





“Menstruation is a Fearful Thing”: A Qualitative Exploration of Menstrual Experiences and Sources of Information About Menstruation Among Adolescent Schoolgirls

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Background: Although menstruation is a biological phenomenon, it is still subjected to secrecy, shame, and negativity. Schoolgirls lack access to appropriate sources of information about menstruation. Little is known about the content of the information provided to schoolgirls concerning menstruation in northern Ethiopia. This study explored schoolgirls' experiences and the content of information they receive concerning menstrual hygiene management in Tigray.

Methods: A qualitative design was implemented. Focus group discussions and in-depth interviews were conducted using the local language among 79 schoolgirls who had experienced menarche. Data were audio-recorded, transcribed, translated, and imported into ATLAS.ti-7.5.18 computer software for analysis. Data were coded and analyzed using a thematic analysis.

Results: Five themes have emerged from the analysis: 1) there is an indistinct and haphazard source of menstrual information; 2) menstruation is perceived as “a natural gift”; 3) menstruation is also considered fearful and embarrassing; 4) negative community perceptions of menstruation lead to menstrual restrictions, and 5) lack of privacy for dealing with menstrual issues as well as the scarcity of menstrual hygiene management materials is an on going problem. Schoolgirls have indistinct and haphazard sources of information concerning menstrual hygiene management, obtaining it from teachers, mothers, sisters, and friends, but the information they receive is shrouded in secrecy and often is factually incorrect. Menstruation is commonly linked to notions of sexuality, shame, and the approach of marriageability.

Conclusion: The information that schoolgirls in rural Tigray receive about menstrual hygiene management is inaccurate, insufficient, and encumbered with social taboos. Thus, schoolgirls do not have an adequate understanding of the physiology of menstruation and do not receive adequate emotional support at menarche, leaving them with feelings of embarrassment and anxiety. There should be efforts to implement programs that change community perceptions about menstruation.

Keywords: menstruation, menstrual hygiene management, adolescent schoolgirls, information, northern Ethiopia

Introduction

More than half of Ethiopian schoolgirls miss school during menstruation, and only one-third of girls use commercially produced sanitary napkins as a means of absorbing menstrual fluid.¹ Menstruation is a normal part of female reproductive physiology, however, it is a private matter and is often surrounded by secrecy, shame, and social taboos across many cultures.²⁻⁵ Because menstruation is linked to reproduction and thus to sexuality, it often has a stigmatizing shameful connotation that prevents schoolgirls from discussing it with parents or even with close friends.⁶⁻⁸ This sense of shame

and secrecy has persisted for decades and has prevented public discussion of the subject, thereby reducing the flow of accurate information to the schoolgirls who need it.^{9–12}

Accurate information regarding menstrual hygiene is one of the four pillars of good menstrual hygiene management, which also includes adequate facilities, adequate materials, and policies that improve the support of menstruating schoolgirls and women.^{13,14} Around 52% of adolescents in Ethiopia have never received any information related to menstrual hygiene management and reach puberty unprepared for menarche.^{15,16} Schoolgirls are concerned about menstruation and how to manage their periods, and seek information on these matters from various sources, including their friends, mothers, sisters, female relatives, and teachers,^{17–21} but much of the information they receive is negative and depicts menstruation as undesirable, contaminating, incapacitating, and even polluting.^{22–24} This negative view restricts girls' social, economic, and educational activities and produces adverse effects on their psychological and physical health.^{25–28} Although 57% of girls in sub-Saharan Africa are enrolled in elementary school, only 17% continue to secondary school. Part of this decline in school attendance is explained by menarche and the continuing effects of menstruation. Menstruating schoolgirls often miss 3–4 days of school each month, and even if they do attend school, menstrual anxiety may diminish their ability to concentrate on their studies.²⁹ In Ethiopia, 55% of girls miss at least one class during their menstrual periods.¹

When schoolgirls reach menarche, they often lack the cognitive and social skills necessary to make informed decisions about their reproductive and sexual lives. This is especially true as the mean age of menarche appears to have decreased around the world.^{30,31} Providing accurate, understandable, and actionable information about menstrual hygiene management is important for schoolgirls to meet the various challenges associated with menstruation. Previous studies showed that mothers and female family members are the primary source of information for schoolgirls about menstrual matters; however, in-depth exploration of what and how this information is communicated has not been done in the study area. Understanding the menstrual experience of girls, and where and how they obtain information about menstrual hygiene management, is important in designing programs to meet their needs.

Methods

A qualitative study was undertaken in 2019 to explore the menstrual experience of schoolgirls and to describe the sources and content of the information they receive concerning menstrual hygiene management in rural Tigray, northern Ethiopia. Purposively selected schoolgirls aged 13–18 years who had experienced menarche were interviewed. The participants were selected by female school teachers. Menstruating schoolgirls who are active and less active participants in their academic class were included in the focus group discussion to reinforce the discussion. Moreover, schoolgirls were selected from grades 5–8 and grades 9–10 in primary and secondary school respectively, to ensure group dynamics, i.e., different durations of menstrual experience. The age range was determined based on a previous study of the mean age of menarche in Ethiopia, which is reported to be 13 years.¹ A total of 79 schoolgirls from 5 schools, participated in this study. Seven schoolgirls participated in the in-depth interview, and 72 schoolgirls participated in the 8 focus group discussions. The number of participants in the focus group discussions ranges from 6–12, with the median size of nine participants in a group. The purpose of the interview was explained by the interviewer to encourage the schoolgirls to express their opinions freely. In-depth interviews were conducted to gather individual perspectives concerning menstruation. Interviews were done in the local language (Tigrigna) using open-ended questions followed by interlocutory probes. Each interview lasted 50 minutes on average. The focus group discussions and in-depth interviews took place at schools in separate, unused classrooms, without the presence of non-participating students. The schoolgirls found these locations allowed for confidentiality and promoted open and free discussions. The focus group discussions and interviews were done by the first author (female and a native speaker of Tigrigna) assisted by a female research assistant who had qualitative research experience.

Interviews were audio-recorded, transcribed, and translated into English. Field notes were also taken. Data were then imported into ATLAS.ti software (version 7.5.18, ATLAS.ti Scientific Software Development Mnbh, Berlin) for analysis. Thematic data analysis was employed. The analysis took place in parallel with the data collection to check the clarity, depth, and breadth of the data collected and the level of saturation obtained. Data saturation was determined to be present when replications took place, and no new codes or themes emerged during the preliminary analysis.³² Reading and re-

reading the data and refining the several codes contributed to the adjustment of sub-themes. Coded data were categorized into families, yielding five major themes. To ensure the trustworthiness of the findings, we went back to the field after the preliminary analysis and discussed the conclusions and interpretations with participants in three schools. After each step, the results were reviewed with peers.

The research proposal was reviewed by the institutional review board of the College of Health Sciences at Mekelle University, and the study protocol was approved (reference number of ERC 1461/2018). Approval was also obtained from the Tigray regional health bureau and district (woreda) health offices. School directors and directresses were informed about the research project and its objectives. Written consent was obtained from parents of schoolgirls who were younger than 18 years old during the data collection period. Moreover, assent was taken from the participants themselves. The purpose of the research was explained to the participants. Moreover, participants were informed that they could decline to respond to questions that made them uncomfortable and that their participation was purely voluntary. They were also assured of confidentiality and that no names or identifiable personal information would be disclosed or used in any publications or reports. Participants were compensated with 50 Birr (~1.78 \$) for their time and participation.

Results

A total of 79 schoolgirls with the age range from 13–18 years were interviewed [Table 1]. Thematic analysis of the data yielded five major themes and two subthemes: 1) The source of menstrual information in this group is indistinct and haphazard; 2) Menstruation is perceived as a “natural gift” to females; 3) Menstruation is also regarded as fearful and embarrassing; 4) negative community perceptions of menstruation result in numerous menstrual restrictions, and 5) the lack of privacy for dealing with menstrual issues and lack of access to adequate menstrual management materials remains a pressing problem for this population [Figure 1].

Indistinct and Haphazard Sources of Information

The study participants confirmed that they had either heard about menstruation or had seen someone menstruating prior to reaching menarche themselves. Schoolgirls hear about menstruation from multiple sources, including from teachers, their mothers, sisters, and friends, as indicated by the study participant who said:

Table 1 Sociodemographic Characteristics of Study Participants

S. No	Variables	Focus Group Discussants	IDI Discussants
1.	Age 13–18 year-old 15–16 year-old Mean age 15.58 \pm 1.11 year-old	72	7
2.	Age at menarche 12–18 year-old Mean age at menarche 14.06 \pm 1.21	72	7
3.	School Grade 5–10 graders 8–10 graders	72	7
4.	Ethnicity Tegarau	72	7
5.	Religion Orthodox Christian	72	7

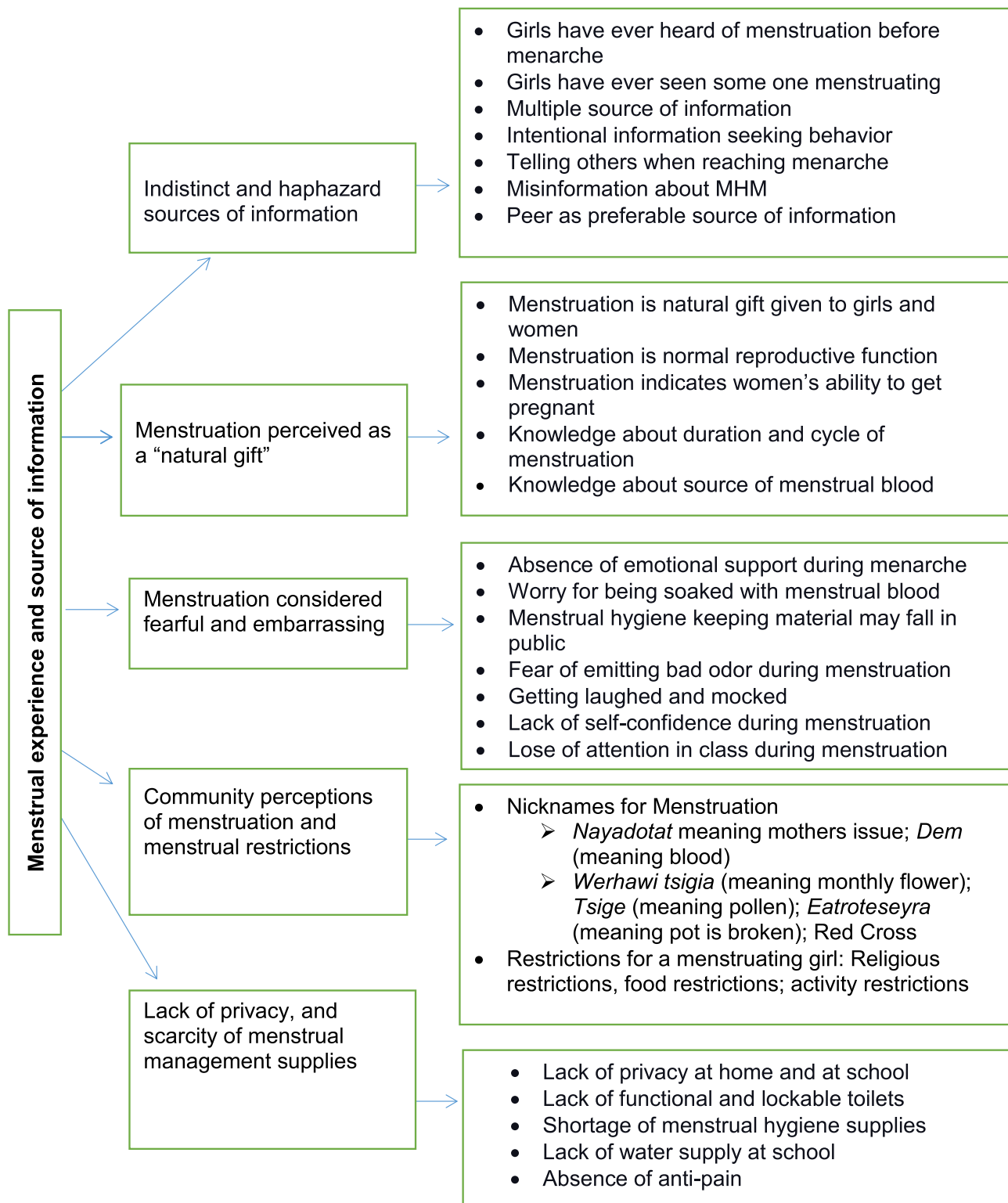


Figure 1 Coding tree of the analysis.

Well, the first time I heard about it [menstruation] was at home from my mother.... The second time I heard about it was at school from one teacher. I had also a friend who underwent menarche when I was in grade 6. (13 year-old, focus group discussant)

However, schoolgirls do not usually intentionally seek out information about menstruation. As one 16 year-old informant said:

We did not intentionally seek out information about menstruation, but we heard about it when they told us about it at school.
(16 year-old, in-depth interview participant)

Schoolgirls do not generally tell others when they reach menarche. They keep this information to themselves as they are uncomfortable talking to their mothers, sisters, friends, and teachers about intimate events such as menstruation. One interview participant noted:

Informing family members about menarche is the most terrible thing. My mother found out about my menarche when she saw my skirt soaked in blood! (16 year-old girl, in-depth interview participant)

One of the reasons schoolgirls do not talk about beginning their menstrual periods is the fact that when they do tell their mothers about it, they often do not get a positive and/or supportive response. This discourages further discussion. Many mothers are caught off guard by the appearance of menstruation when it actually happens. One interviewee remarked that:

I told my mom that I started my period [menstruation] and she asked: What is a “period”? Do you mean “Werhawitsigia?” [A word in the local language (Tigrigna) for Period or Menstruation] because she didn’t know what a ‘period’ was. My mom was shocked and said “What has happened to you? You are so young! [13 year- old]!” (18 year-old, in-depth interview participant)

Asking questions and talking to others about menarche makes schoolgirls uncomfortable; even just hearing about menstruation is difficult for many of them. When we capture their reactions to and uneasiness in hearing about menstruation, discussants reacted in two different ways. Many found it very unsettling to hear about menstruation, but often they became more comfortable with the subject after repeated discussions.

The content, as well as the source of information, matters a great deal in these discussions. Schoolgirls receive very different information about menarche, menstruation, and menstrual hygiene management, depending on their particular source of information. As remarked by one interviewee:

... They [schoolteachers] tell us to wash our clothes and pads, but they also tell us not to pour the wash water into a place where there is sunlight. Also, the pad should not be dried in direct sunlight because you might get “*michi*.” [A non-specific illness believed to be associated with such exposure of menstrual materials]. (16 year- old, in-depth interview participant)

Schoolgirls are instructed to wash their pads in secret and to dry them in hidden places, with the end result that they must often use pads that are still damp and are uncomfortable to wear. This idea is reinforced by a belief in a stigmatizing disease called *michi*. *Michi* is a disease believed to be caused by blood/menstrual fluid staining a reusable menstrual pad when exposed to direct sunlight as per the the perception of the community. According to the girls, the symptoms of *michi* are generalized body weakness, headache, and joint pain, which are treated in the community with herbal remedies. Interestingly, however, schoolgirls who put their used menstrual materials out in direct sunlight reported that they had never had the symptoms of *michi*.

The information about menstrual hygiene management is often incomplete or not fully discussed. Although the schoolgirls are told how to use the pads, issues such as when to change the pad, how to dispose of used menstrual materials, and general bodily hygiene are often not adequately covered. Even school teachers seem to discourage schoolgirls from revealing their menstrual status and to encourage them to keep their menstrual hygiene management materials hidden.

Throughout this study, schoolgirls expressed a preference for getting information about menstruation from friends and peer-informants rather than from adults, but they are bothered by the level of menstrual knowledge among their peers. As one informant said:

It would be nice if we could be told [about menstruation] by our friends, but they may not have accurate information either.
(13 year-old, focus group discussant)

Menstruation Perceived as a “Natural Gift”

Menstruation is commonly understood by schoolgirls to be a special gift of nature, given only to women and girls. They understand that menstruation is part of normal reproductive functioning and that its presence indicates the ability to become pregnant, to become a mother, to start a family. This is seen as a great blessing.

It is “a gift” and it also means that a girl can become pregnant around the age of 13 when she starts producing eggs. (13 year-old, focus group discussant)

The study participants know that menstruation lasts 3 to 7 days and occurs roughly once every month, with some variation. The variation in the length of menstruation was often explained in relation to standards of living. They believe that schoolgirls with an affluent or better standard of living might have a heavy blood flow, lasting for many days. Almost nobody knew where the menstrual fluid comes from. As one 14 year-old focus group participant stated:

I don’t know where it comes from, but I guess it comes from different body parts and then is collected in the abdomen. (14 year-old, focus group participant)

Very few schoolgirls mentioned that the blood comes from the uterus, fallopian tubes, or vagina, but they all recognized that boys and men cannot /do not menstruate.

Menstruation Considered Fearful and Embarrassing

Menstruating schoolgirls are often shocked, scared, frustrated, and embarrassed by menstruation especially when it happens to them for the first time, as they do not have the emotional support they need to deal with this phenomenon. Most of them experience menarche alone, by themselves, without much preparation. They generally do not tell others about it. One study participant remarked:

By the way, it [menstruation] is very scary! You become shocked because you ask “What happened to me?” when it occurs for the first time. Even though information about menstruation was given at school, we were shocked because we had never experienced it ourselves. (13 year-old, focus group discussant)

Moreover, schoolgirls often suffer from menstrual anxiety. They are worried that their clothes may become stained or soaked with blood. They worry that people will see their menstruation, that their pad may fall out in public, or that they will give off a bad odor noticeable by their classmates. If their clothes get soaked or stained with blood, schoolgirls are often mocked and laughed at, not only by boys but also by other girls. With these fears in the back of their minds, it is not surprising that schoolgirls often lose their self-confidence during their menstrual periods and are uncomfortable. As explained by one 16 year-old focus group participant:

Even though I am physically present in class during menstruation, I don’t follow things well and I don’t understand it [the education] well because I’m only thinking about my period, not about the class. So it affects my education. We are really afraid to stand up and do classroom activities [such as writing on the board] because we worry about being soaked with menstrual blood. (16 year-old, focus group participant)

Community Perceptions of Menstruation and Menstrual Restrictions

Nicknames for Menstruation

Menstruation is given different names in Tigrigna, such as “nay adotat”, meaning “mother’s issue;” because it happens to women; “Dem” meaning “blood”, “werhawitsigya”, meaning “monthly flower”, “Tsige”, to mean “pollen”. Just as pollination is an indicator of fertilization in plants and trees, so too a similar analogy is used for menstruating schoolgirls and women because they are seen as now being capable of being fertilized and reproducing. Another local name is “eatroteseyra” meaning “the pot is broken.” Just as water contained in a pot can leak out if that pot becomes cracked or broken, so, too, the analogy is made with menstrual fluid. During menstruation the reproductive organ is similarly open, letting out the fluid. Schoolgirls also call menstruation “red cross”. Local ambulance services in emergencies used to be

provided by the international humanitarian organization, the Red Cross. The nickname implies that menstruation involves a red body fluid coming out in an emergency.

Although the community knows that schoolgirls menstruate and gives menstruation various colorful names, there is still a strong local belief that menstruation is associated with, or even caused by, sexual activity. One informant stated:

Oh, there is a lot of talks. People will gossip that a girl has started having sexual relations and has lost her virginity [when she begins to menstruate], but we know that menarche occurs without sexual intercourse. A lot of things have been said about me [since I started menstruating]. People said 'we saw her with blood on her skirt and she was with so-and-so [having sexual relations]' People say a lot of things about a menstruating girl! (18 year- old, in-depth interviewee)

There is also a strong belief in the community that when a girl starts to menstruate she is mature enough to get married, a belief that might promote early or teenage marriage, partly for fear of out-of-wedlock pregnancies. Parents worry about possible reputational risks to the family if a girl reaches menarche and starts having sexual relationships with boys. Pregnancy outside of marriage is hugely stigmatizing in local Tegarú society, for the family as well as for the girl. To avoid the possibility of illegitimate pregnancy, families may want their daughters to get married once they reach menarche, regardless of their age. One focus group participant said;

Oh in our community, if a girl starts menstruating that means she is ready for marriage. So they say 'we will let her marry.' Because the girl is now capable of getting pregnant, our parents are worried that we may get pregnant if we have sexual intercourse with a boy. It is taboo to be pregnant before marriage! (14 year-old, focus group discussion participant)

Restrictions on Menstruating Girls

Menstruating schoolgirls are also subjected to religious restrictions, they are restricted in respect to some household activities, and maybe forbidden to eat certain foods while on their periods. It is strictly forbidden for menstruating schoolgirls to enter churches or mosques, to touch Holy Scriptures, or to wash with holy water. What would happen to them if they do these things while menstruating is never explicitly stated. One discussant said;

Menstruation is dirtiness; we need to be clean when we go to church. Cleanliness is required to enter a church. But we don't know what would happen to us [if we did these things]. (14 year-old, focus group discussion participant)

During menstruation, schoolgirls are discouraged from eating sweet, sugary foods because it is believed it increases the amount of menstrual flow, whereas sour substances like lemons are thought to decrease the flow. Schoolgirls are encouraged to drink hot liquids to help facilitate the flow of menstrual fluid and reduce the pain associated with menstruation. Cold drinks are discouraged because it is believed to cause the menstrual blood to become clotted and hamper the blood flow.

Menstruating schoolgirls are also subjected to limitations on their activities, such as carrying heavy loads, fetching water, or carrying firewood. It is believed that menstruation saps a girl's strength and makes her easily exhausted. Schoolgirls are also forbidden to work with electricity, as some believe that menstruation increases her body's electrical conductivity and makes it more likely that she might be electrocuted while on her period.

It is not good to cook on the electric stove or to cook injera with electric power because the blood can increase body conductivity. (16 year-old, focus group participant); (Injera is a type of flatbread and a staple food in Ethiopia, where it is served with almost every meal.)

Lack of Privacy and Scarcity of Menstrual Management Supplies

Some, but not all, schools have room for storing menstrual hygiene products, but often these are not utilized well. The rooms are often locked or not easily accessible. Many schools do not have a secured room in which schoolgirls can change their menstrual pads, and often the doors on toilets do not work. Lack of privacy is a big concern for the schoolgirls. As one student remarked;

If we suddenly start to menstruate at school, we don't have any place to change pads. Our toilets don't have doors, so we suffer...! (16 year-old, focus group participant)

Schoolgirls not only lack privacy at school to deal with their menstrual needs but also face similar problems at home. None of the schoolgirls want anyone else to know about their menstrual status.

I normally change my pad at home if there happens to be a room free, but if not, I can't change it [for lack of privacy]. (16 year-old, in-depth interview participant)

There is also a lack of pads at many schools, so schoolgirls must wear the same pad for long periods of time whereas they should change them more frequently. Many schoolgirls also suffer from menstrual cramps, headaches, and backaches while menstruating, and analgesic medications are not readily available at school. The lack of effective pain relief in these cases causes many schoolgirls to miss class while menstruating. As one study participant explained:

We have abdominal cramps but we don't have access to anti-pain medicine. We don't have adequate supplies of pads. There are a lot of schoolgirls whose pads and clothing get soaked with blood. We have a shortage. We need to be provided with underwear.... (18 year-old in-depth interviewee)

Information obtained from focus group discussions and in-depth interviews were similar, but the in-depth interviews reflected individualized experiences.

Discussion

This study reveals that schoolgirls often experience menstrual anxiety with menarche, expressing feelings of fear, shock, frustration, disgust, and worry. The onset of this normal, biological phenomenon places schoolgirls into a socially marginal situation that they see as fraught with tension, fear, and anxiety. Anxiety around menstruation is reinforced by negative sexual stereotypes, a purported "disease" called *michi*; shame and hiddenness; its link with sexuality; and the potential approach of early marriage. Thus, *michi* reinforces the view that menstruation and its management should be private and secretive because it is shameful. *Michi*, therefore, adds fear of disease to the forces marginalizing menstruating schoolgirls.

The link of menarche with sexuality and loss of virginity imposes additional experience of anxiety to schoolgirls which similar studies also concurred with this finding.^{6,33} It is also a getaway for early marriage in traditional societies, once a girl started menstruating, social norms supporting child marriage is becoming prevalent.^{6,30,34} This implies schoolgirls feel mounting pressure to keep menarche and menstruation secret and experience anxiety with each period. Others knowing that a schoolgirl now menstruates could also mean the end of her education. For many schoolgirls, this too is a powerful incentive to keep their menstrual status hidden.

This study determined that adolescent schoolgirls receive information about menstruation from teachers, their mothers, their sisters, and peers, as indicated in other studies.^{6,18,35} However, the study also confirms that menstruating schoolgirls do not receive adequate emotional support during this time in their lives and do not receive practical support in dealing with the hygienic aspects of menstruation. Moreover, it is explored that the local culture informs schoolgirls that menstruation is a "natural gift", which is perceived as a sign of maturity and fertility; it is nonetheless still regarded as a "gift" that should be kept secret. This sense of secrecy is reinforced by mothers and school teachers. This may not be surprising, because partly the teachers themselves are steamed out from the society and mothers do not have adequate information. This finding is supported by many other findings.^{18,25,36} This reinforces the overall negative perception that persists towards this natural biological process.

Revealing to your mother that you have begun menstruating is undesirable according to this study. Most mothers do not appear to react positively to this news about their daughters. This may in part be due to the economic burden that menstrual hygiene management may impose: these schoolgirls need sanitary pads, underwear, laundry detergent, water access. The economic stress that this may impose on a poor, struggling household may be considerable.

In addition, schoolgirls are reluctant to discuss menstruation with their parents and teachers they would rather feel more comfortable discussing this subject with their peers (whose fund of knowledge is often deficient). There is evidence

to suggest that adolescents seek information privately when they do not discuss such issues with their parents.^{30,35,37} We did not find that schoolgirls discuss these matters with fathers; it falls almost exclusively within the mothers' role. The exclusion of males from the discussion of female reproductive health issues such as menstruation contributes to the negative attitudes towards menstruation and the perpetuation of the sense of shame and secrecy that tends to surround it. Moreover, the use of euphemisms for menstruation that their mothers may not understand, such as "the pot is broken" or "red cross", also hinders frank discussions about menstrual biology. Fortunately, the local Tigrigna terms for menstruation like "monthly flower" or "pollen" have more positive connotations which can be considered as an opportunity to improve positive communications thereby minimizing menstrual anxiety.

Like schoolgirls in many parts of the globe, menstruating schoolgirls in Tigray experience religious restrictions.³⁷⁻³⁹ There is a vague and "unquestionable" prohibition and a lingering sense of shame that a menstruating girl is somehow "dirty" in the eyes of God. The physical restrictions placed on schoolgirls' activities seem intended to protect them from fatigue, backache, headache, and abdominal cramps, rather than minimizing the chances of pollution within the household,⁴⁰ but these restrictions on physical activities are ineffective in relieving the discomfort that may be associated with menstruation and only contribute to the generally negative outlook that society has concerning this phenomenon.

This anxious menstrual experience negatively affects schoolgirls' education and presents challenges to the achievement of the sustainable development goals of ensuring healthy lives, ensuring inclusive and equitable education, and achieving gender equity.⁴¹ Achieving these goals requires frank discussions of menstruation before menarche, the transmission of accurate biological information about human reproduction, and openness both at home and in school in dealing with the challenges of menstrual hygiene management to achieve optimal hygiene and personal comfort.

Menstrual experience appears to be anxious imposing a significant problem on schoolgirls in Tigray Region of Ethiopia. Further research about the effects of menstruation on schoolgirls' psychological wellbeing, physical health, and school performance is to be encouraged. This was a qualitative study, hence, data were collected through focus group discussions and in-depth interviews with selected schoolgirls. As a result, we have limited information concerning any underlying medical conditions in this population, and we were not able to carry out any detailed psychological testing about study participants.

Implication for Future Studies and Programs

This study identified areas for future research. Menstrual hygiene management does not only demand menstrual supplies and materials, which is observed to be an integral part of many interventional studies,^{27,42,43} but also privacy, emotional support, psychosocial support, and normalizing the event are equally important to provide holistic support for schoolgirls. However, this is neglected component of the menstrual hygiene management. Moreover, objective measurement of menstrual anxiety, emotional and psychosocial health is also needed. The primary source of information for schoolgirls are mothers according to many studies,^{20,21} but the content of the information they deliver to their daughters and their knowledge about the biological nature of menstruation is not adequately explored. Furthermore, the role of religious leaders on menstrual-related perception and restrictions is not adequately addressed by researchers. Hence, further studies are needed to fill this gap.

Psychosocial and emotional support, as well as privacy, are not given due attention by responsible organizations and programs. Besides systematic and knowledge based source of menstrual-related information for adolescent schoolgirls is limited. Mothers share their customary menstrual hygiene management practices (which mostly is about secrecy) with their daughters. With this situation, the cycle of shame and secrecy will not be broken. In effect, mothers, community, and religious leaders need to have a platform that brings them on board to have adequate knowledge and positive perceptions about menstruation. This would further help to minimize the association of menstruation to sexuality, early marriage, curs, and other related misperceptions. It can also contribute to normalize and consider the menstrual fluid as any other body fluid.

Conclusions

From this study, we can conclude that schoolgirls do not have organized, accurate, concrete sources of information about menstruation and menstrual hygiene management in Tigray, Northern Ethiopia. Although they know menstruation is

a natural phenomenon they still are fearful and embarrassed because of the persistent negative community perceptions regarding menstruation. These community views about menstruation are reinforced by a variety of traditional menstrual restrictions; along with a lack of privacy and inadequate access to menstrual management materials by schoolgirls. All of these factors intertwine to produce an overwhelming menstrual anxiety sometimes, which negatively impacts school experiences and family life. The finding of this study would be relevant in developing schoolgirls and community based Menstrual Hygiene Management interventions that need to be responsive to the local and cultural context. In delivering appropriate responses, diffusion of innovation and creation of optimal pathways that mitigates the menstrual taboo and embrace its positive thoughts need to be outlined for implementation of fast track interventions.

The study calls for responsible bodies in the field of water, sanitation, and hygiene to extend their efforts beyond the mere provision of menstrual products and materials. Community involvement should be encouraged to improve perceptions of menstruation and to provide accurate biological education to girls and boys. Existing efforts should move beyond schools to involve the larger community if wider changes in social attitudes regarding menstruation are to be achieved.

Data Sharing Statement

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethical Approval and Consent to Participate

The protocol was reviewed and approved by the institutional review board at the College of Health Sciences of Mekelle University (MU-IRB 2029/2019). According to the review board, and in compliance to the Declaration of Helsinki, anonymous written informed consent, that included publication of anonymized responses, was obtained from parents of schoolgirls who were younger than 18 year-old during the data collection period. Moreover, anonymous consent was taken from the participants, responses were also anonymized. Participants were compensated for their participation in the study with 50 Ethiopian Birr (approximately US\$ 1.78).

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

LLW serves as a non-compensated member of the board of directors of the charity, Dignity Period. The authors report no other conflicts of interest in this work.

References

1. Tegegne TK, Sisay MM. Menstrual hygiene management and school absenteeism among female adolescent students in Northeast Ethiopia. *BMC Public Health*. 2014;14:1–4.
2. Hawkey AJ, Ussher JM, Perz J, Metusela C. Experiences and constructions of menarche and menstruation among migrant and refugee women. *Qual Health Res*. 2017;27(10):1473–1490. doi:10.1177/1049732316672639
3. Ajah LO, Onubogu ES, Anozie OB, et al. Adolescent reproductive health challenges among schoolgirls in southeast Nigeria: role of knowledge of menstrual pattern and contraceptive adherence. *Patient Prefer Adherence*. 2015;9:1219. doi:10.2147/PPA.S89258
4. Ssewanyana D, Bitanhirwe BKY. Menstrual hygiene management among adolescent girls in sub-Saharan Africa. *Glob Health Promot*. 2019;26(1):105–108. doi:10.1177/1757975917694597

5. Leventhal KS, DeMaria LM, Gillham JE, Andrew G, Peabody J, Leventhal SM. A psychosocial resilience curriculum provides the “missing piece” to boost adolescent physical health: a randomized controlled trial of girls first in India. *Soc Sci Med*. 2016;161:37–46. doi:10.1016/j.socscimed.2016.05.004
6. Crawford M, Menger LM, Kaufman MR. ‘This is a natural process’: managing menstrual stigma in Nepal. *Ult Health Sex*. 2014;16(4):426–439. doi:10.1080/13691058.2014.887147
7. Mugambi A, Georgas T. Menstruation as an education and gender indicator affecting girls dropping out of school International Journal of Educational Research and Development 2016 4 1 1–9.
8. Lowik A. The Palgrave handbook of critical menstruation studies. *Sex Reprod Health Matters*. 2020;28(1):1854928. doi:10.1080/26410397.2020.1854928
9. Guya E, Mayo AW, Kimwag R. Menstrual hygiene management in secondary schools in Tanzania. *Int J Sci Technol*. 2014;3:47–61.
10. Hema Priya S, Nandi P, Seetharaman N, Ramya M, Nishanthini N, Lokeshmaran A. A study of menstrual hygiene and related personal hygiene practices among adolescent girls in rural Puducherry. *Int J Community Med Public Health*. 2017;4:2348–2355. doi:10.18203/2394-6040.ijcmph20172822
11. Ussher JM, Perz J, Metusela C, et al. Negotiating discourses of shame, secrecy, and silence: migrant and refugee women’s experiences of sexual embodiment. *Arch Sex Behav*. 2017;46(7):1901–1921. doi:10.1007/s10508-016-0898-9
12. Romero-Moraleda B, Del Coso J, Gutiérrez-Hellín J, Lara B. The effect of caffeine on the velocity of half-squat exercise during the menstrual cycle: a randomized controlled trial. *Nutrients*. 2019;11(11):2662. doi:10.3390/nu11112662
13. Kuhlmann AS, Henry K, Wall LL. Menstrual hygiene management in resource poor countries. *Obstet Gynecol Surv*. 2017;73(6):356–376. doi:10.1097/OGX.0000000000000443
14. Sumpter C, Torondel B, RezaBaradaran H. A systematic review of the health and social effects of menstrual hygiene management. *PLoS One*. 2013;8(4):e62004. doi:10.1371/journal.pone.0062004
15. Atti M Ministry of water, irrigation and energy community-led accelerated WASH project (COWASH) 2019; 2019. Available from: <https://www.cmpethiopia.org/page/3357>. Accessed May 9, 2023.
16. Belayneh Z, Mekuriaw B. Knowledge and menstrual hygiene practice among adolescent school girls in southern Ethiopia: a cross-sectional study. *BMC Public Health*. 2019;19(1):1–8. doi:10.1186/s12889-019-7973-9
17. Marvan ML, Molina-Abolnik M. Mexican adolescents’ experience of menarche and attitudes toward menstruation: role of communication between mothers and daughters. *J Pediatr Adolesc Gynecol*. 2012;25:358–363. doi:10.1016/j.jpaga.2012.05.003
18. Cooper SC, Barthalow Koch P. “Nobody told me nothin’”: communication about menstruation among low-income African-American women. *Women Health*. 2007;46(1):57–78. doi:10.1300/J013v46n01_05
19. Shah V, Nabwera HM, Sosseh F, et al. A rite of passage: a mixed methodology study about knowledge, perceptions and practices of menstrual hygiene management in rural Gambia. *BMC Public Health*. 2019;19(1):1–15. doi:10.1186/s12889-019-6599-2
20. Deshpande TN, Patil SS, Gharai SB, Patil S, Durgawale P. Menstrual hygiene among adolescent girls—a study from urban slum area. *J Family Med Prim Care*. 2018;7(6):1439. doi:10.4103/jfmpc.jfmpc_80_18
21. Michael J, Iqbal Q, Haider S, et al. Knowledge and practice of adolescent females about menstruation and menstruation hygiene visiting a public healthcare institute of Quetta, Pakistan. *BMC Womens Health*. 2020;20(1):1–8. doi:10.1186/s12905-019-0874-3
22. Juma J, Nyothach E, Laserson KF, et al. Examining the safety of menstrual cups among rural primary school girls in western Kenya: observational studies nested in a randomised controlled feasibility study. *BMJ open*. 2017;7(4):e015429. doi:10.1136/bmjopen-2016-015429
23. Mason L, Nyothach E, Alexander K, et al. ‘We keep it secret so no one should know’—a qualitative study to explore young schoolgirls attitudes and experiences with menstruation in rural western Kenya. *PLoS One*. 2013;8(11):e79132. doi:10.1371/journal.pone.0079132
24. MacLean K, Hearle C, Ruwanpura KN. Stigma of staining? Negotiating menstrual taboos amongst young women in Kenya. *Womens Stud Int Forum*. 2020;78:102290. doi:10.1016/j.wsif.2019.102290
25. Johnston-Robledo I, Chrisler JC. The menstrual mark: menstruation as social stigma. *Sex Roles*. 2013;68(1–2):9–18. doi:10.1007/s11199-011-0052-z
26. Chandra-Mouli V, Patel SV. Mapping the knowledge and understanding of menarche, menstrual hygiene and menstrual health among adolescent girls in low-and middle-income countries. *Reprod Health*. 2017;14(1):1–16. doi:10.1186/s12978-017-0293-6
27. Phillips-Howard PA, Nyothach E, Ter Kuile FO, et al. Menstrual cups and sanitary pads to reduce school attrition, and sexually transmitted and reproductive tract infections: a cluster randomised controlled feasibility study in rural western Kenya. *BMJ open*. 2016;6(11):e013229. doi:10.1136/bmjopen-2016-013229
28. Sivakami M, van Eijk AM, Thakur H, et al. Effect of menstruation on girls and their schooling, and facilitators of menstrual hygiene management in schools: surveys in government schools in three states in India, 2015. *J Glob Health*. 2019;9(1). doi:10.7189/jogh.09.010408
29. Sommer M. Where the education system and women’s bodies collide: the social and health impact of girls’ experiences of menstruation and schooling in Tanzania. *J Adolesc*. 2010;33:521–529. doi:10.1016/j.adolescence.2009.03.008
30. Lee J. Bodies at menarche: stories of shame, concealment, and sexual maturation. *Sex Roles*. 2009;60(9–10):615–627. doi:10.1007/s11199-008-9569-1
31. Simes MR, Berg DH. Surreptitious learning: menarche and menstrual product advertisements. *Health Care Women Int*. 2010;22(5):455–469.
32. Hennink MM, Kaiser BN, Weber MB. What influences saturation? Estimating sample sizes in focus group research. *Qual Health Res*. 2019;29(10):1483–1496. doi:10.1177/1049732318821692
33. Do Amaral MCE, Hardy E, Hebling EM. Menarche among Brazilian women: memories of experiences. *Midwifery*. 2011;27(2):203–208. doi:10.1016/j.midw.2009.05.008
34. Bennett C, Harden J. An exploration of mothers’ attitudes towards their daughters’ menarche. *Sex Educ*. 2014;14(4):457–470. doi:10.1080/14681811.2014.922862
35. Jarrah SS, Kamel AA. Attitudes and practices of school-aged girls towards menstruation. *Int J Nurs Pract*. 2012;18:308–315. doi:10.1111/j.1440-172X.2012.02032.x
36. Johnston-Robledo I, Sheffield K, Voigt J, Wilcox-Constantine J. Reproductive shame: self-objectification and young women’s attitudes toward their reproductive functioning. *Women Health*. 2007;46(1):25–39. doi:10.1300/J013v46n01_03
37. Chothe V, Khubchandani J, Seabert D, et al. Students’ perceptions and doubts about menstruation in developing countries: a case study from India. *Health Promot Pract*. 2014;15(3):319–326. doi:10.1177/1524839914525175

38. O'Flynn N. Menstrual symptoms: the importance of social factors in women's experiences. *Br J Gen Pract.* 2006;56:950–957.
39. van Eijk AM, Zulaika G, Lenchner M, et al. Menstrual cup use, leakage, acceptability, safety, and availability: a systematic review and meta-analysis. *Lancet Public Health.* 2019;4(8):e376–e393. doi:10.1016/S2468-2667(19)30111-2
40. Wall LL, Teklay K, Desta A, Belay S. Tending the 'monthly flower': a qualitative study of menstrual beliefs in Tigray, Ethiopia. *BMC Womens Health.* 2018;18(1):183. doi:10.1186/s12905-018-0676-z
41. Voluntary national review on the: sustainable development goals, Brazil; 2017 https://sustainabledevelopment.un.org/content/documents/15806Brazil_English.pdf.
42. Oster E, Thornton R. Menstruation, sanitary products, and school attendance: evidence from a randomized evaluation. *Am Econ J Appl Econ.* 2011;3(1):91–100.
43. Montgomery P, Ryus CR, Dolan CS, Dopson S, Scott LM, Baradaran HR. Sanitary pad interventions for girls' education in Ghana: a pilot study. *PLoS One.* 2012;7(10):e48274. doi:10.1371/journal.pone.0048274

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