The intersection of menstruation, school and family: Experiences of girls growing up in urban cities in the U.S.A

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ABSTRACT
Evidence on U.S.A. girls’ experiences with menstruation, especially in schools, remains limited. This includes learning from low-income, urban and Black, Indigenous and People of Colour (BIPOC) girls; with the latter often experiencing puberty and menarche earlier than their peers. Qualitative and participatory research methodologies were utilized with girls (15-19) and adults working with youth in three U.S.A. cities (New York City, Los Angeles, Chicago), exploring experiences of menstruation within school and family contexts. Findings revealed gaps in girls’ practical knowledge and support around menstruation, challenges with menstrual pain while in school, and the negative impact of menstruation on girls’ engagement in physical or sports-related activities. There is a need for improved guidance on the practicalities of period management and strategies to support girls with menstrual pain. Lastly, given the benefits of physical activity on girls’ health, new approaches are needed to improve their sport and physical activity experiences while menstruating.

Background
There exists growing momentum around the world to address the menstruation-related challenges faced by adolescent girls, especially in schools (ACLU and Period Equity, 2019; Adam, 2020; Khoamami, 2018; Miiro et al., 2018; Sommer & Sahin, 2013; Tingle & Vora, 2018). To date, much of the evidence, including formative learning on how periods impact girls’ experiences in schools, has been concentrated in low- and middle-income countries (LMIC) (Hennegan et al., 2019; P.A. Phillips-Howard et al., 2016; Scorgie et al., 2015; Van Eijk et al., 2016). Findings highlight a range of challenges, spanning from poor access to menstrual products, to a lack of supportive toilets for managing their periods, and insufficient menstrual health and hygiene (MHH) education; all which can negatively impact girls’ health and well-being (Coast et al., 2019; Crankshaw et al., 2020; Hennegan et al., 2019; Oduor et al., 2015; P.A. Phillips-Howard et al., 2016). These issues are often exacerbated by menstrual stigma, as girls may feel anxious about potentially staining their clothing with blood or revealing odours; both which may reveal their menstruating status to others (Girod et al., 2017; Mason et al., 2013; Sivakami et al., 2019). This stress, coupled with uncomfortable symptoms of dysmenorrhoea, or menstrual pain, can hinder girls’ ability to concentrate on their studies and to socialize with peers during the school day (Armour, Parry, Manohar et al., 2019; Crofts & Fisher, 2012; Mason et al., 2013; Sivakami et al., 2019).
In the United States of America (U.S.A.), there remains limited evidence regarding these issues, especially related to low-income adolescent girls’ experiences in educational settings (Sommer et al., 2019). Much of the existing learning around U.S.A. girls’ menstrual experiences is derived from literature published during the 1980s-1990s, and primarily focuses on the experiences of menstruation and menarche for middle to high income white females (Brooks-Gunn & Ruble, 1982; Ruble & Brooks-Gunn, 1982). Additionally, a large body of recent research is based on data collected from adult women who were asked to reflect on their adolescent experiences of menstruation and menarche (Fahs, 2020; Field-Springer et al., 2019; Jackson & Falmagne, 2013; Rubinsky et al., 2020), rather than directly from menstruating girls themselves. There remains a need for research on the lived menstruation-related experiences of American adolescent girls, especially girls identifying as Black, Indigenous and People of Colour (BIPOC) (A.C. Herbert et al., 2017). Black and Latina adolescents, in particular, often experience pubertal development (e.g., breast growth, menarche), earlier than their peers (Biro et al., 2013; Chumlea et al., 2003; Wu et al., 2002). This lack of prioritization of BIPOC girls is especially concerning given that girls having earlier pubertal development, including menarche, are more vulnerable to depression (Galvao et al., 2014; Seaton & Carter, 2018; White et al., 2012) and to engagement in risky behaviours, such as substance use and early initiation of sexual activity (Koo et al., 2012; Mendle et al., 2007; Stice et al., 2001).

Although limited, the existing evidence provides some important insights into the experiences of menstruating American females. Menstruation remains a stigmatized experience for many girls and women of all ages, especially among low-income populations (Cooper & Kock, 2007; Rubinsky et al., 2020; Sebert Kuhlmann et al., 2019; White, 2013). Despite mothers remaining the most frequently turned to source for information about sexual health across multiple U.S.A. demographics (Alcalde & Quelopana, 2013; Meschke & Dettmer, 2012; Orringer & Gahagan, 2010; Teitelman, 2004; Wartella et al., 2016), many families still do not report engaging in interpersonal conversations around menstruation at home (A.C. Herbert et al., 2017; Cooper & Kock, 2007; Rubinsky et al., 2020). Additionally, a number of studies in the U.S.A. suggest that while many boys are curious about the developmental changes that girls are experiencing, they are often left out of conversations about menstruation, both at school and at home; which may contribute to their reported misconceptions and teasing of female peers (Allen et al., 2011; Chang et al., 2012; Peranovic & Bentley, 2017). Menstrual stigma may have more significant implications for, trans and non-binary people who menstruate, given potential gender dysphoria experienced during puberty, and anxiety about menstrual leaking being seen by their peers (Frank, 2020).

While many American adolescents have a limited understanding of menstruation and are unprepared for menarche, low-income and BIPOC adolescents report even lower levels of menstrual knowledge and preparedness (A.C. Herbert et al., 2017; Angulo-Olaiz et al., 2014; Orringer & Gahagan, 2010; White, 2013). This lack of preparedness often results in negative menstrual experiences and less openness towards discussing menstrual topics (A.C. Herbert et al., 2017; Cooper & Kock, 2007; Rubinsky et al., 2020; White, 2013). Many schools serving low-income girls in the U.S. A. may have structural challenges around period management, such as inadequate bathroom infrastructure (e.g., insufficient privacy and disposal options), challenges accessing menstrual products when affordability is an issue (ACLU and Period Equity, 2019; Goldberg, 2017), or inadequate provision of menstruation and puberty education (Crockett et al., 2019). Although the intersection of girls, menstruation and school environments has been widely examined in LMIC (Chinyama et al., 2019; Crankshaw et al., 2020; P.A. Phillips-Howard et al., 2016; Sommer et al., 2016), it has yet to be sufficiently explored in the U.S.A. context. Little is known about how the social and physical aspects of U.S.A. educational environments may influence girls’ menstrual experiences during the school day. Inadequately funded school systems, especially prevalent in urban areas often serving largely BIPOC and low-income student populations (Logan & Burdick-Will, 2017), may exacerbate the challenges a newly menstruating girl faces in school. Further examination is needed about how U.S.A. schools impact girls’ MHH experiences, from the perspective of girls’ themselves, including how institutions can better support the needs of their menstruating students. The objective of this study was to
explore girls’ experiences with menstruation and puberty within their families, school environments, communities and social networks.

Methods

This qualitative and participatory study was an adaptation of a research methodology previously utilized in studies conducted with adolescent girls in Baltimore, U.S.A. (Herbert, 2018) and numerous LMIC countries (Mumtaz et al., 2019; Sommer et al., 2015; Sommer, Skolnik, et al., 2019; Sommer & Ackatia-Armah, 2012). Three types of data collection methods were used, including: 1) Participatory Methodologies (PM) sessions with adolescent girls aged 15–19; 2) In-depth interviews (IDI) with adolescent girls, and; 3) Key Informant Interviews with adults involved in girls’ lives, such as teachers, counsellors, social workers, non-profit organization staff, coaches, religious leaders and healthcare workers. Older girls were intentionally sampled to enable a reflective experience of transitioning through puberty and to be more comfortable sharing their menstruation experiences and recommendations.

Research setting

This study was conducted in New York City (NYC), Los Angeles (LA) and Chicago; the three most populous cities in the United States (US Census, 2016); all three having diverse demographics and high levels of immigrant populations. For example, 40% of NYC residents are foreign born (MOIA, 2018); followed by 37% in LA (U.S. Census, 2019b) and 21% in Chicago (U.S. Census, 2019a). All three cities have high levels of poverty, with 19.5% of NYC residents (The Mayor’s Office for Economic Opportunity, 2018), 19.1% of LA residents (U.S. Census, 2019b) and 12.4% of Chicago residents living below the poverty line (U.S. Census, 2019a). Lastly, all three cities have significant funding challenges within their public school systems, with such disparities often across racial and demographic lines. In Chicago, 85% of public school students of colour attend high-poverty schools, compared to only 27% of white students (Boschma & Brownstein, 2016). Similarly, the share of students of colour in high-poverty schools is 80% in LA and 57% in NYC (National Equity Atlas, 2017).

Sample and recruitment

A total of 73 adolescent girls (15–19 years old) participated in the PM sessions across the three cities.

In addition to the PM groups, IDIs with adolescent girls (n = 12) were conducted using a semi-structured interview guide. All participants (IDI and PM groups) were recruited directly through school administrators or teachers from public and charter institutions, or through staff at local youth-serving non-profit organizations. Adolescent girls were purposefully sampled to capture a diversity of experiences. The majority of participants in the PM sessions were Black (52%) or Latina (44%) with many coming from a range of ethnic backgrounds including West Africa, the Dominican Republic and Mexico. The KIIIs with adults (n = 23) were also purposefully recruited for a diversity of perspectives.

The findings discussed in this paper are drawn from data collected across all three data sources: PM sessions: In each city, groups of 8–10 girls (n = 7 groups) were gathered in a confidential space for 1.5 hour sessions. Each group met three times over a 2–3 week period. PM were utilized to empower girls to speak more openly about their experiences and insights on sensitive health topics related to menstruation and puberty (Minkler et al., 2003; Sommer, 2009). The PM sessions included a range of activities, with the results in this paper derived from three specific activities, in addition to fieldnotes: (a) First Period Stories Activity: Girls anonymously wrote descriptive narratives about their first period experiences, including how they reacted, who they told, what they wished they had known prior to that experience, and their advice for younger girls; (b) Girl-friendly schools brainstorm: Girls were divided into small groups and asked to describe how they would improve their school environments to become more girl-friendly for MHH with an imaginary 1 USD million budget; and (c) Design a puberty curriculum: Girls were divided into small groups to design ideal MHH and puberty education content for schools.
IDIs: Semi-structured interviews enabled more in-depth exploration of girls’ experiences, with questions examining girls’ menstrual interactions within their school environments, how their relationships with their families, peers and teachers impacted their menstrual experiences, and recommendations for how girls could be better supported by their schools and families around puberty and menstruation.

KILs: Interviews with the adults in girls’ lives sought to capture their perspectives on the body and development issues facing girls transitioning through puberty, including how school environments, family dynamics and other social influences may shape and impact girls’ experiences with menstruation and their changing bodies.

Data collection

The data collection team included 3 female research staff from Columbia University Mailman School of Public Health and 3 female data collection assistants. All PM and IDIs were conducted in private or confidential settings such as school classrooms or non-profit organization offices. All KILs were similarly conducted in private spaces, or by phone or video conferencing platforms (Skype). All PM sessions, IDIs and KILs were conducted in English. For the PM sessions, tape-recording was not used to ensure the comfort of all participants. Instead, careful note-taking was conducted by the research team, which included the capturing of both verbal and non-verbal responses. All IDIs and KILs were recorded and transcribed for analysis. All adolescent girl PM and IDI participants under 18 years of age provided parental consent. All participants 18 years of age or older, including adult KILs, provided oral informed consent prior to the start of data collection.

All study procedures were approved by the Columbia University Medical Centre and the New York City Department of Education Institutional Review Board.

Data analysis

Three members of the research team reviewed all qualitative transcripts (KII, IDI, fieldnotes) with the data analysed using Malterud’s ‘systematic text condensation,’ a descriptive and explorative method for thematic analysis (Malterud, 2012). This approach utilizes a series of steps including: a) broad impression, b) identification of the key themes, c) condensing the text from the code and exploring meaning, and d) synthesizing. Key themes identified were then shared with the entire research team for discussion, validation and consensus-building.

Results

Three major themes emerged about how menstruation impacts the daily lives of adolescent girls growing up in urban areas of the U.S.A. today. This includes: (1) Inadequate menstrual knowledge and practical preparation for managing periods; (2) Challenges associated with menstrual pain; and (3) How menstruation hinders girls’ school-based physical and sport-related activities.

Inadequate menstrual knowledge and practical preparation for managing periods

The majority of adolescent girls across the three cities indicated having some basic knowledge of menstrual periods prior to menarche. They reported having learned from a combination of sources, ranging from mothers, sisters, friends and school to media sources. Despite many girls having had a basic awareness of menstruation before their first period, they shared how the extent and depth of their understanding was limited. In the menstrual stories describing their first periods, numerous girls reported feeling unprepared about what menstruation would feel like, and how they should practically respond to the blood flow. This included, for example, having insufficient guidance before
a first period about how to use and change a menstrual product. As one adolescent girl in NYC explained:

...I was in 5th grade and I started bleeding in the school bathroom. I was like 12 and I knew what it was ... a period. But I didn't know what to do, so I put on tissue [paper]. Unfortunately, my mom didn't teach me how to put pads on, so I taught myself. It took me like 4 years to get it right ...

During the PM sessions, many girls also described lacking information about the types of products available, and anxiety around choosing the ‘right’ one. This included both insufficient understanding about different menstrual products (e.g., pads, tampons, period underwear) and the various sub-categories within each product type (e.g., absorbency level, pads with wings vs. no wings, night-time protection). Numerous girls indicated confusion about the extensive menstrual pad options and how to identify what best fit their body’s needs. As one adolescent girl in LA explained:

... there are so many different types of pads, different brands, different sizes and different hours they can be worn; it's overwhelming to pick. Younger girls get really overwhelmed with it ...

Some girls' limited information about products appeared to be influenced by their families' social or cultural beliefs, particularly around tampon use. Across all three cities, almost all participants indicated reservations regarding tampons, citing fears, such as tampons would result in ‘taking away’ their virginity, might portray them as promiscuous, or that tampon use was ‘dirty.’ As one adolescent girl from NYC explained during a PM session: ‘my mom said that tampons are for people who already had sex and who are not a virgin anymore.’ Another described hesitation was linked to girls’ lack of knowledge about tampon insertion. As one adolescent girl in Chicago explained, ‘I don't use tampons because I don't know how, and it is scary.’ This quote also underscores the lack of practical guidance and basic reproductive body literacy that U.S.A. girls may experience today. These factors appeared to influence the reported preference of most of the participants for menstrual pads over other product options. Early adolescence was indicated as a particularly vulnerable time of confusion around product selection and usage, with confidence in menstrual management lessening over time.

During the PM sessions, many girls recalled that one of the greatest challenges they faced post-menarche was determining how to manage their periods during the school day. This included the need to reduce the chances of leaking blood onto their clothing. Menstrual leaks, and any related visible stains, were perceived to be an extremely embarrassing outcome that would expose girls' menstruating status to peers. Participants noted during early adolescence, girls may experience even higher levels of shame regarding leaking incidents, while also being more vulnerable to having them given a lack of confidence and skill with period management. In some cases, menstrual stain-related embarrassment was described as having caused a girl to leave school for the day or reach out to family for resources that were unavailable at school. As one school nurse in LA explained: ‘some are so mortified they just have to go home ... or have their parents bring [clean] clothes to school.’ Other girls indicated going to school administrators for spare pants or wrapping sweatshirts around their waists. For schools with uniforms, the colour or type of fabric was found to exacerbate this anxiety. One adolescent girl in NYC explained during an interview: ‘In my school, we had to wear khaki [beige] pants as part of the uniform so that was also a struggle [for menstrual stains].’ She described how this resulted in many girls being preoccupied with fears of staining for much of the school day when menstruating.

Numerous girls indicated that better guidance on how to more effectively manage their periods would have helped them to avoid menstrual stains, or reduced the anxiety about having them. This in turn could have improved their initial experiences with menstruation, especially in school. As one adolescent girl in LA explained during a PM group session:
… I used the pads my mom brought me … I never really researched if they were the best pads for me. I also did not have much knowledge about what the types of pads there were. As a result, there were days where I would leak and stain my pants. This was so frustrating for me that I grew to hate being a girl …

A number of girls suggested that a lack of open discussions about these topics at home, including differences in heaviness of menstrual blood flow or period symptoms, negatively impacted their menstrual experiences, particularly in early adolescence as they adjusted to having their periods.

The discomfort with discussions about menstruation emerged as a challenge across many girls’ families. Girls frequently suggested that their mothers or parents were not open to discussing these topics and that bringing up menstruation was taboo. One adolescent girl in LA described this tension with her mother in her first period narrative: ‘I felt embarrassed and ashamed to tell her, I felt as if periods were something gross like farting or pooping and therefore one should remain quiet about it.’ This discomfort speaking about periods with mothers often led girls to seek support from other sources, such as sisters or friends. An adolescent girl in NYC explained this challenge in her first period story:

… I told my older sister and she taught me how to wear pads. I didn’t tell my mother because I knew she would treat me differently and be judgmental about it. She didn’t find out till a year later when I leaked my pants …

This lack of discussion may have direct implications on girls’ ability to access, purchase or vocalize preferences with regards to the type of menstrual products. Several participants indicated that their hesitancy to disclose their experience of menarche was also linked to worries and discomfort around being seen or treated differently, including as more mature or adult, by their mothers and fathers.

The key informant interviews revealed that many parents expected schools to provide puberty and menstruation-related information. As a result, parents believed, or possibly rationalized, that they did not need to discuss such topics with their daughters. This seemed especially prevalent among immigrant parents, who were less familiar with the U.S.A. school system. A religious youth group coordinator in NYC further elucidated this dynamic:

… I think we are all avoiding the very subject because you want to protect your child when it comes to female things; they [parents] are like ‘oh they should know it … if they go to school, they should know these things.’ So, it is a sense of guilt and trying to defend why these sorts of conversations are not held at home …

The majority of girls, however, reported that the information they were receiving in school was often not sufficient, as school-based curricula often focused on the biological aspects of puberty and menstruation rather than providing practical guidance. During the designing a puberty curriculum activity, one adolescent girl in LA described this information gap:

… usually it is science-based … like about the reproductive system but not about cramps and stuff like that. We’re not learning about it in the context of your period but more about pregnancy and what getting your period means scientifically …

Almost all of the girls indicated during the ‘how to make a school more girl-friendly’ participatory activity that schools should more proactively provide practical information. This included, in particular, guidance and insights about how managing a period might affect them over the course of a school day, along with specific strategies for managing symptoms, such as menstrual cramps.

**Challenges associated with menstrual pain**

Menstrual pain was described by girls as one of the most challenging aspects of managing their periods. Menstrual cramps during the school day was a common occurrence for many girls each month and frequently made it difficult to focus while sitting in class. An adolescent girl interviewed in NYC articulated how this diminished her ability to concentrate:

… With cramps … sometimes it kind of stops me from participating … I get really tired. I have trouble paying attention. I understand the concept [being taught] but when it comes to paying attention, it’s like … ‘not today.’ …
Not only was menstrual pain reported to make it difficult to focus, but many girls and teachers described how menstrual pain and related menstruation symptoms contribute to a social withdrawal of some female students in the classroom. For example, girls may intentionally try to reduce their social presence in class by sitting in the back of the classroom or putting on their sweatshirt hoods and refusing to participate in class discussions. One Middle School teacher in Chicago shared her observations of this behaviour:

… I think they just feel icky and it’s new … so they are so uncomfortable. They come in very moody; I can honestly tell when some students have it [their period]. They say they don’t feel well and they have no energy …

A number of girls also described this menstrual pain-related social withdrawal during school. In one interview, an adolescent girl from NYC explained how ‘my friends] become more quiet because they’re concentrating on the pain and can’t communicate with any of us.’ The challenge of managing cramps was found to be compounded by the minimal options girls had for dealing with the pain during the school day. Both girls and key informants described how most schools offer limited options for girls experiencing menstrual cramps. Although many girls were able to articulate what is needed to manage menstrual cramps, such as pain medication, hot water bottles/heating pads and cots or rest areas for lying down, only the latter was cited to be frequently available in schools. In addition, some girls noted that requesting to lie down in designated rest areas when dealing with period pain, although considered helpful, may result in the negative consequence of missing academic coursework and class time.

Across all three cities, both girls and school-based key informants described how regulations prohibit the provision of pain medication to girls. A principal of a charter school in LA articulated the complex dynamics around this issue:

“This school is not allowed to give them medicine - this is based upon legal advice from lawyers because girls are all different sizes and weights; we don’t know the right dosage of medicine to give them. Lawyers told us to stay away from it.”

These regulations left teachers and school nurses with few options available for addressing the menstrual pain needs of their students. As one teacher at a charter school in NYC explained:

… If it seems real and I can tell they’re really in pain or really not feeling great, I’ll send them to the nurse. We can’t give them pills or anything, so there isn’t that much that we can do. I know that the nurse will let them lay down in her little cot area …

Given the limitations on the provision of analgesics by schools, many girls described bringing their own pain medication. School policies however usually did not permit this either, resulting in many girls covertly stowing medication in their backpacks or lockers. In some schools, if teachers or administrators found girls with pain medication during school hours, it was confiscated. As one Public School teacher in NYC further explained: ‘We have to take painkillers away if they have them … a liability thing … we can’t have them with controlled substances.’ Many teachers and school nurses described frustration with these policies, recognizing that the inability to manage menstrual pain was debilitating for many students, and negatively impacted their educational experiences. One school nurse in LA articulated the inequity she saw mired in this approach:

… I believe that we should do what private schools and camps do. I think that health and wellness is very important … if you’re healthy and well, you should be in school getting an education … when you go to camp or private school they have a check-off list that the doctor and the parent checks off and says what we can give you meds for certain conditions …

In all three cities, there was an additional challenge related to the lack of a consistent nursing presence in schools. Due to a range of factors, including funding and prioritization, many school nurses were assigned to float between several schools in a given week. This meant that girls struggling with menstrual pain were not always able to access nurses when needed, or to lie down when they were having cramps, as cots were sometimes located in the nurse’s office. One Chicago School Counsellor described this challenge, explaining how ‘CPS [Chicago Public Schools]
doesn’t have nurses in the schools every day; rather 1 or 2 days a week and it’s just not reliable.’ As a result of the lack of a consistent nurse presence, both teachers and girls described being less familiar and comfortable with their assigned school nurse. This in turn reduced the possibility of the nurse serving as a useful resource on menstruation and its management.

For some girls, social and cultural beliefs were also found to influence how they managed their menstrual pain, including alternative remedies to medication. These girls described coming from households that dissuaded them from using pain medication, and so instead, sought alternative strategies such as warm wash towels or heating pads for their cramps, hot herbal teas, exercise and diet modifications. However, not all of these alternative approaches were logistically feasible to use during the school day.

**How menstruation hinders girls’ school-based physical and sport-related activities**

Participation in physical activities during menstruation was also found to be challenging for many girls. This included engaging in Physical Education (PE) classes at school and extracurricular sports and dance programmes. There were multiple reasons provided, including menstrual pain and discomfort, fear of a menstrual leak due to increased movement, discomfort with the athletic uniforms and, for some adolescent girls, social and cultural norms that led them to refrain from physical activities. Girls, school staff and sports coaches all described considerable drops in physical activity participation for many girls when they were menstruating. A PE and Health teacher in Chicago explained, noting the menstrual secrecy that prevails in their excuses:

> …they feel very uncomfortable being active during their periods. We try and push in our health class that this is just a normal part of their monthly lives and it shouldn’t affect their daily life like that. A lot of coaches and teachers were noticing they weren’t coming [to sports practices] or trying to get out of PE class or afterschool programs. They would just say they didn’t feel well or were uncomfortable …

Some female coaches, PE teachers and dance instructors sought to support menstruating girls and encourage their participation. They described keeping free menstrual products nearby during physical activities in the event of an unplanned period or for girls who may need to change their pads more frequently due to staining worries. In addition, some instructors supported girls by modifying specific exercises or activities to enhance their comfort, or tried to educate them about the benefits of exercise for alleviating cramps.

Some girls described how their menstrual product preferences limited their participation in specific sports or physical activities. For example, one adolescent girl during the PM group sessions in Chicago indicated refraining from joining her schools’ cheerleading team, explaining: ‘I was told by the head cheerleader that if you do cheerleading, you have to wear a tampon. I was not going to do that … so I didn’t do cheerleading.’ Similar product discomfort experiences were described as barriers by some girls hoping to participate in swimming-related activities for leisure or for PE class. In addition, a number of girls shared that school or extracurricular sport uniforms, such as those with short or tight-fitting running shorts, created anxiety that others would observe that they were menstruating. An interviewed adolescent girl participant in LA explained:

> … Most of sitting out of activities is because of embarrassment. You don’t want to accidently move the wrong way and then blood smears against your shorts. You don’t want someone to see the outline of your pad, you know? You just feel like you always have to close your legs …

Sports coaches validated the concerns expressed by the girls, articulating how the design of many sports uniforms are not ideal for menstruating girls, especially when the uniforms are white or light coloured. One coach suggested that girls should be provided with dark spandex shorts to wear under their uniforms to help them feel more secure that their menstrual pad will stay in place and better hide any leaks that occur.
Lastly, some adolescent girls’ decisions about refraining from sports or physical activities were influenced by social and cultural beliefs viewing menstruation as dirty, with a perception that engaging in physical activity during school would require multiple showers. Others reported beliefs of menstruation as a time of weakness or as being unwell; a perception often reinforced by girls’ families. One school nurse in LA described how some ‘girls go home, because it’s what they see from their friends and their parents … it’s an illness or disposition that requires you to be laying down.’ Many of the interviewed school staff and coaches shared receiving verbal requests or letters from parents requesting that their daughter not participate in sports or gym class while menstruating. Although teachers and coaches did not want to disregard parents, many felt strongly that girls should try and participate when possible. A Health and PE Teacher in Chicago explained her approach:

…I wouldn’t let them not participate. It would only work if it was a doctor’s note and those are not doctor’s notes. So, I would have a conversation with the student and the parents and try and tell them that it’s important for them to be active, even during their period. It not only keeps them physically active, but it then correlates to their mind and can help them focus in school and that whole thing. If they are getting out of it [PE class] for a whole week that can it affect them in the classroom …

By framing the range of benefits that can be attributed to physical activity, both menstruation and non-menstruation related, some teachers sought to help convince students and their parents about the value of movement on their general well-being and schooling experiences.

**Discussion**

This qualitative and participatory study provides critical insights into the range of challenges that adolescent girls attending schools in urban U.S.A. cities may face after menarche. These findings highlight that early adolescent girls in particular may lack sufficient knowledge about the practicalities around managing their periods, which can negatively impact their MHH experiences, especially in school contexts. These findings support broader evidence from the U.S.A. regarding the impact of perceived unpreparedness on the menstrual experiences of BIPOC and immigrant girls, including how it fosters feelings of negativity, shame and anxiety (Cooper & Kock, 2007; Jackson & Falmagne, 2013; Janet Lee, 2009; Stubbs, 2008; Teitelman, 2004).

Overall girls described receiving inadequate practical guidance around menstruation and its management, at home and at school. When menstrual health education was provided in schools, there was found to be a prioritization of science-based concepts. Such findings are consistent with broader sexual health education trends across the U.S.A., with a lack of policies mandating sexual health education as an important factor in understanding gaps in the provision of menstruation education. For example, there exists wide state-level variance in school-based sexual health education. Although 39 states and the District of Columbia (DC) mandate sex education and/or HIV education, only 30 states and DC require these programs to adhere to mandated topics, and only 13 states require medically accurate content (Guttmacher Institute, 2018). This results in inconsistencies in the type, comprehensiveness and accuracy of education, and in many cases a total absence of its provision (Crockett et al., 2019; Hall et al., 2016). There is also a lack of understanding about the effectiveness of school-based menstruation and puberty education (Crockett et al., 2019). The focus on providing a science-based approach to menstruation education leaves out practical guidance, a need expressed by many of our participants. This is consistent with school curriculum findings globally, especially in LMIC (Hennegan et al., 2019; P.A. Phillips-Howard et al., 2016; Sommer, 2012). Poorly funded public school systems, which are especially common in urban and rural contexts in the U.S.A. (Logan & Burdick-Will, 2017), may be hindered in the delivery of MHH and puberty education. For example, trends towards prioritizing curricula content for national standardized testing (Jaekyung Lee & Lee, 2020), large class sizes (Jenkins, 2015) and inadequate teaching resources (Logan & Burdick-Will, 2017) may all impact the inclusion and quality of MHH and puberty content.

Another significant issue relates to the age of instruction for menstruation and puberty education in schools. Our findings suggest that many girls did not receive adequate information about MHH
prior to menarche either at home or at school. When pubertal health education is provided to early adolescents in U.S.A. schools, it generally occurs in Grade 5 (ages 10–11) or Grades 6–8 (ages 11–14). However, evidence suggests that some American girls, especially BIPOC adolescents, may experience pubertal development, including menarche, earlier than previous generations (Eckert-Lind et al., 2020; Slyper, 2006). The median age at onset of breast development in the U.S.A. was 8.8 for African American girls, 9.3 for Hispanic girls, 9.7 for white non-Hispanic girls, and 9.7 for Asian girls (Biro et al., 2013). School health education policies need to better reflect these trends to ensure girls are receiving this critical pubertal health information prior to the onset menarche and related body changes (Ann C. Herbert et al., 2016). This may require introducing this education earlier, such as in 4th grade (ages 9–10) and ensuring that elementary schools and teachers are equipped to support their students’ menstrual needs through the provision of education and ensuring the availability of menstrual products.

This study also revealed the discomfort felt by some girls and families around discussing MHH. The younger age of pubertal onset and menarche experienced by girls may factor into these issues; as many parents may not have anticipated the need for such information sharing with their children at earlier ages. Existing evidence suggests that while some mothers among immigrant (Angulo-Olaiz et al., 2014; Hawkey et al., 2017; Meschke & Dettmer, 2012; Metusela et al., 2017) and low-income populations (Cooper & Kock, 2007; Sebert Kuhlmann et al., 2019) report an increasing willingness to have conversations with their children about sexual health, there is still discomfort surrounding communication about menstruation (Rubinsky et al., 2020). Many mothers describe feeling a lack of preparedness to initiate such conversations, or families may expect such issues to be addressed at school (Agbemenu et al., 2018; Alcalde & Quelopana, 2013; Jean et al., 2009). One result of this family hesitancy to openly discuss periods, particularly found among Latino households, are girls’ reported negative perceptions of menstruation, compounded by frequently used scare-tactic messaging linking menstruation to the dangers of pregnancy (Alzate et al., 2018; Janet Lee, 2009; Tettelman, 2004). To address these family dynamics, some schools and education systems have introduced puberty or sexual health workshops to help parents become more confident and competent communicating on these issues (Cappello, 2001; Klein et al., 2005; Wight & Fullerton, 2013). More evidence is needed however regarding the effectiveness and reach of this type of programming, including whether such workshops sufficiently accommodate a range of languages, education levels and socio-cultural perspectives.

Our findings about the impact of socio-cultural contexts, such as menstrual stigma, on American girls’ menstrual experiences correspond with an existing theoretical framework for examining menstrual experiences in LMIC (Hennegan et al., 2019). This includes how socio-cultural factors, combined with social support systems (e.g., families, schools), behavioural expectations enforced by self and others (e.g., not revealing one’s menstrual status) and MHH knowledge (practical and biological) can all shape, positively or negatively, a girl’s menstrual experience. Similar to our findings from this study, the model indicates how the impact of negative menstrual experiences can be far reaching, including hindering girls’ participation in activities, their educational experiences and their physical and mental health (Hennegan et al., 2019).

The problematic dynamic of managing menstrual pain, especially in school settings, arose for many adolescent girls, often causing them to socially and sometimes physically withdraw from school activities. A recent meta-analysis of the existing global evidence suggests that menstrual pain symptoms linked to both pre-menstrual syndrome (PMS) and dysmenorrhea are quite prevalent, estimated to affect around three quarters of all young women under the age of 25 (Armour, Parry, Manohar et al., 2019). However, the quality of the included studies was variable, with more research needed to more understand the experience of menstrual pain in given contexts. Importantly, however, the meta-analysis included LMIC and high-income countries and highlighted the disruptive impact of dysmenorrhea on the daily lives of young women around the world, including its negative impacts their classroom experiences, including academic performance and school attendance (Armour, Parry, Manohar et al., 2019). U.S.A. based research has also identified menstrual pain as a reason for many Hispanic high school girls (grades 9–12) in Houston, Texas to refrain from participating in sports (Banikarim et al., 2000). Although the sample was young US women (ages 18–37), a national online survey identified participants’ desires for improved education
on menstrual pain, including what is ‘abnormal’, and validation of their menstrual pain experiences as real within their school and family contexts (Rubinsky et al., 2020). Globally, young women are often reluctant to bring issues of menstrual pain to health providers; experiences are instead normalized as a part of being female (Armour, Parry, Al-Dabbas et al., 2019; Grace & MacBride-Stewart, 2007; Rubinsky et al., 2020). As severe pain may be a marker for more serious menstrual disorders, such as endometriosis, improved awareness about the such conditions can improve earlier detection (Bush et al., 2017). This includes not only education for girls and their parents to seek appropriate health services (Bellis et al., 2020), but also awareness-raising among school nurses.

A lack of support for managing menstrual pain symptoms in schools, including inconsistent nursing presence and limited mitigation strategies, was a common concern among the adolescent girls in our study. This was also found to raise issues of equity for girls in the U.S.A. of differing SES. Many American public schools adhere to strict policies regarding the provision of any type of non-prescription medication to students, although such procedures are often less clearly defined than those for prescribed medications (McCarthy et al., 2000). Conversely, private schools often have more flexible policies, including the use of standard checklists which parents and health providers can complete to indicate when to the school may provide medication. The significant nursing shortages in the American educational sector further complicates this issue. According to the National Association of School Nurses (NASN), only about 40% of all U.S.A. schools have a full-time nurse; just 35% have a part-time nurse, and 25% have no nurse at all (Willgerodt et al., 2018; Ziminski, 2016).

Notably, there are currently no federal laws mandating the presence of a trained nurse in schools (Rich, 2020). Beyond supporting girls with menstrual pain, school nurses can also play a pivotal role in providing health education and support, including on topics related to puberty and sexual health. Evidence suggests a broader positive impact of nurses on urban schools serving low-income families; including ensuring that students have reliable sources for health support throughout the school day, especially students managing underlying health conditions (Baisch et al., 2011). The rapid rise of COVID-19 further underscores the importance of school nurses in American schools today.

Our study finding that menstruation was negatively impacting girls’ engagement in physical activities raised larger ramifications for their overall health and well-being. Ensuring that girls can comfortably participate in extracurricular programming, such as PE class, sports, dance and other physical activities, is critical for their healthy development (Graves et al., 2015; Johnston et al., 2007; Sabo et al., 2008). A significant body of evidence indicates the positive impact of girls’ participation in sports, including improved academic achievement, psychological well-being and physical health (Womens Sports Foundation, 2018). However evidence also suggests that a higher number of low-income and BIPOC girls drop out of sports programs during early adolescence (Eime et al., 2017; Graves et al., 2015). One factor that may be influencing these drop outs may relate to girls’ changing bodies, including their experiences with gaining weight and breast development (Scurr et al., 2016). Our findings indicate that challenges with managing menstruation, including fears of a menstrual leak, may also negatively impact girls’ engagement in sports and physical activities. A study of white college females in the U.S.A. (ages 18–20) who were involved in sports throughout adolescence raised similar issues, including a fear of disclosing their menstruating status through leaks, and anxiety that menstrual pain might hinder their performance and roles on their teams (Moreno-Black & Vallianatos, 2005). Those leading physical activities and sports should consider practical solutions for addressing the challenges girls may face with participation. For example, the provision of supportive equipment (e.g., spandex shorts), darker uniforms or ensuring that preferred menstrual products are readily available in the event of an emergency, may all help mitigate some of the challenges highlighted by girls.

**Limitations**

There are a few limitations to note. First, the participants of this study were primarily cis-gender females. These findings therefore do not encompass the experiences of non-gender conforming and, trans populations who may have greater challenges with menstruation, especially in school settings. Second, these findings focused primarily on Black and Latina girls attending low-income schools in
urban cities, and thus do not capture the experiences of a broader range of girls in the U.S.A., including across diverse geographies and demographics. Third, our findings were derived from subjects willing to participate in the qualitative and participatory study. Girls or adults who are not comfortable discussing these topics openly in a group or qualitative format may not have been captured in our study. adults

**Conclusion**

BIPOC adolescent girls growing up in urban cities in the U.S.A. lack adequate physical and social support for managing their menstruation-related needs in school contexts. This includes insufficient education on the practicalities of managing menstruation, leading to anxiety and decreased classroom engagement; inadequate information and guidance about menstruation from many parents or other caregivers, hindering confidence for managing periods in school; and inadequate resources within many schools for addressing girls’ menstrual pain, the latter of which may negatively impact their ability to concentrate. Lastly, menstruation may impact girls’ experiences with physical activities and sports, resulting in some refraining from participation, despite the many benefits associated with physical activity. Similar to work conducted in LMIC, new interventions and strategies are needed in U.S.A. schools which aim to directly address the challenges that menstruation poses on the educational experiences of adolescent girls attending American schools.

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