

**THE GROWING GIRLS PROJECT: EXPERIENCES OF PUBERTY AND  
MENSTRUATION IN A LOW-INCOME, MINORITY U.S CONTEXT**

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## DISSERTATION ABSTRACT

**Background:** The transition through puberty is a critical period of sexual development that provides a prime opportunity to equip adolescents with accurate knowledge, positive attitudes, and beneficial skills that create a foundation for their sexual and reproductive health (SRH). Little is known about the present day puberty experiences of lower-income, minority girls in the U.S., who are at an increased risk for teen pregnancy and sexually transmitted infections, including HIV. This dissertation attempts to fill gaps in the literature by aiming to understand how low-income and minority girls in the U.S. describe and interpret their experiences of puberty and also to identify their psychosocial and information needs as they transition through puberty.

**Methods:** To achieve these aims, a systematic review of the scientific literature published on lower-income girls' puberty experiences in the U.S. was carried out. Following the systematic review, in-depth interviews and a longitudinal series of focus group discussions were conducted with 28 adolescent girls aged 15-18, who had recently completed their transition through puberty. This qualitative study was carried out in Baltimore City, Maryland. Twenty-five key informant interviews were also conducted.

**Results:** The current literature revealed that low-income girls predominantly described their transition through puberty as negative and expressed having felt unprepared for their transition. Girls in Baltimore City similarly described their experiences of menarche as largely negative, shrouded in fear and confusion. They received varying levels of preparation for menarche, but most lacked even a basic understanding of the female

reproductive system. Participants' experiences of menarche highlighted eight main areas central to menarche preparedness, each of which contributed to how they felt about their first experience of menstruation. Participants also identified structural aspects of the school environment that influenced adolescent girls' experiences of menstruating in schools, and described how multiple components of the built and policy environments impacted their ability to comfortably manage their menstruation at school.

**Conclusions:** Together the findings from these three studies fill a gap in the literature on the present day puberty experiences of low-income, minority girls in an urban context in the U.S and highlight the need for improved puberty-related support and information for such girls. The limited existing evidence suggests that many low-income girls in the U.S. are unprepared for puberty and have largely negative experiences of this transition. Basic needs for menarche preparation are not currently being addressed for some girls in Baltimore City, and multiple structural aspects of school environments are negatively impacting their girls' experiences of menstruating in school.

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## TABLE OF CONTENTS

DISSERTATION ABSTRACT .....	II
COMMITTEE OF FINAL DEFENSE READERS .....	IV
ACKNOWLEDGEMENTS .....	V
LIST OF TABLES.....	XV
LIST OF FIGURES.....	XVI
LIST OF ACROYNYS .....	XVII
CHAPTER 1: INTRODUCTION .....	18
INTRODUCTION.....	19
RESEARCH AIMS .....	21
ORGANIZATION OF THIS DISSERTATION .....	22
CHAPTER 1 REFERENCES.....	23
CHAPTER 2: BACKGROUND LITERATURE .....	24
BACKGROUND LITERATURE .....	25
<i>Defining Puberty.....</i>	25
<i>The physical changes of puberty.....</i>	26
<i>Pubertal timing .....</i>	29
<i>The psychosocial changes of puberty .....</i>	32
<i>Hormonal processes of puberty .....</i>	36
<i>Conceptual relationship between puberty and sexual development.....</i>	38
<i>What is known about girls' experiences of puberty in the US.....</i>	40
<i>Range of puberty experiences .....</i>	41
<i>Puberty experiences related to the timing of pubertal onset .....</i>	44
<i>Preparation for puberty and puberty experiences .....</i>	45
<i>So what? The public health consequences of negative puberty experiences .....</i>	47
<i>Social contexts of puberty experiences .....</i>	48
<i>Considering race, ethnicity and income .....</i>	53
<i>Puberty education in the US.....</i>	56
A CONCEPTUAL FRAMEWORK OF GIRLS' PUBERTY EXPERIENCES.....	63
THE NEED FOR AND CONTEXT OF THE GROWING GIRLS PROJECT .....	66
<i>Project setting: Baltimore City, Maryland .....</i>	66
<i>The big picture vision of The Growing Girls Project .....</i>	68
<i>Project background and collaborations .....</i>	69
CHAPTER 2 REFERENCES.....	70
CHAPTER 3: METHODS.....	82
SYSTEMATIC REVIEW METHODS .....	83
<i>Steps of the systematic review protocol.....</i>	83
<i>Quality Considerations .....</i>	93
QUALITATIVE METHODS.....	94
<i>Study setting.....</i>	95
<i>Study participants .....</i>	95
<i>Data collection methods .....</i>	96
<i>Recruitment and Retention.....</i>	97
<i>Study Sample.....</i>	100
<i>Data collection instruments .....</i>	101



<i>Data collection procedures and management .....</i>	<i>103</i>
<i>Analysis .....</i>	<i>104</i>
<i>The Research Team.....</i>	<i>105</i>
<i>Ethical Considerations .....</i>	<i>107</i>
<b>CHAPTER 4 (PAPER 1): PUBERTY EXPERIENCES OF LOW-INCOME GIRLS IN THE UNITED STATES: A SYSTEMATIC REVIEW OF QUALITATIVE LITERATURE FROM 2000 TO 2014 .....</b>	<b>112</b>
CHAPTER 4 ABSTRACT .....	113
CHAPTER 4 MANUSCRIPT .....	115
CHAPTER 4 TABLES AND FIGURES.....	138
CHAPTER 4 REFERENCES.....	156
<b>CHAPTER 5 (PAPER 2): AN IN-DEPTH UNDERSTANDING OF PREPARATION FOR AND EXPERIENCES OF MENARCHE IN LOW-INCOME, MINORITY GIRLS GROWING UP IN BALTIMORE CITY, MARYLAND. ....</b>	<b>161</b>
CHAPTER 5 ABSTRACT .....	162
CHAPTER 5 MANUSCRIPT .....	164
CHAPTER 5 TABLES AND FIGURES.....	202
CHAPTER 5 REFERENCES.....	216
<b>CHAPTER 6 (PAPER 3): STRUCTURAL FACTORS INFLUENCING GIRLS' EXPERIENCES OF MENSTRUATING AT SCHOOL IN BALTIMORE CITY, MARYLAND .....</b>	<b>221</b>
CHAPTER 6 ABSTRACT .....	222
CHAPTER 6 MANUSCRIPT .....	224
CHAPTER 6 TABLES AND FIGURES.....	259
CHAPTER 6 REFERENCES.....	260
<b>CHAPTER 7: CONCLUSION .....</b>	<b>266</b>
SUMMARY OF RESULTS .....	267
CONTRIBUTION STATEMENT .....	274
IMPLICATIONS FOR PROGRAMMING.....	275
IMPLICATIONS FOR RESEARCH .....	276
CONCLUDING THOUGHTS .....	278
CHAPTER 7 REFERENCES.....	280
<b>APPENDICES.....</b>	<b>282</b>
APPENDIX A: SYSTEMATIC SEARCH STRATEGY .....	282
APPENDIX B: GREY LITERATURE SEARCH .....	285
APPENDIX C: DATA EXTRACTION AND QUALITY ASSESSMENT FORM .....	286
APPENDIX D: FINAL CODEBOOK FOR A SYSTEMATIC REVIEW .....	289
APPENDIX E: SUMMARY CHARACTERISTICS OF ARTICLES INCLUDED IN THE SYSTEMATIC REVIEW .....	293
APPENDIX F: CERQUAL QUALITATIVE EVIDENCE PROFILE.....	298
APPENDIX G: LETTERS OF SUPPORT FROM PARTNERING ORGANIZATIONS .....	304
APPENDIX H: QUESTIONNAIRE .....	308
APPENDIX I: FOCUS GROUP DISCUSSION GUIDE .....	314
APPENDIX J: IN-DEPTH INTERVIEW GUIDE .....	333
APPENDIX K: POST-FOCUS GROUP DISCUSSION MEETING TEMPLATE .....	337
APPENDIX L: IN-DEPTH INTERVIEW CODEBOOK .....	339
<b>BIBLIOGRAPHY.....</b>	<b>342</b>

<b>CURRICULUM VITAE OF ANN HERBERT, MPP .....</b>	<b>362</b>
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## LIST OF TABLES

Table 2.1: Tanner staging of breast and pubic hair development in girls
Table 2.1.A: Breast/Areolar Stages
Table 2.1.B: Pubic Hair Stages
Table 2.2: Psychosocial Development of Normal Puberty
Table 3.1: Qualitative Study Design
Table 3.2: List of Organizational Partners and their location
Table 3.3: Summary of Participation in Focus Group Discussions
Table 4.1: List of included articles
Table 4.2: Summary statistics of included articles' sample characteristics
Table 4.3: Organization of findings of present day puberty experiences of lower-income girls growing up in the United States
Table 4.4: CERQual summary of qualitative findings
Table 4.4A: Content of girls' puberty experiences
Table 4.4B: Quality of girls' puberty experiences
Table 4.4C: Messages girls receive about puberty
Table 4.4D: Other factors shaping girls' puberty experiences
Table 4.4E: Relationships that shape girls' puberty experiences
Table 5.1: Summary of Participation in Focus Group Discussion
Table 5.2: List of Supporting Participant Quotations
Table 5.2A: Self-Perceived Preparation for menarche
Table 5.2B: Sources and timing of preparation for menarche
Table 5.2C: Emotional response to menarche
Table 5.2D: What is menstruation?
Table 5.2E: When will menarche happen to me?
Table 5.2F: What is this blood?
Table 5.2G: What do I do when I find menses for the first time?
Table 5.2H: How do I take care of myself when menstruating?
Table 5.2I: How does menstruation work?
Table 5.2J: Why do girls menstruate?
Table 5.2K: Am I going to be okay?
Table 5.3: Measures of Menarche Preparation from Questionnaire
Table 5.4: Responses to the Questionnaire item asking, "Do you think your development is any earlier or later than most girls your age?"
Table 6.1: Summary of Participation in Data Collection Activities
Table 6.2: Structural factors related to girls experiences of menstruation in schools

## **LIST OF FIGURES**

Figure 2.1: Petersen and Taylor model of possible paths between the bio-psycho-social pubertal changes

Figure 2.2: Fortenberry's framework of the relationship between puberty and adolescent sexuality

Figure 2.3: Conceptual Framework of girls' puberty experiences

Figure 4.1: Flow diagram of article search and inclusion/exclusion process

## **LIST OF ACROYNYS**

Adolescent sexual and reproductive health (ASRH)  
Baltimore City Health Department (BCHD)  
Baltimore City School System (BCSS)  
Critical Appraisal Skills Programme (CASP)  
Enhancing Transparency in Reporting the Synthesis of Qualitative Research (ENTREQ)  
Focus Group Discussion (FGD)  
In-depth Interview (IDI)  
Menstrual Hygiene Management (MHM)  
Pubertal Development Scale (PDS)  
Sexual and Reproductive health (SRH)  
Sexually Transmitted Infections (STIs)  
United States (U.S.)

## **Chapter 1: Introduction**

## INTRODUCTION

The transition through puberty is a critical period of sexual development that provides a prime opportunity to equip adolescents with accurate knowledge, positive attitudes, and beneficial skills that create a foundation for their sexual and reproductive health (SRH). Although the importance of this transition has gained recent attention from international health organizations (e.g., World Health Organization and Children's Rights & Emergency Relief Organization), in the U.S. the sexual and reproductive health community has not yet capitalized on puberty as a critical window of opportunity for improving adolescent sexual and reproductive health.

Moreover, research on the puberty experiences of girls growing up in the U.S. is outdated, as it mostly occurred in the 1970s, 80s and 90s. Since then, much has changed. Today, girls develop breasts and experience menarche earlier than girls did just 25 years ago. Also, the majority of this research is limited to Caucasian, middle-to upper-income girls although puberty onset occurs earliest in African-American girls. This is important because girls who physically develop "early" are more likely to feel unprepared for pubertal changes and suffer from multiple negative psychosocial outcomes such as: poor body image, low self-esteem, depression, substance use, and early sexual behavior, all of which have been independently linked to poor adolescent health, especially, sexual health. Although the science is sparse regarding puberty experiences of girls in minority and lower socioeconomic groups, available evidence suggests that they are the least well informed and most ill prepared for puberty.

To address this gap, this dissertation research aims to understand how low-income and minority girls describe and interpret their experiences of puberty and also to identify

their psychosocial and information needs as they transition through puberty. To achieve these aims, a systematic review of the scientific literature published on lower-income girls' puberty experiences in the U.S. was carried out to ground the project in the recent literature. Following the systematic review, a qualitative study was conducted involving recently post-pubescent adolescent girls who live in Baltimore, Maryland, a U.S. city that is predominantly lower-income and African-American, with some of the worst sexual and reproductive health outcomes in the country (e.g., high rates of adolescent pregnancy and sexually transmitted infections, including HIV). This qualitative work has given voice to girls regarding their puberty experiences in an effort to capture the present day experiences of an important and potentially vulnerable group of girls.

An overarching goal of this dissertation research has been to create a foundation of knowledge that can contribute to the development of puberty educational tools for girls in Baltimore (and beyond). In collaboration with the Maryland Institute College of Art (MICA), the insights and stories gathered from this dissertation research are being translated into educational tools that provide girls with information about their bodies and pubertal development that are based off of their self-identified needs. The dissertation research along with the puberty educational tools it is helping to create, make up The Growing Girls Project.



## **RESEARCH AIMS**

The purpose of this study is to better understand the puberty experiences of low-income and minority girls in the US. The aims of proposed dissertation are to:

**Research Aim 1:** Understand what is known in the scientific literature about puberty experiences of low-income girls in the U.S.

**Research Aim 2:** Understand how adolescent girls living in Baltimore City, an urban, low-income, predominantly African-American context in the U.S., describe and interpret their recent experiences of puberty.

**Research Aim 3:** Identify the psychosocial and information needs of girls in Baltimore as they transition through puberty.

## **ORGANIZATION OF THIS DISSERTATION**

This dissertation is organized into seven chapters. This chapter outlines the aims of the study and serves as an introduction for the rest of the dissertation. Chapter two provides a brief background on pubertal development in females as well as a review of existing literature on girls' experiences of and education about puberty in the US, including what is known about differences by race and socioeconomic status. Chapter three provides a detailed explanation of the methods used to carry out the aims of this study. Chapters four, five, and six present independent publishable articles of findings from the research carried out for this dissertation. Chapter four contains the findings from the systematic review of the recent qualitative literature on low-income girls' experiences of puberty in the U.S. This has now been published in the *Journal of Adolescent Health* (Herbert et al., 2016). Chapter five explores girls' preparation for and experiences of menarche, from the qualitative study conducted with adolescent girls living in Baltimore City. Chapter six reports the qualitative study results with a focus on how the structural environment of schools in Baltimore City impact girls' ability to manage their menstruation at school. The latter two manuscripts will be submitted for peer-reviewed publication. Several additional manuscripts are planned to ensure that the contributions of the girls and the key informants to this research are fully utilized. And finally, Chapter seven reviews and integrates the findings from Chapters four through six. Chapter seven also includes a summary of the strengths and weaknesses of this research and highlights the implications of this work for programming, policies, and future research.

## CHAPTER 1 REFERENCES

Herbert, A. C., Ramirez, A. M., Lee, G., North, S. J., Askari, M. S., West, R. L., & Sommer, M. (2016). Puberty Experiences of Low-Income Girls in the United States: A Systematic Review of Qualitative Literature From 2000 to 2014. *J Adolesc Health*. doi: 10.1016/j.jadohealth.2016.10.008

## **Chapter 2: Background Literature**

This background section starts by clarifying how puberty is defined in this dissertation, what it entails, and how it is thought to relate to sexual development in adolescence. Then background information is provided on girls' experiences of puberty in the U.S., factors that shape girls' puberty experiences, and the potential public health consequences of negative puberty experiences. Following the review of the literature, an overview of puberty education in the U.S. will be provided. The conceptual framework that guides this research will also be presented. Then, a brief overview of the study setting will be provided. And finally, the context and vision of the Growing Girls project will be explained.

## **BACKGROUND LITERATURE**

### **Defining Puberty**

Universally experienced, puberty involves a series of biological, psychological and social changes that unfold overtime, transitioning a child into adolescence. (Brooks-Gunn & Petersen, 1983; J.A. Graber & J., 1998; E. J. Susman & Dorn, 2009). Puberty is considered one of the most significant and dramatic transitions within the life course, and, in particular, is a critical period of sexual development (Blum, Astone, Decker, & Mouli, 2014; G. C. Patton & Viner, 2007).

Puberty is one of the key developmental transitions that take place in early adolescence. Historically puberty and adolescence were used interchangeably, representing the time in life when children transform into adults (Brooks-Gunn & Petersen, 1983). However, adolescence now encompasses the broader developmental stage that spans ages 10-24 and includes several interconnected processes, cognitive,











moral, and spiritual development, as well as puberty (Sawyer, 2012). For girls, the physical changes of puberty are commonly initiated in late childhood during pre-adolescence (around ages 8-9) with the hormonal changes starting even earlier (around age 6) (Lorah D Dorn, Dahl, Woodward, & Biro, 2006). Physical pubertal changes take place over the course of roughly five years, ending around ages 14 to 15 (Susan Y Euling et al., 2008). Therefore, it is more accurate to assert that with puberty girls transition from childhood into adolescence rather than from a child to an adult woman (Blum et al., 2014; G. C. Patton & Viner, 2007; United Nations Children's Fund, 2006).

### **The physical changes of puberty**

Other than infancy, the pubertal period involves more dramatic physical change than at any other time in life. Traditionally, puberty is described by four major physical changes: growth in height, thelarche—breast development, pubarche—pubic hair growth, and menarche—the start of menstruation. These changes unfold in a relatively predictable sequence. The observable physiological changes are represented by the Tanner stages, which were developed for use by medical providers to characterize the stages of pubertal development, as shown in Table 2.1 (Lorah D. Dorn & Biro, 2011; W. A. T. Marshall, J.M. , 1969; Tanner & R.H., 1976). In social science research, puberty is most often measured using the Petersen Pubertal Development Scale (PDS) which is a self report measure of physical maturation (Petersen, Crockett , Richards, & Boxer, 1988). It is strongly, though not perfectly correlated with the Tanner Stage assessment of puberty by a physician, and is an appropriate measure of pubertal development in social science research in cases where physical examinations are not feasible (Lorah D. Dorn & Biro, 2011; E. J. Susman & Dorn, 2009).

According to the Tanner stages of development, the start of puberty occurs when a girl reaches Tanner stage 2 and ends when the final stage is reached. Most girls in the U.S. today develop breasts (thelarche) as the first physical change of puberty, which occurs on average between ages 8-10 (Biro et al., 2006; Susan Y Euling et al., 2008; Herman-Giddens et al., 1997). Pubarche, the development of pubic hair, tends to start growing roughly a year after the start of thelarche. Around the same time, children experience bone growth and maturation, which typically occurs unevenly throughout the body, with the hands and limbs growing first (Biro & Chan, 2015; Shirtcliff, Dahl, & Pollak, 2009). The growth spurt usually reaches its peak just before menarche (Warren, 1983). Though often used as the main indicator of pubertal development, menarche occurs later on in the process of puberty; at around Tanner stage 4 of thelarche/pubarche and between the ages of 11 and 13 on average (Herman-Giddens et al., 1997).

Not captured by the Tanner stages are other common physical changes that occur during puberty in females, which are: weight gain, which occurs as early as age 6 and is essential for menarche to occur (Warren, 1983); acne, which occurs in 80% of adolescents and can be present at the beginning and end stages of puberty (Bergler-Czop & Brzezinska-Wcislo, 2013); increased body odor and perspiration which starts around age 8 (Warren, 1983); underarm hair growth; and accrual of bone mineral content (E. J. Susman & Dorn, 2009). Also, female reproductive organs grow and mature at this time, including enlargement of the labia and clitoris, and growth of the uterus and vagina (Steinberg, 2005). The sexual anatomy developed during puberty remains with an individual throughout the rest of their sexual life (J. D. Fortenberry, 2013).

Table 2.1: Tanner staging of breast and pubic hair development in girls		
Table 2.1.A: Breast/Areolar Stages		
Stage	Description	Line Drawing
B1	Breasts are flat	
B2	Breast buds; breasts form small mounds, elevation of nipple and enlargement of areolar diameter	
B3	Further enlargement and elevation of breasts and areola, with no separation of their contours	
B4	The nipple and the surrounding part (the areola) make up a mound that sticks up above the breast	
B5	Only the nipple sticks out beyond the breast owing to recession of the areola to the general contour of the breast	
Table 2.1.B: Pubic Hair Stages		
Stage	Description	Line Drawing
PH1	No pubic hair	
PH2	Very little hair; sparse growth of long, slightly pigmented downy hair, straight or only slightly curled, appears along the labia	
PH3	More hair; hair is considerably darker, coarser, and more curled. Hair spreads sparsely over the junction of the pubes.	
PH4	Quite a lot of hair; hair now resembles the adult type, but the area covered by it is still considerably smaller than in the adult. The hair has not spread over the thighs.	
PH5	Hair is of adult quality in terms of quantity and type and has spread over the thighs	
Sources: 1. Tanner, J.M. (1962). <i>Growth at Adolescence</i> (2nd ed.). Springfield, MA: Thomas. 2. Marshall, W.A.; Tanner, J.M. . (1969). Variations in pattern of pubertal changes in girls. <i>Archives of Disease in Childhood</i> , 44(291-303). 3. Sanfilippo, J, & Jamieson, M. (2008, November 2008). Physiology of Puberty. 2015, from <a href="https://www.glowm.com/section_view/heading/Physiology%2520of%2520Puberty/item/285#r42">https://www.glowm.com/section_view/heading/Physiology%2520of%2520Puberty/item/285#r42</a> 4. Center for Young Women’s Health. (March 4, 2014). Puberty. 2015, from <a href="http://youngwomenshealth.org/2010/04/21/puberty">http://youngwomenshealth.org/2010/04/21/puberty</a>		



## **Pubertal timing**

The changes in the shape and size of a girl's body that commonly take place during pubertal development between the ages of 8-14 can vary dramatically in timing and tempo, with some girls finishing the process before others start (Steinberg, 2005). This explains why a fifth grade classroom includes some girls who look fully developed as well as some girls who still appear child-like.

In addition to the variability in pubertal timing seen between girls of the same age, the timing, duration, and sequence of physical pubertal events vary overtime and by race and ethnicity. Over the past 100 years, the age of pubertal onset has declined in developed countries around the world (Anderson, Dallal, & Must, 2003; Gluckman & Hanson, 2006; Herman-Giddens et al., 1997; Parent et al., 2003; Wyshak, 1982). As a result, girls experience puberty three years earlier than girls did 100 years ago (Gluckman & Hanson, 2006). Better nutrition and sanitation are the main explanations for this secular decline in age of puberty (Anderson et al., 2003; Susan Y Euling et al., 2008; Gluckman & Hanson, 2006; Pinyerd & Zipf, 2005). The worldwide decline in age of menarche stalled around age 13 a few decades ago; however, in the US, the average age of thelarche and menarche have continued to decline over the last 25 years (Susan Y Euling et al., 2008; Herman-Giddens, 2005).

Although genetic factors are still the best predictor of pubertal timing, multiple socially determined factors have been posited to influence earlier onset, including increased rates of childhood obesity (Anderson et al., 2003; Deardorff et al., 2011; Reagan, Salsberry, Fang, Gardner, & Pajer, 2012; Walvoord, 2010); poor nutrition (Y. Lee & Styne, 2013; Witchel & Plant, 2014); stressful family circumstances, commonly

operationalized as absence of a father figure (Deardorff et al., 2011; B. J. Ellis & Garber, 2000; B. J. Ellis, Shirtcliff, Boyce, Deardorff, & Essex, 2011; B. J. G. Ellis, J., 2000; B. J. E. Ellis, M.J., 2007); and exposure to hormones and environmental toxins (S. Y. Euling, Selevan, Pescovitz, & Skakkebaek, 2007; M. S. Golub et al., 2008; Waal, 2002).

Race and ethnicity also play a large role in determining pubertal timing. African-American girls experience an earlier age of pubertal onset compared to Caucasian American girls (Herman-Giddens, 2005). In one reputable cross-sectional study of a clinical sample of 17,077 girls ages 3-12 (9.6% African-American and 90.4% Caucasian), the mean age of onset was 8.87 (SD, 1.93) years in African-American girls and 9.96 (SD 1.82) years in Caucasian girls (Herman-Giddens et al., 1997). In the same study, 48.3% of African-American girls and 14.7% of Caucasian girls had started physical pubertal development by age 8. On average, menarche occurs at 12.60 (12.53-12.67) years of age for Caucasian females and 12.00 (11.93-12.07) years of age for African-American females (Biro et al., 2006; Chumlea et al., 2003; Susan Y Euling et al., 2008). Some evidence also indicates younger age at menarche for girls of low socioeconomic status (SES), especially for lower-income Caucasian girls (Krieger, 2015; Reagan et al., 2012). Differences in timing were also found between Mexican American girls and Caucasian girls, with Mexican American girls starting menarche at similar ages as African-American girls, both of which start at significantly younger ages than that of Caucasian girls (Chumlea et al., 2003).

African-Americans also have a slightly different sequence and duration of puberty than Caucasian Americans. African-American girls often begin pubic hair development before (or close to) the time of breast development, while Caucasian girls regularly start

developing breasts prior to growing pubic hair (Biro et al., 2006; Susan Y Euling et al., 2008). And, some racial/ethnic groups (e.g., people of Asian decent) grow no or only a small amount of pubic hair (Susan Y Euling et al., 2008; Freyre, 2002). Interestingly, as the age of pubertal onset continues to decline, the decline in age at which puberty is completed is not as steep; therefore, the duration of puberty is now longer than it was 25 years ago, with African-American girls having the longest duration of all races (Biro et al., 2006; Mendle, 2014). Despite these differences, it is important to note that many of the studies that look at differences in timing of pubertal development by race do not factor in the social factors, previously mentioned, that have also been attributed to earlier pubertal onset; therefore, it is difficult to understand the mechanisms behind these racial and ethnic differences.

As a result of the overall trend toward earlier ages of pubertal onset, the ages of normal puberty are being reconsidered (Biro & Chan, 2015; Parent et al., 2003; C. Roberts, 2015; Witchel & Plant, 2014). In the past, precarious puberty, a medical condition of premature puberty, was diagnosed in girls who initiated puberty prior to age 8, an age now considered relatively normal, especially among African-American girls. In the other direction, girls who have not shown signs of puberty by age 17 are diagnosed with delayed puberty (Biro & Chan, 2015; Witchel & Plant, 2014). This dissertation is concerned with girls' typical experiences of normal puberty, not rare medical conditions. Therefore, the descriptions of "early," "late," "on-time" or "off-time" puberty used in this dissertation are all within what is considered "normal" pubertal development. These terms reflect the actual or perceived pubertal development relative to averages within a population or a subjective comparison of one's development compared with peers.

In summary, there is large variation in the timing of physical pubertal changes in girls. Puberty is also starting earlier than before, with African-American and lower SES girls initiating puberty earlier than their Caucasian and more affluent counterparts. Timing of pubertal development is important because early and late onset of pubertal development have been linked to many detrimental psychosocial outcomes, which will be discussed below.

### **The psychosocial changes of puberty**

Puberty is not only rooted in physical development, it comprises a complex interaction of physical, social and psychological changes in ways that blur distinctions between these categories (Brooks-Gunn & Petersen, 1983; Petersen & Taylor, 1980; C. Roberts, 2015; E. J. Susman & Dorn, 2009; E. Susman & Rogol, 2004). The psychosocial changes are less visible, harder to measure and thus less well defined, but have at least as much relevance to adolescent health and development (Brooks-Gunn, 1984; Brooks-Gunn & Petersen, 1983, 1984). A summary of some of the major psychosocial changes of puberty is provided in Table 2.2.

As girls physically develop, self-perceptions as well as perceptions by peers and family start to change. As girls start to appear older and more mature, they are presented with new social dynamics and changing expectations (L. D. C. Dorn, L.J.; Petersen, A.C., 1988). Socially, they typically gain an increased capacity to relate to others, renegotiate relationships, and begin to fit into new societal roles (Simmons, Blythe, & McKenny, 1983). Psychological development includes increased competence in self-understanding, emergence of a personal identity, and manifestation of new mental health outcomes (Jenkins, 1983; Petersen, Richmond, & Leffert, 1993; Remschmidt, 1994).

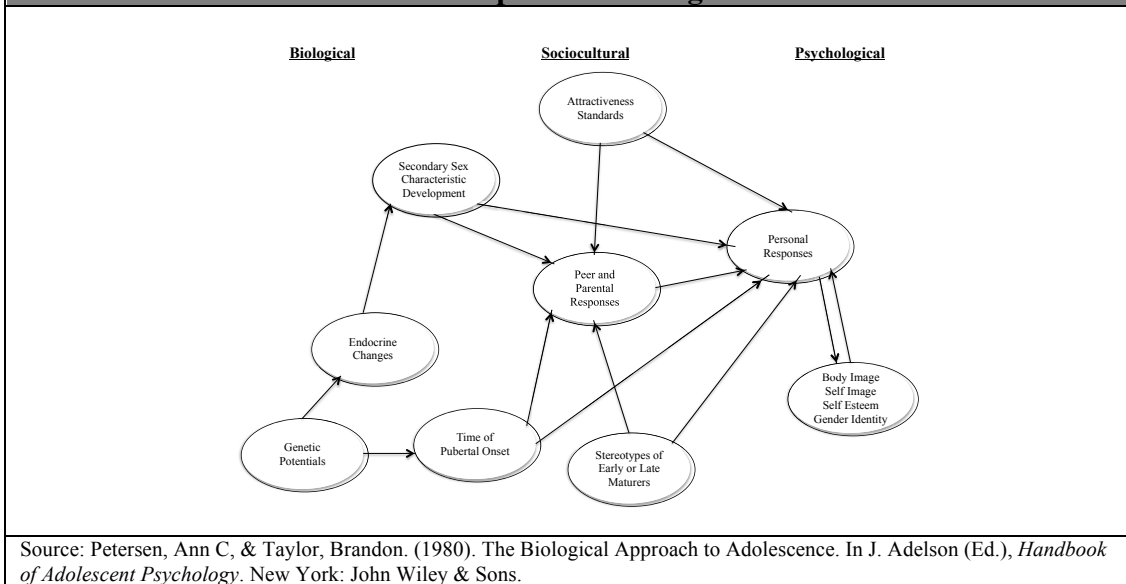
Table 2.2: Psychosocial Development of Normal Puberty
<ul style="list-style-type: none"> <li>• Develops sense of identity (e.g., change in body image, self-concept, self-esteem)</li> <li>• Changes in relationships with parents (e.g., realize that parents are not perfect; have heightened conflict with parents)</li> <li>• Changes in peer relationships (e.g., become increasingly influenced by peer group; peer group becomes increasingly important, shifts to primarily same-sex peer group)</li> <li>• Changes in emotional regulation (e.g., return to childish behavior when stressed; prone to mood swings; tendency to magnify the situation)</li> <li>• Gain greater sense of autonomy (e.g., increased desire for independence; test rules and limits; become more private, increased risk taking)</li> <li>• Develop a sense of sexuality (e.g., develop an interest in sex, increased interest in sexual anatomy, preoccupation with body, develop sexual subjectivity).</li> </ul>
<p>Sources:</p> <p>1. Hornberger, L. L. (2006). Adolescent psychosocial growth and development. <i>Journal of Pediatric and Adolescent Gynecology</i>, 19(3), 243-246. doi: 10.1016/j.jpog.2006.02.013</p> <p>2. Sawyer, S.M.; Afifi, R.A.; Bearinger, L.H.; Blakemore, S.J.; Dick, B.; Ekeh, A.C.; Patton, G.C. (2012). Adolescence: a foundation for future health. <i>Lancet</i>, 379, 1630-1640. doi: 10.1016/S0140-6736(12)60531-5</p> <p>3. Remschmidt, H. (1994). Psychosocial milestones in normal puberty and adolescence. <i>Hormone Research</i>, 41(2), 19-29.</p>

Articulating the relationships between the different aspects of puberty (hormonal, physical, social, and psychological) has proven extremely difficult to do in past research. Petersen and Taylor proposed a model of these interconnections in which genetic factors influence the hormonal and physical changes of puberty, which are linked to both personal and peer/parental responses to the changes (shown in Figure 2.1) (Petersen & Taylor, 1980). Sociocultural factors also influence the individual and peer/parental responses. Individual psychological factors such as body image and self-esteem are reciprocally related to a girl's personal response to her physical changes.

In line with this model and in the absence of a psychosocial equivalent to the Tanner scale, the psychological and social aspects of puberty are mostly assessed by looking at the relationship (whether direct or indirect) between measures of pubertal status and/or timing and some standardized psychosocial measure (e.g., sexual behavior, depression, body-image, etc.) (Carter, Jaccard, Silverman, & Pina, 2009; Grief & Kathleen, 1982; Remschmidt, 1994; Simmons et al., 1983).

Pubertal status, a girl's level of pubertal development at a certain point in time, has been linked with multiple psychosocial outcomes in girls. For example, more advanced physical pubertal development has been associated with sexual behavior (Flannery, Rowe, & Gully, 1993) and sleep phase delay (M. A. A. Carskadon, C., 2002; M. A. A. Carskadon, C.; Richardson, G.S.; Tate, B.A.; Seifer, R., 1997; M. A. V. Carskadon, C.; Acebo, C., 1993), both of which are normative among adolescents. However, physical development in girls has also been associated with negative psychosocial outcomes which are not considered to be normative aspects of pubertal development such as depression (A. C. Angold, E.J.; Erkanli, A.; Worthman, C.W., 1999; A. C. Angold, E.J.; Worthman, C.W., 1998) and alcohol use (Costello, 2007).

**Figure 2.1: Petersen and Taylor model of possible paths between the bio-psychosocial pubertal changes**



A substantial body of literature affirms that girls who start puberty off time have worse psychosocial health outcomes, with those who start early relative to peers, suffering more negative consequences than those who start late (E. J. Susman & Dorn,

2009; E. Susman & Rogol, 2004). For example, girls with early pubertal onset are at risk for low self-esteem (Alasker, 1995; Tobin-Richards, 1983), poor body image (Duncan, 1985; J. M. Williams & Currie, 2000), sedentary behavior (M. S. Golub et al., 2008), and increased levels of stress (M. S. Golub et al., 2008; van Jaarsveld, 2007). Girls with early pubertal timing also engage in romantic and sexual behavior earlier, including earlier first dating, first kissing, first genital petting, earlier onset of sexual intercourse, and pregnancy (Baams, Dubas, Overbeek, & van Aken, 2015; Flannery et al., 1993; J. D. Fortenberry, 2013; J.D. Fortenberry, 2013; Lam, 2002; Moore, Harden, & Mendle, 2014; L. S. S. Zabin, E.A.; Hirsch, M.B.; Hardy, J.B., 1986). Additionally, girls with early puberty timing are more likely to have experienced unwanted sexual touching and forced sexual behaviors (Vicary, 1995; L. S. Zabin, Emerson, & Rowland, 2005). Early puberty has also been linked to delinquency, externalizing behavior, conduct disorder, substance use, disordered eating, and depression (Alasker, 1995; Copeland, 2010; J. A. Graber, Seeley, Brooks-Gunn, & Lewinsohn, 2004; Kaltiala-Heino, 2003; Mendle, Turkheimer, & Emery, 2007; van Jaarsveld, 2007). Early pubertal timing is even predictive of course failure and school dropout (Cavanagh, Riegle-Crumb, & Crosnoe, 2007). For some, the negative effects of early pubertal timing appear to wear off over time, but for others they continue to negatively impact health into adulthood (M. S. Golub et al., 2008; E. J. Susman & Dorn, 2009).

Girls who start puberty “later” are also at risk for some negative psychosocial outcomes, but later pubertal onset can also be protective. Starting later than one’s peers is associated with lower self-esteem, poor body image, and depression (E. J. Susman & Dorn, 2009; J. M. Williams & Currie, 2000). But, late developing girls are also later to

engage in dating and partnered sexual behavior than their early or even on-time peers (Lam, 2002). Deviations in the sequence of pubertal events and the tempo at which they unfold has received significantly less attention than timing of puberty onset but it is likely that variations from the “normal” sequence influence girls’ psychosocial outcomes (Mendle, 2014; E. J. Susman & Dorn, 2009). There is some evidence that girls who start puberty later go through the changes more quickly than girls who start earlier and that shorter duration of puberty can be more difficult to cope with (Lorah D. Dorn & Biro, 2011; Mendle, 2014; Mendle, Harden, Brooks-Gunn, & Graber, 2010).

Petersen and Taylor’s model has spawned a significant body of informative literature on how physical aspects of puberty are related to its psychosocial aspects, but this literature is limited by the assumption that physical changes of puberty are at the root of adolescent psychosocial development (Jenkins, 1983). In doing so, these models possibly neglect the fact that psychological and social aspects of puberty can also influence biological aspects (Brooks-Gunn & Petersen, 1983, 1984; Petersen & Taylor, 1980; Remschmidt, 1994). And finally, it is important to highlight that literature on the psychosocial aspects of puberty has largely focused on negative and non-normative consequences of psychosocial development, especially in early developers, and has failed to investigate positive and more normative psychosocial aspects of pubertal development (E. J. Susman & Dorn, 2009).

### **Hormonal processes of puberty**

Only recently have researchers begun to understand and measure the hormonal processes underlying puberty (Dorn, Dahl, Woodward, & Biro, 2006; Golub et al., 2008). This understanding provides greater nuance to thinking about the process of pubertal



development, especially in how it is related to sexual development.

What we think of as puberty comprises two distinct neuroendocrine changes: gonardarche and adrenarche (Lorah D Dorn et al., 2006; G. C. Patton & Viner, 2007). Gonardarche is a hormonal process necessary for reproductive function (J.A. Graber & J., 1998; G. C. Patton & Viner, 2007; Spear, 2000) and is associated with what most people think of in terms of puberty in girls (thelarche and menarche) (Lorah D Dorn et al., 2006; J.A. Graber & J., 1998; G. M. Herdt, M., 2000). Gonardarche in girls occurs a few years prior to that of males (Biro & Chan, 2015; Witchel & Plant, 2014).

Andrenarche is independent of Gonardarche and is the first physiological change of puberty (Hubert, 1990; Reiter, 1982; Witchel & Plant, 2014). It occurs in girls and boys at roughly the same ages, around ages 6-9 (G. M. Herdt, M., 2000; McClintock & Herdt, 1996). Physical pubertal changes, such as pubarche, increase in body odor, and development of acne are a result of adrenarche (Biro & Chan, 2015; G. C. Patton & Viner, 2007; Witchel & Plant, 2014). Andrenarche is also the hormonal process through which children become sexual beings; meaning they, for the first time, develop an awareness of their own sexuality—referred to as sexual subjectivity (G. M. Herdt, M., 2000). Multiple studies have found that adolescents develop memorable and stable subjective recognition of their sexual attraction to others around the age of 10 (G. B. Herdt, A., 1993; G. M. Herdt, M., 2000; McClintock & Herdt, 1996). This appears to be true for same and opposite sex attraction and in both girls and boys (G. B. Herdt, A., 1993; G. M. Herdt, M., 2000). This is a departure from previous understanding, which assumed that sexual subjectivity stemmed from gonardarche, the process primarily responsible for an adult-like figure and the ability to reproduce (McClintock & Herdt,

1996). This finding also highlights that pubertal changes begin much earlier than is commonly recognized and that these initial hormonal changes of puberty are responsible for important elements of sexuality development.

Additionally, the sex hormone, testosterone, which increases during puberty, has also been directly linked to sexual activity in girls. Though the testosterone production in girls is low relative to boys, increases in testosterone during puberty in girls have been linked to increases in sexual interest (e.g., light to heavy petting, masturbation, frequency of thinking about sex, etc.) and heterosexual intercourse (Halpern, 1996; Moore et al., 2014). However, the relationships between testosterone levels and sexual behavior is stronger for boys than for girls, which suggests that girls' sexuality is more controlled by social factors than for males (Crockett, 1996). These studies on the hormonal underpinnings of puberty highlight the interconnected nature of biological, psychological and social changes of puberty and also provide insight into the role of puberty in sexual development.

### **Conceptual relationship between puberty and sexual development**

Puberty's role in sexuality development is partially what makes it such a salient transition. Developing a positive sense of sexuality and exploring sexual behaviors is a healthy part of adolescent development (Bacon, 1999; Campbell, Mallappa, Wisniewski, & Silovsky, 2013; J. D. Fortenberry, 2013; J.D. Fortenberry, 2013; J.A. Graber & J., 1998; Tolman & McClelland, 2011). Sexuality is defined as "a core human dimension that includes sex, gender, sexual identity, and orientation, eroticism, attachment and reproduction, and is experienced or expressed in thoughts, fantasies, desires, beliefs, attitudes, values, practices, roles and relationships. Sexuality is a result of the interplay of

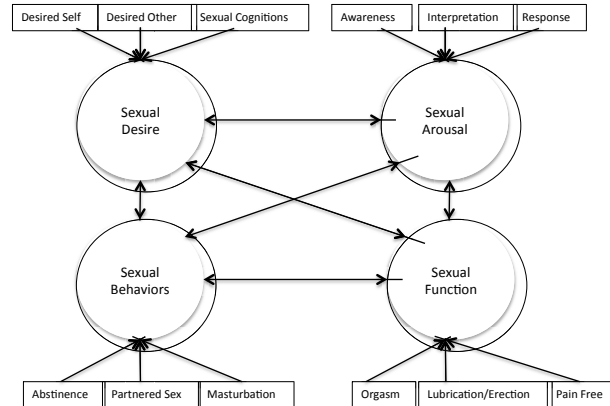
biological, psychological, socio-economic, cultural, ethical, and religious/spiritual factors” (WHO, 2006). Sexual health is therefore defined as, “a state of physical, emotional and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction, or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence. For sexual health to be attained, and maintained, the sexual rights of all persons must be respected, protected and fulfilled” (WHO, 2006).

Menstruation and physical development are the changes most commonly associated with sexuality in that they involve associated bodily regions. Menstruation has also historically been a sign of sexual maturity and the ability to reproduce. Additionally, as mentioned previously, the onset of puberty, especially early onset, is associated with the onset of sexual behavior (Baams et al., 2015; Hipwell, Keenan, Loeber, & Battista, 2010; Westney, Jenkins, & Benjamin, 1983). Though these gross level connections are important, they miss much about the relationship between puberty and sexuality.

Fortenberry, in a very thorough review, has taken a much broader perspective and argues that puberty is related to four distinct, but interrelated, constructs of sexuality: sexual desire, sexual arousal, sexual behaviors and sexual function (shown in Figure 2.2) (J. D. Fortenberry, 2013).

Sexual desire includes sexual cognitions (sexual thoughts), objectified desire by others (the perception that one is desired), and objectified desire for others (awareness of sexual interest in other people). Sexual arousal involves the presence of sexual excitement, an awareness of it as well as an interpretation of it. Sexual function, rarely

**Figure 2.2: Fortenberry's framework of the relationship between puberty and adolescent sexuality**



Source: Fortenberry, J. D. (2013). Puberty and adolescent sexuality. *Hormones and Behavior*, 64(2), 280-287. doi:10.1016/j.yhbeh.2013.03.007.

considered in literature on adolescent sexual health, refers to the ability to feel pleasure from sexual acts. Finally, sexual behavior includes a sexual repertoire that includes abstinence, masturbation, and partnered sexual behaviors (including non-coital sexual behaviors). Fortenberry argues that, though evidence of sexuality exists in childhood, these four constructs first become salient and identifiable at puberty and persist throughout adulthood. Through these four constructs of sexuality (illustrated in Figure 2.2), the transition through puberty is a critical period of change and development when adolescents build a foundation for sexual and reproductive health (SRH) (Igras, Macieira, Murphy, & Lundgren, 2014; Koch, Robbins, Porter, & Gyorke, 2009; Martin, 1996).

### **What is known about girls' experiences of puberty in the US**

So far, this background section has defined and explained the complex and interconnected physiological and psychosocial processes of puberty among girls and also how this transition conceptually relates to sexual development. The physiological changes that take place during puberty are mostly studied using quantitative research

methods. Although the physiological and psychosocial changes that take place during puberty influence girls' experience of their pubertal transition, they are not exactly the same thing. Rather, girls' puberty experiences refer to girls' emotional reactions to their pubertal changes, the personal and social meanings ascribed to these changes, and their subjective interpretations of the role puberty plays (or played) in their lives. To understand girls' subjective experiences of puberty, qualitative methods are helpful. This section reviews what is known about how girls perceive and interpret their pubertal transition, the factors that shape their puberty experiences, and the potential public health consequences of negative puberty experiences.

The body of literature to be reviewed here is limited in multiple ways, but still sheds light on important aspects of puberty experiences that are likely still relevant today. Literature in this area is predominantly outdated as it largely comes from research conducted in 1970's through 90's. It also is mostly focused on girls' experiences of menarche and menstruation and fails to address other aspects of puberty. Moreover, this research was largely conducted in samples of Caucasian girls who are from middle-to-upper-income families. Despite these shortcomings, this literature is informative as it suggests that girls' experiences of puberty influence other aspects of their sexual health and are influenced both by individual and societal factors.

### **Range of puberty experiences**

Girls in the U.S. report experiencing a range of attitudes, beliefs and feelings about menstruation, including some positive attitudes, such as acceptance, excitement and happiness. Negative attitudes about menarche include feeling annoyed, anxious, shameful, worried, scared, confused, grossed out, restrictive, and embarrassed. (Clarke,

1978; Cooper & Koch, 2007; E. Koff, Rierdan, & Sheingold, 1982; E. R. Koff, Jill; Jacobson, Stacey, 1981; C. S. A. Scott, D.; Panizo, M.I.; Owen, R, 1989). In other research girls express ambivalent feelings pointing out that there are some positive things (such as sign of growing up) about menstruation, but also negative sides too (such as cramps) (Brooks-Gunn & Ruble, 1982; J. Lee, 2009; Ruble & Brooks-Gunn, 1982).

Girls' experiences of menarche and attitudes toward menstruation have become more positive throughout the twentieth century than was historically true, but negative experiences still tend to outweigh the positive ones (McPherson & Korfine, 2004). In one of the more recent studies, college-age women were asked to write personal accounts of their pubertal development (Beausang & Razor, 2000). These women's stories were coded as either positive (phrases such as "I felt so grown up" or "I wanted to tell everyone") or negative (phrases such as "I was so embarrassed" or "I wanted to die") (Beausang & Razor, 2000 p 522). Of the 46 stories that were analyzed, only 26% described their experience as mostly positive with the rest describing it as mostly negative.

Indirect measures of girls' emotional reactions to menarche have been used successfully to elicit nuanced and accurate responses from adolescent girls (Brooks-Gunn, 1984). In one study, recently menstruating girls were asked to complete the following sentence: "*Ann just got her period for the first time. The first thing Ann thought was.....*" Girls generally completed this sentence with negative responses about menstrual pain and the "drag" of menstruation and said that Ann felt "*sick*", "*strange*", "*weird*", and "*scared*" (E. R. Koff, Jill; Jacobson, Stacey, 1981).

Studies have shown that menarche is a highly memorable event that is easily recalled, in detail, even many years after menarche; however, girls' attitudes about puberty start to form prior to menarche (Brooks-Gunn, 1984; Brooks-Gunn & Petersen, 1984; L. D. Dorn, Sontag-Padilla, Pabst, Tissot, & Susman, 2013; Must et al., 2002; Pillemer, 1987). Some studies of pre-and post-menarcheal girls have found that girls anticipate having much more negative, painful, and difficult experiences than they actually end up having (Brooks-Gunn & Ruble, 1982; Ruble & Brooks-Gunn, 1982). Other studies with pre-and post-menarcheal girls have found the opposite—that pre-menarcheal girls tend to express excitement and positive anticipation about menstruation, but after having gone through it, express predominantly negative feelings such as annoyance, pain and feeling “grossed out” (E. R. Koff, Jill; Jacobson, Stacey, 1981; Stubbs, 1989).

Regardless of how expectations and attitudes about menstruation change once it is experienced, girls' initial reactions to menarche seem to shape girls' relationship with menstruation throughout their lives. For example, negative attitudes toward menstruation have also been associated with negative attitudes toward menopause (Morrison, Sievert, Brown, Rahberg, & Reza, 2010).

Very few studies have assessed girls' experiences of puberty related to aspects other than menarche, but those that do have found that, like with menarche and menstruation, developing bodies appear to be met with mixed feelings (L. F. O'Sullivan, Meyer-Bahlburg, & Watkins, 2000). For many girls, puberty is a time when body image plummets and body dissatisfaction increases, which is not true for boys (L. D. C. Dorn, L.J.; Petersen, A.C., 1988; Duncan, 1985; Flannery-Schroeder, 1996). Over half of

pubescent girls in one study reported that they receive unwanted teasing about their breast development, much of which comes from their mothers, making them feel upset, embarrassed, and angry (Brooks-Gunn, Newman, Holderness, & Warren, 1994). Other girls, however, welcome their developing bodies as a source of pride and power that symbolizes a much-desired feminine, adult status (L. F. O'Sullivan et al., 2000; Tobin-Richards, 1983). In a 1996 study, Martin found that girls tended to speak of shaving their legs as an important ritual of femininity that makes them feel good about themselves (Martin, 1996).

The diversity of puberty experiences presented above shows that puberty is not necessarily an inherently negative and trying transition, and that in some cases it can even be a positive process. Even so, available evidence indicates that negative experiences were still quite common for girls growing up in the U.S. during the twentieth century.

### **Puberty experiences related to the timing of pubertal onset**

Research from this time period, has shown that the most proximate determinants of negative experiences of puberty, including menarche and menstruation, appear to be the timing of pubertal development and whether or not girls are adequately prepared for it (E. Koff et al., 1982; Rierdan & Koff, 1990; Ruble & Brooks-Gunn, 1982; Usher, 1989). Girls who develop off time and especially those who develop early tend to have more negative experiences of puberty, including increased worry and more negative attitudes about menstruation (E. Koff et al., 1982; Rierdan & Koff, 1990; Stubbs, 1989). Early pubertal timing has also been linked with less body satisfaction and worse body dissatisfaction, body objectification and body monitoring (J. S.-C. Lee, J., 1996; Pliner, 1990; Ruble & Brooks-Gunn, 1982; J. M. Williams & Currie, 2000). On-time puberty,



however, has been associated with more positive feelings about attractiveness, body image, menarche and attitudes about menstruation (E. Koff et al., 1982; Rierdan & Koff, 1990; Tobin-Richards, 1983).

There are multiple potential reasons why early pubertal development may cause difficulty. To begin, these girls are more likely to be overweight and to be less satisfied with their weight than their peers (L. D. C. Dorn, L.J.; Petersen, A.C., 1988; Duncan, 1985). Additionally, two broader theories seek to explain the negative consequences of off-time puberty (J. A. B.-G. Graber, J., 1996). The maturational deviance hypothesis suggests that off-time pubertal timing is viewed as socially deviant, making acceptance and adaptation to this transition more challenging (Petersen & Taylor, 1980). The developmental stage termination hypothesis suggests that early development is difficult because it makes girls look older and more mature than they psychologically and cognitively are (Brooks-Gunn & Petersen, 1983). As a result, early developing girls get in situations they are not cognitively or psychologically ready for, which are likely to involve risky behaviors such as sexual activity and substance use (Simmons et al., 1983). Both theories highlight that parental, peer, and societal expectations and reactions to girls' pubertal development contribute to girls' experiences of puberty and the challenges of early development.

### **Preparation for puberty and puberty experiences**

Preparation for puberty is also an important factor in shaping girls' experiences of it. Girls who have little knowledge about menstruation and who feel unprepared for it are more likely to report having worse experiences of menarche, negative attitudes about menarche, and also more menstrual distress (Brooks-Gunn & Ruble, 1983; Kieren &

Morse, 1992; E. Koff et al., 1982; Ruble & Brooks-Gunn, 1982). Conversely, girls who are knowledgeable about pubertal changes and remember feeling prepared for them report having had more positive experiences of puberty, positive menstrual attitudes and less menstrual distress. A study of 639 girls in grades 5-8 in public schools, 120 of whom were followed longitudinally, found that unprepared girls expressed considerably more negative feelings, fewer positive feelings and more surprise than prepared girls at menarche (Ruble & Brooks-Gunn, 1982). Differences were even seen between girls who felt “pretty well prepared” and “a little prepared.” A study of 85 stories written by women from a small community college in the Midwest about their experience of menarche found that women who expressed having no preparation for menarche, described their experiences with words such as, “*panic,*” “*traumatic,*” “*embarrassed,*” and “*scared*” (Beausang & Razor, 2000).

Adequate preparation for menarche can also alleviate some of the negative effects of early pubertal timing. (E. Koff et al., 1982; Rierdan & Koff, 1990; Ruble & Brooks-Gunn, 1982). For example, one study of 97 college women, found that when adjusting for timing of menarche, adequacy of preparation continued to significantly predict girls’ experiences of menarche ( $p = 0.001$ ), but when adjusting for adequacy of preparation, the relationship between timing of menarche and experience was no longer significant (E. Koff et al., 1982). Another study that included 92 pre-and post-menarcheal girls found that girls who were better prepared and who had received affirming messages about menstruation had more positive experiences, regardless of age of menarche and personality attributes such as locus of control (Rierdan, Koff, & Flaherty, 1983). These studies suggest that adequate education about menarche and menstruation can improve

girls' experiences of menarche even for girls who have early pubertal onset.

### **So what? The public health consequences of negative puberty experiences**

Normal pubertal development, especially menstruation, is, in and of itself, a sign of health, yet, negative experiences of this normal and healthy transition have become an accepted part of adolescence in the U.S., even though negative experiences are not necessary or inevitable (Brooks-Gunn & Ruble, 1982, 1983; C. J. Chrisler, I.K.; Champagne, N.M. Preston, K.E., 1994). In fact, a girl's puberty experience impacts her psychological and sexual wellbeing, both during adolescence and potentially throughout her lifetime (Blum et al., 2014; J. D. Fortenberry, 2013; Igras et al., 2014).

A girl's perceptions of herself and her developing body shapes her opinions of and feelings about herself as she becomes aware of her sexuality, which influences the agency she has over her body when there are pressures to become engaged in sexual activities (Martin, 1996; Schooler, Ward, Merriwether, & Caruthers, 2005). In a sample of mostly Caucasian, heterosexual college students, women who report greater comfort with menstruation also reported more comfort with their sexuality ( $r = .35$ ,  $p < .01$ ) (Rempel, 2003). Another study gathered measures of menstrual attitudes, body shame, sexual assertiveness, sexual experience and sexual risk-taking behavior in 199 female college students (Schooler et al., 2005). This study found that girls who experience negative attitudes toward menstruation experience significantly more body image self-consciousness ( $r = .34$ ,  $p < .001$ ), and less body comfort ( $r = -.41$ ,  $p < .001$ ) whereas those with more open attitudes toward menstruation reported less self-consciousness ( $r = -.16$ ,  $p < .05$ ) and more body comfort ( $r = .24$ ,  $p < .001$ ). They also found that menstrual shame was associated with lower levels of sexual experience and increased sexual-risk taking,

which was mediated through body shame. A third study, again with a predominantly Caucasian sample, found that men had much more positive perceptions of their genitals than women though both males and females, who reported positive perceptions of their genitals, were more likely to report more enjoyment in sexual activities (Reinholz, 1995). Additionally, poor body image and body objectification have been associated with decreased likelihood of engaging in protected health behaviors such as refusing unwanted sex, requiring partners to use condoms, and getting pelvic and breast exams (Gillen, Lefkowitz, & Shearer, 2006; Impett, Schooler, & Tolman, 2006; Schooler et al., 2005).

Although much of this research is older, involves Caucasian girls, and reports uncontrolled (zero-order) associations, the evidence indicates that girls who have a positive body image feel more confident and capable of articulating, pursuing and achieving their sexual desires and making healthy sexual decisions compared to girls who express body dissatisfaction (Koch et al., 2009; Martin, 1996). Given the importance of preparation in shaping girls' experiences of puberty, it is important that girls are provided with adequate puberty education, especially for those with early pubertal onset.

### **Social contexts of puberty experiences**

All aspects of pubertal development, including pubertal timing and puberty education, occur within a defined social context that reflects the values, norms, traditions, and culture at a specific time in history. This section reviews what is known about how girls in the U.S. are socialized to interpret pubertal changes.

The social context in which a girl develops exposes her to certain cultural views of pubertal maturation which in turn influence the beliefs and behaviors she develops toward it (Delaney, 1988). Developing girls observe and absorb implicit and explicit

information from those around them, whether it is that menarche is a sign of womanhood or that menstruation is dirty and debilitating. They pick up on the how others feel about puberty and how those individuals perceive their pubertal development. Often, these beliefs and attitudes become internalized (Dashiff & Buchanan, 1995).

Historically and across different cultures, the meaning placed on menstruation has varied significantly; in some cases menstrual blood has been viewed as something dangerous, to be feared, and in others as something magical, to be revered (J. S.-C. Lee, J., 1996). In primitive societies, menstruation was feared as something threatening to the health and virility of men. Therefore, to protect men, menstruating girls were forced into seclusion. In some cases, females were secluded for the duration of each menstrual cycle and in other cases, menarche resulted in a prolonged period of isolation in preparation of entering womanhood. In contrast, some cultures believed menstrual blood could cure various ailments ranging from leprosy to headaches to the plague (Delaney, 1988). Across cultures, menarche is also commonly viewed as a symbol of womanhood and as rite of passage that indicates sexual maturity and a girl's readiness to reproduce (Diorio, 2003; Uskul, 2004)

In Western countries today, menstrual blood, is generally no longer viewed as having magical powers to harm or heal, though menarche is often still seen as a significant developmental milestone, ripe with meaning (Cooper & Koch, 2007; Hawthorne, 2002; Orringer & Gahagan, 2010; Teitelman, 2004; Uskul, 2004). A variety of menstrual meanings have been identified in the U.S.. A relatively recent study of African-American adolescent girls who had recently started menstruating (and their mothers) found that menarche was commonly viewed as a sign that a girl had already

become sexually active (Hawthorne, 2002). Additionally, this study found that menarche was also viewed as being triggered by early sexual behavior and as payback for the father's previous mistreatment of women. As a result, some mothers kept information about their daughter's menarche from their daughter's father.

Some of the meaning placed on menarche and menstruation in US culture maintains remnants of traditional menstrual taboos (Cooper & Koch, 2007; Martin, 1996). The joke, "Don't trust anything that bleeds for five days and doesn't die," made popular by the show *South Park*, is a good example of lingering stigma associated with menstruating women in the U.S. today (Parker, 2012). The effects of menstrual taboos in the U.S. can be organized in three main categories: 1) concealment of menstrual status from others; 2) limiting activity during menstruation to prevent unwanted attention; and 3) secrecy and silence about topics related to menstruation.

In a culture that prizes hygiene, it is no surprise that menstruating girls are expected to conceal their menstrual status from others by avoiding soiling, staining, and odor. As a result, concealing their menstrual products and preventing menstrual leaks is one of the main sources of anxiety for menstruating girls (Kissling, 1996; E. R. Koff, Jill; Jacobson, Stacey, 1981; L. R. Williams, 1983). A 2002 study that assessed the extent of the concealment taboo in shaping, mainly Caucasian, university students' perception of women found that girls' concerns with concealing their menstruation were based on actual societal taboos and stereotypes about menstruation (T. A. G. Roberts, J.L.; Power, C.; Pyszczynski, T., 2002). In a double-blind study, 65 participants ranked a woman's level of competence and likability as well as their own general objectification of women after witnessing the woman "accidentally" pull a hair clip or a tampon out of her purse.

Women who were viewed with a tampon rather than a hair clip were rated as less competent and likeable. Similarly, both males and females who viewed the woman with a tampon tended to objectify women to a greater extent than did individuals who instead saw her with a hair clip (B. L. Fredrickson, & Roberts, T., 1997; B. L. Fredrickson, Roberts, T., Noll, S. M., Quinn, D. M., & Twenge, J. M., 1998). Clearly, menstruation continues to be stigmatized in U.S. society.

Other menstrual taboos that linger in modern society require girls to limit their activity when menstruating and to avoid communicating with others about the topic (Britton, 1996; L. R. Williams, 1983). Menstruating adolescents report avoiding physical activity such as swimming or playing sports and some still even avoid bathing at this time (Delaney, 1988; Houppert, 1999a; Research & Forecasts, 1981). Women of all ages report avoiding sexual intercourse when menstruating (Britton, 1996; Delaney, 1988; S. Golub, 1992; Research & Forecasts, 1981). Withdrawal from activity during menstruation may result from stigma attached to menstruation (Research & Forecasts, 1981). Many view menstruation as a time when women are fragile and susceptible to illness. Also, prior to menstruation, women are commonly portrayed as maladaptive and thought to be moody, irritable, and unpredictable (J. C. L. Chrisler, Karen B., 1990).

Additionally, talking about menstruation openly, especially with men, is often considered taboo in U.S. culture (Research & Forecasts, 1981; L. R. Williams, 1983). Adolescent girls are reluctant to talk about menstruation, especially immediately after menarche, with anyone other than their mothers, for fear of embarrassment (Brooks-Gunn & Ruble, 1982; Kissling, 1996; L. R. Williams, 1983). Interviews with adolescent girls, mostly European Americans, and their mothers explored how adolescent girls

discuss menstruation amongst themselves and with others (Kissling, 1996). Findings from this study revealed that girls feel embarrassed about the topic and as a result avoid public discussion of it altogether, even with their best friends. When it is discussed, girls tend to use slang, euphemisms or vague language that drops the object of the sentence such as, “I started” or “that time.” And in many cases, the terms used to mask menstruation are negative or derogatory (e.g., the curse) (Allen, 1991; Houppert, 1999b; Kissling, 1996). Secrecy about menstruation is also common amongst adult females. Mothers often feel uncomfortable discussing menstruation and avoid having conversations about it with their daughters (Kissling, 1996). As a result, their daughters become socialized to keep the topic hidden and secret from others, but are left feeling uninformed and unprepared for menarche.

The research cited above suggests that, at least in the 1980’s and 1990’s when most of this research was carried out, puberty remains a sensitive and somewhat taboo topic for many in the U.S. that prevents girls from receiving adequate education on the topic. American culture is more open today than ever before (J. Lee, 2008, 2009; Martin, 1996). Menstruation is now more freely portrayed on popular adult shows (e.g., *Broad City* and *Orange is the New Black*). And, although menstruation is still commonly associated with sex, female sexuality is less demonized than in the past. Given the importance of societal influences on shaping girls experience of puberty it is important to understand the current and specific social contexts in which girls from diverse cultural and demographic groups are going through puberty today.



## **Considering race, ethnicity and income**

Race and SES status are two social constructs that have a significant impact on many aspects of an individual's life in the US. Within the US context, race and socioeconomic status are two distinct constructs that are highly correlated (Macartney, 2013). Both constructs are generally thought to significantly impact the development and health outcomes of individuals, usually with minorities and those of low SES fairing worse than their Caucasian and more affluent counterparts. Despite the significant health disparities amongst racial and SES groups in the US, the majority of puberty research has been conducted within a very homogenous demographic, that of mostly Caucasian, middle-to-upper class females (Brooks-Gunn & Petersen, 1983; Grief & Kathleen, 1982; C. Roberts, 2015). However, a few studies, especially some more recent ones, have included more diverse samples of girls from multiple races, ethnicities and socioeconomic levels. Findings from these few studies are the focus of this section.

Studies that include lower-income and African-American samples suggest that menarche and menstruation are even more challenging transitions for lower-income and African-American girls than for their more affluent and Caucasian counterparts (Cooper & Koch, 2007; Jackson, 1992; Koch et al., 2009; Orringer & Gahagan, 2010; C. S. A. Scott, D.; Panizo, M.I.; Owen, R, 1989; Teitelman, 2004; White, 2013). Girls from minority and lower socioeconomic groups appear to be the least well informed and most ill prepared for this transition (Koch et al., 2009; Teitelman, 2004; White, 2013).

Scott et al. assessed middle-to-higher income African-American girls, grades six through ten, perceptions of, level of preparedness for, and feelings about menarche (C. S. A. Scott, D.; Panizo, M.I.; Owen, R, 1989). In this sample, surprise (63%) as the most

frequently reported emotional reaction to menarche. Following surprise, other common feelings about menarche were “pretty much” or “a lot”: scared” (46%), embarrassed (34%), proud (16%), excited (16%), or happy (12%) (C. S. A. Scott, D.; Panizo, M.I.; Owen, R, 1989). When comparing these findings to those from similarly designed studies with Caucasian girls, Scott et al. suggested that African-American and Caucasian girls are equally likely to report positive feelings about menarche, but that African Americans tend to report more negative feelings than their Caucasian counterparts (C. S. A. Scott, D.; Panizo, M.I.; Owen, R, 1989). Another study of 120 African-American women found similar results with only one fourth of women saying their first menstrual period made them feel good about themselves (Jackson, 1992)

Orringer et al. conducted a qualitative study of communication about menstruation among lower-income, African-American women and found that they tended to express negative attitudes about menstruation and used derogatory terms for menstruating women such as “bitch,” and “evil” (Cooper & Koch, 2007). In this study, a participant, named Tamika, shared her feelings about menstruation:

*I just hate when my period comes . . . the cramps, the mood swings, the attitude when I am on and right now when I am suppose to get it, I'm really moody. . . . But when I have it it's crazy. I be all evil and crampy and I'm like, aww I wish it would leave (Cooper & Koch, 2007 p 69) .*

Women in this study also mostly remembered being “scared” or “hurt” when they started menstruating, and menstruation was viewed positively amongst women in this sample only in that it provided relief when viewed as a sign of an avoided pregnancy (Cooper & Koch, 2007).

A 2004 qualitative study that included African-American and European girls,

aged 14-18 years, from both high- and low-income families, found that girls from lower income families tended to report more negative experiences of pubertal changes and their sexuality than girls from higher-income families (Teitelman, 2004). A more recent study compared menstrual attitudes of 86 African-American and 83 European-American adolescent school girls who were further classified as lower and higher income groups resulting in 4 groups, with at least 33 in each group (White, 2013). Menstrual attitudes of each group were assessed using The Adolescent Menstrual Attitude Questionnaire (AMAQ) (Brooks-Gunn & Ruble, 1982; Morse, Kieren, & Bottorff, 1993). Three subscales of the AMAQ were used: Positive feelings (8 items such as “I feel very grown up when I have my period”), Negative Feelings (11 items such as “I feel ugly when I have my period”), and openness toward menstruation (5 items such as “I often talk about periods with my friends”). There were no statistically significant relationships between race and menstrual attitudes nor any interactions of race and income. However, girls from lower income families, irrespective of race, had significantly less positive feelings ( $F=3.56$ ,  $p<0.052$ ) and openness toward menstruation ( $F=8.45$ ,  $p<0.004$ ) (White, 2013).

Both being African-American and living in a lower income family are linked to earlier pubertal onset which is its self linked to a lack of puberty preparedness and to negative experiences of puberty. Disparities in puberty preparation are in fact likely to account for much of the negative experiences of these girls. White’s 2013 study found significant disparities between African-American and European-Americans’ knowledge about menstruation and feelings of preparation for menarche, though all racial and income groups scored low on these measures (White, 2013). Other studies including African-American and lower-income samples have agreed that girls from these

populations are even less prepared for puberty than their Caucasian counterparts (Cooper & Koch, 2007; Jackson, 1992; C. S. A. Scott, D.; Panizo, M.I.; Owen, R, 1989).

### **Puberty education in the US**

For all girls, puberty education has the potential to improve girls' readiness for puberty, improve their experiences, and potentially avert some of the poor sexual health outcomes associated with negative puberty experiences (M. S. Golub & Catalano, 1983; E. Koff & Rierdan, 1995; E. Koff et al., 1982; Rierdan & Koff, 1990; Rierdan et al., 1983). This section reviews what is known about how to adequately prepare girls for their puberty transition.

Surprisingly, little attention has been paid to puberty education in the US, especially in recent decades (Koch et al., 2009). In prior studies, adolescent girls and women of all ages express feeling they were not adequately prepared for puberty by the puberty education they received and do not seem to have acquired even basic information about anatomy and physiology (E. Koff & Rierdan, 1995; E. Koff et al., 1982; E. Koff, Rierdan, & Stubbs, 1990; Rierdan & Koff, 1990; Rierdan et al., 1983). One of the only studies to thoroughly examine girls' knowledge of puberty uses data from 1973 (L. Z. Whisnant, L. , 1975). Both pre-and post-menarcheal girls in this study lacked accurate vocabulary for their external genitalia calling it "*down there*" and did not recognize words like clitoris or vulva (L. Z. Whisnant, L. , 1975). More recent studies have found similar results—that girls often acquire inaccurate information about puberty (such as why women menstruate, how long they menstruate, when they menstruate, etc.) (Cooper & Koch, 2007). Carrera et al. assessed adolescents' knowledge about puberty in seven different cities in the US using a 20-item knowledge test that covered basic questions

about reproductive physiology. The average score out of 600 adolescents was 30% (Carrera, 2000).

A few studies have asked adolescent girls what they wish they had learned about puberty and each one has found that girls want to receive both concrete information as well as emotional support (E. Koff & Rierdan, 1995; E. Koff et al., 1982; Rierdan et al., 1983). For example, one study, showed that how girls felt about their preparation was significantly correlated ( $r = 0.56$ ,  $p < 0.001$ ) with the actual knowledge they had about menstruation (e.g., the cause of bleeding, duration of menstruation, mechanics of menstrual hygiene) (E. Koff et al., 1982). In another study, when post-menarcheal girls were asked what would have made their first menstruation easier they mentioned: being in a calm, supportive, and reassuring environment, having a female they trusted to talk to about it; knowing what to do in terms of menstrual hygiene when the moment arrived; knowing the biology of menstruation; and having information about other girls' subjective experience (E. Koff & Rierdan, 1995).

Other studies have pointed out that information on pubertal development needs to be presented in a way that is honest, balanced (illustrating both potentially beneficial and challenging aspects of pubertal changes), straightforward, affirming, accurate, and cognitively appropriate (Cooper & Koch, 2007; Diorio, 2003; Erchull, Chrisler, Gorman, & Johnston-Robledo, 2002; Havens, 1989; Kieren & Morse, 1992; Koch et al., 2009; E. Koff & Rierdan, 1995). Cognitive ability is especially salient to puberty education as a child's cognitive development determines how they will be able to interact with and understand educational material. Given the importance of providing education prior to when the pubertal changes take place, children would be roughly ages 6-11 at the time

when initial puberty education is necessary. Children and early adolescents within this age range tend to be concrete, rather than abstract, thinkers, and puberty educational material needs to be created with this in mind (Hawthorne, 2002; Piaget, 1996).

When asked about their menstrual education, menstruating girls mostly remember having been exposed to information about menstruation from at least one source, if not many, prior to menarche (E. Koff & Rierdan, 1995; Rierdan et al., 1983). Sources of puberty education commonly identified were: family members (e.g., mothers, sisters, aunts, grandmothers), female friends, teachers, health professionals, and media (e.g., books, articles, magazines, menstrual product advertising, websites, videos, games and apps) (Costos, 2002). Male sources, such as fathers, brothers, male friends, were rarely mentioned except to say that discussing puberty even with related males can be embarrassing.

Out of all the sources of puberty education mentioned, mothers were reliably listed as the predominant and most important source of information (Cooper & Koch, 2007; Hawthorne, 2002; E. Koff & Rierdan, 1995; Teitelman, 2004). Following mothers, girls' next preferred sources of information about puberty were other females, such as sisters, female friends, as well as schools (Clarke, 1978; Kieren & Morse, 1992). The media, especially menstrual product advertisements also appear to be a common source of information for developing girls (E. Koff & Rierdan, 1995).

As the most common source of pubertal information and support, mothers play an important role in shaping girls puberty experiences. Mothers educate their daughters about puberty, commonly limiting conversations to practical aspects of puberty (how to use menstrual products such as pads and tampons) (Beausang & Razor, 2000; J. Lee,

2008). Mothers also provide a cultural context through which to understand the meaning of puberty and set an emotional tone and attitude toward their daughters' pubertal transition (Cooper & Koch, 2007; Hawthorne, 2002; L. F. O'Sullivan et al., 2000; Orringer & Gahagan, 2010; Teitelman, 2004). Mothers appear to be quite aware of their daughters' pubertal status, and most seem to believe that puberty education is important (Aronowitz & Agbeshie, 2012; Costos, 2002; J. Lee, 2008; L. F. O'Sullivan, Meyer-Bahlburg, & Watkins, 2001; Price, 2003). Yet, girls commonly express dissatisfaction with how their mothers handled this responsibility and disappointment in the information they received. Qualitative studies have captured this disappointment well:

*"All she [her mother] said was, 'there's some pads under the sink.' I was really disappointed that she would not sit down with me and talk" (Beausang & Razor, 2000 p 524).*

*My mom should've taught me how you take care of a pad and where you put it before my period actually started because my period started in the middle of sixth grade camp. . . . I thought you could just stick it in the toilet, and it got stuck in the toilet, and one of the camp leaders was like, "Who put this in here?" I was so embarrassed (Teitelman, 2004 p 1299).*

As these quotes illustrate, girls are disappointed when their mother is not open or able to talk to them about the subject.

A 2002 study interviewed 138 women, ranging in age from 26-60 years old (mean age 43.2 years), about their education and experiences at menarche (Costos, 2002). In this sample that includes multiple generations, women consistently reported that they were mostly provided with negative messages about menstruation from their mothers. The negative messages were categorized into 7 main groups including: no talk—avoided conversation about this topic all together (58%); practical information only—provided only information on menstrual products and hygiene (23%); secrecy-expressed

importance of keeping menstruation hidden from others (18%); sexuality-now you can get pregnant so you have to watch out (13%); Grin-and-bear-it—its going to hurt, but you just have to bear it (13%); Not ready to talk—mothers said they weren't ready for their daughter to grow up (7%); Religious taboos-placed restrictions on daughters behavior when menstruating (7%); and slapping—girls were slapped at menarche as part of an unexplained religious tradition (5%). In particular, the association between puberty and sex appears to be problematic for puberty conversations between mothers and daughters as it means that if there is communication at menarche around sexuality it centers around the dangers (J. S.-C. Lee, J., 1996; L. F. M.-B. O'sullivan, H.F.L.; Watkins, B.X., 2001; Schooler et al., 2005).

Though mothers are important sources of information for girls at puberty, in many cases mothers often provide very limited and/or incorrect information that reinforces menstrual taboos. In many cases, mothers seem to feel uncomfortable and uninformed about the topic (Alcalde & Quelopana, 2013; Cooper & Koch, 2007; Costos, 2002; L. F. O'Sullivan et al., 2001). As a result, mothers hope that other sources of puberty education, such as their older children (their daughter's older sisters), schools, health professionals and the sanitary product manufacturers, can supplement in areas where they are lacking (Delaney, 1988; L. F. M.-B. O'sullivan, H.F.L.; Watkins, B.X., 2001). One mother described it this way,

*I think those trained and qualified people should find the smoother and gentler way to tell our daughters about it. To teach our daughters those scientific terms for our bodies so our daughters avoid the street slang and vulgarities used instead of those terms. Most of us mothers don't even know the exact terms.* (Latina mother of girl, 10-13 age group) (L. F. M.-B. O'sullivan, H.F.L.; Watkins, B.X., 2001 p 208).



This quote illustrates how mothers who feel uninformed about the physiological aspects of pubertal development may choose to pass on the responsibility of education to other sources, and may therefore fail to acknowledge their daughter's desire for connection with and emotional reassurance from them during their pubertal transition.

Schools are also potentially important sources of puberty education. In theory, puberty is the cornerstone of comprehensive rights-based sexuality education program (Koch et al., 2009). When provided by trained teachers in schools throughout a child's entire education, comprehensive sexuality education can provide girls (and boys) with age-appropriate education on knowledge, skills, attitudes and behaviors that promote holistic health sexuality across the life span, including through puberty (Koch et al., 2009). However, comprehensive sexuality education is rarely provided in schools in the U.S. and therefore puberty education suffers as a result. In practice, most adolescent sexual health programs in schools have focused on preventing pregnancy, sexually transmitted infections (STIs), and sexual violence and are administered to girls who have long since gone through puberty (Berglas, Constantine, & Ozer, 2014; Kirby, 2007; Koch et al., 2009). The last national study of comprehensive sexuality education is from 1999 which included 1,789 fifth and sixth grade teachers randomly sampled across the U.S. (Landry, 1999). According to these teachers, fifty-six percent of 5<sup>th</sup> grades in the U.S. offer some form of sexuality education, and 64% of sixth grades. In the same study, teachers who offered this education felt that students would be better off receiving this information even earlier, before fifth-and-sixth grades. Moreover, though teachers tend to think that puberty education is important, they rarely feel qualified, comfortable and

supported by administration to provide it (Goldman & Coleman, 2013; Landry, 1999; Price, 2003).

In the absence of comprehensive sexuality education, adolescents are instead commonly provided with educational booklets, pamphlets, or movies, on pubertal development and/or menstruation, many of which are produced by sanitary product manufacturers (Delaney, 1988; E. Koff & Rierdan, 1995). A number of dated studies have concluded that the quality of these educational materials is lacking and that many are produced by feminine hygiene product manufacturers in order to sell products. These studies have confirmed that most menstrual product advertising and educational materials focus on menstrual hygiene and emphasize the negative aspects of menstruation reinforcing societal views that menstruation is dirty and should remain secret (Erchull et al., 2002; Havens, 1988, 1989; Houppert, 1999b; L. B. Whisnant, E.; Zegans, L., 1975). Qualitative studies have also found that girls are not satisfied when the only puberty education they receive comes from pamphlets. Referring to her menarche experience a 19-year-old Mexican American girl named Bianca said,

*"I felt sad...because in my favorite book, Are You There, God? It's Me, Margaret, they threw a celebration for her and made her feel welcome into womanhood. I just got to go to bed with a pad that felt like a diaper and read information about periods from an old girl scout book. My mother never told me anything (J. Lee, 2008).*

As this quote suggests, puberty education needs to involve more than just handing over a document of information for a girl to read and process on her own.

Puberty educational materials created more recently, however, tend to include more accurate and more positive views about menstruation and menstrual hygiene than materials produced longer ago (Erchull et al., 2002). Still, puberty education materials

tend to mainly reflect heterosexual and traditional gendered norms that focus on the reproductive implications of pubertal development (Diorio, 2003). Moreover, though more recent pubertal educational material in the US has started to include a more racial and ethnic minorities, educational materials are still largely skewed toward Caucasian females. In a 2002 study, Erchull found that only 1 of 13 books published before 1980 included racial or ethnic minorities whereas 6 out of the 15 books published in 1980 depicted at least some minorities (Erchull et al., 2002).

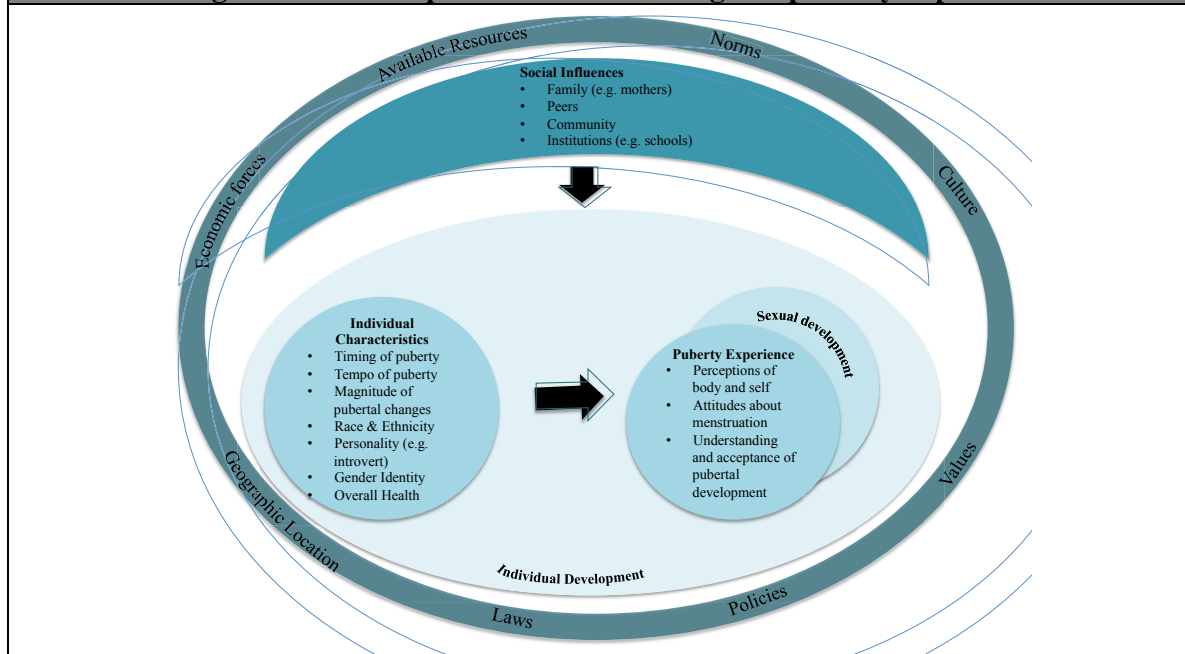
This body of research, though mostly from over twenty years ago, suggests that the puberty education that is commonly provided to girls growing up in the U.S., fails to capture the type of information that pubescent girls feel is important to receive during puberty (such as psychological and social aspects of puberty), often happens too late (after changes have already taken place), and often reinforces negative menstrual attitudes.

## **A CONCEPTUAL FRAMEWORK OF GIRLS' PUBERTY EXPERIENCES**

The background literature informed the conceptual framework in Figure 2.3. This framework is influenced by an ecological model, which situates the individual within their social and cultural context (Blum et al., 2014; Bronfenbrenner, 1998).

In this framework, pubertal development, as well as sexual development, are situated within the overall process of human development in order to acknowledge that multiple types of development take place concurrently (e.g., cognitive, moral, sexual and physical development); consequently, other developmental processes may impact girls'

**Figure 2.3: Conceptual Framework of girls' puberty experiences**



experiences of puberty. For example, a girl's level of cognitive development affects not only the types of puberty education that will resonate with her but also how well she is able to handle the new social dynamics that result from pubertal development.

Research such as Fortenberry's (explained earlier) suggests that girls' experiences of puberty are related to their subsequent sexual desire, sexual arousal, sexual behaviors, and sexual function (J. D. Fortenberry, 2013; J.D. Fortenberry, 2013). However, to provide puberty education that reflects girls' actual psychosocial and information needs within a particular context, it is important to let girls define and explain how they view their pubertal and sexual development as well as the connections they see (or don't see) between the two.

This framework highlights how individuals play a role in constructing their experiences of puberty. Individual traits, such as introversion and extroversion can affect how likely girls are to seek out information and conversation about their pubertal development. Also, the timing, sequence and magnitude of physical changes of pubertal development influence girls' experiences of puberty. Girls who start puberty early are

less likely to have had exposure to puberty education prior to pubertal onset and are more likely to feel unprepared for the transition. However, the physical changes of puberty do not necessarily directly determine their experience of it. For example, starting menarche early does not necessarily mean that a girl inevitably develops a negative attitude toward menstruation. In fact, age-appropriate puberty education received prior to pubertal onset positively shapes girls' experiences of puberty, even when they start the process early (E. Koff et al., 1982; Rierdan & Koff, 1990).

Puberty education and support come from relationships that take place within girls' families, peer groups, communities and institutions such as schools, churches and leadership organizations (Costos, 2002; J. Lee, 2008). Girls develop within a specific geographic, socioeconomic and political context, which upholds certain values, norms, laws and policies, all of which influence how pubertal development is treated and interpreted. For example, Denmark has mandated sexuality education, including puberty education, in all grade levels in schools since 1970s, whereas, in the U.S., no such national mandate exists (Beaumont, 2013). As a result, girls growing up in Denmark are exposed to accurate information on this topic from the time they start school. In contrast, girls in the U.S. may grow up without receiving accurate information about puberty. Laws such as that in Denmark reflect societal norms and values and have the power to influence, at a national level, how pubertal development, including traditionally stigmatized processes such as menstruation, are viewed within society.

## **THE NEED FOR AND CONTEXT OF THE GROWING GIRLS PROJECT**

Much research has been conducted on the sexual behavior of lower-income African-American adolescent American populations such as those in Baltimore, but not a lot is known about puberty experiences in these populations (Jenkins, 1983). As demonstrated in this review of background literature, most research on girls' puberty experiences has been conducted with predominantly Caucasian and mostly middle-to upper-class populations where the focus has predominately been on menarche and menstruation (Jenkins, 1983; L. F. O'Sullivan et al., 2000). With this in mind and with the hope of ultimately supporting positive sexuality development, this dissertation proposes to fill a gap in the literature and aim to better understand the present day puberty experiences of minority girls growing up in a low-income urban environment.

### **Project setting: Baltimore City, Maryland**

Baltimore City, Maryland is an ideal setting for this research because it is home to a population whose puberty experiences are under-investigated and who are likely in the most need of puberty education. Baltimore is a poor urban center with a predominately African-American and low-income population. As of 2015, most students enrolled in the Baltimore public school system identify as African-American (83.0%) (Baltimore City Public Schools, 2015). And recent estimates find that approximately 84% of students enrolled in Baltimore City public schools are low-income, qualifying for the free or reduced-price school lunches program (Baltimore City Public Schools, 2015). As a result of such high numbers, Baltimore now provides a free lunch to all students.

Also, the sexual and reproductive health outcomes of adolescents in Baltimore are some of the worst in the country, including high rates of STIs (including HIV) and teen

pregnancy. According to the CDC Youth Risk Behavior Survey among female high school students in Baltimore, over 40% of girls said that they did not use a condom at last sex to prevent STIs or pregnancy, and 22% reported that they are currently not using any contraceptive method (CDC, 2013). In 2013, Baltimore-Columbia-Towson had the fourth highest estimated adult/adolescent HIV diagnosis rate in the U.S., with African-Americans disproportionately affected in Maryland (CDC, 2015). Similarly, rates of chlamydia in Baltimore adolescents ages 15-19 are three times higher than in the rest of the state and rates in Baltimore are 12.4 times higher among African-American youths compared to Caucasian (Healthy Teen Network, 2010). Further, though teen birth rates have been declining in recent years, they remain amongst the nation's highest (Healthy Teen Network, 2010). A recent multi-site adolescent health study (the Well-Being of Adolescents in Vulnerable Environments (WAVE Study) found that 54.8% of the 130 ever sexually active female adolescents, aged 15-19 years, in the Baltimore sample had ever been pregnant (Brahmbhatt et al., 2014). When asked, these low-income, African-American adolescents (male and females) from East Baltimore identified sexual and reproductive health as one of the primary health challenges in their lives (Mmari et al., 2014). Together these studies show that the sexual health needs of girls growing up in Baltimore are not being met.

Girls growing up in lower-income urban environments often attend schools that do not have adequate, or any, puberty education curriculum and given that the first signs of puberty in girls are starting earlier and earlier, the puberty education that has occurred in schools is typically is too late. An investigation conducted by Baltimore City Health Department (BCHD), identified puberty as one of the key issues for youth ages 6-13 in

Baltimore (Summors, 2015). Given the apparent need for puberty education in Baltimore today, it is important to understand girls' puberty experiences and their needs throughout their transitions. With a greater understanding of girls' present day puberty experiences within this specific context, it will be possible to develop puberty educational materials specifically suited to this particular social context.

### **The big picture vision of The Growing Girls Project**

The Growing Girls Project includes three interconnected phases. The first phase of this project involves the work proposed for this dissertation including the literature review and the qualitative data collection. The goal of the proposed dissertation research is to gain an in-depth and comprehensive understanding of girls' experiences of puberty in Baltimore, and what their psychosocial and information needs are during this transition. The second and third phases of this project are not technically part of the dissertation, but are described to provide the rationale for the dissertation work. In the second phase, the information developed through this dissertation research will be used to develop puberty education material that is grounded in research and based on current perspectives of girls' actual experiences of going through puberty in Baltimore. The puberty education material will be designed to work within the social factors identified as shaping girls experiences of puberty in Baltimore and to address the psychosocial and information needs identified as salient for their pubertal transitions. The third phase of this project, also not included as part of this dissertation work, will involve dissemination and evaluation of the puberty educational material throughout Baltimore.



## **Project background and collaborations**

The Growing Girls Project was inspired by and is part of a larger project with the goal of developing a Puberty Book for girls in the U.S. Dr. Marni Sommer, an Associate Professor at the Mailman School of Public Health at Columbia University, is an international expert in puberty education and has conducted studies in multiple countries around the world (e.g., Pakistan, Tanzania, Ghana, Ethiopia and Cambodia) on girls' experiences of puberty (M. Sommer, 2009; Marni Sommer, 2009; Sommer, 2011; Sommer, Ackatia-Armah, Connolly, & Smiles, 2014). She uses findings from her research to inform the creation of puberty books catered to each population's specific context. My Growing Girls Project is a collaborative effort with Dr. Sommer, extending her research by adapting methods used in developing country contexts to a specific U.S. setting, incorporating additional qualitative methods, and exploring new topics related to puberty that had not previously been addressed by her international work (e.g., exploring the ways in which girls' perceive the connection between pubertal and sexual development).

In addition to the financial support and expertise that the Growing Girls Project is receiving from Dr. Sommer, this project is also receiving financial support from The Lerner Center For Public Health Promotion at Johns Hopkins Bloomberg School of Public Health. The Lerner Center is providing funding for extended data collection in Baltimore and to support collaboration with the Maryland Institute College of Art (MICA) to design the puberty education material for girls in Baltimore, both of which have been overseen by Dr. Anne Riley, the dissertation advisor.

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## **Chapter 3: Methods**

Two types of research methods were used to carry out the aims of this dissertation. First, a qualitative literature review was conducted to understand what is known in the scientific literature about puberty experiences of low-income girls in the US. Second a qualitative study was conducted to understand how girls in Baltimore City, Maryland describe and interpret their experiences of puberty and identify their psychosocial and information needs throughout this transition. The systematic review grounds the project in the existing body of recent literature, and the qualitative study captures the present-day experiences of girls' puberty transitions in Baltimore from the perspective of those closest to it.

## **SYSTEMATIC REVIEW METHODS**

The first aim of this dissertation is to understand what is known in the scientific literature about puberty experiences of low-income girls in the US. To achieve this aim, a systematic review of the literature was conducted.

### **Steps of the systematic review protocol**

Guided by Cochrane's suggested steps for conducting a systematic review, this review was carried out in 12 steps following the methodology outlined below (Armstrong R. et al., 2007)

*Step 1: Protocol development*

*Step 2: Develop search strategy*

*Step 3: Database literature search*

*Step 4: Grey literature search*

*Step 5: Full library formation*

*Step 6: Title/abstract screening*

*Step 7: Full text screening*

*Step 8: Bibliography search*

*Step 9: Quality assessment*

*Step 10: Data extraction*

*Step 11: Data analysis*

*Step 12: Manuscript preparation*

***Step 1: Protocol development***

A protocol was developed for this review based on the *Cochrane Guidelines for Systematic Reviews in Health Promotion and Public Health* and will be used to guide all aspects of the review (Armstrong R. et al., 2007) . The protocol specified the objectives, methods and tools of the review, the details of which are provided below.

***Step 2: Develop search strategy***

The search encompassed published and unpublished literature on US populations, available in English from 2000 to the present date. Studies of all types were considered for this review. The search strategy was developed in PubMed and adapted to other databases and grey literature sources. The search strategy used is provided in Appendix A.

Though the study participants included in the research could be of any age, the focus of the review was on the period of life between the ages of 8 and 14, which is the current normal age range of puberty (Biro & Chan, 2015). Therefore, retrospective studies that ask girls to refer back to this age range were also included.

The review included articles published on puberty-related topics in this population. Puberty related topics include all of the following:



- Puberty-related knowledge
- Puberty-related education
- Puberty-related experiences
- Puberty-related norms
- Puberty-related myths
- Puberty-related beliefs
- Puberty-related attitudes
- Puberty-related behavior
- Puberty-related perceptions
- Puberty-related feelings
- Puberty-related sources of information
- Puberty-related sources of support

### ***Step 3: Database literature search***

Electronic databases, including Pubmed, ERIC, PsycInfo, Scopus, and EMBASE, were systematically searched.

### ***Step 4: Grey literature search***

Grey literature was defined as “that which is produced on all levels of government, academics, business and industry in print and electronic formats, but which is not controlled by commercial publishers” ("The Grey Literature Report,"). Grey literature was searched using grey literature databases as well as web pages from major implementing organizations working with adolescent health and puberty-related topics (such as Planned Parenthood and the US Office of Adolescent Health). A list of the gray literature sources searched is in Appendix B.

### ***Step 5: Full library formation***

All articles from the database and grey literature searches were assembled into a single library. Duplicate articles were removed from the main library. Endnote bibliographic software was used to store and keep track of citations ("Endnote," 2012). Electronic searches were downloaded directly into Endnote, while studies retrieved from other sources were entered into Endnote manually.

### ***Step 6: Title/abstract screening***

Titles and abstracts of articles were screened based on the following criteria:

1. Does the study have anything do with puberty?
  - If not, **EXCLUDE** with reason “**OFF TOPIC**”
  - If so, or if it is unclear, move to the next question
2. Does the study take place in the US?
  - If not, **EXCLUDE** with reason “**US**”
  - If so, or if it is unclear, move to the next question
3. Are the study participants aged 8-14 OR does the study ask participants about their experience during this age period?
  - If not, **EXCLUDE** with reason “**AGE**”
  - If so, or if it is unclear, move to the next question
4. Are the study participants female?
  - If not, **EXCLUDE** with reason “**FEMALE**”
  - If so, or if it is unclear, move to the next question
5. Does this study include low-income populations?
  - If not, **EXCLUDE** with reason “**INCOME**”

--If so, or if it is unclear, move to the next question

6. Is the study a duplicate?

--If so, **EXCLUDE** with reason “**DUPLICATE**”

--If not, or if it is unclear, **INCLUDE**

All articles in the full library were double screened based on their title and abstract, meaning each record in the library was assessed by two independent reviewers. In the absence of abstracts, table of contents and summaries in reports were screened. Each article was marked as **INCLUDE** or **EXCLUDE**. All excluded articles were tagged with the reason for exclusion. Articles that at least one reviewer chose to include were included. Articles that are excluded by both reviewers were removed from the main library and saved in a separate library. Studies excluded at this stage were listed separately, with the reason for exclusion stated. A list of the excluded records is available upon request.

### ***Step 7: Full text screening***

The full-text of each article included during the title/abstract screening was obtained.

The full text of articles were double screened using the following criteria:

1. Is the study inaccessible?

--If so, **EXCLUDE** with reason “**INACCESSIBLE**”

--If not, or if it is unclear, move to the next question

2. Does the study concern puberty?

--If not, **EXCLUDE** with reason “**OFF TOPIC**”

--If so, or if it is unclear, move to the next question

3. Does the study look at any of the following psychosocial aspects of puberty?

- Puberty-related knowledge
- Puberty-related education
- Puberty-related experiences
- Puberty-related norms
- Puberty-related myths
- Puberty-related beliefs
- Puberty-related attitudes
- Puberty-related behavior
- Puberty-related perceptions
- Puberty-related feelings
- Puberty-related sources of information
- Puberty-related sources of support

--If not, **EXCLUDE** with reason “**PUBERTY**”

--If so, or if it is unclear, move to the next question

4. Does the study take place in the US?

--If not, **EXCLUDE** with reason “**US**”

--If so, or if it is unclear, move to the next question

5. Are the study participants aged 8-14 OR does the study ask participants about their experience during this age period?

--If not, **EXCLUDE** with reason “**AGE**”

--If so, or if it is unclear, move to the next question

6. Are the study participants female?

--If not, **EXCLUDE** with reason “**FEMALE**”

- If so, or if it is unclear, move to the next question
7. Does this study include low-income populations?
- If not, **EXCLUDE** with reason “**INCOME**”
- If so, or if it is unclear, move to the next question
8. Is the study a duplicate?
- If so, **EXCLUDE** with reason “**DUPLICATE**”
- If not, or if it is unclear, **INCLUDE**
9. Did the study use qualitative or quantitative methodology?
- If qualitative, **INCLUDE**
- If quantitative or mixed methods, **EXCLUDE** with reason “**QUANT**” (set aside for another manuscript)

To make the next level of inclusion/exclusion decisions, two independent reviewers read the full text of each article. If inconsistencies are identified or disagreements regarding inclusion and exclusion decisions occurred, they were resolved through discussion or by consulting a third reviewer. Studies excluded at this stage were listed separately and the list of studies excluded, as well as the reason for exclusion, is available upon request. Articles included at this stage of the review were reviewed for quality and analyzed.

### ***Step 8: Bibliography search***

Bibliographies of the articles included after full text screening were searched for additional relevant articles that may have been missed in the initial database and gray literature searches (Gough, Oliver, & Thomas, 2012). Articles retrieved from

bibliographies of already-included articles underwent the same screening methods applied to articles identified through searches.

### ***Step 9: Quality assessment***

Following the full text review, two independent reviewers assessed the methodological quality of each included article. The included qualitative studies were assessed using a quality assessment form adapted from the following sources: Joanna Briggs Institute (The Joanna Briggs Institute, 2014), Critical Appraisal Skills Programme (CASP) checklist for qualitative studies (CASP, 2013), and the Cochrane guidelines for appraisal of qualitative research (Hannes, 2011). Based on the criteria, each article was given a score of one to three in descending order: a one will denote excellent quality, a two will denote mediocre quality, and a three will denote poor quality. Differences in quality assessment between the two reviewers were decided in a reconciliation process and a third reviewer was consulted as needed.

### ***Step 10: Data extraction***

For all articles undergoing quality assessment, basic data such as author(s), article title, year published, and journal name was extracted from Endnote into an Excel document. Data on research questions, study design, sampling, methods, analysis, key results, study limitations, and the author's conclusions were extracted by two independent reviewers using an Excel form adapted from the Cochrane data extraction form (Higgins, 2008) and Joanna Briggs Institute data extraction forms (The Joanna Briggs Institute, 2014). Differences in data extracted were reconciled between the two reviewers. Data extraction and quality assessment were done in parallel using the form, attached in Appendix C.

### ***Step 11: Data synthesis***

The goal of synthesizing data in this qualitative review was to build a collective body of new knowledge grounded in the information extracted from the primary studies (Gough et al., 2012).

Following the guidelines outlined in *An Introduction to Systematic Reviews*, thematic synthesis of qualitative studies was conducted in three steps: 1) line-by-line coding, 2) developing descriptive themes, and 3) generating analytical themes (Gough et al., 2012). Two independent reviewers inductively conducted line-by-line coding on study results using the Dedoose online software (SocioCultural Research Consultants, 2015). In this review, “results,” which were subject to line-by-line coding, included research findings as well as author conclusions. In step two, codes that emerged through step one were discussed amongst the research team and a final codebook was developed based on a combination of salient and recurring topics found within articles. After the final codebook was created and applied, the research team discussed and brainstormed the main descriptive themes found across studies. In this final step, the final codes were analyzed across studies, generating a theory of how the descriptive themes related to one another and provided an overall picture of lower-income girls’ puberty experiences in the US (Thomas & Harden, 2008).

Confidence in the review findings was assessed using the Confidence in the Evidence from Reviews of Qualitative research (CERQual) approach, which is based on the GRADE tool used to assess the certainty of evidence of effectiveness (Bohren et al., 2015; Lewin et al., 2015). CERQual provides a higher level of quality and accountability to a qualitative review by providing a transparent process for assessing the level of

confidence in each review finding. Using CERQual, the confidence in a finding was assessed within four domains: 1) methodological limitations—utilized the quality assessment score assigned to each study from the quality assessment tool previously mentioned and assessed the overall methodological quality of studies as they relate to each individual finding; 2) the relevance of the contributing studies to the review question—assessed the overall extent to which the studies that contribute to a finding were applicable to the review question and study population of interest; 3) the coherence of the review finding—determined how well a finding reflects the scope of evidence provided in the contributing studies and how variations within the data were explained; and 4) the adequacy of the data contributing to a review finding—considered the number of studies that contributed to the finding as well as the richness or thinness of data supporting the finding.

After assessing each individual finding within these four domains, the overall confidence in a finding was determined to be high, moderate, low or very low. High confidence in a finding indicates that the review findings should be seen as a reasonable representation of the phenomenon of interest. Ratings with less confidence reflect a weaker body of evidence available to support the finding, and indicate that more research may be necessary to confirm or deny this finding for the population of interest (i.e., lower income girls in the US).

### ***Step 12: Manuscript formation***

The goal of the manuscript of this review was to summarize and synthesize existing literature on this topic, making salient findings available in a single document (Gough et al., 2012; Saini & Shlonsky, 2012). The quantitative findings were reported



using the Enhancing transparency in reporting the synthesis of qualitative research (ENTREQ) guidelines (Tong, Flemming, McInnes, Oliver, & Craig, 2012) and included two recommended CERQual tables: CERQual summary of qualitative findings and CERQual evidence profile (Lewin et al., 2015).

### **Quality Considerations**

The following list outlines the additional efforts taken throughout the course of conducting this review to ensure its quality.

1. The structure of the review followed current standards for qualitative systematic reviews. These standards are explained and cited in the steps above.
2. Pilots of steps 1 through 10 were conducted in order to test each step before conducting the full review. Conducting pilots of each step ensured that reviewers had a full understanding of each step and that each reviewer employed the same criteria for inclusion and exclusion.
3. A team of seven researchers conducted this review, which allowed for double review at every stage.
4. An expert in this field, Marni Sommer, PhD, Associate Professor Columbia University, provided feedback for each step and helped reconcile any content-related uncertainties (when both reviewers were unsure about inclusion/exclusion decisions, etc.) that arose.
5. An Informationist at Johns Hopkins Bloomberg School of Public Health was consulted about review procedures and steps along the way.

## QUALITATIVE METHODS

Aims two and three of this dissertation are to: understand how girls growing up in a predominantly low-income, African-American, Urban, U.S. context describe and interpret their experiences of puberty, including menstruation, and what they perceive their psychosocial and information needs to be throughout this transition. To address these aims, a qualitative study was conducted that included interviews and focus groups with adolescent females ages 15-18 (referred to as girls) living in Baltimore, City Maryland as well as interviews with key informants, which are individuals who have had direct or indirect contact with early-adolescent girls living in Baltimore (Geoff & Judy, 2004). Table 3.1 summarizes the basic qualitative study design. Strategies to enhance quality of qualitative research were interwoven throughout various stages and aspects of the study (Lincoln, 1985).

<b>Table 3.1: Qualitative Study Design</b>				
<b>Type of Study Participant</b>	<b>Data Collection Method</b>	<b>Data Collection Tools</b>	<b>Sample Size</b>	<b>Description of Sample</b>
Adolescent Girls (ages 15-18)	Focus Group Discussions (involving participatory activities)	-Semi-structured guide (discussions, narratives, brainstorming & listing activities) -Questionnaire	N=28 (4 groups, each participating in four consecutive sessions)	Sampled from youth organizations in Baltimore City that work with lower-income and underprivileged youth living in the city
	In-depth Interviews	Semi-structured guide	N=15 15 interviews (60-80 min each)	
Key Informants – Adults (Mothers, Fathers, Youth workers, adolescents experts, medical professionals, religious leaders, teachers)	In-depth Interviews	Semi-structured guide	N=25 (22 women/3 men) 25 interviews (60-80 min each)	Purposively sampled a diverse range of adults based on their roles with young girls in Baltimore.

## **Study setting**

This study took place in Baltimore City, Maryland (referred to as Baltimore) because it is an urban center with a lower-income, predominantly African-American population for which not much is known regarding girls' current experiences of puberty. Also, based a prior informal investigation of puberty educational programs available through schools and local youth organizations, Baltimore appears to lack any citywide efforts to provide puberty education in Baltimore City Schools.

## **Study participants**

**Adolescent females ages 15-18:** Girls ages 15-18 (girls) who lived in Baltimore City were the main focus of this study. Girls in this age group are likely to have already experienced the major physical milestones of puberty, including menstruation, making the topic less sensitive to discuss as well as allowing girls to reflect back on the full pubertal transition. Moreover, girls ages 15-18, are likely to have already engaged in some form of sexual behavior thus enabling them to reflect on how their experiences of puberty relate to their current sexuality (Haydon, Herring, Prinstein, & Halpern, 2012).

**Key Informants:** Key Informants refer to people in the community who have insight into girls' transition through puberty either because they work directly with pubescent girls or because they have insight into the types of puberty-related information and support girls growing up in Baltimore are exposed to. Given that girls' understandings and experiences of puberty are socially and culturally constructed, the perspective of the adults who influence and care for young girls in Baltimore was important to capture. Also, because one eventual goal of this work is to create puberty educational tools for girls in Baltimore, it is important to include the perspective of adults

who are the gatekeepers to working with adolescents in this city.

### **Data collection methods**

**FGDs with adolescents:** Focus Group Discussions (FGDs) were utilized to understand the normative aspects of transitioning through puberty and to shed light on the social environment that shapes girls' experiences in Baltimore. The advantage of FGDs is that they allow participants to exchange ideas and information amongst themselves revealing norms and stimulating exchange of a range of experiences using everyday language (Kitzinger, 1994; Mack, 2005; Morgan, 1997). The discussions amongst participants in FGDs also provides a wider range of perspectives than is typically generated in interviews (Morgan, 1997; Ulin, 2005).

Each girl participated in four separate FGD sessions that took place over four consecutive weeks (exact schedules varied slightly by group). Meeting repeatedly allowed the research team to build trust and a good rapport with participants, which is critical to the quality of the data collected (Spradley, 1979).

**In-depth Interviews with adolescents:** In addition to FGDs, in-depth interviews (IDIs) were conducted with a subset of girls who were in the FGD's. The goal of the interviews was to obtain in-depth perspectives of their puberty experiences and to explore emerging themes from FDGs (M. Patton, 1990), as well as to explore unexpected or "outlier" topics that arose during the FGDs (Ulin, 2005). The IDIs provide a more private setting where adolescents can feel comfortable sharing more personal aspects of pubertal development that they may feel self conscious about sharing in a group setting (Mack, 2005; Ulin, 2005).

**Key Informants Interviews (KIIs):** Given that topics of adolescent puberty and

sexuality can be somewhat controversial and even politically charged in the U.S., individual interviews with Key Informants were preferred to focus groups. The private setting was intended to facilitate more comfortable and open communication about the topics allowing for a more detailed understanding of the social and cultural forces shaping girls' puberty experiences in Baltimore.

### **Recruitment and Retention**

Contact with adolescent girls was facilitated by youth organizations in Baltimore. All adolescent girls between the ages of 15-18 who are involved with the partnering organizations were invited to participate in the FGDs until sufficient numbers were obtained.

Organizations were purposefully selected based on the programs they provide and the types of adolescents they serve (J. Maxwell, 2013). Organizations were selected based on the following criteria:

- Work with teenage girls ages 15 and above who live in Baltimore
- Predominantly serve lower income, African-American girls
- Do not already provide programming specifically related to puberty

In choosing partnering organizations, there was also an attempt to select organizations that worked in different geographic areas of the city so as to capture potential variation in norms and experiences across the city.

Four partnering organizations were selected, each of which is listed in Table 3.2 along with the general geographic area they serve. Letters of support for each group are provided in Appendix G. One partnering organization formed two separate groups divided by self-identified race/ethnicity—one group included predominantly African

American girls and other Hispanic. The other three partnering organizations each recruited a single group of predominately African American girls to participate. In total, the four organizations produced five separate groups of girls who participated in the data collection.

To recruit girls into the FGD's, staff at each partner organization reached out to their members about participation in the study. When requested by the organizational partner, a member of the research team also visited the partner organization to make an announcement about the study and to inform girls about details of participation. Girls who were interested in participating were asked to have their parent sign a parental permission form, and they themselves signed an assent form.

<b>Table 3.2: List of Organizational Partners and their location</b>		
<b>Organization</b>	<b>Location</b>	<b>Group and number of participants</b>
Youth Leadership and Advocacy Network (YLAN)— McElderly and Patterson Park Basketball Camp	East Baltimore	Group 1— 4 girls
KIPP Through College	Northwest Baltimore	Group 2—10 girls
Ben Center at Benjamin Franklin High School	Southeast Baltimore	Group 3—5 girls
		Group 4—5 girls
Mission Thrive Summer Program	Northeast Baltimore	Group 5—4 girls

All girls in each group were asked to participate in In-depth Interviews (IDIs). An announcement of the option to participate in an interview was made at the end of each FGD session. Girls who were interested in participating were required to sign the IDI assent form and have their parent sign the parental IDI permission form.

Key Informants were purposively sampled to obtain perspectives from adults who represented a range of roles in pubescent girls' lives. Including a range of types of Key Informants provide a diverse range of perspectives that capture a breath of in-depth

information on the cultural and structural nature of girls' transitions, which is particularly helpful for topics such as puberty education in Baltimore. The roles to be represented were Parent, Religious Leader, Adolescent Worker, Health Care Provider, Educator, and Adolescent Expert. Key Informants were recruited by utilizing already existing contacts, by asking for referrals from people who are connected to and working in child and adolescent health and education within the Baltimore context (including other Key Informants), and by looking up publically available information online. Key Informants were contacted directly by a member of the research team via email or phone. Key informants provided oral consent prior to the start of the interview, per the IRB approval.

Desired sample sizes for this study were estimated based on similar studies conducted in other settings (Sommer et al., 2014). Recruitment ended when saturation was reached, the point at which no new information is obtained from an additional group or interview (Crabtree & Miller, 1992; C. Marshall & Rossman; Morse, 2000; Sommer et al., 2014; Ulin, 2005).

To help with retention of participants, by offsetting some of the costs of participation (e.g., transportation costs), all adolescent participants were given incentives. Adolescents were given \$10 per FGD and for each week of participation, their name was entered to win a \$50 prize, which was randomly drawn on the 4<sup>th</sup> week of data collection. Delicious and nutritious food was provided to adolescent participants each week of data collection. Similarly, IDI participants received \$10 per IDI. Key informants were also offered \$10 thank you for participating in the interview, but only six of 25 accepted. In addition to providing incentives to promote sample retention, the research team and/or

the main contact from the respective partner organization reminded participants by phone or text about upcoming meetings.

## Study Sample

In total, 53 participants contributed data to this study. More detail on the sample sizes of each type of data is provided below.

**FGDs with adolescents:** A total of 28 adolescent girls residing in Baltimore, between the ages of 15-18 ultimately participated in at least one focus group discussion (FGD). Girls participated as part of a small group (4-10) that met weekly over the course of four or so weeks (schedules varied slightly by group). Table 3.3 summarizes the participation in each group across the four FGD sessions. Reasons for non-attendance in some sessions ranged from conflict with another commitment to lack of transportation. In Group 5, IDIs were conducted immediately after the first FGD session because it became clear during the first session that meeting once a week for a month was not feasible with this group given their summer schedules. Seventeen girls participated in all four sessions.

<b>Table 3.3: Summary of Participation in Focus Group Discussions</b>						
	<b>Focus Group Discussion Sessions</b>				<b>In-depth Interviews</b>	<b>Total</b>
	<b>Session 1</b>	<b>Session 2</b>	<b>Session 3</b>	<b>Session 4</b>		
<b>Group 1</b>	4	3	4	4	3	4
<b>Group 2</b>	9	10	7	10	5	10
<b>Group 3</b>	5	5	3	4	2	5
<b>Group 4</b>	5	4	4	4	1	5
<b>Group 5</b>	4	-	-	-	4	4
<b>Total</b>	<b>23</b>	<b>22</b>	<b>18</b>	<b>22</b>	<b>15</b>	<b>28</b>

**In-depth Interviews with adolescents:** 15 adolescent girls also took part in individual in-depth interviews (IDIs) (Table 3.3).



**Key Informants Interviews (KIIs):** 25 interviews with key informants were conducted. Key informants included: 7 mothers, 3 fathers, 5 educators, 2 health care professionals, 2 adolescent workers, 4 adolescent experts, and 2 religious leaders. Though each key informant was categorized into one type, some key informants played dual roles. For example, one key informant was both a middle school counselor and a father.

### **Data collection instruments**

An overview of data collection instruments used for each type of data are provided in Table 3.1.

The FGD sessions consisted of interactive structured activities such as discussions, brainstorming, drawing, listing and writing narratives. Activities were designed specifically in order to appeal to adolescents and to elicit interaction amongst participants (Bernard, 2013; Ulin, 2005). Each session involved an educational component addressing questions the girls had anonymously submitted or vocalized during an activity. The researchers attempted to create an equalizing and dynamic environment where girls were empowered to contribute to creating puberty educational material that would benefit younger girls growing up in Baltimore (Israel, Schulz, Parker, Becker, & Health, 2001; Minkler & Wallerstein, 2003). The ‘climate’ created during the FGDs was one of empowerment, which generated a desire for girls to participate. In fact, at some point during the data collection period, participants from each group asked if we would continue to come and hold group sessions with them on a regular basis.

For each session, semi-structured scripts were used to guide the FGDs. The guides utilize a combination of structured activities (e.g., brainstorming, drawing, listing) as well

as open-ended questions. This semi-structured design facilitates comparison across groups, but still allows for flexibility to let participants guide the discussion based on their experiences (Bernard, 2013). In order to adjust the sessions to the pace and the dynamics of each group of girls, the sessions varied slightly from group to group.

The main topics covered in the FDGs reflected the overarching research questions and were ordered to provide a natural flow for discussion. We began with less sensitive topics related to puberty and moved to potentially more sensitive questions, such as questions related to sexual development (Ulin, 2005).

The first FDGs started with introductions, a review of confidentiality and privacy, setting ground rules for respectful interaction, and an ice-breaker activity. Initial FGD activities focused on the more concrete experiences of menarche and then broadened to cover less concrete aspects of puberty, such expectations of different genders at different ages. The final day of activities involved asking girls to explain their psychosocial and informational needs related to puberty and provide recommendations for puberty educational material to be used in Baltimore.

Also in the first week, girls were asked to complete a short (roughly 10 minute) questionnaire that assessed sociodemographic information, current puberty stage (using the Puberty Development Scale), timing of puberty, and brief sexual and reproductive histories (Petersen et al., 1988). The questionnaire is provided in Appendix H. Having this quantitative information allowed for verification that the sample recruited was within between 15-18 years old and also allowed for a quantitative summary of participants.

The semi-structured IDI guides were developed to explore personal experiences of puberty rather than the more abstract descriptions of girls' experiences that were explored

in FGDs. For example, rather than being asked to describe “a girl’s experience” they were asked to describe their own experience. The semi-structured KII guides were designed to explore how adults view girls’ experience of puberty today and also to gain insight into how they think girls growing up in Baltimore are getting support and information on this topic. Both interview guides were flexible enough to adjust to themes that arose during the FGDs, but also structured enough to be relatively comparable across interviews. The semi-structured IDI and KII guides are provided in Appendix I and J.

### **Data collection procedures and management**

Two members of the research team were present at each FGD. One moderated the discussion and the other took thorough field notes, recording both verbal and non-verbal information. FGDs were audio-recorded, when permission was provided. The note taker was responsible for making sure that the voice recording equipment was situated and working. Interviews, both IDIs and KIIs, were also audio-recorded, with permission. Interviews were conducted with a single interviewer who audio-recorded and took notes during the conversation. Following the IDIs and the FGDs, the interviewer/moderator generated field notes reflecting on each session.

Hard copies of qualitative data (participatory write-ups, brainstorming sheets, field notes, questionnaire, etc.) were transferred into an electronic format and then organized and stored in a secure location. Audio recording were transcribed by HomePro Transcribing, a transcription company specializing in transcriptions for academic research (HomePro Transcribing Company). For accuracy, a member of the research team checked each transcript against the audio recording from that session. All electronic files are stored on an encrypted external hard drive that is continually backed up by

another equally secure external hard drive. A data naming system was developed following a predetermined file naming convention (McLellan, MacQueen, & Neidig, 2003). All data collected was logged in a master data log so that there is a master list of all data available to the research team for analysis (Guest, MacQueen, & Namey, 2012).

## **Analysis**

Data for the analysis came from FDG, IDI, and KII transcripts, field notes made by moderators/interviewers and note takers, and the text and drawings generated from individual and group activities from FDGs. Data were analyzed using ATLAS.ti qualitative software (Scientific Software Development GmbH, 2016).

The data analysis process was iterative and systematic following an interrelated sequence of five steps: reading, coding, displaying, reducing, and interpreting (Miles & Huberman, 1994; Ulin, 2005). During data collection and after, transcripts and field notes were continually reviewed so analysts could become familiar with the data and discern patterns and themes (Creswell, 2007; J. Maxwell, 2013; Miles & Huberman, 1994). The moderator and note taker met after each FGD session to discuss any themes, questions, and/or issues that arose during data collection so that data collection procedure could be adjusted for the next session, as needed. The post-FGD meeting template is provided in Appendix K. Summaries of each FGD session were written and shared with the rest of the research team for feedback.

For the initial round of coding, two independent coders, re-reviewed the hard copy versions of the data to come up with an initial set of inductive codes based on salient ideas and repeated themes that emerged from the data (Charmaz, 2006; J. Maxwell, 2013). Deductive codes were also created based on the semi-structured guides

used in data collection as well as on previous research, including the literature review conducted as part of this dissertation. The use of both inductive and deductive codes allowed the analysis to stay rooted in the data, while also connecting it prior literature and keeping it bound to the aims of the research (Creswell, 2007; Miles & Huberman, 1994).

To finalize the codebook, a consensus coding process was followed where 30% of the data was double coded by the two independent coders in order to facilitate an interpretation and summary of the data that was standardized across coders. For this coders met regularly to discuss discrepancies, and to continually revise codes, until a consensus was reached on the coding scheme. Through this process, a hierarchically organized codebook was developed that identified the level, type, name, definition, and rules for application of each code (Saldana, 2013). As an example, the final version of the codebook used for the IDIs is provided in Appendix L. Once established, the final codebook was applied to all transcripts, and all transcripts coded prior to when the codebook was finalized were recoded.

Throughout the analysis, memos were used to record and organize ideas and to note potential connections between emerging themes within the data (Saldana, 2013). Other analytic tools such as diagrams and matrixes were used to identity, understand and organize cross-cutting themes (Creswell, 2007; J. Maxwell, 2013). During the analysis process, codes and preliminary findings were discussed with the research team to ensure that interpretations of the data were staying rooted in the data (Ulin, 2005).

### **The Research Team**

The research team in Baltimore consisted of two research assistants and myself, the lead researcher. One research assistant, Kenika Walker has extensive experience

facilitating group discussions with at-risk youth in Baltimore. Kenika assisted in moderating and note taking of FGDs, data entry, transcription checking, and designing of data collection tools. As a 26-year-old African-American woman who was born and raised in Baltimore City, Kenika has a background similar to that of the girls who participated in the study potentially allowing the girls to feel more comfortable with her than to the lead researcher who is a 33-year-old white woman from the Midwest. The other research assistant, Blair Berger, a fellow PhD student, provided assistance with all aspects of the study. However, she played a limited role in data collection, only conducting 3 interviews (1 KII and 2 IDIs), which allowed her to play the critical role of bringing fresh eyes to the data during analysis.

Together, Kenika and I co-facilitated the focus groups. I conducted interviews with adolescents as well as with key informants. Blair substituted as a data collector when necessary.

This project was continually advised, overseen, and mentored by multiple, more experienced researchers: Dr. Anne Riley, Dr. Marni Sommer, Dr. Terri Williams, Mrs. Katrina Brooks, Dr. Beth Marshall, and Dr. Kristin Mmari. Together they provided mentorship on topics such as creating partnerships in Baltimore, ethical considerations for collecting data, topical expertise on puberty and menstruation research, as well as qualitative research methods. They were available for debriefing on issues and emerging themes that arose at each phase of the study.

Prior to data collection, training sessions were conducted with the research team. The training session covered the objectives of the study, data collection procedures, techniques for interviewing and leading group discussions (including how to use probes

during FGD and IDIs), human subjects protection, handling distress and conflict within FDGs, need for medical care referrals, and responses to disclosure of abuse or threats within the interviews or groups.

All researchers involved in this study consider themselves co-constructors of the data, which means that the researchers' background, knowledge, and own experiences deeply shaped every aspect of this study (Creswell, 2007; J. Maxwell, 2013; Ulin, 2005). In order to use these "biases" to enhance the analytic process rather than unconsciously shape it, the research team was prompted to reflect on their background and experiences both during training and throughout gathering data and conducting the analysis. The goal of this type of activity is to provide a method for each researcher to reflect on how her background and assumptions may be shaping interpretations as well as how they are being affected by the research (Corbin & Strauss, 1990)

### **Ethical Considerations**

This study and all related documents were approved by the IRB at Columbia University Mailman School of Public Health (IRB-AAAQ1354). The Johns Hopkins Bloomberg School of Public Health IRB approved Columbia University as the IRB of record for this project. All members of the research team were trained on research ethics through the Collaborative Institutional Training Initiative (CITI).

Prior to all data collection activities, participants provided oral assent and, if under 18 years of age, their parents also provided written consent for them to participate. Participants were also asked for permission to record the data collection activities prior to each interview and before the first FDG of each group of girls. Throughout the study, the voluntary nature of participation was emphasized and participants were encouraged to

communicate any issues with the research staff. Participants were also continually reminded about the importance of keeping the other FGD participants' information confidential.

Given that this study included minors and touched on potentially sensitive topics, the recruitment strategy, of partnering with leadership and youth development organizations, meant that girls who participated in our study were part of an already existing support network. This was important in that it provided another layer of support for girls if needed.

Data collection activities took place in a safe and private location. Names and contact information of participants were collected for logistical purposes, but participants were asked to use codenames during data collection activities. All data collected has been de-identified.

No adverse events were experienced during these data collection activities; all girls seemed to value their participation and most were quite talkative and engaged. One minor inconsistency occurred when it was learned that a few 14 year-old girls had joined one of the groups. Immediately upon discovering their age, they were told that they were not the right age for participation and accepted this decision well. This was reported to the IRB.



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# **Chapter 4 (Paper 1): Puberty Experiences of Low-Income Girls in the United States: A Systematic Review of Qualitative Literature From 2000 to 2014<sup>1</sup>**

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<sup>1</sup> This paper is published in the Journal of Adolescent Health (Herbert et al., 2016)

## CHAPTER 4 ABSTRACT

**Purpose:** Puberty is a critical period of development that lays the foundation for future sexual and reproductive health (SRH). It is essential to learn about the puberty experiences of low-income girls in the United States (US) given their increased vulnerability to negative SRH outcomes. To understand the present-day puberty experiences of this population we conducted a qualitative systematic review.

**Methods:** We systematically searched the peer-reviewed literature published between 2000 and 2014 on the puberty experiences of low-income girls in the US. Reviewers screened titles, abstracts and the full texts of articles. Using standardized templates, reviewers assessed the methodological quality and extracted data. Data were synthesized using thematic analysis. Confidence in each finding was assessed using CERQual.

**Results:** 20 qualitative articles were included. They described the experiences of mostly African-American, Caucasian, and Hispanic girls living primarily in urban areas of Northeastern US. Five overarching themes emerged: content of girls' puberty experiences, quality of girls' puberty experiences, messages girls receive about puberty, other factors that shape girls' puberty experiences, and relationships that shape girls' experiences of puberty.

**Conclusion:** The limited existing evidence suggests that low-income girls in the US are unprepared for puberty and have largely negative experiences of this transition.

**Implications and Contribution Summary Statement:** This is the first systematic review to describe the current puberty experiences of low-income girls in the US, highlighting potential racial disparities in puberty education, identifying gaps in the literature, and informing future puberty education interventions aimed at this population.

## **CHAPTER 4 MANUSCRIPT**

### **Introduction**

The transition through puberty is a critical period of development that provides an important opportunity to build a healthy foundation for sexual and reproductive health (SRH) (Blum et al., 2014; Igras et al., 2014; Koch et al., 2009; G. C. Patton & Viner, 2007). Recognizing the importance of healthy early-adolescent transitions, puberty education was recently added to the global health agenda in low-income countries (McCarthy, Brady, & Hallman, 2016; Sommer, 2011; Sumpter & Torondel, 2013). Despite a strong focus on adolescent sexual health outcomes (e.g., sexually transmitted infections (STIs) and teen pregnancy) clinicians and public health practitioners in the United States (US) have not yet capitalized on puberty as a window of opportunity to improve adolescent SRH (Sommer, 2011). Much remains unknown about the foundational puberty experiences and puberty education of children raised in the US today (Koch et al., 2009).

Starting at pre-adolescence, puberty involves an intertwined process of physical, psychological, and social development that is rooted in an underlying “cascade of neuroendocrine changes” (Brooks-Gunn & Petersen, 1983; Lorah D. Dorn & Biro, 2011; G. M. Herdt, M., 2000; G. C. Patton & Viner, 2007 p1130). Although physical development is the hallmark of puberty, psychosocial development is just as important. This includes “changes in social experience, perceptions by peers and family, and self perception”—all of which may influence an adolescent’s mental health and risk-taking behavior (A. C. Angold, E.J.; Erkanli, A.; Worthman, C.W., 1999; Baams et al., 2015;

Lorah D Dorn et al., 2006 p33; Galvao, 2014; Koo, Rose, Bhaskar, & Walker, 2012; Remschmidt, 1994; E. J. Susman & Dorn, 2009; E. Susman & Rogol, 2004).

As the cornerstone of reproductive development, puberty is particularly salient to SRH. During puberty, adolescents grow awareness of their own sexuality and begin developing sexual attraction to others (J.D. Fortenberry, 2013; J.A. Graber & J., 1998; G. M. Herdt, M., 2000; McClintock & Herdt, 1996). And, a girl's perception of her developing body may influence her feelings about herself, shaping her sexual agency and sexual decision-making (Brooks-Gunn et al., 1994; Brooks-Gunn & Ruble, 1983; E. R. Koff, Jill; Jacobson, Stacey, 1981; Martin, 1996; Schooler et al., 2005).

Much of what is known about the puberty experiences of US adolescent girls is derived from literature published in the 1980-90's that focused on experiences of menarche and menstruation among Caucasian females of mostly middle-to-high income families (Brooks-Gunn & Petersen, 1983; Grief & Kathleen, 1982; C. Roberts, 2015). This literature suggested that girls' experiences of puberty are largely shaped by the preparation for pubertal changes they received and the timing of their development. Girls who started menstruating "early" tended to have more negative memories of menarche, poorer body image, lower self-esteem and an earlier sexual debut than those who were "on time" or "late" (Brooks-Gunn & Ruble, 1982, 1983; Flannery et al., 1993; E. Koff et al., 1982; J. M. Williams & Currie, 2000). Girls who felt unknowledgeable or unprepared for menstruation were more likely to report having worse experiences of menarche, negative attitudes about menarche, and more menstrual distress (Brooks-Gunn & Ruble, 1983; Kieren & Morse, 1992; E. Koff et al., 1982; Ruble & Brooks-Gunn, 1982). Adequate preparation for menarche was also shown to alleviate some of the



negative effects of early pubertal timing (E. Koff et al., 1982; Rierdan & Koff, 1990; Ruble & Brooks-Gunn, 1982). Given these findings, puberty education has the potential to improve girls' readiness for and experiences of puberty, and to potentially avert some of the poor SRH outcomes associated with early or negative puberty experiences (M. S. Golub & Catalano, 1983; E. Koff & Rierdan, 1995; E. Koff et al., 1982; Rierdan & Koff, 1990; Rierdan et al., 1983).

The more recent body of literature (2000 to present) focuses on the timing of pubertal onset. This research found that the age of breast development and menarche has declined steadily in the US during the last 25 years, with African-American girls experiencing the steepest decline (Susan Y Euling et al., 2008; Herman-Giddens, 2005). In a sample of 17,077 girls aged 3-12 years, collected during pediatric "well-child" visits across the US, 48.3% of African-American girls and 14.7% of Caucasian girls showed signs of physical development by age eight (Herman-Giddens et al., 1997). This trend of early-onset pubertal development may mean that increasing numbers of girls, especially African-Americans, are not be receiving adequately-timed puberty education—leaving them uninformed and ill-prepared for this transition.

Given the significant disparities amongst socioeconomic groups in the US, low-income girls are likely to lack adequate resources for puberty education (Koch et al., 2009). Although puberty experiences of low-income girls has largely been ignored in the literature, a 2013 study looked at socioeconomic differences (lower-income versus higher-income) in 15-19 year olds regarding their knowledge about menstruation, feelings of preparation for menarche and menstrual attitudes (White, 2013). The study found that irrespective of race, higher-income girls had significantly higher scores on

knowledge, menarche preparedness and positive attitudes about menstruation. This suggests that in the US, there may be disparities by socioeconomic status in relation to preparation for puberty.

In an effort to address these disparities and understand what is known about low-income girls' current experiences of puberty, we conducted a systematic review of the qualitative literature on the present-day puberty experiences of low-income girls in the US.

## **Methods**

This systematic review is reported following the Enhancing Transparency in Reporting the Synthesis of Qualitative Research (ENTREQ) statement (Tong et al., 2012). In August 2014 a review protocol was adapted from the *Cochrane Guidelines for Systematic Reviews in Health Promotion and Public Health Interventions* and was used to guide all steps of this review (Armstrong R. et al., 2007). To ensure consistency, all seven members of the research team were trained prior to each step.

*Search Strategy:* Electronic databases, including PubMed, ERIC, PsycInfo, Scopus, and EMBASE, were systematically searched on October 16-October 22, 2014. A core search strategy was developed in PubMed and adapted to the additional databases (Appendix A). For each database, titles, abstracts, and keywords of articles were searched for a combination of controlled vocabulary and free-text terms. After the database search, 29 websites were searched for gray and unpublished literature using modified versions of the free-text search terms (Appendix B). Bibliographies of included articles were also searched to identify additional literature.

*Study Selection:* To be included, articles must address a psychosocial aspect of puberty (puberty-related knowledge, education, experiences, norms, myths, beliefs, attitudes, behavior, perceptions, feelings, information, sources of support) among low-income, US females who went through a “normal” puberty transition (i.e., girls who did not experience precocious or delayed pubertal onset). Included articles were published between 2000 and 2014, written in English, peer-reviewed, and used a qualitative study design. A standardized procedure using two independent reviewers was followed for each article. Reviewers first screened titles and abstracts, and then the included full texts. Both reviewers discussed inconsistencies or disagreements, and a third reviewer was consulted when differences could not be resolved. The list of excluded articles and reason for exclusion is available upon request.

*Quality Assessment:* Two independent reviewers assessed the quality of articles using a quality assessment form adapted from the Critical Appraisal Skills Programme (CASP) checklist for qualitative studies (Appendix C) (CASP, 2013). Areas of assessment include: aims, methodology, design, sample appropriateness, data collection procedures, analysis, findings, limitations, authors’ reflexivity, and evidence of ethical approval. Each article was given a score of low, moderate, or high quality. Articles were not excluded based on low scores. Instead, the scores were used to weigh the confidence of each finding during the synthesis. Differences between the two reviewers were discussed and reconciled. A third reviewer was consulted when differences could not be resolved.

*Data Extraction:* Two independent reviewers used a standardized template to extract data on research questions, study design, sampling, methods, analysis, key results,

study limitations, and authors' conclusions. Differences in extracted data were reconciled between the two reviewers.

*Synthesis:* Information extracted from primary studies was synthesized to build a collective body of new knowledge (Gough et al., 2012). Qualitative thematic synthesis was conducted in three steps: 1) line-by-line coding, 2) descriptive theme development, and 3) analytical theme generation (Gough et al., 2012). During step 1, two independent reviewers inductively coded research findings and author conclusions using Dedoose software (SocioCultural Research Consultants, 2015). Codes that emerged through step 1 were discussed among the seven-person research team and a final codebook was developed in step 2 (Appendix D). After applying the final codebook, the team discussed all re-occurring, main descriptive themes. In step 3, the final codes were analyzed across studies, generating a theory for how the descriptive themes interrelate. Findings were then organized into first, second and third order themes (Braun & V., 2006).

The overall confidence in our findings was summarized using the Confidence in the Evidence from Reviews of Qualitative (CERQual) research approach (Bohren et al., 2015; Lewin et al., 2015). CERQual adds a higher level of quality and accountability to a qualitative review. The confidence of a finding is assessed by: 1) methodological limitations of the study that contributed to a finding, 2) the relevance of the contributing study to the review question; 3) the coherence of the review finding and 4) the adequacy of the data contributing to a review finding (e.g., number of studies that contribute to the finding, richness of data) (Lewin et al., 2015).

After assessing each finding by these four domains, the overall confidence was determined to be high, moderate, low or very low. High confidence suggests that the

finding is a reasonable representation of the phenomenon of interest. These findings are typically supported by “thick” data of relevance to the research question and population of interest, and consistently supported by multiple studies with high methodological quality. Findings with less confidence reflect a weaker body of evidence. Findings with low or very low confidence are generally supported by fewer studies with lower methodological quality, less direct relevance to the research question or population of interest, and/or based on “thin” data that provides less coherent evidence. Low confidence indicates that more research may be necessary to confirm or deny the finding.

## **Results**

***General Overview:*** The searches resulted in 3,685 total articles (Figure 4.1). The full texts of 821 pertinent articles were retrieved and reviewed. 20 articles fit the inclusion criteria (Table 4.1, Appendix E, Table 4.2).

The qualitative evidence from the 20 included studies was analyzed and resulted in 42 individual findings that were organized into five overarching themes (Table 4.3): 1) content of girls’ puberty experiences; 2) quality of girls’ puberty experiences; 3) messages girls receive about puberty; 4) other factors shaping girls’ puberty experiences; and 5) relationships that shape puberty experiences. The 42 findings were summarized (Table 4.4A-4.4E) with supporting quotes, CERQual confidence levels, and explanations for confidence decisions (Appendix F).

***Content of girls’ puberty experiences:*** Menarche and/or menstruation were key aspects of puberty for low-income US girls of all races and ethnicities (Alcalde & Quelopana,

2013; Angulo-Olaiz, Goldfarb, & Constantine, 2014; Aronowitz & Agbeshie, 2012; Aronowitz & Munzert, 2006; Aronowitz, Rennells, & Todd, 2006; Beausang & Razor, 2000; Charmaraman & McKamey, 2011; Cooper & Koch, 2007; Hawthorne, 2002; Jean, Bondy, Wilkinson, & Forman, 2009; Kalman, 2003; J. Lee, 2008, 2009; Meschke & Dettmer, 2012; Nwoga, 2000; L. F. O'Sullivan et al., 2000, 2001; Orringer & Gahagan, 2010; Pinto, 2007; Teitelman, 2004). Breast development was also important, understood as a clear sign of development that attracted wanted and unwanted attention of others (Aronowitz & Munzert, 2006; Charmaraman & McKamey, 2011; Jean et al., 2009; J. Lee, 2008, 2009; Nwoga, 2000; L. F. O'Sullivan et al., 2000, 2001; Pinto, 2007; Teitelman, 2004). Whereas 8 out of 20 articles focused on menarche and menstruation, no articles focused specifically on breast development (Table 4A) (Beausang & Razor, 2000; Cooper & Koch, 2007; Hawthorne, 2002; Kalman, 2003; J. Lee, 2008, 2009; Orringer & Gahagan, 2010; Teitelman, 2004).

***Quality of girls' puberty experiences:*** The majority of low-income girls reported having negative experiences of puberty, especially related to menarche and menstruation (Aronowitz et al., 2006; Beausang & Razor, 2000; Cooper & Koch, 2007; Hawthorne, 2002; Jean et al., 2009; Kalman, 2003; J. Lee, 2008, 2009; L. F. O'Sullivan et al., 2000, 2001; Orringer & Gahagan, 2010; Pinto, 2007; Teitelman, 2004). Experiences were commonly described as embarrassing, traumatic, scary and confusing (Beausang & Razor, 2000; Cooper & Koch, 2007; Hawthorne, 2002; J. Lee, 2008, 2009; L. F. O'Sullivan et al., 2001; Orringer & Gahagan, 2010; Pinto, 2007; Teitelman, 2004), and associated with feeling gross, dirty, smelly, and disgusting (Beausang & Razor, 2000;

Cooper & Koch, 2007; Hawthorne, 2002; Kalman, 2003; J. Lee, 2008, 2009; L. F. O'Sullivan et al., 2000, 2001; Orringer & Gahagan, 2010; Pinto, 2007; Teitelman, 2004). Girls who described menarche and menstruation with these negative terms also tended to report having felt unprepared and ill equipped for this transition (Cooper & Koch, 2007; J. Lee, 2008, 2009; Pinto, 2007; Teitelman, 2004).

Less commonly, some girls described neutral, ambivalent, or positive experiences of menarche and menstruation (Hawthorne, 2002; Jean et al., 2009; Kalman, 2003; J. Lee, 2008, 2009; L. F. O'Sullivan et al., 2000; Orringer & Gahagan, 2010; Pinto, 2007; Teitelman, 2004). For example, out of the 19 women (ages 18-50) included in Cooper and Koch's 2008 article, only one had a positive menarche experience (Cooper & Koch, 2007 p69). Positive experiences of menarche were often described as exciting, and often associated menarche with celebration and increased freedom (Beausang & Razor, 2000; Jean et al., 2009; J. Lee, 2008, 2009; L. F. O'Sullivan et al., 2000; Teitelman, 2004). Neutral experiences were described with phrases such as "*no big deal*" (J. Lee, 2008 p1336). Ambivalent experiences were marked by a mix of positive and negative statements, such as feeling "*scared but relieved*" (J. Lee, 2008 p1338).

Less was reported on breast development attitudes, although comments were generally more positive than negative. While some girls were excited to grow breasts because it made them feel womanly and older (Angulo-Olaiz et al., 2014; J. Lee, 2008, 2009; L. F. O'Sullivan et al., 2000; Pinto, 2007), others felt embarrassed and disliked the unwanted attention it attracted (Table 4B) (Aronowitz et al., 2006; Hawthorne, 2002; Jean et al., 2009; Kalman, 2003; J. Lee, 2009; L. F. O'Sullivan et al., 2000; Pinto, 2007; Teitelman, 2004).

***Messages girls receive about puberty:*** One of the most frequent messages girls received about puberty and menarche is that these changes signify “*becoming a woman*” (Aronowitz et al., 2006; Beausang & Razor, 2000; Cooper & Koch, 2007; Hawthorne, 2002; J. Lee, 2008, 2009; Nwoga, 2000; Orringer & Gahagan, 2010; Pinto, 2007; Teitelman, 2004). Such messages were sometimes conveyed through celebrations, such as special mother-daughter outings, parties and gifts (Beausang & Razor, 2000; J. Lee, 2008, 2009; Teitelman, 2004). Celebration of menarche was mostly mentioned by Caucasian girls (J. Lee, 2008; Teitelman, 2004).

Messages about “*becoming a woman*” were frequently connected to femininity, especially related to the limitations imposed by it (Beausang & Razor, 2000; J. Lee, 2008, 2009; L. F. O'Sullivan et al., 2000, 2001; Orringer & Gahagan, 2010; Pinto, 2007). For example, girls spoke about the restrictions they faced at puberty such as “*not being able to swim or do anything again,*” having to act “*ladylike,*” or wear “*girly*” clothes (J. Lee, 2009 p622). In contrast, girls who spoke about “*growing up*” often described the maturity and additional freedoms that puberty brought. One African-American girl explained, “*I kinda felt like I grew up a little bit more....I think my period and just goin’ through all them changes and gettin’ used to it helped me to grow up more...*” (Pinto, 2007 p525).

Girls reported being told that menstruation is a cleansing of unused and unnecessary materials from the body (Cooper & Koch, 2007; Orringer & Gahagan, 2010). One 17-year-old African-American girl reasoned menstruation as “*...cause the female needs that to cleanse out their body. We have more organs than the male* (Orringer & Gahagan, 2010 p838). Orringer and Gahagan (2010) found that the



menstrual cleansing belief was only mentioned among African-American and Mexican-American girls, and not among Caucasian or Arab girls (Orringer & Gahagan, 2010).

Around menarche, some girls described receiving scare-tactic messages aimed at preventing sexual activity or creating a sense of danger around pregnancy (Alcalde & Quelopana, 2013; Angulo-Olaiz et al., 2014; Aronowitz & Agbeshie, 2012; Aronowitz & Munzert, 2006; Aronowitz et al., 2006; Charmaraman & McKamey, 2011; J. Lee, 2009; Meschke & Dettmer, 2012; Nwoga, 2000; L. F. O'Sullivan et al., 2000, 2001; Orringer & Gahagan, 2010; Pinto, 2007; Teitelman, 2004). Mothers, especially Hispanic mothers, instructed girls to distance and protect themselves from males, stressing that menarche comes with increased sexual vulnerability (Aronowitz & Agbeshie, 2012; Aronowitz & Munzert, 2006; Aronowitz et al., 2006; Charmaraman & McKamey, 2011; Hawthorne, 2002; J. Lee, 2009; Meschke & Dettmer, 2012; Nwoga, 2000; L. F. O'Sullivan et al., 2000, 2001; Orringer & Gahagan, 2010; Pinto, 2007; Teitelman, 2004). Vague messages that linked puberty to unplanned pregnancy generated negative and fearful puberty experiences among girls across racial and ethnic groups (Alcalde & Quelopana, 2013; Angulo-Olaiz et al., 2014; Aronowitz & Agbeshie, 2012; Aronowitz & Munzert, 2006; Aronowitz et al., 2006; Charmaraman & McKamey, 2011; J. Lee, 2009; Meschke & Dettmer, 2012; Nwoga, 2000; L. F. O'Sullivan et al., 2000, 2001; Orringer & Gahagan, 2010; Pinto, 2007; Teitelman, 2004).

Girls also reported receiving implicit and explicit messages that puberty—specifically menstruation—is something to keep hidden, especially from males (Alcalde & Quelopana, 2013; Beausang & Razor, 2000; Cooper & Koch, 2007; Hawthorne, 2002; Kalman, 2003; J. Lee, 2008, 2009; Meschke & Dettmer, 2012; L. F. O'Sullivan et al.,

2000, 2001; Orringer & Gahagan, 2010; Teitelman, 2004). To maintain this secrecy, girls reported hiding menstrual supplies, restricting their physical activities (e.g., avoiding running) and concealing their breast development (e.g., wearing baggy clothes) (Table 4C) (Aronowitz et al., 2006; Beausang & Razor, 2000; Cooper & Koch, 2007; Hawthorne, 2002; J. Lee, 2008, 2009; Meschke & Dettmer, 2012; L. F. O'Sullivan et al., 2000, 2001; Pinto, 2007; Teitelman, 2004).

***Other factors shaping girls' puberty experiences:*** In addition to the messages girls received, puberty experiences were shaped by their sense of preparedness and timing of pubertal onset (Table 4D).

Across studies, girls reported feeling a lack of information and readiness to cope with the onset of menstruation (Alcalde & Quelopana, 2013; Beausang & Razor, 2000; Cooper & Koch, 2007; Hawthorne, 2002; J. Lee, 2008, 2009; Meschke & Dettmer, 2012; Orringer & Gahagan, 2010; Pinto, 2007; Teitelman, 2004). Although many girls reported prior exposure to puberty topics from at least one source (e.g., mothers, sisters, teachers), most felt that the information was inaccurate, insufficient or provided too late (Alcalde & Quelopana, 2013; Angulo-Olaiz et al., 2014; Aronowitz et al., 2006; Beausang & Razor, 2000; Charmaraman & McKamey, 2011; Cooper & Koch, 2007; Hawthorne, 2002; Jean et al., 2009; J. Lee, 2008, 2009; Meschke & Dettmer, 2012; Orringer & Gahagan, 2010; Pinto, 2007; Teitelman, 2004). As a female college student recalled, *“I read the pamphlets and the book and did not really understand what they were about and what they had to do with me”* (Beausang & Razor, 2000 p524).

Girl's inadequate preparation was further revealed through studies that assessed levels of menstrual knowledge, which was frequently found to be incorrect or incomplete (Angulo-Olaiz et al., 2014; Aronowitz & Munzert, 2006; Cooper & Koch, 2007; Hawthorne, 2002; Jean et al., 2009; Orringer & Gahagan, 2010; Teitelman, 2004). A quote from a 23-year-old African-American young woman exemplifies this: "*My mom taught me how to judge when my period would come. It might come on the first. If it came on the first, it should always come at that time*" (Cooper & Koch, 2007 p66). One study found that compared to African-American, Hispanic, and Arab participants, Caucasian girls provided the most accurate responses to the question "*Why do women menstruate?*" (Orringer & Gahagan, 2010).

Pubertal timing also influenced girls' puberty experiences. Some studies suggested that girls are more likely to experience early menarche as negative if they are not adequately prepared (Aronowitz & Munzert, 2006; Jean et al., 2009; J. Lee, 2008, 2009; Pinto, 2007; Teitelman, 2004). College-aged respondents in Lee's 2009 study reported feeling more shame around menarche if they experienced it earlier than others (J. Lee, 2009). Other girls who reached later menarche spoke of wanting to "catch up" with their peers' more advanced development (J. Lee, 2008, 2009; L. F. O'Sullivan et al., 2000). One girl felt "*defective*" due to her late start (J. Lee, 2009 p623), and another cried "*tears of relief*" when she reached menarche because her friends already had their periods (J. Lee, 2008p 1336).

***Relationships that shape puberty experiences:*** Mothers were often the first to be informed by girls who experienced menarche, and were the main source of emotional and

informational support for puberty (Alcalde & Quelopana, 2013; Aronowitz & Agbeshie, 2012; Aronowitz & Munzert, 2006; Aronowitz et al., 2006; Beausang & Razor, 2000; Charmaraman & McKamey, 2011; Cooper & Koch, 2007; Hawthorne, 2002; Jean et al., 2009; Kalman, 2003; J. Lee, 2008, 2009; Meschke & Dettmer, 2012; Nwoga, 2000; L. F. O'Sullivan et al., 2000, 2001; Orringer & Gahagan, 2010; Teitelman, 2004). In turn, mothers described feeling that conversations about puberty were important to their daughters' sexual health (Alcalde & Quelopana, 2013; Aronowitz & Agbeshie, 2012; Cooper & Koch, 2007; Hawthorne, 2002; Jean et al., 2009; Nwoga, 2000; L. F. O'Sullivan et al., 2000, 2001).

Despite this, many girls reported being disappointed in the information they received from mothers (Alcalde & Quelopana, 2013; Aronowitz & Agbeshie, 2012; Aronowitz & Munzert, 2006; Beausang & Razor, 2000; Charmaraman & McKamey, 2011; Cooper & Koch, 2007; Jean et al., 2009; J. Lee, 2008, 2009; Nwoga, 2000; L. F. O'Sullivan et al., 2001). As one college-aged woman recalled, "*All she [mother] said was, 'there's some pads under the sink.' I was really disappointed that she would not sit down with me and talk*" (Beausang & Razor, 2000 p524). Girls desired emotional connection and conversation with their mothers in order to feel confident about their development.

Complementary to the reports from girls, many mothers admitted to being unable to fully address their daughters' needs (Alcalde & Quelopana, 2013; Angulo-Olaiz et al., 2014; Aronowitz & Agbeshie, 2012; Aronowitz & Munzert, 2006; Beausang & Razor, 2000; Charmaraman & McKamey, 2011; Cooper & Koch, 2007; Jean et al., 2009; J. Lee, 2008, 2009; Nwoga, 2000; L. F. O'Sullivan et al., 2001; Orringer & Gahagan, 2010;

Teitelman, 2004). They were uncertain about the right time to initiate conversations, uncomfortable with the topic, and uninformed about the physiology of menstruation. In a number of studies, menarche was described as a sign for mothers to discuss sex with their daughters (Alcalde & Quelopana, 2013; Aronowitz & Agbeshie, 2012; Aronowitz et al., 2006; Charmaraman & McKamey, 2011; Cooper & Koch, 2007; Hawthorne, 2002; J. Lee, 2009; Meschke & Dettmer, 2012; Nwoga, 2000; L. F. O'Sullivan et al., 2000, 2001; Pinto, 2007; Teitelman, 2004). However some ethnic and racial groups (Hispanic and Asian) reported cultural restrictions to having open conversations about pubertal development (Alcalde & Quelopana, 2013; Meschke & Dettmer, 2012; L. F. O'Sullivan et al., 2001; Orringer & Gahagan, 2010). O'Sullivan et al. (2000) found that African-American mothers and daughters tended to feel more comfortable discussing pubertal changes and sexual behavior than Caucasian mothers and daughters (L. F. O'Sullivan et al., 2000).

A mother's response to her daughter's developing body was connected to the daughter's experience of the changes (Aronowitz & Agbeshie, 2012; Beausang & Razor, 2000; J. Lee, 2008, 2009; L. F. O'Sullivan et al., 2000; Orringer & Gahagan, 2010; Teitelman, 2004). The reaction was sometimes drawn from the mother's own pubertal experience (Alcalde & Quelopana, 2013; Aronowitz & Agbeshie, 2012; Beausang & Razor, 2000; Cooper & Koch, 2007; Hawthorne, 2002; Jean et al., 2009; Meschke & Dettmer, 2012; Nwoga, 2000; L. F. O'Sullivan et al., 2001). As one early adolescent Latina girl explained, *"My mother didn't have a problem 'cause she asked those questions to my grandmother [before]. My mother likes it when I ask her 'cause she knows I'm growing up"* (L. F. O'Sullivan et al., 2001 p286).

Girls reported infrequently turning to fathers for support at puberty (Aronowitz & Munzert, 2006; Beausang & Razor, 2000; Hawthorne, 2002; Jean et al., 2009; Kalman, 2003; J. Lee, 2008, 2009; Meschke & Dettmer, 2012; L. F. O'Sullivan et al., 2000; Pinto, 2007; Teitelman, 2004). A number of studies found that the onset of puberty and menstruation caused physical and emotional distancing between daughters and fathers (Kalman, 2003; J. Lee, 2009; L. F. O'Sullivan et al., 2001; Pinto, 2007). Cooper and Koch (2008) found that in one group of African-Americans from an urban, low-income area, fathers believed that early menarche was a sign that their daughters were sexually active. Some fathers interpreted their daughters' early menarche as payback for when they previously mistreated other men's daughters (Cooper & Koch, 2007).

Female family members were another vital source of support (Aronowitz et al., 2006; Beausang & Razor, 2000; Charmaraman & McKamey, 2011; Cooper & Koch, 2007; Jean et al., 2009; Kalman, 2003; Nwoga, 2000; L. F. O'Sullivan et al., 2000, 2001; Orringer & Gahagan, 2010; Teitelman, 2004). In particular, older sisters were viewed as a trusted source of information, filling in where mothers left off (Aronowitz et al., 2006; Beausang & Razor, 2000; Charmaraman & McKamey, 2011; Cooper & Koch, 2007; Jean et al., 2009; Kalman, 2003; Nwoga, 2000; L. F. O'Sullivan et al., 2000, 2001; Orringer & Gahagan, 2010; Teitelman, 2004). Brothers were mostly mentioned as sources of anxiety (e.g., teasing) for newly menstruating girls (J. Lee, 2008, 2009).

Peer relationships were perceived both as a source of emotional and informational support (Aronowitz & Agbeshie, 2012; Aronowitz et al., 2006; Beausang & Razor, 2000; Charmaraman & McKamey, 2011; Cooper & Koch, 2007; Jean et al., 2009; J. Lee, 2009; L. F. O'Sullivan et al., 2000, 2001; Orringer & Gahagan, 2010; Pinto, 2007; Teitelman,

2004), and as a source of problems and anxiety (e.g., jealousy) (Aronowitz & Munzert, 2006; Aronowitz et al., 2006; Jean et al., 2009; J. Lee, 2009; L. F. O'Sullivan et al., 2000; Pinto, 2007). Relationships with male peers became more sexualized during puberty, and many girls reported unwanted attention to their developing bodies (Aronowitz & Agbeshie, 2012; Aronowitz et al., 2006; Beausang & Razor, 2000; Hawthorne, 2002; Kalman, 2003; J. Lee, 2009; L. F. O'Sullivan et al., 2000, 2001; Pinto, 2007; Teitelman, 2004). As one 10-year-old newly menstruating girl explained, "*Boys think you are ripe...I was told that when a girl sees her period that it means she is ready for sex...The boys at my school say that...I've heard other people say that too*" (Hawthorne, 2002 p493). As this quote illustrates, to peers, pubertal development suggested that girls are ready for sex, which in turn influences the amount and type of attention girls receive.

Schools were generally not portrayed as a main source of pubertal information (Alcalde & Quelopana, 2013; Beausang & Razor, 2000; Cooper & Koch, 2007; J. Lee, 2009; Meschke & Dettmer, 2012; Nwoga, 2000; L. F. O'Sullivan et al., 2001; Orringer & Gahagan, 2010). Beausang (2006) found that girls often felt too embarrassed or ashamed to ask questions about menarche and puberty during sexuality education in schools (Beausang & Razor, 2000). Cooper and Koch (2008) found that schools provided inaccurate and largely negative information about menstruation, and often after many girls had already begun menstruating (Table 4E) (Cooper & Koch, 2007). As one lower-income, African-American girl noted, "*First I had my period, and then they started talking about it. It wasn't helpful; it was a little late*" (Cooper & Koch, 2007 p64).

## Discussion

This systematic review provides an updated look at the puberty experiences among US girls, and is the first to aggregate research from the most vulnerable populations (low-income and minority groups). The overarching findings suggest that among this population, girls do not feel adequately prepared for puberty and menarche, particularly those who develop earlier than their peers.

Overall, most girls recalled their experiences of puberty as negative. Girls who felt prepared and supported expressed having more positive or neutral puberty experiences. While multiple sources provided girls with messages about menstruation, mothers were the most important source of information and support. Yet, mother-daughter conversations about puberty were often described as challenging, especially when linked to sexual behavior. Many mothers were uncomfortable discussing puberty-related topics, leaving girls feeling unprepared to manage menstruation and other aspects of pubertal development. This literature suggests that the sources of puberty education and support available to US girls today are insufficient in preparing them for their pubertal transition.

Although these results were drawn predominantly from samples of girls growing up in urban environments in the Northeastern US, the included studies also pulled from racially and ethnically diverse samples from across all the US regions. Within these populations, low-income girls today expressed a similar sentiment as the middle-to-upper class, Caucasian girls studied in the 1980s- and 90s—that they felt largely unprepared for puberty, and described it in mostly negative terms (Brooks-Gunn, 1984; Brooks-Gunn et al., 1994; Brooks-Gunn & Ruble, 1982, 1983; Brooks-Gunn & Petersen, 1983; E. Koff &



Rierdan, 1995; E. Koff et al., 1982; E. Koff et al., 1990; E. R. Koff, Jill; Jacobson, Stacey, 1981; Rierdan & Koff, 1990; Rierdan et al., 1983). This review did not include studies from more affluent US populations. Therefore, it is not clear whether the puberty experiences of middle-to-upper-income, Caucasian girls growing up in the US today have improved.

Although recent literature is more racially and ethnically diverse, there is remains an incomplete picture of puberty experiences among low-income and minority girls. In studies that included racially and ethnically diverse samples, minority groups appeared to have slightly different experiences than their Caucasian counterparts. Caucasian girls were more likely to experience menarche as a celebration, while African-American and Hispanic girls commonly experienced puberty as tied to fears about unwanted pregnancy and the need to protect oneself from males. Caucasian girls tended to feel more supported during puberty and were better able to report accurate puberty knowledge. These variations must be interpreted with caution, however, as this differences were derived from qualitative trends and could be the result of differing study focus.

It is important to note that within these 20 studies, sexual behavior tended to be the research focus for Hispanic and African-American populations, while menarche experiences were the research focus with Caucasian samples. To fully understand the puberty experiences of US girls from low-income and/or minority groups, more segmented and comparative studies are needed.

Given the importance of the pubertal transition, the current literature is striking in its lack of quantity and quality. The low (12 findings), and very low (3 findings) confidence levels (Table 4.4A-4.4E) indicate insufficient evidence to support the

reoccurring themes that arose in the analysis. These low rankings suggest that more and higher quality research is needed on multiple topics in this area.

The quality of literature included in this review was moderate and lacking depth. The majority of the studies were assessed as having moderate (10 articles) or low (2 articles) methodological quality (Appendix E). For example, this literature generally categorized girls' puberty experiences as simply positive or negative, rather than seeking a richer and more nuanced understanding of girls' pubertal development. Additional research is needed on mother-daughter conversations about pubertal development, the role of non-maternal figures in shaping girls' experiences of puberty (e.g., fathers, sisters, brothers, peers, and schools), what information girls today need to prepare for puberty, factors contributing to non-negative experiences of puberty, and girls' experiences of pubertal changes other than menarche (e.g., breast development). Studies from the last few decades rarely took a holistic approach to understanding sexuality development during puberty (e.g., explored aspects of sexuality other than sexual behavior such as sexual desire and sexual function), which is problematic given the earlier onset of puberty and its related influence on the onset and amount of sexual activity in adolescence (Baams et al., 2015; J. D. Fortenberry, 2013; J.D. Fortenberry, 2013).

Additionally, many topics were absent from this body of research altogether. Voices of adolescents with non-conforming gender role and sexual orientation were missing entirely. Only one study assessed girls' understanding of menopause (Cooper & Koch, 2007). Also, there was little, if any, mention of media as a source of education and support during puberty. Finally, studies primarily focused only on physical changes,

ignoring the psychosocial changes that are critical to the pubertal transition and have implications for SRH, mental health and wellbeing.

Given that so much funding and attention is focused on preventing STIs and pregnancy among low-income populations in the US, it is curious that puberty transitions—a foundational part of sexual development—remain an understudied area. The authors speculate that the lack of emphasis on puberty transitions of girls reflects overarching gender norms that promote shame and ignorance about female bodies in order to disempower female sexuality (Kagesten et al., 2016; Martin, 1996; C. Roberts, 2015). And, these oppressive gender norms may be exacerbated when multiple points of disadvantage intersect (e.g., economic and racial disadvantage), putting already disadvantaged girls at greater risk for poor SRH outcomes throughout their lifetimes (Kerrigan & Andrinopoulos, 2007; Kerrigan, Andrinopoulos, Chung, Glass, & Ellen, 2008).

## **Limitations**

There are some important limitations to this review. First, although many studies provided clear information about the socioeconomic background of their sample (e.g., participants came from a free clinic at a public housing project), the income level of the study population was not always clearly explained. As a result, studies were excluded when the information provided suggested that the sample included only affluent females (e.g., sample was from an Ivy League university). In cases where the income level of the sample was ambiguous, but the information available suggested that at least some of the sample was of a lower socioeconomic level, the study was included (five articles had

unclear income information) (Appendix E). However, this missing information lowered the CERQual confidence in the study due to lower relevance of the sample population to the population of interest (Appendix F). Second, three of studies included in this review had adult only samples instead of including adolescents or mother-daughter pairs (Alcalde & Quelopana, 2013; Cooper & Koch, 2007; Nwoga, 2000). Older women may recall their puberty experience less accurately than girls who experienced puberty more recently. To account for this potential recall bias, findings from these studies were downgraded in confidence due to lower relevance of that study to the respective finding (Appendix F).

## **Implications**

The review findings suggest that the current level of puberty education is not adequately reaching low-income girls growing up in the US. These girls expressed a need for more quality information and emotional support before and during their pubertal transition. Given the communication challenges identified around puberty and menstruation, it is imperative that caregivers are educated on how best to inform and support girls. In addition, puberty education materials and programs are needed to reach girls prior to the (increasingly earlier) onset of pubertal changes. In order to provide effective puberty education to all girls, it is important to have a more accurate understanding of racial and income differences in puberty experiences. Finally, more guidance is needed for adolescents to understand their sexual development and successfully navigate changing peer relationships during their pubertal transition.

## **Conclusion**

This systematic review is the first to provide an overview of puberty experiences among present-day low-income girls in the US. The puberty experiences of girls from this disadvantaged demographic are largely negative, as many feel unprepared for their transition. Ignoring these girls' needs at puberty misses an important opportunity to provide a solid foundation for positive SRH in a vulnerable population.

## CHAPTER 4 TABLES AND FIGURES

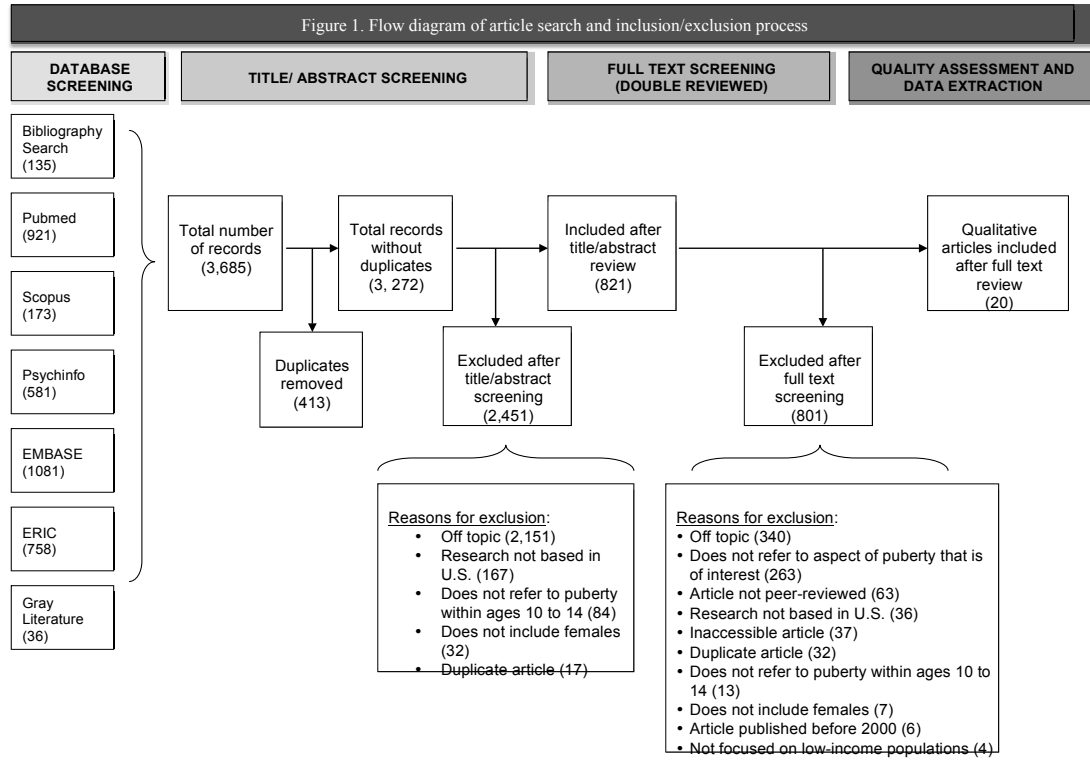


Table 4.1. List of included articles				
	Author	Title	Year	Journal
1	Alcalde MC, Quelopana AM	Latin American Immigrant Women and Intergenerational Sex Education	2013	Sex Education
2	Angulo-Olaiz F, Goldfarb ES, Constantine NA	Sexuality Information Needs of Latino and African American Ninth Graders: A Content Analysis of Anonymous Questions	2014	American Journal of Sexuality Education
3	Aronowitz T, Agbeshie E	Nature of Communication: Voices of 11-14 Year Old African-American Girls and Their Mothers in Regard to Talking About Sex	2012	Issues in Comprehensive Pediatric Nursing
4	Aronowitz T, Munzert T	An Expansion and Modification of The Information, Motivation, and Behavioral Skills Model: Implications From a Study with African American Girls and Their Mothers	2006	Issues in Comprehensive Pediatric Nursing
5	Aronowitz T, Rennells RE, Todd E	Ecological Influences of Sexuality on Early Adolescent African American Females	2006	Journal of Community Health Nursing
6	Beausang CC, Razor AG	Young Western Women's Experiences of Menarche and Menstruation	2000	Health Care for Women International
7	Charmaraman L, McKamey C	Urban Early Adolescent Narratives on Sexuality: Accidental and Intentional Influences of Family, Peers, and The Media	2011	Sexuality Research and Social Policy
8	Cooper S, Koch P	"Nobody Told Me Nothin": Communication About Menstruation Among Low-Income African American Women	2008	Women & Health
9	Hawthorne D	Symbols of Menarche Identified by African American Females	2002	Western Journal of Nursing Research
10	Jean RT, Bondy ML, Wilkinson AV, Forman MR	Pubertal Development in Mexican American Girls: The Family's Perspective	2009	Qualitative Health Research
11	Kalman MB	Adolescent Girls, Single-Parent Fathers, and Menarche	2003	Holistic Nursing Practice
12	Lee J	A Kotex and a Smile' Mothers and Daughters at Menarche	2008	Journal of Family Issues
13	Lee J	Bodies at Menarche: Stories of Shame, Concealment, and Sexual Maturation	2009	Sex Roles
14	Meschke LL, Dettmer K	Don't cross a man's feet': Hmong parent-daughter communication about sexual health	2012	Sex Education
15	Nwoga, I	African American Mothers Use Stories for Family Sexuality Education	2000	The American Journal of Maternal/Child Nursing
16	O'Sullivan LF, Meyer-Bahlburg HF, Watkins BX	Mother-Daughter Communication About Sex Among Urban African American and Latino Families	2001	Journal of Adolescent Research
17	O'Sullivan LF, Meyer-Bahlburg HF, Watkins BX	Social Cognitions Associated With Pubertal Development in a Sample of Urban, Low-Income, African-American and Latina Girls and Mothers	2000	Society for Adolescent Medicine
18	Orringer K, Gahagan S	Adolescent Girls Define Menstruation: A Multiethnic Exploratory Study	2010	Health Care for Women International
19	Pinto K	Growing Up Young: The Relationship Between Childhood Stress and Coping with Early Puberty	2007	The Journal of Early Adolescence
20	Teitelman AM	Adolescent Girls' Perspectives of Family Interactions Related to Menarche and Sexual Health	2004	Qualitative Health Research

Table 4.2. Summary Statistics of Included Articles' Sample Characteristics		
Data Type	Description of Characteristics	Number of Studies
Sample Population	Mother-daughter dyads	6
	Father-daughter dyads	1
	Adolescent girls	7
	College-age females	3
	Adult females (25+)	3
Race and Ethnicity	Racially and Ethnically diverse sample <sup>a</sup>	10
	African Americans only	6
	Hispanic Americans only	2
	Asian only	1
	Caucasian only	1
Geographic Area	Northeast	7
	South	4
	Midwest	3
	West	3
	Unknown	3
Setting	Urban	15
	Rural	2
	Urban and Rural	1
	Unknown	2
Study Relevance to Review Question <sup>b</sup>	Directly Relevant	3
	Partially Relevant	6
	Indirectly Relevant	6
	Unclear	5
<sup>a</sup> Racially and ethnically diverse samples include different combinations of races and ethnicities. For example, some include mostly Caucasian participants with a small percentage of minorities and others include only African American and Hispanic participants. <sup>b</sup> <b>Direct Relevant</b> =studies that focus on puberty broadly within the population of interest <b>Partially Relevant</b> =studies that focus on one aspect of puberty such as menarche or menstruation within the population of interest <b>Indirectly Relevant</b> =are studies that focused on sexuality development broadly, but findings related to pubertal development were generated within the population of interest <b>Unclear</b> =are studies that have unclear relevance to the study population in that these studies were not entirely transparent about the socioeconomic status of their sample. These studies were kept in the review despite lack of transparency of their samples SES because they typically were highly relevant to the review question and provided enough evidence to suggest their review included a substantial proportion of low-income girls.		



Table 4.3 Organization of Findings of Present Day Puberty Experiences of Lower-income Girls Growing up in the US		
Third-order themes	Second-order themes	First-order themes
1. Content of girls' puberty experiences	1.A. Menarche & menstruation	1.A.1. Menarche is an important milestone 1.A.2. Blood is the main sign of menarche 1.A.3. Menstrual management is a concern 1.A.4. Menstruation is physically painful
	1.B. Breast Development	1.B.1. Breast growth is an important, visible aspect of puberty 1.B.2. Developing bodies inspire new clothing decisions
2. Quality of girls' puberty experiences	2.A. Negative experiences	2.A.1. Menstruation is embarrassing, gross, dirty, smelly, disgusting, and unclean 2.A.2. Menarche is scary, traumatic and confusing 2.A.3. Developing bodies provoke insecurity and self consciousness
	2.B. Neutral and ambivalent experiences	2.B.1. Menstruation is a fact of life for females 2.B.2. Girls have ambivalent feelings about menarche and menstruation
	2.C. Positive experiences	2.C.1. Menarche is happy and exciting event 2.C.2. Breast development is viewed as a positive change
3. Messages girls receive about puberty	3.A. Becoming a woman	3.A.1. Becoming a woman 3.A.2. Celebration and gifts as right of passage 3.A.3. Menarche as sign of growing up
	3.B. Cleansing the body	3.B.1. Menstruation cleanses the body
	3.C. Fears of pregnancy	3.C.1. Menarche means you can get pregnant 3.C.2. Girls need to protect themselves from boys
	3.D. Keep it hidden	3.D.1. Girls are told that menstruation is something to keep hidden from others 3.D.2. Girls should restrict their behavior in order to prevent unwanted attention
4. Other factors shaping girls' puberty experiences	4.A. Lack of preparation	4.A.1. Girls feel uninformed about menarche and menstruation 4.A.2. Girls are uninformed about menstruation 4.A.3. Girls want more information and support during puberty
	4.B. Pubertal timing	4.B.1. Starting puberty earlier than their peers is particularly challenging for girls 4.B.2. Girls who start puberty later than their peers feel eager to "catch up"
5. Relationships that shape girls' puberty experiences	5.A. The role of mothers	5.A.1. Daughters want to learn about puberty from their mothers 5.A.2. Mothers influence their daughter's experience of puberty 5.A.3. Mothers think conversations about puberty are important 5.A.4. Mothers feel uncomfortable about having puberty conversations with their daughters 5.A.5. There are communication break downs during Mother-daughter conversations about puberty 5.A.6. Timing of mother-daughter conversations can be tricky 5.A.7. Conversations about puberty and sex are interconnected 5.A.8. A mothers experience of puberty influences how she approaches conversations with her daughter about puberty
	5.B. The role of non-maternal family members	5.B.1. Females other than mothers (especially sisters) are also important sources of pubertal support for girls 5.B.2. Fathers are not a main source of pubertal support for girls 5.B.3. Father-daughter relationships change at puberty 5.B.4. Brothers are a source of anxiety for girls going through puberty
	5.C. The role of peers	5.C.1. The nature of relationships with male peers changes at puberty 5.C.2. Friends and peers serve as sources of pubertal information and support 5.C.3. Female peer relationships can develop a negative dynamic at puberty

5.D. The role of schools	5.D.1. Schools are not a major source of puberty information or support
This typology presents what is known about lower-income girls puberty experiences in the US based on qualitative literature from 2000-2014. First order themes are the smallest units of findings and describe some aspect of girls' experiences in detail. Second and third order themes classify these smaller units of findings into higher-level themes.	

Table 4.4. CERQual Summary of Qualitative Findings			
Table 4.4.A. Content of girls' puberty experiences			
Review Finding	Supporting Quote	References	Confidence in Evidence
<b>1.A.1. Menarche is an important milestone:</b> Girls were able to recall the experience of getting their first periods in great detail, even many years after experiencing it. Their stories of menarche included details such as how they reacted, how other people reacted (mostly their mothers), the location where it happened, feelings they had about it, relevant information they had (or didn't have) about it at the time it happened, and information about the circumstances where occurred (e.g., at camp, at school, at home).	<i>It was the summer before my freshman year of high school and I was babysitting. I went to the bathroom and saw a little brown spot..... I called my mom and asked her what to do so and she came over and helped me out....I went home and my mom tried to explain how to put a tampon in, I ended up lying on the bathroom floor..... (Kelsey, Caucasian, 19 yrs old) (51 p1341-1342).</i>	(1-20)	<b>High Confidence:</b> 20 studies. Minor concerns about coherence, relevance, adequacy, and methodological limitations. 8 had somewhat rich data. Findings reflected experience of African-American, Caucasian, and Asian females; urban settings; Northeastern, US. Studies on menarche had predominantly Caucasian samples
<b>1.A.2. Blood is the main sign of menarche:</b> Girls described finding blood that was pink, red, or brown in their underwear when going to the bathroom. Many girls were initially uncertain about what the blood was. If unprepared for menarche, girls were often scared that the blood came from another bodily function (e.g., urination, excrement). In these cases, girls believed the blood signaled a problem (e.g., illness, pregnancy). They expressed feeling shame about menstrual blood and sometimes hid their soiled underwear from others.	<i>My mom's boyfriend was there. And I used the bathroom and when I wiped, it wasn't even red, it was like pink. And I was wondering, and I started crying because I didn't know what was going on. And then my mom wasn't there. And then I called [to] my sister. (African-American girl, low-income family, 9 yrs old) (56 p1298-1299)</i>	(1, 7, 9, 10, 13, 16, 18-20)	<b>High Confidence:</b> 9 studies with no to minor concerns about coherence, relevance, adequacy, and methodological limitations. High (7) methodological quality. Somewhat rich data within and across studies. Mostly from studies that focused specifically on menarche. Included females who were African-American or Caucasian (some Hispanic); urban.
<b>1.A.3. Menstrual management is a concern:</b> Girls were uncertain what to do after they first got their period. Some resorted to toilet paper (or changing their underwear frequently) until they were able to obtain other menstrual supplies (mostly from mothers). Girls tended to use pads, often referred to as diapers, though some used tampons. Girls often felt that they needed to keep menstrual supplies hidden and discrete from others, especially from males. They were concerned that others would somehow discover them. Girls discussed the challenges and importance of predicting their next period. They were anxious about staining their clothes with menstrual blood.	<i>We didn't have no pads or nothing, so she rolled up some toilet paper and told me to just stick it in right there like a pad....[later] my mom brought me some pads and stuff. And then I really didn't know how to use them. (African-American, low-income, first menarche at age 9) (56 p1299)</i>	(1, 7, 9, 10, 12, 13, 18, 20)	<b>High Confidence:</b> 8 studies with no to minor concerns about coherence, relevance, adequacy, and methodological limitations. Sufficiently rich data within and across studies. High (5) and moderate (2) methodological quality. The use of alternative menstrual supplies (such as menstrual cups) was not explored in any studies. Studies included females who were mostly Caucasian and African-American; urban areas; all regions
<b>1.A.4. Menstruation is physically painful:</b> Some girls experienced physical discomfort (e.g., cramps, moodiness, tiredness) when menstruating. Their lives changed on days they were menstruating because of it. Cramps were mentioned as being painful and restrictive in that they prevented girls from being able to do things they wanted to do. For example, when on their periods, girls laid around in bed all day feeling bad instead of getting up and playing. In some cases, the physical pain from menstruation caused girls to worry that they were sick with something more medically severe.	<i>....And then the next day [after having started my period], I was all sick and throwing up and stuff. I was cramping. I felt weird. It was like kind of weird. I thought that I had an infection or something. I didn't know what it was. I was all nervous and stuff. And then the next day, I was all sick. And then I was bleeding more. (African-American girl, low-income family, first menarche at age 9) (56 p1299)</i>	(1, 9, 10, 19, 20)	<b>Moderate Confidence:</b> 5 studies with no, minor and moderate concerns about coherence, relevance, adequacy, and methodological quality. Studies mostly superficial data. Descriptions and definitions of physical discomfort related to menstruation varied across studies. Samples reflected perspectives of African-American and Caucasians females; rural or urban environments; all regions

<p><b>1.B.1. Breast growth is a significant, visible aspect of puberty:</b> Girls mentioned breast development as a significant aspect of puberty. Breast development was most often mentioned in relation to how other people noticed or commented on their developing breasts. Girls noted that they started to receive different types of attention from males once they developed breasts and a “more womanly” figure—regardless of the age when this happens.</p>	<p><i>... I do remember that I was embarrassed that my body was maturing like this because I noticed people noticing it...(Penny, 18 yrs old) (50 p615)</i></p>	<p>(1, 5, 8, 11, 13, 15-17, 19, 20)</p>	<p><b>Moderate Confidence:</b> 10 studies. Minor to moderate concerns about coherence, relevance, adequacy, and methodological limitations. Topic was insufficiently explored. Mostly superficial data. Data similar within and across studies for Caucasian, African-American, and Hispanic females; urban areas, Northeast</p>
<p><b>1.B.2. Developing bodies inspire new clothing decisions:</b> Girls discussed how their developing bodies influenced their clothing choices. They referred to their decision to start wearing a bra. Some girls avoided wearing a bra as long as possible, while others started wearing bras as soon as they could. Some girls mentioned wearing baggy clothes to hide their figure. Other girls chose to dress in such a way as to accentuate their womanly figure.</p>	<p><i>I used to wear T-shirts up to when I was really, really showing chest. I used to still wear T-shirts and no bra. And people in my school used to be like, “You can’t do that no more.” But I felt comfortable just wearing T-shirts . . . and boys [would] tell me, “Why you coming to school like that?” (African American girl) (49 p231).</i></p>	<p>(4, 15, 19, 20)</p>	<p><b>Low Confidence:</b> 4 studies. Minor to substantial concerns about coherence, relevance, adequacy, and methodological limitations. Data mostly superficial. Mostly African-American samples; urban &amp; rural; Southern, Northeastern &amp; Midwestern</p>
<p>Tables 4a-4e provide a summary of the review findings from the qualitative analysis (column 1) that corresponds to the typology of findings presented in Table 3. Column 2 of tables 4a-4e provide supporting quotes from one or two contributing studies. The information provided about the quoted participants in column 2 is taken from the primary study in which it was extracted. Most quotes are taken directly from participants in the studies, but when helpful comments from the article authors are also included. Column 3 provides the reference numbers for each contributing study, which corresponds to the reference numbers in the reference section of this paper. And column 4 provides the overall CERQual assessment of confidence, rated as high, moderate, low, or very low confidence. This column also includes a summary explanation of confidence based on methodological limitations of included studies, relevance, adequacy, and coherence. A more detailed explanation of the assessment of the confidence in each of these domains is provided in Appendix 6. Information on race, rural/urban areas and geographic location of the sample are provided to indicate the demographic makeup of the samples that contributed to each finding. Samples from studies included in this review included Caucasian, African-American, Hispanic, Asian, and Arab females. “Diverse racial and ethnic groups” indicates that more than two racial and/or ethnic group were present in the samples that contributed to this finding. When no region is indicated, contributing studies together had samples from each region (Northeastern, Midwestern, Southern, and Western). All studies are from the US even when not explicitly stated.</p>			

Table 4.4.B. Quality of girls' puberty experiences			
Review Finding	Supporting Quote	References	Confidence in Evidence
<b>2.A.1. Menstruation is embarrassing, gross, dirty, smelly, disgusting, and unclean:</b> Most girls' experiences of menarche and menstruation were described in negative terms. They described feeling ashamed, gross, dirty, smelly, and disgusting. These girls described feeling unprepared for menarche, and receiving messages that menstruation was something gross that should be hidden from others.	<i>I said, "Ohh, ewwwh. . . I don't like this." She [mother] went out and bought me pads and stuff. She told me, "Well you're going to have this every month, so there ain't no sense in 'ewwhing' about it 'cause you're going to 'ewwh' every month." So I got used to it. And it's still nasty to me. (African-American, low-income) (56 p1299).</i>	(1, 7, 9, 10, 12, 13, 16-20)	<b>High Confidence:</b> 11 studies. Minor or moderate concerns about coherence, relevance, adequacy, & methodological limitations. 8 with rich data & high methodological quality. Studies focused on menses. Consistent data across studies. Mostly Caucasian & African-American (some Hispanic); urban areas
<b>2.A.2. Menarche is scary, traumatic and confusing:</b> Many girls viewed their experience of menarche in a negative light, describing their experiences as horrifying, traumatic, scary, and confusing. These girls often initially misinterpreted blood from menstruation as a serious medical problem. They expressed feeling confused and "out of control" about why they were menstruating. Girls' horror stemmed from lack of preparation and/or from feeling as though they started too "early."	<i>I was scared, I was dyin'. And I'm sittin' there like, "Mom!" I was like, "MOM!" She was like "what?" I was like, "Mom, come down"! (Lakeisha, 25 yrs old) (44 p69).</i>  <i>All I seen was blood coming out. I thought I was supposed to go to the hospital. My mom was like, "No, you're starting your period." (African-American, low-income) (56 p1299).</i>	(1, 7, 9, 10, 13, 16, 18-20)	<b>High Confidence:</b> 9 studies with no to minor concerns about coherence, relevance, adequacy, & methodological limitations. Somewhat rich data from studies focused on menarche and menstruation. Data from females who were mostly African-American and Caucasian (though some Hispanic); urban areas
<b>2.A.3. Developing bodies provoke insecurity and self-consciousness:</b> As girls' bodies started developing, they began comparing their own physical development with that of their peers. Girls also mentioned receiving unwanted attention, touching, or teasing from male peers and brothers. Some girls hid their breasts from view by wearing baggy clothes. One study mentioned how weight gain during puberty can also cause girls to become self-conscious about their bodies.	<i>I didn't want to be around boys and stuff. And I would wear big baggy clothes and stuff. When I started my period, I really had a nice little figure and really didn't want no one to see my figure so I wore baggy clothes and dressed like a boy and stuff so boys wouldn't be interested in me. (African-American, low-income) (56 p1300).</i>	(6, 10-13, 17, 19, 20)	<b>Low Confidence:</b> 8 studies. Minor, moderate, & substantial concerns about coherence, relevance, adequacy, & methodological limitations. Breast development not sufficiently explored. Moderately supported by superficial data from studies of high methodological quality. Most African-American, Caucasian, or Hispanic; urban areas
<b>2.B.1. Menstruation is a fact of life for females:</b> Few expressed neutral feelings about menarche. Those who did, described menarche as a necessary and inevitable part of being female that had to be tolerated. These girls tended to be prepared for menarche. Some girls, however, had neutral feelings about menstruation because their experience of it had been overshadowed by other traumatic life events (e.g., experienced abuse or trauma).	<i>I've heard about so many girls getting their period and being excited or miserable or having some emotion about it, and I didn't really have much of any. (Ivy) (55 p523).</i>	(1, 10, 12, 13, 18-20)	<b>Low Confidence:</b> 7 studies. Minor, moderate & substantial concerns about coherence, relevance, adequacy, & methodological limitations. Thin data. Focus on positive or negative experiences—may have missed neutral ones. Mostly African-American & Caucasian adolescents; urban & rural areas
<b>2.B.2. Girls have ambivalent feelings about menarche and menstruation:</b> Some girls viewed menarche as a both positive and negative experience. For these girls, getting a period was burdensome but tolerable, and not something to stress about. Although they were annoyed for having something to worry about each month, they were glad to get their period for the positive things it signified in their life (e.g., growing up, becoming a woman, a sign that they weren't pregnant).	<i>I felt anxious and embarrassed, but also happy to be growing up. (51 p1338).</i>	(1, 13, 17, 19)	<b>Low Confidence:</b> 4 studies. Minor, moderate, & substantial concerns about coherence, relevance, adequacy, & methodological limitations. Data consistent across studies. Mixed feelings about menarche, sometimes inconsistently defined. Literature may have preferred negative stories. Samples were African-American, Caucasian, or Hispanic; urban areas; Northeast & West
<b>2.C.1. Menarche is happy and exciting event:</b> Few girls reported having positive feelings about menarche. Those who did described feeling excited and happy. Girls who viewed menarche as a positive event described having celebrated the milestone (sometimes with gifts). These girls tended	<i>"I was happy because I was growing up," ... "It was just great to know I was almost a woman. I was looking forward to that!" (Simone, 19 yrs old, Caucasian) (51 p1336).</i>	(1, 7, 11, 13, 17, 20)	<b>Low Confidence:</b> 6 studies. Minor, moderate, & substantial concerns about coherence, relevance, adequacy, & methodological limitations. SES of samples were not clear. Positive nature of menstruation somewhat vague & thin; largely

to view menarche as a sign of growing up, entering womanhood, and increased freedom. Girls who viewed menarche and menstruation positively reported feeling prepared for it.		underexplored. Mostly Caucasian (some African-Americans & Hispanics); urban areas
<b>2.C.2. Breast development is viewed as a positive change:</b> Many girls spoke of feeling proud and happy to develop a womanlier figure. Girls described breast development as being connected to gaining a new sexual status in society, associated with greater social capital by awarding girls with access to older peer groups.	<p><i>I wanted breasts so badly.</i> (Dulcie, mixed race, 18 yrs old) (51 p1336).</p> <p><i>She's 10 or 11, but she's with these girls who look fourteen, fifteen . . . and she's trying to be down because they're older and more mature body-wise.</i> (African-American) (49 p230).</p>	<p>(1, 3, 13, 17, 19)</p> <p><b>Low Confidence:</b> 5 studies. Minor, moderate &amp; substantial concerns about coherence, relevance, adequacy, &amp; methodological limitations. Somewhat thin data. Factors contributing to positive feelings about body development not thoroughly explored. Mostly Caucasian (some African-American &amp; Hispanic); urban areas; Northeast &amp; West</p>

Table 4.4.C. Messages girls receive about puberty			
Review Finding	Supporting Quote	References	Confidence in Evidence
<b>3.A.1. Becoming a woman:</b> “ <i>Becoming a woman</i> ” was a common message girls received at menarche, meaning that girls become part of an exclusive club of females with whom they are able to share common experiences and understandings. These messages portrayed menarche as a right of passage shared by all females, & was sometimes linked the ability to reproduce. “ <i>Becoming a woman</i> ” was usually seen as a positive message, but girls who felt that women's behavior was limited at menarche saw it more negatively.	<i>I became a woman! I was so excited!</i> (Lorraine) (50 p623).  <i>...Periods and tampons scared the hell out of me so I hated that I started... I wasn't one of those girls who was waiting for the day that they "became a woman." Fuck that, I wanted to play sports and swim and never wear dresses...</i> (Ginger) (50 p622).	(1, 6, 7, 9, 10, 13, 15, 18-20)	<b>High Confidence:</b> 10 studies. No, minor, & moderate concerns about coherence, relevance, adequacy, & methodological limitations. 6 with rich data. “Becoming a woman” was somewhat inconsistently described & contradictions not sufficiently explained. Mostly African-American & Caucasian female samples; urban & rural
<b>3.A.2. Celebration and gifts as right of passage:</b> For many, celebration was part of “ <i>becoming a woman</i> .” Girls mentioned having received special gifts to mark the occasion (e.g., flowers, jewelry, journals, etc.); mother-daughter outings; or parties. Celebration was mostly portrayed as a positive reaction, but some found their mother's enthusiastic reaction embarrassing and exaggerated.	<i>It was really celebrated in our family. Actually, I'm really glad I had that. A lot of people don't. Either it's just like, "whatever," or they're kind of happy, or some of them are upset about it. But, for me, it was really a rite of passage.</i> (European-American, low-income) (56 p1303).	(1, 7, 13, 20)	<b>Moderate Confidence:</b> 4 studies. Minor & substantial concerns about coherence, relevance, adequacy, & methodological limitations. Rich data. Unclear SES & reasons for different responses. Mostly Caucasian samples; urban areas; Western & Midwestern.
<b>3.A.3. Menarche as sign of growing up:</b> For some girls, menarche is a sign of growing up which means they are transitioning from child to adolescent or child to adult. Messages about growing up tended to be more gender neutral than messages about becoming a woman. With these messages, girls described gaining new freedoms, increased autonomy, and additional responsibilities. Many were excited to grow up, but some expressed feeling sad that they lost their innocence and childhood.	<i>I felt more grown up...and I liked that I could look forward to all the benefits of being a woman and no longer being a child... [It's] good to move beyond childhood and be treated like an adult.</i> (Ruth) (50 p623).  <i>It meant I'd soon be able to drive and smoke cigarettes (just kidding!)...</i> (Janet) (50 p623).	(1, 7, 13, 16-19)	<b>Moderate Confidence:</b> 7 studies. Minor to moderate concerns about coherence, relevance, adequacy, & methodological limitations. Somewhat rich data. “Growing up” vaguely & inconsistently defined. Difficult to distinguish from “ <i>becoming a woman</i> .” African-American, Caucasian, or Hispanic samples; urban areas; Midwest, West & Northeast.
<b>3.B.1. Menstruation cleanses the body:</b> Some girls believed menstruation cleansed the body. Menstruation was viewed as the body's way of disposing of the blood that would have nourished a pregnancy. Others had an overall feeling of uncleanness that endured throughout menstruation.	<i>[You need to] Get all that filth out of there. You know, it gots to come out. It gots to come out!</i> (less than 35 yrs old) (44 p69).	(9, 18)	<b>Moderate Confidence:</b> 2 studies. Minor & substantial concerns about coherence, relevance, adequacy, & methodological limitations. Rich data. Inconsistently described. African-American, urban, Northeast
<b>3.C.1. Menarche means you can get pregnant:</b> At menarche, girls were informed that they are now capable of reproducing. They received warnings about risky sexual behavior and unplanned pregnancies. Menarche was a cue to mothers to initiate conversations about risky sex. For some, jumping from menarche to pregnancy prevention was a giant leap that leaves girls misinformed and feeling confused, uncertain, and afraid of menstruation.	<i>The first day I got my period, I was like, "Mommy, I peed blood!" And then she was like, "Cause you have your period." And I was like, "Oh." And then she was like, "Well, we'll have a talk at home." And then we got home . . . that's when she started talking about sex and everything.</i> (African-American, 10-13 yrs old) (48 p278).	(2-6, 8, 10, 13-20)	<b>High Confidence:</b> 15 studies. Minor to moderate concerns about coherence, relevance, adequacy, & methodological limitations. High (6), moderate (8), low (1) methodological quality. Somewhat rich data. Diverse racial & ethnic groups; urban (some rural); all regions.
<b>3.C.2. Girls need to protect themselves from boys:</b> Some girls were told that they reached a potentially dangerous and vulnerable sexual status that they must defend from pregnancy. They were given the responsibility to act & dress in certain ways to avoid attention from males. In	<i>You'll [her daughter] notice a difference [in your body]. You'll notice that men will notice you more, but this doesn't mean you are ready to cut classes, have sex, boyfriends, be independent from your family, let them touch you.</i>	(4-6, 8, 10, 13-20)	<b>Moderate Confidence:</b> 13 studies. Minor to moderate concerns about coherence, relevance, adequacy, & methodological limitations. High (6), moderate (6), and low (1) methodological quality. 5 somewhat rich data. Most from

some cases, girls' interactions with males were restricted. Girls tended to be frustrated, disappointed and confused by this message.	<i>Don't let them touch you because your body is sacred and private. Don't let anyone touch you, not even your father. (Latina mother) (49 p231).</i>		studies (5) on sexuality. Diverse racial & ethnic groups; mostly urban (some rural); 6 Northeast
<b>3.D.1. Girls are told that menstruation is something to keep hidden from others:</b> Many girls received explicit &/or implicit messages to conceal signs of menstruation (e.g., menstrual supplies, bloody underwear), especially from males. Girls took great precautions & felt anxiety about others finding out about their menstrual status. Silence from mothers lead daughters to intuitively know menstruation was a taboo topic that should not be discussed or shared with others. In rare instances, this taboo prevented girls from telling their mothers their menstrual status.	<i>The narrator described being taught by her mother that a woman must never let anyone know when she is menstruating. She was taught to wrap her pads &amp; hide them in the bottom of the wastebasket out of sight. When the mother remarried, the narrator said she was so afraid of being discovered that she began hiding the wrapped pads in various places throughout her room. (College student, Midwest) (53 p524).</i>	(1, 2, 7, 9, 10, 12-14, 16-18, 20)	<b>High Confidence:</b> 12 studies with minor to moderate concerns about coherence, relevance, adequacy, & methodological limitations. Data consistent. High (7), moderate (4), & low (1) methodological quality. 5 focused on menstruation. Range of racial & ethnic groups (mostly Caucasian & African-American); rural & urban areas; Midwest, West & South
<b>3.D.2. Girls should restrict their behavior in order to prevent unwanted attention:</b> Girls were told to avoid activities during menstruation (e.g., bathing or swimming) and described their extreme efforts to restrict activities (e.g., swimming) and freedom (e.g., go places they wanted to go) when menstruating in order to prevent embarrassing stains and leaks.	<i>I was scared I was going to trip all over and people were going to see the blood. So I kinda like stayed in the house and stuff. (African-American, low-income) (56 p1300).</i>	(1, 5, 7, 9, 10, 13, 14, 16, 17, 19, 20)	<b>High Confidence:</b> 11 studies. No to minor concerns about coherence, relevance, adequacy, & methodological limitations. Data consistent. 8 high methodological quality. 6 focused on menstruation. Diverse samples; urban areas; Northeast & Midwestern



Table 4.4.D. Other factors shaping girls' puberty experiences			
Review Finding	Supporting Quote	References	Confidence in Evidence
<b>4.A.1. Girls feel uninformed about menarche and menstruation:</b> Most girls reported prior exposure to puberty-related topics from at least one source (e.g., mothers, grandmothers, sisters, friends, mothers' of friends, and teachers), but commonly reported that information provided to them was insufficient or inaccurate. Information was limited to topics such as anatomy and menstrual hygiene (how to use a pad and/or tampon), and failed to address the emotional aspects of development. Girls were told that menstruation means you can get pregnant, but were not told how pregnancy would occur. Girls who felt inadequately prepared described negative experiences of menarche.	<i>My mom should've taught me how you take care of a pad and where you put it before my period actually started because my period started in the middle of sixth grade camp. . . I thought you could just stick it in the toilet, and it got stuck in the toilet, and one of the camp leaders was like, "Who put this in here?" I was so embarrassed. (European-American, low-income) (56 p1299).</i>	(1, 2, 7, 9, 10, 13, 14, 18-20)	<b>Moderate Confidence:</b> 10 studies. Minor to moderate concerns about coherence, relevance, adequacy, & methodological limitations. 4 studies rich data, but mostly thin data. None focused on puberty education or preparedness exclusively. Preparation for menarche vaguely defined. 4 studies with unclear SES and age. Studies from racial & ethnic diverse adolescents; urban (2 rural); all regions.
<b>4.A.2. Girls are uninformed about menstruation:</b> Girls lacked accurate information about menstruation. Some knew little about menarche before getting their periods. These girls tended to misinterpreted menarche as a sign that something was seriously wrong with them, which scared & confused them. Some adults even shared that they hadn't understood the connection between menarche and pregnancy until after their first pregnancy. Some mothers said they avoided conversations with their daughters related to menstruation because they did not feel confident about their knowledge on the topic.	<i>I thought that I was going to get raped or something and get pregnant because my mom told me, "Now you can have babies because you started." Then I thought that I was going to get raped and get pregnant and I didn't want to get pregnant. It was so stupid. (African-American, low-income) (56 p1300).</i>	(3, 5, 9-11, 18, 20)	<b>Low Confidence:</b> 7 studies. Minor to moderate concerns about coherence, relevance, adequacy & methodological limitations. 4 studies focused on menstruation. Consistent evidence across studies, but somewhat superficial. 4 high methodological quality, but qualitative method may not be best way to assess knowledge. Racial & ethnically diverse sample (few Caucasian); mostly urban (5); all regions
<b>4.A.3. Girls want more information and support during puberty:</b> Girls wanted to know more about their bodies including wanting to understand how their anatomy relates to sexual functioning. They expressed a desire to have someone to talk to openly about pubertal changes. They wanted to be reassured that what they are going through is normal and wanted to hear about other women's experiences. Girls wanted to feel comfortable to ask their mothers questions about their (and her previous) developmental changes.	<i>I remember in the fifth grade all the girls seeing "the film" about menstruation. I was so excited because I was getting older. ... When I went home my mom just said, "Do you have any question?" It would have meant a lot to me if she would have sat down with me and we could have read the book together, and discussed things together, instead of, "Do you have any question?" (53 p524).</i>	(1-3, 6-11, 13, 14, 18-20)	<b>Moderate Confidence:</b> 14 studies. Minor to moderate concerns about coherence, relevance, adequacy, & methodological limitations. None focused on puberty education or preparedness. 5 had unclear SES & age information. 7 high methodological quality. Superficial data. Insufficient investigation into what preparation is wanted. Sample of adolescents from diverse racial & ethnic groups; urban areas (2 rural areas); all regions
<b>4.B.1. Starting puberty earlier than their peers is particularly challenging for girls:</b> Girls who experienced "early" onset of puberty relative to their peers felt various levels of distress. They felt unprepared, surprised, embarrassed, and/or afraid at menarche due to their "early" and unexpected start. Two studies (using the same sample) found that in the subsample of participants who remembered menarche as happening early that menarche was connected with feelings of shame & humiliation.	<i>I'd rather not feel that [cramps from menstruation] as a 10-year-old...Because that be hurting. 10 years old? You want to be runnin' up and down the driveway; you don't want to be layin' in the bed with cramps...If I was older then, I wouldn't be running everywhere. I mean I would still be having fun and stuff. It might have been better if it had started when I was older. (Miya, African-American, urban public school) (55 p525-526).</i>	(1, 5, 11, 13, 19, 20)	<b>Moderate Confidence:</b> 6 studies. Minor to substantial concerns about coherence, relevance, adequacy, & methodological limitations. "Early" was inconsistently defined. High (5) & moderate (1) methodological quality, but somewhat thin data. Perspectives from females from mostly young samples; Hispanic, African-American & Caucasian females; urban areas

<p><b>4.B.2. Girls who start puberty later than their peers feel eager to "catch up":</b> Girls who felt as though they were physically developing behind their peers felt relieved once they got their periods. These females spoke about menarche as something they eagerly awaited. And when talking about the timing of menarche these females used words such as "<i>finally</i>" as in "<i>I finally got my period.</i>" Girls who felt that they development behind their peers spoke about wanting to "<i>catch up,</i>" or become "<i>part of the club.</i>"</p>	<p><i>"Most of my friends had already had theirs and I wanted mine too!"</i> (Michelle, 20 yrs old, Caucasian) (51 p1336).</p> <p><i>"I was the last one of my group of friends to start,"... "I felt defective."</i> (Jenny) (50 p623).</p>	<p>(1, 13, 17)</p> <p><b>Very Low Confidence:</b> 3 studies. Minor, moderate &amp; substantial concerns about coherence, relevance, adequacy, &amp; methodological limitations. "Late" puberty/menarche inconsistently &amp; vaguely defined. 2 studies had unclear SES. Somewhat thin data. College age (2) &amp; mother-daughter (1) samples; Caucasian, African-American &amp; Hispanic females; urban environments; Northeastern &amp; Western</p>
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Table 4.4.E. Relationships that shape girls' puberty experiences			
Review Finding	Supporting Quote	References	Confidence in Evidence
<b>5.A.1. Daughters want to learn about puberty from their mothers:</b> Most daughters considered their mothers their main and most important source of information and guidance on puberty-related topics. Mothers were usually the first person girls informed about menarche. Most mothers explained the practical aspects of puberty (e.g., how to use menstrual pads), but few explained the biological aspects of puberty.	[One participant] <i>believed she was seriously ill when she found blood in her underwear. She screamed for her mother. Upon arrival her mother laughed, told her she had started her period, and handed her a sanitary pad. The narrator had not been prepared and described feeling "horrified and hurt" by the incident</i> (53 p523).	(1, 2, 4-18, 20)	<b>High Confidence:</b> 18 studies. Minor to moderate concerns about coherence, relevance, adequacy, & methodological limitations. High (8) methodological quality. Rich & consistent data. 8 mother-daughter samples. Diverse racial & ethnic samples; urban & rural; all regions (6 Northeast)
<b>5.A.2. Mothers influence their daughter's experience of puberty:</b> Girls were disappointed when their mothers were not supportive at puberty. Girls who discussed puberty openly with their mothers described a positive experience, whereas those who did not, described it negatively. However, supportive mothers did not ensure a positive experience.	<i>"My mom just smiled and let me work it out. She didn't tell me I shouldn't worry, she just modeled laid-back behavior and I started to feel better," wrote Alison, ...who described her first period as "no big deal." (Alison, Caucasian) (51 p1343).</i>	(1, 4, 7, 13, 17, 18, 20)	<b>Moderate Confidence:</b> 7 studies. Minor, moderate, & substantial concerns about coherence, relevance, adequacy, & methodological limitations. Contradictory responses unexplored. 3 unclear age & SES. Diverse samples; urban; Midwest, West, & Northeast
<b>5.A.3. Mothers think conversations about puberty are important:</b> Mothers wanted their daughters to be informed about puberty, in particular about menstruation and the associated risk of pregnancy. Mothers viewed menarche as an important milestone in their daughter's development and felt that communication was important for their daughter's sexual health.	<i>I have to prepare her 'cause every day she's growing up. She's developing. I notice she's developed pubic hair at the age of 10, her bust was. . . . I said, "Hey! The change is gonna come soon." And so I used to send her for the napkin, and she used to say, "What's it for?" and I used to explain it to her. (African-American mother, daughter aged 10-13 age group) (48 p278).</i>	(2, 4, 9-11, 15-17)	<b>Low Confidence:</b> 8 studies. Moderate concerns about coherence, relevance, adequacy, & methodological limitations. 3 focused on sexuality. Superficial data. 5 mother-daughter samples. Possible social desirability related to focus groups. Hispanic or African-American; urban & rural areas; Southern & Northeastern
<b>5.A.4. Mothers feel uncomfortable about having puberty conversations with their daughters:</b> Daughters sensed that their mothers were uncomfortable discussing puberty. Some mothers felt uncomfortable and uninformed about puberty, admitting that they avoided conversations about puberty as a result. They preferred their daughters get information from other sources (e.g., school, older siblings)	<i>I think those trained and qualified people should find the smoother and gentler way to tell our daughters about it. To teach our daughters those scientific terms for our bodies so our daughters avoid the street slang and vulgarities used instead of those terms. Most of us mothers don't even know the exact terms. (Latina mother, daughter aged 10-13 age group) (48 p280).</i>	(2, 3, 7, 9, 11, 16, 18, 20)	<b>Moderate Confidence:</b> 8 studies. Minor to moderate concerns about coherence, relevance, adequacy & methodological limitations. High (4) or moderate (4) methodological quality. 4 focused on sexuality. All somewhat superficial data. Hispanic & African-American (some Caucasian); urban areas; all regions
<b>5.A.5. There are communication breakdowns during mother-daughter conversations about puberty:</b> Puberty topics were sometimes difficult to discuss, even in close mother-daughters pairs. Girls wanted to ask questions and openly discuss puberty with their mothers. Some mothers felt that their messages were not getting through. Some mothers admitted to raising their voices during discussions, especially when they did not understand something.	<i>Cause I would go up to them [mother &amp; grandmother] and I would ask them [about the period] and they would be like why you wanna know about that, you didn't get your period yet. I'm just like, I just wanna know so when I get it. So then when I got it, I was scared. I was like: Oooo, I'm bleeding. (Tamika, 20 yrs old) (44 p65).</i>	(1, 2, 4, 5, 7-9, 11, 13, 15, 16)	<b>Moderate Confidence:</b> 11 studies. Minor to moderate concerns about coherence, relevance, adequacy, & methodological limitations. 4 focused on sexuality & 5 had unclear SES & age. 5 high methodological quality. Rich data. 5 mother-daughter samples, but dynamics of relationship not fully addressed. All regions; urban; African-American & Hispanic (some Caucasian)
<b>5.A.6. Timing of mother-daughter conversations can be tricky:</b> Mothers were uncertain when to discuss puberty with their daughters, and feared doing it too early, especially in cases of "early" pubertal onset. Some mothers initiated conversations based on their daughter's pubertal stage (i.e., breast development). Mothers also initiated conversations	<i>I think not right now but in a little bit, older, let's see, yes we will talk, to give her advice and talk to them well, but right now because they're little, no. (Laura, 39 yrs old, Latina mother) (37 p299).</i>	(2, 4, 5, 7, 9, 11, 15, 16)	<b>Moderate Confidence:</b> 8 studies. Minor to moderate concerns about coherence, relevance, adequacy, & methodological limitations. High (3), moderate (4), low (1) methodological quality. Superficial data. 4 focused on sexuality. African-American & Hispanic (some Caucasian); urban areas;

when puberty was going to be discussed in school or when asked questions.			Northeastern & Southern
<b>5.A.7. Conversations about puberty and sex are interconnected.</b> For many mothers, menarche was a cue to discuss sex with daughters, especially if mothers had a prior unwanted pregnancy. Girls felt that, at puberty, mothers gave mixed and incomplete messages about puberty and sex (e.g., you are woman, but avoid male attention; avoid pregnancy, but fail to explain how to get pregnant). When puberty and sex were intertwined both were seen as taboo topics that were difficult to discuss.	<i>Several mothers described demanding proof each month that their daughters were menstruating. One said, "I still say, 'Did you get your period? Did you mark it on the calendar?' I look for it every month and if she misses I say, 'Come here. You got a problem? I want to see some blood.' ...No, you have to" (African-American mother) (49 p232).</i>	(2, 4, 6, 8-10, 13-17, 19, 20)	<b>High Confidence:</b> 13 studies. Minor to moderate concerns about coherence, relevance, adequacy & methodological limitations. Rich data across studies. High coherence. 6 high methodological quality. 5 studies were focused on sexuality broadly. 5 mother-daughter samples. 10 Urban (2 rural). All US regions (6 Northeast). Racially & ethnically diverse samples
<b>5.A.8. A mothers experience of puberty influences how she approaches conversations with her daughter about puberty:</b> Mothers who were unable to talk to their own mothers about puberty reported wanting to provide a different, more supportive experience to their daughters. However, mothers from conservative cultures that considered this topic to be taboo were less inclined to talk to their daughters about it.	<i>I don't wanna be like my momma. My momma didn't talk to me about it. But I be sure to talk to my girl. I don't hold nothing back. My daughter's 15 years old. I don't hold anything back, we already had that talk. She's like, "OKAY, OKAY." I can't be with you all the time, but I want you to hear me, I want you to hear me!" (35 yrs or older focus group) (44 p72).</i>	(2, 4, 7, 9-11, 14-16)	<b>Low Confidence:</b> 9 studies. Moderate concerns about coherence, relevance, adequacy, & methodological limitations. None specifically on this topic. High (4), methodological quality. Superficial data. 5 mother-daughter samples. Diverse samples; urban (2 rural); Southern (4), Northeast (2), & Midwest (2) regions
<b>5.B.1. Females other than mothers (especially sisters) are also important sources of pubertal support for girls:</b> Female family members (e.g., older sisters, grandmothers) were trusted sources of information, advice, and emotional support to pubescent girls, especially in the absence of mother-daughter conversations. Mothers acknowledged the role of females in supporting and informing their daughters about sexual development.	<i>"Because [my sister] had it and she knows a lot more about it than my dad because he's not a girl. He's a boy." (Kaylie, Caucasian) (47 p38).</i>	(6-9, 11, 12, 15-18, 20)	<b>Low Confidence:</b> 11 studies. Minor, moderate, or substantial concerns about coherence, relevance, adequacy, & methodological limitations. None focused on non-maternal female family members. Superficial data. 4 unclear SES & age of sample. Hispanic, African-American & Caucasian; urban; Southern, Midwestern & Northeastern
<b>5.B.2. Fathers are not a main source of pubertal support for girls:</b> Fathers were described as "hands-off" or "clueless" about puberty. At menarche, few girls told their fathers and some even asked their mothers not to. Both daughters and fathers were embarrassed to discuss menstruation with one another, even in close relationships. Some fathers bought menstrual supplies and were excited their daughters were maturing. Others feared it meant their daughters were sexually active.	<i>I didn't tell him [her father] for a while 'cause I didn't know what to say...It's embarrassing I guess, and it's just something you don't want to talk about with your dad. Really. He's a guy. (Jennifer, Caucasian) (47 p38).</i>	(1, 5, 7, 10-14, 17, 19, 20)	<b>High Confidence:</b> 10 studies. Minor to moderate concerns about coherence, relevance, adequacy, & methodological limitations. 7 high methodological quality. 4 rich data. 1 included fathers. 1 focused on fathers' roles. Father vaguely defined (step-father?). Diverse samples; urban (some rural); all regions
<b>5.B.3. Father-daughter relationships change at puberty:</b> Females reported that the onset of puberty and menstruation caused physical and emotional distancing between daughters and their fathers. Girls reported that they no longer felt like "daddy's little girl" and experienced a loss of affection from their fathers. For example, after girls bodies begin to develop, father-daughter tickling became inappropriate, and girls felt that they could no longer sleep next	<i>After seventh grade I kind of grew away from my dad a little bit. I think I didn't want to be tickled by him anymore or get too close and I think it's a lot to do with school and I don't know. After seventh grade that really changed the way I felt about my body, and I guess I felt more comfortable around my mom just because she was more similar to me than my dad . . . Just the fact that dad was a guy, it kind of made me go eehh. It's just</i>	(12, 13, 16, 19)	<b>Very Low Confidence:</b> 4 studies. Moderate to substantial concerns about coherence, relevance, adequacy, & methodological limitations. 2 rich data. Small sample sizes (13 & 10). 1 focused on fathers' roles at menarche. Father vaguely defined (step?). Girls are from unique samples (e.g. had experience adverse experience). Predominantly Hispanic & African-American (some Caucasian); urban;

to their fathers to fall asleep at night.	<i>kind of weird.</i> (Natasha, Caucasian) (47 p39).		West & Northeast.
<b>5.B.4. Brothers are a source of anxiety for girls going through puberty:</b> Brothers were mentioned as source of anxiety, cause for secrecy and embarrassment related to puberty. Brothers teased, humiliated, and insulted their sisters about their periods, PMS and “smelly diapers.” To avoid this teasing, some girls shared how they made an extra effort to hide their menstrual supplies from their brothers.	<i>My pad was huge and I was worried it would bulge... I worried about everything. I especially worried about whether my brothers would know and I did not want to be teased. I'd always make sure I hid my supplies in my room and didn't leave them out in the bathroom.</i> (Celie, 18-21 yrs old, College student at university in the Pacific Northwest) (50 p621-622).	(1, 13)	<b>Very Low Confidence:</b> 2 studies. Minor to substantial concerns about coherence, relevance, adequacy, & methodological limitations. Thin data. Topic not well explored within studies. Brother not clearly defined (i.e., step? Older?). Unclear SES & age information—mostly Caucasian college students from Oregon
<b>5.C.1. The nature of relationships with male peers changes at puberty:</b> Girls described an increased interest in and attention from boys during puberty. But, this was sometimes unwanted (e.g., touching, hugging, teasing). Mothers closely monitored their daughter's interaction with males. Mothers noticed their daughters' increased preoccupation with males & attention on appearances (e.g., wearing makeup, jewelry).	<i>"I had nerve-racking incidents where guys love to look in my backpack. I would snap at them instantly, 'No. Don't do that, please.'"</i> (Stephanie, Caucasian) (47 p38).	(4, 6, 7, 10, 12, 13, 16, 17, 19, 20)	<b>Low Confidence:</b> 10 studies. Moderate concerns about coherence, relevance, adequacy, & methodological limitations. None focused on girls' relationships with boys during puberty. Superficial data. Potentially inappropriate methods for sensitive topic. Hispanic, African-American or Caucasian; urban; all regions.
<b>5.C.2. Friends and peers serve as sources of pubertal information and support:</b> Older or more developed females (and their mothers) were viewed as being able to pass down valuable knowledge about puberty. Girls commiserated with friends about the pains of menstruation and discussed the timing of their next periods. Girls also enjoyed receiving compliments from friends about their appearance at this time (e.g., pretty, skinny).	<i>All of my friends had gotten their period; my best friend Sara and I were the only ones who had not in our friend group. When it finally came I told all my friends and was super-excited. Sadly Sara had still not gotten hers and our no-period club was split up on my account! But she wasn't mad, she was supportive.</i> (Bethany) (50 p623).	(5-9, 11, 13, 16-20)	<b>Moderate Confidence:</b> 12 studies. Minor to moderate concerns about coherence, relevance, adequacy & methodological limitations. Possibility of social desirability bias. Unclear between "peer" & "friend." African-American or Caucasian (some Hispanic); urban; West (2), Midwest (1), Northeast (7)
<b>5.C.3. Female peer relationships can develop a negative dynamic at puberty:</b> Early developers were “implicitly vilified” for their adult-like status by their peers. Developed bodies gave girls social capital, which spawned jealousy within peer groups. Girls felt that developed bodies indicated that girls are ready for or experienced at sex. Fear of gossip and being teased was a barrier to sharing experiences with friends.	<i>Furthermore, they regarded talking to their friends about puberty as putting themselves in a position where the friends could hurt their feelings. One girl reported talking “about who is skinnier and who is fatter” with her friends, and that it made her feel bad “because some girls say I'm fat.”</i> (Mexican-American, low income) (46 p10)	(5, 6, 11, 13, 17, 19)	<b>Low Confidence:</b> 6 studies. Minor to moderate concerns about coherence, relevance, adequacy & methodological limitations. 2 rich data. Unclear difference between "peer" & "friend." 4 high methodological quality. Focus groups not ideal for sensitive topic. None focused on peer relationships. Diverse sample; Urban; 4 Northeastern
<b>5.D.1. Schools are not a major source of puberty information or support:</b> Girls viewed school education about menstruation as inaccurate, negative, and late. Some felt embarrassed to ask questions in schools, and were	<i>One woman indicated that she was dissatisfied with what she was taught in school. But she said, 'I'm grateful I that one hour as inadequate as it was. I would have been lost without it.' She had sought information from</i>	(2, 3, 7, 9, 13-16, 18)	<b>Moderate Confidence:</b> 9 studies. Minor to moderate concerns about coherence, relevance, adequacy & methodological limitations. 3 somewhat rich data. Puberty education not clearly defined. None

## References for Tables 4.4A-4.4E. CERQual Summary of Qualitative Findings

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**Chapter 5 (Paper 2): An in-depth understanding of preparation for and experiences of menarche in low-income, minority girls growing up in Baltimore City, Maryland.**

## **CHAPTER 5 ABSTRACT**

**Purpose:** The main goal of this study was to provide an in-depth look at girls' experiences of menarche and needs for menarche preparation in a low-income and predominantly minority, urban context.

**Methods:** In-depth interviews and a longitudinal series of focus group discussions were conducted with 28 adolescent girls in Baltimore City, Maryland, a high poverty urban center with a predominantly African-American population where little is known regarding girls' current experiences of puberty and menstruation. Transcriptions of audio recordings were analyzed using a combination of inductive and deductive codes that were developed through a consensus coding process.

**Results:** Participants stories highlighted eight main areas central to participants' ability to understand, manage and identify menarche, each of which contributed to how they felt about their first experience of menstruation. These areas included support and information related to: making girls aware of menstruation and that it was something that would happen to them, addressing the uncertainty in timing of menarche, providing clarity about what to do when menarche happens, providing practical advice and instructions for managing menstruation, providing information on the physiological processes of menstruation, addressing the cultural significance of menarche, and offering reassurance that everything is okay.

**Conclusion:** This study adds to the literature on low-income and minority girls' experiences of puberty in the U.S. by providing a detailed look at how various types of information and support influence girls' experiences of menarche. These findings provide a framework for understanding the key aspects of preparedness that influence girls' experiences of menarche and suggest that some basic needs for menarche preparation are not currently being addressed for some girls in this population.

## **CHAPTER 5 MANUSCRIPT**

### **Background**

Starting with menarche, contemporary U.S. women are estimated to ovulate 450 times in their lifetime (Eaton, Pike, Short, Lee, & Trussell, 1994). As a result, females are forced to deal with menstruation in some way for much of their lives—whether managing menstrual blood, choosing the right type of hormonal contraception, dealing with menstrual-related symptoms, or tracking ovulation in order to conceive—making it, undeniably, an integral part of female life, as well as core to their sexual and reproductive health (SRH) (S. Golub, 1992; Kaunitz, 2000). Despite the centrality of menstruation to women's lives, menarche has only recently become recognized as an important public health topic, recognizing that girls too commonly enter into menstruation uninformed, unprepared, and unsupported (Sommer, Sutherland, & Chandra-Mouli, 2015)

Research from multiple contexts from around the world, has found that girls often report having had primarily negative experiences of menarche (M. S. Golub & Catalano, 1983; Herbert et al., 2016; McPherson & Korfine, 2004). Girls who have little knowledge about menstruation and who feel unprepared for it are more likely to report having worse experiences of menarche, negative attitudes about menarche, and also more menstrual distress (Brooks-Gunn & Ruble, 1983; Kieren & Morse, 1992; E. Koff et al., 1982; Ruble & Brooks-Gunn, 1982). Conversely, girls who are knowledgeable about pubertal changes and remember feeling prepared for them report having had more positive experiences of puberty, positive menstrual attitudes and less menstrual distress. A study of 639 girls in grades 5-8 in public schools, 120 of whom were followed longitudinally, found that unprepared girls expressed considerably more negative feelings, fewer positive feelings



and more surprise than prepared girls at menarche (Ruble & Brooks-Gunn, 1982).

Another study of 92 pre-and post-menarcheal girls found that girls who were better prepared and who had received affirming messages about menstruation had more positive experiences, regardless of age of menarche (Rierdan et al., 1983). These studies suggest that adequate education on menarche and menstruation can improve girls' experiences of menarche even for girls who have early pubertal onset, which is often associated with considerable distress and even poor health outcomes.

The emerging evidence indicates that menarche is an even more challenging transition for lower-income and African-American girls than for their more affluent and Caucasian counterparts (Cooper & Koch, 2007; Jackson, 1992; Koch et al., 2009; Orringer & Gahagan, 2010; C. S. A. Scott, D.; Panizo, M.I.; Owen, R, 1989; Teitelman, 2004; White, 2013). African American girls, on average, reach menarche earlier than any other demographic groups (Biro et al., 2006; Chumlea et al., 2003; Susan Y Euling et al., 2008; Krieger, 2015), putting them at increased risk for a host of detrimental outcomes such as victims of peer sexual harassment, depression, eating disorders, substance abuse, and delinquency (Allison & Hyde, 2011). Recent research has also found that lower income girls, regardless of race, and African Americans, regardless of socioeconomic status, have a poor understanding of menstruation and report feeling unprepared for menarche, with scores on both menstruation knowledge and preparedness for menarche that are significantly lower than their European American and higher income counterparts (White, 2013).

Despite the significant health disparities amongst racial and SES groups in the US, the majority of research on menarche and menstruation has been conducted within a

fairly homogenous demographic, that of Caucasian, middle-to-upper class females (Brooks-Gunn & Petersen, 1983; Grief & Kathleen, 1982; C. Roberts, 2015). In an effort to ultimately contribute to improving girls' preparation for menarche and menstruation in low-income and minority populations within the U.S., this study takes an in-depth look at girls' experiences of menarche and their self-perceived needs for menarche preparation in a low-income and predominantly minority, urban context.

## **Methods**

This qualitative study was designed to understand how low-income and minority girls in Baltimore City, Maryland described and interpreted their experiences of puberty and also to identify their psychosocial and information needs at puberty. The underlying goal of the Growing Girls Project research is to contribute to the creation of puberty educational material for girls in Baltimore that is based on the insights and stories gathered from adolescent girls in qualitative research.

The study findings presented here focus specifically on one aspect of puberty, girls' experiences of menarche. As part of a broader look at the entire pubertal transition, participants shared their experiences of menarche—how they discovered it, how they reacted to it, who they told, what they felt when it happened, what they had learned about it prior to it happening, what meaning it had for them, and how they had managed it. Their stories, comments, answers and recommendations were analyzed for patterns and themes germane to the participants' perceived level of preparation and readiness for menarche, highlighting how different aspects of preparedness were perceived to influence their overall experience of menarche.

## **Study Design**

A qualitative study, including in-depth interviews (IDIs) and a series of focus group discussions (FGDs), was conducted with adolescent girls to capture a thorough understanding of girls' experiences of menarche and their self-perceived needs for menarche preparation in Baltimore City, Maryland, U.S.. The Institutional Review Board at Columbia University Mailman School of Public Health approved all aspects of this study.

## **Study Setting**

Baltimore City, Maryland, the setting for this research, is a major urban center in the U.S. with a predominantly African-American and low-income population (U.S. Census Bureau, 2015). About 24% of the population was estimated to be in poverty as of 2015, which is roughly twice the national average (Bishaw & Benson, 2017; U.S. Census Bureau). For those under 18 years old, the poverty rate is even higher—34% (U.S. Census Bureau). Recent estimates find that approximately 84% of students enrolled in Baltimore City public schools are low-income (Baltimore City Public Schools, 2015). As of 2016, 60% of Baltimore residents identified as Black or African American and 83% of students enrolled in the Baltimore public school system identify as African-American (Baltimore City Public Schools, 2015).

SRH outcomes of adolescents in Baltimore are some of the most troubling in the country, including high rates of Sexually Transmitted Infections STIs (including HIV) and teen pregnancy (Brahmbhatt et al., 2014; CDC, 2013, 2015; Healthy Teen Network, 2010). A qualitative study of low-income, African-American adolescents from East Baltimore, a particularly low-income section in the city, identified SRH as one of their

primary health challenges (Mmari et al., 2014). An investigation conducted by Baltimore City Health Department (BCHD), identified support for pubertal transitions as one of the key topics related to the wellness of youth aged 6-13 in Baltimore (Summors, 2015). Given the apparent need for resources and education to increase the likelihood of healthy pubertal transitions by youth in Baltimore, it is important to understand girls' puberty experiences and their needs as they transition through puberty into adolescence.

### **Study Sample**

Adolescent girls, between ages 15-18, were chosen as the participants for this study as they are well positioned to provide insight into the experiences of menstruation in schools. Within this age range, girls are likely to have already experienced menarche, for which average age is 12.43 in the U.S. (Chumlea et al., 2003). They will have also been through the first three years after menarche when menstruation is commonly unpredictable due to continued hormonal maturation (Browner-Elhanan, Epstein, & Alderman, 2003; Elford & Spence, 2002; Treloar, 1967)

A total of 28 adolescent girls living in Baltimore City were purposively selected to participate in this study via youth organizations in Baltimore. Four separate groups of girls participated in a series of four FDGs. Group sizes ranged from four to ten girls per group. Fifteen of these girls also took part in follow-up, individual IDIs.

The number of girls per group and in each FGD session is in Table 5.1. Attendance at FGD sessions was quite consistent. Reasons for non-attendance included conflict with another commitment and lack of transportation. Only one session occurred for Group 5 due to conflicts in the participants' schedules.

<b>Table 5.1: Summary of Participation in Focus Group Discussions</b>						
	<b>Focus Group Discussion Sessions</b>				<b>In-depth Interviews</b>	<b>Total</b>
	<b>Session 1</b>	<b>Session 2</b>	<b>Session 3</b>	<b>Session 4</b>		
<b>Group 1</b>	4	3	4	4	3	4
<b>Group 2</b>	9	10	7	10	5	10
<b>Group 3</b>	5	5	3	4	2	5
<b>Group 4</b>	5	4	4	4	1	5
<b>Group 5</b>	4	-	-	-	4	4
<b>Total</b>	<b>23</b>	<b>22</b>	<b>18</b>	<b>22</b>	<b>15</b>	<b>28</b>

## Procedure

Contact with adolescent girls was facilitated by youth organizations in Baltimore City. Organizations that serve lower-income and predominantly African-American girls aged 15-18 in Baltimore City, and that do not already provide programming specifically related to pubertal development, were purposively selected. All adolescent girls between the ages of 15-18 involved in the partnering organizations were invited to participate in the FGDs.

FGDs involved four separate sessions that took place over the course of four consecutive weeks, allowing trust and rapport to develop (Spradley, 1979). Prior to all data collection activities, participants provided oral assent and, if under 18 years of age, parents/guardians also provided written consent for them to participate. Participants used coded identifiers throughout the duration of the study. The data were de-identified after all data collection procedures were completed.

Data were collected on-site at the participating organizations' locations. The research team and study participants mutually agreed upon dates and times of meetings. FGD sessions lasted between 1.5-2 hours. To offset some of the costs of participation (e.g., transportation costs), all adolescent participants were given \$10 per FGD session,

and their names were entered to win a \$50 prize, which was randomly drawn on the fourth week of meetings with each group of girls.

Two members of the research team were present at each FGD. One moderated the discussion and the other took field notes, recording both verbal and non-verbal information. FGDs and IDIs were audio-recorded, with the permission of participants. Prior to data collection, all members of the research team were trained on: the objectives of the study, data collection procedures, techniques for interviewing and leading group discussions (including how to use probes during FGDs and IDIs), human subjects' protection, handling distress and conflict within FDGs, and disclosure of child abuse or threats within the interviews or groups. As co-constructors of the data, all members of the research team worked actively, throughout the study, to reflect on and discuss how their background, knowledge, and own experiences may have shaped their interaction with study participants, as well as their interpretation of the data (Creswell, 2007; J. Maxwell, 2013; Ulin, 2005).

For each FGD session, semi-structured guides were used, consisting of somewhat structured activities, (e.g., brainstorming, drawing, listing) as well as open-ended discussion questions that were designed to appeal to adolescents and stimulate interaction (Bernard, 2013; Ulin, 2005). Each session involved an educational component addressing questions the girls had anonymously submitted or asked during an activity. Throughout data collection, the researchers attempted to create an equalizing and dynamic environment where girls were empowered to contribute to understanding that would support puberty educational material to benefit girls growing up in Baltimore.

The four weeks of FGDs started with introductions, a review of confidentiality and privacy policies, ground rules for respectful interaction, and an icebreaker activity. Initial FGD activities focused on defining and describing puberty and menstruation. In the first session, the participants also completed a 10-minute questionnaire assessing sociodemographic information, current puberty stage (using the Puberty Development Scale) (Petersen et al., 1988), timing of puberty, Measure of Puberty Preparedness (White et al.), and brief sexual and reproductive histories. The second FGD session explored what girls had learned about puberty and menstruation and from whom/where. In this session, girls also wrote individual narratives of their own menarche experience. In the third session, girls were encouraged to discuss their perspectives on gender expectations and sexual development at puberty and their psychosocial and informational needs related to puberty. In the final FGD session girls were asked to discuss their experiences of puberty and menstruation in school and to make recommendations for a puberty education curriculum.

The semi-structured IDI guides were developed to go more in-depth on the same topics covered in the FGDs. Questions asked about girls' personal experiences of puberty and menstruation, exploring topics that emerged in the FGDs in further detail. The semi-structured design of the data collection tools facilitated comparison across groups, while still allowing for flexibility to let participants guide the discussion based on their experiences (Bernard, 2013).

## **Analysis**

Audio recordings of FGDs were transcribed by an online transcription company specializing in transcriptions for academic research (HomePro Transcribing Company).

For accuracy, a member of the research team checked each transcript against the audio recording and corrected any discrepancies. Transcripts and field notes were analyzed using ATLAS.ti qualitative software (Scientific Software Development GmbH, 2016). The iterative and systematic analysis process began with the reading of transcripts, write-ups from structured activities, and field notes to develop a set of inductive codes based on salient ideas and repeated themes that emerged from the data (Charmaz, 2006; J. Maxwell, 2013). Deductive codes were also created based on the semi-structured guides used in data collection (Saldana, 2013). To finalize the codebook, two coders met regularly to discuss discrepancies between codes, and to continually revise codes until a consensus was reached on the coding scheme. Thirty percent of the transcripts were double-coded to ensure consistency across coders. The final codebook contained 57 codes hierarchically organized into 12 main categories.

Codes that were used capture girls' stories of menarche, including the support and information for menarche provided to and recommended by participants. A matrix was used to map out the coded data onto the individual participants using their de-identified code names. A highlighting process was also used to further explore and categorize themes and patterns (Krueger, 2015). Additionally, diagrams were then utilized to visualize how the themes were connected and fit together (Creswell, 2007; J. Maxwell, 2013). During analysis, codes and preliminary findings were discussed with the research team to ensure that interpretations of the data were rooted in the data (Ulin, 2005). The quantitative data from the questionnaire were analyzed in Excel (Microsoft, 2011).



## **Results**

### **Participant Characteristics**

The average age of menarche in the sample was 11.5 years, which is slightly lower than national estimates, but is in line with national averages for African-American and Hispanic populations in the U.S. (Chumlea et al., 2003). The average age of the participants at the time of data collection was 15.6 years.

All participants self-identified as a racial or ethnic minority. Sixty-four percent identified as African American, 14% as African-American plus another race, and 21% choosing “other”, and 4% did not respond to the question. Thirty-two percent of the sample identified as Hispanic or Latino.

Prior to de-identifying the data, zip codes of participants were analyzed to assess the socioeconomic status of participants. Participants came from nine different zip codes across the city, representing Northeast, Northwest, and Southeast parts of the city. Using data from 2011-2015 American Community Survey 5-year Estimates, the average poverty rate of the nine zip codes was 22.3%, mirroring the poverty level of the city overall (U.S. Census Bureau).

### **Findings**

The results of the analysis are presented in two parts. The first part provides an overview of the participants’ experiences of menarche including their self-perceived preparation of menarche, their sources of menarche preparation, views on timing of preparation, and how they felt at the time of their first period. Based on the participants’ experiences, the second part provides a framework of the types of information and support girls in this context need at menarche. All the findings are supported through

multiple quotes, provided in Tables 5.2A-5.2K, that highlight the participants' experiences as well their recommendations for what should be provided to girls growing up in Baltimore today. Participant IDs are provided with corresponding quotes. The first part of the ID number indicates the group number and the second number indicates the girl's identifier within the group; for example, ID#1.2 represents girl number 2 from the first group.

### **Part 1: Overview of participants' experiences of menarche**

#### **Self-Perceived Preparation for menarche (Quotes provided in Table 5.2A):**

Participants' perceptions of how prepared they had felt for menarche revealed a range of levels and types of preparation across the study sample. A couple of participants expressed feeling satisfied with the preparation they had received for menarche [Quote A1-A2], but many expressed not having had enough information and not having felt ready for menarche [Quote A3-A5]. Results from the quantitative measures of preparation for menarche, shown in Table 5.3, provide additional insights into the types of preparation participants did and did not have (White, 2013).

Table 5.3: Measures of Menarche Preparation from Questionnaire						
	Strongly Agree	Agree	Neither Agree/ Disagree	Disagree	Strongly Disagree	Non-Response
I was given helpful information about periods before I got my first one	18%	50%	11%	11%	7%	4%
I felt ready when I got my first period	11%	7%	25%	29%	25%	4%
I knew what to do when I got my first period	18%	29%	18%	18%	7%	11%
I understood what was happening to my body when I got my first period	14%	25%	18%	29%	7%	7%
I knew what to expect before I got my first period	11%	21%	29%	29%	7%	4%
I had enough stuff (pads/tampons) when I got my first period	43%	18%	4%	18%	14%	4%

I knew how to use pads or tampons when I got my first period	18%	39%	18%	7%	14%	4%
I couldn't wait to get my first period	7%	7%	7%	14%	61%	4%
<b>Total percentages</b>	<b>17%</b>	<b>25%</b>	<b>16%</b>	<b>19%</b>	<b>18%</b>	<b>5%</b>
Measures of Preparation for Menarche are from: White, L. R. (2013). The Function of ethnicity, income level, and menstrual taboos in post-menarcheal adolescents' understanding of menarche and menstruation. <i>Sex Roles</i> , 68, 65-76.						

These descriptive statistics show that perceived levels of preparation varied depending on the type of preparation. For example, 43% of the sample strongly agreed with the statement, “I had enough stuff (pads/tampons) when I got my first period. However, 29% of the sample disagreed with the statements, “I felt ready when I got my first period” and “I knew what to expect before I got my first period”.

One participant noted during her individual interview that in the study’s focus groups was the first time she had heard about other girls’ experiences of menarche, and after hearing their stories realized that girls needed more information about the topic. [Quote A6] Even though participants unanimously agreed that more preparation was needed for menarche, they also questioned whether menarche was something that is even possible to feel ready for or whether having education on it would even help given that periods are not something you can prevent. [Quote A7-A8] A few participants pointed out that even though they had heard about what menstruation was prior to menarche, they had forgotten what they knew when it had actually happened to them for the first time. [Quote A9]

### **Sources and timing of preparation for menarche (Quotes provided in Table 5.2B):**

Mothers were unambiguously the main source of preparation for menarche, and were viewed as the most critical source of information and support on menarche and menstruation for girls. [Quote B1-B2] However, participants explained that

conversations about menstruation can be difficult with mothers, depending on the girls' relationship with them. [Quote B3] Others pointed out that these particular topics can make parents or daughters nervous or uncomfortable. [Quote B4-B6] Participants also felt like sometimes parents did not want them to have certain types of information, especially when pictures of bodies were be involved. [Quote B7-B8]

Participants without mothers, or those who had strained relationships with their mothers, appeared to be at a disadvantaged in terms of the information and support available to them about menarche. [Quote B9-B10] Both as a substitute for and a supplement to mothers, participants also mentioned multiple additional sources of information about menstruation, such as doctors, other female family members (e.g., aunts, sisters, and cousins), teachers, guidance counselor, the Internet, and books. [Quote B11-B15] However, non-maternal sources of information about menstruation were mostly mentioned as having played a role only once menstruation had already begun. Fathers typically only found out about menarche via the mother figure and, though sometimes mentioned by participants, were primarily not seen as a helpful source of information and support for menarche, other than for buying menstrual supplies [Quote B16-B18].

Ultimately, participants felt that all girls needed to have people they could talk to openly with and who could provide them with trusted information about these topics. [Quote B19-B22] Some participants felt strongly that their sources of information and support on this topic needed to be female and also someone who was “younger”, though not everyone felt this way. [Quote B23-B25] It is noteworthy that participants seemed to enjoy participating in this study, discussing these topics and hearing about the other

participants' experiences. Each group of participants expressed a desire to continue on with the regular meetings following the four weeks of data collection, even without the incentives. [Quote B26-B27] They also often recommended that other girls would benefit from participating in something similar. [Quote B28]

When asked about what they had learned about menstruation in school, most participants reported that they had not received any formal information about menstruation, pointing out that if education on puberty was provided at all it was limited to learning about body parts, did not address menstruation, was of poor quality, and was offered too late to prepare girls for menarche. [Quote B29-B35]. Only one participant was pleased with the health information that she had learned in school, explaining that Planned Parenthood had come to her school and taught classes in 5<sup>th</sup> and 6<sup>th</sup> grade. However, when she explained what information they had provided, she noted it was primarily focused on pregnancy and STIs. [Quote B36] Participants shared the opinion that more information should be provided to girls about menstruation and felt the "*best way is to teach it in schools*" because providing it in school was the only way to guarantee that everyone got the information they needed [Quote B37-B39]. A reoccurring suggestion from participants was that schools should involve parents in the education on puberty and menstruation, recommending that parents could join for some of the classes. [Quote B37-B43]

Even outside of school, the majority of participants' information and support for menstruation came after menarche, starting right at the point of first menstruation, with very little instruction having come before. However, participants overwhelmingly felt that girls should be informed about menstruation prior to menarche so that girls are not

scared the first time they menstruate. [Quote B44-B47] Even though participants wanted girls to be informed about menstruation prior to menarche, they simultaneously warned that young girls should not be told “*too much information, too soon.*” [Quote B48] When asked to elaborate on what “*too much*” included, they said, that before menarche just provide information on “*the basics*” of menstruation, and that information about sex should be given when girls are older. [Quote B49] Participants expressed concern that providing too much information too soon would needlessly scare younger girls and some participants said that, in some ways, they were glad they had not know too much about menstruation beforehand. [Quotes B50-B51] However, participants also felt that providing on-going education on menstruation would be helpful as they pointed out that what they wanted to know, as well as their level of interest in the topic changed as they got older. [Quotes B52-B53]

**Emotional response to menarche (Quotes provided in Table 5.2C:** The majority of participants described having felt “*scared*”, “*nervous*”, “*horrified*”, “*confused*,” “*weird*,” “*shocked*,” or “*mad*”, about menarche. A couple participants expressed having had positive or neutral feelings about menarche, such as feeling: “*happy*”, “*excited*” and “*normal*”. While a few shared ambivalent feelings, saying things like, “*I was just normal, but nervous*,” “*I wasn’t upset, but I was crying*” or “*it was okay, but I was still kinda scared.*” One participant pointed out that she “*didn’t know how to feel*” her first time menstruating. [Quote C1] Though most described their experiences of menarche in negative terms, the details surrounding why their experiences were negative varied among participants.

A comparison of two participants' particular experiences is illustrative of the nuances found in menarche experiences within the sample. One participant who reached menarche just before turning 12 explained that she was "*scared*" and even "*shocked*" when she got her period, despite having talked about periods with her mother beforehand. She explained that her initial shock was related to not knowing whether the timing of her menarche was normal because she "*didn't know anyone else with a period besides an adult*" [Quote C2] Another participant, also age 12 at menarche, similarly described feeling scared when she got her period for the first time, but for her, the fear, stemmed from not having known about periods prior to menarche and was of a much greater intensity than the former participant. As a result of not knowing why she was bleeding from her genitals, she initially assumed that she had done something wrong, and was afraid to go to her mother for help. [Quote C3] As these two stories illustrate, feeling fear at menarche is not simply a result of having not known about menstruation in advance, though that is one important reason, but that there are different layers of preparation (or lack thereof) that are salient to girls' experience of menarche.

## **Part 2: Information and support needed for menarche preparation**

The participants' ranging and complex stories of menarche and preparation for menarche revealed commonalities in the types of information and support that were salient to girls' experiences of menarche in this population. These commonalities provide a framework for understanding the main aspects of menarche preparation pivotal to shaping girls' experiences of menarche in this setting. The themes are organized around the eight key questions: 1) What is menstruation?, 2) What is this blood?, 3) When will

menarche happen to me?, 4) What do I do when I find menses for the first time?, 5) How do I take care of myself when menstruating?, 6) Why do girls menstruate? 7) How does menstruation work?, and 8) Am I going to be okay? Most participants felt as though they had information and support related to at least one of these questions prior to menarche, though none felt prepared in all areas. An overview of the participants' experiences with menarche in each of the eight aspects of menarche preparation is provided below.

***What is menstruation? (Quotes provided in Table 5.2D):*** One of the most fundamental factors influencing girls' initial experience of menarche was whether or not they had heard about menstruation prior to going through menarche. Though most participants claimed to have had at least heard of menstruation prior to their first experience with it, some girls in the sample had not. [Quote D1-D2] Without a basic awareness of menstruation, menarche was described as a relatively traumatizing event, using terms such as "*horrifying*" or "*terrifying*" to describe it, because, at the time, it was unclear what was going on. Most of the participants in this situation reported having cried, or having wanted to cry. [Quotes D3] One of the participants realized in retrospect that her mother had tried to give her hints about menstruation, but she had not caught on at the time because her mother had only referred to it vaguely as "bleeding", and had not explicitly mentioned menstruation [Quote D4]. In contrast, most participants that had heard of menstruation prior to menarche had been directly exposed to it through witnessing and discussing other women's menstruation. [Quote D5-D7].

What's more, part of knowing what menstruation is, was understanding that it is something that every female is at "risk" for. Some participants explained that though they



had known about menstruation generally, they had not realized it would happen to them specifically. [Quote D8-D9]

**When will menarche happen to me? (Quotes provided in Table 5.2E):** A reoccurring theme across groups was that menarche is impossible to prepare for because the exact timing of menarche is not possible to predict [Quote E1] Participants felt that menarche was an inherently shocking or surprising event due to its unpredictable nature. [Quote E2] In retrospect, a number of participants used superstition to explain the timing of their menarche, assuming that something they (or someone else) had done had led to the misfortune of having started their period [Quote E3-E5] Participants did not seem to have an understanding of when menarche occurred within the sequence of pubertal development. They knew it generally happened sometime in early adolescence, but were sometimes surprised when they got it earlier than expected [Quote E6-E7] Participants also had a sense that girls start their periods around the same age as when their mothers' had gotten theirs, and generally gaged the normalcy of their age of menarche on their mothers' age of menarche. [Quote E8-E10] Some participants pointed out that their mothers had made a point to talk to them about menstruation before they reached the age that their mothers had started their periods, though, even for them, the timing was still confusing [Quote E11-12] Participants who got their period before when their mothers had expected tended to not have been prepared [Quote E13]

Notably absent from discussions were concerns about differential timing of menarche amongst peers. When asked in the questionnaire, "Do you think your

development is any earlier or later than most girls your age” 52% of participants felt their development was about the same time as their peers (Table 5.4). While menarche did not

Table 5.4: Responses to the Questionnaire item asking, "Do you think your development is any earlier or later than most girls your age?"	
much earlier	11%
somewhat earlier	15%
about the same	52%
somewhat later	15%
much later	4%
NR	4%
Questions from Puberty Development Scale: Petersen, Ann C, Crockett , L, Richards, M, & Boxer, A. (1988). A self-report measure of pubertal status: Reliability, validity, and initial norms. <i>J Youth Adolesc</i> , 2.	

appear to be a topic that participants discussed with their peers [Quote E14], some were keenly aware of differences in experiences among their peers, as is indicated by the repetition of phrases such as “*everyone is different.*” [Quote E15-E16] However, there was no indication that these differences were problematic for participants.

Additionally, some participants recalled having felt “*off*” or “*bad*” during the days prior to menarche, which in retrospect they realized was a warning sign that their first period was about to come. [Quote E17-18] Those that had pain at menarche, described it as physical pain such as cramps, back pain, and/or headaches, and some also described feeling emotional, lethargic, extra hungry, or weird. Though experiencing cramps was a common occurrence for participants at menarche, not all participants experienced symptoms with menarche. [Quote E19-E20] These participants pointed out that without any other menstrual symptoms it was jarring when their period came with no warning.

***What is this blood? (Quotes provided in Table 5.2F):*** Being able to accurately identify the blood at menarche as menses was an important factor in shaping girls’ initial

reactions to menarche. Participants who were unaware of menstruation were clearly unable to identify menarche, but, also, of the participants who had known about menstruation, many explained that they had not initially identified the blood as menses. In a few instances, the issue with initial identification was about whether or not what they had seen was actually blood. A participant explained that because the color of her menses at menarche was brown instead of red, she had not initially realized it was blood [Quote F1] However, for most of the participants in this position, they simply did not realize that the blood coming from their genital area was due to menstruation, which they explained was a “*scary*” or, at best, a “*confusing*” experience. [Quote F2-F3] These participants explained how they had initially mistaken the sight of blood as an indication of a serious health problem, one initially thinking she was urinating blood. [Quotes F4-F7].

Conversely, close to half of the participants were able to accurately identify menarche, which they explained was because they had simply been told that it would happen to them prior to it happening. [Quote F8-F10]. Those who could immediately recognize the blood as menses tended to describe menarche as something that made them “*nervous*” or that was “*strange*” or “*weird*”, but not as something traumatizing.

### **What do I do when I find menses for the first time? (Quotes provided in Table**

**5.2G):** Beyond being able to identify menarche, participants shared that it was important to then know what to do about it, how to take care of that immediate situation [Quote G1-2]. One of the most common pieces of advice the participants had for pre-menarcheal girls about what to do at menarche was to “*tell someone what’s going on*”. [Quote G3] This advice reflects what the majority of participants had themselves done at menarche—

immediately sought out help from an adult. Though participants stressed that young girls could get help from anyone, they overwhelmingly first turned to their mothers, or whoever was serving as the mother figure in their lives. [Quote G4-G6] In the absence of the mother, participants got help from other female family members (i.e., aunts, sisters, grandmother, stepmothers, etc.) [Quote G7]. Fathers were only mentioned as a source for immediate assistance at menarche in cases where the mother was not available [Quote G8]. The few participants who turned to their fathers felt that their fathers did not know how to properly handle the situation. [Quotes G9] Rarely were friends mentioned as sources of support at menarche, as they were described as being just as confused about what to do as the participants. [Quote G10] Only four participants in the sample did not immediately turn to an adult for help during menarche, and instead waited until it was apparent to them that they absolutely needed help (i.e., the blood was not stopping or their cramps were severe). [Quote G11]

After informing an adult, the most immediate course of action in response to menarche was to take care of the blood. At the first sight of blood, a couple participants used toilet paper as a temporary solution until they were able to notify an adult. [Quote G12-G13]. Most, however, were immediately provided pads by the adult who was there assisting them, though retrieving pads often requiring a special trip to the store [Quote G14-G16] Some participants reported needing significant help with applying the pad for the first time [Quote G17-G18], but most said they figured out how to use it on their own, claiming it was a relatively straightforward and easy process. [Quote G19-G20] Still, most participants suggested that girls need more thorough instruction on how to use menstrual supplies prior to menarche, recommending “demonstrations” or “games” or

“classes” for young girls on how to use a pad [Quote G21-G22] Only two participants expressed having felt confident in what to do the first time they go their period [Quote G23].

**How do I take care of myself when menstruating? (Quotes provided in Table 5.2H):**

Participants felt like the biggest challenge about menarche and menstruation overall was the increased responsibility to “*keep yourself clean*” or “*how to clean your private stuff*.” [Quote H1-H3] They expressed sincere concern that many girls in Baltimore have issues with odor when on their period, and therefore assumed they had not been taught to properly take care of themselves and their period. [Quote H4-H8] Participants believed that the key steps to good menstrual hygiene were to shower regularly (sometimes taking multiple showers a day), and to change pads frequently, with one participant suggesting changing it once an hour. [Quote H9-H11] Many participants also shared that they always carried wipes or perfume with them, which they used to stay clean and smell good when menstruating [Quote H12-H13]. Some used special cleaning products for the vagina, while others had heard that things like douching are not good for you. . [Quotes H14-H15] The participants’ emphasis on hygiene echoed the messages they had received at menarche on the importance of cleanliness. [Quotes H16-H17] Participants explained that the emphasis on hygiene and cleanliness was critical to avoid stinking, which was portrayed as particularly disgraceful for girls as boys would not like girls who stunk. [Quotes H18-H20]

Participants felt that another important aspect of preparing girls for menarche was to prepare them to manage the regular occurrence of menstruation that was to follow.

Some participants shared that they had not initially known that menarche would mark the beginning of a pattern of regular menstruation in their lives. [Quote H21-H23] It took a few times of being surprised by their period before they understood that it would regularly return. [Quote H24] This particular issue tended to be mentioned by participants who were young (10 and below) when they started menstruation, though not exclusively, and was true even for girls who had known about menstruation prior to menarche. Similarly, at menarche participants remembered initially having a lot of questions about how long their periods would last. One participant was initially worried that she would be bleeding for a whole month. [Quote H25].

Participants emphasized the importance of avoiding menstrual accidents, especially for newly menstruating girls whose periods were likely to be unpredictable at first. A few participants shared that they had been concerned about the irregularity or heaviness of their period when it first started, and in turn had sought out medical advice. [Quote H26-H27] Based on their own experiences, they wanted younger girls to know that their period might change at first and that they should “*always be prepared*” by having pads on hand because it is “*better to be safe than sorry.*” [Quote H28-H29] Some participants felt that girls needed to be told “*how long you use a pad for*” and one participant recommended using two pads at once [Quote H30] To prevent embarrassment from accidents, participants also suggested girls bring extra clothes or wear dark colored pants, and avoid wearing their nice underwear on days when they are menstruating [Quotes H31-H32]. Participants also explained that much of what they had learned about managing their menstruation on a regular basis came from experience, sharing that they had never really been explained what “heavy” and “light” meant or how to pick out the

right pad absorbency. A few participants shared how she was nervous when she first started that other people would be able to see her pad. [Quote H33-G34]

Once menstruation became more regular, participants felt that it would be helpful for young girls to learn how to “track their periods”; however, few in the sample said they themselves had ever successfully tracked theirs. [Quotes H35-H38] Throughout data collection, participants were interested in questions about how to predict their periods and whether or not certain aspects of their period were normal (e.g., length and frequency of their period). [Quote H39] What foods to eat and to not eat when menstruating was a common topic of conversation amongst participants. [Quote H40-H43]

Additionally, many participants mentioned that menstrual cramps were sometimes a challenge to manage at first and that they wished they would have been given more warning about them. [Quote H44]. Others had been warned about menstrual cramps, but were surprised by the severity of the menstrual pain. [Quote H45-H46] Many participants provided practical advice for how newly menstruating girls could ease the pain of menstrual cramps. [Quote H47-H48] One common suggestion was to take over the counter pain medication, and to do so from the beginning of a period so as to prevent cramps from developing in the first place. [Quote H49] Participants also warned that even if you do not initially have cramps, they may come later. [Quote H50-H51] In addition to cramps, some girls felt that when menstruating, or right before, they got tired, hungry, moody, and just wanted to be alone. [Quote H52] They pointed out that menstruation has affected their “*lifestyle*”, sometimes impacting what they can and want to do. [Quote H53-H54]

**How does menstruation work? (Quotes provided in Table 5.2I):** This aspect of preparedness for menarche involved knowing about the reproductive system and the physiological mechanisms behind menstruation. None of the participants claimed to have had a grasp on this type of information prior to menarche. In fact, most of the sample displayed only a rudimentary understanding, of how menstruation worked. [Quotes I1-I3] Some participants used words like “*uterus*”, “*eggs*”, and “*hormones*,” and though they seemed to get the gist of how it worked, they were not confident with exactly how to use the words and what they had to do with menstruation. [Quote I4-I7] This was even true when it came to the relationship between menstruation and pregnancy.

Participants generally knew that menstruation meant you could get pregnant, but they did not necessarily know how the two were connected, beyond viewing menstruation as a sign of a successfully avoided pregnancy. [Quote I8] However, when asked about the connection between the two, one participant shared that main thing to know about them is that you should not have sex while in the process of menstruating. [Quote I9] During the focus group sessions, participants were interested to know more about the relationship between pregnancy and menstruation [Quote I10-I11]. The one participant who had already had a child said she had never been told how menstruation was connected to pregnancy.

According to multiple participants, participating in this study was the first time they had learned the details about how menstruation worked. [I12] Throughout data collection, it became clear, through the participants’ deep interest in the information being provided, that they were eager to learn this information and that they did not previously have a good understanding of the physiological processes of menstruation or



the anatomy of the reproductive system prior to data collection. When asked to provide recommendations on how to prepare girls for menarche, participants regularly suggested educating them on things like “*how a period works*” and “*learning about your body*” because they felt girls wanted “*to know what's going on*”.

**Why do girls menstruate? (Quotes provided in Table 5.2J):** For the most part, the meaning of menstruation was not addressed with participants until after they reached menarche though for some it was an important part of shaping how they felt about the experience [Quote J1] At menarche, the majority of participants were told that menarche was a sign of “*growing up*” and “*becoming a woman.*” [Quote J2-J8] And, how parents (and other adults) reacted to the participants’ menarche was often how they came to understand that the event had a bigger meaning. Multiple participants talked about how they were confused by their parents’ dramatic reactions to their menarche, sometimes crying in response, because participants said they did not understand what the “*big deal*” was [Quote J8-J12] Participants were vocal about disliking when adults shared the news of their menarche with other people [Quote J13-J15] In fact, participants wanted to warn younger girls that their parents would likely tell other people, whether they wanted them to or not. [Quotes J16] One participant specifically warned girls to not tell their fathers about menarche because her father had shared the news on social media, which she explained was incredibly embarrassing for her. [Quote J17] However, the few participants whose parent’s “celebrated” their menarche with gifts explained that these gestures made them feel supported. [Quote J18-J19] Other participants who had not received anything at menarche said that getting something would have made them feel

special. [J20] On the contrary, some participants said their mothers did not really have much of a reaction to their first period. [Quote J21]

Outside of “*growing up*”, some participants shared that they had heard that menstruation is how the body cleanses itself. [Quote J22] Many participants also viewed menarche as the start to when girls can get pregnant, which, in some cases, meant that after menarche they were told to be “*careful*” with boys. [Quote J23-J25] Related, participants said that one of the only positive aspects of menstruation was that it was a sign that you were not pregnant. [Quote J26] Similarly, a few participants viewed menarche as a sign that a girl was indeed already sexually active. [Quote J27] One participant, whose mother had died when she was very young, shared that her father had been upset when she first started her period because he was worried it meant she had already been sexually active. [Quote J28] Still, others felt that menarche did not have a meaning at all. [Quotes J29-J30]

Still, despite these dominant meanings, many participants were still unsure about what the meaning of menstruation was and explained that they still did not really understand why women must menstruate. [Quotes J31-J32] However, most of their remaining questions about the meaning of menstruation were more about why things are the way they are and less about the significance or role menstruation has in society. They asked things like “*why did I have to be a girl?*”. [Quote J33] For many participants the ultimate reason for menstruation was linked to the Bible story of Adam and Eve and how women were cursed with menstruation for Eve’s original sin. This origin story was also alluded to multiple times throughout data collection, especially in the names participants

used for menstruation calling it things like the “*devil*”, “*demon*”, “*curse*”, or “*Eve*”.

[Quote J34-J35]

**Am I going to be okay? (Quotes provided in Table 5.2K:** Having information and support in any of the above areas contributed to providing reassurance to newly menstruating girls; however, explicit statements of reassurance that menarche and menstruation were natural, normal and happened to everybody were clearly appreciated by participants. [Quote K1] In response to menarche, many of the participants were told “*this is normal*” and is “*something every girl goes through*” pointing out that even “*your mother went through this*”. [Quotes K2-K5] Participants too stressed the importance of reassuring girls prior to menarche that, when they saw blood, to know that nothing was wrong with them, recommending phrases like, “*Don’t panic, you’ll be fine*” and “*don’t be scared, this is normal*”. [Quotes K6-K12] However, only one participant strongly felt that menstruation was a sign of good health, and she explained that this is something she had come to understand in health class. [Quote K13] Though other participants hinted at viewing menstruation as a sign of health, this was still something some were unclear about, as indicated by the questions participants asked during data collection. [Quote K14] The same participant who confidently expressed that menstruation is a sign of health, also suggested to young girls to not be ashamed of their periods and to have “*period confidence*”. [Quote K15] In the same vein of building confidence, a few participants wanted to let younger girls know that menstruation is a “*learning experience*” and something “*you have to work through*” [Quote K16-K17]. A common suggestion participants gave to better prepare young girls for menarche was to provide

the opportunity to “*hear other women’s stories*” about menarche and menstruation.

[Quote K18-K19] They felt that doing so, would help them understand that it is normal, it happens to everybody, and everybody’s experience is unique.

## **Discussion**

The main goal of this study was to provide an in-depth look at girls’ experiences of menarche and needs for menarche preparation in a low-income and predominantly minority, urban context. Participants’ provided rich stories of how their experiences of menarche unfolded, and in doing so revealed a nuanced picture of the practical and concrete needs of girls at menarche in this setting. A range in experiences of menarche and level of preparation for menarche was found in this sample, though participants mostly described their experience of menarche in negative terms emphasizing that it was a scary and/or confusing occurrence. A few participants reported having felt prepared for menarche, though even more reported having not known about menstruation prior to menarche. Most participants, however, were somewhere in between, having heard about menstruation prior to menarche, but also with large gaps in critical information remaining at the time of menarche.

Commonalities in the participants’ stories highlighted eight main aspects of preparation central to participants’ ability to understand, manage and identify menarche, each of which contributed to how they felt about their first experience of menstruation. These areas included support and information related to: making girls aware of menstruation and that it was something that would happen to them, instructing them on how to identify menses the first time it happens, addressing the uncertainty in timing of

menarche, providing clarity about what to do when menarche happens, providing practical advice and instructions for managing menstruation, educating on the physiological processes of menstruation, addressing the meaning of menarche, and providing reassurance that everything is going to be okay.

Overwhelmingly participants felt that girls in Baltimore needed more menstrual related information and support, in at least some of the eight domains of menarche preparation. These results support prior research pointing to a lack of menarche preparation and education on menstruation in the U.S., especially for low-income and minority girls (Herbert et al., 2016; Orringer & Gahagan, 2010; C. Roberts, 2015; C. S. A. Scott, D.; Owen, R.; Panizo, M.L.; , 1989; Teitelman, 2004; White, 2013). The accounts of menarche from participants in this study echo the findings of research from over 30 years ago—that girls report that menarche is a predominantly scary experience, even traumatizing in some cases (E. Koff & Rierdan, 1995; E. Koff et al., 1982; E. Koff et al., 1990; Rierdan & Koff, 1990; Rierdan et al., 1983). Also, similar to this body of prior literature, girls in this sample who had some level of preparation for menarche tended to describe the experience with less extreme negative terms (i.e., horrifying, traumatizing, etc.) and also tended to display more self-efficacy in identifying and managing menarche. Research from developing country contexts, suggests that learning about menstrual hygiene management and the physical processes of menstruation can reduce menstrual shame and stigma, and in some cases, even improve educational outcomes (Hennegan & Montgomery, 2016; UNESCO, 2004) Additional research is needed to understand the pervasiveness in lack of information and support for menarche

and menstruation in the U.S. context and the role it plays in shaping girls' self-perceptions and self-efficacy in managing their menstruation.

The most lacking area of menarche preparation in this sample, was information related to the physical mechanisms of menstruation. Similar to previous studies, participants displayed little knowledge of the female reproductive system and the physiological process of the menstrual cycle. Notably, some participants in this sample claimed to have not been informed about menstruation prior to menarche. And, most participants, aged 15-18 at the time of the study, indicated a lack of understanding about the relationship between menstruation and pregnancy. Lack of information in this area is particularly concerning in a population overly burdened by unwanted teen pregnancies and sexually transmitted infections (CDC, 2013, 2015; Healthy Teen Network, 2010). Additional research is needed to better understand the relationship between menstrual education and preventing unwanted teen pregnancies, especially in teens who do not have regular access to contraception.

Participants, specifically, expressed a desire for schools to provide instruction on menstruation, prior to menarche, especially because they felt that not all girls were getting this information at home. Based on participants stories about the health education they had received in school up to that point, most had received, at least some, information related to pregnancy and STI prevention though no one in the sample reported having learned about menstruation prior to menarche in school. This finding suggests that though students in Baltimore appear to be receiving critical information on sex and HIV education, which is mandated in the state of Maryland, they are not being provided with the foundational information about puberty and menstruation (Guttmacher Institute,

2017). Prior work has shown that puberty is often an overlooked area of comprehensive sexuality education, and is specifically an overlooked topic of child and adolescent wellness in Baltimore City (Koch et al., 2009; Summors, 2015).

Participants emphasized the importance of providing age appropriate information on menstruation as they felt it was important to not scare girls about something they did not have any control over (i.e., that they inevitably were going to get their period whether they liked it or not and they would not be able to predict when menarche would happen). Recent research assessing the effect of an online puberty educational game on body image and self-esteem found that pubertal status moderated the effect of the program for multiple outcomes measured, suggesting that puberty education was more effective when aligned with the timing of development (Cousineau et al., 2010). Additionally, the cognitive development of girls prior to menarche would be important to consider when providing education on menarche in schools. To reach children prior to menarche, education would need to be provided roughly between the ages of six and eleven, when children tend to be concrete, rather than abstract, thinkers (Hawthorne, 2002; Piaget, 1996). Therefore, educational material and interventions should consider both the pubertal status and cognitive development of children, which could prove challenging to implement in a school setting where programming is often administered by grade level. The findings reported here highlight the key content that needs to be considered when preparing girls for menarche, but do not adequately address when and how this information and support should be provided. Additional research is needed to assess what types of programs and interventions are effective at preparing girls for menstruation in different settings, and also when and how they should be provided

Findings from this study are also consistent with prior evidence that emphasizes the importance of mothers in preparing their daughters for menarche, and that girls without mothers are at risk of entering menarche unprepared (Cooper & Koch, 2007; Hawthorne, 2002; E. Koff & Rierdan, 1995; Teitelman, 2004). In this sample, when mothers did not provide information on menstruation prior to menarche, girls received the information too late (i.e., after menarche) or are not at all, especially pertaining to information on the reproductive system. Research from similar populations has found that mothers sometimes avoid discussions about menstruation because they themselves feel uninformed about the physiological aspects of it (Alcalde & Quelopana, 2013; Cooper & Koch, 2007; Costos, 2002; L. F. O'Sullivan et al., 2001). Additional research is needed to understand how to better support mothers in providing information on and support for their daughters' menstruation, specifically in relation to preparation for menarche.

The dominant concern of participants in this study was with making sure young girls received adequate information on menstrual hygiene management. They explained that they've observed that girls can have trouble with cleanliness when menstruating, resulting in unpleasant smells, described as "*fishy*". It is not possible to tell from the methods used in this study whether the participants' preoccupation with menstrual hygiene reflects an actual problem with girls' ability to manage their menstruation (i.e., changing their menstrual supplies regularly) and vaginal health or is rather evidence of persistent social stigma of uncleanness that has historically accompanied menstruation (Houppert, 1999b; Kissling, 1996; T. A. G. Roberts, J.L.; Power, C.; Pyszczyński, T., 2002; Sommer & Sahin, 2013). Regardless, it reveals that menstrual hygiene management is a serious concern for present-day girls in this population. Stemming from



this concern, participants reported having a preoccupation with cleanliness, showering multiple times a day, using wipes and special cleaning products on their genital areas, and changing menstrual supplies frequently. One potential nuance to consider is that African American and Hispanics are known to suffer more frequently from Bacterial Vaginosis, commonly indicated by a foul smell, compared to other races (Rajamanoharan, Low, Jones, & AL, 1999; ROYCE et al., 1999). The variation in prevalence of Bacterial Vaginosis cannot be accounted for by differences in socioeconomic status, sexual activity, hygiene or health behaviors (Goldenberg et al., 1996; ROYCE et al., 1999). However, recent research has found that the vaginal microbial communities of Black women were more likely to be dominated by harmful bacteria and less likely to be dominated with protective bacteria, compared to Caucasian women, which is thought to explain some of the racial disparities in Bacterial Vaginosis (Zhou et al., 2007). At minimum, this research, as well as findings from the present study, highlights the need for greater, and more refined, education on vaginal and menstrual hygiene, in hopes of thwarting cleaning practices that contribute to, rather than prevent, the problem.

This paper fills a gap in the literature by providing an in-depth look at low-income and minority girl's experiences of menarche in an urban, U.S. context. These results provide insight into the salient aspects of menarche and suggest that some basic needs for menarche preparation are not currently being addressed for some girls in this population. The findings add to our understanding of the information and support needed to address the practical concerns of girls at menarche in this setting.

### **Strengths and Limitations**

Several limitations should be kept in mind when interpreting the findings of this study. The study sample was selected to shed light on menarche experiences within a very specific population, low-income, minority adolescents in an urban setting in the U.S.. As is true for all qualitative research, the extent to which the findings can be generalized to other populations is unknown. Moreover, the wide variety of menarche experiences displayed throughout the sample suggests that factors not accounted for in this study could be at play in shaping girls' experiences and preparation level. For example, individual characteristics such as personality traits, health literacy, learning styles, and intelligence are likely factors that shape girls' experiences of menarche. Similarly, differences in cultures across families and between and within the Hispanic and African American cultures likely play an important role in how meanings and understandings of menarche and menstruation are constructed. If so, this study was not designed to capture this level of nuance in difference.

Selection bias may have affected the results of this study in that a certain type of adolescent girl may have naturally been drawn to participate in the study for reasons that make her stories of menarche systematically and qualitatively different than another who grew up in similar conditions but who chose not participate (i.e., participants who were more or less informed and supported may be more likely to participate). Recall bias could have limited the amount of detail and level of accuracy participants could provide about their experiences of menarche, or negative experience could have been more readily recalled. The average age of the sample at the time of data collection was 15.5, which was 4 years after the average age of menarche, of 11.5 years, that was reported for this sample. Moreover, it is possible that participants were unable to disentangle the

information and support received prior to menarche from what had been obtained since, including what was provided to participants as part of the study, which would affect their assessment of what had been known at menarche. Participants' actual knowledge of menstruation was not assessed as part of this study. A quantitative assessment of knowledge would have helped to validate the evidence for lack of knowledge about the physiological mechanisms of menstruation in this population. And, it is possible that the severity of menstrual symptoms may have been overemphasized in this study as prior research has shown that menstrual cycle related distress is less frequently reported in studies where participants are not aware that menstruation is the focus of the study (Englander-Golden, Whitmore, & Dienstbier, 1978). Similarly, participants may have overemphasized the need for information and support on menstruation given that they knew one goal of the study was to create puberty educational tools for girls in Baltimore.

Despite these limitations, this research fills an important gap in the present day experiences of menarche in an underserved area in the U.S. The qualitative study design allowed for a detailed exploration of aspects of preparation that relate to girls' experiences of menarche in this setting. The level of nuance in understanding would not have been possible to capture in a quantitative assessment of menarche experiences and preparation. The triangulation of data collection methods, including focus group discussions and individual interviews, allowed the researchers to follow up with participants who shared data that was surprising or unexpected, such as those in this study who reported having not known about menstruation prior to menarche.

Triangulating FGDs with IDIs also built in a check for the possibility of group think dynamics developing in the FGDs, ensuring that participants were sharing stories and

views that were thoughtful and reflective of their unique opinions and perspectives (Carey & Smith, 1994). For an additional counter-measure against group think, focus groups discussions included participatory activities that often began by prompting participants to reflect on their own opinion, prior to engaging in a group discussion. And, the use of coded identifiers in this study allowed data provided from the same participant to be connected across the different types of data collected. The coded identifiers supported the use of quasi-statistics, which provided information on the amount of independent evidence that contributed to each findings (J. A. Maxwell, 2010). The quantitative questionnaire allowed for the use of summary statistics, which provided additional insight to the themes that emerged. And finally, the extensive use of participant's quotes to support each finding provides confirmation that the results are deeply rooted in the participants' reported experiences (Lincoln, 1985).

## **Conclusions**

Menarche is a critical point of development within the life course, the experience of which is heavily influenced by the level and type of preparation for it (Brooks-Gunn & Ruble, 1983; Kieren & Morse, 1992; E. Koff et al., 1982; Ruble & Brooks-Gunn, 1982). Low-income and minority girls are less likely to feel prepared for menarche and are more likely to report a lack of knowledge about menstruation than their Caucasian and higher income counterparts (Jackson, 1992; Orringer & Gahagan, 2010; C. S. A. Scott, D.; Panizo, M.I.; Owen, R, 1989; White, 2013). Findings from this research suggest a gap in menarche-related information and support for girls growing up in a low-income, predominantly minority, urban city in the U.S. Current findings offer insight into the

areas of menarche preparation that are salient to experiences of menarche in this setting and provide recommendations, from present day girls from this population, on how to address the areas that are lacking. These results provide much needed direction for menarche preparation of girls in this setting so as to help bridge the racial and socioeconomic disparities in information and support for menarche.

## CHAPTER 5 TABLES AND FIGURES

Table 2: Participant Quotes
Part 1: Overview of participants' experiences of menarche
Table 2A: Self-Perceived Preparation for menarche
<p>Quote A1— <i>"My sister basically explained everything."</i> (IDI, ID#1.3)</p> <p>Quote A2— <i>"I don't know. I hope it is. I hope somebody teaching the girls how to put on certain stuff and like that but I don't know. I'm not saying like the way that my mom told me is probably like the best because everybody's different .... I'm perfectly fine about what I knew and stuff and like that."</i> (IDI, ID#2.4)</p> <p>Quote A3— <i>"I feel like I shoulda had more [information], because now, some things I found out about my period that I did not know."</i> (IDI, ID#2.8)</p> <p>Quote A4— <i>"Well...some [girls in Baltimore] can get enough information [about puberty and menstruation]. Some may not, like me."</i> (IDI, ID#4.6)</p> <p>Quote A5— <i>"... , I mean, I knew a little bit, but I didn't know enough."</i> (IDI, ID#5.2)</p> <p>Quote A6— <i>"I can't speak for everybody, but when I was listening to the stories of other people saying when we were in a room [referring to other participants in FGD], they were basically saying they wished they knew more stuff about it. My sister told me all I needed to know. They were saying they wished somebody told them more about it. Guess some girls really need more information about it. They don't have people to tell them everything or they probably got theirs. They just got freaked out about it."</i> (IDI, ID#1.3)</p> <p>Quote A7— <i>"I mean, I feel like you'll never be ready for your period, I wasn't ready"</i> (FGD, ID#2.6)</p> <p>Quote A8— <i>"Well I don't think it would be different at all because either way the same thing never would have happened if I weren't to know about would still happen the same if I did know about it."</i> (IDI, ID#2.2)</p> <p>Quote A9— <i>"I knew about periods but at that moment you forget everything you know."</i> (IDI, ID#2.5)</p>
Table 2B: Sources and timing of preparation for menarche
<p>Quote B1— <i>"Firstly, I learnt from my mom..."</i> (IDI, ID#5.1)</p> <p>Quote B2— <i>"...I learned a lot from my mom after I got my period."</i> (IDI, ID#5.4)</p> <p>Quote B3— <i>"No...she [her mom] never explained periods to me at all...I mean, well it depends on your relationship with your mother, or your sister, or whoever, but whoever you're closest to, and you feel like they'd be open to tell you things, you should talk to them."</i> (IDI, ID#5.2)</p> <p>Quote B4— <i>"...you can trust your parents like I trust my mother but then it's like some things I still don't feel comfortable talking about like."</i> (IDI, ID#2.5)</p> <p>Quote B5—Interviewer: <i>"... And is there anything that you wish she [your mom] would've done differently?"</i>  Respondent: <i>"Just explain everything better....Like, just us sitting down, talking about what's going on ... It seemed like she [her mother] wasn't comfortable to talk about it [periods] ... Probably because I was too young, but now, she talk about it to me."</i> (IDI, ID#4.6)</p> <p>Quote B6— <i>"I think so, a lot of parents are still like nervous about talking to their child about it, maybe because their past experiences so like they not ready for them to go through that yet, I think so."</i> (IDI, ID#2.1)</p> <p>Quote B7—ID#2.4: <i>"Like we said, some parents try to sugar coat everything and don't want you to really know too much....So my thing was if they mother or father don't want them to be learnin' about that stuff the parents may have a problem with them learning how to put a pad on and stuff and watchin' videos and stuff about breasts. Unless their parent is like a good parent want to inform them."</i>  ID#2.6: <i>"Right."</i>  ID#2.5: <i>"Well it's not like the girl watchin' porn."</i>  ID#2.6: <i>"Some people may feel like that. Parents may feel like that."</i> (FGD, Group 2)</p> <p>Quote B8— <i>"Sometimes like your parents don't want to 'cause they growin' too fast or because....that's too much information they should not know at that age. Or like parents are really overprotective."</i> (FGD, ID#4.4)</p> <p>Quote B9— <i>"...I'm not in the same exact household as them so I don't know what their person is telling them so they probably get more information than I did because I didn't have any information so they probably get information from their mother like you gotta do this, you gotta do that and their mother actually sit down and talk to them about it.... My mother she really wasn't the type to talk to her children."</i> (IDI, ID#2.2)</p> <p>Quote B10— <i>"we want to know stuff and sometimes your parents don't even know all the questions you're askin' 'cause maybe they're</i></p>

*like a single parent, you know like a single dad or they have their grandpas or their grandmas or their cousins or their adopted parents or stuff like that.” (FGD, ID#4.4)*

Quote B11— *“My aunt, she like, I don't know. She's just more open about stuff. My mom, she an introvert, so it's so hard to talk to her.... I asked adults that I was close to, I asked my doctor....and also, Internet, I Googled different stuff, so yeah.” (IDI, ID#1.4)*

Quote B12— *“I'm glad I did have my sister and my grandmother.” (IDI, ID#1.3)*

Quote B13— *“And I learned that from my mom and my sister, family members, and also asked my doctor questions about it, because my doctor knows everything you know, about menstrual cycles and all of that, so I asked my doctor.” (IDI, ID#5.2)*

Quote B14— *“I mean, I already had a book but I didn't actually read it. I just looked at the pages like, that's your body and stuff like that. I used to read some of it but I can't actually remember what it was about.... It was about period but the title and stuff like that.” (IDI, ID#1.2)*

Quote B15— *“Sometimes they can like talk to like their parents or like someone they're close to or like the book or something or like teachers sometimes they even talk about it. But like since a lot of teachers don't like talkin' about it you can get it yeah from a website and stuff like that.” (FGD, ID#4.4)*

Quote B16— *“I didn't tell my dad. He figured it out.” (FGD, ID#3.3)*

Quote B17— *“My step-father when I told him, he was like ew.” (FGD, ID#3.1)*

Quote B18—Respondent: *“I mean my father knew but I don't really talk to my father like that so...”*

Interviewer: *“How'd he find out?”*

Respondent: *“'Cause I told him 'cause I told him he needed to buy me some pads.”*

(IDI, ID#3.2)

Quote B19—ID#2.7: *“Any female figure.”*

ID#2.8: *“Any female figure that has intelligence.”*

ID#2.9: *“Anyone you can trust as a female figure.”*

(FGD, Group 2)

Quote B20— *“Talk to someone you know or that you're close to.” (IDI, ID#4.6)*

Quote B21— *“I mean, everyone that I talked to was most helpful, because everyone told me things that were true.” (IDI, ID#1.4)*

Quote B22— *“to any younger girls that just getting their period don't be scared to talk to anyone about it.” (FGD, ID#2.7)*

Quote B23— *“Yeah, anybody that has that type of information. I really prefer somebody who's like younger so that they could relate or somebody who had like the same experiences. Yeah they could really like be able to relate and help them understand and really teach them in a way that they know we'll understand.” (FGD, ID#3.3)*

Quote B24— *“I guess, yeah. I'm not tryin' to make that sound like a bad thing like male teachers can't do the job, but you know. It's easier to talk to a female teacher about all that. Like bein' in health class I kinda don't like, 'cause it's like, I don't wanna talk to no man about it. I don't want to talk to a man about how we're developin' and what's goin' on with our bodies. I'd rather hear that from a female. I mean it's not like he's gonna know as much as a female anyway so.” (FGD, ID#3.3)*

Quote B25— *“I think anybody could teach but a woman would be more like better 'cause they have more understanding. But if a man has the right information, then I think he could teach too.” (FGD, ID#3.5)*

Quote B26— *“I think you should elongate like this program thing cause I like it.” (FGD, ID#2.5)*

Quote B27— ID#3.4: *“I wish it wasn't like pay or nothin' but I wish it was like you know like all year.”*

ID#3.3: *“Yes, we need to keep this.”*

(FGD, Group 3)

Quote B28— *“Just [do] basically like what you all doing. Well not basically because you all asking us a lot but telling them what it is, what you need to do, stuff like that.” (IDI, ID#2.5)*

Quote B29— *“We had health class but in elementary, we didn't talk about periods and stuff. We just talked about body parts in health class.” (IDI, ID#1.2)*

Quote B30—Interviewer: *“Did you have any education in school?”*

Respondent: *“No, not about periods and stuff.”*

Interviewer: *“Ok.”*

Respondent: *“Maybe a little bit of sex but mostly like drugs and alcohol.” (IDI, ID#2.5)*

Quote B31—*“I think, I learned more stuff in school after the fact, because I had health in ninth grade, that was after I got my period, after. You know, so I really think they should start learning about it in elementary school, maybe at an older grade, like maybe fourth,*

*fifth grade, before it happens. Like learn everything that I'm talking about, because some people don't go in depth about the menstrual cycle. How to manage it, or you know, that kind of stuff, so but safe sex is definitely taught in schools. I'm not even going to say they don't teach enough about that, because they do. Hygiene, they do teach enough about that. Everybody knows that you supposed to brush your teeth and bathe at least once a day and wear deodorant, of course. But yeah, I think that it should be taught in elementary school at an older grade, like fourth or fifth grade before it happens, because girls are going to be totally confused, and they're not going to know anything about it when they first get it like I did" (IDI, ID#5.2)*

Quote B32—*"Talk about having periods when they in elementary school...They should have talked about stuff in elementary school so you can be aware of your body... in Fourth grade."* (IDI, ID#4.6)

Quote B33—*"I didn't really learn all the health facts about periods, until middle school."* (IDI, ID#5.1)

Quote B34—*"They just wanna tell you what a condom is and try to prevent HIV, they haven't even talked about nothing. So, the whole time you was in health class—I don't even have health no more but the whole time we was in health class we barely talked about anything....He [the teacher] was always absent....Yeah, I just don't see what the whole point of that class was. It was a waste of my time. [laughter] I sat there in that class for an hour."* (IDI, ID#3.2)

Quote B35— Respondent: *"Health at our school wasn't like really health. I don't even know cause those kids were really bad so I didn't really learn anything. When the real health teacher was there, but then she quit cause they used to do mean stuff to her. But then my gym teacher had to be our health teacher or she was gonna get fired. So she just had us read random stuff in books and do what's on that. But it was mostly about working out."*

Interviewer: *"What grade was that in?"*

Respondent: *"That was seventh and eighth grade."*

Interviewer: *"Ok. So did you ever learn about anything in school about your period or puberty?"*

Respondent: *"This year I did in health class. [9<sup>th</sup> grade]"*

Interviewer: *"What did you learn this year?"*

Respondent: *"He didn't really talk about that much, but he made us read it. He tried to skip the topic and talk about sex That's what his main focus was on."*

(IDI, ID#3.5)

Quote B36—*"majority of my information came from planned parenthood. They came to my middle school twice, once in sixth grade and once in seventh grade, and that information stuck with me until now, so...They brought the I guess, a plastic version of a vagina. They brought the wooden penis, condoms, female condoms. They gave us little books, pamphlets, like packets. The packets had information on pubic hair, STDs, STIs now, how to put on a condom, and they gave us demonstrations, and they keep talking about it, like birth controls, what to do if you get pregnant, or how to prevent pregnancy. So planned parenthood helped a lot, but I don't know if they still do those things, anymore. But, after planned parenthood, then we had a health class my freshman year of high school, and that was the only year you get a health class, which I don't think that should be it, but I guess they feel that they teach you all that they need to teach you in that little bit of time. So, I don't know, but they just went more in depth with STIs, birth controls, side effects to certain things like drugs, alcohol abuse, yeah."*(IDI, ID#5.1)

Quote B37—*"There is a need for more education before they start because some people, some parents aren't--they're not really close to their parents and they don't really feel like they have anybody to talk to so they'll just they're not gonna actually know how to really handle it when it comes....There should be a program, it should happen in school like when you take health it should automatically be talked about. And they should have a program that you can go to and all that."* (IDI, ID#3.2)

Quote B38—*"That's when like okay when you like programs with their families, I feel like not everybody would go, but if they in school and everything and they going through that time period and they about to get it I think they should get the book then so they can be a little bit more prepared."* (IDI, ID#2.1)

Quote B39 – *"Well if you put it in school then it would be mandatory. Then you could put the knowledge in their head. But if you just do like a program it's not going to be like it would be in school. Because then you have to take it, you have to like listen and stuff like that."* (IDI, ID#2.5)

Quote B40—*"Some of the sessions their parents should be in there, too. Their parent could teach their kids their experience. Stuff like that. Or the parent could be in there listening cause they probably didn't get to talk to give to their child and now they can provide it."* (IDI, ID#3.5)

Quote B41—*"like I feel like as a community or as a health teacher and stuff like you should get like the parent and child together and do like period activities. Like teaching the child how to put a pad on and stuff like that. ... And places, how to put a pad on, giving out like pads and stuff. Like givin' out like enough for them and learn lessons of like why these things happen to you and many give outs."* (FGD, ID#2.4)

Quote B42—*"They should have like a school meeting, like bring all the parents....Just the parents...And the parents, they will teach them how to talk to their child."* (FGD, ID#4.3)

Quote B43—*"I see it as it might can just be the health class or it might just be that mommy and me class or stuff like that."* (IDI, ID#3.2)

Quote B44—*"Teach them before they go through it, because once you hit middle school, you're going to be twelve, or older, and some people get it at eleven, because I saw on the news, where young girls were getting their period and it's because of obesity, it*



<p>increases your hormones or something, whereas though you can get your menstrual cycles early. You never seen, you never heard that?" (IDI, ID#5.2)</p> <p>Quote B45— "I think people in Baltimore dealing with [it] after periods [happen], it probably depends on how your household is because in Baltimore city, a lot of females don't really have the privilege of something telling them that...mainly because a lot of people's parents in Baltimore city ...probably just teach them once...They probably just teach them, but they probably don't ask a lot of questions maybe." (IDI, ID#5.4)</p> <p>Quote B46— "But the girls who haven't gone through it yet probably like to know. Or they probably gonna be scared." (IDI, ID#3.2)</p> <p>Quote B47— "...I think you should tell them beforehand. Like so they know when it finally comes like you know how some people say when they talk about their period, they how they was like oh my gosh what's this. But I really think they should actually know before it happens so that they'll be prepared and they'll know what to do in that type of situation. Better safe than sorry." (FGD, ID#3.3)</p> <p>Quote B48—ID#2.1: "They should know before puberty but they shouldn't go into depth."  ID#2.5: "Don't explain it too much but at least tell them something so they won't be so shocked."  ID#2.2: "Tell them the basics; just tell them the basics of it."  (FGD, Group 2)</p> <p>Quote B49— "I think you should teach them beforehand so like I said so they understand what actually starts happening. The only thing that I really don't think you should teach eight to ten [year old] girls about is like the dangers of drugs and alcohol and STD's and sex....Because I don't think they're ready for that yet. I mean there are some kids that come across drugs and alcohol and sometimes even sex but I don't really think that you should teach them about that yet. I think you should really wait until their older so they can probably have a better understanding." (IDI, ID#3.3)</p> <p>Quote B50— "I'm glad she didn't tell me at first because after that I felt like everything was coming to an end basically like, I did not know what was going on." (IDI, ID#2.1)</p> <p>Quote B51— "Hmm...Like remember when you had brought in those little bags with the little stuff in there...Then I'm kinda glad that I didn't know because when I was younger, I probably would've looked at that like terrified, you know. I didn't know how to use it [a menstrual cup]. What if I did something wrong and it got stuck inside me? So I'm just like, No. I'm kinda glad, but I still feel like I shoulda learned more. Just to, you know, know so my mind can be prepared." (IDI, ID#2.8)</p> <p>Quote B52— "And, in seventh grade I still wasn't thinking about that, but it was still good to know in time. Cause my parents, they're really like blunt with everything, so like they say what they need to say to me and stuff like that, but with the real class like it kind of taught me like a lot of stuff, so it was nice to know that information. Then when I got in ninth grade it did like be kind of informing me again because this was like at the beginning of ninth grade. A lot of girls start having sex when they get to high school and stuff, so then that helped me a lot. Then I had life skill classes when we talked about like good skills to have in life and stuff like that, a lot of different stuff, the opportunities that really helped me. Knowing that you're around a lot of people that's going through like the same thing." (IDI, ID#2.4)</p> <p>Quote B53—Interviewer: "And just to be clear, do you think girls should learn about their cycle before it starts or when it starts?"  ID#3.1: "Before it starts."  ID#3.5: "Both."  ID#3.3: "Both."  (FGD, Group 3)</p>
<p><b>Table 2C: Emotional response to menarche</b></p> <p>Quote C1— "It was just a crazy experience, and the whole week, I was in a trance. I did not know what to do. I mean, I knew what to do, but I just didn't know how to feel." (IDI, ID#2.8)</p> <p>Quote C2—"I was scared. I mean, we talked about it before, but I didn't know when it would happen, because you never know. I'm going to say in shock, because I didn't know anyone else with a period besides an adult, so I was a little like, scared, like is this normal? Am I supposed to get it at eleven? What's wrong with me, or am I dying? I don't know, so I was confused even though I already knew about periods." (IDI, ID#5.1)</p> <p>Quote C3—"So, I didn't tell my mother until the next day cause I was scared, I did not know what was going on...I thought it was like, I didn't know that girls get periods at first, like it was just like I don't know what it is, I felt like I did something wrong at first so and that's why I told her and she told me what it was." (IDI, ID#2.1)</p>
<p><b>Part 2: Information and support needed for menarche preparation</b></p>
<p><b>Table 2D: What is menstruation?</b></p> <p>Quote D1—"It was horrible... So, I go in the house and I go in the bathroom, I seen blood I was like ...[gasp]...I was really scared so then I told my ...I don't know who I told at first. I think I told my mom. I was scared to tell her at first but then she told me [what it was]....I was scared, I was ready to cry because I didn't really understand what was going on" (FGD, ID#3.2)</p> <p>Quote D2—Interviewer: "Did you know about periods before you got one?"  Respondent: "No....Uh-huh. Didn't really know. I probably just figured it out for myself once--after a while, once I started getting used to it, I started realizing it. Cause I don't really talk about it in school so..." (IDI, ID#3.2)</p> <p>Quote D3—"My first time I got my menstruation, I was worried. I started crying because I didn't know what was happening." (FGD,</p>

ID#4.3)

Quote D4— “I was terrified. I mean, I wish she would have told me about it... she did kinda give me a heads up about it, so, it's like, it's not like she left me in the blind...Like she told me, she was like, you might see blood and stuff like that, she gave me hints .... She didn't tell me like specifically it's going to be a period but she told me to tell her if I started bleeding.” (IDI, ID#2.1)

Quote D5— “Prior to the whole me getting my period thing, my mom was in the bathroom one day, and I came past and she was like....stop, come here I need to show you something, and she was like alright, because she was on hers [her period], and she's like alright, look. You can see that a little bit [of blood] got in my underwear, so this is how you clean it.” (IDI, ID#5.1)

Quote D6— “My sister was hurt one day, and I asked her why she hurt. She said she was on her period. I was like what's a period. She was like something that girls get at a certain age, and you bleed out of your vagina and you get really bad cramps sometimes. You're going to have to go through what I'm going through one day. Ok. Can't wait. [Laughs]” (IDI, ID#1.3)

Quote D7— “.... it wasn't like a long lecture or something but she [her mother] just real open and like she be in the bathroom and she'd be doing it [changing her pad] so I would see like what it is, so it wasn't like an oh my gosh what is this?” (IDI, ID#2.5)

Quote D8— “So, I don't know. It's a big experience for some girls because some girls don't know about it. So once it do come, it's like a shock. It was a shock to me but I knew about it but I didn't know exactly...” (IDI, ID#1.2)

Quote D9— “I felt scared because my grandmother didn't tell me that I was going to have the period.” (FGD, ID#4.7)

**Table 2E: When will menarche happen to me?**

Quote E1— “So, like for first periods, I don't think you can ever really prepare yourself to get a period, because you don't know which age it will come at, what day, what month, what year.” (IDI, ID#5.1)

Quote E2— “How people react like that. So I was just chill about it. I already knew this was going to happen, but I was kind of shocked cause I didn't know it was going to happen at that moment.” (IDI, ID#3.5)

Quote E3— “My grandmother had hers when she was ten, so right after she passed away is when it happened to me. So I think she jinxed me.” (IDI, ID#2.8)

Quote E4— “He was like oh my daughter hasn't got her period yet. I'm looking at him like what are you talking about; I'm like I'm going to be thirteen and still living free. And then after that week like boom, one morning I was like he cursed me.” (FGD, ID#2.7)

Quote E5— “I think I was jinx because a week before the doctor had just asked me “have I started my period yet” and it happened (it's like he knew it was coming... I didn't know it was going to come the week after the doctor talked to me. I knew about it though.” (FGD, ID#2.10)

Quote E6— “You can come on at any age after 10 and at any time of the [day], you can be asleep, woke (or playing).” (FGD, ID#1.2)

Quote E7— “I kind of knew about it but I was eleven so it was like you had, I didn't really think like you could come one that early. I'm like huh-uh wait.” (FGD, ID#2.4)

Quote E8— “I'll say around fifth grade they should know about [menstruation] because I think, well no, actually around the time their mother got their period... Because that's the same age range the daughter might get their period.” (IDI, ID#2.1)

Quote E9— “I was 12 when it happened my mother told me it was okay because all of our family started early.” (FGD, ID#2.9)

Quote E10— “I said I was too young...She [her mother] said she was nine when she came on, so you never too young for it.” (IDI, ID#4.6)

Quote E11— “My momma got it when she was eleven so I thought I was going to get it when I was eleven, but I didn't. I got it when I was twelve. I was already prepared for it cause my mother told me cause she thought I was going to get it when I was eleven, too, but then actually I was twelve.” (IDI, ID#3.5)

Quote E12— “Like, oh my God, it really happened, I don't know why, I guess I didn't think it would happen, because my mom said she got hers at ten, and I was like, I'm eleven, so maybe I'm just not going to get it. And then it happened, and so I was like well, okay.” (IDI, ID#5.1)

Quote E13—Cause nobody ever told me about that [menstruation]. That I was too young to know about that what my mom told me...When she found out she was shocked herself (IDI, ID#5.3)

Quote E14—Interviewer: “Did you talk to your friends about it [menarche] at all?”  
Respondent: “No, I didn't tell nobody.” (IDI, ID#4.6)

Quote E15— “Different people have different experiences with their menstrual cycle because we all have different insides/hormones/uterus's...Some people have light periods, shorter periods, longer periods, heavier periods, cramps, no cramps, it just all depends.” (IDI, ID#5.2)

Quote E16— *“like it's actually normal, everyone goes through it, not everyone goes at the same age but like everyone goes through it.”* (FGD, ID#4.4)

Quote E17— *“[the day she started her period] I was feeling weird I didn't know what I was feeling so I was just like...I mean my coochie just started hurting so I was just like hahah its just not maybe I'm trippin so I just walk the dog with my brother and then I was like something is not right....my stomach was hurting really bad that day so I was really cramping and I was really rude to my brother and everything.”* (IDI, ID#3.2)

Quote E18— *“So I was in my favorite teacher class and, you know, like something came over me. I was cramping. I'm like, What is wrong with me? I started getting headaches, I was getting lazy, I'm just sitting on a desk, just sitting down, and then I go to the bathroom, and I see a little spot in my pants.”* (IDI, ID#2.1)

Quote E19— *“I didn't bleed heavy or have cramps that day, it just randomly came on with no feeling to warn me.”* (FGD, ID#3.5)

Quote E20— *“and to wake up out of a nice sleep with no pain or anything, and to go to the bathroom and just see it there, and you're just like oh my God. Oh my God.”* (IDI, ID#5.1)

**Table 2F: What is this blood?**

Quote F1— *“I was in the bathroom, and I see something in my underwear, and I didn't know what it was at first. It didn't really look red, it was more brown, I'm like why is this in my underwear?”* (IDI, ID#5.2)

Quote F2— *“I remember feeling something extrude from out of me so I went to the bathroom to find spots of chunky blood. I tried to wash the blood away but it was still coming.”* (IDI, ID#2.5)

Quote F3— *“I just didn't know what it [the blood] was. I was like, what is this? And it made me uncomfortable.”* (IDI, ID#4.6)

Quote F4— *“I had to ask my mother why I was bleeding at first...Didn't know what it was. I thought something was wrong with my body at first. When my mother told me I was on my period I was shocked.”* (IDI, ID#5.3)

Quote F5— *“I called my mom and told her I need emergency services.”* (FGD, ID#3.3)

Quote F6— *“So I'm thinking I'm dying. I'm like, Oh my gosh. So I'm sitting here, you know, telling everybody I love them. [Laughs] I thought I was dying. Oh my gosh.”* (IDI, ID#2.8)

Quote F7— *“I was asleep and I had woke up and I was like, I'm peeing blood. I said, I'm peeing blood. And my cousin was like oh my god, oh my god it's your first period. And she was like oh my god; call your mom because I don't know what to do.”* (IDI, ID#1.2)

Quote F8— *“I had used the restroom and all I seen was blood and I knew what was happening.”* (FGD, ID#2.4)

Quote F9— *“When I first got my period I knew what was happening, it just felt really weird.”* (IDI, ID#1.3)

Quote F10— *“My first period wasn't that bad, my mother told me about it before it happened.”* (FGD, ID#2.9)

**Table 2G: What do I do when I find menses for the first time?**

Quote G1— *“I think I'm on my period cause there's blood down there. I don't know what to do, and then I started crying.”* (IDI, ID#5.4)

Quote G2—Just them having information, they should be good. So, that way they'll have information to know what to do when it comes. (IDI, ID#3.2)

Quote G3— *“Advice I would tell girls is it's normal and don't freak out or be scared but always be prepared for when it does come, also tell a parent/guardian that you're comfortable with so they can talk to you and make sure you clean up right.”* (IDI, ID#3.5)

Quote G4— *“I screamed my moms name.”* (FGD, ID#3.4)

Quote G5— *“I just woke up one day, seeing blood in my underwear, and I told my mother. She said I was on my period.”* (IDI, ID#4.6).

Quote G6— *“I started crying because I didn't know what was going on until my mother told me and she was just like it's pads under the sink and stuff like that and that's when she showed me how to do it.”* (IDI, ID#2.2)

Quote G7— *“I told my aunt and she told me that I was alright and she gave me pads.”* (IDI, ID#2.8)

Quote G8— *“My dad was the first person that I called when I got my period because my mom was at work, and she wasn't answering the phone so I just had to call my dad. I was crying cause I didn't know what was going on. He was like are you serious? Then he took me to CVS, and he's asking every female in the store. It was so embarrassing. He's asking every woman in sight what do we do? What kind do we get, and it was just embarrassing. He doesn't know what to do when new things are happening with me in my life.”* (IDI, ID#5.4)

Quote G9— *“I told my father, and he was like ok. He didn't react. I don't know if he knew what I mean. I just said Daddy I'm bleeding. He was like ok. I don't know if he knew exactly what I meant.”* (IDI, ID#1.3)

Quote G10— *“so when I told my friend, she was like, “What? What is wrong with you?” She didn’t know about the period either, so we both were inexperienced.”* (IDI, ID#2.8)

Quote G11— *“When I first had my menstrual, I had kept it to myself until I started having bad pains and I told my mother.”* (IDI, ID#2.2)

Quote G12— *“I put tissue in my underwear [till] my mom came and got me.”* (FGD, ID#2.4)

Quote G13— *“I grabbed a whole bunch of napkins [paper towels] and put it on my panties and prayed my mother would be back to get me sooner than later.”* (IDI, ID#2.5)

Quote G14— *“I knew you were supposed to use pads and tampons and stuff, but all we had were tampons, and I was like, “Mom, am I supposed to use this?” She was like, “No, I’m gonna have to get you a pad...”* (IDI, ID#1.4)

Quote G15— *“She [her mother] just told me to take a bath and she was going to buy me some pads so it won’t be messy, like all over the place.”* (IDI, ID#5.3)

Quote G16— *“Cause I was at my aunt’s house and my aunt didn’t have any pads at the moment so I was like can you just call my mom and tell her to bring me a new pair of clothes, underwear and pads, and she was like yeah. But it was eleven o’clock at night, and it was raining so I had to walk through the rain and get them.”* (IDI, ID#3.5)

Quote G17— *“Well my cousin tried to explain to me how to put a pad on but I was just like--I wasn’t getting it. So, my mom put it on for me and everything....”* (IDI, ID#3.2)

Quote G18— *“My mother just told me. I mean, she demonstrated all of it.....Like, you put it in your underwears, you pull it back off, and then, you pull it off when you...finally, you wrap it up and put it in the toilet paper and put it in trash and wash your hands because you carry a lot of bacteria.”* (IDI, ID#4.6)

Quote G19— *“I already knew how to use the pad. It’s kind of obvious though. She just gave me stuff and told me what to use and how to use it.”* (IDI, ID#3.5)

Quote G20— *“My mom never told me how to put one on but I read the directions like, to me it was like common sense. She told me how to, she didn’t sit down with me but she was like, you put it in your underwear then these two little parts you put them down.”* (IDI, ID#2.4)

Quote G21— *“I wish she [her mother] told me how to put it on. Interviewer: The pad? Respondent: Yeah. Interviewer: So how’d you figure it out? Respondent: I looked at the box.... Just get a pair of underwear and do it. Just show her how to put it on.”* (IDI, ID#2.1)

Quote G22— *“Puttin’ on a pad games....They have this game to show you how to roll up a blunt so why can’t you have a game to put a pad on?”* (FGD, ID#2.10)

Quote G23— *“I already knew what to do and everything my aunt yelled in the bathroom like you know what you [need to do] and I yelled and said yes.”* (FGD, ID#3.1)

**Table 2H: How do I take care of myself when menstruating?**

Quote H1— *“... you have responsibilities once you be on your period. You gotta make sure you’re clean, all your stuff and all that. It’s a big responsibility and all that.”* (IDI, ID#1.2)

Quote H2— *“when you eight to ten you should learnin’ about ... when you come on your cycle and how you should take care of yourself.”* (FGD, ID#3.1)

Quote H3— *“When I first got my period, I remember I was scared to use the bathroom all the time. I was walking stiff like a penguin cause it was weird for me. I would sit down real slow, and my mom would be laughing at me. I asked her can I still go to the bathroom? How do I wash myself up and stuff? I was talking to her a lot about that cause I was walking like something was wrong with me. I didn’t know what to do. I’d walk down the steps real slow like foot by foot cause I didn’t know what to.”* (IDI, ID#5.4)

Quote H4— *“I think the focus should be on their hygiene the whole time like, you know, a lot of people kinda smell like fish when they’re on their period. They should know you have to wash moist yourself every day, you know what I’m saying, you need to cleanse yourself. You need to change yourself a couple times a day, you gotta keep up with yourself, you gotta just watch yourself basically.”* (IDI, ID#2.1)

Quote H5— *“I would just say keeping yourself clean...yeah, because people just be walking around like...I don’t know, like just keep yourself clean, you shouldn’t have yourself stinking like...Some of them are like I don’t want to say regular but you wouldn’t associate you smelling like that if you would just see you and not smell you. But some, there’s like you can tell like home related or something like that. Or they can’t...they don’t have the time or they don’t have like the nourishment or the support or somebody telling them to make sure you keep yourself clean.”* (IDI, ID#2.5)

Quote H6— *“maybe some of them just don’t know how to take care of their bodies properly. They don’t have that person to tell them how*

*to really take care of their body. Like when they come on their period and they're supposed to change their pad frequently and all that."* (IDI, ID#3.2)

Quote H7— *"Well, the girls, some of the girls I know, they just make sure they clean and don't smell, and some of them they just be smelling. I don't want to tell them that they stink, because...they think I'm being rude. You know, when you don't change your pad for a while, and you smell it...They should take care of themselves. Like they need to be clean and don't smell, because when you smell, people talk about you."* (IDI, ID#4.6)

Quote H8— *"They need to know about good hygiene, and stuff. Like how to take care of their bodies. Like a lot of the girls at school, and stuff, they don't smell good. Like you can tell when one of them is on their period. You can smell it. Like it's really bad."* (IDI, ID#1.4)

Quote H9— *"I really just kept clean and I took a shower twice a day and changed myself every hour just to make sure I was clean."* (FGD, ID#3.4)

Quote H10— *"They take showers constantly, like you take a shower more often than you would...Like especially in the summertime, cause you know it's real bad in the summertime. You don't wanna be stinking cause you sweating so much, so it take more showers, they take shower more often."* (IDI, ID#3.2)

Quote H11— *"My mom taught me about hygiene... You have to make sure you always clean yourself, and as a woman, make sure you always carry a pad on you no matter where you're going."* (IDI, ID#5.4)

Quote H12— *"And clean yourself. They just said keep yourself clean...I keep sanitary wipes and I also keep soap in my bag...I always wanted to smell like my mother and I usually just take a bunch of perfume, bunch of smell good lotions and stuff and take it with me so I won't stink...my mother she always give me sanitary wipes so instead of just using tissue she would tell me use this... like use tissue and sanitary wipes."* (IDI, ID#2.2)

Quote H13— *"I put a panty liner on just in case it comes unexpectedly. When it comes, my mom has these wipes. She says use wipes to clean yourself and then use tissue. I use that and then I put a pad on. I make sure I change frequently instead of keeping it on. I think it stinks if you keep it on for a long time I guess. My mom uses a lot of Summer Eve stuff. It's like soap. It's supposed to be for your vagina and stuff."* (IDI, ID#3.5)

Quote H14— *"My step-mom told me this but it's like pussy deodorant."* (FGD, ID#2.2)

Quote H15— *"My mother told me, she was like, don't use dutch, I think it's a douche?...Douche, never use that. She say you should wash up like every chance you get when you're on your period, so yeah."* (IDI, ID#2.1)

Quote H16— *"My sister...she said that females' bodies are dirtier than dudes when they grow up. So I'm just like, Okay. Fine. So she was just like, "Just take two showers a day. One in morning and one at night." So like, "All right, okay, I'll do that and keep myself refreshed." And she told me not to use the Summer's Eve, stuff like that. Don't use the little douche thing that everybody else been using. I was like, All right, don't use that 'cause it'll mess up my balance. So that's pretty much what she told me."* (IDI, ID#2.8)

Quote H17— *"She [her mother] like you know you got to keep up on your hygiene and stuff like that. And I'm like, I know....they just like always told me I better keep up with my hygiene cause I don't want to be no girl walking around smelling like nothing..like I don't want to be smelling like the bottom of the ocean and stuff like that. When I be on my period, I was up at least two to three times a day....like that is how, I don't know...my mother do that. I don't have to, but, like, she be making me thinking I don't want to be smelling bad or nothing like that."* (IDI, ID#1.2)

Quote H18— *"Because I think all female's hygiene is important because it's like the way you carry yourself is the way people see you and you don't want people to see you at your worst. I don't think no one wants to see anybody at their worst, so yeah. ...I think it's the way you smell like if you stink you don't want to be told that you stink but like if you smelling good you know people wanna say that you smell good, so yeah....Because if you stink the stereotype is if you stink you're dirty."* (IDI, ID#2.1)

Quote H19— *"Cuz a girl don't want to walk around and have a boy smell them and think...they should have something to make them not smell, stink. At least keep some perfume on them or anything...I don't want a boy to smell me and be like she stinks, she dirty..."* (IDI, ID#2.2)

Quote H20— *"Like that's like your hygiene and like when I say like yeah like take care of yourself. Like you shouldn't be like, you shouldn't smell the type of way, like you should smell the type of way that you're supposed to smell."* (FGD, ID#3.1)

Quote H21— *"'Cause I really thought it was gonna a one time and I was good....I was only nine, I didn't know. I thought it was that one time then it happened again..."* (FGD, ID#2.6)

Quote H22— *"I didn't really get the concept until after the 2<sup>nd</sup> month."* (FGD, ID#3.4)

Quote H23— *"Like I didn't know it was gonna come monthly, I thought it came like once a year maybe. I didn't know it would come once a month. I didn't know it was gonna last three days, I thought it was gonna last like one day. I thought it was like once a year stuff like that."* (IDI, ID#2.1)

Quote H24— *"I would be like why is it still coming...Like why's it coming every month, like I would forget or something. ...I don't*

*think she like ever told me it was like every month.” (IDI, ID#2.5)*

Quote H25— *“I was asking my mom a lot of questions like how long is this going to be? ....How long will my period last? She was telling me three to five days. After she told me three to five days, she was like it could be longer. I was like how do I know am I going to be bleeding for a month? How do I know how long this is going to last?” (IDI, ID#5.4)*

Quote H26— *“So, you know, I'm like, What is going on? Why am I bleeding this much? I'm like, Oh my God. So I was texting my friends, like [Laughs], I was fourteen years old, and I was texting them. I was like, 'I love you, man.' They were like, 'What is wrong with you?' I'm like, 'I'm losing a lot of blood.' [Laughs] They were like, 'What is wrong with you?' I said, 'I don't know. I just know I'm bleeding a lot,' and I'm like, 'I don't know what's going on.' I just thought that something was wrong. Also, I went to my doctor about how, you know, sometimes I would get it at the beginning, then somewhere I would get it near the end. So I went to my doctor. She was like, 'Maybe your period is changing.' I was nervous 'cause, you know, I got my period twice in a month, or one time, I wouldn't get it at all. So I'm just like, What's going on? But... I just wish I woulda knew that...about how the periods would change as you get older.” (IDI, ID#2.8)*

Quote H27— *“Well, my doctor said that it's heavy for some girls when they first come on, because it got to regulate itself, so just wait on it.” (IDI, ID#5.2)*

Quote H28— *“...[my] grandmother told me I should always like have an extra pair of underwear and bring more than enough pads with me in my bag....Some people not understanding when you wear a pad you shouldn't wear like real light clothes because you never know and some people is not prepared. They probably bring three pads to school knowing you should bring about twelve so it's like they need to bring more than not basically.... My advise is to bring more than enough pads with you because you rather be safe than sorry.” (IDI & FGD, ID#2.1)*

Quote H29— *“So not it's like, you always have to stay ready. Because if you don't, then you're just going to have a mess in your pants, and no one wants that. So, staying ready, you'll either have like, liners in your underwear, catch discharge or spotting, or maybe you'll just walk around in a pad all day. ...So you just have to be prepared.” (IDI, ID#5.1)*

Quote H30— *“how to prevent blood from seeping through my clothes when I'm in public.... Tricks are: wear a sweater around your waist, shorts under your pants, wear black ....wear two pads, also to change or check yourself every hour or so. (FGD, ID#5.2)*

Quote H31— *“We said keep up with yourself like your hygiene. We said wear dark clothing like underneath your pants, said wear extra underwear... and like bring more pads like even when you're not on your period. Make sure you have pads 'cause you never know when you gonna come on.” (FGD, ID#2.7)*

Quote H32— ID#2.4: *“Don't wear like your little sexy panties.”*  
ID#2.7: *“Oh no.”*  
ID#2.3: *“Don't wear them.”*  
Interviewer: *“Why not?”*  
ID#2.6: *“Whip out them granny panties real quick. [laughs]”*  
ID#2.4: *“You bleed through them.”*  
ID#2.10: *“Wal-Mart drawers.”*  
ID#2.6: *“Don't wear your good underwear.”*  
(FGD Group 2)

Quote H33— *“I learned like some of it on my own like how to determine or keep changing yourself like I think everyone's different because some people are lighter some people are heavier so it's like I learned that. I learned like what kind of pad I would want, like some people like maxi I really don't like maxi at all but some people do and yeah, everybody different I think...like I tried the maxi before, it won't stay in place. Like and then like you can sometimes see it, you gotta keep checking to see if you can see through. With the thin ones, it's like, can't see it. You are paranoid, you're more paranoid though with the thin ones so but, yeah.” (IDI, ID#2.1)*

Quote H34— *“I saw pads and things like that in the bathroom so I wanted to ask her how do you use it and stuff. ....She didn't tell me about heavy and light so that's why I was confused in the store. She just basically showed me how to use the pad.... I asked her a lot of questions as I started school, too. I came on my period before school started so I didn't know what to do. How are people going to look at me? Are people going to know that I'm on my period? Are they going to see the pad in my pants? What do I do? She was telling me in between classes, just go to the bathroom and change it.” (IDI, ID#5.4)*

Quote H35— *“Like your period. You know how sometimes people, like she was saying earlier how sometimes you can get their period twice a month 'cause their periods changing' and stuff like that stuff like that. You know be prepared for it. Tracking your period, have extra pads with you, bring an extra pair of panties with you, wear dark colors... Just in case you get your period accidentally you don't know, so yeah that's it.” (FGD, ID#2.8)*

Quote H36— *“...You can like put like notes like on your wall like maybe like how many days then you can put that like on your wall to remind you when you ready to come on your cycle and everything.” (FGD, ID#3.1)*

Quote H37— *“just basically talking to them about...when it's gonna come and how some girls, like when is it gonna come up, some's last a week, some people last like four days some, not only different stuff and talk to them.” (IDI, ID#3.2)*

Quote H38—*“...I didn't even like calendar my days of my period yet. I would still be surprised every time I came on I'd be like where's that book at...I just never thought that I was going to have to write in there every day I came on my period. I was still young.”* (IDI, ID#2.4)

Quote H39—*Is it bad to have your period for 5 days?  
Is it bad to not have your period in 3 months? ?  
Why do we get our period every month? ?  
Is it bad if your period is not on a schedule?*  
(FGD, Group 4)

Quote H40—*“At the moment of my first menstrual period I felt sad and hurt because my mom told me I cannot eat spicy or do exercise.”* (FGD, ID#4.5)

Quote H41—ID#2.1: *“Well I learned that I can't drink milk at all 'cause I get heavy...I don't eat cereal...Someone told me.”*  
ID#2.6: *“I heard if you eat bananas it slows down your cycle.”*  
ID#2.10: *“I learned that while I'm on my period I can't have cold stuff because it's going to make me get cramps or it's going to make the cramps worse.”*  
(FGD, Group 2)

Quote H42—*“Like I looked up like foods, foods that make your menstrual cycles heavier. One time I looked up like things that can delay your menstrual cycle, like stress. I looked up like, why my period was so heavy because I was still trying to figure it out. When it first came on... my mom told me that might be why it's so heavy, because sunflower seeds... because I used to get like the big bag, and I would sit there, eat the whole bag, like...”* (IDI, ID#5.2)

Quote H43—*“Like I looked up like foods, foods that make your menstrual cycles heavier. One time I looked up like things that can delay your menstrual cycle, like stress. I looked up like, why my period was so heavy because I was still trying to figure it out. When it first came on.”* (IDI, ID#3.5)

Quote H44—Interviewer: *“Is there anything you feel like you wish you would have known before you started that you didn't know?”*  
Respondent: *“I didn't think the cramps were going to be that bad. I wish she [her sister] went into more detail about it.”*  
Interviewer: *“What kind of detail?”*  
Respondent: *“Like your stomach is going to be killing you, and I would take some medicine before. When it comes my period, just hurry up and take some medicine cause your stomach's really going to kill you.”* (IDI, ID#1.3)

Quote H45—*“the next day I remember having like the worst cramps. I don't get cramps at all no more but when I first got them I had like the worst cramps ever. Crying, in tears and my mom is just like, well this is what comes with it, and then she just gave me some medicine....I was just like, so this is what it is? I don't want it no more, you take it. It was just like, I don't want this, I don't want this, you know.”* (IDI, ID#2.4)

Quote H46—ID#2.3: *“I feel like when I get cramps it hurts in my stomach and my back.”*  
ID#2.1: *“Like stab you in your back, your lower back.”*  
ID#2.6: *“If feel like they stabbin' me in my thigh, my groin area, my chest, my heart, my throat, my everything.”*  
(FGD, Group 2)

Quote H47—*“my mother just be like just put a hot rag on your stomach or put a cold pack on or take some Midol or any type of pain reliever.”* (IDI, ID#2.2)

Quote H48—*“so I got this bottle. It's a big bottle, I put water in it, and I throw it in the microwave so I can warm it up, because I didn't want to use a towel, because towels and wash rags get cold after a while, but this bottle stays nice and warm. So I just sit it there, and I just lay on my bed staring at the ceiling, like oh my God, I can't. And I didn't want to eat...”* (IDI, ID#5.1)

Quote H49—*“Take medicine while you eat your breakfast so you don't have to deal with cramps through the day.”* (IDI, ID#5.4)

Quote H50—*“eventually your period will get worse as you get older, so you might have to get over it one day.”* (FGD, ID#2.10)

Quote H51—*“But then I started, after that first year, maybe like six months into the next year, I finally started getting cramps, I did not like that at all, I hated it so much.... So I was never bloated, I never cramped until the first year it was up. It was like a free trial or something.”* (IDI, ID#5.1)

Quote H52—ID#2.9: *“For me I'm angry, like bein' tired, like the week before I come on. Like I'm mean to everybody in the house and school, yeah. ....I get mad as, I don't know what, when I go off, I get mad before I come on.”*  
ID#2.6: *“The week before I get on it's like I get cramps before I come on and like I start feelin' nauseous and then when I get on it's just like everything shut down. Just don't talk to me, don't look at me, don't breathe on me, don't call my phone, don't text me, nothing, just don't talk to me. It's like I can be the nicest person when I'm not on my period but as soon as I come on it's just like don't come near me at all, ever.”*  
ID#2.3: *“When I come on I just feel a slight depression 'cause I be lookin' at like it, I'm like why...”*  
(FGD Group 2)

Quote H53—*“Oh, I also didn't know that you had to go to school when you were on your period. I didn't wanna go. I still went, but I didn't think I had to cause I was “sick”, and I throwed up, you know.”* (IDI, ID#2.8)

Quote H54— <i>“And I was like; oh I want to go to the pool. And for me I didn't know like you couldn't get in the water and go to the pool when you get your period and stuff like that. So I started to cry. I was like; I can't get in the water.”</i> (IDI, ID#1.2)
<b>Table 2I: How does menstruation work?</b>
Quote I1— <i>“I meant the other hole underneath your pee hole.”</i> (FGD, ID#2.6))
Quote I2— <i>“I didn't learn it was two holes in stead of one.”</i> (FGD, ID#1.4)
Quote I3— <i>“Wait, so I was watching Cops one day and I felt so stupid. No, I'm seventeen and I felt so stupid cause the lady jumped on the man's car and then the cop was like she was showing her genitals and I was like....my mom looked at me like, “you your father's child” cause I was like I thought only men had genitals. I was like no. I really feel so bad cause I didn't know. I was like I thought only men had genitals.”</i> (FGD, ID#2.9)
Quote I4— <i>“Somebody told me that it's because your egg is right there or something like that...I don't know somebody told me something about the egg that you have, and, like, what do it have to do with anything ...”</i> (IDI, ID#2.2)
Quote I5— <i>“My mama said when I come on my period like it's eggs dyin' so I just assumed it was eggs. My baby's dyin'. I'm like my baby's dyin'...I really thought it was like eggs. I'm just like oh my baby's dyin'... I thought I'd be able to see them.”</i> (FGD, ID#2.6)
Quote I6— <i>“I learned it's from the uterus and stuff like that...I don't know the specific reason why the uterus bleeds, but I know it's from the uterus, and that when you get pregnant it stops or something, but I'm not sure why. I think I learned that, but I don't remember why.”</i> (IDI, ID#5.2)
Quote I7— <i>“They said how the cell, the egg, a cell breaks and leak, it start bleeding. And they said that happen when you have your first period and stuff...A cell break and then you know. And your stomach start hurting, cramps. And that how you feel when you on your period. Something they say like that.”</i> (IDI, ID#5.3)
Quote I8— <i>“If you're having sex, you just sitting there waiting for your period. If my period come late, I don't care. It come.”</i> (FGD, ID#2.4)
Quote I9— <i>“... some girls don't know like when you come on your period like you don't supposed to have sex when you're on your period....So I think like sex and period like somethin' like that.”</i> (FGD, ID#3.1)
Quote I10— <i>“When your not on your period is it possible to get pregnant having sex”(FGD, Group 1) “How many eggs are able to be fertilized?”</i> (FGD, Group 2)
Quote I11— <i>“Is it true that you come on your period and be pregnant? I'm still curious.”</i> (IDI, ID#1.2)
Quote I12—Interviewer: <i>“Did you know how menstruation worked and what was going on?”</i> Respondent: <i>“No. I didn't know all the details. All I knew that's what happened when a girl was a certain age. That's it.”</i> Interviewer: <i>“So when did you learn the details?”</i> Respondent: <i>“Recently when we were talking about it. Just now I learned it”</i> Interviewer: <i>“So when you had class in school, you didn't learn about that?”</i> Respondent: <i>“No, not really.”</i> (IDI, ID#1.4)
Quote I13— <i>“Tell them how a period works.”</i> (FGD, ID#2.2)
<b>Table 2J: Why do girls menstruate?</b>
Quote J1—Interviewer: <i>“Do you remember what kind of things did you ask the doctor?”</i> Respondent: <i>“...why do I get it? And stuff like that.... I kind of knew what it [a period] was, I just didn't know the reasoning behind it. I was twelve.”</i> (IDI, ID#5.2)
Quote J2— <i>“I got my mother pokin' at me. Oh you're growing up.”</i> (FGD, ID#2.7)
Quote J3— <i>“my older sister told me when you come on your period you mature now.”</i> (FGD, ID#3.1)
Quote J4— <i>“My dad just smiled and said you're growing up.”</i> (IDI, ID#2.5)
Quote J5— <i>“She [her mom] came running and told me I was becoming a young lady and that I would have to start wearing pads.”</i> (FGD, ID#3.4)
Quote J6— <i>“When I told them [her cousins] I got my period, they was like, “You're growing up.” Like they were crying, just tearing up. I'm just looking at them like, “Why are you looking at me like that?” They were just like, “I can't believe you got your period. Next thing I know, you're gonna be thirteen. Crazy. [Laughs] Yeah.”</i> (IDI, ID#2.8)
Quote J7— <i>“And then she [her mother] took me to my aunt's house and my aunt she was like welcome to womanhood. I'm just like...[looks puzzled].”</i> (FGD, ID#2.6)
Quote J8— <i>“I said why my stomach started hurting and I saw blood in my pants. I asked her what's going on with my body and she said you're growing.”</i> (IDI, ID#5.3)



Quote J9— *"I don't know why they're [some girls' parents] so happy, but they do that, some parents do that. ... so some of them will talk to you and be happy and some parents just tell you you're growing up and just end it like that....she [her mother] just acting normal. I mean she think it was a big deal but it wasn't, she was just acting normal. We were just being more nice."* (IDI, ID#3.2)

Quote J10— *"She thought I was grown up. She told my grandma and it's like I don't know. I think she was smiling and I don't know why. It hurt [Laughter] I don't know why."* (IDI, ID#2.1)

Quote J11—ID#2.4: *"My mother cried, I'm serious."*  
ID#2.10: *"Huh-uh, my real mother cried too."*  
ID#2.4: *"My mother sat me down and told me how to put them on [pads] and all of that. She was crying, I was just like 'ma stop crying."*  
(FGD, Group 2)

Quote J12— *"She [her mother] was like my baby growing up on me. Oh you got your first period. .... And she was like, oh my baby. I can't wait to tell your father and I was like, there's nothing to tell nobody. I was like, there's nothing you can tell. I'm growing up. It's a part of life. She was like; yeah it's a part of life but wait until your father finds out. You're his first daughter. Came on her cycle. I was like, oh my god I don't want to hear this."* (IDI, ID#1.2)

Quote J13—ID#3.1: *"I kinda didn't wanna tell my grandma 'cause ... My great-grandma she told everybody, I was like."*  
ID#3.4: *"I told my mom, my mom told my grandmother, my grandmother told her group, like the grandmother group...I hate when they be talkin' about you, but you be sittin' right there."*  
(FGD, Group 3)

Quote J14— *"Like, I told my mom, I didn't think she would tell anyone. Turns out she told my grandmother, she called my gram. My grandmother came across the street, and I'm just like oh my God. She tells my dad, and I'm just like, why? I didn't think periods were such a big deal. I don't, it's weird...I don't know, they smile about it. They'll tell other people about it, even if you don't want them to know, well they know."* (IDI, ID#5.1)

Quote J15— *"My mother ... she's like guess what...your niece just got her period. I was like is that something to tell the whole world, like..."* (FGD, ID#2.6)

Quote J16— *"I said, your mother going to talk. The only person I told were my mother and my cousin and last I found out my whole family knew at the next cookout. I was like, oh my God. ... like you mother going to put you on the spot cause you first came on. I was like, my mother told one person and it's like a tree line...tell somebody, they tell somebody. It's like gosh."* (IDI, ID#1.2)

Quote J17— *"And she [her stepmother] just laughing and that's when she told my father and he told the damn world and I was so angry.... My father he went on Facebook, called my grandfather and my grandmother... My step-mother before she even texted me back, she texted him... My father said today my daughter became a woman on Facebook...I deleted my Facebook. He did tag me, I untagged myself. To the whole world, it was embarrassing ...Basically, what I have to say for young girls is when you become a young woman make sure you don't tell your father."* (FGD, ID#2.10)

Quote J18—ID#2.5: *"They give me a gift basket like with chocolate and stuff in there."*  
ID#2.9: *"What you get that?"*  
ID#2.5: *"I did".*  
ID#2.9: *"Oh no, where's your family at?"*  
Moderator: *"Who gave it to you?"*  
ID#2.5: *"My mother and my aunt gave me one."*  
ID#2.6: *"They love you. ..."*  
ID#2.9: *"I got congratulations."*  
ID#2.1: *"I got a text, use this...[a pad]."*  
Moderator: *"What'd you say was in the gift basket?"*  
ID#2.5: *"Chocolate, pads, a journal, stuff like that."*  
ID#2.7: *"I need to come to your house."*  
ID#2.10: *"I didn't get nothing for the first like the two years."*  
(FGD, Group 2)

Quote J19—Respondent: *"And I would say a good thing is that I had support."*  
Interviewer: *"Ok. And like can you describe what your support looked like that was so good?"*  
Respondent: *"My support was getting the baskets, like just I guess like everybody like family members knowing what you're going through, and not feeling like you're by yourself. Even though I did still feel like that plenty of times.... I was not mad but I was like why are you telling everybody?...I guess. They already knew it was going to come anyway."*  
(IDI, ID#2.5)

Quote J20—Respondent: *"... apparently, ID#2.6 had got a basket for of stuff, and I didn't know. I don't think we knew each other at the time. But when she would say [that], I'm just like, "Oh, I didn't get anything." I just got a pad and that was it. I didn't get no special basket. No, "You got your period!" No. I just got the reality. "You got your period." That's it."*  
Interviewer: *"Would you have liked to get a basket?"*  
Respondent: *"Yes. [Laughs] I would still like one to this day. [Laughs] Like, "Oh, hey, you got your period!" I'd be like, "Oh, thank you!" [Laughs]*  
Interviewer: *"Why would you have liked to get a basket?"*

<p>Respondent: <i>"I don't know. It would make me feel special. You know, like make me feel I'm changing. You know, the pad, it was okay, but you know, it was special to me at the time, but when I heard that, I was just like, mine could have been a lot more special, you know? But..."</i></p> <p>Interviewer: <i>"What kind of thing do you think should be in the package"</i></p> <p>Respondent: <i>"Chocolate. I love chocolate. Chocolate, maybe some painkillers over there, and more pads in the middle. Not just little pads, but a big box of pads right in the middle. And it'd be decorated. I think that would be nice."</i> [Both laugh]</p> <p>(IDI, Danny)</p> <p>Quote J21— <i>"No my mom just, it's like she didn't care. She's just like oh everything's in the closet and then when I got home she's like so how's it feel? I said my stomach hurts, not happy. I want to go to sleep."</i> (FGD, ID#2.7)</p> <p>Quote J22— <i>"I mean, some people that I know is like, asked what period is for but period is mainly for is to clean your body out. And like, you're growing up."</i> (IDI, ID#1.2)</p> <p>Quote J23— <i>"I mean not while you're having it but like you been havin' it so they say that after you have menstruation you can get pregnant."</i> (FGD, ID#4.3)</p> <p>Quote J24— <i>"...then, you know, you can make a baby. So stay away from boys."</i> (IDI, ID#2.8)</p> <p>Quote J25— <i>"...Cause once you get your period, I mean that's how you have kids. It is a big concern because once you have a period, and then you start having sex/sexual intercourse with a boy you can never know. So, it's a big concern. It's how you have kids, so yeah."</i> (IDI, ID#1.2)</p> <p>Quote J26—Interviewer: <i>"What would you have liked to look up?"</i></p> <p>Respondent: <i>"Like what does it mean to have a period?...Why do you have a period?"</i></p> <p>Interviewer: <i>"OK [silence] Do you have the answers to those questions now?"</i></p> <p>Respondent: <i>"I say the way because you have a period is so like some people used to say it's Mother Nature because she is telling you good job you didn't get pregnant so that's what people used to always tell me. So I actually think that is true because when you are pregnant you don't come on your period so I'm like she's right. That's a key to say you're not pregnant."</i> (IDI, ID#2.2)</p> <p>Quote J27— <i>"She [her mother] didn't tell me that when you have sex before you get on your period, that's when you come on after that."</i> (IDI, ID#5.4)</p> <p>Quote J28— <i>"my dad looked at me like, have you been sexually active?" I'm like, "How would I be sexually active?" He said, "Any boy been touching you?" and stuff like that. I'm just like, "No." He's like, "Cause you too young to get this." I'm just looking at him like..."</i> (IDI, ID#2.8)</p> <p>Quote J29— <i>"Thought it was just blood coming out of me, that's all. It's just a period."</i> (IDI, ID#1.4)</p> <p>Quote J30— <i>"It doesn't have a meaning to me but I don't know about other girls."</i> (IDI, ID#2.2)</p> <p>Quote J31— <i>"I still don't like get why does it have to do that...Like I don't get why it has to bleed?"</i> (IDI, ID#2.5)</p> <p>Quote J32— <i>"I was like, why does my stomach feel like this? Why do it have to be so much pain for your body to get cleaned up? That's what my mother always said, your body getting clean up. So why does it have to be so much pain for your body? Why can't it just...I don't know. I don't know why we have to get periods."</i> (IDI, ID#1.2)</p> <p>Quote J33— <i>"I hated, hated coming on my period. I was like mom, why can't I be a boy? [Laughs] It's like, why couldn't I be a boy because I can't do this."</i> (IDI, ID#5.2)</p> <p>Quote J34— <i>"The funny thing is I was walking through an alley making fun of it [the story of Adam and Eve] that day before I got my period and then it happened. [Laughs]...Yeah cause I was getting mad. I was like why did Eve have to do that to girls and stuff? [Laughs] And then it happened that night, and I was like I shouldn't have made fun of them. [Laughs]"</i> (IDI, ID#3.5)</p> <p>Quote J35—ID#2.1: <i>"Wait I got a question. Period is a sin? Is a sin?"</i></p> <p>ID#2.9: <i>"No."</i></p> <p>ID#2.1: <i>"I thought it was a sin or something."</i></p> <p>ID#2.4: <i>"My thing is that is not completely true."</i></p> <p>ID#2.1: <i>"'Cause he bit the apple so she's saying that a period is a sin. Because she bit the apple and that's why we..."</i></p> <p>ID#2.4: <i>"She basically said that we have a period because she ate the apple off the tree but that is not a hundred percent true."</i></p> <p>ID#2.7: <i>"So they say if she wouldn't have bit the apple we wouldn't like..."</i></p> <p>(FGD, Group 2)</p>
<p><b>Table 2K: Am I going to be okay?</b></p> <p>Quote K1—Quote K18—<i>"To have her parents right there telling her what to do cause it's hard when you first come on your period. It's scary. To have someone there to guide you and to know that it's ok cause it's normal."</i> (IDI, ID#5.4)</p>

Quote K2—*“My mother, she just says everybody gets their periods, and just told me I just need to put a pad on.”* (IDI, ID#4.6)

Quote K3—*“They talk to you about it and make you feel like it's normal. Cause when you first get it you're scared cause you don't know what it is. But then when they tell you what it is and they help you so then...”* (IDI, ID#3.2)

Quote K4—*“She [her mother] said, “Girl, calm down before I let you die!” She told me I was fine.”* (FGD, ID#3.3)

Quote K5—*“I talked to my mom about it, she said it was normal...My mom explained to me and told me her story too. After she told me that, I felt better.”* (FGD, ID#4.3)

Quote K6—*“I will tell those girls who don't have the period yet that be prepared for have it and don't be scared”* (FGD, ID#4.7)

Quote K7—*“My advice for younger girls is to be prepared and don't have to be worry because the menstrual is natural.”* (FGD, ID#4.5)

Quote K8—*“when you get your first period don't freak out its normal, wash up and get a pad.”* (FGD, ID#1.3)

Quote K9—*“My advice is don't panic, you'll be fine.”* (FGD, ID#3.3)

Quote K10—*“Advice I would give to a younger girl is not to get upset just take a deep breath your body is changing.”* (FGD, ID#3.2)

Quote K11—*“I would tell girls to not worry, this happens to every girl, even your mother went through this.”* (FGD, ID#4.3)

Quote K12—*“Anywhere, a lot of people talk about it and stuff and it's not like, it is a big deal, obviously it's a big deal. It's not the hugest big deal. It's just like something normal that everybody learns, everybody goes through ...”* (FGD, ID#4.4)

Quote K13—*“My current feel about periods is that if you're first getting it, you're healthy, because in health class, they tell you that if you're a certain weight and a certain height, you can't get your period because you may be underweight or really small, so I'm like oh, so now I'm happy because it's a good thing that people have periods, because you know that you're healthy,”* (IDI, ID#5.1)

Quote K14—*“Is menstruation healthy for your body?”* (FGD, Group 4)

Quote K15—*“Do not let your period make you feel self-conscious. Have period confidence.”* (IDI, ID#5.1)

Quote K16—*“Hang in there!!! It will take a while for you to adjust to your period because you never experienced it before. Periods are a learning experience like anything else in life.... after a while, I had to get used to it...”* (FGD, ID#5.2)

Quote K17—*“Just be prepared, don't freak out, and don't rush anything. It might be annoying and hard but you have to work through it.”* (FGD, 1.1)

Quote K18—*“You can get like different girls and set them up like a panel or something...Telling about their different experiences.”* (FGD, ID#2.5)

Quote K19—*“You could say like, be like look I'm not sayin' your period is gonna be like this, but this is how mine is. When yours comes you can tell me and we can try to relate.”* (FGD, ID#2.6)

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**Chapter 6 (Paper 3): Structural factors influencing girls'  
experiences of menstruating at school in Baltimore City,  
Maryland**

## CHAPTER 6 ABSTRACT

**Purpose:** This study was designed to understand adolescent girls' experiences of menstruation in school and to explore how the school environment influences their ability to manage their menstruation at school.

**Methods:** In-depth interviews and a longitudinal series of focus group discussions were conducted with 28 adolescent girls in Baltimore City, Maryland, a high poverty urban center with a predominantly African-American population where little is known regarding girls' current experiences of puberty and menstruation. Transcriptions of audio recordings were analyzed using a combination of inductive and deductive codes that were developed through a consensus coding process.

**Results:** Participants described how physical and policy aspects of the school environment influenced their ability to manage their menstruation. Pertinent physical aspects of the school environment included: upkeep of school bathrooms, provision of waste bins for menstrual product disposal, and privacy in bathrooms. Relevant policy aspects of the school environment were: bathroom passes, menstrual supplies, menstrual accidents, menstrual symptoms, and school nurses. Participants provided examples of how these aspects of their school environment could support or hinder their ability to manage their menstruation, and they gave recommendations for how schools could better support menstruating girls.

**Conclusion:** Aspects of both the built and policy environments of schools impacted girls' experiences of menstruating in school. These findings suggest that structural factors in schools should be considered when attempting to support girls' ability to effectively and conveniently manage their menstruation in educational settings.

## CHAPTER 6 MANUSCRIPT

### Background

Firmly rooted in a social determinants framework, the field of public health has historically embraced a structural approach to improving population health (Lieberman L, 2013; Sommer M, 2013). Many of public health's major success stories have leveraged structural interventions to improve health outcomes, from fostering access to and use of condoms for HIV prevention-(Jernigan, 2011; Parker R, 2000) to reducing automobile collision deaths through highway redesign (Gopalakrishnan, 2012). The benefit of structural interventions (e.g., changing policy, modifying prices, redistributing resources, redesigning physical spaces, etc.) is that they have the potential to impact large numbers of people at once, and often result in sustainable changes (Blankenship KM, 2006; Horgen & Brownell, 2002; Lieberman L, 2013).

One arena that public health has yet to fully explore is how structural factors in schools influence adolescent sexual and reproductive health, especially that of girls entering puberty. School-level structural factors include not only their organization (middle schools of 6-8<sup>th</sup> grades vs. 7-8<sup>th</sup>), their financing, and the centralization or decentralization of management, but also the actual state of facilities such as bathrooms and the policies related to students' access to bathrooms for menstrual hygiene management (MHM). Public health has a role in understanding the ways that schools influence girls' experiences of puberty and menstruation (Sommer & Mmari, 2015).

A growing body of literature in international settings has found that structural barriers to menstrual management exist in schools in lower-income countries, disproportionately disadvantaging girls (M Sommer et al., 2015). When girls are not able

to properly manage their menstrual hygiene at school, it becomes difficult to engage in, and, sometimes, even to attend school, resulting in missed educational opportunities for girls (United Nations Educational Scientific and Cultural Organization, 2014). Key structural barriers to menstrual management in low-income countries include factors such as lack of toilets and/or running water in schools (Karon, Cronin, Cronk, & Hendrawan, 2017). However, even when functional toilets and running water are available, many other environmental, social and policy-related factors have been identified as inhibiting girls' ability to manage their menstruation in schools (Pillitteri, 2011; Sommer, 2013).

Several studies in various low-income country contexts have found that lack of properly functioning toilets (e.g., either due to not flushing or to overflow), menstrual supplies, sufficient options for disposal of menstrual materials, accessible hand washing facilities, and privacy of latrines (no doors or locks), all impact girls' abilities to adequately manage their menstruation at school (Alam et al., 2017; Connolly & Sommer, 2013; Montgomery et al., 2016; Sommer, 2013; Sommer & Mokoah Ackatia-Armah, 2012). Similarly, girls in these contexts, have expressed discomfort in discussing menstruation with male teachers, so that in schools without many female teachers, girls often feel unable to discuss menstrual-related issues (Sommer, 2013). National, local and school policies may also negatively impact a girl's ability to effectively take care of her menstruation in a school setting; for example, de-prioritizing health education that includes information about puberty and menstruation (Sommer, 2013). In many low-income settings, these physical and social aspects of school environments present significant obstacles to girls' comfort, engagement and participation at school when menstruating, and they also negatively impact their psychological wellbeing by inducing

shame, insecurity, and anxiety around menstruation (Crichton, Okal, Kabiru, & Zulu, 2013; McMahon et al., 2011; M. Sommer, 2009; Marni Sommer, 2009).

In U.S. schools there is not an absence of toilets and running water, but many of the structural factors identified in low-income countries could apply to girls' experiences of menstruation hygiene management (MHM) (e.g., issues with school uniforms, menstrual supplies, discomfort in discussing menstruation with teachers, etc.). However, this topic has barely been explored. In a recent systematic review of qualitative studies that investigated girls' experiences of puberty and menstruation in the U.S., schools did not appear to play a major role in providing support for menstruation (Herbert et al., 2016). Studies investigating girls' experiences of menstruation in U.S. schools focus primarily on the provision of education related to puberty and menstruation (Goldman & Coleman, 2013; Koch et al., 2009; Landry, 1999). On conclusion of this review is that girls' experiences of menstruation in schools have not been a major research priority in the U.S. (Kann, Brener, & Wechsler, 2007).

Multiple states have received media attention for enacting significant policy changes that affect girls' experiences of menstruating at a structural level. In 2016, eleven states across the country made news for legislating the removal of sales tax on feminine hygiene products, such as pads and tampons (referred to as "the tampon tax"), which is estimated to save female consumers millions of dollars (Bowerman, 2016; Hartman, 2017; Money, 2017; Press, 2016). At the municipal level, New York City government officials recently unanimously approved measures that allow women in institutionalized populations, including students in schools, free access to menstrual supplies (Ruiz-Grossman, 2016; Women In The World Staff, 2016). The premise behind these policy

changes is the same as in the international MHM research cited above: females should not be disadvantaged due to the fact that they menstruate, and structural interventions are needed to address current inequalities. To the best of the authors' knowledge, no studies have yet been conducted assessing the impact of these recent policy changes on girls' ability to effectively manage their menstruation in U.S. schools.

The current study aims to contribute to the nascent body of research on structural barriers to MHM in schools by addressing a key gap in the U.S.-based literature. Specifically, it explores how the environment girls experience in their school influences their management of menstrual hygiene when they are in school, with a focus on a low-income population of girls in a mid-size U.S. city.

## **METHODS**

### **Study Design**

A qualitative study, including in-depth interviews (IDIs) and a series of focus group discussions (FGDs), was conducted with adolescent girls to capture a thorough understanding of recently post-menarcheal girls' experiences of menstruation hygiene management in schools in Baltimore City, Maryland, U.S.. Methods for this study were adapted from research conducted in multiple developing country contexts including Tanzania, Ghana, Ethiopia and Cambodia (Sommer et al., 2014). All aspects were approved by the Institutional Review Board at Columbia University Mailman School of Public Health.

### **Study Setting**

Baltimore City, Maryland was the setting for this research. Baltimore is a major urban center in the U.S. with a predominantly African-American and low-income population, of which little is known about their experiences of puberty and menstruation (Brooks-Gunn & Petersen, 1983; Grief & Kathleen, 1982; C. Roberts, 2015; U.S. Census Bureau, 2015). About 24% of the population was estimated to be in poverty as of 2015, which is roughly twice the national average (Bishaw & Benson, 2017; U.S. Census Bureau). For those under 18 years old, the poverty rate is even higher—34% (U.S. Census Bureau). Recent estimates find that approximately 84% of students enrolled in Baltimore City public schools are low-income (Baltimore City Public Schools, 2015). As of 2016, 60% of Baltimore residents identified as Black or African American and 83% of students enrolled in the Baltimore public school system identify as African-American (Baltimore City Public Schools, 2015).

Sexual and reproductive health outcomes of adolescents in Baltimore are some of the most troubling in the country, including high rates of STIs (including HIV) and teen pregnancy (Brahmbhatt et al., 2014; CDC, 2013, 2015; Healthy Teen Network, 2010). A qualitative study of low-income, African-American adolescents from East Baltimore, a particularly low-income section in the city, identified SRH as one of their primary health challenges (Mmari et al., 2014). An investigation conducted by Baltimore City Health Department (BCHD), identified puberty as one of the key topics related to the wellness of youth aged 6-13 in Baltimore (Summors, 2015). Given the apparent need for resources and education to increase the likelihood of healthy pubertal transitions by youth in Baltimore, it is important to understand girls' puberty experiences and their needs as they transition through puberty into adolescence.



## Study Sample

Adolescent girls, between ages 15-18, were chosen as the participants for this study as they are well-positioned to provide insight into the experiences of menstruation in schools. Within this age range, girls are likely to have already experienced menarche, for which average age is 12.43 in the U.S. (Chumlea et al., 2003). They will have also been through the first three years after menarche when menstruation is commonly unpredictable due to continued hormonal changes (Browner-Elhanan et al., 2003; Elford & Spence, 2002; Treloar, 1967)

A total of 28 adolescent girls living in Baltimore City participated in this study. Four separate groups of girls participated in a series of four FDGs. Group sizes ranged from four to ten girls per group. Fifteen of these girls also took part in follow-up, individual IDIs.

The number of girls per group and in each FGD session is in Table 6.1. Attendance at FGD sessions was quite consistent. Reasons for non-attendance included conflict with another commitment and lack of transportation. Only one session occurred for Group 5 due to conflicts in the participants' schedules.

<b>Table 6.1: Summary of Participation in Focus Group Discussions</b>						
	<b>Focus Group Discussion Sessions</b>				<b>In-depth Interviews</b>	<b>Total</b>
	<b>Session 1</b>	<b>Session 2</b>	<b>Session 3</b>	<b>Session 4</b>		
<b>Group 1</b>	4	3	4	4	3	4
<b>Group 2</b>	9	10	7	10	5	10
<b>Group 3</b>	5	5	3	4	2	5
<b>Group 4</b>	5	4	4	4	1	5
<b>Group 5</b>	4	-	-	-	4	4
<b>Total</b>	<b>23</b>	<b>22</b>	<b>18</b>	<b>22</b>	<b>15</b>	<b>28</b>

## **Procedure**

Contact with adolescent girls was facilitated by youth organizations in Baltimore City. Organizations that serve lower-income and predominantly African-American girls aged 15-18 in Baltimore City, and that do not already provide programming specifically related to pubertal development, were purposively selected. All adolescent girls between the ages of 15-18 involved in the partnering organizations were invited to participate in the FGDs.

FGDs involved four separate sessions that took place over the course of four consecutive weeks, allowing trust and rapport to develop (Spradley, 1979). Prior to all data collection activities, participants provided oral assent and, if under 18 years of age, parents/guardians also provided written consent for them to participate.

Data was collected on-site at the participating organizations' locations. The research team and study participants mutually agreed upon dates and times of meetings. FGD sessions lasted between 1.5-2 hours. To offset some of the costs of participation (e.g., transportation costs), all adolescent participants were given \$10 per FGD session, and their names were entered to win a \$50 prize, which was randomly drawn on the fourth week of meetings with each group of girls.

Two members of the research team were present at each FGD. One moderated the discussion and the other took field notes, recording both verbal and non-verbal information. FGDs and IDIs were audio-recorded, with the permission of participants. Prior to data collection, all members of the research team were trained on: the objectives of the study, data collection procedures, techniques for interviewing and leading group discussions (including how to use probes during FGDs and IDIs), human subjects'

protection, handling distress and conflict within FDGs, and disclosure of child abuse or threats within the interviews or groups. As co-constructors of the data, all members of the research team worked actively, throughout the study, to reflect on and discuss how their background, knowledge, and own experiences may have shaped their interaction with study participants, as well as their interpretation of the data (Creswell, 2007; J. Maxwell, 2013; Ulin, 2005).

For each FGD session, semi-structured guides were used, consisting of somewhat structured activities, (e.g., brainstorming, drawing, listing) as well as open-ended discussion questions that were designed to appeal to adolescents and stimulate interaction (Bernard, 2013; Ulin, 2005). Each session involved an educational component addressing questions the girls had anonymously submitted or asked during an activity. Throughout data collection, the researchers attempted to create an equalizing and dynamic environment where girls were empowered to contribute to understanding that would support puberty educational material to benefit girls growing up in Baltimore (Israel et al., 2001; Minkler & Wallerstein, 2003)

The four weeks of FDGs started with introductions, a review of confidentiality and privacy policies, ground rules for respectful interaction, and an icebreaker activity. Initial FGD activities focused on defining and describing puberty and menstruation. In the first session, the participants also completed a 10-minute) questionnaire assessing sociodemographic information, current puberty stage (using the Puberty Development Scale) (Bond et al., 2006), timing of puberty, and brief sexual and reproductive histories. The second FGD session explored what girls had learned about puberty and menstruation and from whom/where. In this session, girls also wrote individual narratives of their own

menarche experience. In the third session, girls were encouraged to discuss their perspectives on gender expectations and sexual development at puberty and their psychosocial and informational needs related to puberty. In the final FGD session girls were asked to discuss their experiences of puberty and menstruation in school and to make recommendations for a puberty education curriculum.

The semi-structured IDI guides were developed to go more in-depth on the same topics covered in the FGDs. Questions asked about girls' personal experiences of puberty and menstruation, exploring topics that emerged in the FGDs in further detail. The semi-structured design of the data collection tools facilitated comparison across groups, while still allowing for flexibility to let participants guide the discussion based on their experiences (Bernard, 2013).

## **Analysis**

Audio recordings of FGDs were transcribed by an online transcription company specializing in transcriptions for academic research (HomePro Transcribing Company). For accuracy, a member of the research team checked each transcript against the audio recording and corrected any discrepancies. Transcripts and field notes were analyzed using ATLAS.ti qualitative software (Scientific Software Development GmbH, 2016).

The iterative and systematic analysis process began with the reading of transcripts, write-ups from structured activities, and field notes to develop a set of inductive codes based on salient ideas and repeated themes that emerged from the data (Charmaz, 2006; J. Maxwell, 2013). Deductive codes were also created based on the semi-structured guides used in data collection as well as on prior research (Saldana, 2013). To finalize the codebook, two coders met regularly to discuss discrepancies

between coding schemes, and to continually revise codes until a consensus was reached on the coding scheme. Thirty percent of the transcripts were double-coded to ensure consistency across coders. The final codebook contained 57 codes hierarchically organized into 12 main categories. Codes describing the role of schools in supporting girls through puberty and menstruation, including codes for subthemes such as missing school and school environment, were used for this paper. These codes were further analyzed (using a color-coded highlighting process) to further explore and categorize themes and patterns (Krueger, 2015). Diagrams were then also utilized to visualize how the themes were connected and fit together (Creswell, 2007; J. Maxwell, 2013). During analysis, codes and preliminary findings were discussed with the research team to ensure that interpretations of the data were rooted in the data (Ulin, 2005). Sociodemographic data were analyzed in Excel (Microsoft, 2011).

## **RESULTS**

### **Participant Characteristics**

The average age of the participants was 15.6 years. Their average age at menarche was 11.5 years, slightly lower than national estimates, but in line with U.S. African-American and Hispanic populations (Chumlea et al., 2003).

All participants self identified as a racial or ethnic minority. Sixty-four percent identified as African American, 14% as African American plus another race, and 21% choosing “other”, and 4% not responding to the question. Thirty-two percent of the sample identified as Hispanic or Latino.

Prior to de-identifying the data, participants' zip codes were used to describe the economic status of their neighborhood. Participants came from nine different zip codes, representing Northeast, Northwest, and Southeast Baltimore. Based on 2011-2015 American Community Survey Estimates, the average poverty rate of the nine zip codes was 22.3%, mirroring the poverty level of the city overall (U.S. Census Bureau).

To protect confidentiality, names of current schools were not obtained, though the type of school attended in 5<sup>th</sup> grade was provided as that is when puberty education is typically offered, if available at all. For 5<sup>th</sup> grade, 48% of participants reported having attended a Baltimore City Public School, 33% a charter school, 11% attended a school in Baltimore county, and 7% attended a school outside of the Baltimore area. In one FGD, four participants shared that they currently attended private school because it was pertinent to their comments. After following up with the organization contact to verify the socioeconomic status of the girls in the group, the organizational contact for this group explained that these four girls all attended the same private school on scholarship for good grades. No other girls in that group or in other groups suggested that they attended private school, though this information was not officially collected.

## **Findings**

Participants' stories of their experiences of menstruation at school, as well as their recommendations on how schools could be more "girl friendly," were described in terms of two structural categories: (1) Physical aspects of school bathrooms and (2) Policy factors influencing girls' experiences of menstruation. For both of these structural aspects the majority of girls expressed dissatisfaction with how their school environment impacted their ability to manage their menstruation at school. However,

some participants shared positive examples of ways their schools successfully support menstruating girls.

Results are summarized in Table 6.2 with more details on how both aspects of the school environment influence girls' ability to manage their menstruation. Participant IDs are provided with corresponding quotes. The first part of the ID number indicates the group number and the second number indicates the girl's identifier within the group; for example, ID#1.2 represents girl number 2 from the first group.

Comments made by the four girls who attended the private school were strikingly different from those of other girls, as they reported having felt significantly more supported in their ability to manage their menstruation at school than other girls. Their stories and comments served as a comparison and inspiration for recommendations for other girls in the group.

### **Physical aspects of school bathrooms**

School bathrooms impacted girls' ability to manage their menstruation in several ways: 1) poor upkeep in bathrooms created discomfort and embarrassment and discouraged bathroom use, 2) availability of waste bins next to the toilets was a critical feature for MHM, 3) lack of privacy in bathrooms resulted in efforts to hide or conceal their menstruation from others. Girls had multiple suggestions for how schools could better support menstruating girls, making schools more "girl friendly."

### ***Upkeep of School Bathrooms***

Across groups, girls emphatically complained about the “*disgusting*” state of the bathrooms in their schools. They complained that school bathrooms were “*stinky*,” “*dirty*,” “*nasty*,” and “*didn’t have toilet paper or soap*.” Not having toilet paper was problematic for menstruating girls, especially when they were first began menstruating, as toilet paper was commonly used as a last resort MHM measure. However, lack of soap was also quite frustrating to girls. One girl explained how not having soap in the school bathrooms was particularly bothersome when menstruating.

“...*You know you get blood on your fingers, they don't have soap.*” (FGD; ID# 4.4)

The poor upkeep of the bathrooms led girls to want to avoid using them altogether, delaying MHM until they returned home, though doing so was not always possible. The lack of cleanliness and supplies in school bathrooms was one of the most emphasized and ubiquitous comments.

“*They don't got no napkin in the bathroom, no paper towels and stuff. They don't got that. They barely be havin' toilet tissue, they barely be havin' soap. So I just be like, I be like I be so down on my school....Like we really do be comin' in with our own rolls [of toilet paper]*”. (FGD, ID# 2.6)

All participants emphasized the importance of having clean bathrooms that were consistently stocked with toilet paper and soap. Still, participants did not blame the state of their school bathrooms entirely on the school, but also felt that their peers’ lack of menstrual hygiene also contributed.

“...*first of all there's no soap, there's no toilet paper. That's the school's fault. And the fact that they [other girls] actually go in there and like put that stuff [menstrual supplies] on the floor, that's the students' fault. Like it's everybody's*



*fault. Like everybody put in to make it look like that. So I think everybody should do their part and try to make it look decent.” (FGD, ID# 3.3)*

Many participants shared that they felt that menstruating girls were to blame for the bad smells in the bathroom, which was one of their main bathroom complaints. Some participants expressed a gendered double standard for bathroom cleanliness, assuming that boys’ bathrooms could smell, but that girls’ bathrooms should not.

*“Yeah that bathroom is triflin’. To me, it seems like boys go in there more than girls. ...we as girls, we shouldn’t be smellin’ like this.” (FGD, ID #3.1)*

Some participants suggested that providing an air freshener in school bathrooms could help to mitigate the smell in girls’ bathrooms. They also shared a sense of shame about the poor state of their bathrooms, especially in front of people who were guests at the school.

*“...It’s like a guest or somethin’ come use our bathroom like it’s embarrassin’ how girls just don’t take care of their bodies and stuff.” (IDI, ID #3.5)*

In contrast to the majority of girls in the study, the four participants attending the private school expressed great satisfaction at the high level of upkeep in their school bathrooms, explaining that it made them feel cared for. The other girls in the group openly coveted their situation. The following exchange from one of the FGD sessions was between two participants (the first attended a private school, the second did not) illustrates this dynamic:

*“I have to say personally, at my school it’s probably one of the best school bathrooms I’ve been in. ‘Cause it smell good, they clean them bathrooms twenty-four seven”. (FGD, ID# 2.4)*

*“Well when they clean your bathrooms they can come to my school”. (FGD, ID# 2.6)*

Another participant, attending the same private school, explained how she appreciated that the janitors at her school asked students if they felt the bathroom was clean enough.

*“Our janitors...they really talk to you though. Like they really care and everything. They was like is it clean enough for you and stuff like that, they ask that....The bathroom always smells good, it's always clean.”* (FGD, ID# 2.1)

With the exception of the girls who attended the private school, girls were consistently displeased with the lack of cleanliness and supplies in their school bathrooms, were disappointed in their schools, yet also internalized some of the shame for the poor state of the bathrooms. Lack of toilet paper and soap were the predominant complaints about how the school bathrooms made menstrual management more challenging at school, but lack of cleanliness made bathrooms uninviting to use. Girls felt that schools should do a better job of keeping bathrooms clean and stocked with supplies.

### ***Waste bins for disposal of menstrual products***

Participants felt that having a bin to dispose of menstrual products next to the toilet seat was important for menstrual management and bathroom upkeep. For the most part, girls said their schools provided waste bins. However, they noted that these bins had to be regularly emptied out, which was not always the case. They felt that a contributing factor to the poor state of bathrooms was that some girls do not properly dispose of their pads or tampons. Participants said it was common to find “*pad trash on the floor,*” “*pads in the toilet*” and “*blood on the toilet seat.*” Participants widely expressed disgust at how girls at their schools dirtied bathrooms with their soiled menstrual supplies.

*“They [other female students] be leaving it [used menstrual supplies] all on the toilet seat..... They just stick it on the toilet seat....when they're on their period they don't know how to just really put your pad through, they give you a little bin, actually inside the stall, you don't even have to leave the stall with it. You just put it in there, wrap it up put it in there and you'll be good. No, these girls like to be trifling and sit there and put it on the back of the toilet seat or try to put it inside the toilet.” (FGD, ID# 3.2)*

Not having to leave the stall to throw away used menstrual supplies was a critical feature of waste bins intended for MHM as it prevented other people from seeing that girls were having their period. If there was no bin, participants suggested girls did not properly dispose of their menstrual products because they would feel too self-conscious to throw them away in front of their peers.

Participants admitted that they were perplexed why girls did not properly dispose of their menstrual supplies, even when a bin was provided next to the toilet. They suggested that it could be due to lack of knowledge or blatant disrespect for the school property.

*“.... some girls don't know how to wash up after themselves. Some I guess they don't know how to throw it in the trash can. Nobody taught them how to throw the pad in the trash can.” (IDI, ID# 3.5)*

One participant openly revealed that she had been flushing her pads down the toilet. She said she had not realized what the bin in the bathroom stall was for, suggesting that lack of education/awareness was a factor.

### ***Privacy in school bathrooms***

Across FGDs girls felt a need for, and lack of, privacy when using the school bathrooms when menstruating. They were concerned that others would see or hear them changing their pad or tampon, and make fun of them.

*“To me, I feel uncomfortable sometimes, because I don't want anybody to hear me unraveling my pad.... Or hear me changing. And I don't want nobody in the bathroom, I want to be by myself...[I] pull [the pad wrapper] off very slow... 'Cause some people they'll make fun of you.” (IDI, ID# 4.6)*

A few participants shared concerns that people could look at them under the stalls when changing their menstrual products, that stall doors did not have locks or did not fully shut, or that boys would sometimes come in if the main bathroom door was kept open.

*“...And half the doors barely got locks on it so you like, you peein' and the door probably swing open...” (FGD, ID# 2.7)*

Participants revealed that they sometimes asked for special permission to use bathrooms that were usually locked or to use the teachers' or nurses' private bathrooms. However, this strategy was not always successful as participants shared that the private bathrooms in the school were typically off-limits to the students.

*“But it's just like the nurse don't let nobody go in her bathroom and I understand that like they dirty, you all trifling. And the teachers lock their bathrooms so we can't be using their bathrooms. The office bathroom, nobody can go in it either. So I'm just like...” (FGD, ID# 2.6)*

Again, participants felt that students were partly to blame for lack of private bathroom access as they guessed the restriction was likely because students had misused this freedom in the past. Even the girls attending the private schools explained that they were not allowed access to private bathrooms in their school.

*“The only thing we not allowed to do is use like the private bathrooms at our school because they said they had too many issues with that.” (FGD, ID# 2.4)*

Girls still unanimously desired access to private bathrooms in schools when menstruating. In the absence of private bathrooms, girls felt it was important that the bathroom stalls properly close and lock.

Menstruating girls seek privacy when going to the bathroom, mostly to avoid being made fun of by other students. Some participants were able to access private bathrooms in their schools when needed during menstruation, but many were not.

### **Policy factors influencing girls' experiences of menstruation**

Girls shared five ways in which school policies influenced their ability to effectively manage their menstruation in schools: 1) bathroom passes needed for MHM, 2) free menstrual supplies provided in a discreet manner, 3) support for menstrual accidents, 4) assistance with managing menstrual symptoms, and 5) helpful school nurses. With each policy, participants provided examples and recommendations for policy changes that would make their experience of menstruation easier to manage when in school.

#### ***Bathroom passes needed for MHM***

Participants discussed the rules about going to the bathroom during class and how it related to their ability to manage their menstruation. Approaches to providing bathroom passes during class times varied by school attended, and even between classrooms within the same school.

Some schools required students to raise their hands and ask for permission to leave the classroom before going to the bathroom. When permission was required, schools tended to have one of two approaches for limiting how much students could go to the bathroom during class time. One approach, referred to as “the 15-minute rule”, prohibits bathroom passes fifteen minutes before and after the bell rings. The second

approach provides students with a certain number of bathroom passes per year, per class, which are tracked by the teacher.

Some schools, however, did not require any permission for bathroom breaks allowing students to go to the bathroom, as long as they signed out of the room. Regardless of policy, girls expressed annoyance with specific teachers who simply did not allow students to leave the classroom to go to the bathroom at all.

The girls who attended schools that allowed students to go to the bathroom whenever needed described their school's approach to bathroom breaks with pride to the other girls in the focus groups.

*"We can just sign out and go. You don't have to raise your hand no more. Not at my school." (FDG, ID# 2.5)*

Girls who attended schools with stricter approaches to bathroom passes expressed strong dissatisfaction with the policies and shared how these policies directly prevented them from adequately managing their menstruation. Participants who had ask permission to go to the bathroom described their school as "childish" and discussed at length how having to ask teachers to go to the bathroom when menstruating was embarrassing, especially when the teachers were males.

*"... it's really hard to talk to your teachers, and to tell them oh, I need to go to the bathroom, like you know, because you're a girl. And, especially if you have a male teacher..." (IDI, ID# 5.2)*

The girls' main concern with strict bathroom policies was the potential to leak menstrual blood through clothes and getting made fun of by other students, especially boys.

*"It's stupid saying that a girl has to raise their hand to go to the bathroom. Okay, yes, some girls may lie about it, but still, I'm still a girl, I still can't control it, and*

*I'm not going to sit in your classroom and have to go through [bleed through] my pads or something, and then get laughed at by the entire student body about it. I don't want to go through that humiliation.” (IDI, ID# 5.1)*

In cases where bathroom passes were limited, participants repeatedly shared that many girls resorted to just walking out of the classroom without permission, even if it meant getting in trouble. Girls overwhelmingly condoned this behavior, seeing no alternative, and also felt their parents would support them if they got in trouble at school for doing so.

*“Like we really gotta go, you got trouble like that [period trouble], it's like you can't wait that long. So some girls end up just walkin' out the classroom and you end up gettin' in even more trouble than what you are. But sometimes some parents be like if you really have to go just walk out the classroom 'cause that teacher not tryin' to let you go. And then they'll deal with the problems.” (IDI, ID# 3.2)*

Girls discussed how making it to the bathroom between classes was not always possible because there was not enough time to get to the bathroom and to the next class on time, especially because some larger schools only left a few of the bathrooms unlocked and accessible to the students.

Participants across FGDs showed a strong preference for a bathroom policy that allowed them to go to the bathroom when needed without asking permission. They felt that simply signing out before leaving to go to bathroom was an acceptable way to monitor bathroom use. If for some reason a school had to require permission to use the bathroom, the girls felt that they should always be able to go when asking. One participant explained why she felt this was important.

*“... if somebody asked to go to the bathroom, they should tell them go to the bathroom. That's what they should do, and be aware that certain girls have to go to the bathroom, because they, like some of them first get their menstrual cycle,*

*and they don't really know how to deal with it. They're not a pro with it, whereas older people would be.” (IDI, ID# 5.2)*

Participants viewed not being allowed to go to the bathroom when needed as a potential barrier to MHM, especially for newly menstruating girls, and they felt that having to ask male teachers for permission was particularly embarrassing. Girls feared that not being allowed go to bathroom could result in leaking menstrual blood into their clothes, making them a vulnerable target for ridicule by other students. Across groups, girls emphasized that a lenient approach to bathroom passes was important for successful menstrual management.

### ***Free menstrual supplies provided in a discreet manner***

Nearly every participant shared stories of menstrual accidents at school, and they feared being made fun of when accidents occur. One girl shared that a particular fear of hers, which was based on an experience of a girl at her school, was that someone would post a picture of her on social media showing a blood stain on her clothes. Girls felt that having inconspicuous access to menstrual supplies at schools, referring primarily to disposable pads and tampons, was important to preventing and taking care of menstrual accidents, especially because toilet paper was not always available as a possible back up in school bathrooms.

Most girls felt they had some way to get a pad at school in an emergency, and, if not, they could call a parent to come get them; however, supplies were not always conveniently accessible and required permission to access. Participants emphasized that being able to access the back-up supplies in a discreet way was important, and that having to ask permission for them was inconvenient and uncomfortable.



*“...you don't even want to go to the nurse, you don't want to go to a teacher or like a friend or something 'cause you maybe like embarrassed or something.”* (FDG, ID# 4.4)

Even when supplies were offered at their school, participants complained that getting back-up menstrual supplies at school could be problematic as they felt that some school nurses were difficult to interact with and rationed supplies. One girl shared that when she started her period unexpectedly, the nurse gave her a difficult time for needing more than one pad.

*“So, we asked, we came back, and we asked her for another [pad], and she's [the nurse] like, you still need one? And I'm like, so I'm supposed to only use this one throughout the day? I used the bathroom, it gets full, so she was really, hesitant to give us more, so it's like, why are you so hesitant to give us things? I guess she didn't believe we were on it? I don't know why. Like, who just wants to come to the nurse and ask for pads? No one.”* (IDI, ID# 5.1)

As this quote illustrates, girls expressed disappointment that menstrual supplies were sometimes rationed in school in a way that felt accusatory to them.

It was also important to girls when getting supplies from nurses or other school staff that there would be a way to retrieve the supplies and bring them to the bathroom in an inconspicuous manner. One girl shared an example of how her school provided back-up supplies in a discreet way that allowed her to avoid embarrassment.

*“At my school, you could go to the office and as soon as you go over the counter, you give them the look. The ladies behind the counter already knew that you were on your period if you come in and you say do you have? They'll be right there or they'll just slide it to you.”* (IDI, ID# 5.4)

This participant was able to choose her menstrual product privately without having to explicitly ask for one. Another girl shared that in the past at her school they had provided a case to discreetly transport the supplies from the office, which she appreciated.

*“...So, if you go to your nurse and ask for a tampon or a pad or something, she will give you this book... And you flip over the page, and you have pads at the top, tampons on the side, all of it's right there. It was really nice, but I guess she ran out of books, so now it's like, she gives them to us in our hand, and you have to find a place to hide it, because you don't want people to see it.” (IDI, ID# 5.1)*

Though this girl appreciated having a carrying case for the menstrual supplies she got from the school nurse, girls from another FGD decided that providing a special bag or box for carrying menstrual supplies was challenging because peers would end up knowing what it was for, which would defeat the purpose of concealing the menstrual products.

To address the lack of privacy in providing menstrual supplies to girls at school, participants said that having a free pad and tampon dispenser at school located in the bathrooms would be ideal, as it would mean that girls would not have to ask for them. Many participants mentioned the coin-operated menstrual supply dispensers available for pay in many public restrooms were an example of what they wanted to see in schools, though they emphasized the need for menstrual supplies at school to be free, pointing out that many girls would not have money to pay for them at school.

To address any potential menstrual supply vandalism, one group voiced the following solution:

*“You know you have an I.D. right, for school?... The bathroom could have like this thing, like you swipe your I.D. and this packet come down and that way you knows who takes one” (FGD, ID# 4.3).*

Even though no participants reported having ever had financial barriers to obtaining menstrual products, they were unanimously concerned that other girls in their school may. Only one participant admitted to missing school once because she was out of

menstrual supplies at home. When asked why she did not go to school for this reason, she said:

*“because I didn't want to come to school in a dirty pad cause I already had a pad on. So I didn't want to come to school in a dirty pad. I would have come to school if I had one extra pad then I could have gone to the nurse and gotten more pads.”*  
(IDI, ID# 3.5)

For this participant, it was better to miss school altogether than to arrive at school with a dirty pad.

Finally, when providing free pads in an inconspicuous way, girls emphasized the importance of providing pads that were comfortable and effective. Many girls complained that the pads provided at their school were poor quality or the wrong size.

*“...they give us like the little irritatin' ones that don't have the wings so they don't stay still.”* (FGD, ID# 2.9)

It was clear within FGDs that girls had varied preferences for their menstrual supplies (pads versus tampons), which prompted the girls to suggest that schools have different options available.

To support menstrual management in schools, girls felt that it was important to provide a variety of menstrual supplies for free and to do so in a way that does not require asking someone and that allows girls to keep the menstrual products concealed from others.

### ***Support for menstrual accidents***

One of the most feared scenarios was having a menstrual accident at school. Nearly every participant had an anecdote about at least one experience of bleeding

through her clothes; often occurring when initially getting used to menstruating.

Menstrual accidents tended to happen when periods came unexpectedly or when they were unexpectedly heavy. The main concern about leaking menstrual blood was embarrassment about being made fun of by other students.

*“...it was really embarrassing, especially when I first got it...because people be like, oh there's something on your pants, or something like that. It was like, really? And then, that's just embarrassing because you know, having blood on your pants, that's just embarrassing to me. For people to tell you that's on your pants, and I struggled with that a lot in middle school...” (IDI, ID# 5.2)*

When menstrual accidents occurred, participants felt it important that the situation be addressed immediately. Most girls responded to menstrual accidents by going to the nurse (if available) and/or calling home, either to request extra clothes or to be picked up to go home. Some participants suggested that schools could provide back-up clothes for girls to use for such purposes. A few participants (who did not attend the private school) shared that their schools provided back up clothes, though they had not utilized this service themselves.

The manner in which the school staff responded to menstrual accidents appeared to be even more important than having back-up clothes available. Girls felt that nurses and teachers should be kind and compassionate when these situations happened. A participant shared an exchange with her school nurse that she felt was unsupportive.

*“I think this was like last year I didn't know I was going to come and she said you should have known it's gonna come. And I said well I didn't okay sorry. 'Cause I already had it that month and then it came again that month and I was like that's weird. And then I went to the nurse to get one. She just started saying you should have known what day you come, you should count this and stuff like that and I'm like oh my God.” (FGD, ID# 4.4)*

Menstrual accidents at school were sources of anxiety and embarrassment for girls. Should accidents occur, participants felt that immediate and compassionate help was needed to address the blood-stained clothing to avoid teasing from other students.

### ***Assistance with managing menstrual symptoms***

The majority of girls in the sample reported having missed school at some point due to menstrual-related pain. In general, participants reported that absences due to menstrual pain only occurred occasionally when symptoms were particularly severe. Common reactions to the question “do you ever miss school due to menstruation” were illustrated by this quote:

*“When they’re [the cramps are] really bad, sometimes I gotta miss school and stuff like that...Not that often. Just when they’re really bad.” (IDI, ID# 1.3)*

In contrast, a minority of girls in the sample felt that menstruation was never an excuse to miss school, saying that they took medicine preventatively to take care of the pain. One participant explained that she thinks some girls use menstruation as an excuse to stay home from school.

*“Some girls do [miss school], they claim it’s for cramps, but I feel like you could take medicine for your cramps though, mostly. I don’t think it’s that serious to miss school.” (IDI, ID# 2.4)*

However, no one personally admitted to using menstruation as a way to get out of school.

Most participants felt that missing school was justified when cramps were severe and/or when accompanied with additional physical symptoms (e.g., a headache, blurry vision) because it could be distracting or challenging to deal with the pain while at school.

*“Uh-huh. Cause it be so bad that sometimes I come to school but it usually be bad I go home cause when I come to school just makes it worse. Cause I'm going to the bathroom constantly and teachers be just thinking that you just leaving out the classroom just to walk the halls but you be having to go. Like it really make your stomach hurt”. (IDI, ID# 3.2)*

Girls who had personally experienced cramps, unanimously felt that schools should provide over-the-counter pain medication (e.g., Midol). Many participants also felt that providing hot pads and a place for girls to temporarily rest would be helpful. One girl (who attended the private school) explained that being allowed to lay down at school when experiencing cramps made her feel cared for.

*“At my school it's real cool....when you crampin' and stuff, like our nurse got like a bed in the back. She'll straight let you like lay down. Like she let me lay down for twenty minutes and I was like real cool and then she gave me like medicine for my cramps and stuff and was like she really took care of me and made me feel real you know...” (IDI, ID# 2.4)*

Another girl said that having pain medication available for menstrual symptoms at school helped to alleviate some of her stress about menstruating at school.

*“They [her school] had medicine for you, but it's kind of stressful being on your period in school because you can't really do anything about it. I have really horrible cramps all through the week. No matter what medicine I take, it just doesn't help. In school, it was very stressful and it gave me attitudes and things like that. I think the school helps out a little bit by providing pads for you and medicine.” (IDI, ID# 5.4)*

A few girls said that their schools were not allowed to provide medication to students, and therefore when they had bad cramps, they just had to call home and leave school to take care of the pain.

Menstrual symptoms were a reason for missing school, though for most girls absences were described as something that only rarely happened, only when cramps were

severe. Girls recommended that school provide care for girls who experienced menstrual symptoms at school.

### ***Supportive school nurses***

The importance of school nurses to facilitating girls' ability to effectively manage their menstruation at school was embedded within many the structural factors already mentioned (e.g., providing help with pain management and menstrual accidents), and was repeatedly reiterated throughout the data.

Most girls said their schools had a nurse at least part- time. However, no nurse was available at a few schools, and it was clear that it interfered with them being able to manage their menstruation. They made clear that the only way to deal with menstrual issues was to be sent home.

*“the fact that we don't have a nurse they send us home if anything happens.”*  
(FGD, ID# 2.9)

However, simply having a nurse was not enough. Participants emphasized the need for school nurses to be “nice”. Those who had nurses they liked spoke very highly of them with much appreciation and those who had issues with their nurses were equally as vocal about their dissatisfaction.

*“In my school like it don't help at all 'cause the nurse, for one she rude so she don't let nobody like if I go in there and ask for pads she'd probably say no. If I ask to use her bathroom she says no.”* (FGD, ID# 2.6)

Having a school nurse who is approachable and able to provide assistance for menstruation was described as an important way that schools could support menstruating girls.

## Discussion

Recent literature has called for a greater emphasis on how structural factors shape sexual and reproductive health of adolescents, especially in low-income contexts (Sommer & Mmari, 2015). The goal of this study was to explore the structural factors influencing adolescent girls' experiences of menstruation in schools. Adolescent girls from Baltimore City, Maryland, USA identified specific ways in which physical aspects of school bathrooms and school policies related to their ability to effectively address their menstrual hygiene needs at school. Results from this study suggest the need to consider these factors when attempting to improve girls' experiences of menstruation, within low resource settings in the U.S..

Underlying many of the structural factors identified in this study, were significant concerns about concealing menstrual products and preventing menstrual accidents at school. Girls in this study spoke about feeling shame, anxiety, embarrassment, and fear related to other people at school finding out about and making fun of their menstruation (e.g., not wanting other students to hear them changing their pad in the bathroom). The importance of concealing menstruation from others has been supported by multiple studies across various contexts and overtime (Johnston-Robledo & Chrisler, 2013; Kissling, 1996; E. R. Koff, Jill; Jacobson, Stacey, 1981; L. R. Williams, 1983). Recent research in the U.S. suggests that girls' concerns with concealing menstruation may be rooted in societal taboos and stereotypes about menstruation—viewing a woman drop a tampon, compared to hair clip, was linked with a greater tendency to objectify women (B. L. Fredrickson, & Roberts, T., 1997; B. L. Fredrickson, Roberts, T., Noll, S. M., Quinn, D. M., & Twenge, J. M., 1998). In the study, participants' preoccupation with privacy in



bathrooms and discreetness with menstrual products suggests continued stigmatization of menstruation in a low-income settings within the U.S..

Though the majority of participants in this study reported having missed some school due to occasional severe menstrual symptoms, it is not possible to tell from this data the pervasiveness of school absences in this setting due to menstruation nor is it possible to assess the impact that such absences have on girls' education. To the best of the authors' knowledge, recent estimates of menstrual-related school absenteeism in the U.S. are not available (ED.gov, 2015-2016). The extent to which managing menstruation in schools in the U.S., including due to the psychological toll of dealing with stigma and shame associated with menstruation, affects girls' education in this setting needs further investigation.

Similarly, the extent to which the structural factors raised in this study disproportionately burden schools serving low-income and minority students cannot be assessed with the data available from this study. However, given the historic precedent for racial and SES inequalities in educational opportunities in the U.S., this question warrants further investigation. Even within the same schools, race and SES could influence how the school environment impacts girls' experiences of menstruation. Prior research on the topic found that black adolescents in the U.S. were absent nearly twice as often from school due to their menstrual pain, even after accounting for SES, despite blacks and whites reporting comparable likelihood of experiencing. (Klein & Litt, 1983). Participants in this sample, all of whom were from a racial/ethnic minority group, generally felt that periodically missing school due to severe cramps was common and justified. A larger-scale quantitative study is needed to better understand the relationship

between menstrual symptoms and school attendance, and to assess any differences by racial/ethnic identity as well as by SES.

As of one of the only explicitly segregated spaces in Western countries, gender-segregated bathrooms in schools are ripe with controversy (Gershenson & Penner). Recent research on gender and school bathrooms has shown that gender-segregated school restrooms contribute to feelings of exclusion, low-self esteem, lack of safety, and worse grades for trans-identifying students (Porta et al., 2017; Wernick, Kulick, & Chin, 2017). Common recommendations to address these issues are structural changes to school bathrooms, such as ensuring students have access to private and/or gender neutral bathrooms. Findings from this research support the need for structural changes in bathrooms in school, and suggest that making single-occupancy bathrooms available to students could also be good for menstruating girls. However, within this sample, revealing menstrual status to males was especially worrisome for girls, which suggests that multi-stall gender-neutral bathrooms, if introduced without addressing the culture of shame and stigma around menstruation in both sexes, could present new challenges for menstruating girls. The impact of such structural changes to school bathrooms still needs to be assessed and the effect on students of varying gender and sexual orientations should be considered.

Most of the structural factors raised in this paper pertain specifically to menstruation, which by definition pertains to the female sex. However, complaints about the state of the bathrooms, such as not having toilet paper, soap and lack of cleanliness, could be problematic for all students. If the bathrooms are indeed bad enough that students avoid using them except when in dire need, an additional public health and

rights issue could be at play. Potentially developing standards for school bathrooms and bathroom policies that can be evaluated and that meet the needs of all types of students, including those who menstruate, would be a potential avenue for future work in this area.

In addition to suggesting questions for future investigation, this research echoes findings from existing research on adolescent health sexual and reproductive health. The beneficial role of nurses in providing important school health services has been well-documented, especially for low-income and at-risk youth (Baische, Lundeen, & Murphy, 2011; Council on School Health, 2008; Guttu, Engelke, & Swanson, 2004). This study provides evidence from students' perspectives on the critical role of nurses in schools, and makes a case that MHM is an important service nurses provide in schools. Similar to research on MHM in low-income countries, education on puberty and menstruation appears to be lacking in this setting (Montgomery et al., 2016; Sommer & Mokoah Ackatia-Armah, 2012; Sommer et al., 2014). Findings from this study suggest that education and awareness on MHM may be needed in this population. For example, participants revealed that improper menstrual hygiene product disposal was an issue in their schools and that lack of knowledge was one potential explanation for it. As is true in other areas of public health, MHM programs and interventions in the US would benefit from further exploring the role of both individual factors (i.e., education) as well as the structural factors, such as those explored in this study.

Finally, embedded in many participants' suggestions is their value that schools should afford a high level of trust and freedom to students. For example, providing single-occupancy bathrooms, free menstrual products in bathrooms, and an open bathroom-pass-policy clearly presents potential safety and behavioral concerns in

schools. Participants in this study acknowledge this, noting that girls have a responsibility to do their part—to keep bathrooms clean, to properly dispose of menstrual supplies, to not vandalize school property, and to not abuse privileges such as going to the bathroom without permission. The realities of addressing the structural factors identified in this study are likely a potential barrier to implementing change in schools.

### **Strengths and Limitations**

The limitations of this study should be considered when interpreting the findings. First, the sample was not designed to be representative of all adolescent girls or even all schools in Baltimore City; extrapolating results more broadly should be undertaken with caution. Rather, the results should be viewed in terms of potential structural factors to be considered when considering how to support girls transition into and through puberty, particularly in terms of their needs to address MHM issues in schools. Another potential limitation of this study is that those who participated in the study may have had systematically different experiences of menstruating in schools (e.g., particularly challenging experiences) than those who did not participate, which could not have been detected in the data collected. Triangulating the data with perspectives from different types of informants, especially from adults, would have provided added validity to the voices of adolescents.

Despite these limitations, this study contributes to the literature on MHM in schools the U.S., and is one of the only contemporary studies on the role of structural factors and girls' experiences of menstruation in schools in the U.S.. This research contributes to ongoing efforts to incorporate the voices of adolescents in research and

programs designed to improve adolescent health and wellbeing (Baltimore City Health Department, 2017; Interagency Working Group on Youth Programs, 2017). Having repeated exposure with participants facilitated a trusting dynamic throughout the data collection, which helped to produce credible data (Lincoln, 1985). Repeat exposure with participants also allowed for follow-up on topics that needed additional clarification, producing richer data. Triangulating data from IDIs and FGDs also contributed to the trustworthiness of the findings by validating data collected from one method with that collected from another. Including girls who attended different types of schools (i.e., private vs not private) provided a variation within the sample that revealed not only that there are differences across schools in Baltimore, but also that girls differed substantially regarding their perspectives on barriers, as well as facilitators to menstrual management in their schools. Finally, collecting quantitative data from participants allowed us to characterize relevant aspects of the girls puberty transition and verify that they lived in low-income areas representative of Baltimore's overall poverty level (J. Maxwell, 2013).

## **Conclusions**

This study addresses a gap in the literature by identifying structural factors that influence adolescent girls' experiences of menstruation in schools in a major urban center in the U.S. Eight structural factors within the physical and policy environments of schools were identified as impacting girls' ability to manage their menstruation at school. These findings provide insight into potential ways that schools could improve their physical environment and policies to better support menstruating girls' needs. Further research is needed to better understand the extent to which issues of MHM are impacting

the health, wellbeing, and education of girls in underserved parts of the U.S., and to what extent racial, ethnic, SES, and gender disparities exist.

## CHAPTER 6 TABLES AND FIGURES

**Table 6.2: Structural factors related to girls experiences of menstruation in schools**

Category of Structural Determinants	Structural factors and how participants perceived them to relate to girls' experiences of menstruation	Representative Quotes
Physical aspects of school bathrooms influencing girls' experiences of menstruation	Poor upkeep of bathrooms (lack of cleanliness and basic supplies such as toilet paper and soap) created discomfort and embarrassment and discouraged bathroom use.	<i>"What I do like, since there's not no soap I get the water real hot and just wait. And I actually like scrub my hands. We had never had no soap ever since I think like October. Like that's a shame.... That's why you be gettin' mad." (FGD, ID# 3.1)</i>
	Putting waste bins next to toilets provided an option for discrete menstrual product disposal	<i>"Like it's really bad... especially in the bathrooms, they throw their pads in the toilet and stuff is disgusting." (IDI, ID# 1.4)</i>
	Lack of privacy in bathrooms resulted in embarrassment and extra efforts to hide or conceal their menstruation from others	<i>"Sometimes I get scared. Hoping there won't be nobody in there...Because I don't want nobody hearing...like me opening the pad and stuff." (IDI, ID# 2.5)</i>
Policy factors influencing girls' experiences of menstruation	Bathroom passes limited when and how often girls could use the bathroom, inciting fears of menstrual accidents and annoyance at having to reveal menstrual status to male teachers	<i>"...that's what I struggle with a lot...going to the bathroom constantly, especially when I'm in school, at home it's easy, but in school I have certain classes where you can't miss certain things they're teaching or whatever, and they end up getting blood on your pants and stuff, especially if you're wearing pads or something. ... The heaviness when it first started off, it was terrible..." (IDI, ID# 5.2)</i>
	Availability of free menstrual supplies, when provided in an inconspicuous way, reduced anxiety about menstruation at school, especially when periods came on unexpectedly or were uncharacteristically heavy	<i>"... at my other schools it was like, they had like the little dispensers on the wall. 'Cause you know like some people they'll probably come on their period they don't have a pad or a tampon and there would be like right there on the wall...They don't even have that in the bathroom. And sometimes there's not even toilet paper in there." (FGD, ID# 3.3)</i>
	Menstrual accidents are a major source of embarrassment for girls at school and assistance in dealing with these issues provided to support to menstruating girls.	<i>"I mean you can go to the nurse and get a pad, you could go--or they give you a walk-pass you can go home and then come back to school once you clean up and everything." (IDI, ID# 3.2)</i>
	Providing support for managing menstrual pain allowed menstrual symptoms to be dealt with at school rather than having to go home	<i>"Some girls have like real bad cramps and they probably can't bear like this to stay in class." (IDI, ID# 2.4)</i>
	Having an approachable school nurse to assist girls with menstrual related issues created a supportive environment for menstruating girls	<i>"Yeah, in the beginning when I first started coming on my period. I had an accident at school, but then I handled it by going to the nurse, and they give you stuff for that." (IDI, ID# 1.3)</i>

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## **Chapter 7: Conclusion**

## **SUMMARY OF RESULTS**

The transition through puberty is a critical period of development that provides an important opportunity to build a healthy foundation for sexual and reproductive health (SRH) (Blum et al., 2014; Igras et al., 2014; Koch et al., 2009; G. C. Patton & Viner, 2007). Preparing girls for their pubertal transition, including their menarche, can positively shape their developing sense of self during those critical early-adolescent years, thus priming them for sexual and reproductive health (SRH) throughout adolescence and into adulthood (McCarthy et al., 2016; M Sommer et al., 2015; Sommer, 2011; Sommer, Hirsch, Nathanson, & Parker, 2015; Sumpter & Torondel, 2013). Yet, little is known about the foundational puberty and menstrual experiences of children raised in the US today, nor about what information and support girls are receiving for puberty and menstruation (Koch et al., 2009). Even less is known about low-income and minority girls' experiences on and education for this important developmental period. The purpose of this dissertation was to understand the puberty experiences of girls in this specific context.

**Research Aim 1: To understand what is known in the scientific literature about puberty experiences of low-income girls in the U.S.**

### **Paper 1: Puberty Experiences of Low-Income Girls in the United States: A Systematic Review of Qualitative Literature From 2000 to 2014<sup>2</sup>**

This study involved a systematic review of qualitative literature on the present-day puberty experiences of low-income girls in the United States. Twenty qualitative

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<sup>2</sup> This paper is published in the Journal of Adolescent Health (Herbert et al., 2016)

articles fit the inclusion criteria. The studies included racially and ethnically diverse samples, from all regions of the U.S. including rural and urban areas. The methodological quality of the studies included in the review were rated as high (8 articles), moderate (10 articles), or low (2 articles).

Findings from the 20 included articles were synthesized into 42 individual findings that were organized into five overarching themes: (1) content of girls' puberty experiences; (2) quality of girls' puberty experiences; (3) messages girls receive about puberty; (4) other factors shaping girls' puberty experiences; and (5) relationships that shape puberty experiences. The confidence in evidence of each of the 42 findings was assessed using the Confidence in the Evidence from Reviews of Qualitative (CERQual) research approach (Bohren et al., 2015; Lewin et al., 2015). Nine of the 42 findings were assessed as having high confidence, meaning that the finding: was supported by "thick" data of relevance to the research question, included the population of interest, and was consistently supported by multiple studies with high methodological quality. However, low confidence and very low confidence were found for 15 of the findings (12 and 3 respectively) indicating that more research is necessary to confirm or deny those findings. A summary of main findings that received moderate to high confidence rankings is provided.

Menarche was considered an important milestone in girls' lives, and was accompanied by concerns about menstrual management and menstrual symptoms. Breast development was also seen as an important part of puberty as it was an outwardly visible change that affected how others viewed and treated them.

Overall, most girls recalled their experiences of puberty as primarily negative,



describing it both as something gross and/or scary. Menstruation, specifically, was commonly portrayed in a negative light, as something that was painful, restrictive, and shameful. The meaning of menarche was commonly juxtaposed as simultaneously being a natural cleansing process of the body and a source of contamination. Menarche was also intricately connected to pregnancy, viewing menstruation as a sign that pregnancy had successfully been avoided and a signal that pregnancy was a risk. Due to the association with pregnancy, girls were often warned to protect themselves against boys once they had begun menstruating. Menarche was often accompanied by messages that a girl is growing up and becoming a woman. Rarely were responses to menarche presented as a right of passage or something to celebrate.

Overall girls, felt uninformed about menstruation, especially those who reached menarche at earlier ages than their peers. Those who reported feeling prepared and supported through puberty expressed having more positive or neutral pubertal experiences. Generally, girls expressed a desire for more information and support for their pubertal development.

Mothers were the main source of pubertal information and support for girls yet, mother-daughter conversations about puberty were often described as challenging and ineffective in providing the information and support girls had desired from them about puberty and menstruation, especially when menarche was viewed as connected to sexual behavior. Many mothers were uncomfortable discussing puberty-related topics, leaving girls feeling unprepared to manage menstruation and other aspects of pubertal development. Females other than mothers (especially sisters) and, in some cases, friends, were also listed as sources of support for puberty and menstruation. Fathers were not

described as playing a significant role in girls' experiences of puberty, though father-daughter relationships appeared to become more physically and emotionally distant as girls developed. Interest in male peers increased throughout puberty though they, as well as brothers, were sources of menstrual-related anxiety. Schools were not viewed as a major source of puberty information and support.

This was the first systematic review to describe the current puberty experiences of low-income girls in the US. Together, the current evidence suggests that among low-income girls in the U.S., girls report negative experiences of menarche and menstruation that are steeped in feelings of fear and shame. The limited existing evidence also suggests that the sources of puberty education and support available to present day U.S. girls in this context are insufficient in preparing them for their pubertal transition.

**Research Aim 2 and 3: Understand how adolescent girls living in Baltimore City, an urban, low-income, predominantly African-American context in the U.S., describe and interpret their recent experiences of puberty and to identify the psychosocial and information needs of girls in Baltimore during puberty.**

Stemming from Aims 2 and 3, a qualitative study of girls' puberty experiences in Baltimore City, Maryland was conducted in a sample of 28 adolescent girls aged 15-18. For this dissertation, two of the initial analyses from this data were presented. The first, explored girls' experiences of and preparation for menarche in the U.S.. The second explored the structural factors in schools that influenced girls' experiences of menstruation in schools. Summaries of the main findings from these two studies are

provided below.

**Paper 2: An in-depth understanding of preparation for and experiences of menarche in low-income, minority girls growing up in Baltimore City, Maryland.**

The main goal of this study was to provide an in-depth look at girls' experiences of menarche and needs for menarche preparation in a low-income and predominantly minority, urban context. Participants provided rich stories of how their experiences of menarche unfolded, and in doing so revealed a nuanced picture of the practical and concrete needs of girls at menarche in this setting.

Participants mostly described their experience of menarche in negative terms emphasizing that it was a scary and/or shocking occurrence. Most of the participants, had heard about menstruation prior to menarche (though not all), but most also had large gaps in critical information remaining when they first began menstruating (and even at the time of data collection). Those who reported having some level of preparation for menarche had mostly gotten it from their mothers. No one in the sample had gotten information on menstruation from schools prior to menarche.

Participants stories' highlighted eight main areas central to participants' ability to understand, manage and identify menarche, each of which contributed to how they felt about their first experience of menstruation. These areas included support and information related to: making girls aware of menstruation and that it was something that would happen to them, addressing the uncertainty in timing of menarche, providing clarity about what to do when menarche happens, providing practical advice and instructions for managing menstruation, providing information on the physiological

processes of menstruation, addressing the cultural significance of menarche, and providing reassurance that everything is okay and that menstruating is something normal.

Most participants had received some information and support for menarche in at least some of these respects. Most commonly they had received practical information about managing menstruation, while information on the physiology of menstruation was largely lacking. Being able to identify menarche arose as one of the key moments that distinguished girls who felt extreme fear at menarche and those that did not. Girls who had not been aware of menstruation prior to menarche were the most horrified by the initial sighting of blood. Also, understanding that menstruation was a reoccurring process that would take time to regulate arose as important information to provide pre-menstrual girls.

Overwhelmingly, participants felt that girls in Baltimore needed more support and information to better prepare them for menarche, but with the caveat that the information was age-appropriate and did not unnecessarily scare young girls about menstruation. The participants' main concerns for pre-menstrual and newly menstruating girls were that they get adequate information on menstrual hygiene management and are reassured that menstruation is a normal process and not something to be scared of. Participants, specifically, expressed a desire for schools to provide instruction on menstruation, prior to menarche, especially because they felt that not all girls were getting this information at home.

This study adds to the literature on low-income and minority girls' experiences of puberty in the U.S. by providing a detailed look at how various types of information and support influence girls experiences of menarche. These findings provide a framework for

understanding the key aspects of preparedness that influence girls' experiences of menarche and suggest that some basic needs for menarche preparation are not currently being addressed for some girls in this population.

### **Paper 3: Structural factors influencing girls' experiences of menstruating at school in Baltimore City, Maryland**

In this study, twenty-eight adolescent girls shared how structural aspects of their school environments influenced their ability to manage their menstruation at school. Physically, participants reported unfavorable bathroom conditions, such as dirty, smelly environments that lacked basic necessities, like soap and toilet paper. These poor bathroom conditions were unfavorable to menstrual hygiene and discouraged bathroom use. In school bathrooms, participants stated the importance of having a convenient and discreet way of disposing of used-menstrual products. Additionally, girls expressed a desire for more privacy in school bathrooms (either with single occupancy options or individual stalls that securely lock) when menstruating to avoid discomfort and embarrassment.

Several policy factors were also identified as influencing girls' experiences of menstruation in schools. Strict bathroom pass policies were viewed as unnecessarily limiting of when and how often girls could use the bathroom, and such policies put girls in vulnerable situations where they felt forced to reveal their menstrual status. Availability of free menstrual supplies and help for menstrual accidents, when provided in a compassionate and caring way, reduced anxiety about menstruation at school, especially when periods came on unexpectedly for newly menstruating girls. Girls felt

that schools should provide support for managing menstrual pain, which was the main reason identified for missing school due to menstruation. And finally, having a school nurse with whom girls felt comfortable discussing menstrual related issues with helped to mitigate some of the girls' menstruation-related challenges at school.

These findings highlight structural factors in schools that influence girls' experiences of menstruating while in a school environment. This study is one of the first to look at how the school environment influences girls ability to manage their menstruation in a U.S. context.

## **CONTRIBUTION STATEMENT**

This work fills a gap in the literature on the present day puberty experiences of low-income and minority girls' in the U.S. The first study synthesized literature on girls' experiences of puberty from the last 14 years and provided a detailed overview of the themes found across this body of work. The second paper analyzed girls' experience of menarche in Baltimore City and from their stories created a framework for understanding and evaluating preparation for menarche. The third paper, explored the influence of structural factors on girls experiences of menstruation in school in a U.S. context. Together the findings from these three studies highlight the need for improved puberty-related support and information for low-income, minority girls in the U.S. and more specifically for girls growing up in Baltimore, City.

The puberty experiences of girls from this disadvantaged demographic are largely described as negative, shrouded in fear and confusion. Girls, from this particular setting, displayed varying levels of preparation for menarche, most of which had come from their

mothers. Schools in this setting are not viewed as providing adequate information about menstruation prior to menarche. Those without mothers or who expressed challenging relationships with their mothers tended to reach menarche unaware of what menstruation even is or that it would happen to them. Though overall most participants in this study knew about menstruation prior to menarche, not all did. Moreover, most of the sample appeared to lack even a basic understanding of the female reproductive system, which is especially concerning in a population overly burdened by unwanted teen pregnancies and sexually transmitted infections (CDC, 2013, 2015; Healthy Teen Network, 2010). In addition to lack of information and support for menarche, the structural environments of schools in this setting also negatively influenced girls' experiences of menstruating in schools, with both the built and policy environments hindering their ability to comfortably manage their menstruation at school. These findings highlight how multiple social and structural factors shape girls' experiences of puberty and menstruation.

## **IMPLICATIONS FOR PROGRAMMING**

Findings from this research point to potential areas of intervention to improve girls' experiences of menarche and menstruation in this setting. Perhaps one of the most important takeaways is the need to ensure that girls are informed about menstruation prior to menarche. The framework of menarche preparedness could be used to guide what types of information are provided to girls before they begin menstruating. To be effective at preparing girls for menarche, education on menstruation needs to be provided prior to the onset of menstruation. Given the demographic of the city, for girls in Baltimore to get

information prior to menarche it needs to be provided around ages 8-10, which would include 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> grades.

The important role of mothers in shaping girls experiences of menarche and menstruation was highlighted in this research. Mothers need to be empowered to discuss these topics with their daughters and seek out additional resources in areas where they feel unqualified or uncomfortable. Schools could supplement what girls are learning at home by providing education on menstruation in schools. They should also make an effort to include parents in education on menstruation and to ensure that girls who are without a mother figure are provided with support and information they need throughout this transition.

Schools should also consider how the school environment impacts girls' ability to manage menstruation in schools. Schools should make bathroom upkeep a priority and ensure that all bathroom facilities are equipped with bins for menstrual supply disposal. School policies should also be evaluated with the realities of menstruating girls in mind. Allowing girls to use the bathroom when needed without asking for permission could prevent unnecessary anxiety around menstrual hygiene management in schools. Making sure to have supplies available at schools for managing menstrual blood and symptoms, in a discreet way, would contribute to a supportive environment for menstruating girls in schools.

## **IMPLICATIONS FOR RESEARCH**

Though this dissertation fills some of the gaps in information on low-income, minority girls' experiences of puberty, additional research is needed. Quantitative



research is needed to understand the scope and impact of the lack of information and support provided to girls in this setting, and possibly across the U.S. Studies that compare different racial and ethnic groups are also needed. Similarly, validated measures are needed to assess puberty knowledge and preparedness of menarche.

Though girls in this study claim to have not received information on menstruation in school prior to menarche, it remains unclear what instruction schools are (and are not) actually providing. Studies of what puberty education is actually being provided would be helpful in understanding the current status of puberty education in the U.S.

This research provides a framework for understanding what types of information are needed to help girls feel prepared for puberty. Quantitative studies are needed to evaluate the impact of providing this type of education to ascertain whether and what the effect of providing it is.

Additionally, qualitative studies are needed to better understand when and how to best administer puberty education to girls. This research found that girls who have already gone through puberty are concerned about younger girls learning too much too soon. Recent studies have found that a child's stage of pubertal development influences how information about puberty is received (Cousineau et al., 2010). A child's cognitive development is another factor that influences what types of information should be provided. It is important to gain a more nuanced understanding of when and how to provide information about menstruation. Children who develop early present an additional challenge in that they may not be cognitively able to understand the same type of information a girl who developed later did. How to effectively adapt education on

menstruation and puberty continues to the individual needs of a child continues to be an unanswered question.

And finally, to address the structural factors influencing girls' experiences of menstruation in schools, additional research is needed to assess the pervasiveness of the non-supportive school policies and physical environments that were identified in this research. One extension of this current research could be to develop an audit tool for assessing the "girl friendliness" of school policies and school bathrooms. Doing so would provide a way to measure and evaluate schools settings in a systematic way across different contexts, helping to identify disparities. And finally, additional studies are needed to better understand the impact that these structural factors on the health, wellbeing, and educational outcomes of girls in this context.

## **CONCLUDING THOUGHTS**

Negative experiences of puberty and menstruation have been ubiquitous across cultures and over time almost to the point of assuming it just has to be that way. However, positive transitions through puberty are possible, with preparation being one of the most critical factors in shaping experiences. Low-income and minority girls in the U.S. are disadvantaged in multiple ways, one of which is not having adequate information and support for puberty, menarche and menstruation, largely because they are often attending schools that have little resources and do not provide adequate support on this subject. Still many of the issues identified in this research are likely applicable to other demographics in the U.S., especially in other underserved parts of the country where there are fewer services and more poverty. Still, given the importance of culture in

shaping what it means to grow up and start menstruating, providing culturally specific education is important. Schools can play an important role in ensuring that all girls are equipped with the information and support they need for this critical developmental period. And, mothers should be helped in their role as the main provider of information and support to their developing daughters.

Too long have girls' needs been neglected in this central part of their lives, and too often puberty and menstruation are shrouded in shame, fear, and ignorance. Not until girls are ushered into their developing bodies and selves, armed with information about their reproductive system, with the support they have so clearly asked for, will females be empowered to make healthy sexual and reproductive health decisions that reflect their own desires and values, in adolescence and beyond. This research, and the corresponding educational tools it has spawned, is one attempt to contribute to a society that bolsters all girls through this important stage of development.

## CHAPTER 7 REFERENCES

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# APPENDICES

## APPENDIX A: Systematic search strategy

Table A1: Systematic search strategy of five electronic databases for a systematic review of literature on puberty experiences of low-income girls in the US, published between 2000-2014											
Concept	Key words	Key search terms	PubMed		PsychInfo		ERIC		EMBASE		Controlled vocabulary
			Key word	Controlled vocabulary	Key word	Controlled vocabulary	Key word	Controlled vocabulary	Key word	Controlled vocabulary	
1 Puberty-general	puberty sexual maturation puberty guidance pubertal body changes body changes sexual development pubertal development pubertal timing puberty education puberty-related information puberty information puberty educational program puberty informational material puberty curriculum pubertal stages pubertal phases body development pubertal maturation	pubert* OR body change* OR "sexual development" OR "body development" OR "sexual maturation"	pubert* [tw] OR body change* [tw] OR "sexual development" [tw] OR "body development" [tw] OR "sexual maturation" [tw]	puberty [mesh] OR sexual development [mesh]	(AB Pubert* OR TI Pubert* OR KW pubert*) OR (AB "body change*" OR TI "body change*" OR KW "body change*") OR (AB "sexual development" OR TI "sexual development" OR KW "sexual development" OR ( AB "body development" OR TI "body development" OR KW "body development") OR (AB "sexual maturation" OR TI "sexual maturation" OR KW "sexual maturation")	DE "Puberty" OR DE "Sexual Development"	ab(pubert* OR body change* OR "sexual development" OR "body development" OR "sexual maturation") OR ti(pubert* OR body change* OR "sexual development" OR "body development" OR "sexual maturation")	SU(Puberty) OR SU(physical development )	(pubert* OR body change* OR "sexual development" OR "body development" OR "sexual maturation")ab,ti	sexual development /exp OR puberty/exp	
2 Puberty-specific	menstruation menarche mensus breast development hormonal changes period pubic hair growth acne physical maturation first period body growth underarm hair growth height growth body odor	((menstrua* OR "menarche" OR "mensus") OR (pubert* AND (breast* OR hormone* OR period* OR "pubic" OR "acne" OR "physical maturation" OR "body growth" OR underarm hair* OR body odor* OR "menstruation" OR "body growth" OR underarm hair* OR body odor* )))	((menstrua* [tw] OR "menarche" [tw] OR "menses" [tw] OR (pubert* [tw] AND (breast* [tw] OR hormone* [tw] OR period* [tw] OR "pubic" [tw] OR "acne" [tw] OR "physical maturation" [tw] OR "body growth" [tw] OR underarm hair* [tw] OR body odor* [tw] )))	menarche [mesh] OR menstruation [mesh]	((AB menstruat* OR TI menstruat* OR KW menstruat*)OR (AB "menarche" OR TI "menarche" OR KW "menarche")) OR ((AB pubert* OR TI pubert* OR KW pubert*) AND ((AB breast* OR TI breast* OR KW breast*) OR (AB period* OR TI period* OR KW period*) OR (AB "pubic" OR TI "pubic" OR KW "pubic") OR(AB "acne" OR TI "acne" OR KW "acne") OR (AB "physical maturation" OR TI "physical maturation" OR KW "physical maturation") OR (AB "body growth" OR TI "body growth" OR KW "body growth") OR (AB underarm hair* OR TI underarm hair* OR KW underarm hair*) OR (AB body odor* OR TI body odor* OR KW body odor*))	DE "menarch" OR DE "menstruation"	ab((menstrua* OR "menarche" OR "mensus") OR (pubert* AND (breast* OR hormone* OR period* OR "pubic" OR "acne" OR "physical maturation" OR "body growth" OR underarm hair* OR body odor* ))) OR ti((menstruat* OR "menarche" OR "mensus") OR (pubert* AND (breast* OR hormone* OR period* OR "pubic" OR "acne" OR "physical maturation" OR "body growth" OR "underarm hair" OR "body odor"))))ti,ab	SU(menstrua tion) OR SU (mensus)	(menstrua* OR "menarche" OR "mensus" OR (pubert* AND (breast* OR hormone* OR period* OR "pubic" OR "acne" OR "physical maturation" OR "body growth" OR "underarm hair" OR "body odor"))))ti,ab	menarche/e xp OR 'menstruation n/exp	

Table A1: Systematic search strategy of five electronic databases for a systematic review of literature on puberty experiences of low-income girls in the US, published between 2000-2014

Concept	Key words	Key search terms	PubMed Key word	Controlled vocabulary	PsychInfo Key word	Controlled vocabulary	ERIC Key word	Controlled vocabulary	EMBASE Key word	Controlled vocabulary
3 Sex	sex education comprehensive sexuality education family life education	"sex education" OR "family life education"	"sex education" [tw] OR "family life education" [tw]	sex education [mesh]	((AB "sex education" OR TI "sex education" OR KW "sex education")OR (AB "family life education" OR TI "family life education" OR KW "family life education"))	DE "sex education"	"sex education" OR "family life education"	SU (Sex Education) OR SU (family life education)	(sex* education OR "family life education")ab,ti	sexual education/c xp
4 8-15 Age group	Adolescent Young Adolescent Preadolescent pre-adolescent teen tween youth young people young person middle school middle childhood boy girl juvenile minor pubescent pre-pubescent school age child kid elementary school	adolesc* OR teen* OR youth* OR young people* OR young person* OR middle school* OR puberty OR "middle childhood" OR preadolesc* OR girl* OR juvenile* OR minor* OR pubesc* OR school age* OR child* OR kid* OR "elementary school"	adolesc*[tw] OR teen*[tw] OR youth*[tw] OR young people*[tw] OR young person*[tw] OR middle school*[tw] OR puberty*[tw] OR "middle childhood"[tw] OR preadolesc*[tw] OR girl*[tw] OR juvenile*[tw] OR minor*[tw] OR pubesc*[tw] OR school age*[tw] OR child*[tw] OR kid*[tw] OR "elementary school"[tw]	"Child" [Mesh] OR "Adolescen t" [Mesh]	((AB adolesc* OR TI adolesc* OR KW adolesc* OR (AB teen* OR TI teen* OR KW teen*) OR (AB tween* OR TI tween* OR KW tween*) OR (AB youth* OR TI youth* OR KW youth*) OR (AB young people* OR TI young people* OR KW young people*) OR (AB young person* OR TI young person* OR KW young person*) OR (AB middle school* OR TI middle school* OR KW middle school*) OR (AB puberty OR TI puberty OR KW puberty ) OR (AB "middle childhood" OR TI "middle childhood" OR KW "middle childhood") OR (AB preadolesc* OR TI preadolesc* OR KW preadolesc* OR (AB girl* OR TI girl* OR KW girl*) OR (AB juvenile* OR TI juvenile* OR KW juvenile*) OR (AB minor* OR TI minor* OR KW minor*) OR (AB pubesc* OR TI pubesc* OR KW pubesc*) OR (AB school age* OR TI school age* OR KW school age*) OR (AB child* OR TI child* OR KW child* ) OR (AB kid* OR TI kid* OR KW kid* ) OR (AB "elementary school" OR TI "elementary school" OR KW "elementary school")	DE "Middle School Students" OR DE "Junior High School Students" OR DE "Elementary School Students" OR DE "High School Students"	ab(adolesc* OR teen* OR tween* OR youth* OR young people* OR young person* OR middle school* OR puberty OR "middle childhood" OR preadolesc* OR girl* OR juvenile* OR minor* OR pubesc* OR school age* OR child* OR kid* OR "elementary school") or ti (adolesc* OR teen* OR tween* OR youth* OR young people* OR young person* OR middle school* OR puberty OR "middle childhood" OR preadolesc* OR girl* OR juvenile* OR minor* OR pubesc* OR school age* OR child* OR kid* OR "elementary school")	SU (adolescents OR (preadoles cents) OR SU (early adolescents) OR SU (preadolesc*) OR SU (adolescent development ) OR SU (teenagers) OR SU (childhood OR SU (childhood attitudes) OR SU (elementary school children) OR SU (elementary school students) OR SU (junior high school students) OR SU (High school students) OR SU (middle school students) OR SU (youth) OR SU (youth problems)	(adolesc* OR teen* OR OR tween* OR youth* OR young people* OR young person* OR middle school* OR puberty* OR "middle childhood" OR preadolesc* OR girl* OR juvenile* OR minor* OR pubesc* OR school age* OR child* OR kid* OR "elementary school")ab,ti	child/exp OR "adolescent/ exp

Table A1: Systematic search strategy of five electronic databases for a systematic review of literature on puberty experiences of low-income girls in the US, published between 2000-2014

[illegible]

Table A1: Systematic search strategy of five electronic databases for a systematic review of literature on puberty experiences of low-income girls in the US, published between 2000-2014

Concept	Key words	Key search terms	PubMed		PsychInfo		ERIC		EMBASE	
			Key word	Controlled vocabulary	Key word	Controlled vocabulary	Key word	Controlled vocabulary	Key word	Controlled vocabulary
								OR SU ("Ethnic Groups") OR SU ("Blacks") OR SU ("American Indians") OR SU (minority group children) OR SU(minority group students) OR SU (minority students) OR SU (migrants) OR SU (immigration ) OR SU (foreign nationals) OR SU (migrant problems) OR SU (welfare services) OR SU (social services)		
6 USA	United States of America United States US US citizen America American	United State* OR US* OR America*	United State* [tw] OR US* [tw] OR America* [tw]	United States [mesh]	(AB United State* OR TI United State* OR KW United State*) OR (AB US* OR TI US* OR KW US*) OR (AB America* OR TI America* OR KW America*)	N/A	United State* OR US* OR America*	N/A	(United States* OR US* OR America*).ti,ab	United States/exp

**SCOPUS:** (( TITLE-ABS-KEY ( puberty OR pubertal ) ) OR ( TITLE-ABS-KEY ( menstruat\* OR "menarche" ) ) OR ( ( TITLE-ABS-KEY ( pubert\* ) ) AND ( TITLE-ABS-KEY ( breast\* OR hormonal change\* OR period\* OR "pubic" OR "acne" OR "physical maturation" OR "body growth" OR underarm hair\* OR body odor\* ) ) ) OR ( TITLE-ABS-KEY ( "sex education" OR "family life education" ) ) AND ( adolesce\* OR teen\* OR tween\* OR youth\* OR young people\* OR young person\* OR middle school\* OR puberty OR "middle childhood" OR preadolesc\* OR girl\* OR juvenile\* OR minor\* OR pubesc\* OR school age\* OR child\* OR kid\* OR "elementary school" ) AND ( indigen\* OR "low income" OR vulnerable population\* OR underserved population\* OR "poor" OR "poverty" OR "impoverished" OR "disadvantaged" OR "lowest income" OR "welfare" OR "entitlement" OR "needy" OR "financial" OR struggl\* OR "inner city" OR african american\* OR "urban" OR "rural" OR "black people" OR black person\* OR hispanic\* OR latino\* OR latina\* OR asian\* OR minonit\* OR immigrant\* ) AND ( LIMIT-TO ( PUBYEAR , 2015 ) OR LIMIT-TO ( PUBYEAR , 2014 ) OR LIMIT-TO ( PUBYEAR , 2013 ) OR LIMIT-TO ( PUBYEAR , 2012 ) OR LIMIT-TO ( PUBYEAR , 2011 ) OR LIMIT-TO ( PUBYEAR , 2010 ) OR LIMIT-TO ( PUBYEAR , 2009 ) OR LIMIT-TO ( PUBYEAR , 2008 ) OR LIMIT-TO ( PUBYEAR , 2007 ) OR LIMIT-TO ( PUBYEAR , 2006 ) OR LIMIT-TO ( PUBYEAR , 2005 ) OR LIMIT-TO ( PUBYEAR , 2004 ) OR LIMIT-TO ( PUBYEAR , 2003 ) OR LIMIT-TO ( PUBYEAR , 2002 ) OR LIMIT-TO ( PUBYEAR , 2001 ) OR LIMIT-TO ( PUBYEAR , 2000 ) ) AND ( LIMIT-TO ( AFFILCOUNTRY , "United States" ) ) )



## APPENDIX B: Grey literature search

Organizations	Website URL	Reviewer	Search term	# of hits	Access date	# Screened
1 Promundo	<a href="http://www.promundo.org.br/en/">http://www.promundo.org.br/en/</a>	Ann	puberty OR menstruation OR menarche	0	1/9/15	0
2 US Department of Education	<a href="http://findit.ed.gov/search?utf8=&amp;affiliate=ed.gov&amp;query=puberty">http://findit.ed.gov/search?utf8=&amp;affiliate=ed.gov&amp;query=puberty</a>	Melanie	puberty		12/28/14	3
3 US Office of Adolescent Health	<a href="http://search.hhs.gov/search?q=puberty&amp;ie=UTF-8&amp;ud=1&amp;sort=date%3AD%3A%3Ad1&amp;output=xml.no_dtd&amp;ie=UTF-8&amp;oe=UTF-8&amp;lr=lang_en&amp;client=oa&amp;site=oa&amp;proxystylesheet=oa&amp;proxypreload=1">http://search.hhs.gov/search?q=puberty&amp;ie=UTF-8&amp;ud=1&amp;sort=date%3AD%3A%3Ad1&amp;output=xml.no_dtd&amp;ie=UTF-8&amp;oe=UTF-8&amp;lr=lang_en&amp;client=oa&amp;site=oa&amp;proxystylesheet=oa&amp;proxypreload=1</a>	Grace	puberty	8	1/8/15	2
4 US Administration for Children & Families	<a href="http://search.hhs.gov/search?q=puberty&amp;btnG=Google+Search&amp;client=acf&amp;output=xml.no_dtd&amp;proxystylesheet=acf&amp;sort=date%3AD%3A%3Ad1&amp;ie=UTF-8&amp;ie=UTF-8&amp;ud=1&amp;exclude_apps=1&amp;site=acf&amp;sitesearch=www.acf.hhs.gov&amp;ulang=en&amp;ip=156.145.78.69&amp;access=p&amp;entq=1&amp;entqrm=0&amp;wc=200&amp;wc_mc=1&amp;filter=0">http://search.hhs.gov/search?q=puberty&amp;btnG=Google+Search&amp;client=acf&amp;output=xml.no_dtd&amp;proxystylesheet=acf&amp;sort=date%3AD%3A%3Ad1&amp;ie=UTF-8&amp;ie=UTF-8&amp;ud=1&amp;exclude_apps=1&amp;site=acf&amp;sitesearch=www.acf.hhs.gov&amp;ulang=en&amp;ip=156.145.78.69&amp;access=p&amp;entq=1&amp;entqrm=0&amp;wc=200&amp;wc_mc=1&amp;filter=0</a>	Grace	puberty	19	1/8/15	0
5 CDC	<a href="http://www.cdc.gov/search.do?subset=&amp;queryText=puberty">http://www.cdc.gov/search.do?subset=&amp;queryText=puberty</a>	Melanie	puberty	767	12/28/14	1
6 CDC	<a href="http://www.cdc.gov/search.do?subset=&amp;queryText=puberty+knowledge&amp;oe=UTF-8&amp;ie=UTF-8&amp;ulang=&amp;sort=date%3AD%3A%3Ad1&amp;entqrm=0&amp;wc=200&amp;wc_mc=1&amp;ud=1">http://www.cdc.gov/search.do?subset=&amp;queryText=puberty+knowledge&amp;oe=UTF-8&amp;ie=UTF-8&amp;ulang=&amp;sort=date%3AD%3A%3Ad1&amp;entqrm=0&amp;wc=200&amp;wc_mc=1&amp;ud=1</a>	Melanie	puberty knowledge	378	1/3/15	1
7 Guttmacher	<a href="http://www.guttmacher.org/search/index.html?q=puberty">http://www.guttmacher.org/search/index.html?q=puberty</a>	Becca	puberty	108	1/6/15	0
8 Healthy Children	<a href="https://www.healthychildren.org/English/Pages/default.aspx">https://www.healthychildren.org/English/Pages/default.aspx</a>	Melanie	puberty	15	12/28/14	0
9 Population Council	<a href="http://www.popcouncil.org/research/results?projects=yes&amp;experts=yes&amp;resources=yes&amp;keywords=puberty">http://www.popcouncil.org/research/results?projects=yes&amp;experts=yes&amp;resources=yes&amp;keywords=puberty</a>	Becca	puberty	20	1/6/15	0
10 Teens Health	<a href="http://teenshealth.org">teenshealth.org</a>	Savannah	puberty	112	1/7/14	0
11 Boys and Girls Club	<a href="http://www.bgca.org/Pages/index.aspx">http://www.bgca.org/Pages/index.aspx</a>	Savannah	N/A	N/A	1/7/14	0
12 YMCA	<a href="http://www.ymca.net/">http://www.ymca.net/</a>	Ana	puberty	0	1/6/15	0
13 YMCA	<a href="http://www.ymca.net/">http://www.ymca.net/</a>	Ana	puberty knowledge	0	1/6/15	0
14 Planned Parenthood	<a href="http://plannedparenthood.org">plannedparenthood.org</a>	Savannah	puberty, puberty beliefs	351, 51	1/6/14	1
15 Advocates for Youth	<a href="http://www.advocatesforyouth.org/index.php">http://www.advocatesforyouth.org/index.php</a>	Melanie	puberty	221	12/28/14	4
16 Sexuality Information and Education Council of the United States (SIECUS)	<a href="http://www.siecus.org/">http://www.siecus.org/</a>	Melanie	puberty knowledge	118	1/3/15	0
17 Sexuality Information and Education Council of the United States (SIECUS)	<a href="http://www.siecus.org/">http://www.siecus.org/</a>	Melanie	puberty beliefs	85	1/3/15	0
18 National Sex Education Conference	<a href="http://sexedstore.com">http://sexedstore.com</a>	Ana	puberty	0	1/6/15	0
19 P & G School Programs	<a href="http://www.pgschoolprograms.com/index.php">http://www.pgschoolprograms.com/index.php</a>	Savannah	puberty materials	7	1/7/14	3
20 Women's Foundation	<a href="http://womensfoundation.com/index.php">http://womensfoundation.com/index.php</a>	Savannah	N/A	N/A	1/5/14	0
21 Education Portal	<a href="http://education-portal.com/">http://education-portal.com/</a>	Ann	N/A	N/A	1/9/14	N/A
22 Education.com	<a href="http://www.education.com/results?q=puberty+beliefs">http://www.education.com/results?q=puberty+beliefs</a>	Melanie	puberty beliefs	58	1/3/15	0
23 Scarleteen: Sex Ed for the real world	<a href="http://www.scarleteen.com/">http://www.scarleteen.com/</a>	Melanie	puberty beliefs	16	12/28/14	1
24 KidsHealth.org	<a href="http://kidshealth.org">kidshealth.org</a>	Savannah	puberty, puberty beliefs	102	1/8/15	2
25 Google Scholar	<a href="http://scholar.google.com/">http://scholar.google.com/</a>	Ann	(puberty, menstruation, menarche); between 2000-2014; articles	8,101	1/9/15	2
26 Google Search	<a href="https://www.google.com/">https://www.google.com/</a>	Ann	puberty experiences in low income girls in the United States	355,00	1/9/15	4
27 OpenGrey	<a href="http://www.opengrey.eu/">http://www.opengrey.eu/</a>	Ann	N/A	N/A	1/9/15	N/A
28 Popline	<a href="http://www.popline.org/">http://www.popline.org/</a>	Ann	(Puberty OR Menstruation OR Menarche) AND (USA) AND (2000-2015) AND (Gray literature)	18	1/9/15	12

## APPENDIX C: Data extraction and quality assessment form

Table C1. Data extraction and quality assessment form		
Criteria	Instructions	Specifications and examples
<b>ALL STUDIES</b>		
Research question/aims	Cut and paste this from the study	What is the purpose of study? What are they trying to understand?
Was research aim/question stated clearly?	(0) N/A (1) Strong (2) Moderate (3) Weak (4) Unclear	
Type of study	(1) Qualitative (2) Quantitative (3) Mixed methods (4) Unsure	
Type of study clearly stated	(0) N/A (1) Strong (2) Moderate (3) Weak (4) Unclear	
Did the authors use an appropriate type of study (qualitative vs. quantitative) to answer their question?	(0) N/A (1) Strong (2) Moderate (3) Weak (4) Unclear	
<b>QUALITATIVE STUDIES</b>		
Qualitative research methodology used?	If the research methodology is not explicitly stated, cut and paste sections of the paper that you think explain the methodology used.	Examples: ethnography, phenomenology, narrative research, case study, grounded theory, etc.
Is there congruity between the research methodology and the research question or objectives?	(0) N/A (1) Strong (2) Moderate (3) Weak (4) Unclear	With grounded theory methodology, for example, the research question changes over time as you collect and analysis data in an iterative process. A study that asked a quantitative question such as how much honey is consumed in this village on a daily basis by women who are between the ages of 15-19, using grounded theory methodology would be ridiculous. An appropriate starting research question for a study that used grounded theory might be something like, "what role does honey play in the diets of X?"
When was data collected for this study?	Dates	Example: 2000-2001; Jan 2014-March 2014
Geographical/cultural setting/context of study	Where did the study take place?	Be as specific as possible. This column is meant to be for additional context/detail on location and context than what is already provided in the geographical location in the previous section.

Table C1. Data extraction and quality assessment form		
Criteria	Instructions	Specifications and examples
Does the setting of the study seem appropriate to answer the research question?	(0) N/A (1) Strong (2) Moderate (3) Weak (4) Unclear	
Sampling strategy	If no specific sampling strategy is stated, just include information on how they gathered their sample.	Examples: purposive sampling, maximum variation, homogenous, critical case, theory based, confirming/disconfirming, snowball or chain, typical/extreme case, criterion or combination
Sampling strategy clearly stated?	(0) N/A (1) Strong (2) Moderate (3) Weak (4) Unclear	
Description of sample	Description	Be as specific as possible including other specific characteristics such as: students, doctors, religious affiliation etc. that were not touched upon in the FT section. No need to repeat information previously included in the geographic section.
Is sample appropriate for answering question?	(0) N/A (1) Strong (2) Moderate (3) Weak (4) Unclear	
Data collection methods used	Methods	Examples: Interviews, surveys, observation, focus groups, free listing, etc.
Data collection tools used	Tools	Examples: Semi-structured Interview guide, indirect observation guide
Type of data collection tools were explained well?	(0) N/A (1) Strong (2) Moderate (3) Weak (4) Unclear	If they included a copy of the guide it counts as being explained well. If they don't mention the tool used it counts as weak or unclear.
Qualitative data analysis techniques	Cut and paste	Normally, analyses such as recording, transcribing, codes (and even the types of codes used) will be mentioned. Key words are inductive and deductive coding, iterative process, codes emerged, etc.
What limitations of the study are mentioned by the author?	Limitations	
Author's conclusions	Key findings, major themes	
Influence of the researcher is mentioned and addressed?	(0) N/A (1) Strong (2) Moderate (3) Weak (4) Unclear	Example: The author, an African American female, conducted all interviews in the participants' homes at their convenience.  The role of the researcher in the process of data collection. Reflexivity is an important concept in qualitative data given that the researcher has such a close interaction with the participants and that the researcher is considered an instrument in the data collection that co-creates the data. Reflexivity is the

**Table C1. Data extraction and quality assessment form**

Criteria	Instructions	Specifications and examples
<p><u>Ethics</u></p> <p>The research is ethical according to current criteria or for recent studies there is evidence of ethical approval by an appropriate body?</p>	<p>(0) N/A (1) Strong (2) Moderate (3) Weak (4) Unclear</p>	<p>process of stepping back and reflecting what the researchers assumptions, beliefs, feelings, etc are regarding the participants and the study topic/process.</p> <p>Example: The research protocol for this study met the approval of the University of Florida's Institutional Review Board (IRB). Participants were informed of their rights, including the right to withdraw from the study at any time. All participants signed and dated the Informed Consent Form, and the young girls were assented in the study as minors with parental approval. Confidentiality of participants was maintained through the use of a 4-digit identification code during recording and transcribing.</p>
<p><u>Credibility</u></p> <p>Does the representation of data fit the view of the participants studied? Do the findings hold true/seem credible?</p>	<p>(0) N/A (1) Strong (2) Moderate (3) Weak (4) Unclear</p>	<p>This is asking whether or not the major take aways in the study are in line with what this particular study is capable of finding and also with what seems to have arisen from the data. Evaluation techniques include: having outside auditors or participants validate findings (member checks), peer debriefing, attention to negative cases, independent analysis of data by more than one researcher, verbatim quotes, persistent observation etc.</p>
<p><u>Transferability</u></p> <p>Are research findings transferable to other specific settings.</p>	<p>(0) N/A (1) Strong (2) Moderate (3) Weak (4) Unclear</p>	<p>Evaluation techniques include: providing details of the study participants to enable readers to evaluate for which target groups the study provides valuable information, providing contextual background information, demographics, the provision of thick description about both the sending and the receiving context etc.</p>
<p><u>Dependability</u></p> <p>Is the process of research logical, traceable and clearly documented, particularly on the methods chosen and the decisions made by the researchers.</p>	<p>(0) N/A (1) Strong (2) Moderate (3) Weak (4) Unclear</p>	<p>Evaluation techniques include: peer review, debriefing, audit trails, triangulation in the context of the use of different methodological approaches to look at the topic of research, reflexivity to keep a self-critical account of the research process, calculation of inter-rater agreements etc.</p>
<p><u>Confirmability</u></p> <p>Are findings qualitatively confirmable through the analysis being grounded in the data and through examination of the audit trail?</p>	<p>(0) N/A (1) Strong (2) Moderate (3) Weak (4) Unclear</p>	<p>Are the participants and their voices adequately represented? Were quotes used? Were in-vivo codes used? Evaluation techniques include: assessing the effects of the researcher during all steps of the research process, reflexivity, providing background information on the researcher's background, education, perspective, school of thought etc.</p>
<p><u>Limitations</u></p> <p>Were all the major limitations addressed and adequately accounted for by the author?</p>	<p>(0) N/A (1) Strong (2) Moderate (3) Weak (4) Unclear</p>	<p>Adequate accounted for means the author acknowledged the limitations and considered them when interpreting the results.</p>

## APPENDIX D: Final codebook for a systematic review

Table D1. Final codebook for a systematic review of literature on puberty experiences of low-income girls in the US, published between 2000-2014			
Parent Code	Code	Subcode	Description/Example
Timing of Puberty			Use for any mention of timing of puberty; it could refer to the perception of being an early (or late) starter or actually starting early or late.
	Late		Use for any mention of starting puberty late.
	Early		Use for any mention of starting puberty early whether puberty starts for that girl with breast buds or menarche.
Support			Use to capture experts related to support of any kind (though our subcodes are captures specific types of support such as information, supplies, emotional support, and communication). An excerpt could be coded as "support" (or some subcode) when adolescent mentions needing support, when the author of the article interprets what adolescent says as them needing more support and also when you interpret whatever is written as something related to support of any kind.
	Information/ Knowledge		Use for descriptions of type of information or knowledge; anatomy; practical aspects such as how to use a tampon); physiology and anatomy.
	Lack of Information		This includes puberty myths and misinformation; for example, many girls mention that when they got their period they thought they had an infection; myths told about puberty/menarche/period/pregnancy/unwanted consequences. It also includes lack of information provided by other credible sources in their lives?
	Communication		Use when adolescent/mother/father describes talking about puberty/menarche/becoming a woman
	Lack of Communication		Use when adolescent/mother/father expresses resistance or avoidance of communication about any aspect of puberty
	Emotional Support		Use when girl(s) feel like they have someone to talk to about the changes they are going through; advice; permission; normalcy.
	Lack of Emotional Support		Use when it is clear that for whatever reason an adolescent is lacking emotional support which could be that they feel abnormal and no one is telling them that they are okay.
Feelings about Puberty			This code captures anyone's perception of puberty—their feelings about any aspect of their puberty experience.
	Positive Feelings		Describes a positive perception of puberty experience. It includes feelings such as: excitement, power, control, self esteem, power.
		Excited	Use when girl(s) describe feelings of anticipation, sense of eagerness about menarche or puberty.
		Prepared	Use when girl(s) describe feeling ready for menarche or puberty.
		Empowered	Use when girl(s) describe feeling self-confident regarding puberty and/or menarche.
		Comfortable	Use when girl(s) describe feeling comfortable about puberty or menarche.
	Other Feelings		Describes neutral or non-negative or non-positive feelings about puberty or a feeling that you can feel is somehow neither positive or negative.
		Ambivalent	Use when puberty is described as being no big deal; ambivalent feelings about it.
		Relieved	Use when getting period provided a sense of relief.
	Negative Feelings		Describes a negative perception of puberty experience. It includes feelings such as: fear, embarrassment, gross, unprepared/not ready, lack of control, lack of power, uncertainty, disgust, uncomfortable, shame
		Embarrassment	Use when girl(s) describe feeling embarrassed about her experience of puberty and/or menarche.

**Table D1. Final codebook for a systematic review of literature on puberty experiences of low-income girls in the US, published between 2000-2014**

Parent Code	Code	Subcode	Description/Example
		Fear	Use when girl(s) describe feeling scared at menarche.
		Unprepared	Use when girl(s) express not feeling ready for menarche.
		Uncomfortable	Use for any mention of feelings of discomfort with puberty, menarche, and/or period.
		Vulnerable	Use for any mention of feeling vulnerable due to experience of puberty and/or menarche.
		Gross	Use when girl(s) express feelings of disgust
		Shame	Use when girl(s) express feeling ashamed
		Guilt	Use when girl(s) describe feelings of guilt due to experience of puberty and/or menarche.
Desire for Normalcy			Use there is an expressed desire to be "normal". Sometimes they express this as though they want to be like their friends like they want (or don't want) to have breasts like their friends. Sometimes this is expressed by parents who wish their daughter didn't start her period early.
Secrecy			Use when girl(s) express a desire to keep anything related to puberty secrete. In relation to menstruation girls sometimes say they didn't tell anyone about starting their period or that they need to hide their menstrual products. In relation to breast development this is often expressed as an attempt to hide their breasts by baggy clothes.
Celebration			Use when any aspect of puberty is explained as a type of celebration. Sometime this is explicitly stated and sometimes girls mention receiving gifts.
Body Development			Use for any mention of physical changes that occur to the body during puberty.
	Menstruation		Use for any mention of menstruation.
		Blood	Use for any mention of blood or even when not explicitly called blood, but referred to as a fluid.
		Menarche	Use for any excerpts specifically related to getting the first period
		PMS	Use for any mention of PMS or mood swings.
		Menopause	Use for any mention of menopause.
		Physical Pain	Use for any mention of physical pain related to menstruation. For example, cramps would be included as physical pain
	Acne		Use for any mention of acne or pimples.
	Weight Gain		Use for any mention of weight gain.
	Hips		Use for any mention of hips (lack there of, presence of, growth of, desire to have).
	Odor		Use for any mention of body order.
	Hair		Use for any mention of pubic or underarm hair.
	Breasts		Use for any mention of breasts (having them or not having them).
Relationships			This is used to capture when some relationship is described that's pertinent to an adolescent's puberty experience.
	Family		Use for when family is mentioned, but there is no distinction of who within the family is being referred to
		Father	Use for description of the relationship or interaction between father and daughter regardless if it is positive or negative.
		Mother	Use for description of the relationship or interaction between mother and daughter regardless if it is positive or negative.
		Sister	Use for any mention of a sister. Could be positive or negative.

**Table D1. Final codebook for a systematic review of literature on puberty experiences of low-income girls in the US, published between 2000-2014**

Parent Code	Code	Subcode	Description/Example
		Brother	Use for any mention of a brother. Could be positive or negative.
		Other-family-female	Use for any mention of a family member that is a female, but that does not fit the categories above (such as a grandmother, aunt, etc.). Could be positive or negative.
		Other-family-male	Use for any mention of a family member that is a male, but that does not fit the categories above (such as a step father, mom's boyfriend, male cousin, uncle, etc.). Could be positive or negative.
	Community		Use for when community is mentioned broadly, but there is no distinction of who within the community is being referred to.
		Health Care Worker	Use for description of the relationship or interaction between a health care worker and adolescent girl/s.
		Teacher	Use for any mention of a teacher/instructor in a school type environment. Could be positive or negative.
		Female Friend	Use for any mention of a female who is considered a friend of the adolescent. Could be positive or negative.
		Male Friend	Use for any mention of a male friend of the adolescent. Could be a positive or negative.
		Other Female	Use for any mentioned of a female that is not family (such as a family friend). Could be a positive or negative.
		Other Male	Use for any mentioned of a male that is not family (such as a family friend). Could be a positive or negative.
Materials/ Other Sources of Influence			Use for description of use or exposure to media, social media, books, films, radio, internet, songs, popular culture
Navigating Sexuality			This code is used for any reference to any aspect of sexuality (for example: desires or pressure to engage in sexual activity) it includes things such: mention of sexual arousal or sexual desire; feeling like a sexual object (like your body has become a commodity); societal expectations about sexual activity (after menarche you can become sexually active); pregnancy related topics; any type of sexual harassment (bra snapping, unwanted attention, etc.).
Puberty Supplies			Use anytime some material items that are needed during puberty are mentioned. For example, pads, tampons, bra, etc. Use this code even when you don't feel like the item is necessary for puberty, but the adolescent in the article is mentioned it as something necessary for puberty. So things like clothes for women, douche, etc. could be included in this category.
Transition			Use when puberty is described as a transition (or change in life) of any sort. Could be viewed as a negative or a positive thing.
	Loss of Childhood		Loss of Childhood refers to no longer acting like a child. This can be expressed as a positive or negative thing. Some papers talking about how adolescents could no longer play, or had new responsibilities or had a desire for independence or where able to do things "adults" did like drink, go out, etc. "loss of childhood" gets at a less gender oriented aspect of puberty that refers to the change from child to adult rather than from girl to woman.
	Transition to Womanhood		"Transition to Womanhood" was mentioned explicitly in a lot of papers and therefore those sections would be coded accordingly. Also, if findings of a paper reflect the idea that puberty (or some aspect of puberty) is the point at which girls become women even when not explicitly stated. One aspect of this is related to gender and becoming feminine whether that is perceived as a good or bad thing.
	Relationship Changes		Use for descriptions of relationship changes during/because of puberty such as: jealous with friends, can't play with boys, distance from father, independent from mother. One thing that came up a lot in the readings are relationships with male peers here (possible ones) which would be captured here as well as possibly double coded with "navigating sexuality"

**Table D1. Final codebook for a systematic review of literature on puberty experiences of low-income girls in the US, published between 2000-2014**

Parent Code	Code	Subcode	Description/Example
Limitations & Opportunities			Use when girls lives of girls change (either through a newly imposed restriction on their behavior or a newly gained opportunity) due to puberty. Limitations include things such as: they can't swim; they no longer want to participate in physical activity; they can no longer play with boys, etc. The excerpt can be from a girl who is explaining a limitation that was imposed by her or it can be a parent who is imposing a limitation, etc. Opportunities include things such as: being able to do things they weren't able to do before; saving legs; gain more independence; able to sit at the big kids table, etc.
Puberty Education in School			Use anytime puberty education in school is mentioned Some articles say things like, "when I watched the video in 5th grade" and this would count as something to code as "puberty education in school"
Other Codes	Great Quotes		Use for any quotes that seem particularly important, interesting, and/or unique to this study.
	Population Demographics		Description of the geographic location, race/ethnicity, age, urban or rural setting, socioeconomic status, language, and immigration status.
		Geographic Location	Use for description of the geographic location of the study.
		Race/ Ethnicity	Use when describing the racial or ethnic make-up of the study participant(s).
		Age	Use when describing the age of the study participants.
		Urban/Rural Setting	Use when describing the whether the geographic location of the participants is either urban and/or rural.
		SES	Use when describing the socio economic status of participants. Examples of this include family income level or descriptions of "low income" or "high income".
		Language	Use for any mention of the language(s) spoken by participant(s).
		Immigrant	Use for any description of immigration status of participant(s).
	Article Facts	Journal	Name of the publishing journal
		Title	Title of the article
		Author(s)	Author(s) names
	Study Detail		Description of the main study design details: analytic methods, data collection methods, recruitment strategy, sample size, study aim, and research methods.
		Analytic Methods	Description of the analytic methods applied.
		Data Collection Methods	Description of the data collection methods applied.
		Recruitment Strategy	Description of the recruitment strategy applied for the participant sample.
		Sample Size	Description of the same size.
		Study Aim	Description of the study aim.
		Research Methods	Description of the research methods used, i.e. qualitative; quantitative; mixed methods
	Summary of Main Results		Description of the main results of the study.
	Author Recommendation		Use for any recommendations made by the author based on the study findings.



# APPENDIX E: Summary characteristics of articles included in the systematic review

Table E1. Summary characteristics of articles included in the systematic review of literature on puberty experiences of low-income girls in the US, published between 2000-2014								
Author & title	Study objective	Study setting	Sample & sampling	Race, ethnicity & socioeconomic status of sample	Study design, data collection & analysis methods	Key findings	Quality of study	Relevance
1 Alcalde & Quolopana (2013)  Latin American Immigrant Women and Intergenerational Sex Education	Examine messages about sex women received as children in their countries of origin, and how these messages and their views of the USA influence the sexual education women provide for their children.	Urban, Kentucky; Southeast  Part of larger project on health and immigration experiences of women of Latin American	Adult sample; N=24 women; Ages 20-52 (M=33 years)  Convenience sampling (recruited from health clinics, ESL centers, public library)	Hispanic; Immigrant women lived in US 3-18 years (majority from Mexico; 1 Guatemala, 1 Peru, 1 El Salvador); Spanish speaking (14 spoke Spanish only)  13 employed for pay, 10 did not work for pay, and 1 woman did not provide information on employment. Among those who worked, weekly income ranged from \$150 to \$350.	Qualitative  Focus group; Self-administered socio-demographic questionnaire  Grounded theory analysis; Digital recordings, transcripts, and notes from the focus groups were used to develop the resulting themes; employed open coding to identify themes and axial coding to understand the range of themes	Women reported not having had any sex education (including about menstruation and its connection to pregnancy). They attributed the lack of information about sex to their early initiation of sexual activity and unplanned pregnancies. Women felt that the US was a more sexually open society and that children growing up here were exposed to multiple sources of sex education. Women expressed wanting to provide more sex education to their daughters and sons than they had received even if they felt embarrassed to do so. Their conversations about sex with their daughters tended to be cautionary and to focus on menstruation.	Moderate  Retrospective nature of sample (mean age 33 years); Only used focus groups to discuss sensitive topics; Convenience sample yield diverse sample of Hispanic Immigrants (varied by length of time in US, education level, country of origin)  Methods and data collection tools not made explicit; Reflexivity of researcher not addressed; Some important factors (such as influence of religiosity) not explored	Indirect  Study is about sex education (not puberty) which women linked to certain aspects of menstruation on their own.  Sample comprised of immigrant women who experienced puberty in other countries (mostly Mexico); Adult women ages 18-45 sample
2 Angulo-Olatz F et al. (2014)  Sexuality and Information Needs of Latino and African American Ninth Graders: A Content Analysis of Anonymous Questions	Answer three primary research questions: 1) What kinds and types of information about sex and sexuality are sought by Latino and African American adolescents? 2) To what extent does the information sought vary by gender? 3) What are the developmental and programmatic implications of the content, patterns, and gender differences in information sought?	Urban (Los Angeles); California; West  Data comes from larger randomized trial evaluating a multicomponent comprehensive c sexuality education program in 44 ninth-grade classrooms across eight schools in Fall 2011	Adolescent sample; N=655 ninth grade students; 50.2% female  All students in the 24 intervention classrooms (in charter schools) were asked to write anonymous questions on two occasions during the 12-session curriculum	83.4% Latino & 9.1% African-American; English speaking  8 charter high schools in low-income neighborhoods	Qualitative; content analysis  Written anonymous questions  Inductive analysis; double coded questions and created main and sub-topic categories using ATLAS.ti	The second most common type of question asked (by 31% of students) was about anatomy and physiology. 22.2% of female student questions were about the female body, with the highest percentage (8.8%) asking about menstruation (e.g., timing, why boys do not have periods). Many questions linked menstruation with pregnancy (how pregnancy occurs, pregnancy prevention, and fetal development and childbirth) and female students wanted to know about their bodies and body processes in more detail. Only 4% of the female student questions asked about the male body.	Moderate  Retrospective nature of sample (9th grade students); Sample only included students who submitted written anonymous questions (biased toward literate students who speak English); Students were involved in sex education program which could have influenced types of questions submitted (questions were collected in 6 and 12th week of program)  Did not get questions of control groups for comparison; Ethical concerns of study were not addressed; Question prompt limited types of questions that could be asked; Narrative form of data collection prevents further probing and discussion to gather more detail on topic	Partial  Questions were elicited as part of a larger randomized trial evaluating a multi-component comprehensive sexuality education program. In week 6, students were asked to submit anonymous questions about sexual anatomy or reproduction and then in week 12, students were simply told it was anonymous question time.  Included boys and girls, but findings were disaggregated by gender; Sample comprised of African American and Hispanic women; Conducted in 8 charter schools
Table E1. Summary characteristics of articles included in the systematic review of literature on puberty experiences of low-income girls in the US, published between 2000-2014								
3 Aronowitz & Aghebshie (2012)  Nature of Communication: Voices of 11-14 Year Old African-American Girls and Their Mothers in Regard to Talking About Sex	Explore what African American mothers say to their daughters about sex, in what context the discussions occur, and how the daughters respond to their mothers' messages	Urban (Inner city community centers)  Geographic location of sample was not explicitly stated, but data appears to be from the same source as the other two Aronowitz articles included in this review (New York; Northeast)	Mother-daughter sample; N=42 mother-daughter dyads; Daughters' ages 11-14 (M=13.2 years); Mothers' ages 32-78 (M=38 years)  Snowball sampling (main contacts were from the community centers)	African American; English speaking  Inner-city community agencies in four cities in central New York that provide after-school programming, parenting classes, and other community services for the most impoverished census tracts in these cities were the sites of recruitment for this study	Qualitative; Drew on aspects of grounded theory & Participatory Action Research  Focus groups (separate for mothers and daughters; 6 per group)  Progressive & inductive analysis; color coded transcripts & sorted data by themes; validated themes with 2 of the focus groups	Girls expressed a view that mothers in general were clairvoyant about girls and their experiences and behaviors (especially regarding menarche). According to the girls, however, if the mothers and daughters "don't communicate," this aspect of knowing will be compromised. Both mothers and daughters defined "knowing" as the ability to read each other's non-verbal communications. When mothers were able to read their daughters' nonverbal communication they adjusted their teaching to be more developmentally appropriate. The daughters expressed closeness to their mothers and stated that their mothers understood them when they felt that their mothers "knew" them.	Moderate  Only used focus groups to discuss sensitive topic; Snowball sampling  Data collection tools and context of study (location, education, income) were not well specified; Study limitations and reflexivity of researcher not addressed in article	Indirect  Study was broadly about mother-daughter conversations about sex though asked one question in the focus group about puberty, "Where did you learn about how your body changes as you go through puberty?"  Sampled limited to African Americans; Daughters in study reported having never been sexually active
4 Aronowitz & Munzert T (2006)  An Expansion and Modification of The Information, Motivation, and Behavioral Skills Model: Implications From a Study with African American Girls and Their Mothers	Investigate sexual communication between 11- to 14-year-old girls and their mothers.	Urban (Inner city community centers); New York; Northeast	Mother-daughter sample; N=28 mother-daughter dyads; Daughters' ages 11-14 (M=12.4 years); Mothers' ages 32-78 (M=35 years)  Snowball sampling (main contacts were from the community centers)	African American; English speaking  Inner-city community agencies in four cities in central New York that provide after-school programming, parenting classes, and other community services for the most impoverished census tracts in these cities were the sites of recruitment for this study.	Qualitative; Drew on aspects of grounded theory & Participatory Action Research  Secondary analysis of qualitative data—the data were reexamined and categorized according to the modified IMB model constructs.	The girls have a baseline level of knowledge regarding puberty, types of sexual behaviors, birth control, and HIV transmission and prevention. Mothers revealed specific knowledge about puberty and were able to correlate this with the stage of their daughter's development.	Moderate  Only used focus groups to discuss sensitive topic; Snowball sampling  Insufficient detail about sampling and data collection methods provided; Context of study (location, education, income) was not well specified; Study limitations and reflexivity of researcher not addressed in article	Indirect  Study was broadly about mother-daughter conversations about sex though asked one question in the focus group about puberty, "Where did you learn about how your body changes as you go through puberty?"  Sampled limited to African Americans; Daughters in study reported having never been sexually active
5 Aronowitz et al. (2006)  Ecological Influences of Sexuality on Early Adolescent African American Females	Explore ecological factors (cultural, developmental, and family factors) influencing adolescent sexual risk behaviors of young African American adolescent girls	Urban (Inner city community centers); New York; Northeast	Mother-daughter sample; N=28 mother-daughter dyads; Daughters' ages 11-14 (M=12.4); Mothers' ages 32-78 (M=35)  Snowball sampling (main contacts were from the community centers)	African American; English speaking  Participants recruited from four inner-city community centers that provide afterschool programming, parenting classes, and other community services for the most impoverished census tracts in the city.	Qualitative; Drew on aspects of grounded theory & Participatory Action Research  Focus groups (separate for mothers and daughters)  Progressive & inductive analysis; color coded transcripts & sorted data by themes; validated themes with 2 of the focus groups	Three venues were mentioned where girls participated in planned sex education programs: home, school, and community centers. The content from the venues that mothers and daughters described in the focus groups consisted of menstruation and physical changes of puberty. Some girls stated they had not spoken to their mothers about menstruation prior to menarche; those who had reported conversations focused on "how to take care of yourself"—not on the meaning of this developmental milestone. The daughters reported they learned the most about puberty and STDs in school.	Moderate  Only used focus groups to discuss sensitive topic; Snowball sampling  Insufficient detail about sampling and data collection methods provided; Data collection tools and context of study (location, education, income) were not well specified; Study limitations and reflexivity of researcher not addressed in article	Indirect  Study was broadly about mother-daughter conversations about sex though asked one question in the focus group about puberty, "Where did you learn about how your body changes as you go through puberty?"  Sampled limited to African Americans; Daughters in study reported having never been sexually active

6	Beausang & Razor (2006)  Young Western Women's Experiences of Menarche and Menstruation	Examine young women's experiences of menarche and menstruation, as included in personal stories of growing up sexually. Identify menstrual-related education provided to young women, and to evaluate its effects on their experiences.	Small community college; Midwest  Data from study came from a sample of the 227 stories written by women. All stories that referenced their first menstruation or "period" were included in the sample.	College sample; N=85 student autobiographical written accounts; Ages 18-61  Data for the study were provided by college students enrolled in a human sexuality course.	70 Caucasian, 5 Black, 6 Hispanic, 4 Unidentified; English speaking  Students in Community College	Qualitative; Cross-case analysis  Written narratives  Each narrative story was coded for content: whether menarche was perceived as positive or negative, who was identified as the primary teacher, age the narrators were taught, and age at menarche.	Young women were influenced by cultural beliefs that menstruation is secretive female process that is primarily hygienic in nature. How women were taught about menstruation influenced how they learned about other issues related to sexuality. Mothers and schoolteachers were 2 most frequently identified sources of information. Most had a negative view of their menstrual education regardless of the source.	Moderate  Retrospective nature of sample (ages 18-61); Only analyzed narratives of women who referenced first period (85/227); Convenience sample from college course  Limitations and methodology of study not made clear; Narrative form of data collection prevents further probing and discussion to gather more detail on topic	Unclear relevance  Captured girls' experiences of menarche and sexual development; Very much on topic, but community college sample (wasn't clear about income); Asked college age women to recall experience  SES; Age; Sample comprised of mostly women who identify as Caucasian
7	Charmaraman & McKamey (2011)  Urban Early Adolescent Narratives on Sexuality: Accidental and Intentional Influences of Family, Peers, and The Media	Examine the ways that early adolescents talk, interact, and make references to events in their individual and collective lives with regards to sexuality and relationships.	Urban, Public middle schools; Northeast  Part of a comprehensive sex education impact evaluation	Adolescent sample; N=23 6th grade adolescents (10 boys, 13 girls); Ages 11-13  Purposive sampling	61% Black, 26% Latino, 9% Multiracial, 4% White; English speaking  SES of sample was not stated	Qualitative; Photovoice, narrative and content analysis  Photography focus groups, visual and verbal narratives  Photos were preliminarily analyzed for content, but verbal narratives were main content. Transcripts were double coded.	Urban early adolescents construct ideas about sex through several contexts—family, peer, school, and media. Parent's rarely initiated explanations about general sexual topics, but when they did they typically referenced puberty and biological development. In these conversations (which were often indirect) puberty was related to being able to get pregnant.	Moderate  Only used focus groups to discuss sensitive topic  Context of study (city, education, income, religion) not specified; Limitations of study not thoroughly mentioned in article	Unclear  Study was broadly about sexuality and relationships and not about puberty specifically  SES of participants not clear; includes boys and though quotes are specific to girls it's not always clear whose experience the findings reflect; Some results are disaggregated by gender; Used somewhat diverse sample, but was mostly made up of African Americans
8	Cooper & Koch (2008)  "Nobody Told Me Nothing": Communication About Menstruation Among Low-Income African American Women	Address the following research questions: 1) Where do low-income African American women receive their menstrual health information? 2) What is their level of understanding regarding menstrual events (i.e., menarche, menstruation, menopause, and menstrual-related health conditions)? 3) What are their attitudes toward menstrual events? 4) How do these women communicate about menstrual events with others?	Urban; Northeast	Adult sample; N=17 women; Ages 18-50 (M=30.3 years)  Convenience & snowball sampling	African American; English speaking  Recruited from a free clinic in a housing project	Qualitative; Grounded theory  Focus groups and individual interviews  Inductive open, axial, and selective coding of transcripts by two researchers	The core theme was avoidance or negative discussion of menstrual issues throughout the women's lives. Women had few sources of and very limited menstrual learning from school, their mothers, and other women. This led to confusion and inaccurate beliefs about and negative attitudes toward menstruation, menopause, and menstrual-related health conditions.	High  Retrospective nature of sample; asked adult women (mean age=30.3) to recall menstruation; Used convince and snowball sampling  Little detail about context of study (city, education, income, religion); Reflexivity of researcher not addressed	Partial  Experiences of menarche  African American girls; Growing up in urban areas; Northeast part of the USA

9	Hawthorne (2002)  Symbols of Menarche Identified by African American Females	Answer the following questions: 1) How do 9- and 10-year-old African American girls view the meaning of their menarcheal flow? 2) How do African American mothers view the meaning of menarche?	Rural; Florida; Southeast	Mother-daughter sample; N=15 mother-daughter dyads; Daughters' ages 9-10; Mothers' ages 26-55  Purposive & snowball sample	African American; English speaking  Participants' yearly household income ranged from \$4,000 to \$107,000 (median of \$35,000); Mother's Mean Education: 12.7 years, SD = 1.76	Qualitative; Case Study  Individual interviews (conducted separately for mothers and daughters 2 to 5 days after completion of menarche.)  Qualitative data, audiotaped interviews, and field notes were analyzed using a cross-case analysis method	Four themes: 1) vaginal bleeding (Wetting pants with blood, Menstrual period-red vaginal blood flow; A sickness; No special meaning. Nothing), 2) sexual maturation (Child to woman, Ready and interested in heterosexual activities, Capable of becoming pregnant, 3) premenarcheal sexual activity (Involvement in heterosexual activities prior to menarche, Menarcheal onset triggered by early-for-age sexual activities, and 4) sexual payback to biological fathers (Young girls used as sexual objects by males, What happens to daughters will be fathers' punishment for sexually abusing females)	High  Family interviews could have biased participants responses (mother and daughter interviewed together); Fathers not included in the sample though results related to fathers were one of the main findings; Girls were interviewed 2-5 days after girls first menstruation  Purposive sampling occurred through school board which may have biased type of people included in the study (well-educated, involved, etc.); Only utilized one type of data collection method (individual interviews)	Partial  Experiences of menarche; Experiences of mothers and daughters  African Americans; Growing up in rural areas; Southern part of the USA
10	Jean et al. (2009)  Pubertal Development in Mexican American Girls: The Family's Perspective	Explore perceptions of body image, pubertal development, communications, and sources of puberty-related information in Mexican American mother-father-daughter triads	Urban; Texas; Southwest	Mother-daughter-father sample; Total N=37; Daughter N=16; Mother N=13; Father N=8; Daughters' ages 6-12 (M=7.94); mean ages of mothers=34.8 & fathers=38.5 years  Mothers of girls between the ages of 6-12 from the Mano a Mano cohort were asked to participate and daughters and fathers where then recruited through them	Hispanic (most immigrants from Mexico); Parents predominantly spoke Spanish, daughters spoke English & Spanish  Most parents had less than a high school education level	Qualitative  Focus Groups conducted separately for mothers, fathers, and daughters.  Transcripts, summaries, & notes were synthesized; Responses to questions were analyzed separately; similarities and differences were identified; Results discussed until a consensus was reached among researchers	Parents expressed concerns about daughters' weight and pubertal development. Mothers had a more active role in conveying pubertal information to daughters than fathers though both were involved. Among the girls, there was a gap in knowledge about the pubertal process between the younger and older girls.	Moderate  Small sample sizes (especially for fathers); Adolescent sample includes girls ages 6-12 which meant that not all girls had experience puberty at time of study; Only used focus groups to discuss sensitive topic)  Methodology used and reflexivity of researcher not discussed in paper	Direct  Perceptions of body image, pubertal development, communications about puberty and sources of puberty-related information; Experiences of mothers, daughters and fathers  Hispanic immigrants (mostly from Mexico); Growing up in urban areas; Southern part of the USA

Table E1. Summary characteristics of articles included in the systematic review of literature on puberty experiences of low-income girls in the US, published between 2000-2014								
11 Kalman (2003) Adolescent Girls, Single-Parent Fathers, and Menarche	Understand how girls living with single fathers feel about getting menarche and menstruation information from their fathers.	Geographic location of sample was not explicitly stated  The findings emerged from a larger sample of 16 adolescent females who did not live with their mothers.	Adolescent sample; N=13 girls; Ages 10-18  Purposive & theoretical sampling	Caucasian; English speaking  SES of sample was not stated; All girls in sample live with their fathers as primary caretaker though mother was still alive	Qualitative; Grounded theory  Individual interviews (implied but not said explicitly)  Line by line as coding of transcripts was performed a second time was conducted 3 times with each compared with previous incidents.	Adolescent girls living with in single father homes felt that they had close relationships with their fathers, but were still embarrassed to discuss menarche with them.  Adolescent girls with single fathers felt their fathers lacked credibility regarding menstrual issues and felt an emotional and physical distancing from their fathers.	Low  Small sample size (n=13); Wide age range of sample (ages 10-18)  Methodology and data collection instruments not specified; Context of study not specified (when and where study took place); Only used one data collection method (individual interviews); No discussion of limitations or reflexivity of researchers in the paper	Partial  Experiences of menarche and menstruation Caucasians; Experiences of girls growing up in single parents households headed by fathers  SES of sample unknown; Geographic location on of sample unknown
12 Lee (2008)  'A Kotex and a Smile' Mothers and Daughters at Menarche	Explores menarche or first-period narratives of 155 young women, focusing on their relationships with their mothers at this time.	Urban; Oregon (Oregon State University); West  Data from this study was also used in Lee (2009)	College sample; 155 young women; Ages 18-21(2/3rds were 18-19)  Sample was taken from students enrolled in 3 gender studies classes, participation was anonymous, voluntary and not linked to grading	120 Caucasian, 35 women of color (over half Asian, also included African American, Hispanic & mixed race); English speaking  University students; 1/5 annual family income below \$40,000, 3/5 between \$40,000 - \$100,000, 1/5 over \$100,000, more whites were high income and more non-whites were low income	Qualitative; Narrative approach  Written narrative of experience with menarche & relationship with their mother at menarche; Demographic survey  Close readings of all narratives, without taking notes; Re-read and noted patterns and themes in the data	Most girls reported negative menarche experiences. Some of these girls also recalled having supportive mothers who were emotionally engaged with them. Still, in many cases emotionally connected mothers mitigated feelings of shame and humiliation of menstruation. Finally, although White women and the more affluent are overrepresented among celebratory and emotionally connected mothers, women of color and, to some extent, the less affluent are overrepresented among the helpful, less demonstrative mothers. The latter seem to facilitate the least negative menarcheal responses on the part of daughters.	High  Retrospective nature of sample (ages 18-21); Convenience sample from college course on gender and society  Potentially unreliable socioeconomic information as college students often do not provide reliable information on income; Ethical considerations and reflexivity of researcher not addressed; Narrative form of data collection prevents further probing and discussion to gather more detail on topic;	Unclear  Experiences of menarche and relationships with mothers; Captured college girls reflections of their past experiences  SES is not clear; Mostly Caucasians; Most of the sample was not of low SES, but some results were disaggregated

Table E1. Summary characteristics of articles included in the systematic review of literature on puberty experiences of low-income girls in the US, published between 2000-2014								
13 Lee (2009)  Bodies at Menarche: Stories of Shame, Concealment, and Sexual Maturation	Examine the frequency of themes of shame, concealment and sexual maturation in written menarche narratives. Examine the meanings women make of such experiences of their first period. Examine the relation of these themes to key characteristics or conditions (including age, race, economic status, family's political identification, having siblings in the home).	Urban; Oregon (Oregon State University); West  Comes from a larger project examining women's relationships with their mothers at menarche and addressing the relationship between women's memories of maternal scripts and their experiences of menarche. Data was collected at a university in Winter 2006	College sample; N=155 women; Ages 18-21(2/3rds were 18-19)  Sample was taken from students enrolled in 3 gender studies classes, participation was anonymous, voluntary and not linked to grading	120 Caucasian, 35 women of color (over half Asian, also included African American, Hispanic & mixed race); English speaking  University students; 1/5 annual family income below \$40,000, 3/5 between \$40,000 - \$100,000, 1/5 over \$100,000; more whites were high income and more non-whites were low income	Qualitative; Narrative approach  Questionnaire and narrative  Narratives coded for presence of indicators of shame, concealment and sexual maturation (subset checked for agreement=85%); coded for demographic variables (Chi-square statistics)	There is some evidence for the continued presence of themes of shame and concealment and for the ways girls continue to experience sexual maturation as negative. Although some women report experiencing menarche in ways that reflect cultural misogyny and association of menarche with shame and secrecy, most women did not experience their period this way and were excited to develop an adult female body - showing that there is no single negative or positive model empowering girls as they generate agency through their bodies and menstruation.	High  Retrospective nature of sample (ages 18-21); Convenience sample from college course on gender and society  Potentially unreliable socioeconomic information as college students often do not provide reliable information on income; Ethical considerations and reflexivity of researcher not addressed; Narrative form of data collection prevents further probing and discussion to gather more detail on topic	Unclear  Experiences of menarche and relationships with mothers; Captured college girls reflections of their past experiences  SES is not clear; Mostly Caucasians; Most of the sample was not of low SES, but some results were disaggregated
14 Meschke & Dettmer (2012)  Don't cross a man's feet': Hmong parent-daughter communication about sexual health	Explore parent-adolescent communication in immigrant families around sexual health. Examine if Hmong parents are involved in sexual health discussions with their daughters, the content of such discussions, and perceived conversation barriers.	Urban (Ramsey County); Minnesota; Midwest  Data are part of a larger needs assessment of Hmong adolescent pregnancy that included 11 years of birth record data, numerous focus groups and surveys of Hmong adolescents and parents. Interview data collected April - September 2002	Adolescent sample; N=44 Hmong girls; Ages 14-20 (M=17.55; SD=1.62)  Convenience sampling	Asian or Asian American (Hmong); 80% (35) interviews were conducted in English, 20% (9) in Hmong  Respondents were pregnant or parenting adolescent females. Most (86%) were enrolled in school & nearly a quarter (23%) was employed.	Qualitative; Case study and content analysis  Semi-structured interviews  Transcripts reviewed & summarized by interview guide topic area. Validated via line by line coding (marking quotes associated with sexual health communication) & open coding identified topics of interest.	Parent-adolescent communication about sexual health issues is an infrequent occurrence in the Hmong community, and when information is shared, it is often inaccurate and very little detail is provided. Fear appeals often are incorporated in the information, including exaggerated or inaccurate effects of STIs and threats of abandonment if the daughter becomes pregnant. Comparable to previous studies of non-immigrant families, parental knowledge, discomfort, and fear were all cited as challenges to sexual health discussions, however the daughters couched each of these areas in the context of the Hmong culture.	Moderate  Wide age range of sample (ages 14-20); Uncertain if pregnant teens (and teen mothers) are likely to under or over-report sexual health information they received at home; Convenience sample  Information on qualitative methodology, data collection methods, and data analysis was not thoroughly explained; Only collected data through individual interviews; Ethical concerns and reflexivity of researcher not addressed	Unclear  About parent-adolescent communication in immigrant families around sexual health pregnant or parenting girls  SES is not clear; Hmong girls; girls are pregnant or are mothers; Ramsey County, Minnesota, the residence of the largest concentration of Hmong in the U.S.

Table E1. Summary characteristics of articles included in the systematic review of literature on puberty experiences of low-income girls in the US, published between 2000-2014								
15 Nwoga (2000)	Describe stories and proverbs used by African American mothers in conversations with their daughters about growing up, being a woman, and dealing with boys, sex, and pregnancy.	Rural; Florida; Southeast	Adult sample; N=11 mothers who had daughters ages 12-19; Mothers ages 30-56	African American; English speaking	Qualitative; Narrative research	Mothers felt uninformed about sexuality & wanted daughters to be more informed in order to prevent them from making the same mistakes as they did. They used story telling (sometimes from own experiences) as a strategy for sexuality education. Conversations often first initiated at puberty though mothers pointed out that close & open relationships had to be established from early on. Mothers expected that their daughter's sex education would also come from others in the "village" (grandmothers, aunts, cousins, in-laws, friends, godmothers, school teachers, spiritual leaders, the church, fellow church members, and neighbors)	Low	Indirect
African American Mothers Use Stories for Family Sexuality Education			Purposive & snowball sampling	Info on income was not collected, but most mothers completed high school (82%), one mother had a masters degree in public administration, and one had a bachelor's degree in education. Most (82%) mothers were employed.	Interviews  Five-stage narrative analysis process: attending, telling, transcribing, analyzing, and reading. Stories examined to for thematic content, functions, narrative styles and story forms/structure		Retrospective nature of sample (ages 30-56); Very small sample size (n=11); Daughters of study participants were a wide range of ages (12-19) so mothers had not necessarily all experienced the same level of development in their daughters  Information on data collection methods was not provided in sufficient detail; Reflexivity of author not sufficiently discussed	Daughters being raised by only their mothers (70%) conversations about sexuality
16 O'Sullivan et al. (2001)	Addressed: 1) Cues and timing of parent-child communication about sex in the course of the child's developments; 2) Content of communication, specifically the types of messages mothers use to influence their daughters' sexual decision making, as well as their daughters' responses to these messages; and 3) Approaches adopted by girls and their mothers when discussing sexuality issues together to understand how sex messages were exchanged.	Urban (New York City); New York; Northeast	Mother-daughter sample; N=72 mother-daughter dyads; Daughters' ages between 6-9 and 10-13; Mothers' ages between 31-35 years (29.2%) and 36-40 years (23.6%)	African American (AA) & Latina; 97.3% of AA mothers born in US, 6.1% Latina mothers born in US—rest born in Dominican Republic (63.6%), El Salvador (6.1%), Nicaragua (6.1%), and Puerto Rico (3.0%). (15.2% no report); Spanish & English speaking	Qualitative; Grounded theory	Most mothers and daughters reported discussing sexual issues together in both the African American and Latino families. These conversations are sometimes triggered by a mother's observation of daughter's pubertal development. Mothers and daughters adopt relatively antagonistic positions that may functionally preclude effective communication.	High	Indirect
Mother-Daughter Communication About Sex Among Urban African American and Latino Families		Data are part of a larger study examining social cognitions of urban girls with regard to sexual behaviors and relationships.  From same data source as Sullivan et al (2000)	Convenience sampling	SES of sample was not stated (refer to O'Sullivan et al (2000))	22 Focus groups; 16 with girls or mothers of girls ages 10-13 years, and 6 with girls or mothers of girls ages 6-9 years; 10 with primarily Latina participants, 12 with primarily African American participants.  Analytic and thematic coding; Earlier data compared to later		Socioeconomic information (and other important background information such as religion) of sample was not provided; Only used focus groups to discuss sensitive topic; Convenience sample  Insufficient discussion of limitations or reflexivity of researchers in the paper	Broadly about parent-child communication about sex and sexuality
Table E1. Summary characteristics of articles included in the systematic review of literature on puberty experiences of low-income girls in the US, published between 2000-2014								
17 O'Sullivan et al. (2000)	Examine both the personal and the social meanings girls attributed to various physical manifestations of puberty, the changing expectations of girls' social roles in family, peer, and dating relationships during the years corresponding to puberty, and the means by which girls interpreted and integrated sexual behavior and arousal in the development of sexual self concepts.	Urban; New York; Northeast	Mother-daughter sample; N=57 mother-daughter dyads; Daughters' ages 10-13; Mothers' ages 31-35 (25%) and 36-40 (27%)	Latina and African American; Mothers were African-American (51%) or Latina (49%); English and Spanish Speaking	Qualitative	Pubertal Themes: 1) Physical maturation provides new social status of maturity; 2) girls develop social meanings to feelings of sexual arousal and; 3) puberty prompts changes in mother-daughter relationship control. Subthemes: 1) physical development provides new social status among peers; 2) menarche is a critical communication opportunity for mothers. Other Themes: hygiene and cleanliness, disgust and shame, and increased status among older women.	High	Direct
Social Cognitions Associated With Pubertal Development in a Sample of Urban, Low-Income, African-American and Latina Girls and Mothers			Convenience sampling	SES of sample was not stated, but was drawn from Washington Heights & Upper Harlem communities of New York City.	Focus Groups (8 groups consisted primarily of Latina participants & 8 primarily of African-American participants)  Thematic content analysis (identified major and minor themes)		Socioeconomic information (and other important background information such as religion) of sample was not provided; Only used focus groups to discuss sensitive topic; Convenience sample  Insufficient discussion of limitations or reflexivity of researchers in the paper	About puberty (personal and social meanings girls attributed to various physical manifestations of puberty)  Hispanic and Black; Mother daughter sample
18 Orringer & Gahagan (2010)	Further define menstrual understanding in an ethnically diverse group or adolescent girls.	Geographic location of sample was not explicitly stated	Adolescent sample; N=73 girls; Ages 11-19	Arab American (mostly immigrant), African American, Mexican American, European American, English speaking	Qualitative	Girls interpret menstrual meaning as the signaling of reproductive capability, serving as a cleansing function, constituting a sign of growing up, embodying something essentially female, or not knowing. Overlapping menstrual meanings that transcend girls' age, cultural affiliation, and level of education or formalized menstrual teaching. Patterns emerged suggesting more prominent themes within particular ethnic groups.	Moderate	Partial
Adolescent Girls Define Menstruation: A Multicultural Exploratory Study			Convenience sampling	The girls from minority families were largely low income, while the European American girls were primarily from upper middle income families	Focus groups (6 ethnically homogeneous groups), 41 individual interviews, written surveys  Systematic thematic & in vivo coding of girls' responses and narratives, grouping of similar coding categories for analysis; memos		Age range of participants was wide (11-19) which could have affected dynamics in focus groups discussions; Convenience sample  All data collection methods took place in English even though the sample was from diverse racial and ethnic groups; Context of study not specified (when and where study took place); Reflexivity of author not discussed	Not sure who it is directly applicable to (geographic setting not defined)
19 Pinto (2007)	Explore how early-developing girls construct the experience of early puberty, specifically the role of childhood stress in the meaning of early puberty.	Rural & urban; Pennsylvania; Northeast	Adolescent sample; N=10 girls; 11th and 12th graders	5 Caucasian, 5 African American; English speaking	Qualitative; Grounded theory; feminist theory	Psychosocial demands of childhood adversity influenced many of the participants' meaning making of early puberty and maturation, not their risk for psychosocial problems. Early adversity influences the experience of early puberty/development and perceptions of self at later time points. Early development may also influence adversity experiences.	High	Direct
Growing Up Young: The Relationship Between Childhood Stress and Coping with Early Puberty			Surveyed 55 11th & 12th grade girls from three high schools to identify a subsample of interview volunteers who qualified as early developers (report menarche, axillary hair growth, breast development, or hip growth no later than age 10, or development earlier than their friends)	"Diverse sample in terms of class"; "Most of the African-American girls were low income"; All participants had experienced early puberty and some type of adverse circumstances/stress	Surveys; Individual interviews  Descriptive narrative memo; interpretive analysis that involved descriptive and interpretive codes; Composed cross-case analytic memos; flowcharts of relationships between codes.		Retrospective approach (sample was in 11th and 12th grade) which privileges hindsight of experience or immediate accounts; Small sample size (10); All respondents experienced adversity, but extremely different kinds  Couldn't make comparisons by race, class, and type of childhood adversity	Girls who experience adversity; All participants had experienced early puberty and some type of adverse circumstances/stress  "Diverse sample in terms of class"; "Most of the African-American girls were low income"; Rural & urban; Pennsylvania, Northeast; Don't know what questions were asked (maybe asked specifically about menarche/menstruation only)

Table E1. Summary characteristics of articles included in the systematic review of literature on puberty experiences of low-income girls in the US, published between 2000-2014									
20	Teitelman (2004)  Adolescent Girls' Perspectives of Family Interactions Related to Menarche and Sexual Health	Explore what girls learn at menarche from family about acknowledging and accepting positive feelings in relation to their bodies and about making active decisions regarding their bodies and potential sexual practices.	Urban (Health Center); Michigan; Midwest  Data were part of a larger qualitative exploratory study conducted in 1999 that examined family scripts about sex, sexuality, and relationships from the perspective of adolescent girls,	Adolescent sample; N=22 girls; Ages 14-18  Selective and snowball sampling	9 African American, 11 European American, and 2 multiethnic individuals; English speaking  11 teens from high-income families (3 African American, 6 European American, and 2 multiethnic) and 11 from low-income families (6 African American, 5 European American)	Qualitative; Interpretive methodological approach using narrative analysis  Open ended individual interviews  Content and narrative analyses (Listening Guide analysis) to examine the data. Descriptive coding. Compared and contrasted transcripts	Girls who were prepared for the physical changes at menarche were better able to acknowledge and accept this bodily change. When girls' wider potentials, such as intellectual or creative capacities, were recognized, they were more likely to describe pleasurable aspects associated with this transition, contrastingly when sex and reproduction were referenced, girls were more likely to associate fear, shame, dysfunction, and victimization with their bodies. 'Family scripts' regarding menstruation largely influenced the girls' experience of puberty.	High  Retrospective data from adolescents ages 14-18; Was not able to obtain accurate income information for adolescents so used parental job category as a proxy measure  Influence of researcher not fully addressed; Only collected data through individual interviews; Study did not address other aspects of familial status/circumstances (family living arrangements) that may have influenced girls' experience/ perception of puberty	Partial  Includes high and low income, but results are disaggregated; African American and Caucasian; Growing up in urban areas; Midwest part of the USA

APPENDIX F: CERQual qualitative evidence profile

Table F1. CERQual qualitative evidence profile						
Review finding	Ref	Methodological limitations	Relevance	Coherence	Adequacy	Confidence in evidence
<b>1. Content of girls' puberty experiences</b>						
<b>1.A.1. Menarche is an important milestone:</b> Girls were able to recall the experience of getting their first periods in great detail, even many years after experiencing it. Their stories of menarche included details such as how they reacted, how other people reacted (mostly their mothers), the location where it happened, feelings they had about it, relevant information they had (or didn't have) about it at the time it happened, and information about the circumstances where occurred (e.g. at camp, at school, at home)	(1-20)	<b>Minor concerns about methodological quality</b>  Studies had high (9), moderate (9), and low (2) methodological quality. Most studies were not transparent about data collection techniques (what questions were asked, what probes were used) and researcher reflexivity making it unclear how much the interviewer influenced the emphasis on menarche and menstruation. However, given that studies that weren't focused on menarche this was only a minor concern.	<b>Minor concerns about relevance</b>  Overall relevance ranking of contributing studies were direct (3), partial (6), unclear (5), and indirect (6). Menarche was the primary focus of 8 studies, but the topic was raised by participants in studies where it wasn't the main focus. Samples were mostly urban (but 3 rural); mostly from the Northeast; from a range of racial and ethnic groups. However, studies that examined menarche were studies that had more Caucasian samples 4 of 8 compared to 1 of 12 and studies that examined sexuality broadly were more likely to be African-American. The samples included females from a range of ages but mostly adolescents (7) and mother-daughter samples (7).	<b>Minor concerns about coherence</b>  Data within and across studies consistently supported this finding. There was evidence from the data that other aspects of puberty might be important as well, but there was a lack of investigation into these other aspects of puberty (e.g. breast growth, hair growth, cramps).	<b>Minor concerns about adequacy</b>  20 studies contributed to this finding. 8 studies offered rich data while 12 offered somewhat superficial data that just mentions menarche and menstruation rather than discussing it in depth. Given the descriptive nature of this finding, the superficial data in these 12 studies was sufficient to support this finding.	<b>High Confidence:</b> 20 studies. Minor concerns about coherence, relevance, adequacy, and methodological limitations. 1 had somewhat rich data. Findings reflected experience of African-American, Caucasian, and Asian females; urban settings; Northeastern. Studies on menarche had predominantly Caucasian samples
<b>1.A.2. Blood is the main sign of menarche:</b> Girls described finding blood that was pink, red, or brown in their underwear, on their bodies, or in the toilet when going to the bathroom. Many girls were originally uncertain about what the blood was. If unprepared for menarche, girls were often initially scared that the blood a result of another bodily function (e.g. urination, excrement). In these cases, girls believe the blood signaled a problem (e.g. illness, pregnancy). Girls expressed feeling shame about menstrual blood and sometimes hid their soiled underwear so that no one else would know	(1, 7, 9, 10, 13, 16, 18-20)	<b>No concerns regarding methodological limitations</b>  Studies had of high (7) and moderate (2) methodological quality.	<b>No concerns about relevance</b>  Samples included mostly females who had experienced puberty recently (were adolescents or in college); African-American or Caucasian (though a some were Hispanic); urban settings (5). This finding mostly came from studies whose focus was on menarche. 4 partial, 3 indirect, 3 direct relevance.	<b>Minor concerns about coherence</b>  Evidence was consistent within and across studies though the possible range of reactions to menstrual blood was not fully explored in the data.	<b>Minor concerns about adequacy</b>  9 studies contributed to this finding, all of which offered somewhat rich data.	<b>High Confidence:</b> 9 studies with no to minor concerns about coherence, relevance, adequacy, and methodological limitations. High (7) and moderate (2) methodological quality. Somewhat rich data within and across studies. Included females who were African-American or Caucasian (though some were also Hispanic); urban settings. This finding mostly from studies whose focus specifically on menarche
<b>1.A.3. Menstrual management is a concern:</b> Girls were uncertain what to do after they first get their period. Some resorted to toilet paper (or changing their underwear frequently) until they were able to obtain other menstrual supplies (mostly from mothers). Girls used used pads, often referred to as diapers, though some used tampons. Girls often felt that they needed to keep menstrual supplies hidden and discrete from others, especially from males. They were concerned that others would somehow discover them. Girls discussed the challenges and importance of predicting their next period. They were anxious about staining their clothes with menstrual blood.	(1, 7, 9, 10, 13, 16, 18-20)	<b>No concerns about methodological limitations</b>  Studies had high (5) and moderate (2) methodological quality. Menstrual management and hygiene can be a sensitive topic, but pertinent studies included a range of methods (written narratives, individual interviews and focus groups).	<b>Minor concerns about relevance</b>  Studies included females of all ages, who were mostly Caucasian and African-American, urban areas. All studies were about menarche and/or menstruation. Most studies were of partial relevance (5). The use of alternative menstrual supplies (such as menstrual cups) was not explored at all in any studies. All regions.	<b>Minor concerns about coherence</b>  Data were consistent within and across studies. Reasons for why some girls chose to use pads and others chose to use tampons were not explored in the data.	<b>Minor concerns about adequacy</b>  8 studies with somewhat rich data.	<b>High Confidence:</b> 8 studies with no to minor concerns about coherence, relevance, adequacy, and methodological limitations. Sufficiently rich data within and across studies. High (5) and moderate (2) methodological quality. Studies included females who were mostly Caucasian and African-American urban areas. The use of alternative menstrual supplies (such as menstrual cups) was not explored in any studies. All regions.
<b>Table F1. CERQual qualitative evidence profile</b>						
Review finding	Ref	Methodological limitations	Relevance	Coherence	Adequacy	Confidence in evidence
Column 1 includes a detailed summary of each finding. Column 2 includes the list of references that support each finding. Column 3 provides the CERQual assessment decision and summary explanation of the methodological quality of the articles contributing to each finding. Methodological quality refers to the methodological rigor of the primary studies contributing to a finding. Column 4 provides the CERQual assessment decision and summary explanation of the relevance of the articles contributing to each finding. Relevance refers to the extent to which the data from the contributing studies is applicable to lower-income girls' experiences of puberty in the US. Column 5 provides the CERQual assessment decision and summary explanation of the coherence of the articles contributing to each finding. Coherence refers to how clearly and logically the review finding fits the underlying data from the primary studies that contribute to a finding. Column 6 provides the CERQual assessment decision and summary explanation of the adequacy of the articles contributing to each finding. Adequacy refers to how much data there is to support a finding and how rich it is. Column 7 provides the overall decision of confidence in the each finding as well as a detailed summary explanation of the evidence from all 4 quality domains that contributed to the decision. Information on race, rural/urban areas and geographic location of the sample are provided to indicate the demographic makeup of the samples that contributed to each finding. Samples from studies included in this review included Caucasian, African-American, Hispanic, Asian, and Arab females. "Diverse racial and ethnic groups" indicates that more than two racial and/or ethnic group were present in the samples that contributed to this finding. When no region is indicated, contributing studies together had samples from each region (Northeastern, Midwestern, Southern, and Western). All studies are from the US even when not explicitly stated.						
<b>1.A.4. Menstruation is physically painful:</b> Some girls experienced physical discomfort (e.g. cramps, moodiness, tiredness) when menstruating. Their lives changed on days they were menstruating because of it. Cramps were mentioned as being painful and restrictive in that they prevented girls from being able to do things they wanted to do. For example, when on their periods, girls laid around in bed all day feeling bad instead of getting up and playing. In some cases, the physical pain from menstruation caused girls to worry that they were sick or something more medically severe.	(1, 9, 10, 12, 19, 20)	<b>No concerns about methodological limitations</b>  5 studies of high methodological quality.	<b>Minor concerns about relevance</b>  All but 1 study was about menarche and/or menstruation (3 studies were partial relevance, 1 directly relevance, and 1 uncertain relevance). Studies had samples that reflected perspectives of females who had recent and dated experiences of puberty. Lived in each region of the US, lived in both rural and urban areas, and identified as African-American and Caucasian. All 4 regions.	<b>Moderate concerns about coherence</b>  Descriptions and definitions of physical discomfort related to menstruation varied across studies. Also, experiences of girls without physical discomfort related to menstruation were not thoroughly explored--pain free experience might be less notable than a painful one.	<b>Moderate concerns about adequacy</b>  5 studies with superficial data contributed to this data. Cramps and physical discomfort were mostly mentioned briefly by participants.	<b>Moderate Confidence:</b> 5 studies with no, minor and moderate concerns about coherence, relevance, adequacy, and methodological quality. Studies mostly superficial data. Description and definitions of physical discomfort related to menstruation varied across studies. Sample that reflected perspectives of females who identified as African-American and Caucasians; rural or urban environments; all regions.
<b>1.B.1. Breast growth is a significant, visible aspect of puberty:</b> Girls mentioned breast development as significant aspect of puberty. Breast development was most often mentioned in relation to how other people noticed or commented to their developing breasts. Girls noted that they started to receive different types of attention from males once they developed breasts and "more womanly" figure-regardless of the age when this happens.	(1, 5, 8, 11, 13, 15-17, 20)	<b>Minor concerns about methodological quality</b>  Studies had high (7), moderate (2), and low (1) methodological quality. 1 study was ranked low because it did not provide sufficient information about study design (e.g. data collection methods and reflexivity of the author), but this study did not contribute much data to this finding.	<b>Moderate concerns about relevance</b>  No studies directly explored the role of breast development in girls' experiences of puberty. Caucasian, African-American and Hispanic participants, mostly urban, Northeast. Most data came from studies that included mother-daughter samples (5).	<b>Minor concerns about coherence</b>  Data similar within and across studies. Girls' experiences of getting breasts was insufficiently explored in the underlying body of evidence.	<b>Moderate concerns about adequacy</b>  10 studies contributed to this finding. This descriptive finding was supported by superficial data though 5 studies offered slightly richer data.	<b>Moderate Confidence:</b> 10 studies. Minor to moderate concerns about coherence, relevance, adequacy, and methodological limitations. Experiences of getting breasts was insufficiently explored and is mostly supported by superficial data. Data similar within and across studies for Caucasian, African-American, and Hispanic females; urban areas, Northeast
<b>1.B.2. Developing bodies inspire new clothing decisions:</b> Girls discussed how their developing body influenced their clothing choices. They referred to their decision to start wearing a bra. Some girls avoided wearing a bra as long as possible, while others started wearing bras as soon as they could. Some girls mentioned wearing baggy clothes to hide their figure. Other girls chose to dress in such a way as to accentuate their womanly figure.	(4, 15, 19, 20)	<b>Minor concerns about methodological quality</b>  Studies had high (2), moderate (1), and low (1) methodological quality. Most studies (3 of 4) used individual interviews that may be more appropriate for this finding given its slightly sensitive nature.	<b>Moderate concerns about relevance</b>  No studies directly explored the role of how clothing choices change during puberty in response to girls' changing bodies. Studies reflected the perspective of adolescents and mother-daughter samples; mostly African-Americans; urban and rural settings; Southern, Northeastern, and Midwestern US.	<b>Moderate concerns about coherence</b>  It is hard to tell how well the underlying body of evidence supports this finding because there were some inconsistencies in how girls discussed this topic across studies (some girls talked specifically about bra while others talked about other clothing articles). These alternative experiences were not well explored.	<b>Substantial concerns about adequacy</b>  4 studies offered mostly superficial data. Girls mentioned clothing discussion as small pieces of broader stories.	<b>Low Confidence:</b> 4 studies. Minor to substantial concerns about coherence, relevance, adequacy, and methodological limitations. Data mostly superficial as girls mentioned clothing within stories on other topics. Studies reflected the perspective of African-American females; urban and rural settings; Southern, Northeastern and Midwestern
<b>2. Quality of girls' puberty experiences</b>						

Table F1. CERQual qualitative evidence profile						
Review finding	Ref	Methodological limitations	Relevance	Coherence	Adequacy	Confidence in evidence
<b>2.A.1. Menstruation is embarrassing, gross, dirty, smelly, disgusting, and unclean.</b> Most girls' experiences of menarche and menstruation were described in negative terms. They described feeling awkward, gross, dirty, smelly, and disgusting. These girls described feeling unprepared for menarche, and receiving messages that menstruation was something gross that should be hidden from others.	(1, 7, 9, 10, 12, 13, 16, 18, 20)	<b>Moderate concerns about methodological quality</b>  Studies had high (8), moderate (2), and low (1) methodological quality. Findings came from studies using a variety of qualitative methods. Most studies analyzed data as either positive or negative experiences that may have led to fewer findings of moderate experiences.	<b>Minor concerns about relevance</b>  Most studies were of partial relevance, mainly focusing on girls' experiences of menstruation and menarche instead of the broad experience of puberty. Studies included younger samples consisting of adolescents, college students, and mother-daughters. Participants were mostly Caucasian and African-American (but some Hispanic); urban areas; mostly Northeast US.	<b>Minor concerns about coherence</b>  Consistent data across studies to support mostly negative experiences of menarche and menstruation. The 3 explanations for negative experiences were well supported by underlying data. Some cases didn't fit the explanations provided (e.g. some girls just described having a negative experience without providing an explanation). General lack of investigation of these alternative cases.	<b>Minor concerns about adequacy</b>  11 studies contributed to this finding. 8 offered rich data. Thick data provided to describe negative feelings, but explanation of negative feelings was usually sufficiently described.	<b>High Confidence:</b> 11 studies. Minor or moderate concerns about coherence, relevance, adequacy, & methodological limitations. 8 with rich data & high methodological quality. Studies focused on menses. Consistent data across studies. Mostly Caucasian & African-American (some Hispanic); urban areas
<b>2.A.2. Menarche is scary, traumatic and confusing.</b> Many girls viewed their experience of menarche in a negative light, describing their experiences as horrifying, traumatic, scary, and confusing. These girls often initially misinterpreted blood from menstruation as a serious medical problem. They expressed feeling confused and "out of control" about why they were menstruating. Girls' horror stemmed from lack of preparation and/or from feeling as though they started too "early."	(1, 7, 9, 10, 13, 16, 18, 20)	<b>No concerns regarding methodological quality</b>  Studies had high (7) and moderate (2) methodological quality. Studies used a variety of qualitative data collection techniques.	<b>Minor concerns regarding relevance</b>  Most studies focused on menarche and menstruation. Studies were of partial (4), unclear (3), indirect (1), and direct (1) relevance. Studies mostly included younger individuals (4 with adolescents/adolescent samples, 2 with mother-daughter samples, and 2 with college samples); mostly African-American and Caucasian (though some Hispanic); urban areas; 4 studies were from Northeast US.	<b>No concerns regarding coherence</b>  Consistent findings within and across studies.	<b>Minor concerns regarding adequacy</b>  9 studies collectively offered somewhat rich data.	<b>High Confidence:</b> 9 studies with no to minor concerns about coherence, relevance, adequacy, & methodological limitations. Somewhat rich data from studies focused on menarche and menstruation. Data from females who were mostly African-American and Caucasian (though some Hispanic); urban areas
<b>2.A.3. Developing bodies provoke insecurity and self-consciousness.</b> As girls' bodies started developing, they began comparing their own physical development with that of their peers. Girls also mentioned receiving unwanted attention, teasing, or teasing from male peers and brothers. Some girls had their breasts from view by wearing baggy clothes. One study mentioned how weight gain during puberty can also cause girls to become self-conscious about their bodies.	(6, 10-13, 17, 20)	<b>Minor concerns regarding methodological quality</b>  Studies had high (6), moderate (1), and low (1) methodological quality. Most studies utilized data collection techniques appropriate for the sensitive nature of this finding such as written narrative and individual interview though some studies did not adequately address researcher reflexivity.	<b>Moderate concerns regarding relevance</b>  The topic of breast development was not directly explored in great depth in any study. Most studies were of partial relevance (3) and focused on menarche and menstruation specifically (remaining studies were indirect=1, direct=2, uncertain=1). Studies mostly included younger participants (3 studies of adolescents and 4 of mother-daughter samples). African-American, Caucasian or Hispanic; urban areas; mostly from Northeastern US.	<b>Moderate concerns regarding coherence</b>  This finding was supported by data from several studies. However, the underlying data suggested that timing of development (early or late) might be related to negative experiences, but there were insufficient evidence to provide this level of explanation for this finding. Data also suggested potential alternative explanations for developing insecurities about physical development (e.g. weight gain at puberty, cultural stereotypes about women, media, etc.) though this was insufficiently explored in the underlying body of evidence.	<b>Substantial concerns regarding adequacy</b>  8 studies contributed to this finding most of which offered superficial data.	<b>Low Confidence:</b> 8 studies. Minor, moderate, & substantial concerns about coherence, relevance, adequacy, & methodological limitations. Breast development not sufficiently explored. Moderately supported by superficial data from studies of high methodological quality. Most African-American, Caucasian, or Hispanic; urban areas

Table F1. CERQual qualitative evidence profile						
Review finding	Ref	Methodological limitations	Relevance	Coherence	Adequacy	Confidence in evidence
<b>2.B.1. Menstruation is a fact of life for females.</b> Few expressed negative feelings about menarche. Those who did described menarche as a necessary and inevitable part of being female that had to be tolerated. These girls tended to be prepared for menarche. Some girls, however, had neutral feelings about menstruation because their experience of it had been overshadowed by other traumatic life events (e.g., experienced abuse or trauma)	(1, 10, 12, 13, 17, 19)	<b>Substantial concerns regarding methodological limitations</b>  Studies had high (5), moderate (1) and low (1) methodological quality. Most studies analyzed data as either positive or negative experiences, which may have led to fewer findings of moderate experiences.	<b>Minor concerns regarding relevance</b>  Most studies (4) focused on menarche and menstruation and were ranked as having partial relevance (remaining studies were ranked as 1 direct relevance, 2 unclear relevance). Studies included samples that were mostly African-American and Caucasian adolescents; urban and rural areas.	<b>Moderate concerns regarding coherence</b>  There was sufficient data to support that some girls have pragmatic/neutral feelings about menarche and menstruation, but there was insufficient data to support the explanation about adverse experiences overshadowing menarche as this surprising finding was only supported by 1 study. Also, pragmatic/neutral feelings were not well described across studies. Negative stories could have been referenced in the literature as they were more notable.	<b>Moderate concerns regarding adequacy</b>  7 studies contributed to this finding. 5 offered moderately rich data. Data were relatively thin in terms of explanations for this response.	<b>Low Confidence:</b> 7 studies. Minor, moderate, & substantial concerns about coherence, relevance, adequacy, & methodological limitations. This data focus on positive or negative experiences & may have missed neutral ones. Mostly African-American & Caucasian adolescents; urban & rural areas
<b>2.B.2. Girls have ambivalent feelings about menarche and menstruation.</b> Some girls viewed menarche as a both positive and negative experience. For these girls, getting a period was burdensome but tolerable, and not something to stress about. Although they were annoyed for having something to worry about each month, they were glad to get their period for the positive things it signified in their life (e.g. growing up, becoming a woman, a sign that they weren't pregnant)	(1, 13, 17, 19)	<b>Substantial concerns regarding methodological limitations</b>  All studies had high methodological quality, but most contributing studies had a tendency to analyze data as either positive or negative experiences, which may have led to fewer findings of moderate experiences.	<b>Moderate concerns regarding relevance</b>  2 studies were of direct relevance to the research question of this review (2 were of uncertain relevance). Studies included samples that were African-American (2), Caucasian, or Hispanic; urban areas (4); Northeastern and Western US. Studies mostly included younger samples who were either adolescents or in college.	<b>Moderate concerns regarding coherence</b>  Data were consistent across studies, but this finding, that girls have mixed feelings about menarche, was sometimes inconsistently defined and described in the underlying body of evidence. Negative stories could have been referenced in the literature, as they are more notable.	<b>Minor concerns regarding adequacy</b>  4 studies offered somewhat rich data to support this primarily descriptive finding.	<b>Low Confidence:</b> 4 studies. Minor, moderate, & substantial concerns about coherence, relevance, adequacy, & methodological limitations. Data consistent across studies. Mixed feelings about menarche, sometimes inconsistently defined. Literature may have preference negative stories. Samples were African-American, Caucasian, or Hispanic; urban areas; Northeast & West
<b>2.C.1. Menarche is happy and exciting event.</b> Few girls reported having positive feelings about menarche. Those who did described feeling excited and happy. Girls who viewed menarche as a positive event described having celebrated the milestone (possibly with girls). These girls tended to view menarche as a sign of growing up, entering womanhood, and increased freedom. Girls who viewed menarche and menstruation positively reported feeling prepared for it.	(1, 7, 11, 13, 17, 20)	<b>Moderate concerns regarding methodological limitations</b>  Studies had high (5) and moderate (1) methodological quality. Some participants in 1 (Jean et al.) study had not yet reached menarche; therefore, their feelings about the experience were not reflective of experience of girls who have already gone through menarche. Negative experiences might have been overemphasized in analysis methods, meaning that details about positive experiences were missed.	<b>Substantial concerns regarding relevance</b>  Most studies were of unclear relevance (3) because they did not clearly describe the SES of their sample. The remaining studies were of partial and direct relevance which means they focused on the broad experience of puberty in low-income girls in the US. Samples were mostly of college age (3), Caucasian (though some African-American and Hispanics were also included); urban areas.	<b>Minor concerns regarding coherence</b>  Data were mostly consistent within and across studies in respect to the descriptive finding that few girls described puberty as an unambiguously positive experience. Inconsistent evidence to support the reasons for why these girls had overwhelming positive experiences (e.g. not all girls whose menarche was celebrated described having positive experiences). Positive experiences were underexplored in the underlying body of evidence because negative stories could have been referenced as they are more notable.	<b>Moderate concerns regarding adequacy</b>  6 studies offered thin data. Some descriptions of and explanations for the positive nature of menstruation were vague & thin.	<b>Low Confidence:</b> 6 studies. Minor, moderate, & substantial concerns about coherence, relevance, adequacy, & methodological limitations. SES of sample was not clear. Positive nature of menstruation somewhat vague & thin; largely underexplored. Mostly Caucasian (some African-Americans & Hispanics); urban areas
<b>2.C.2. Breast development is viewed as a positive change.</b> Many girls spoke of feeling proud and happy to develop a womanly figure. Girls described breast development as being connected to gaining a new sexual status in society, associated with greater social capital by awarding girls with access to older peer	(1, 3, 13, 17, 19)	<b>Moderate concerns regarding methodological quality</b>  Studies had high (4) and moderate (1) methodological quality. Most studies used data collection techniques (except 1 that used focus group discussion) that were appropriate for	<b>Moderate concerns regarding relevance</b>  No studies directly explored the role of breast development in girls' experiences of puberty. However, 2 studies were of direct relevance to the research question (broad experience of puberty). Remaining studies were of unclear relevance (2) and indirect	<b>Minor concerns regarding coherence</b>  Data were consistent across and within studies. Factors contributing to positive feelings about body development were not fully explored	<b>Substantial concerns regarding adequacy</b>  5 studies offered thin data.	<b>Low Confidence:</b> 5 studies. Minor, moderate, & substantial concerns about coherence, relevance, adequacy, & methodological limitations. Somewhat thin data. Factors contributing to positive feelings about body development not thoroughly explored. Mostly Caucasian

Table F1. CERQual: qualitative evidence profile						
Review finding	Ref	Methodological limitations	Relevance	Coherence	Adequacy	Confidence in evidence
groups.		sensitive nature of the topic. Most studies lacked openness to girls embracing sexuality in a positive manner.	relevance (1) Studies mostly included younger samples (adolescents or college age samples); Caucasian (though some were African-American and Hispanic); urban areas; Northeast or Western US	in the data		(some African-American & Hispanic); urban areas; Northeast & West
<b>3. Messages girls receive about puberty</b>						
<b>3.A.1. Becoming a woman: "Becoming a woman" was a common message girls received at menarche, meaning that girls become part of an exclusive club of females with whom they are able to share common experiences and understandings. These messages portrayed menarche as a right of passage shared by all females, &amp; was sometimes linked the ability to reproduce. "Becoming a woman" was usually seen as a positive message, but girls who felt that woman's behavior was limited at menarche saw it more negatively.</b>	(1, 6, 7, 9, 10, 13, 15, 18-20)	<b>No concerns regarding methodological limitations</b> Studies had high (6), moderate (3), low (1) methodological quality. 3 studies gathered information through anonymously submitted written narratives. Probing not possible with this data collection technique so the difference between messages about growing up and becoming a woman weren't sufficiently explored. However, many of the additional studies used a variety of qualitative data collection techniques (individual interviews, focus groups) where probing was possible.	<b>Minor concerns regarding relevance</b> Most studies were of partial relevance (4) and focused on experiences of menstruation and menarche (rather than the puberty broadly). Remaining studies were of unclear relevance (3), due to lack of clarity of SES and context of sample, indirect relevance (2) and direct (1). Studies included young samples (1 adolescent, 3 college, and 2 mother-daughter samples); African-American and Caucasian females; urban and rural settings.	<b>Moderate concerns regarding coherence</b> Becoming a woman was inconsistently described across studies. Some cases were hard to interpret and there was some contradictory evidence regarding girls responses to the message "becoming a woman."	<b>Minor concerns regarding adequacy</b> 10 studies contributed this finding. 6 offered rich data on the messages girls receive at menarche.	<b>High Confidence:</b> 10 studies. No, minor, & moderate concerns about coherence, relevance, adequacy, & methodological limitations. 6 with rich data. "Becoming a woman" was somewhat inconsistently described & contradictions not sufficiently explained. Mostly African-American & Caucasian female samples; urban & rural
<b>3.A.2. Celebration and gifts as right of passage:</b> For many celebration was part of becoming a woman." Girls mentioned having received special gifts to mark the occasion (e.g. flowers, jewelry, journals, etc.); mother-daughter outings; or parties. Celebration was mostly portrayed as a positive reaction, but some found their mother's enthusiastic reaction embarrassing and exaggerated.	(1, 7, 13, 20)	<b>Minor concerns regarding methodological limitations</b> Studies had high (3) and moderate (1) methodological quality. Most studies (3 of 4) used narrative analysis of anonymous stories which did not allow for probing of responses.	<b>Substantial concerns regarding relevance</b> 3 out of 4 studies were of unclear relevance due to unclear information about SES and age of participants. Studies included mostly Caucasian, college females; urban areas; Western and Midwestern US.	<b>Minor concerns regarding coherence</b> Lack of explanation for why some girls were embarrassed by a mother's celebratory response and others were appreciative. Different responses to celebration were not adequately explained.	<b>Minor concerns regarding adequacy</b> 4 studies offered rich data.	<b>Moderate Confidence:</b> 4 studies. Minor & substantial concerns about coherence, relevance, adequacy, & methodological limitations. Rich data. Unclear SES & reasons for different responses. Mostly Caucasian samples; urban areas; Western & Midwestern.
<b>3.A.3. Menarche as sign of growing up:</b> For some girls, menarche is a sign of growing up which means they are transitioning from child to adolescent or child to adult. Messages about growing up tended to be more gender neutral than messages about becoming a woman. With these messages, girls described gaining new freedoms, increased autonomy, and additional responsibilities. Many were excited to grow up, but some expressed feeling sad that they lost their innocence and childhood.	(1, 7, 12, 16-19)	<b>Minor concerns regarding methodological limitations</b> Studies had high (5) and moderate (2) methodological quality. 3 studies gathered information through anonymously submitted written narratives. Probing wasn't possible with this data collection technique, so the difference between messages about growing up and becoming a woman weren't sufficiently explored.	<b>Moderate concerns regarding relevance</b> 3 of the studies were of direct relevance. The remaining studies were of indirect (2), indirect (1), and partial (1) relevance. Studies mostly used young samples (adolescent=), mother-daughter=2 and college=3); African-American, Caucasian, and Hispanic racial and ethnic groups; urban areas; Midwest, West and Northeast US.	<b>Moderate concerns regarding coherence</b> "Growing up" was often vaguely described and not consistently defined across studies. In some cases messages about "becoming a woman" and "growing up" were conflated and difficult to parse apart.	<b>Minor concerns regarding adequacy</b> 7 studies offered somewhat rich data.	<b>Moderate Confidence:</b> 7 studies. Minor to moderate concerns about coherence, relevance, adequacy, & methodological limitations. Somewhat rich data. "Growing up" vaguely & inconsistently defined. Difficult to distinguish from "becoming a woman." African-American, Caucasian, or Hispanic samples; urban areas; Midwest, West & Northeast.
<b>3.B.1. Menstruation cleanses the body:</b> Some girls believed menstruation cleansed the body. Menstruation was viewed as the body's way of disposing of the blood that would have nourished a pregnancy. Others had an overall feeling of cleanliness that endured throughout menstruation.	(9, 18)	<b>Minor concerns regarding methodological quality</b> Studies had high (1) and moderate (1) methodological quality. The moderate study was partially ranked down because all data collection methods took place in English even though the sample was from diverse racial and ethnic groups.	<b>Minor concerns regarding relevance</b> Both studies were partially relevant studies focusing on menarche and menstruation. The studies included mostly African-American participants from urban areas in the Northeastern US. 1 study consisted of an adolescent sample while the other was an adult sample who experienced menarche longer ago.	<b>Minor concerns regarding coherence</b> There were slight inconsistencies in how "cleansing" was described in the data.	<b>Substantial concerns regarding adequacy</b> 2 studies contributed to this finding. 1 study provided rich data, while the other study provided superficial data.	<b>Moderate Confidence:</b> 2 studies. Minor & substantial concerns about coherence, relevance, adequacy, & methodological limitations. Rich data. Inconsistently described. African-American, urban, Northeast
<b>Table F1. CERQual: qualitative evidence profile</b>						
Review finding	Ref	Methodological limitations	Relevance	Coherence	Adequacy	Confidence in evidence
<b>3.C.1. Menarche means you can get pregnant:</b> At menarche, girls were informed that they are now capable of reproducing. They received warnings about risky sexual behavior and unplanned pregnancies. Menarche was a cue to mothers to initiate conversations about risky sex. For some, jumping from menarche to pregnancy prevention is a giant leap that leaves girls misinformed and feeling confused, uncertain, and afraid of menstruation.	(2-6, 8, 10, 13-20)	<b>Moderate concerns regarding methodological quality</b> Studies had high (6), moderate (8), and low (1) methodological quality. Studies used a variety of qualitative data collection techniques though most (8 of 15) used focused groups. However, some studies utilized anonymously submitted written narratives and individual interviews, which were more appropriate for the sensitive nature of the finding.	<b>Moderate concerns regarding relevance</b> A substantial handful of studies were of indirect relevance (5), meaning they focused on sex broadly and could have enhanced theme prominence. However, 5 studies were of partial relevance and focused on menarche and menstruation, mitigating this concern. Studies included samples from females within a range of ages though most were young (6 adolescent, 6 mother-daughter, 1 college, and 2 adult), diverse racial and ethnic groups (most were African-American, but some were Asian, Hispanic, or Caucasian), 6 samples from Northeastern, 3 from Southern, 2 from Western, and 2 from Midwestern US; 12 samples from urban areas, 2 from rural areas, and 1 from both.	<b>Minor concerns regarding coherence</b> Inconsistent data regarding integration of messages about reproductive status and puberty. In a few cases, being able to reproduce was also linked to messages about "becoming a woman." There was evidence in data of positive interpretations of girls newly acquired sexual status gained at menarche but these were not adequately explored in the data.	<b>Minor concerns regarding adequacy</b> 15 studies collectively offered somewhat rich data.	<b>High Confidence:</b> 15 studies. Minor to moderate concerns about coherence, relevance, adequacy, & methodological limitations. High (6), moderate (8), low (1) methodological quality. Somewhat rich data. Diverse racial & ethnic groups; (some rural), all regions.
<b>3.C.2. Girls need to protect themselves from boys:</b> Some girls were told that they reached a potentially dangerous and vulnerable sexual status that they must defend from pregnancy. They were given the responsibility to act & dress in certain ways to avoid attention from males. In some cases, girls' interactions with males were restricted. Girls tended to be frustrated, disappointed and confused by this message.	(4-6, 8, 10, 13-20)	<b>Moderate concerns regarding methodological limitations</b> Studies had high (6), moderate (6), and low (1) methodological quality. Studies used a variety of methods. Most studies ranked as moderate were graded down due to lack of information regarding researcher reflexivity and data collection methods which are particularly important for this finding given the sensitive nature of discussing sexuality of adolescents.	<b>Moderate concerns regarding relevance</b> Most studies (5) were indirect studies whose focus was on sex and not puberty. Remaining studies were either of unclear relevance (3) or partial relevance (3). Studies included mostly adolescent and mother-daughter samples; range of racial and ethnic groups; urban (but also includes rural) areas; 6 studies were from the Northeast US.	<b>Minor concerns regarding coherence</b> There were a few brief mentions of cases that didn't support this finding in the underlying body of evidence and that instead suggested that some girls received mixed messages about boys at puberty, but these findings were not thoroughly investigated in the data.	<b>Minor concerns regarding adequacy</b> 13 studies contributed to this finding, 5 of which offered somewhat rich data.	<b>Moderate Confidence:</b> 13 studies. Minor to moderate concerns about coherence, relevance, adequacy, & methodological limitations. High (6), moderate (6), and low (1) methodological quality. 5 somewhat rich data. Most from studies (5) on sexuality. Range of racial & ethnic groups; mostly urban (some rural); 6 Northeast
<b>3.D.1. Girls are told that menstruation is something to keep hidden from others:</b> Many girls received explicit & or implicit messages to conceal signs of menstruation (e.g. menstrual supplies, bloody underwear), especially from males. Girls took great precautions & felt anxiety about others finding out. Silence from mothers had daughters to intuitively know it was a taboo topic that should not be discussed or shared with others. In rare instances, this taboo prevented girls from telling their mothers their menstrual status.	(1, 2, 7, 9, 10, 12-14, 16-18, 20)	<b>Minor concerns regarding methodological limitations</b> Studies had high (7), moderate (4), and low (1) methodological quality. Studies used a variety of qualitative data collection techniques including those most appropriate for sensitive topics (anonymous written narratives and individual interviews).	<b>Minor concerns regarding relevance</b> Most studies focused specifically on menarche and menstruation and were of partial relevance (5). The remaining studies were of unclear (4), indirect (2) and direct (1) relevance. Studies included adolescent (1), college (2) and mother-daughter (1) samples; range of racial and ethnic groups (though mostly Caucasian and African-American); rural and urban areas; Midwest, West, and South US.	<b>No concerns regarding coherence</b> Data were consistent within and across studies.	<b>Minor concerns regarding adequacy</b> 12 studies contributed to this finding and most offered somewhat rich data.	<b>High Confidence:</b> 12 studies with minor to moderate concerns about coherence, relevance, adequacy, & methodological limitations. Data consistent. High (7), moderate (4), & low (1) methodological quality. 5 focused on menstruation. Range of racial & ethnic groups (mostly Caucasian & African-American); rural & urban areas; Midwest, West & South
<b>3.D.2. Girls should restrict their behavior in order to prevent unwanted attention:</b> Girls were told to avoid activities during menstruation (e.g. bathing or swimming) and described their extreme efforts to restrict activities (e.g. swimming) and freedom (e.g. go places they wanted to go) when menstruating in order to prevent embarrassing stains and leaks.	(1, 5, 7, 9, 10, 13, 14, 16, 17, 19, 20)	<b>No concerns regarding methodological quality</b> Studies had high (8) and moderate (3) methodological quality. Studies used a variety of qualitative data collection techniques including those most appropriate for sensitive topics (anonymous written narratives and individual interviews).	<b>Minor concerns regarding relevance</b> 6 studies were focused on menarche and menstruation. Studies had unclear (4), partial (3), indirect (2) and direct (2) relevance. Studies included perspectives from females within a range of ages; racial and ethnically diverse backgrounds; urban areas; mostly Northeast and Midwestern US.	<b>No concerns regarding coherence</b> Data were consistent within and across studies.	<b>Minor concerns regarding adequacy</b> 11 studies collectively offered somewhat rich data.	<b>High Confidence:</b> 11 studies. No to minor concerns about coherence, relevance, adequacy, & methodological limitations. Data consistent. 8 high methodological quality. 6 on menstruation. Diverse samples; urban areas; Northeast & Midwestern
<b>4. Other factors shaping girls' puberty experiences</b>						
<b>4.A.1. Girls feel uninformed about menarche &amp; menstruation:</b> Most girls	(1, 2, 7, 9)	<b>Moderate concerns regarding methodological quality</b>	<b>Moderate concerns regarding relevance</b>	<b>Minor concerns regarding coherence</b>	<b>Minor concerns regarding adequacy</b>	<b>Moderate Confidence:</b> 10 studies. Minor to moderate concerns about coherence,



Table F1. CERQual qualitative evidence profile						
Review finding	Ref	Methodological limitations	Relevance	Coherence	Adequacy	Confidence in evidence
reported prior exposure to puberty-related topics from at least one source (e.g. mothers, grandmothers, sisters, friends, mothers of friends, and teachers), but commonly reported that information provided to them was insufficient or inaccurate. Information was limited to topics such as anatomy and menstrual hygiene (how to use a pad and/or tampon), and failed to address the emotional aspects of development. Girls were told that menstruation means you can get pregnant, but were not told how pregnancy would occur. Girls who felt inadequately prepared described negative experiences of menarche.	10, 13, 18-20	Studies had high (6) and moderate (4) methodological quality. Studies that received moderate quality scores did so mostly due to lack of information related to data collection and reflexivity of researcher.	No studies focused on puberty education or preparedness specifically. Studies had indirect (1), unclear (4), or partial (4) relevance. Studies of unclear relevance were unclear about the SES in their sample. Studies included adolescent (4), mother-daughter (1), college (3), and adult (2) samples. Studies included a diverse racial and ethnic groups; urban areas; 7 studies were from the Northeast US.	Preparation for menarche was vaguely defined in the body of evidence. Timing of preparation was also not referred to consistently across studies. But given that this is about how prepared girls feel about their preparation, these inconsistencies are possibly less of an issue.	10 studies contributed to this finding. 4 studies offered rich data, but most studies provided somewhat thin data. However, the body of evidence together from all 10 studies makes up a robust body of evidence.	relevance, adequacy, & methodological limitations. 4 studies rich data, but mostly thin data. None focused on puberty education or preparedness exclusively. Preparation for menarche vaguely defined. 4 studies with unclear SES and age. Studies from racial & ethnic diverse adolescents; urban (2 rural); all regions.
<b>4.A.2. Girls are uninformed about menstruation.</b> Girls lacked accurate information about menstruation. Some knew little about menarche before menarche. These girls tended to misinterpreted menarche as a sign that something was seriously wrong with them, which scared & confused them. Some adults even shared that they hadn't understood the connection between menarche and pregnancy until after their first pregnancy. Some mothers said they avoided conversations with their daughters related to menstruation because they did not feel confident about their knowledge on the topic.	(3, 5, 9-11, 18, 20)	<b>Moderate concerns regarding methodological quality</b>  4 high, 3 moderate. Combination of interviews, focus groups and written stories. Qualitative studies may not be the best way to measure knowledge.	<b>Minor concerns regarding coherence</b>  Consistent evidence within and across studies	<b>Minor concerns regarding coherence</b>  Consistent evidence within and across studies	<b>Moderate concerns regarding adequacy</b>  7 studies. Somewhat superficial evidence data.	<b>Low Confidence:</b> 7 studies. Minor to moderate concerns about coherence, relevance, adequacy & methodological limitations. 4 studies focused on menstruation. Consistent evidence across studies, but somewhat superficial. 4 high methodological quality, but qualitative method may not be best way to assess knowledge. Racial & ethnically diverse sample (few Caucasian), mostly urban (5); all regions
<b>4.A.3. Girls want more information and support during puberty.</b> Girls wanted to know more about their bodies including wanting to understand how their anatomy relates to sexual functioning. They expressed a desire to have someone to talk to openly about pubertal changes. They wanted to be reassured that what they are going through is normal and wanted to hear about other women's experiences. Girls wanted to feel comfortable to ask their mothers questions about their (and her previous) developmental changes.	(1-3, 6-11, 13, 14-20)	<b>Minor concerns regarding methodological quality</b>  Studies had high (7) and moderate (7) methodological quality. Studies included a range of methods (written narratives, individual interviews and focus groups).	<b>Moderate concerns regarding relevance</b>  No studies focused specifically on puberty education or puberty preparedness. Studies had partial (5), indirect (2), unclear (5), and direct (2) relevance. Studies included samples of mostly younger participants: adult-2/adolescent-m, m-d-3, and college-3; diverse racial and ethnic groups; urban areas (though 2 included rural areas). All regions of the US.	<b>Moderate concerns regarding coherence</b>  There were a few hard-to-interpret cases that potentially provided contradictory data (e.g. it was difficult to tell whether girls were saying they wanted more information and support on puberty related topics). The few cases that might have suggested that girls didn't want more information or support were not well explored in the data. It is possible that in some instances, puberty education and sex education are intertwined and in those cases it is difficult to disentangle the difference. Inadequate investigation into what preparation girls would like.	<b>Minor concerns regarding adequacy</b>  14 studies contributed to this finding. Most offered somewhat thin data on this topic. However, collectively they provided a convincing body of evidence to support this finding.	<b>Moderate Confidence:</b> 14 studies. Minor to moderate concerns about coherence, relevance, adequacy, & methodological limitations. None focused on puberty education or preparedness. 5 had unclear SES & age in their sample. 7 high methodological quality. Superficial data. Insufficient investigation into what a convincing body of evidence to support this finding. Sample of adolescents from diverse racial & ethnic groups; urban areas (2 rural areas); all region

Table F1. CERQual qualitative evidence profile						
Review finding	Ref	Methodological limitations	Relevance	Coherence	Adequacy	Confidence in evidence
<b>4.B.1. Starting puberty earlier than their peers is particularly challenging for girls.</b> Girls who experienced "early" onset of puberty relative to their peers felt various levels of distress. They felt unsupported, surprised, embarrassed, and afraid of menarche due to their "early" and unexpected start. Two studies (using the same sample) found that in the subsample of participants who remembered menarche as happening early that menarche was connected with feelings of shame & humiliation.	(1, 5, 11, 13, 19, 20)	<b>Minor concerns regarding methodological quality</b>  Studies had high (5) and moderate (1) methodological quality. Most studies did not measure pubertal stage and age of pubertal onset, but because "early" was assessed based on girls' perceptions of timing (which also appears to be what usually matters for their experience) this was only a minor methodological issue.	<b>Moderate concerns regarding relevance</b>  Only 1 study focused on girls who started early, but these were girls had also experienced major life adversity making them a part of a specific subgroup whose experience might not be generalized. Studies had direct (2), uncertain (2), indirect (1), and partial (1) relevance. Studies provided perspectives from females from mostly young samples; adolescent (2), college (2), mother-daughter (2). Studies included Hispanic, African-American and Caucasian females; urban areas.	<b>Minor concerns regarding coherence</b>  Though "early" mostly referred to girls' peers' developmental status, "early" puberty/menarche was inconsistently defined across studies—some girls who felt as though they reached menarche early started at age 9 while others started at age 11.	<b>Substantial concerns regarding adequacy</b>  6 studies contributed to this finding and all offered somewhat thin data.	<b>Moderate Confidence:</b> 6 studies. Minor to substantial concerns about coherence, relevance, adequacy, & methodological limitations. "Early" was inconsistently defined. High (5) & moderate (1) methodological quality, but somewhat thin data. Perspectives from females from mostly young samples; Hispanic, African-American & Caucasian females; urban areas
<b>4.B.2. Girls who start puberty later than their peers feel eager to "catch up."</b> Girls who felt as though they were physically developing behind their peers felt relieved once they got their periods. These females spoke about menarche as something they eagerly awaited. And when talking about the timing of menarche these females used words such as "Finally" as in "I finally got my period." Girls who felt that they developed behind their peers spoke about wanting to "catch up," or become "part of the club."	(1, 13, 17)	<b>Minor concerns regarding methodological quality</b>  All studies had high methodological quality. Most studies did not measure pubertal stage and age of pubertal onset, but because "early" was assessed based on girls' perceptions of timing (which appeared to be what matters) this was only a minor methodological issue.	<b>Substantial Concerns regarding evidence</b>  2 of 3 studies were of uncertain relevance due to unclear classification of participant SES. The other contributing study was directly relevant which helped mitigate this concern. College age (2) and mother-daughter (1) samples; Caucasian, African-American and Hispanic females; urban environments; Northeastern and Western US.	<b>Moderate concerns regarding coherence</b>  "Late" puberty/menarche was inconsistently and vaguely defined across studies, but this finding referred to girls' perceptions of timing and therefore a shared experience expressed across studies was still expressed in this finding. However, the concept of "lateness" and its effect on girls' experience was not thoroughly explored.	<b>Substantial concerns regarding adequacy</b>  3 studies offered somewhat thin data.	<b>Very Low Confidence:</b> 3 studies. Minor, moderate & substantial concerns about coherence, relevance, adequacy, & methodological limitations. "Late" puberty/menarche inconsistently & vaguely defined. 2 studies had unclear SES. Somewhat thin data. College age (2) & mother-daughter (1) samples; Caucasian, African-American & Hispanic females; urban environments; Northeastern & Western

5. Relationships that shape girls' puberty experiences						
<b>5.A.1. Daughters want to learn about puberty from their mothers.</b> Most daughters considered their mothers their main and most important source of information and guidance on puberty-related topics. Mothers were usually the first person girls informed about menarche. Most mothers explained the practical aspects of puberty (e.g. how to use menstrual pads), but few explained the biological aspects of puberty.	(1, 2, 4-18, 20)	<b>Minor concerns regarding methodological limitations</b>  Studies had high (8), moderate (8), and low (2) methodological quality. 3 of 18 studies included samples with mothers-daughters (though focus groups were held separately for mothers and daughters). Knowledge that a girl's mother was also being interviewed could have influenced girls' perceptions. In 1 study where primary focus was on mother-daughter community about sex), girls verified with the researcher that their comments wouldn't be shared with their mothers. However, 5 of 18 studies included only adolescents which helps mitigate this concern.	<b>Moderate concerns regarding relevance</b>  8 of the studies included mother-daughter samples. Many of these studies were more focused on mother-daughter conversation about sexuality rather than puberty. Studies were of indirect (6), partial (5), unclear (3), and direct (2) relevance. No studies focused on sources of information/support for puberty. Studies included diverse racial and ethnic groups; urban and rural areas (13 of 18 were urban); 6 of 13 were from the Northeast.	<b>Minor concerns regarding coherence</b>  Data were consistent within and across studies, but underlying data indicated contradictions in this finding (some girls didn't like to discuss puberty with their mothers) which wasn't fully investigated within the data.	<b>Minor concerns regarding adequacy</b>  18 studies collectively offered rich data on the importance of mothers as a source of support during puberty. Only 6 studies provided information on explanations for why some girls did not turn to their mothers for support and most of these data were superficial.	<b>High Confidence:</b> 18 studies. Minor to moderate concerns about coherence, relevance, adequacy, & methodological limitations. High (8) methodological quality. Rich & consistent data. 8 mother-daughter samples. Diverse racial & ethnic groups; urban & rural areas; all regions (6 Northeast)

Table F1. CERQual qualitative evidence profile						
Review finding	Ref	Methodological limitations	Relevance	Coherence	Adequacy	Confidence in evidence
<b>5.A.2. Mothers influence their daughter's experience of puberty.</b> Girls were disappointed when their mothers were not supportive at puberty. Girls who discussed puberty openly with their mothers described a positive experience, whereas those who did not, described it negatively. However, supportive mothers did not ensure a positive experience.	(1, 4, 7, 13, 17, 20)	<b>Moderate concerns regarding methodological quality</b>  Studies had high (4) and moderate (3) methodological quality. Many studies did not address other factors (education, income, race) that could have influenced the link between a mother's reaction with her daughter's experiences.	<b>Moderate concerns regarding relevance</b>  No studies looked at mothers' roles in shaping girls' experiences about menarche, but this topic arose naturally when girls were sharing their experiences. Studies had unclear (3), partial (2), direct (1), and indirect (1) relevance. Studies with unclear relevance were from college samples; age and SES of participants were unclear. Other studies had adolescent (2) and mother-daughter (2) samples. Participants identified as Hispanic, Caucasian or Black; urban areas; Midwest, West, and Northeast US.	<b>Moderate concerns regarding coherence</b>  These findings included contradictory evidence not fully explored in underlying data. Some underlying data were unclear about the relationship between a mother's response and a daughter's perception of pubertal changes. Some contradictory data were provided (even girls with supportive mothers sometimes struggle with puberty), but this alternative was not thoroughly explored in data.	<b>Minor concerns regarding adequacy</b>  7 studies contributed to this finding with 6 studies offering rich data.	<b>Moderate Confidence:</b> 7 studies. Minor, moderate, & substantial concerns about coherence, relevance, adequacy, & methodological limitations. Contradictory responses not explored. 3 unclear age & SES. Hispanic, Caucasian or Black; urban areas; Midwest, West, & Northeast
<b>5.A.3. Mothers think conversations about puberty are important.</b> Mothers wanted their daughters to be informed about puberty, in particular about menstruation and the associated risk of pregnancy. Mothers viewed menarche as an important milestone in their daughter's development and felt that communication was important for their daughter's sexual health.	(2, 4, 9-11, 15-17)	<b>Moderate concerns regarding methodological quality</b>  Studies had high (5), moderate (2), and low (1) methodological quality. 6 out of 9 studies used focus groups with mothers. Providing daughters with puberty education (and sex) was a socially desired behavior, mothers might have exaggerated or changed their stance on this issue when speaking in a group (social desirability bias).	<b>Moderate concerns regarding relevance</b>  No studies focused on mothers' feelings of their daughters receiving puberty education. Studies had indirect (3), partial (3), direct (2), and unclear (1) relevance. Indirect studies were designed to discuss sexuality and in some cases it was difficult to know whether mothers were referring to thinking it was important for their daughters to learn about puberty or sex. However, given how much mothers tended to associated the topic, this is issue is only of minor concern. Most studies included mother-daughter samples (5). Hispanic or African-American, urban and rural areas; Southern and Northeastern US.	<b>Moderate concerns about coherence</b>  Underlying data suggested some mothers were motivated to have discussions with their daughters about puberty for other reasons (as a right of passage into womanhood). These alternative explanations were unexplored in the data because most studies that included mothers were on the topic of sexuality, not puberty.	<b>Moderate concerns regarding adequacy</b>  8 studies contributed to this finding. Most offered somewhat superficial data as mothers mentioned this point when commenting about related topics.	<b>Low Confidence:</b> 8 studies. Moderate concerns about coherence, relevance, adequacy, & methodological limitations. 3 focused on sexuality. Superficial data. 5 mother-daughter samples. Possible social desirability. Hispanic or African-American urban & rural areas; Southern & Northeastern
<b>5.A.4. Mothers feel uncomfortable about having puberty conversations with their daughters.</b> Daughters sense that their mothers were uncomfortable discussing puberty. Some mothers felt uncomfortable and uninformed about puberty, admitting that they avoided conversations about puberty as a result. They preferred their daughters get information from other sources (e.g. school, older siblings)	(2, 3, 7, 9, 11, 16, 18, 20)	<b>Minor concerns regarding methodological quality</b>  Studies had high (4) or moderate (4) methodological quality. Studies collectively used a range of qualitative data collection techniques.	<b>Minor concerns regarding relevance</b>  Studies had partial (4), indirect (2), unclear (1), and direct (1) relevance. Studies with partial relevance were about menarche and menstruation, rather than puberty. Females from a wide range of ages (adolescent-1, mother-daughter-2, college-), and adult-2). Reflected experiences of Hispanic and African-American (though some Caucasian) females; urban areas.	<b>Moderate concerns regarding coherence</b>  This finding was not fully explored in most studies.	<b>Moderate concerns of adequacy</b>  8 studies contributed to this finding. Individually most studies offered somewhat superficial data, but collectively data sufficiently supported this finding.	<b>Moderate Confidence:</b> 8 studies. Minor to moderate concerns about coherence, relevance, adequacy & methodological limitations. High (4) or moderate (4) methodological quality. 4 focused on sexuality. All somewhat superficial data. Hispanic & African-American (some Caucasian); urban areas; all regions

Table F1. CERQual qualitative evidence profile						
Review finding	Ref	Methodological limitations	Relevance	Coherence	Adequacy	Confidence in evidence
<b>S.A.5. There are communication breakdowns during mother-daughter conversations about puberty.</b> Puberty topics were sometimes difficult to discuss, even in close mother-daughters pairs. Girls wanted to ask questions and openly discuss puberty with their mothers. Some mothers felt that their messages were not getting through. Some mothers admitted to raising their voice during discussions, especially when they did not understand something.	(1, 2, 4, 5, 7-9, 11, 13, 15, 16)	<b>Moderate concerns regarding methodological quality</b> Studies had high (5), moderate (5), and low (1) methodological quality. All studies that included mothers (or adults) in their sample used focus groups. Might be problematic in regards to social desirability, as the mothers might want to appear to be closer to their daughters than they actually are in order to appear as a "good mother."	<b>Moderate concerns regarding relevance</b> Most studies included mother-daughter samples (5). Many studies that support this finding are of indirect (4) and unclear relevance (5). Indirect studies focused on sex more than puberty might've highlighted the challenging side of talking about puberty. Given that multiple other studies, with similar SES and age of participants, were clear this was only a minor relevance threat. Unclear studies were unclear about age and/or income of participants, making it difficult to determine whether the finding was relevant for US low-income girls. Studies reflected the perspective of mostly African-American and Hispanic (and some Caucasian) females, urban areas.	<b>Moderate concerns regarding coherence</b> Studies did not all include mother-daughter samples who were referring to each other, therefore nuances of specific mother-daughter relationships may not be well captured. Some patterns were better supported by the data than others. Multiple studies presented inconsistent findings related to challenges of mother-daughter conversations and not all "outliers" were adequately explored in underlying data.	<b>Minor concerns regarding adequacy</b> 11 studies collectively offered sufficiently rich data across studies.	<b>Moderate Confidence:</b> 11 studies. Minor to moderate concerns about coherence, relevance, adequacy, & methodological limitations. 4 focused on sexuality & 5 had unclear SES & age. 5 high methodological quality. Rich data. 5 mother-daughter samples, but dynamics of relationship not fully addressed. All regions; urban; African-American & Hispanic (some Caucasian).
<b>S.A.6. Timing of mother-daughter conversations can be tricky.</b> Mothers were uncertain when to discuss puberty with their daughters, and feared doing it too early, especially in cases of "early" pubertal onset. Some mothers initiated conversations based on their daughter's pubertal stage (i.e. breast development). Other times, mothers initiated conversations when puberty was going to be discussed in school or when asked questions.	(2, 4, 5, 7, 9, 11, 15, 16)	<b>Moderate concerns regarding methodological quality</b> Studies had high (3), moderate (4), and low (1) methodological quality.	<b>Moderate concerns regarding relevance</b> Most studies included mother-daughter samples (5), and remaining studies had older samples (adult=2, college=1). Half the studies were of indirect relevance (4). Due to sex focus of these studies, could have conflated timing to talk about sex with timing to talk about puberty. Studies reflected perspective of mostly African-American and Hispanic females (though also some Caucasian), urban areas (1 rural) in the Northeastern and Southern US.	<b>Minor concerns regarding coherence</b> Inconsistencies in data about timing of mother-daughter conversations, and certain aspects of the findings were explored more than others within overall body of evidence.	<b>Moderate concerns regarding adequacy</b> 8 studies contributed to this finding and all offered relatively superficial data related to this finding.	<b>Moderate Confidence:</b> 8 studies. Minor to moderate concerns about coherence, relevance, adequacy, & methodological limitations. High (3), moderate (4), low (1) methodological quality. Superficial data. 4 focused on sexuality. African-American & Hispanic females (some Caucasian), urban areas (1 rural); Northeastern & Southern
<b>S.A.7. Conversations about puberty and sex are interconnected.</b> For many mothers, menarche was a cue to discuss sex with daughters, especially if mothers had a prior unwanted pregnancy. Girls felt that, at puberty, mothers gave mixed and incomplete messages about puberty and sex (e.g. you are woman, but avoid male attention, avoid pregnancy, but don't explain how to get pregnant). When puberty and sex were intertwined both were seen as taboo topics that were difficult to discuss.	(2, 4, 6, 8, 10, 13-17, 19, 20)	<b>Minor concerns regarding methodological quality</b> 6 high, 6 moderate, 1 low. Combination of individual interviews and focused group methodologies were used.	<b>Moderate concerns regarding relevance</b> 5 studies were indirectly relevant, meaning they were focused on sexuality broadly rather than puberty specifically (under=3, partial=2, direct=2). One study looked specifically at the relationship between menarche and puberty, 3 mother-daughter samples, but women of all ages (though mostly adolescents) were included. 10 urban & 2 rural. All US regions (mostly Northeast 6). Racially and ethnically diverse samples.	<b>Minor concerns regarding coherence</b> Evidence was consistent across studies. In a few cases, it was difficult to tell whether participants were referring to sex or puberty, but overall these two were so commonly conflated, that this is only a minor concern.	<b>Minor concerns regarding adequacy</b> 13 studies. Relatively rich data across studies.	<b>High Confidence:</b> 13 studies. Minor to moderate concerns about coherence, relevance, adequacy & methodological limitations. Rich data across studies. High coherence, 6 high methodological quality. 5 studies were focused on sexuality broadly. 5 mother-daughter samples. 10 Urban (2 rural). All US regions (6 Northeast). Racially & ethnically diverse samples.
<b>S.A.8. A mothers experience of puberty influences how she approaches conversations with her daughter about puberty.</b> Mothers who were unable to talk to their own mothers about puberty reported wanting to provide a different, more supportive experience to their daughters. However, mothers from conservative cultures, that consider this topic to be taboo were less inclined to talk to their daughters about it.	(2, 4, 7, 9-11, 14-16)	<b>Moderate concerns regarding methodological quality</b> Studies had high (4), moderate (4), and low (1) methodological quality. Studies used focus groups to gather data when individual interviews might have been more effective to capture mothers' experiences of puberty and influence on their approach to their daughters' puberty.	<b>Moderate concerns regarding relevance</b> No studies examined how a mother's puberty experience affected how she approached her daughter's puberty. Studies included mostly mother-daughter samples (5) or adult samples (2). Studies reflected perspective of African-American females (4), but multiple racial and ethnic groups were included. Samples from urban (1 rural) environments.	<b>Moderate concerns regarding coherence</b> Some aspects of this finding (when mothers chose to go against contrary to or in line with their experience) were not well explored in underlying data.	<b>Moderate concerns regarding adequacy</b> 9 studies contributed to this finding and all offered fairly superficial data.	<b>Low Confidence:</b> 9 studies. Moderate concerns about coherence, relevance, adequacy, & methodological limitations. None specifically on this topic. High (4), methodological quality. Superficial data. 5 mother-daughter samples. Diverse samples urban (2 rural), Southern (4), Northeast (2), & Midwest (2) regions.

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Review finding	Ref	Methodological limitations	Relevance	Coherence	Adequacy	Confidence in evidence
<b>S.B.1. Females other than mothers (especially sisters) are important sources of pubertal support for girls.</b> Female family members (e.g. older sisters, grandmothers) were trusted sources of information, advice, and emotional support to pubescent girls, especially in the absence of mother-daughter conversations. Mothers acknowledged the role of females in supporting and informing their daughters about sexual development.	(6-9, 11-12, 15-18, 20)	<b>Moderate concerns regarding methodological quality</b> Studies had high (5), moderate (4), and low (2) methodological quality. 5 out of 11 studies included mother-daughter samples in which cases, daughters may have been more reluctant to mention and elaborate on non-maternal sources of support knowing that their mothers were nearby and also part of the study.	<b>Substantial concerns regarding relevance</b> No studies examined role of non-maternal female family members in shaping girls' puberty experiences. No studies included non-maternal female family members. Studies were of unclear (4), indirect (2), partial (2), and direct (2) relevance. Unclear studies lacked information about the SES and/or age of sample to determine inclusion of US low-income girls. Indirect studies focused on sexuality broadly rather than puberty. Possible that non-maternal female members played a more significant role in supporting girls on topics related to sex than puberty due to challenging nature of sex topics for mothers and daughters to discuss. Young and who had experienced puberty recently (adolescent=4, mother-daughter=5, college=1). Females who identified as Hispanic, African-American and Caucasian; urban areas; Southern, Midwestern, and Northeastern US regions.	<b>Minor concerns regarding coherence</b> Findings were well supported by underlying body of evidence, but non-maternal female family members were not clearly defined and data consistency unclear. Data suggested that a mother might not be open to other people informing her daughter about puberty, but an explanation for this "outlier" case was not provided in data.	<b>Moderate concerns regarding adequacy</b> 11 studies offered relatively superficial data.	<b>Low Confidence:</b> 11 studies. Minor, moderate, or substantial concerns about coherence, relevance, adequacy, & methodological limitations. None focused on non-maternal female family members. Superficial data. 4 unclear SES & age of sample. Hispanic, African-American & Caucasian; urban, Southern, Midwestern & Northeastern
<b>S.B.2. Fathers are not a main source of pubertal support for girls.</b> Fathers were described as "hands-off" or "chuckles" about puberty. At menarche, few girls told their fathers and some even asked their mothers not to. Both daughters and fathers were embarrassed to discuss menstruation with one another, even in close relationships. Some fathers bought menstrual supplies and were excited their daughters were maturing. Others feared it meant their daughters were sexually active.	(1, 5, 7, 10, 14, 17, 19, 20)	<b>Minor concerns regarding methodological quality</b> Studies of high (7), moderate (2), and low (1) methodological quality. Only 1 study included fathers. Not including fathers left out their perspective. Most studies from sources that included only adolescent participants (and not their mothers). Thus, this finding mostly reflected how adolescents viewed fathers as sources of pubertal support and not what they did.	<b>Moderate concerns regarding relevance</b> Only 1 study included fathers. 1 study focused fathers' roles in providing menarche-related support to daughters. Later study was of unclear relevance due to lack of information about SES and sample context. Another study mentioned difficulty recruiting fathers. Mostly represents girls' perspectives and lack of fathers' opinions was only of minor concern. Studies were of unclear (4), partial (3), and direct relevance how many? relevance and most focused on girls' experiences of menarche and menstruation. Young samples (adolescent=4, college=3, mother-daughter=2), a range of racial and ethnic backgrounds (Asian, Hispanic, African-American, and Caucasian), rural and urban areas; most from the Midwest (3).	<b>Minor concerns regarding coherence</b> Father vaguely defined (biological father, step-father, mother's boyfriend) so data consistency unclear. Evidence consistent across studies, but a few contradictory cases were provided (some fathers were considered supportive). Explanations for contraction weren't provided. Overwhelming evidence pointed to a consistent story: fathers were not a main source of support for puberty. Thus, coherence threats of minor significance.	<b>Minor concerns regarding adequacy</b> 10 studies contributed to this finding. 4 studies offered somewhat rich data with remainder offering superficial evidence.	<b>High Confidence:</b> 10 studies. Minor to moderate concerns about coherence, relevance, adequacy, & methodological limitations. 7 high methodological quality. 4 rich data. 1 included fathers. Focused on fathers' roles. Father vaguely defined (step-father?). Asian, Hispanic, African-American, & Caucasian; urban (some rural), all regions.
<b>S.B.3. Father-daughter relationships change at puberty.</b> Females reported that the onset of puberty and menstruation caused physical and emotional distancing between daughters and their fathers. Girls reporting that they no longer felt like "daddy's little girl" and experienced a loss of affection from their fathers. For example, after girls bodies begin to develop, father-daughter tickling became inappropriate, and girls felt that they could no longer sleep next to their fathers to fall asleep at night.	(12, 13, 16, 19)	<b>Moderate concerns regarding methodological quality</b> Studies were of high (3) or low (1) methodological quality. 1 study that contributed a significant amount of evidence to this finding was of low methodological quality due to lack of information about methodology used, data collection instruments, context and limitations of study, and reflexivity of researchers. However, studies drew data from multiple qualitative data collection techniques including individual interviews (2), focus groups (1), and written narratives (1).	<b>Moderate concerns regarding relevance</b> Only 1 study focused on fathers' roles in providing menarche-related support to their daughters. This finding mostly represents girls' perspectives and lack of fathers' opinions is only of minor concern. Studies were of partial (2), unclear (1), and direct (1) relevance with 2 studies focusing on girls' experiences of menarche and menstruation. Females from a range of ages (adolescent=2, adult=1, mother-daughter=1); predominantly Hispanic and African-American (some Caucasian), mostly urban areas in Western (1) and Northeastern (2) US regions.	<b>Moderate concerns regarding coherence</b> Father vaguely defined (biological father, step-father, mother's boyfriend) so consistency unclear across studies. Distance inconsistently defined across studies. Data suggested that mothers might play a role in father-daughter distancing at puberty, but was inconsistently supported by data. Not all daughters reported distancing from fathers and explanations for occurrence not fully explored.	<b>Substantial concerns regarding adequacy</b> 4 studies contributed to this finding. 2 offered rich data. Due to surprising aspects of this finding, more rich data is necessary to enhance confidence in data adequacy used to support this finding. The 2 studies had small sample sizes (13 and 10) from specific groups (girls raised by their fathers only and girls who had experienced extreme life adversity).	<b>Very Low Confidence:</b> 4 studies. Moderate to substantial concerns about coherence, relevance, adequacy, & methodological limitations. 2 rich data. Small sample sizes (13 & 10). 1 focused on fathers' roles at menarche. Father vaguely defined (step?). Girls are from unique samples. Predominantly Hispanic & African-American (some Caucasian), mostly urban, Western & Northeastern.

Table F1. CERQual qualitative evidence profile						
Review finding	Ref	Methodological limitations	Relevance	Coherence	Adequacy	Confidence in evidence
<b>S.B.4. Brothers are a source of anxiety for girls going through puberty.</b> Brothers were mentioned as source of anxiety, cause for secrecy and embarrassment related to puberty. Brothers teased, humiliated, and insulted their sisters about their periods, PMS and "smelly diapers." To avoid this teasing, some girls shared how they made an extra effort to hide their menstrual supplies from their brothers.	(1, 13)	<b>Minor concerns regarding methodological quality</b>  Both studies were of high methodological quality, but both gathered data through anonymous written narratives, preventing the researcher from probing into topics raised by the participants.	<b>Substantial concerns regarding relevance</b>  Both studies were of low relevance because they were not explicit about the SES and age of study participants. These studies used the same sample of predominantly Caucasian college-aged females, attending college in Oregon.	<b>Minor concerns regarding coherence</b>  Brother was not clearly defined (i.e. inclusion of step and half brothers) and details about brother relationships were inconsistently provided (older vs. younger brother, close vs. far in age, etc.). However, this finding was consistent across all studies making lack of clarity of brother type only a minor concern.	<b>Substantial concerns about adequacy</b>  3 studies contributed to this finding and all offered thin data. Topic not well explored within studies and was briefly addressed by participants.	<b>Very Low Confidence:</b> 2 studies. Minor to substantial concerns about coherence, relevance, adequacy, & methodological limitations. Thin data. Not well explored within studies. Brother not clearly defined (i.e. step? Older?). Unclear SES & age information. Mostly Caucasian college students from Oregon
<b>S.C.1. The nature of relationships with male peers changes at puberty.</b> Girls described an increased interest in and attention from boys during puberty. However, this was sometimes unwanted (e.g. touching, hugging, teasing). Mothers closely monitored their daughter's interaction with males. Mothers noticed their daughters' increased preoccupation with males—increased attention on appearances (wearing makeup, different types of clothing, jewelry), secret phone calls, etc.	(4, 6, 7, 10, 12, 13, 16, 19, 20)	<b>Moderate concerns regarding methodological limitations</b>  Studies had high (6), moderate (3), and low (1) methodological quality. 2 studies outlined that girls were reluctant to discuss sexual arousal and romantic interest directly with researchers (especially when their mothers were also participants in the study). Therefore girls may not have provided accurate or detailed information on this topic. Moreover, most studies insufficiently addressed reflexivity in their studies making it unclear how the author(s) thought their presence and interaction affected responses.	<b>Moderate concerns regarding relevance</b>  No studies looked directly at how girls' relationships with boys changed as a result of pubertal changes. Studies were of indirect (3), partial (3), direct (2) and uncertain (2) relevance. Young females (and their mothers), Hispanic, African-American or Caucasian; urban and rural settings. 4 out of 10 studies were conducted in the Northeast, US.	<b>Moderate concerns regarding coherence</b>  The underlying body of evidence did not fully investigate girls' relationships with boys during puberty.	<b>Moderate concerns regarding adequacy</b>  10 studies had superficial data and somewhat vague descriptions.	<b>Low Confidence:</b> 10 studies. Moderate concerns about coherence, relevance, adequacy, & methodological limitations. None focused directly on girls' relationships with boys during puberty. Superficial data & somewhat vague descriptions. Inappropriate methods (focus groups) for such a sensitive topic. Hispanic, African-American or Caucasian; urban (2 rural), all regions (4 Northeast)
<b>S.C.2. Friends and peers were as sources of pubertal information and support.</b> Older or more developed females (and their mothers) were viewed as being able to pass down valuable knowledge about puberty. Girls communicated with friends about the pains of menstruation and discussed the timing of their next periods. Girls also enjoyed receiving compliments from their friends at this time (e.g. pretty, skinny).	(5-9, 11, 13, 16, 20)	<b>Moderate concerns regarding methodological quality</b>  Studies had high (6), moderate (5), low (1) methodological quality. 7 out of 12 studies gathered data through focus groups. Participants were sampled using snowball or convenience methods, including some friends of participants. While unclear, if that was the case, girls could have provided a more positive assessment of their friends' support throughout puberty. However, these concerns were mitigated by 3 studies that found corroborating evidence using different qualitative methods (individual interviews and written narratives).	<b>Moderate concerns regarding relevance</b>  No study focused exclusively on girls' peer relationships during puberty, but the topic was indirectly explored because adolescent participants spoke of both their own and their friends' puberty experiences. Many studies were focused specifically on menarche and menstruation and of partial (4), indirect (3), unclear(3), and direct (2) relevance. Studies included samples that identified as African-American or Caucasian (with some Hispanic), lived in urban environments in the West (2), Midwest (1), and Northeast (7) US regions.	<b>Minor concerns regarding coherence</b>  The difference between "peer" and "friend" was unclear in the underlying body of evidence, so it was unclear whether "friend" was referenced consistently. However, this finding was still supported by data across studies.	<b>Moderate concerns about adequacy</b>  12 studies contributed to this finding and all offered somewhat thin data on the topic.	<b>Moderate Confidence:</b> 12 studies. Minor to moderate concerns about coherence, relevance, adequacy & methodological limitations. Possibility of social desirability bias. Unclear between "peer" & "friend." African-American or Caucasian (some Hispanic); urban, West (2), Midwest (1), Northeast (7)
<b>S.C.3. Female peer relationships can develop a negative dynamic at puberty.</b> Early developers were "implicitly vilified" for their adult-like status by their peers. Developed girls gave girls social capital, which spawned jealousy within peer groups. Girls felt that developed bodies indicated that girls are ready for or experienced at sex. Fear of gossip and being teased was a barrier to sharing experiences with friends.	(3, 6, 11, 13, 17, 19)	<b>Minor concerns regarding methodological quality</b>  Studies had high (4) and moderate (2) methodological quality. 4 out of 5 studies gathered data through focus groups despite sensitive nature of topic.	<b>Moderate concerns regarding relevance</b>  No study focused exclusively on girls' peer relationships during puberty, but the topic was indirectly explored because adolescents spoke of both their own and their friends' puberty experiences. Studies predominantly sampled mother-daughters pairs (3). Studies reflected the perspective of females who identified as African-American, Hispanic, and Caucasian, who lived in the Northeastern (4), Western (1), and Southern (1) US regions.	<b>Minor concerns regarding coherence</b>  The difference between "peer" and "friend" were unclear in underlying body of evidence so was unclear whether "friend" was referenced consistently. However, this finding was still supported by data across studies.	<b>Moderate concerns about adequacy</b>  6 studies contributed to this finding with only 2 offering somewhat rich data.	<b>Low Confidence:</b> 6 studies. Minor to moderate concerns about coherence, relevance, adequacy & methodological limitations. 2 rich data. Unclear difference between "peer" & "friend." 4 high methodological quality. Focus groups not ideal for sensitive topic. None focused on peer relationships. Diverse sample. Urban, 4 Northeastern

Table F1. CERQual qualitative evidence profile						
Review finding	Ref	Methodological limitations	Relevance	Coherence	Adequacy	Confidence in evidence
<b>S.D.1. Schools are not a major source of puberty information or support.</b> Girls viewed school education about menarche as inaccurate, negative, and late in time. Girls felt embarrassed to ask questions in schools. Others felt that schools allocated inadequate time for discussion. A few found it difficult to remember what was covered in school.	(2, 3, 13-16, 18)	<b>Moderate concerns regarding methodological quality</b>  Studies were rated as having high (3), moderate (3) and low (1) methodological quality. Lack of information about researcher reflexivity and data collection tools made it difficult to know the researcher's influence on findings.	<b>Moderate concerns regarding relevance</b>  No studies looked at school-based and other sources of support for pubertal changes. These themes were addressed in the underlying body of evidence. Studies were of partial (3), indirect (3), or unclear (3) relevance. Most studies came from adolescent samples (4) and identified as a diverse range of racial and ethnic groups (African-American, Caucasian, Hispanic and Asian) All regions; urban (6)	<b>Minor concerns regarding coherence</b>  Puberty education was not clearly defined and thus it was unclear whether it was referenced consistently across studies. Data consistent within and between studies. While not specifically defined in the data, the underlying body of evidence suggested that some girls benefit from receiving puberty education in schools. When interpreted vaguely as girls' feelings about school puberty education, these coherence threats were considered minor.	<b>Moderate concerns about adequacy</b>  9 studies contributed to this finding. 3 offered somewhat rich data and 6 offered superficial data.	<b>Moderate Confidence:</b> 9 studies. Minor to moderate concerns about coherence, relevance, adequacy & methodological limitations. 3 somewhat rich data. Puberty education not clearly defined. None focuses on school based sources. 3 high methodological quality. Diverse, mostly adolescent samples; all regions; urban (6)

## References for Table F1: CERQual qualitative evidence profile

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## APPENDIX G: Letters of Support from Partnering Organizations

Marni Sommer  
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Columbia University  
722 W. 168th Street, Room 540  
New York, NY 10032  
Tel: 212-305-1826  
Email: [ms2778@columbia.edu](mailto:ms2778@columbia.edu)

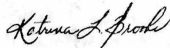
Ann Herbert  
(*Baltimore Project Coordinator*)  
Department of Population Family and Reproductive Health  
Johns Hopkins Bloomberg School of Public Health  
615 N Wolfe Street, room E4607  
Baltimore, MD 21205  
Tel: 773-706-5919  
Email: [annherb@gmail.com](mailto:annherb@gmail.com)

August 5, 2015

Dear Ms. Marni Sommer:

Thank you for requesting permission to conduct the research activities at the Youth Leadership and Advocacy Network (YLAN) for the Growing Girls Project. We would be happy to have the research team conduct research activities with girls ages 15-19 who are affiliated with our organization. We grant you permission to conduct the research at this time and understand that results from this study will be reported back to the organization.

Sincerely,



Katrina L. Brooks, MHS  
Community Relations Director/ Youth Coordinator  
Johns Hopkins Bloomberg School of Public Health  
Center for Adolescent Health  
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Kayanna Johnson  
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City Hall  
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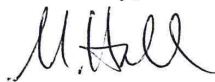
Ann Herbert  
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September 24, 2015

Dear Ms Marni Sommer:

Thank you for requesting permission to conduct the research activities for the Growing Girls Project with KIPP Through College. We would be happy to have the research team conduct research activities with girls, ages 15-19, who are affiliated with our organization. We grant you permission to conduct the research at this time and understand that results from this study will be reported back to the organization.

Sincerely,



Megan Hall  
Director of KIPP Through College  
KIPP Through College | 4701 Greenspring Avenue | Baltimore, MD 21209  
M: [443.415.9708](tel:443.415.9708) | O: [410-367-0807](tel:410-367-0807) | F: [443.455.1483](tel:443.455.1483) | E: [mhall@kippbaltimore.org](mailto:mhall@kippbaltimore.org)  
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December 2, 2016

Dear Ms. Marni Sommer:

I hope to find you well. We are thrilled that Ann Herbert's Growing Girls Project is interested in partnering with a Community School. I was happy to connect her with Kelly Oglesbee the Community School Coordinator who can help her navigate this project with girls at Benjamin Franklin High School ages 15-19.

The Ben Center at Benjamin Franklin High School at Masonville Cove, where Kelly works, provides a multitude of health supports for the students of that school including an on-site Early Child Care Center. Additionally, they were a pilot site for the comprehensive sexual health education curriculum that Baltimore City Public Schools is rolling out. When approached regarding potential sites, we knew that Ben Franklin would be eager to participate.

I also sincerely appreciate that the information gleaned will complement the work I am doing surrounding reproductive health in and out school as well as information we share with parents. Additionally, we appreciate the that project not only receives parental consent but also student assent.

We are excited to what educational materials get developed and how we may work together to explore lessons learned. Please feel free to reach me at [hnaviasky@familyleague.org](mailto:hnaviasky@familyleague.org) or via cell at (410) 916-0430. Best of luck with all the work ahead.

Sincerely,



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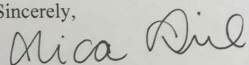
Ann Herbert  
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July 5, 2016

Dear Ms. Marni Sommer:

Thank you for requesting permission to conduct the research activities with the Mission Thrive Summer program for the Growing Girls Project. We would be happy to have the research team conduct research activities with girls ages 15-19 who are affiliated with our organization. We grant you permission to conduct the research at this time and understand that results from this study will be reported back to the organization.

Sincerely,



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## APPENDIX H: Questionnaire

### Growing Girls Baltimore Project Questionnaire

This questionnaire asks about your personal experiences, such as changes to your body, menstruation (having your period), things you do and talk about with friends and family members, and your physical, mental and reproductive health.

**REMEMBER-ALL ANSWERS YOU GIVE WILL BE KEPT PRIVATE.** If you do not want to answer a certain question, you can skip it, and if you want to quit, you can do that at any time. Your participation in this survey is completely voluntary, meaning you decide if you want to do it. Nothing bad will happen if you decide not to take the survey.

Please be as honest as possible since your honest answers will help us learn about girls your age. For each question, read the question and respond with the answer that best reflects your real opinions, thoughts, and experiences. There are no right or wrong answers. **Please circle the answer that is best for you.** Choose only one answer for each question unless the directions tell you to choose more than one answer. A few questions ask you to fill in the blank, like this: \_\_\_\_\_. Put your answer on the blank line.

If you have any questions, please raise your hand and one of the female researchers will come to your seat to help you.

#### Section 1: Background

*First, we are going to ask you some basic background questions about your age, race and education*

1.1	What is the codename (or nickname) are you using during group activities?	_____ (write-in)
1.2	What is today's date?	_____ Month      Day      Year (write in)
1.3	How old are you currently?	a) 15 years old b) 16 years old c) 17 years old d) 18 years old e) 19 years old f) Other _____ (write in)
1.4	Are you Hispanic, Latino or of Spanish origin?	a) Yes b) No
1.5	Were you born in the United States?	a) Yes a) No
1.6	What is your race? If you are more than one race, you may choose more than one response. (circle all that apply)	b) American Indian or Alaskan Native c) Asian, Asian American, or Indian d) Black or African American e) Native Hawaiian or Other Pacific Islander f) White/Caucasian g) 6. Other _____ (write in)
1.7	What language do you feel most comfortable speaking in?	a) English b) Non-English _____ (write in language)





<b>1.8</b>	What school did you attend for 5 <sup>th</sup> grade? <i>(If you attended more than one school, list the school you were at for most of your 5<sup>th</sup> grade year)</i>	_____ (write in name of school)
<b>1.9</b>	Do you have your own cell phone?	a) Yes b) No
<b>1.10</b>	How many computers does your family own?	a) None b) One c) Two d) More than two
<b>1.11</b>	During the past 12 months, how many times did you travel away on holiday with your family?	a) Not at all b) Once c) Twice d) More than twice
<b>1.12</b>	Does your family own a car, van or truck?	a) No b) Yes, one d) Yes, two or more
<b>1.13</b>	Do you have your own bedroom for yourself?	a) No d) Yes
<b>1.14</b>	How well off do you think your family is?	a) Not at all well off b) Not Particularly well off c) Fairly well off d) Rather well off e) Very well off
<b>1.15</b>	What zip code do you currently live in?	_____ (write in)
<b>1.16</b>	What is your religion?	a) None b) Christian: Catholic c) Christian: Protestant (e.g. Methodist, Baptist, Presbyterian, etc.) d) Muslim e) Hindu f) Jewish g) Buddhist h) Other religion _____ i) I am spiritual, but I am not part of any religion j) Not sure
<b>1.17</b>	In the past 12 months, how often did you attend religious services?	a) Once a week or more b) Less than once a week, but at least once a month c) Just for holidays e) Never
<b>1.18</b>	How important is religion to you?	a) Very important b) Fairly important c) Fairly unimportant d) Not important at all

## Section 2: Pubertal Development Scale

The next set of questions is related to your puberty status. Since it is normal for different girls to go through these physical changes at different times, we are interested in learning about what changes are usually happening in girls when they are your age. We would like to ask you to help us get this information by answering some questions about how you are currently growing and developing.

2.1	How tall are you <i>without</i> your shoes on?	I am _____ feet and _____ inches tall. (write in your height)
2.2	How much do you weigh <i>without</i> your shoes on?	I weigh _____ pounds. (write in your weight)
2.3	Would you say that your growth in height:	a) Has not yet begun to spurt ("spurt" means more growth than usual) b) Has barely started c) Is definitely underway d) Seems completed
2.4	How about the growth of body hair ("body hair" means underarm and pubic hair)? Would you say that your body hair has:	a) Not yet started growing b) Has barely started growing c) Is definitely underway d) Seems completed
2.5	Have you noticed any skin changes, especially pimples?	a) Not yet started showing changes b) Have barely started showing changes c) Skin changes are definitely underway d) Skin changes seem completed
2.6	Have your breasts begun to grow?	a) Not yet started growing b) Has barely started changing c) Breast growth is definitely underway d) Breast growth seems completed
2.7	Do you think your development is any earlier or later than most other girls your age?	a) Much earlier b) Somewhat earlier c) About the same d) Somewhat later e) Much later
2.8	Have you begun to menstruate (get your period)?	a) Yes b) No ( <i>skip to Question 3.1 on page 4</i> )
2.9	If you answered <b>YES</b> , how old were you when you first menstruated (got your period)?	I was _____ years and _____ months old when I began to menstruate. (write in age)
2.10	Before you got your period who did you feel most comfortable talking with about the changes that happen to girls during puberty? <b>Please rank your top 3 choices in order by writing the number on the line next to the person.</b>	_____ Mother figure _____ Father figure _____ Sister _____ Brother _____ Other relative (e.g. grandmother, grandfather, aunt, etc.): _____ (write in) _____ Female Friend _____ Male Friend _____ Teacher _____ Doctor/nurse _____ Someone else (e.g., coach, religious leader, etc.): _____ (write in)

The next set of questions asks you about your experience with your period. Please circle the number in front of the answer that best describes how well you agree or disagree with each of the following statements. Please **choose only one answer** for each question.

2.11		Strongly agree	Agree	Neither agree/disagree	Disagree	Strongly disagree
a.	I was given helpful information about periods before I got my first one.	1	2	3	4	5
b.	I felt ready when I got my first period.	1	2	3	4	5
c.	I knew what to do when I got my first period.	1	2	3	4	5
d.	I understood what was happening to my body when I got my first period.	1	2	3	4	5
e.	I knew what to expect before I got my first period	1	2	3	4	5
f.	I had enough stuff (like pad or tampons) when I got my first period.	1	2	3	4	5
g.	I knew how to use pad or tampons when I got my first period	1	2	3	4	5
r.	I couldn't wait to get my first period.	1	2	3	4	5

### Section 3: Family Context

Now we would like to ask you some questions about your mother, or the person who is most like a mother to you. This could be your biological mother, stepmother, foster mother, adoptive mother, or perhaps a grandmother, aunt, or older sister.

3.1	Do you have a main mother figure in your life?	a) Yes b) No ( <i>skip to Question 3.12 on page 10</i> )
3.2	Is this person your:	a) Biological mother b) Grandmother c) Aunt d) Stepmother e) Father's girlfriend f) 6. Other _____ ( <i>write in</i> )

The next set of questions is going to ask you about this main mother figure.

3.3	Does your mother figure currently live in the same household as you?	a) Yes b) No c) Sometimes
3.4	Was your mother figure born in the U.S.?	a) Yes ( <i>skip to Question 4.1 on page 5</i> ) b) No
3.5	If <b>NO</b> , in what country was she born?	_____ ( <i>write in country name</i> )
3.6	Does your mother figure speak English?	a) Yes, she speaks English well b) Yes, she speaks English a little bit, but not well c) No, but she speaks: _____ well ( <i>write in the language</i> )

^



3.7	How far in school did your mother figure go?	a) Did not finish high school b) Graduated from high school c) Some after high school d) Graduated from college e) Not sure
3.8	How easy do you find it to talk to your mother figure about things that are important to you?	a) Very easy b) Easy c) Average d) Difficult e) Very Difficult f) Do not talk to her
3.9	How easy do you find it to talk to your mother figure about things related to puberty?	a) Very easy b) Easy c) Average d) Difficult e) Very Difficult f) Do not talk to her
3.10	How easy do you find it to talk to your mother figure about things related to sex?	a) Very easy b) Easy c) Average d) Difficult e) Very Difficult f) Do not talk to her
3.11	How well do you agree with the following statement: <i>Overall, you are satisfied with your relationship with your mother figure.</i>	a) Strongly agree b) Agree c) Disagree d) Strongly Disagree e) Not sure

#### Section 4: Health Status

Now we would like to ask you about your physical and mental health

4.1	a) How do you describe your health in general?	a) Excellent b) Very good c) Good d) Fair e) Poor
4.2	Over the past month, have you had little interest or pleasure in doing things?	a) Yes b) No
4.3	Over the past month, have you been feeling down, depressed, or hopeless?	a) Yes b) No

The next few questions are going to ask you about your experience with hormonal contraceptive methods. Women use hormonal birth control methods for all kinds of reasons, including: preventing pregnancy, regulating periods, controlling acne, and many other reasons. We are asking about your hormonal contraceptive use because using hormonal contraception can sometimes affect female's periods. When we refer to these methods, we are talking about birth control pills, implants (such as Implanon or Nexplanon), a shot (such as Depo-Provera), a patch (such as Ortho Evra), a birth control ring (such as NuvaRing), and the Mirena IUD (intrauterine device).

4.4	Have you ever used any one of the following hormonal contraceptive methods: birth control pills, implants (such as Implanon or Nexplanon), a shot (such as Depo-Provera), a patch (such as Ortho Evra), a birth control ring (such as NuvaRing), and the Mirena IUD (intrauterine device).	a) Yes b) No ( <i>skip to Question 5.1 on page 6</i> )
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5



The following table asks you about your history of using hormonal methods. Please indicate whether you have used any of the following methods, the age when you first started, and whether you are currently using that method. If you have not used some of the methods below, please leave the method's box blank.

4.5	Age when first started	Currently using
a. Birth control pill		Yes No
b. Shot (such as Depo-Provera)		Yes No
c. Patch (such as Ortho Evra)		Yes No
d. Ring (such as NuvaRing)		Yes No
e. Mirena IUD (intrauterine device)s or Implant		Yes No

#### Section 5: Gender identity and sexual orientation

The next set of questions is about your gender identity and sexual orientation. Please feel free to be as honest as possible, and remember that all of your answers will be kept private.

5.1	Are you:	a) Female b) Male c) Other _____
5.2	Is your gender identity the same as the sex you were assigned at birth?	a) Yes b) No
5.3	Which of the following best describes how you think of yourself?	a) Heterosexual (straight) b) Gay or lesbian c) Bisexual d) Transsexual e) Not sure f) Other _____
5.4	During your life, with whom have you had sexual contact? (refers to any type of sexual contact including kissing)	a) Females b) Males c) Both Females and males d) Have not had sexual contact (skip the next question. You have completed the survey)
5.5	Was your first experience of sexual contact before or after you started your period? (refers to any type of sexual contact including kissing)	a) Before b) After c) Have not started period yet

**END OF SURVEY. THANK YOU!!**

6



## **APPENDIX I: Focus Group Discussion Guide**

### **The Growing Girls Project** **Semi-structured Focus Group Guide for Adolescent Girls**

#### **Outline**

##### **Week 1:**

- Activity 1.0 Introduction and project overview (20 min)
- Activity 1.1: Ice-breaker activity (10 min)
- Activity 1.2: Describing puberty (20 min)
- Activity 1.3: Menstrual terms (15 min)
- Activity 1.4: Submit anonymous puberty questions (10 min)
- Activity 1.5: Questionnaire (20 min)
- Activity 1.6: Closing

##### **Week 2:**

- Activity 2.0: Check in (10 min)
- Activity 2.1: Revisit a few things from last session that were left undone (10 min)
- Activity 2.2: Menstrual stories (15 min)
- Activity 2.3: Role of family, schools and peers in shaping puberty experiences (15 min)
- Activity 2.4: Menstrual myths and beliefs (15 min)
- Activity 2.5: Puberty knowledge true/false activity (15 min)
- Activity 2.6: Respond to questions from session 1 (15 min)
- Activity 2.7: Closing

##### **Week 3**

- Activity 3.0: Check in (5 min)
- Activity 3.1: Puberty gender and expectations (15 min)
- Activity 3.2: Psychosocial and information needs during puberty (15 min)
- Activity 3.3: Puberty and sexual development (15 min)
- Activity 3.4: Respond to questions (15 min)
- Activity 3.5: Closing

##### **Week 4**

- Activity 4.0: Check in (5 min)
- Activity 4.1: Making schools more girl friendly (20 min)
- Activity 4.2: Puberty educational material design (20 min)
- Activity 4.3: Feedback on educational tools (5 min)
- Activity 4.4: Respond to final set of questions and address any lingering issues (20 min)
- Activity 4.5: Final Closing

### **Things to remember**

The participatory activities include the following outline for the 4-5 weeks (one meeting per week with each group of girls), although some evolution of activities may occur if saturation is reached early in the findings/data. Also, the number of weeks may vary depending on the particular schedule with each group, but our goal is to fit in all activities into a 4 week period if possible.

It is essential to not give away the answers when engaging in the activities, so that you collect an accurate sense of what girls do and don't know about the topic.

Girls will not be putting their names on anything during data collection. However, they should include the nickname they have chosen to use throughout data collection.

It is important that each moderator feel comfortable and familiar with the data collection activities that will be used in each session. The details of each data collection activity could change as the data collection proceeds so be sure to check this guide before each group session.

When leading focus group discussions we want to...

- develop trust with participants
- engage with them as though they are the experts
- use follow up questions and probes to get the participants to elaborate more--we want them speaking as much as possible

Also, please be aware that, as with all groups, some girls will be more vocal than others. We recommend handing out sheets of paper so that those girls who are not as comfortable talking about everything out loud can write anonymously and hand the papers back to the research team at the end of each session. Make sure that comments from the vocal ones do not further silence the quiet ones.

Throughout data collection emphasize...

- the importance of confidentiality throughout the sessions so that girls become more familiar with the idea and comfortable with sharing.
- sensitive topics are okay here
- there are no right or wrong answers--all opinion are okay
- that we are talking about norms
- they should be thinking back to when they were younger, not now.

It is incredibly important for copious amounts of notes to be taken throughout data collection. Information about non-verbal cues, times, dates, descriptions of the surrounding, etc. all need to be included.

\*Please note carefully the different activities – some provide guidance to focus on “puberty” and some point towards focusing on “menstruation” specifically.



## **Detailed description of each activity**

### **Week 1:**

- Activity 1.0 Introduction and project overview (20 min)
- Activity 1.1: Ice-breaker activity (10 min)
- Activity 1.2: Describing puberty (20 min)
- Activity 1.3: Menstrual terms (10 min)
- Activity 1.4: Submit anonymous puberty questions (10 min)
- Activity 1.5: Questionnaire (20 min)
- Activity 1.6: Closing

### **--1.0 Introduction to research team overview of the project (3 min) [3:00 Kenika and Ann]**

Each member of the team should introduce themselves, tell something about who they are and what they do, and also share something interesting about their self.

\*Be cognizant of your energy and how you are coming off to the girls as this will set the tone for the rest of data collection.

### **--1.0 Introduction to the project (overview of the project) (3 min) [3:03 Kenika and Ann]**

Please explain that the aim of this research is to collect information to create educational material for girls who are transition from young girls to young women. We are seeking out their advice because, given that they just when through this, are experts on the topic.

Please assure them that if we are able to find funding to publish the educational materials we produce, we will send copies back to the school/center so that they each can have a copy.

Please keep stressing to girls that they should be thinking back to when they were younger-- throughout the data collection process, just to assure the girls of the importance of their honest and candid opinions.

### **--1.0 Introduction: Confidentiality and privacy (4 min) [3:06 Ann]**

- **Informed consent form for the girls (assent form)**
- **Recording devices (x2)**
- **Note taking forms**
- **Pencil or pen for writing**
- **Information sheet**
- **2 copies of this document**

Explain the role of each person--notetaker and moderator. At the first meeting with the girls, it is important to review “informed consent/assent” from the participating girls. Please refer back to the informed consent document, and remind them...

- Participants are assured that written reports will not include names and that tapes will not be shared outside the research team. Basically, we will do our best to keep all their information confidential, but that we cannot guarantee this.
- remind participants of the group’s responsibility to guard the confidentiality of the discussion.
- they do not have to participate if they do not want to, and they can change their mind about participating at any time.
- they are being compensated for their participation (review compensation)

The moderator also explains the purpose of the tape recorder: to enable the researchers to capture ideas that emerge from the discussion without identifying the speakers by name.

Re-obtain permission to record. Immediately once this is obtained. Turn on the recorder.

\*All girls under 18 should have parental consent forms on file. Anyone age 18 or older will provide their consent orally.

#### **--1.0 Introduction---Making name tags (5 min) [3:10 Kenika]**

- Paper for name tags
- markers

No identifying information (including names) will be included in the data collected, or in the educational material, so they should feel free to say anything they want, and to ask any question they want. It is their honesty, good advice, and recommendations that will enable us to make sure we produce a good materials that are helpful to younger girls.

Girls will not be putting their names on anything during data collection. However, they should include the nickname they have chosen to use throughout data collection. Use this time to go around and come up with nicknames...choose something fun like: animal names, colors, cities, countries, famous people, something in nature (air, water, etc.). Let the girls come up with their own nicknames. They should make name tags with their nicknames on them. Remind the girls that during our group meetings they will be referring to each other by their nick names only.

#### **--1.0 Introduction: Lay ground rules (5 min) [3:15 Kenika]**

- Big sheet of poster board paper
- Marker

Brainstorm together, using a big sheet of poster board or a dry erase board, some ground rules for data collection. If they don’t think of the below things, make sure to suggest them...

- \*Respect other people's opinions and comments
- \*Keep what is shared within the group confidential
- \*Need to understand what you are saying so talk one at a time.

### **--1.1 Introduction: Ice-breaker activity (10 min) [3:20 Kenika]**

- Ball
- Hula Hoop (as backup)

Tell the participants that we will throw a ball and when they get the ball they should answer the question. They should hold onto the string so that ultimately they make a web. Do two rounds...

- 1) What do you want to do when they grow up
- 2) what is your dream job?

BE SURE TO START TAKING NOTES ON RESPONSES HERE

After making the web, point out to the group that like this web we'll be creating something unique and special in our time together and that everyone in the group is critical to it's creation.

\*if the group needs more warming up OR TO MOVE GET MOVING AT ANY POINT DURING DATA COLLECTION we could also do the hula hoop activity.

### **--1.2 Describing puberty (20 min) [3:30 Kenika]**

- Big piece of paper with question prompts written on it
- Big pieces of papers (enough for multiple groups)
- Markers and drawing utensils (enough for multiple groups)
- Big piece of paper for group brainstorming
- Writing utensil for group brainstorming
- Puberty definition worksheet
- Writing utensils for each girl

With this activity we are asking the participants to list (brainstorm) the physical/emotional changes that occur during adolescence

-Drawing Activity: *Provide big pieces of paper and markers, pens and pencils*

Let's think back to what girls are like before they have developed, like when they were six or eight years old—like when they are in the 1<sup>st</sup> or 2<sup>nd</sup> grade. In groups, describe this girl. THINK GENERALLY HOW AN 6-8 YEAR OLD GIRL IS LIKE AND CREATE A CHARACTER BASED ON HER.

- What does she look like?
- What does she wear?
- What is her name?
- What does she like to do?
- What sorts of things does she care about?
- What sorts of things are on her mind?
- How does she spend most of her time?
- Who is she closest to? What are things that make her laugh?

- What are things that make her happy?
- What are things that make her upset or sad?

*Have the list of questions listed up so that they are visible to participants as they doing the activity. Set a timer so that they don't take too long (5 min)*

Now, we are going to pretend that the girl you just created is now developed and is closer to your age, so between the age of 15-19 and in high school. On a separate sheet of paper draw and describe what the child you just drew looks like now as a teenager. What does she look like? What does she wear? What does she like to do? What sorts of things does she care about? What sorts of things are on her mind? How does she spend most of her time? Who is she closest to? What are things that make her laugh? What are things that make her happy? What are things that make her upset or sad? *Have the list of questions listed up so that they are visible to participants as they doing the activity. Set timer to 5 min.*

-Brainstorm and Listing Activity:

Now we want to understand the changes that the girls you've come up with (and most girls in Baltimore) go through as they develop from the child you just drew to a teenager like you. Let's make a list of what these changes are? If they have trouble thinking of things probe by asking about physical changes? Emotional changes? Relationship changes? Expectations changes? Etc? Pull from things they drew in the previous activity. GET THEM DISCUSSING.

-Brainstorm activity: *Provide a worksheet that includes these three questions. REMIND THEM THAT THIS ISN'T A TEST...WE WANT TO KNOW HOW THEY THINK OF IT*

If the word puberty does not come up in the last activity introduce it and give each girl a separate piece of paper and ask her to write down answers to the following three question...

1. What do you think of when you think of puberty?
2. If someone tells you that a girl is going through puberty, what does that mean to you?
3. If you had to come up with a definition of the word puberty that would be useful to young girls getting ready to go through it, what would it be?

Aftering writing down their responses take a few minutes to discuss their answers. Be sure to ask them...

- if they use the word puberty?
- if they hear other people using it?
- about other words or phrases used instead of puberty.

### **--1.3 Menstrual terms (10 min) [3:50 Kenika]**

- **Post-it paper with menstruation circle**
- **Writing utensil**

Point out that menstruation was something that came up as being part of puberty from the last activity, but that you heard a lot of different ways of referring to it.

Draw a big circle and in the middle of it write the word menstruation. Ask the girls to list anything that comes to mind when they hear the word menstruation. Write down anything they say and connect it to the circle. Probe to try to get them to move beyond the obvious and superficial.

[Probe to try to get them to move beyond the obvious and superficial.]

[Probe to find out local words/slang (girls' code words) for menstruation]

[Probe to find out if what one girl says is the same (or different) for other girls]

[Probe to get them to go deeper and explain what they are thinking]

#### **--1.4 Submit anonymous puberty questions (10 min) [4:00 Kenika]**

- **Cut up blank pieces of paper**
- **Writing utensils for each girl**

Hand out blank pieces of paper to each girl so they can each write their anonymous "puberty questions" *about the body changes of growing up and related topics*. These questions should not have any identifying information on them, including their codenames. Emphasize that they should feel free to ask anything they are curious about and that we will answer their questions in future sessions. Collect the papers to answer at future sessions. NO CODE NAMES ARE ADDED TO THESE

*NOTE:* the anonymously written puberty questions that are collected in Week 1 are key data for knowing the gaps in girls' information. They are also our way of "giving back" to the girls – the team will spend the final 15 minutes of each of the next two one-hour sessions answering the girls' questions. If girls have additional questions in weeks 2 and 3 (verbal or written), the team should be sure to write them down and capture them for the data]

#### **--1.5 Questionnaire (20 min) [Kenika]**

- **Copies of the questionnaire**
- **Writing utensils for each girl**

Pass out the questionnaires and ask girls to fill them out.

\*again remind them that just because it's the first day are we doing this stuff and from here on out we will mostly be doing activities and just discussing.

Fun activity ideas

-vagina explanation

-packets of menstrual hygiene products

\*need to check knowledge questionnaire

#### **--1.6 Closing [4:20 Kenika and Ann]**

- **Incentives**
- **Incentive tracker**
- **Food**
- **Cups and plates and paper towels**
- **Materials for menstrual stories in case there is time**

-Summarize what has been said---at the end of the discussion, the moderator may ask the participants to summarize what they have said, adding any comments they want to include. Or the moderator might supply the summary, beginning with "Since we are almost out of time, I will try to summarize what you have told me." The summary is a chance to clarify issues and give the group a sense of work accomplished. Participants are able to restate points and correct any misunderstanding the moderator may have.

-Ask them if they have anything they'd like to discuss? Any questions?

-Provide incentives and food

-Remind them of the next meeting

-Thank them for their time

-Turn tape recorder off

-ASK THEM TO HELP GET THE ROOM BACK IN ORDER

#### **Be sure to....**

- provide incentives
- Generate the information sheet that includes names, nicknames, and phone numbers
- note down the girls information on information sheet for this group and include whether the name of the person who signed their consent form
- provide food
- clean up the room
- gather all pieces of written information girls have done throughout this session
- complete note taking tasks
  - -note taker complete and clean up your notes
  - -moderator write extensive notes
  - -complete the debriefing form
- bring all data back, put it onto the external hard drives and then place the hard copies into the file cabinet
- return all materials to their place

## **Week 2:**

- Activity 2.0: Check in (10 min)
- Activity 2.1: Revisit a few things from last session that were left undone (10 min)
- Activity 2.2: Menstrual stories (15 min)
- Activity 2.3: Role of family, schools and peers in shaping puberty experiences (15 min)
- Activity 2.4: Menstrual myths and beliefs (15 min)
- Activity 2.5: Puberty knowledge true/false activity (15 min)
- Activity 2.6: Respond to questions from session 1 (15 min)
- Activity 2.7: Closing

### **--2.0 Check in (10 min)**

- **Information sheet for attendance**
- **2 copies of this document**
- **Note taking materials**
- **Group rules--tape to hang them**
- **Name tags**
- **Recording devices (x2)**

Pass out name tags. Use this as a way to take attendance.

Check in and ask how everyone is doing

### **2.1: Revisit a few things from last session that were left undone (10 min)**

Tell them we are going to revisit one of the activities we did last week...Remind them of the girls/characters they created last week (put up the poster board papers if necessary) and ask the girls....

- What are the changes that took place “off the paper” for their characters?
- Physical changes?
- Emotional changes?
- Changes in interests?
- Relationship changes? (relationships with parents, peers, sibling, romantic interests, etc.)

--GET THEM TALKING AND DISCUSSING WHAT HAPPENS AS GIRLS  
TRANSITION FROM A YOUNG GIRL AND YOUNG WOMAN

### **--2.2 Menstrual stories (15 min)**

- **Menstrual story worksheet**
- **Writing utensils for each girl**

Written menstrual stories (20 min)

Hand out another piece of paper to the girls, and ask to write a one-page anonymous “menstrual story” that includes their memories about their first menstrual period. Please

write on the blackboard for the girls to copy the four things they are to include in the one page story (please emphasize to ONLY write one page):

- 1)include how they felt at the moment of their first menstrual period;
- 2)include who they told (or did not tell if they told no one),
- 3)include how they managed their first menstrual period; and
- 4)include their advice for younger girls.

Please remind them to put their nicknames on the paper.

*\*compare this activity to writing in a journal and point out that they should not simply answer these question, but just make sure to include them*

*\*tell girls to give as much detail as they can*

*\*reassure the girls that this is the most writing intensive activity we will ask them to do.*

*\*tell the girls they should write in a way that would explain to other girls who have not yet got their period what they can expect*

AS GIRLS COMPLETE THEIRS HAND BACK THE QUESTIONNAIRES AND GIVE THEM AN OPPORTUNITY TO FINISH THE THINGS THEY MISSED.

## **--2.2 Role of family, schools and peers in shaping puberty experiences (15 min)**

Discussion: Ask girls to think about a young girl in Baltimore who just started menstruating (they should have just done this if they just did the menstrual stories activity)....

Ask them to discuss how people in this girl's life react to this transformation, including how she herself reacts.

What about when her body starts developing (breast, hips, etc.)

Discussion: How does going through puberty influence a girl's relationship with other people? (her mother, father, siblings, peers, friends, teachers)? BEFORE ASKING ABOUT PUBERTY BE SURE TO ASK THE IF THIS IS A WORD THEY USE.

## **--2.3 Menstrual myths and beliefs (15 min)**

- **Blank paper**

Brainstorm: Hand out a piece of paper to each girl, and have each girl write down individually the **things they have been told about menstruation. Remind them that they can include examples of things they learned that they feel are true as well as myths or beliefs they heard.** Remind them that this can just be a list rather than a narrative.

Ask them to include their nicknames on the piece of paper and after a few minutes, collect the papers (so they cannot alter their responses). Discuss their thoughts in a large group and write notes on the board.



Discussion:

What do you think girls in Baltimore usually learn (are told) about puberty?

What advice do they get?

When do they learn it?

From whom?

[probe: does social media play a role]

Discussion:

When girls go through puberty in Baltimore, where do they get information about it?

Follow up questions:

How does a girl come to know and understand what is happening to her during puberty?

Where does she learn about it?

Who do girls in Baltimore turn to for information and support during puberty? (probe by offering participants to consider the role of mothers, fathers, sisters, brothers, peers, teachers, etc.)

[Probe to find out what sorts of information they've heard about menstruation...like what were they told about "why they menstruate" or "what meaning menstruation has" or "what happens when you swim while menstruating." These are examples of questions that could get them talking]

#### **--2.4 Puberty knowledge true/false activity (10 min)**

Hand out another piece of paper to each girl and conduct a true/false "puberty activity" to ascertain girls' level of knowledge. Have the girls write the numbers of questions on their paper, and then instruct them to write "true" or "false" to each question you read aloud. Please assure the girls that it is not a real "test" but it is just something to help us learn what they do or do not know yet.

Have girl include their nicknames and pick up their writing utensils. Provide the group with the correct answers and allow them to discuss what they got write and got wrong and what questions they have. **USE THIS ACTIVITY TO GENERATE CONVERSATIONS.** Collect their papers.

#### **--2.5 Respond to questions (15 min)**

- **Supporting materials for responding to the questions**

Answer some of the questions they asked in their anonymous puberty questions submitted in Week 1. If they ask additional questions out loud, please take notes. AS IS TRUE WITH THE REST OF DATA COLLECTION, MAKE SURE TO TAKE NOTES ON THE ADDITIONAL QUESTION THAT COME UP DURING THIS PART AS WELL AS THE INTERACTION AND EXPRESSIONS OF GIRLS DURING.

## **--2.6 Closing**

- **IDI parental consent forms**
- **Incentives**
- **Incentive tracker**
- **Food**
- **Cups and plates and paper towels**
- **Calendar for scheduling IDIs**

-Summarize topics that arose

-Tell them that we will be doing individual interviews for an additional \$10 and pass out consent forms to those who are interested. Ask about logistics about setting these up.

-Ask them if they have anything they'd like to discuss? Any questions?

-Provide incentives and food

-Remind them of the next meeting

-Thank them for their time

-Turn tape recorder off

\*we need to be sure that we start the individual interviews much earlier with this group. Ideally they would end around the time as the group meetings.

### **Week 3:**

- Activity 3.0: Check in (5 min)
- Activity 3.1: Puberty gender and expectations (15 min)
- Activity 3.2: Psychosocial and information needs during puberty (15 min)
- Activity 3.3: Puberty and sexual development (15 min)
- Activity 3.4: Respond to questions (15 min)
- Activity 3.5: Closing

#### **--3.0 Check in (5 min)**

- **Information sheet for attendance**
- **2 copies of this document**
- **Note taking materials**
- **Group rules--tape to hang them**
- **Name tags**
- **Recording devices (x2)**
- **Snacks**

Name tags, attendance, touch base with each other, get started.

#### **--3.1 Puberty gender and expectations (15 min)**

- **Blank paper**
- **Pencils**
- **Example paper**
- **Yarn ball for talking**

Brainstorm: Provide each girl with a piece of paper and have her fold it into 6 squares (fold into threes and then into half). Have her write the following in each cell...

Young girl	Young boy
Teenage girl	Teenage boy
Adult woman	Adult Man

Ask the girls to think about and jot down their thoughts on the piece of paper (about 3-5 things in each cell). Ask them to include their nicknames on the piece of paper.

Ask them to think about...in their communities.....

-What are the expectations for a girl, a teenager, a woman?

For example... How do people expect men to act/be like? Women? Etc.?

After a few minutes to write, collect the papers and/or writing utensils, and after they are collected (so they cannot alter their responses).

Now, have the girls discuss their thoughts on this topic in a large group. Jot down what they are saying on the postboard. ....

-What are some of the expectations you each listed for each group?

-Why do you think people have these expectations?

-How does having these expectations affect the young girl, adult man, etc.? For example, how does it make a girl feel when she is expected to be nice and clean?

-What do you think about these expectations?

-Why do you think there are differences in each group?

-How do you feel about their being different expectations for males and for females? And for people of different ages?

-What do girls know about boys and vice versa (specifically about their puberty process)?

Discussion: Ask them about how they think expectations for each box differs by race and SES. [remind them to respect others opinions]

### --3.2 Psychosocial and information needs during puberty (15 min)

- Piece of paper
- Writing utensil
- Ball

-Listing activity: As a group we are going to make a list of things that you think girls are concerned about and/or particularly curious about as they go through puberty. Ask:

--What kinds of things are girls curious about as they are developing?

--What are some of the things girls are concerned about as they go through puberty?

--What kinds of things do girls need help with at this time?

-Discussion: **Identify needs....**Let's discuss what you think the young girl you drew a few weeks ago needs as she develops into a teenager year old. [ask them to think back to the girl they created]

Give each girl a piece of paper to write on (include nickname)....Ask them to **list out what you think girls need to as they go through puberty** (think broadly what information, what material things, what experiences, what types of relationships, what types of conversations, do you think girls need as they develop, etc.

-Discussion: **Resources already available...**Have girls discuss the following questions:

- What resources are already available to girls OF THIS AGE in Baltimore to address these needs?
- What types of education and information do girls already get? From where? What resources did they like/not like?
- What about it do they like/not like about the supports that are already available to girls?

-Discussion: Have girls discuss the following questions:

- In your opinion do girls in Baltimore get the things they need during puberty?
- Follow up questions:
- Do girls have the information and support they need as they go through puberty? Why or why not?
  - What sorts of things do you think girls in Baltimore need as they go through puberty?
  - Do girls talk to their doctors about these issues? What kind of doctors? When?

### --3.3. Puberty and sexual development (15 min)

- Yarn ball for talking (if necessary)

*Remind them before starting the discussion....*

- *that we are not asking them to share their personal information if they don't want to, but rather we are asking about girls' experiences in Baltimore more broadly.*
- *that we need to be cognizant about being compassionate and respectful about the fact that everybody has different experiences.*

-Discussion: Ask girls to **think** back to the first time they had feelings for someone else. And also have them think back to the first time they wanted to be physical with someone (emphasize that this could be anything including holding hands, hugging, etc.)?

-I'm curious....

- When do girls first start having sexual/romantic feelings for other people?
- When do girls first know who their are attracted to (boys or girls)? How do they know?
- What do girls do when they like someone?

-In what ways do you think it's okay for girls to express their romantic interest in someone?

-In what ways do you think it's okay for girls to express their sexuality? Is it okay for girls to look or act sexy?

-When do you think it's okay for girls to start engaging in romantic/sexual behavior? (what ages do you think sexual/romantic interests becomes an important topic for girls in Baltimore?)

-How do you think the development of a girls' sexual life/sexual desires relate to her pubertal development?

Probe:

-How do you see these fitting together and/or being separate?

-Is there any overlap between the two? If so, what it is?

-Group discussion: In your opinion....

-what sort of things do girls learn about their sex in Baltimore?

Probe:

-From whom? When?

-What sorts of things do you think girls would like to learn about this topic?

Probe:

-At what age should they learn it. How should they learn it? Who from?

### **--3.4 Respond to questions (15 min)-Start this once the food comes (around 4:30)**

- **Support material for responding to this week's questions**

Answer some of the questions they asked in their anonymous puberty questions submitted in Week 1. If they ask additional questions out loud, please take notes.

-Males at puberty (why do boys want to have sex)

-Gender norms (why do boys want to have sex all the time)

-sexual activity (how early is too early--STIs and Pregnancy)

### **--3.5. Closing (We need to start wrapping up by 4:50pm because I have to schedule interviews)**

- **Incentives**
- **Incentive tracker**
- **Food**
- **Cups and plates and paper towels**
- **Calendar for scheduling IDIs**

-Summarize what you think you heard today and ask them to correct you if you've got something wrong (Or **ask them to summarize what was talked about**)

-Ask them if they have anything they'd like to discuss? Any additional questions?

-Provide incentives and food

-Thank them for their time

-schedule IDIs

#### **Week 4:**

- Activity 4.0: Check in (5 min)
- Activity 4.1: Making schools more girl friendly (20 min)
- Activity 4.2: Puberty educational material design (20 min)
- Activity 4.3: Feedback on educational tools (5 min)
- Activity 4.4: Respond to final set of questions and address any lingering issues (20 min)
- Activity 4.5: Final Closing

#### **--4.0 Check in (5 min)**

- **Recording devices (x2)**
- **Note taking forms**
- **Pencil or pen for writing**
- **Information sheet**
- **2 copies of this document**

Name tags, attendance, touch base with each other, get started.

#### **--4.1 Making schools more girl friendly (20 min)**

- **Pieces of blank paper**
- **Writing utensils**

Divide the girls into small groups and hand out more paper. Tell the girls to imagine you are giving them a huge sum of money, around “1 million dollars” and ask them to brainstorm in their group about how to make schools more girl-friendly for girls who are going through puberty and managing their menstruation in school (e.g. improved water and sanitation facilities).

*[In Ghana, the team first asked the larger group to talk about how the school environment does or does not help them manage their menstruation, including the facilities and what they may learn or not learn in class, and who taught them, and if they learned prior to getting their first periods, and so on – warming the girls up on the topic before having them do the group work]*

Ask them to write one list together of ideas. Give them 10 minutes to work together, then have the groups report back to their list ideas to the large group and collect their lists (making sure they do not change anything on their lists as the larger group discusses – be sure to emphasize we want their original answers as they are very important to us)

#### **--4.2 Puberty educational material design (20 min)**

- **Pieces of posterboard paper**
- **markers**

We want to get their recommendations for puberty education for prepubertal (8-10) and pubertal (10-14) girls (curriculum design). Divide girls into small groups and hand out a piece of paper to each group. Tell the girls that we want to make a recommendation to the

Department of Health about what girls should be learning in school about puberty and body changes. Ask them to write down their ideas for what should be taught to girls before and during they transition through puberty in Baltimore.

**--4.3. Feedback on educational tools (20 min)**

- **Puberty educational tools from MICA**

Discussion: Tell girls about what we are making and show them the mark ups. Ask them what they think? Do they think girls will like it? Would it be helpful to girls? What should be changed?

**--4.4 Respond to final set of questions and address any lingering issues (20 min)** [be sure to take notes about the conversations that happen during this discussion]

- **Supporting materials for answering final questions**

**--4.5 Closing**

- **Incentives**
- **Incentive checklist**
- **Food**
- **Cups, Plates, Paper towels**
- **Computer for scheduling IDIs**

-Summarize and review what we learned asking for their feedback

-Ask them if they have anything they'd like to discuss? Any questions?

-Provide regular incentives and also do the drawing for the \$50 prize

-give them and go through last day package

-Thank them for their time

-make sure to have all IDI's set up by this time.



## **APPENDIX J: In-depth Interview Guide**

### **The Growing Girls Project Girls Semi-Structured In-Depth Interview Guide**

**Step 1:** Introduce yourself to the participant. Describe the purpose of the interview using the information sheet, why the participant was selected for the interview, and how information will be used. Verify that the parental consent document for this participant has been returned.

**Step 2:** Ask the participant if recording the interview is okay and turn on the recording if participant agrees. Steps 1-2 should take no more than 5 minutes.

**Step 3:** Conduct the interview.

**Step 4:** Remember to take notes during and after the interview. After the interview is complete, fill out the final page of this interview guide.

Start time: \_\_ \_\_: \_\_ \_\_

Interviewer Name \_\_\_\_\_

Interview date: \_\_ \_\_/ \_\_ \_\_/ \_\_ \_\_  
DD/MM/YY

**Sections 1: Contextual-Background information: (5 min)**

*Objectives:* The objective of this section is to gather information on the specific social context of where the research participant grew up and her demographic-background information.

- Nickname used in study?
- Born? Grew up?
- Current residence?

**Block 2: Transition to Womanhood (10 min)**

*Objectives:* The objectives of this section are: 1) to elicit information on the transitions from being girls to becoming women; 2) to list the social symbols (milestones) of womanhood as perceived by the research participant; 3) to describe the meanings attached to those symbols of womanhood; 4) to identify the role of menarche within these symbols and in this specific social context. Restrictions on behavior?

- Most important health and body topics?
- What are the things that mark the transition from young girl to young woman?
- Difference in how young woman and young girl are treated? By adults? By boys? By girlfriends?

**Block 3: Cultural views of Puberty and Menstruation (10 min)**

*Objectives:* The objectives of this section are to 1) elicit information on the meanings and cultural understandings about puberty and menstruation amongst members of the community; 2) to list traditions, taboos or behavioral restrictions/expectations for pubertal and menstruating girls and women; and 3) to identify inter-generational differences in menstrual traditions

In local community, what are some of the cultural understandings about menstruation? Beliefs? Traditions?

How does puberty/menstruation change a young girl's life? What changes are made?

Difference in ideas about menstruation between younger and older people?

Differences by race, sex, sexual orientation?

**Block 4: Personal Menstrual History and Perspectives'**

*Objectives: The objectives of this section are 1) to elicit information from young women about the significance of puberty and menstruation in their own lives; 2) to identify public versus private spaces of menstruation in young women's lives; 3) to describe young women's understanding, knowledge, and feelings about puberty and the onset of menstruation; 4) to elicit information about the intersection of menstruation and schooling in young women's lives 5) and describe the sources of information and support girls had and/or wanted as well as what they would recommend for younger girls.*

Does your family treat you as a young girl or a young woman?

How were you different before and after puberty?

What aspects of puberty were challenging and/or beneficial?

Have you started menstruating? Age at first menstruation?

Who were you living with when first period came?

Did you tell them? What was their reaction?

What was significant to you about this experience?

Did you participate in any traditions or rituals when you started menstruating?

What is your current experience with menstruation? In daily activities?

How do you and other girls manage your menstruation?

Were you given instructions? How did you feel?

Does the school environment influence how you manage menstruation?

Do you or other woman ever stay home from school when menstruating?

Have you ever been harassed about menstruation or puberty?

How did you get information about puberty? Who did you talk to? What materials did you use?

Do you think girls in your community get adequate support and information about puberty?

What's missing?

What are some things you think girls absolutely need to know before starting puberty?

What is the best way for girls to receive information? From whom? When?

What is the ideal puberty experience for a girl?

Is there anything else you'd like to talk about? Or tell me?

**End Time:** \_\_\_\_:\_\_\_\_

**Remember: After the participant has left and soon after the interview, the interviewer should turn off the recording device, take copious notes, and be sure to fill out the final page of the guide.**

**Describe the participant (leaving out any identifying information):**

**Describe the setting:**

**Interviewer thoughts/reflections:**

## **APPENDIX K: Post-Focus Group Discussion meeting template**

### **GA Debriefing Form**

**Date ( DD/MM/YY):**

**Group Name/info:**                      **What number participatory group is this, for this particular group:**

**Moderator:**

**Notetaker:**

(1) What are the main themes that emerged in this focus group?

(2) Did any information contradict what you thought?

(3) What did participants say that was unclear or confusing to you?

(4) What did you observe that would not be evident from reading a transcript of the discussion (e.g., group dynamic, individual behaviours, etc.)?

(5) What problems did you encounter (e.g., logistical, behaviors of individuals, questions that were confusing, etc.)?

(6) What things need to be considered or follow up on for next time (next groups and/or next meetings)?

(7) What about the study needs to be re-assessed?

(8) Does the note-taker have any suggestions for the moderator and vice versa?

(9) What are the important messages to relay to Marni and Anne?

## APPENDIX L: In-depth Interview codebook

\* Elaboration of codes and examples of how to use codes were not included here due to spacing constraints

IDI codebook				
Family #	Family Name	Code #	Code	Description of Code
1	IDI	1	health challenges	Important health topics & challenges of girls growing up today
		2	markers of transition	Markers of the transition from young girl to young woman
		3	differences in treatment	Differences in how young girls are treated compared to women
		4	what changes_girls perspective	How girls describe their own lives changing as they go through puberty.
		5	benefits & challenges of puberty/menstruation	Aspects of puberty and menarche that were beneficial and/or challenging
2	Physical Development	6	body changes	Physical changes of puberty (other than menstruation) that are mentioned specifically (butts, boobs, hair growth, height, acne, oily hair, smelly body, weight gain, etc.) or referred to vaguely such as "puberty" or body changes
3	Menstruation	7	menarche	Experiences of first menstruation
		8	meaning	meaning of menstruation
		9	communication	Conversations girls have (or don't have) about discussing menstruation with other people
		10	menstrual management_symptoms	Includes problems/symptoms related to periods (moodiness, cramps, irritability, tiredness, etc.) and how they are dealt with.
		11	menstrual management blood	How girls take care of the blood when menstruating.
		12	special treatment	Getting special treatment (including harassment and celebrations/gifts) due to menstruation/menarche. Special treatment is coming from others.
		13	menstruation	Anything related to menstruation that is not adequately captured in the other codes
4	Sexual Development	14	sexuality	Sexual and romantic interest or curiosity
		15	consequences	Consequences of sex (e.g.pregnancies and sti's and broken hearts)
		16	unwanted attention	Girls receiving unwanted attention about how they look from others
5	Support & Information	17	what was received	What participants were taught about puberty/menstruation
		18	assessment of what was learned	Participants opinion about what they (and other girls in Baltimore) learned about puberty/menstruation

		19	recommendations	Participants recommendations on what should be taught to younger girls and recommendations on how things should be taught (both by whom, where and using what medium)
6	Sources	20	role of mother	Mothers role in providing information and support (whether she actually was or whether it is just that girls wish she would be)
		21	role other adults (not mother)	People (other than their mother or romantic relationships or peers) that provided information and support (or not) to them at some point through their development
		22	role of siblings & cousins	The role siblings and cousins play in providing support and information to girls during puberty/menstruation (regardless of age)
		23	role of peers	Peers (other than romantic relationships, siblings and cousins) that provided information and support (or not) to them at some point through their development
		24	learn on own	Learning how to get along on your own. Figure things out on your own
		25	participant	Participant is providing or plans to provide puberty/sex support and/or information to other people
		26	trusted person	Wanting/needing a trusted person who they can talk to
		27	non-human sources	Sources of learning about puberty/menstruation such as books, tv, videos, games, etc.
7	In vivo	28	hygiene	Conditions or practices related to keeping oneself "clean" (or lack thereof)
		29	too grown	in-vivo term captures text where "too grown" is mentioned
		30	trust	Captures text related to having trust or lack of trust in others. Includes loss of naivety
		31	emotional (not due to menstruation)	States of intense emotions or emotional ups and downs
		32	appearance	Concern (or lack of concern) for or interest in outward appearance especially as it relates to clothes (including shoes), hair, and nails
		33	isolation	wanting to be alone and/or not having many friends
		34	finding yourself	Participants talk about wanting to know/figure out who they are. Being or wanting to be their own person. Being or wanting to be confident in who they are.
		35	importance of school-work	Importance of school work and planning for/worrying about wellbeing in the future.
8	Growing Up	36	acceptance	Refers to wanting to be accepted or liked, whether by self or by others. Wanting to be normal
		37	maturing	Getting older, growing up, and becoming more mature



		38	limitations	Limiting or avoiding behavior (whether self imposed or required by others)
		39	responsibilities	Taking on responsibilities (whether self imposed or required by others)
		40	independence	getting or wanting more independence--freedom to do what they want
		41	changing relationships	Changing relationship dynamics at puberty
9	Schools	42	school environment	The policies, procedures, services, and physical space (including bathrooms) at schools relate to how girls manage their menstruation at school.
		43	missing school	Missing school due to menstruation.
		44	puberty or sex ed	What schools do or should teach about puberty or sex
10	Gender	45	gender expression	How gender is experienced/expressed as girls go through puberty
		46	gender norms	Describes explicit gender norms that participants express
11	Differences in Groups	47	noticing variation	Girls noticing/pointing out that people have different experiences of puberty menstruation
		48	gender identity	Differences in experience of puberty/menstruation by gender identity
		49	SES	Differences in experience of puberty/menstruation by SES
		50	race	Differences in experience of puberty/menstruation by race or ethnicity
		51	sexual orientation	Differences in experience of puberty/menstruation by sexual orientation
		52	intergenerational	Differences in experience of puberty/menstruation by generation
12	Structural Codes	53	S_quote	Excellent quote
		54	S_waste	Data that doesn't add ANY value
		55	S_background	Background information
		56	S_growing girls project	Direct questions about, feedback or comments on the puberty educational material we are creating and/or how the project affected them.
		57	S_questions	Questions girls have throughout data collection

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# **CURRICULUM VITAE of ANN HERBERT, MPP**

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## **EDUCATION AND TRAINING**

B.A. Butler University  
Major: Comparative Religion; Minors: Business Administration and Spanish  
Honors: *Magna Cum Laude*, Highest Departmental Honors, Honors Program, Alpha Lambda Delta, Phi Eta Sigma, National Society of Collegiate Scholars (2006)

M.P.P. University of Chicago, Harris School of Public Policy; Graduate Program in Health Policy and Administration (GPHAP) (2012)

Ph.D. Candidate Johns Hopkins University, Bloomberg School of Public Health; Department of Population, Family and Reproductive Health (Present)

## **PROFESSIONAL EXPERIENCE**

**Director**, Growing Girls Project, Lerner Center, Johns Hopkins Bloomberg School of Public Health (2014-present)

- Developing educational material about puberty with an interdisciplinary team from Johns Hopkins, Columbia University, Maryland Institute College of Art (MICA), and the Baltimore Community
- Worked with Jennifer Cole Phillips, Director of MICA Graphic Design Master in Fine Arts Program and MICA student groups to design and develop prototypes for empirically-based pubertal education materials for Baltimore girls
- Co-designed and ran a qualitative research study on girls' puberty experiences with adolescent girls (age 15-18) in Baltimore City
- Led a systematic review of the literature on low-income girls' puberty experiences in the U.S.

## **HONORS AND AWARDS**

Departmental Honors & Awards: Cheryl Alexander Memorial Fund (2017)

Center for Qualitative Studies in Health and Medicine Dissertation Enhancement Award (2017)

Departmental Honors & Awards: Laurie Schwab Zabin Award (2015-2016)

Departmental Honors & Awards: Kann Trowbridge Award (2014)

Harris School of Public Policy Dean's Scholarship (2010-2012)

National Peace Corps Association Story Contest—2<sup>nd</sup> Place (2009)

## FELLOWSHIPS

Erikson Fellow-Global Health Center, University of Chicago (2011)

## GRANTS

SAPPI Ideas that Matter Grant—\$38,500 award to create and disseminate puberty educational tools to girls age 8-10 in Baltimore City (2016)

Booth School of Business Social New Venture Challenge—\$15,000 award (2012)

Katie Memorial Foundation Leadership Grant—\$5,000 award (2011)

## PUBLICATIONS

Mmari K, Mallalieu E, Van Lith, L, Smelyanskaya M, **Herbert A**, Leddy A, Dam K. (2015). What are the Social Ecological Factors that Influence Adolescent Condom Use in LMIC? Findings from a Systematic Literature Review. Submitted for publication.

**Herbert A**, Ramirez A, Grace L, North S, Askari M, West R, Sommer M. (2016). Puberty Experiences of Low Income Girls in the USA: A Systematic Review of Qualitative Literature. *Journal of Adolescent Health*. doi: 10.1016/j.jadohealth.2016.10.008.

Powell T.W., **Herbert A**, Ritchwood T, & Latkin C.A. (2016). “Let Me Help You Help Me:” HIV Prevention in Churches for Young Adult Black Men who have Sex with Men. *AIDS Education and Behavior*, 28(3), 202-215.

Kågesten A, Gibbs S, Blum R, Moreau C, **Herbert A**, et al. (2016). Understanding factors that shape gender attitudes in early adolescence: A mixed-methods systematic review. *PLOS ONE*. <http://dx.doi.org/10.1371/journal.pone.0157805>.

Conti R, Dusetzina S, **Herbert A**, Berndt E, et al. (2013). The Impact of Emerging Safety and Effectiveness Evidence on the Use of Physician-Administered Drugs: The Case of Bevacizumab for Breast Cancer. *Med Care*. 51:622-627.

## ACADEMIC TEACHING EXPERIENCE

Lead Instructor, Columbia University (2015-2016)

Course title: Conducting a Systematic Review (Informal special studies)

- Taught and mentored five master’s students at Columbia University through the process of writing a systematic review and co-publishing the results

Teaching Assistant, Johns Hopkins University (2015-Present)

Course title: Sociology of Health and Illness; Professor: Emily Agree, Ph.D.

- Guest lecturer for session on “Breathing for relaxation”
- Design and lead weekly discussion sessions
- Manage course material on course website (Blackboard)

- Grade assignments
- Assist in restructuring the syllabus

Teaching Assistant, Johns Hopkins Bloomberg School of Public Health (2015)

Course title: Couples and Reproductive Health Professor: Stan Becker, Ph.D.

- Generated lab content (Using STATA for methodological application of quantitative analyses of couples' health and behavior)
- Led weekly student analysis and discussion groups
- Managed course content on course website (Courseplus)
- Helped update and reorganize course syllabus

Teaching Assistant, Johns Hopkins Bloomberg School of Public Health (2014)

Course title: Demographic Estimation for Developing Countries (online); Professor: Maria Perez-Patron, Ph.D.

- Managed course content on course website (Courseplus)
- Assisted students with course content and assignments
- Assisted in *LiveTalk* presentations

Teaching Assistant, Johns Hopkins Bloomberg School of Public Health (2014)

Course title: Principles of Population Change (online); Professor: Nan Astone, Ph.D.

- Graded assignments
- Assisted students with course content and assignments
- Assisted in *LiveTalk* presentations
- Managed online course content (Courseplus)

Teaching Assistant, University of Chicago Harris School of Public Policy (2011)

Course title: Leadership in Chicago; Professor: Robert Michael, Ph.D.

- Managed course logistics and assisted in choosing guest speakers
- Scheduled speakers and organized their visit to Harris School

## **NON-ACADEMIC TEACHING EXPERIENCE**

Yoga Teacher, Radiant Body Kundalini Yoga (2015-Present)

Studios: Johns Hopkins Ralph S. O'Connor Recreation Center; Asana Roots, Yoga Works

- Create and lead weekly Kundalini yoga course
- Substitute teach classes as needed

Assistant Teacher, Power of Prana 100-hr Yoga Alliance Training (2017-Present)

- Assist in curriculum development
- Support the main instructor in administering the curriculum

English Instructor, Accelingua, Munich, Germany (2009-2010)

- Taught business-English to adults in a work-training program (all levels)
- Led private English lessons for children and adults (all levels)

## **RESEARCH ASSISTANCESHIPS**

Center for Communication Programs (2014)



- Conducted a systematic analysis of recent published literature on family planning in northern Nigeria
- Wrote the final report for United States Agency for International Development

The Well-Being of Adolescents in Vulnerable Environments Study (WAVE) (2013)

- Assisted with data collection from adolescents in East Baltimore
- Assisted with registering participants and administering incentives as part of Respondent Driven Sampling protocol

Program Monitoring and Accountability (PMA) 2020, The Bill and Melinda Gates Institute for Population and Reproductive Health, Johns Hopkins Bloomberg School of Public Health (2013)

- Oversaw and co-organized training of resident enumerators
- Built research and training capacity of in-country supervisors
- Created and programmed online surveys and quizzes using Open Data Kit
- Developed resident enumerator country-wide assessment

Vladimir Canudas-Romo, PhD, Johns Hopkins Bloomberg School of Public Health (2013)

- Performed literature review on alcohol, tobacco, driving and accidental injury, and life expectancy in the U.S. and wrote summary report of main research findings
- Consulted with and helped prepare project's lead researchers on above topics

## **ADDITIONAL WORK EXPERIENCE**

Consultant, The East Baltimore Collaborative (EBC) (2017-Present)

- Develop protocol for systematic review of environmental plans for East Baltimore
- Direct research efforts with the Neighborhood Design Center
- Conduct research and communicate results to EBC

Consultant, The Gender Roles, Equality and Transformations (GREAT) Project, Institute for Reproductive Health (IRH), Georgetown University (2017-Present)

- Developed analysis plan
- Coordinate the paper's various authors
- Draft, edit, and mold article to fit journal focus

Consultant, Early Literacy Kit Pilot Evaluation, Family League of Baltimore (2014-2015)

- Recorded survey data and conducted analysis
- Presented findings at Early Literacy Coalition meeting

Rural Health Extension Agent, Peace Corps, Morocco (2007-2009)

- Created 13 health videos in local language, which Peace Corps duplicated and distributed country-wide (The Video Health Education Project)
- Founded a bakery with local women's association
- Designed local waste management system; introduced proper collection and disposal

Program Specialist, Girls Inc. of Indianapolis (2006)

- Developed curriculum based on Girl's Inc.'s national outcomes for girls age 7-15
- Instructed girls on topics such as female sexual health, personal finance, cultural understanding, and science
- Oversaw activity booths at community events

- Developed organizational and storage system for teaching resources and trained staff on implementation and maintenance

Assistant Manager of Mitchell City Pool (2003-2005 & 2008)

- Supervised daily activities such as customer service, sales, emergency care, use of chemicals, opening, and closing processes
- Supervised employees
- Oversaw community swim lesson program and taught group and private swim lessons

## **PRESENTATIONS AND POSTERS**

Population Association of America (PAA), Poster, Christian-Muslim Disparity in Contraceptive Use in Nigeria (2014)

PAA; Poster, Impact of Teenage Childbirth on Schooling (2014)

## **PROFESSIONAL MEMBERSHIPS**

Student Member, American Public Health Association (APHA) (2016-2017)

Student Member, Population Association of America (PAA) (2013-2015)

Yoga Alliance Registered Yoga Teacher (2015-Present)

## **ACADEMIC ADMINISTRATIVE ACTIVITIES**

Admissions Committee, Johns Hopkins Bloomberg School of Public Health, Department of Family Planning and Reproductive Health (2015-2017)

Graduate Program in Health Policy and Administration (GPHAP) Student Representative (2011-2012)

## **CERTIFICATES**

Kundalini Yoga Instructor; Radiant Body Yoga Teacher Training; India; (March 2015)

## **SUPPLEMENTAL INFORMATION**

**Programs:** STATA, ATLAS.ti, MPLUS, UCINET, ODK, MS Office, Google Analytics

**Languages:** Advanced Moroccan Berber, Intermediate German & Spanish

**International Work and Study Experience:** India (March 2015), Ghana (July-Aug 2013), Nigeria (Sept 2011), Germany (2009-2010), Morocco (2007-2009), Ecuador (Jan-May 2005), Nicaragua (April 2004)

**Volunteer Activities:** Financial coach with Baltimore Cash Campaign (2014-present); Sexuality education instructor at Friendship Academy of Science and Technology through the Community Adolescent Sexual Education (CASE) program (2013)