



Review article

Puberty Experiences of Low-Income Girls in the United States: A Systematic Review of Qualitative Literature From 2000 to 2014



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 A B S T R A C T

Purpose: Puberty is a critical period of development that lays the foundation for future sexual and reproductive health. It is essential to learn about the puberty experiences of low-income girls in the United States given their increased vulnerability to negative sexual and reproductive health 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 United States. Reviewers screened titles, abstracts, and the full texts of articles. Using standardized templates, reviewers assessed the methodologic quality and extracted data. Data were synthesized using thematic analysis. Confidence in each finding was assessed using Confidence in the Evidence from Reviews of Qualitative research.

Results: Twenty qualitative articles were included. They described the experiences of mostly African-American, Caucasian, and Hispanic girls living primarily in urban areas of Northeastern United States. 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.

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

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IMPLICATIONS AND CONTRIBUTION

This systematic review describes the current puberty experiences of low-income girls in the United States, highlighting potential racial disparities in puberty education, identifying gaps in the literature, and informing future puberty education interventions aimed at this population.

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) [1–4]. Recognizing the importance of healthy early-adolescent

transitions, puberty education was recently added to the global health agenda in low-income countries [5–7]. Despite a strong focus on adolescent sexual health outcomes (e.g., sexually transmitted infections and teen pregnancy), clinicians and public health practitioners in the United States have not yet capitalized on puberty as a window of opportunity to improve adolescent SRH [5]. Much remains unknown about the foundational puberty experiences and puberty education of children raised in the United States today [1].

Conflicts of Interest: There are no conflicts of interest for any of the authors.

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Starting at preadolescence, puberty involves an intertwined process of physical, psychological, and social development that is rooted in an underlying “cascade of neuroendocrine changes” [3,8–10]. 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 [11–18].

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 [10,19–21]. And, a girl’s perception of her developing body may influence her feelings about herself, shaping her sexual agency and sexual decision-making [22–26].

Much of what is known about the puberty experiences of U.S. adolescent girls is derived from literature published in the 1980s and 1990s that focused on experiences of menarche and menstruation among Caucasian females of mostly middle-to-high income families [8,27,28]. 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” [25,29–32]. 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 [25,31,33,34]. Adequate preparation for menarche was also shown to alleviate some of the negative effects of early pubertal timing [31,33,35]. 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 [31,35–38].

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 United States during the past 25 years, with African-American girls experiencing the steepest decline [39,40]. In a sample of 17,077 girls aged 3–12 years, collected during pediatric “well-child” visits across the United States, 48.3% of African-American girls and 14.7% of Caucasian girls showed signs of physical development by age 8 years [41]. This trend of early-onset pubertal development may mean that increasing numbers of girls, especially African-Americans, are not receiving adequately timed puberty education—leaving them uninformed and ill prepared for this transition.

Given the significant disparities among socioeconomic groups in the United States, low-income girls are likely to lack adequate resources for puberty education [1]. Although puberty experiences of low-income girls have largely been ignored in the literature, a 2013 study looked at socioeconomic differences (lower income vs. higher income) in 15- to 19-year-olds regarding their knowledge about menstruation, feelings of preparation for menarche, and menstrual attitudes [42]. 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 United States, 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 United States.

Methods

This systematic review is reported following the Enhancing Transparency in Reporting the Synthesis of Qualitative Research statement [43]. 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 [44]. To ensure consistency, all seven members of the research team were trained before each step.

Search strategy

Electronic databases, including PubMed, ERIC, PsycInfo, Scopus, and EMBASE, were systematically searched from October 16 to 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 Web sites 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, U.S. 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 are available on request.

Quality assessment

Two independent reviewers assessed the quality of articles using a quality assessment form adapted from the Critical Appraisal Skills Programme checklist for qualitative studies (Appendix C) [45]. 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.

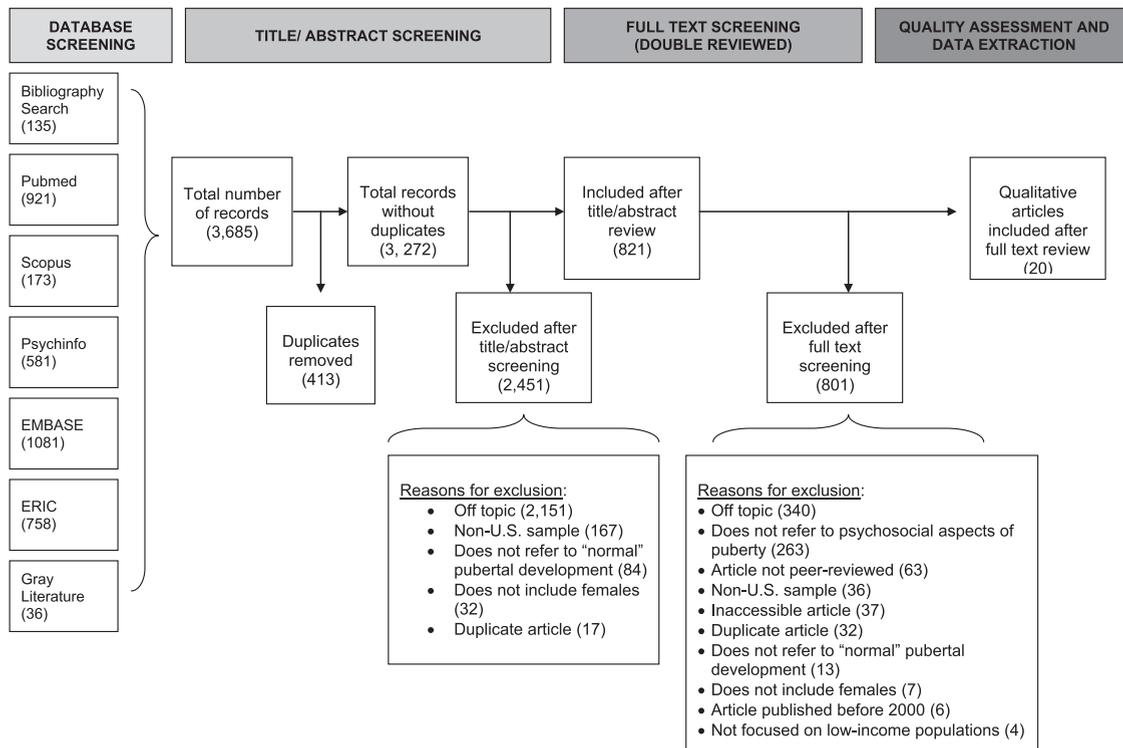


Figure 1. Flow diagram of article search and inclusion/exclusion process.

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 [46]. Qualitative thematic synthesis was conducted in three steps: (1) line-by-line coding; (2) descriptive theme development; and (3) analytical theme generation [46]. During step 1, two independent reviewers inductively coded research findings and author conclusions using Dedoose software [47]. 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 reoccurring, 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 [48].

The overall confidence in our findings was summarized using the Confidence in the Evidence from Reviews of Qualitative (CERQual) research approach [49,50]. CERQual adds a higher level of quality and accountability to a qualitative review. The confidence of a finding is assessed by (1) methodologic 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) [49].

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 methodologic 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 methodologic quality, less direct relevance to the research question or population of interest, and/or based on "thin" data that provide 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 1). The full texts of 821 pertinent articles were retrieved and reviewed. Twenty articles fit the inclusion criteria (Tables 1 and 2, Appendix E).

The qualitative evidence from the 20 included studies was analyzed and resulted in 42 individual findings that were organized into five overarching themes (Table 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

Table 1

List of included articles

Reference number	Author	Title	Year	Journal
1	[52] Alcalde MC, Quelopana AM	Latin American Immigrant Women and Intergenerational Sex Education	2013	Sex Education
2	[53] 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	[54] 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	[66] 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	[68] Aronowitz T, Rennells RE, Todd E	Ecological Influences of Sexuality on Early Adolescent African American Females	2006	Journal of Community Health Nursing
6	[67] Beausang CC, Razor AG	Young Western Women's Experiences of Menarche and Menstruation	2000	Health Care for Women International
7	[58] 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	[59] Cooper S, Koch P	"Nobody Told Me Nothin": Communication About Menstruation Among Low-Income African American Women	2008	Women & Health
9	[60] Hawthorne D	Symbols of Menarche Identified by African American Females	2002	Western Journal of Nursing Research
10	[61] Jean RT, Bondy ML, Wilkinson AV, Forman MR	Pubertal Development in Mexican American Girls: The Family's Perspective	2009	Qualitative Health Research
11	[62] Kalman MB	Adolescent Girls, Single-Parent Fathers, and Menarche	2003	Holistic Nursing Practice
12	[51] Lee J	"A Kotex and a Smile": Mothers and Daughters at Menarche	2008	Journal of Family Issues
13	[65] Lee J	Bodies at Menarche: Stories of Shame, Concealment, and Sexual Maturation	2009	Sex Roles
14	[55] Meschke LL, Dettmer K	"Don't cross a man's feet": Hmong parent-daughter communication about sexual health	2012	Sex Education
15	[56] Nwoga, I	African American Mothers Use Stories for Family Sexuality Education	2000	The American Journal of Maternal/Child Nursing
16	[63] 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	[64] 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	[57] Orringer K, Gahagan S	Adolescent Girls Define Menstruation: A Multiethnic Exploratory Study	2010	Health Care for Women International
19	[69] Pinto K	Growing Up Young: The Relationship Between Childhood Stress and Coping with Early Puberty	2007	The Journal of Early Adolescence
20	[70] Teitelman AM	Adolescent Girls' Perspectives of Family Interactions Related to Menarche and Sexual Health	2004	Qualitative Health Research

shape puberty experiences. The 42 findings were summarized (Table 4) 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 U.S. girls of all races and ethnicities [51–70]. Breast development was also important, understood as a clear sign of development that attracted wanted and unwanted attention of others [51,56,58,61,63–66,69,70]. Although 8 of 20 articles focused on menarche and menstruation, no articles focused specifically on breast development (Table 4A) [51,57,59,60,62,65,67,70].

Quality of girls' puberty experiences

Most low-income girls reported having negative experiences of puberty, especially related to menarche and menstruation [51,57,59–65,67–70]. Experiences were commonly described as embarrassing, traumatic, scary, and confusing [51,57,59,60,63,65,67,69,70] and associated with feeling gross, dirty, smelly, and disgusting [51,57,59,60,62–65,67,69,70]. Girls who described menarche and menstruation with these

negative terms also tended to report having felt unprepared and ill equipped for this transition [51,59,65,69,70].

Less commonly, some girls described neutral, ambivalent, or positive experiences of menarche and menstruation [51,57,60–62,64,65,69,70]. For example, of the 19 women (ages 18–50) included in the study by Cooper and Koch, only one had a positive menarche experience [59]. Positive experiences of menarche were described as exciting and often associated with celebration and increased freedom [51,61,64,65,67,70]. Neutral experiences were described with phrases such as "no big deal" [51]. Ambivalent experiences were marked by a mix of positive and negative statements, such as feeling "scared but relieved" [51].

Less was reported on breast development attitudes, although comments were generally more positive than negative. Although some girls were excited to grow breasts because it made them feel womanly and older [51,53,64,65,69], others felt embarrassed and disliked the unwanted attention it attracted (Table 4) [60–62,64,65,68–70].

Messages girls receive about puberty

One of the most frequent messages girls received about puberty and menarche is that these changes signify "becoming

Table 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 years)	3
Race and ethnicity	Racially and ethnically diverse sample ^a	10
	African-Americans only	6
	Hispanic Americans only	2
	Asians only	1
Geographic area	Caucasians only	1
	Northeast	7
	South	4
	Midwest	3
	West	3
Setting	Unknown	3
	Urban	15
	Rural	2
	Urban and rural	1
	Unknown	2
Quality assessment of individual articles	High quality	8
	Moderate quality	10
	Low quality	2
Study relevance to review question ^b	Directly relevant	3
	Partially relevant	6
	Indirectly relevant	6
	Unclear	5

^a 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.

^b Directly relevant = studies that focus on puberty broadly within the population of interest. Partially relevant = studies that focus on one aspect of puberty such as menarche or menstruation within the population of interest. Indirectly relevant = studies that focused on sexuality development broadly, but findings related to pubertal development were generated within the population of interest. Unclear = 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 sample included a substantial proportion of low-income girls.

a woman" [51,56,57,59,60,65,67–70]. Such messages were sometimes conveyed through celebrations, such as special mother–daughter outings, parties, and gifts [51,65,67,70]. Celebration of menarche was mostly mentioned by Caucasian girls [51,70].

Messages about "becoming a woman" were frequently connected to femininity, especially related to the limitations imposed by it [51,57,63–65,67,69]. 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 [65]. 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..." [69].

Girls reported being told that menstruation is a cleansing of unused and unnecessary materials from the body [57,59]. 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" [57]. Orringer and Gahagan [57]

found that the menstrual cleansing belief was only mentioned among African-American and Mexican-American girls and not among Caucasian or Arab girls.

Around menarche, some girls described receiving scare-tactic messages aimed at preventing sexual activity or creating a sense of danger around pregnancy [52–58,63–66,68–70]. Mothers, especially Hispanic mothers, instructed girls to distance and protect themselves from males, stressing that menarche comes with increased sexual vulnerability [54–58,60,63–66,68–70]. Vague messages that linked puberty to unplanned pregnancy generated negative and fearful puberty experiences among girls across racial and ethnic groups [52–58,63–66,68–70].

Girls also reported receiving implicit and explicit messages that puberty—specifically menstruation—is something to keep hidden, especially from males [51,52,55,57,59,60,62–65,67,70]. 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 4) [51,55,59,60,63–65,67–70].

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 4).

Across studies, girls reported feeling a lack of information and readiness to cope with the onset of menstruation [51,52,55,57,59,60,65,67,69,70]. 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 [51–53,55,57–61,65,67–70]. 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" [67].

Girl's inadequate preparation was further revealed through studies that assessed levels of menstrual knowledge, which was frequently found to be incorrect or incomplete [53,57,59–61,66,70]. 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" [59]. 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?" [57].

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 [51,61,65,66,69,70]. College-aged respondents in the study by Lee [65] reported feeling more shame around menarche if they experienced it earlier than others. Other girls who reached later menarche spoke of wanting to "catch up" with their peers' more advanced development [51,64,65]. One girl felt "defective" due to her late start [65], and another cried "tears of relief" when she reached menarche because her friends already had their periods [51].

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 [51,52,54–68,70]. In turn, mothers described feeling that conversations about

Table 3

Organization of findings of present day puberty experiences of lower-income girls growing up in the United States

Third-order themes	Second-order themes	First-order themes
1. Content of girls' puberty experiences	1.A. Menarche and 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 a significant, 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 breakdowns during mother–daughter conversations about puberty
5.A.6. Timing of mother–daughter conversations can be tricky		
5.B. The role of nonmaternal family members	5.A.7. Conversations about puberty and sex are interconnected	
	5.A.8. A mother's experience of puberty influences how she approaches conversations with her daughter about puberty	
	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.C. The role of peers	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.1. The nature of relationships with male peers changes at puberty	
5.D. The role of schools	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.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 United States based on qualitative literature from 2000 to 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.

puberty were important to their daughters' sexual health [52,54,56,59–61,63,64].

Despite this, many girls reported being disappointed in the information they received from mothers [51,52,54,56,58,59,61,63,65–67]. 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" [67]. Girls desired emotional connection and conversation with their mothers to feel confident about their development.

Complementary to the reports from girls, many mothers admitted to being unable to fully address their daughters' needs [51–54,56–59,61,63,65–67,70]. 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

[52,54–56,58–60,63–65,68–70]. However some ethnic and racial groups (Hispanic and Asian) reported cultural restrictions to having open conversations about pubertal development [52,55,57,63]. O'Sullivan et al. [64] found that African-American mothers and daughters tended to feel more comfortable discussing pubertal changes and sexual behavior than Caucasian mothers and daughters.

A mother's response to her daughter's developing body was connected to the daughter's experience of the changes [51,54,57,64,65,67,70]. The reaction was sometimes drawn from the mother's own pubertal experience [52,54–56,59–61,63,67]. As one early adolescent Latina girl explained, "My mother did not 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" [63].

Girls reported infrequently turning to fathers for support at puberty [51,55,60–62,64–67,69,70]. A number of studies found

Table 4
CERQual summary of qualitative findings

Review finding	Supporting quote	References	Confidence in evidence
4A. Content of girls' puberty experiences			
1.A.1. Menarche is an important milestone: 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 did not have) about it at the time it happened, and information about the circumstances where it 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 years old; [51]).</i>	[51–70]	High Confidence: 20 studies. Minor concerns about coherence, relevance, adequacy, and methodologic limitations. Eight had somewhat rich data. Findings reflected experience of African-American, Caucasian, and Asian females; urban settings; Northeastern, USA. Studies on menarche had predominantly Caucasian samples.
1.A.2. Blood is the main sign of menarche: 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 was not even red, it was like pink. And I was wondering, and I started crying because I did not know what was going on. And then my mom was not there. And then I called [to] my sister. (African-American girl, low-income family, 9 years old; [70])</i>	[51,57,59, 60,63,65, 67,69,70]	High Confidence: nine studies with no to minor concerns about coherence, relevance, adequacy, and methodologic limitations. High (7) methodologic 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.
1.A.3. Menstrual management is a concern: 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, although 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 did not 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 did not know how to use them. (African-American, low-income, first menarche at age 9; [70])</i>	[51,57,59, 60,62,65, 67,70]	High Confidence: eight studies with no to minor concerns about coherence, relevance, adequacy, and methodologic limitations. Sufficiently rich data within and across studies. High (5) and moderate (2) methodologic 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.
1.A.4. Menstruation is physically painful: 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 did not 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; [70])</i>	[51,59,60, 69,70]	Moderate Confidence: five studies with no, minor, and moderate concerns about coherence, relevance, adequacy, and methodologic quality. Studies with mostly superficial data. Descriptions and definitions of physical discomfort related to menstruation varied across studies. Samples reflected perspectives of African-American and Caucasian females; rural or urban environments; all regions.
1.B.1. Breast growth is a significant, visible aspect of puberty: 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.	<i>...I do remember that I was embarrassed that my body was maturing like this because I noticed people noticing it....(Penny, 18 years old; [65])</i>	[51,56,58, 61,63–66, 69,70]	Moderate Confidence: 10 studies. Minor to moderate concerns about coherence, relevance, adequacy, and methodologic limitations. Topic was insufficiently explored. Mostly superficial data. Data similar within and across studies for Caucasian, African-American, and Hispanic females; urban areas, Northeast.

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Table 4
Continued

Review finding	Supporting quote	References	Confidence in evidence
<p>1.B.2. Developing bodies inspire new clothing decisions: 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, whereas others started wearing bra 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?"</i> (African-American girl; [64]).</p>	[54,56,69,70]	Low Confidence: four studies. Minor to substantial concerns about coherence, relevance, adequacy, and methodologic limitations. Data were mostly superficial. Mostly African-American samples; urban and rural; Southern, Northeastern, and Midwestern.
<p>4B. Quality of girls' puberty experiences</p> <p>2.A.1. Menstruation is embarrassing, gross, dirty, smelly, disgusting, and unclean: 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.</p>	<p><i>I said, "Ohh, eewwh... I do not 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 'eewwh' every month." So I got used to it. And it's still nasty to me.</i> (African-American, low-income; [70]).</p>	[51,57,59,60,62–65,67,69,70]	High Confidence: 11 studies. Minor or moderate concerns about coherence, relevance, adequacy, and methodologic limitations. Eight with rich data and high methodologic quality. Studies focused on menses. Consistent data across studies. Mostly Caucasian and African-American (some Hispanic); urban areas.
<p>2.A.2. Menarche is scary, traumatic, and confusing: 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."</p>	<p><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!"</i> (Lakeisha, 25 years old; [59]).</p> <p><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."</i> (African-American, low-income; [70]).</p>	[51,57,59,60,63,65,67,69,70]	High Confidence: nine studies with no to minor concerns about coherence, relevance, adequacy, and methodologic 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.
<p>2.A.3. Developing bodies provoke insecurity and self-consciousness: 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.</p>	<p><i>I did not 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 did not want no one to see my figure so I wore baggy clothes and dressed like a boy and stuff so boys would not be interested in me.</i> (African-American, low-income; [70]).</p>	[60–62,64,65,68–70]	Low Confidence: eight studies. Minor, moderate, and substantial concerns about coherence, relevance, adequacy, and methodologic limitations. Breast development not sufficiently explored. Moderately supported by superficial data from studies of high methodologic quality. Most African-American, Caucasian, or Hispanic; urban areas.
<p>2.B.1. Menstruation is a fact of life for females: 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).</p>	<p><i>I've heard about so many girls getting their period and being excited or miserable or having some emotion about it, and I did not really have much of any.</i> (Ivy; [69]).</p>	[51,57,60,62,65,69,70]	Low Confidence: seven studies. Minor, moderate, and substantial concerns about coherence, relevance, adequacy, and methodologic limitations. Thin data. Focus on positive or negative experiences—may have missed neutral ones. Mostly African-American and Caucasian adolescents; urban and rural areas.
<p>2.B.2. Girls have ambivalent feelings about menarche and menstruation: 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 were not pregnant).</p>	<p><i>I felt anxious and embarrassed, but also happy to be growing up.</i> ([51]).</p>	[51,64,65,69]	Low Confidence: four studies. Minor, moderate, and substantial concerns about coherence, relevance, adequacy, and methodologic limitations. Data were 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 and West.

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Table 4
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Review finding	Supporting quote	References	Confidence in evidence
<p>2.C.1. Menarche is happy and exciting event: 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 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.</p>	<p><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!"</i> (Simone, 19 years old, Caucasian; [51]).</p>	<p>[51,61,64,65, 67,70]</p>	<p>Low Confidence: six studies. Minor, moderate, and substantial concerns about coherence, relevance, adequacy, and methodologic limitations. Socioeconomic status (SES) of samples was not clear. Positive nature of menstruation somewhat vague and thin; largely underexplored. Mostly Caucasian (some African-Americans and Hispanics); urban areas.</p>
<p>2.C.2. Breast development is viewed as a positive change: 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>	<p><i>I wanted breasts so badly.</i> (Dulcie, mixed race, 18 years old; [51]). <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; [64]).</p>	<p>[51,53,64, 65,69]</p>	<p>Low Confidence: five studies. Minor, moderate, and substantial concerns about coherence, relevance, adequacy, and methodologic limitations. Somewhat thin data. Factors contributing to positive feelings about body development not thoroughly explored. Mostly Caucasian (some African-American and Hispanic); urban areas; Northeast and West.</p>
<p>4C. Messages girls receive about puberty</p> <p>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 and was sometimes linked to the ability to reproduce. "Becoming a woman" was usually seen as a positive message, but girls who felt that women's behavior was limited at menarche saw it more negatively.</p>	<p><i>I became a woman! I was so excited!</i> (Lorraine; [65]). <i>...Periods and tampons scared the hell out of me so I hated that I started... I was not 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; [65]).</p>	<p>[51,56,57, 59,60,65, 67–70]</p>	<p>High Confidence: 10 studies. No, minor, and moderate concerns about coherence, relevance, adequacy, and methodologic limitations. Six with rich data. "Becoming a woman" was somewhat inconsistently described and contradictions not sufficiently explained. Mostly African-American and Caucasian female samples; urban and rural.</p>
<p>3.A.2. Celebration and gifts as right of passage: 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.</p>	<p><i>It was really celebrated in our family. Actually, I'm really glad I had that. A lot of people do not. 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; [70]).</p>	<p>[51,65,67,70]</p>	<p>Moderate Confidence: four studies. Minor and substantial concerns about coherence, relevance, adequacy, and methodologic limitations. Rich data. Unclear SES and reasons for different responses. Mostly Caucasian samples; urban areas; Western and Midwestern.</p>
<p>3.A.3. Menarche as sign of growing up: 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.</p>	<p><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) [65]. <i>It meant I'd soon be able to drive and smoke cigarettes (just kidding!)...</i> (Janet; [65]).</p>	<p>[51,57,63–65, 67,69]</p>	<p>Moderate Confidence: seven studies. Minor to moderate concerns about coherence, relevance, adequacy, and methodologic limitations. Somewhat rich data. "Growing up" vaguely and inconsistently defined. Difficult to distinguish from "becoming a woman." African-American, Caucasian, or Hispanic samples; urban areas; Midwest, West and Northeast.</p>
<p>3.B.1. Menstruation cleanses the body: 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.</p>	<p><i>[You need to] Get all that filth out of there. You know, it gots to come out. It gots to come out!</i> (<35 years old; [59]).</p>	<p>[57,59]</p>	<p>Moderate Confidence: two studies. Minor and substantial concerns about coherence, relevance, adequacy, and methodologic limitations. Rich data. Inconsistently described. African-American, urban, Northeast.</p>

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Table 4
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Review finding	Supporting quote	References	Confidence in evidence
<p>3.C.1. Menarche means you can get pregnant: 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.</p>	<p><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 years old; [63]).</p>	<p>[52–58,60,63–66,68–70]</p>	<p>High Confidence: 15 studies. Minor to moderate concerns about coherence, relevance, adequacy, and methodologic limitations. High (6), moderate (8), low (1) methodologic quality. Somewhat rich data. Diverse racial and ethnic groups; urban (some rural); all regions.</p>
<p>3.C.2. Girls need to protect themselves from boys: 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 and 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.</p>	<p><i>You'll [her daughter] notice a difference [in your body]. You'll notice that men will notice you more, but this does not mean you are ready to cut classes, have sex, boyfriends, be independent from your family, let them touch you. Don't let them touch you because your body is sacred and private. Don't let anyone touch you, not even your father.</i> (Latina mother; [64]).</p>	<p>[54–58,60,63–66,68–70]</p>	<p>Moderate Confidence: 13 studies. Minor to moderate concerns about coherence, relevance, adequacy, and methodologic limitations. High (6), moderate (6), and low (1) methodologic quality. Five had somewhat rich data. Most from studies (5) on sexuality. Diverse racial and ethnic groups; mostly urban (some rural); six Northeast.</p>
<p>3.D.1. Girls are told that menstruation is something to keep hidden from others: Many girls received explicit and/or implicit messages to conceal signs of menstruation (e.g., menstrual supplies, bloody underwear), especially from males. Girls took great precautions and felt anxiety about others finding out about their menstrual status. Silence from mothers led 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.</p>	<p><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 & 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.</i> (College student, Midwest; [67]).</p>	<p>[51,52,55,57,59,60,62–65,67,70]</p>	<p>High Confidence: 12 studies with minor to moderate concerns about coherence, relevance, adequacy, and methodologic limitations. Data consistent. High (7), moderate (4), and low (1) methodologic quality. Five focused on menstruation. Range of racial and ethnic groups (mostly Caucasian and African-American); rural and urban areas; Midwest, West, and South.</p>
<p>3.D.2. Girls should restrict their behavior in order to prevent unwanted attention: 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 to prevent embarrassing stains and leaks.</p>	<p><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.</i> (African-American, low-income; [70]).</p>	<p>[51,55,59,60,63–67,69,70]</p>	<p>High Confidence: 11 studies. No to minor concerns about coherence, relevance, adequacy, and methodologic limitations. Data consistent. Eight had high methodologic quality. Six focused on menstruation. Diverse samples; urban areas; Northeast and Midwestern.</p>
<p>4D. Other factors shaping girls' puberty experiences</p>			
<p>4.A.1. Girls feel uninformed about menarche and menstruation: 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.</p>	<p><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.</i> (European American, low-income; [70]).</p>	<p>[51,52,55,57,59,60,65,67,69,70]</p>	<p>Moderate Confidence: 10 studies. Minor to moderate concerns about coherence, relevance, adequacy, and methodologic limitations. Four studies with rich data but mostly thin data. None focused on puberty education or preparedness exclusively. Preparation for menarche vaguely defined. Four studies with unclear SES and age. Studies from racial and ethnic diverse adolescents; urban (two rural); all regions.</p>

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Table 4
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Review finding	Supporting quote	References	Confidence in evidence
<p>4.A.2. Girls are uninformed about menstruation: Girls lacked accurate information about menstruation. Some knew little about menarche before getting their periods. These girls tended to misinterpret menarche as a sign that something was seriously wrong with them, which scared and confused them. Some adults even shared that they had not 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.</p>	<p><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 did not want to get pregnant. It was so stupid.</i> (African-American, low-income; [70]).</p>	<p>[53,57,59–61, 66,70]</p>	<p>Low Confidence: seven studies. Minor to moderate concerns about coherence, relevance, adequacy, and methodologic limitations. Four studies focused on menstruation. Consistent evidence across studies but somewhat superficial. Four with high methodologic quality, but qualitative method may not be best way to assess knowledge. Racial and ethnically diverse sample (few Caucasian); mostly urban (5); all regions.</p>
<p>4.A.3. Girls want more information and support during puberty: 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.</p>	<p><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?" ([67]).</i></p>	<p>[51–53,55, 57–61,65, 67–70]</p>	<p>Moderate Confidence: 14 studies. Minor to moderate concerns about coherence, relevance, adequacy, and methodologic limitations. None focused on puberty education or preparedness. Five had unclear SES and age information. Seven had high methodologic quality. Superficial data. Insufficient investigation into what preparation is wanted. Sample of adolescents from diverse racial and ethnic groups; urban areas (two rural areas); all regions.</p>
<p>4.B.1. Starting puberty earlier than their peers is particularly challenging for girls: 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 because of 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 and humiliation.</p>	<p><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 do not want to be layin' in the bed with cramps...If I was older then, I would not 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.</i> (Miya, African-American, urban public school; [69]).</p>	<p>[51,61,65,66, 69,70]</p>	<p>Moderate Confidence: Six studies. Minor to substantial concerns about coherence, relevance, adequacy, and methodologic limitations. "Early" was inconsistently defined. High (5) and moderate (1) methodologic quality but somewhat thin data. Perspectives from females from mostly young samples; Hispanic, African-American, and Caucasian females; urban areas.</p>
<p>4.B.2. Girls who start puberty later than their peers feel eager to "catch up": 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 development behind their peers spoke about wanting to "catch up" or become "part of the club."</p>	<p><i>"Most of my friends had already had theirs and I wanted mine too!" (Michelle, 20 years old, white; [51]).</i> <i>"I started my period after my younger sister... I was glad because I thought I was never going to get it." ... "I was the last one of my group of friends to start." "I felt defective." (Cassy, Jenny; [65]).</i></p>	<p>[51,64,65]</p>	<p>Very Low Confidence: three studies. Minor, moderate, and substantial concerns about coherence, relevance, adequacy, and methodologic limitations. "Late" puberty/menarche inconsistently and vaguely defined. Two studies had unclear SES. Somewhat thin data. College age (2) and mother–daughter (1) samples; Caucasian, African-American, and Hispanic females; urban environments; Northeastern and Western.</p>
<p>4E. Relationships that shape girls' puberty experiences</p> <p>5.A.1. Daughters want to learn about puberty from their mothers: 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.</p>	<p><i>[One participant] 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 ([67]).</i></p>	<p>[51,52, 54–68,70]</p>	<p>High Confidence: 18 studies. Minor to moderate concerns about coherence, relevance, adequacy, and methodologic limitations. High (8) methodologic quality. Rich and consistent data. Eight mother–daughter samples. Diverse racial and ethnic samples; urban and rural; all regions (six Northeast)</p>

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Table 4
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Review finding	Supporting quote	References	Confidence in evidence
<p>5.A.2. Mothers influence their daughter's experience of puberty: 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.</p>	<p><i>"My mom just smiled and let me work it out. She did not tell me I should not 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, white; [51]).</i></p>	<p>[51,54,57, 64,65, 67,70]</p>	<p>Moderate Confidence: seven studies. Minor, moderate, and substantial concerns about coherence, relevance, adequacy, and methodologic limitations. Contradictory responses unexplored. Three had unclear age and SES. Diverse samples; urban; Midwest, West, and Northeast.</p>
<p>5.A.3. Mothers think conversations about puberty are important: 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.</p>	<p><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 of girl, 10–13 age group; [63]).</i></p>	<p>[52,54,56, 59–61, 63,64]</p>	<p>Low Confidence: eight studies. Moderate concerns about coherence, relevance, adequacy, and methodologic limitations. Three focused on sexuality. Superficial data. Five mother–daughter samples. Possible social desirability related to focus groups. Hispanic or African-American; urban and rural areas; Southern and Northeastern.</p>
<p>5.A.4. Mothers feel uncomfortable about having puberty conversations with their daughters: 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)</p>	<p><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 do not even know the exact terms. (Latina mother of girl, 10–13 age group; [63]).</i></p>	<p>[52,53,57, 59,61,63, 67,70]</p>	<p>Moderate Confidence: eight studies. Minor to moderate concerns about coherence, relevance, adequacy, and methodologic limitations. High (4) or moderate (4) methodologic quality. Four focused on sexuality. All somewhat superficial data. Hispanic and African-American (some Caucasian); urban areas; all regions.</p>
<p>5.A.5. There are communication breakdowns during mother–daughter conversations about puberty: Puberty topics were sometimes difficult to discuss, even in close mother–daughter 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.</p>	<p><i>Cause I would go up to them [mother & grandmother] and I would ask them [about the period] and they would be like why you wanna know about that, you did not 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 years old; [59]).</i></p>	<p>[51,52,54, 56,58,59, 61,63, 65–67]</p>	<p>Moderate Confidence: 11 studies. Minor to moderate concerns about coherence, relevance, adequacy, and methodologic limitations. Four focused on sexuality and five had unclear SES and age. Five had high methodologic quality. Rich data. Five mother–daughter samples but dynamics of relationship not fully addressed. All regions; urban; African-American and Hispanic (some Caucasian)</p>
<p>5.A.6. Timing of mother–daughter conversations can be tricky: 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 when puberty was going to be discussed in school or when asked questions.</p>	<p><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 years old, Latina mother; [52]).</i></p>	<p>[52,54,56, 59,61,63, 66,67]</p>	<p>Moderate Confidence: eight studies. Minor to moderate concerns about coherence, relevance, adequacy, and methodologic limitations. High (3), moderate (4), low (1) methodologic quality. Superficial data. Four focused on sexuality. African-American and Hispanic (some Caucasian); urban areas; Northeastern and Southern.</p>
<p>5.A.7. Conversations about puberty and sex are interconnected. 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 failed to explain how to get pregnant). When puberty and sex were intertwined, both were seen as taboo topics that were difficult to discuss.</p>	<p><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; [64]).</i></p>	<p>[52,54–56, 58–60, 63–65, 68–70]</p>	<p>High Confidence: 13 studies. Minor to moderate concerns about coherence, relevance, adequacy, and methodologic limitations. Rich data across studies. High coherence. Six had high methodologic quality. Five studies were focused on sexuality broadly. Five mother–daughter samples. 10 Urban (two rural). All U.S. regions (six Northeast). Racially and ethnically diverse samples.</p>

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Table 4
Continued

Review finding	Supporting quote	References	Confidence in evidence
<p>5.A.8. A mothers experience of puberty influences how she approaches conversations with her daughter about puberty: 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.</p>	<p><i>I do not wanna be like my momma. My momma did not talk to me about it. But I be sure to talk to my girl. I do not hold nothing back. My daughter's 15 years old. I do not 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!" (Older Focus Group 35 years or older; [59]).</i></p>	<p>[52,54–56, 59–61, 63,67]</p>	<p>Low Confidence: nine studies. Moderate concerns about coherence, relevance, adequacy, and methodologic limitations. None specifically on this topic. High (4), methodologic quality. Superficial data. Five had mother–daughter samples. Diverse samples; urban (two rural); Southern (4), Northeast (2), and Midwest (2) regions.</p>
<p>5.B.1. Females other than mothers (especially sisters) are also important sources of pubertal support for girls: 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.</p>	<p><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) ([62]).</i></p>	<p>[56–59, 61–64,67, 68,70]</p>	<p>Low Confidence: 11 studies. Minor, moderate, or substantial concerns about coherence, relevance, adequacy, and methodologic limitations. None focused on nonmaternal female family members. Superficial data. Four had unclear SES and age of sample. Hispanic, African-American, and Caucasian; urban; Southern, Midwestern, and Northeastern.</p>
<p>5.B.2. Fathers are not a main source of pubertal support for girls: 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.</p>	<p><i>I did not tell him [her father] for a while 'cause I did not know what to say...It's embarrassing I guess, and it's just something you do not want to talk about with your dad. Really. He's a guy. (Jennifer, Caucasian; [62]).</i></p>	<p>[51,55,60–62, 64–67, 69,70]</p>	<p>High Confidence: 10 studies. Minor to moderate concerns about coherence, relevance, adequacy, and methodologic limitations. Seven had high methodologic quality. Four had rich data. One included fathers. One focused on fathers' roles. Father vaguely defined (stepfather?). Diverse samples; urban (some rural); all regions.</p>
<p>5.B.3. Father–daughter relationships change at puberty: 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 to their fathers to fall asleep at night.</p>	<p><i>After seventh grade I kind of grew away from my dad a little bit. I think I did not want to be tickled by him anymore or get too close and I think it's a lot to do with school and I do not 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 kind of weird. (Natasha, Caucasian; [62]).</i></p>	<p>[62,63,65,69]</p>	<p>Very Low Confidence: four studies. Moderate to substantial concerns about coherence, relevance, adequacy, and methodologic limitations. Two had rich data. Small sample sizes (13 and 10). One focused on fathers' roles at menarche. Father vaguely defined (stepfather). Girls are from unique samples (e.g., had experience, adverse experience). Predominantly Hispanic and African-American (some Caucasian); urban; West and Northeast.</p>
<p>5.B.4. Brothers are a source of anxiety for girls going through puberty: 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.</p>	<p><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 did not leave them out in the bathroom. (Celie, 18–21 years old, university in the Pacific Northwest; [65]).</i></p>	<p>[51,65]</p>	<p>Very Low Confidence: two studies. Minor to substantial concerns about coherence, relevance, adequacy, and methodologic limitations. Thin data. Topic not well explored within studies. Brother not clearly defined (i.e., stepbrother, older). Unclear SES and age information—mostly Caucasian college students from Oregon.</p>
<p>5.C.1. The nature of relationships with male peers changes at puberty: 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 and attention on appearances (e.g., wearing makeup, jewelry).</p>	<p><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.'" (Stephanie, Caucasian; [62]).</i></p>	<p>[54,60,62–65, 67–70]</p>	<p>Low Confidence: 10 studies. Moderate concerns about coherence, relevance, adequacy, and methodologic 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.</p>

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Table 4
Continued

Review finding	Supporting quote	References	Confidence in evidence
<p>5.C.2. Friends and peers serve as sources of pubertal information and support: 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).</p>	<p><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 was not mad, she was supportive.</i> (Bethany; [65]).</p>	<p>[57–59,61, 63–70]</p>	<p>Moderate Confidence: 12 studies. Minor to moderate concerns about coherence, relevance, adequacy, and methodologic limitations. Possibility of social desirability bias. Unclear between “peer” and “friend.” African-American or Caucasian (some Hispanic); urban; West (2), Midwest (1), Northeast (7).</p>
<p>5.C.3. Female peer relationships can develop a negative dynamic at puberty: 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 were barriers to sharing experiences with friends.</p>	<p><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; [61])</p>	<p>[61,64–66, 68,69]</p>	<p>Low Confidence: six studies. Minor to moderate concerns about coherence, relevance, adequacy, and methodologic limitations. Two had rich data. Unclear difference between “peer” and “friend.” Four had high methodologic quality. Focus groups not ideal for sensitive topic. None focused on peer relationships. Diverse sample; urban; four Northeastern.</p>
<p>5.D.1. Schools are not a major source of puberty information or support: Girls viewed school education about menstruation as inaccurate, negative, and late. Some felt embarrassed to ask questions in schools, and were dissatisfied with the time allotted for discussions. Some could not remember what was taught in schools. Schools were more important in situations where mother–daughter conversations were nonexistent.</p>	<p><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 several sources, but no one had been willing to talk with her about menstruation.</i> (College student, community college in the Northwest; [67]).</p>	<p>[52,53, 55–57,59, 63,65,67]</p>	<p>Moderate Confidence: nine studies. Minor to moderate concerns about coherence, relevance, adequacy, and methodologic limitations. Three had somewhat rich data. Puberty education was not clearly defined. None focused on school-based sources. Three had high methodologic quality. Diverse, mostly adolescent samples; all regions; urban.</p>

Table provides 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 provides 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 authors of the article 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 article. And, column 4 provides the overall CERQual assessment of confidence, rated as high, moderate, low, or very low. This column also includes a summary explanation of confidence based on methodologic 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 F. Information on race, rural/urban areas, and geographic location of the sample is 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 United States even when not explicitly stated.

that the onset of puberty and menstruation caused physical and emotional distancing between daughters and fathers [62,63,65,69]. Cooper and Koch 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 [59].

Female family members were another vital source of support [56–59,61–64,67,68,70]. In particular, older sisters were viewed as a trusted source of information, filling in where mothers left off [56–59,61–64,67,68,70]. Brothers were mostly mentioned as sources of anxiety (e.g., teasing) for newly menstruating girls [51,65].

Peer relationships were perceived both as a source of emotional and informational support [54,57–59,61,63–65,67–70] and as a source of problems and anxiety (e.g., jealousy) [61,64–66,68,69]. Relationships with male peers became more sexualized during puberty, and many girls reported unwanted attention to their developing bodies [54,60,62–65,67–70]. 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” [60]. 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 [52,55–57,59,63,65,67]. Beausang and Razor [67] found that girls often felt too embarrassed or ashamed to ask questions about menarche and puberty during sexuality education in schools. Cooper and Koch [59] found that schools provided inaccurate and largely negative information about menstruation and often after many girls had already begun menstruating (Table 4). 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” [59].

Discussion

This systematic review provides an updated look at the puberty experiences among U.S. 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 U.S. 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 United States, the included studies pulled from

racially and ethnically diverse samples from across all the U.S. 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 [8,24–26,31,32,35–37,71,72]. This review did not include studies from more affluent U.S. populations. Therefore, it is not clear whether the puberty experiences of middle-to-upper income, Caucasian girls growing up in the United States today have improved.

Although recent literature is more racially and ethnically diverse, there 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, whereas 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 these 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, whereas menarche experiences were the research focus with Caucasian samples. To fully understand the puberty experiences of U.S. 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) 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. Most studies were assessed as having moderate (10 articles) or low (2 articles) methodologic 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 nonmaternal 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 nonnegative experiences of puberty, and girls' experiences of pubertal changes other than menarche (e.g., breast development). Studies from the past 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 [15,21,73].

In addition, many topics were absent from this body of research altogether. Voices of adolescents with nonconforming gender role and sexual orientation were missing entirely. Only one study assessed girls' understanding of menopause [59].

Also, there was little, if any, mention of media as a source of education and support during puberty. Finally, studies primarily defined puberty solely by the physical changes that occur, ignoring the psychosocial changes that are critical to the pubertal transition and have implications for SRH, mental health, and well-being.

Given that so much funding and attention is focused on preventing sexually transmitted infections and pregnancy among low-income populations in the United States, 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 to disempower female sexuality [22,27,74]. 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 [75,76].

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 because of lower relevance of the sample population to the population of interest (Appendix F). Second, three of the studies included in this review had adult-only samples instead of including adolescents or mother–daughter pairs [52,56,59]. 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 because of 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 United States. 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 before the (increasingly earlier) onset of pubertal changes. 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.

This systematic review is the first to provide an overview of puberty experiences among present-day low-income girls in the United States. 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.

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Supplementary Data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.jadohealth.2016.10.008>.

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