

A Review of Menstruation Hygiene Management  
among Schoolgirls in Sub-Saharan Africa

by

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## **Abstract**

This literature review analyzes the current challenges related to menstruation hygiene management (MHM) among schoolgirls in sub-Saharan Africa. Though this topic has recently gained more attention, it is under-studied. Research shows that many adolescent schoolgirls miss days of school and/or do not concentrate as well during their menses. Many schoolgirls lack adequate feminine hygiene products, sanitation facilities, and menstrual hygiene education. Misconceptions regarding menstruation are widespread, and there is a general culture of silence surrounding this topic. The existing quantitative and qualitative data related to MHM is scarce with relatively small data samples. The current initiatives to distribute and produce feminine hygiene products, expand sanitation facilities, and provide MHM education need to be expanded to improve girls' livelihoods and ability to manage their menses.

## **Introduction**

Approximately 52% of the global female population is of reproductive age.<sup>(1)</sup> The majority of these females menstruate between two and seven days each month. Menstruation is a natural component of the reproductive cycle. The entire reproductive cycle usually lasts between 21 and 35 days. Each reproductive cycle involves ovulation, meaning the release of an egg from the uterus to the fallopian tubes. Tissue and blood begin to line the walls of the uterus for fertilization, shedding through the vagina if fertilization does not occur. In sub-Saharan Africa<sup>1</sup>, this normal process is considered taboo and, consequently, is not discussed often. Due to the lack of knowledge and privation of other essential resources, menstruation is often managed poorly and is described by schoolgirls<sup>2</sup> as a negative and isolating experience. This literature review draws attention to the current challenges related to menstruation hygiene management (MHM) among schoolgirls in sub-Saharan Africa and outlines recommendations and policy implications to improve this problem affecting such a large population.

## **Problem Statement**

### **Lack of Knowledge and Education Regarding Menstruation**

Research from multiple countries throughout sub-Saharan Africa reveal there is a consistent lack of knowledge and education among schoolgirls regarding menstruation. Findings from several qualitative and quantitative studies from schoolgirls in rural, peri-urban, and urban settings indicate that many girls receive little or no pre-menarcheal

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<sup>1</sup> Sub-Saharan Africa is the region of Africa south of the Sahara desert, which includes 47 countries.

<sup>2</sup> Schoolgirls are defined as primary and secondary-aged females that attend schools. Typically, schoolgirls are between of 10 and 20 years of age.

information.(2-6) Girls most often ask parents, peers, sisters, and teachers to obtain information about menstruation.(3,5,7-10) Frequently, the parents, teachers, and peers pass along incorrect information or do not feel comfortable discussing menstruation.(10,11) Girls commonly choose to keep their menses a secret.(6) Though some countries have puberty education and menstruation topics incorporated into their school curriculums, many schools do not actually teach these lessons or experience great difficulty if they do.(6,12) Additional challenges to providing menstruation education include that many schools have only male teachers and lack appropriate materials to help guide the lessons on this subject.(6,13)

Findings from a Ghanaian study indicate that parents typically do not discuss sex or menstruation with their daughters until menarche.(6) Many parents believe that it is the school's responsibility to broach these subjects. Educators describe the Ghanaian parenting style as cool and non-conversational. Even so, many parents complain that the girls never tell anyone when their menses begin, deciding instead to keep it a secret. Since puberty conversations are rare in the Ghanaian culture, at menarche, approximately half of schoolgirls in the study have no knowledge of menstruation.(6) Some girls immediately tell their mothers, while others confide in a friend or sister. Those who confide in a peer are less likely to inform an adult. While most mothers introduce girls to cloth initially, nearly all girls who confide in their peers are familiarized to sanitary pads.(6)

In a Kenyan study, the data reveal that many girls name their mothers or other family members as their preferred sources of support about menstruation.(14) Girls desire practical information about how to manage menstrual flow and hygiene as well as

emotional support to make the adjustment to menarche easier. Girls want to be reassured that their experiences with menstruation are normal. Some of the mothers describe how they use cloth themselves to save money so that they can purchase sanitary pads for their daughters in an effort to make the experiences more comfortable. Similar to the Ghanaian study, some Kenyan girls receive little or no guidance either before or after menarche. Some girls try to avoid discussing menarche with their relatives. Many mothers describe discussing menstruation with their daughters as uncomfortable, embarrassing, or shameful, while others choose to avoid this conversation topic entirely.(14)

A Ugandan study demonstrates that most girls from poor urban settings learn about menstruation from their peers and sisters, while the majority of girls from rural areas receive information from their mothers. Findings suggest that the rural mothers feel more comfortable discussing menstruation with their daughters than the urban poor mothers who typically stay silent.(12)

Findings from a Nigerian study suggest that women in the rural communities communicate with a girl about the onset of menstruation by preparing special food for her and the rest of the house, passing on warnings about staying away from boys and about pregnancy risks.(11) Often these messages are delivered in harsh tones, and sometimes false information is passed along. Other families secretly rejoice when a daughter matures to womanhood. When probed further about discussing menstruation with their daughters, the women convey they often impart traditional practices and knowledge that they learned from their own mothers. Some mothers believe it is important to talk to their daughters about menstruation and they would like to be able to share biological

information about menstruation. However, the mothers admit not knowing much correct information to transmit.(11)

Ghana is an example of a sub-Saharan African country that has a standard puberty education curriculum that includes a menstruation module, though most schools in a Ghanaian study are either not actually teaching it or the puberty education is described as a negative experience by girls and teachers. A trend is that the farther from the city, the more likely the teachers are to be male. Many of these teachers are embarrassed when asked about puberty education, consequently choosing not to teach it. The girls who are actually learning about puberty describe it as an embarrassing event. They declare that boys tease them and make noises during the lessons, which make it difficult to retain the information.(6)

Uganda is an example of a sub-Saharan African country that does not include any modules about menstruation in the puberty education curriculum for primary school, often leaving girls unprepared at the onset of menses.(12) Findings suggest that some primary school teachers believe that it is the responsibility of more senior teachers to discuss menstruation with the girls. Other teachers believe that it is unimportant to discuss menstruation in school because they assume that the girls' mothers are speaking with them about menstruation. The Ugandan school curriculum broaches the biology of menstruation, but does not include information regarding the physiological, financial, and social aspects.(12) Yet, most girls from rural areas respond they have never heard their teachers mention menstruation in their science classes.

Accurate education for adolescents surrounding menstruation is important to combat misconceptions. Some girls believe that menstruation is a bad or strange event,

while others find it a frightening or embarrassing experience.(10) In a Ghanaian study, less than 10% of the adolescent girls receive menstrual education from health providers, compared to 80% who receive menstrual education from their parents.(10) Currently, many misconceptions about menstruation are passed on from one generation to the next, especially when only relatives are involved.

Studies demonstrate that girls have difficulty in describing menstruation in biological terms. A Kenyan survey among females living in an informal urban settlement demonstrates that only a minority of the participants are able to describe menstruation in biological terms.(15) There is also a discrepancy in perceived knowledge versus correct knowledge among schoolgirls. In a Nigerian study, the data shows that 85% of schoolgirls perceive they possess correct knowledge regarding menstruation, whereas only 61% actually possess correct knowledge.(3) While the perceived knowledge of respondents is not influenced by parental education, girls with correct knowledge are more likely to have parents with at least a secondary education. Similarly, parents with at least a secondary education are more likely to have a pre-menarcheal discussion to prepare their daughters for menses than those with lower education levels.(3)

Schoolgirls will continue to lack adequate knowledge regarding menstruation due to the absence of accurate information, education, and communication (IEC) materials about menstruation, the unavailability of developed school curriculum materials, and in the culture of silence. Girls may suffer unnecessarily both physically and psychologically during menses without sufficient, correct information. Physically, girls may not understand why they have irregular cycles, dysmenorrhea, and heavy menstrual flow or



how to manage menstrual cramps or to prevent unwanted pregnancies.(10) The psychological consequences will be discussed in the following section.

### **Negative Feelings Related to MHM**

Many schoolgirls experience negative feelings related to menses, such as shame, embarrassment, fear, pain, weakness, anxiety, and discomfort.(11,12,14,16-19) The most commonly cited emotion is embarrassment. The data shows that schoolgirls in urban areas typically experience fewer negative emotions than their rural peers. In a Ghanaian study, approximately half of the girls in peri-urban areas feel ashamed and embarrassed during menses, compared to over 90% in rural areas.(18)

Findings from multiple studies illustrate that many negative feelings related to MHM are tied to the notion of menstruation being associated with sexual impurity. In Nigeria, particularly in the rural villages, this notion is the cause of a culture of silence and shame surrounding issues associated with sexuality and menstruation.(11) In Kenya, girls express concern about being stigmatized by fellow students due to the cultural belief that menarche signals the advent of a girl's sexual status.(17) In Tanzania, many girls do not disclose to anyone when they initiate menarche because it is believed to be associated with improper sexual behavior; they fear they would be accused of premarital sexual activity.(20) Consequently, over half of the rural respondents from the Tanzanian study claim to have disclosed their "secret" for the first time to the researchers.(20)

Schoolgirls report that their challenges during menstruation related to hygiene, leakages, and insufficient privacy are often the cause of the embarrassment and stigma. Some teachers suppose that girls who accidentally stain their uniforms during menstruation are "misbehaving." This supposition demonstrates the offense of the social

taboo.(14) Girls communicate feeling anxious constantly during their menses, owing to fear of leakage and body odor due to infrequent change of menstrual hygiene products. Girls report being bullied if their peers at schools discover they are menstruating. Sometimes boys suspect that a girl is menstruating when she wears a sweater around her waist or if it smells like she “killed a chicken.”(12) Male perceptions of menstruation are often driven by stereotypic notions and lack of knowledge about menstruation. Ignorance about menstruation only increases the negative expressions and teasing, particularly from boys to girls. Girls express that the fear of ridicule decreases their confidence levels at schools.(12)

### **Traditional Beliefs and Cultural Practices Related to Menstruation**

The lack of knowledge and education about menstruation feeds into many traditional beliefs and cultural practices that exacerbate the negative feelings many schoolgirls experience. These beliefs and practices often lead girls to feel isolated and stigmatized, as well as discourage girls from participating in school and other social events while menstruating. Table 1 illustrates several beliefs and cultural practices about menstruation that are common in countries throughout sub-Saharan Africa.<sup>3</sup>

<b>Table 1: Beliefs and Cultural Practices about Menstruation</b>	
<b>Country</b>	<b>Description</b>
Ethiopia, Nigeria	In many parts of Ethiopia and certain parts of Nigeria, some believe that menstruating women should isolate themselves in menstruation huts because the menstrual blood pollutes the home.(21)
Ghana	Some believe that menstruation signifies a girl is ready for a relationship. Some traditional beliefs and cultures claim that once a girl has begun menses a man can sleep with her and seek her hand in marriage. Consequently, many girls will not openly tell their parents of their menstruation because they are not ready for that type of relationship. A female child is betrothed the day she is born in some remote cultures in northern Ghana. The man monitors the girl’s growth and waits for her menses to start. At menarche, she is pulled out of school to marry the man and fulfill the

<sup>3</sup> These beliefs and practices are not necessarily limited to the countries mentioned in this table, but they are cited based on the evidence presented in the referenced sources.

	betrothal.(6)
Ghana	Some believe that menstrual cloths are used for witchcraft and can lead to nonstop menstruation for a year, sterility, or even death. (6)
Ghana	Some still believe in long-standing taboos that restrict behaviors during menstruation, including that a woman in menarche is forbidden to cross a river, pass a shrine, cook, fetch water, or go to church. To enforce these taboos, some warn these actions can bring about stillborn children, infertility, or disturbing visions.(6)
Ghana	Many believe that menstrual blood is dirty, leading them to place restrictions on girls' behaviors. Menstruating girls are often prohibited from cooking, doing dishes, or playing games with their friends.(22)
Kenya	Some believe that menstruation is the time during which women are most likely to become pregnant.(15)
Malawi	Some adolescents believe that menstruation is the removal of bad blood. Less than half of the schoolgirls think that menstruation is a natural process. A few schoolgirls believe that the insertion of methylated spirits in their vaginas will stop excessive bleeding.(23)
Malawi	Some ethnic groups in particular areas of Malawi pay a man called a <i>fisi</i> to have sexual intercourse with a girl who has begun menstruating as a sexual initiation rite.(24)
Nigeria	In rural Nigeria, some believe that burning menstrual cloths will have negative consequences because it is burning human blood. These consequences can cause itching all over the body, the body to change color, and the generation of internal heat in the women's body. Others believe it causes cancer and infertility.(4)
Nigeria	The menstrual beliefs of the Celestial Church place many restrictions on women. The Celestial Church originated in Benin in 1947 from a Christian origin and is active in West Africa and many other regions of the world. Beliefs include that a female should not do the following during menses: cook for her husband, go near the yam barn, touch a pepper plant, cross certain streams and village shrines, or attend church services. If a menstruating female is allowed to worship, she should do so only outside the church premises. Additionally, a female should not touch any <i>juju</i> (charm) during menses or it will no longer be effective. (11)
Nigeria	Some women from rural Igbo tribes in southeastern Nigeria avoid sweetened foods during menses, which are believed to increase both menstrual cramps and flow. Many women bathe more than usual to keep clean during menses. Most women do not participate in sexual intercourse during menses. Some women believe that menstrual blood is toxic to sperm, which can cause both the woman and a man's other wives to become infertile. Respondents discourage girls from carrying a female newborn baby for fear it would lead to menorrhagia later in life. Respondents from one community believe that bathing in a particular river during menses can restore fertility.(4)
Nigeria	Rural Nigerian adolescents reveal their attitudes toward menstruation. While 62 percent express the positive belief that menstruation is part of a woman's life, the rest hold more negative views. Twenty percent believe that menstruation is a curse on womanhood, 13% think that God created menstruation to punish women, and 5% agree that females with menstrual problems are suffering from the sins of their forefathers.(25)
Nigeria	Many women report that they are not allowed to pray during menstruation, which is perceived as an unclean time.(26)
Sierra Leone	Some believe that used sanitary napkins can be manipulated to make someone sterile.(21)

South Africa	Some believe that menstrual blood is “dirty” because it is the accumulation of “dirt” from organs in other parts of the body being released.(27)
Tanzania	Some believe that if a menstrual cloth is seen by others, the cloth owner may be cursed.(20)
Tanzania	Cultural initiation rituals following menarche in Tanzania were commonplace in the past, often including female circumcision. However, these beliefs and practices continue only in certain ethnic groups, such as the Masai and Zaromo. Compulsory schooling is linked to a decrease in these initiation rituals.(20)
Tanzania	Some believe that those with irregular menses suffer with the illness called <i>mchango</i> in Swahili, literally meaning “snake” or “worm.” <i>Mchango</i> is linked to many health problems and is perceived to have physical as well as spiritual origins. <i>Mchango</i> is also linked to menstrual pain and light menses. Women experiencing these symptoms believe it can decrease their ability to conceive, cause a miscarriage, or turn a woman’s uterus around.(28)
Tanzania	Findings from a qualitative study conducted in northern Tanzania reveal that menarche is tied to improper sexual behavior. Many schoolgirls learn from their primary teachers that their mothers will die if the girls inform them when they have started menstruating. The primary teachers instruct that menstruation must be kept secret, except for informing a sister or a paternal aunt.(19)
Uganda	Due to the belief that menstrual blood is impure or dirty, menstruating girls are often prohibited from cooking or holding newborns.(12)

### **School Absenteeism and Reduced Performance**

Almost all the data indicate that MHM challenges lead to absenteeism and/or reduced concentration among schoolgirls.(6,12,18,20,29-31) While some studies find that girls often miss multiple days a month during their menses,(6,18) others observe that girls are typically absent just a few hours.(14,23,30) Usually, girls from rural areas are without money to buy sanitary pads and report greater absenteeism due to menstruation than their urban counterparts.(12) A few studies observe that the girls miss school because of menstruation-related health problems, such as abdominal cramps, back aches, and mood changes.(6,23,31) Furthermore, girls recount difficulty concentrating at school due to menstrual pain, and because of anxiety over the inability to manage their menses owing to inadequate sanitary protection or facilities.(20)

A Ghanaian study finds that most girls in rural settings walk at least an hour to school each day.(6) The school sanitation facilities are communal pits, which provide

neither privacy nor water with which to wash. The girls report they miss four to five days of school each month as a result of menstruation. Some stay home even if they think their menses might start during the day. They say that staying home reduces the fear of leakages and being teased. Girls testify that more teasing occurs from their male classmates when they notice leakages. Teasing makes it difficult to concentrate during lessons. Girls recount being less likely to participate in classes during their menses because it often involves standing to speak or answer a question. Some respond that stained uniforms inhibit them from going to school. Stains, especially in light colored uniforms, are hard to wash out.(6)

Even though most girls interviewed in a Kenyan study claim they rarely or never miss school because of menstruation, they report that it affects their school performance because they worry about staining their clothes or about odor.(14) The girls describe sitting very still in class, worrying about moving or standing up, and choosing not to play physical games and sports. Respondents also verbalize that it affects their ability to socialize with peers and makes them feel isolated.(14)

Though most studies highlight menstruation as a principal reason for absenteeism, an Ethiopian study suggests that many other factors play a larger role in keeping girls out of school.(30) Although 43% of respondents miss school because of menstruation, this factor ranks low on the consensus analysis performed on all the factors in the survey that contribute to school absence.(30) Menstruation ranks ninth out of ten factors attributable to items for school absence. Other items such as early marriage, absent parents, work load, family poverty, general disinterest, feeling that school is unimportant, and distance rank higher than menstruation on the consensus analysis.(30)

### **Inadequate Feminine Hygiene Products**

Multiple studies in sub-Saharan Africa show that the most commonly used feminine hygiene products are reusable cloths and sanitary pads among schoolgirls. Girls make reusable cloths using scraps from shirts, dresses, old towels, or blankets.(17) Girls from urban areas and with higher socioeconomic status (SES) more often use sanitary pads while girls from lower SES and in peri-urban and rural areas typically utilize reusable menstrual materials.(4,6,17,32) Girls from lower SES often respond that sanitary pads are too expensive for them to purchase.(6,14,15) Girls from rural areas indicate that sanitary pads are inaccessible in their areas.(4,11,14) A very small proportion of girls use tampons and menstrual cups.(3,4,8) Other feminine products girls use include cotton, wool, socks, toilet paper, pages torn from school exercise books and old newspapers, pieces of sponge torn from mattresses, and additional clothing worn as menstrual protection.(14,30,33) In poor rural areas, girls even report using leaves or cow dung, or digging a hole in the ground to sit on for the duration of menses, as MHM methods.(33) In a Kenyan study, some girls use soft grass that they place in their underwear or sit on to manage their menses.(17) In an Ethiopian study conducted among schoolgirls in both rural and urban areas, 25% indicate they use nothing, and typically isolate themselves during menstruation.(30)

Many studies specify that the preferred feminine hygiene product among schoolgirls is sanitary pads. The schoolgirls expand on the advantages of sanitary pads and describe the challenges with reusable cloths. Nigerian girls claim that using sanitary pads is a satisfactory experience, helpful for hygiene purposes, and boosts their self-confidence.(9) In multiple studies, many reusable cloth users explain the obstacles they

face when washing and drying their cloths.(6,14,23,30) Most girls wash their cloth during their nightly bath. They do not want to put their cloths out to dry in a place it can be seen. Consequently, girls dry their cloths in a hidden place without light. Under the bed is the most common drying space. Most girls only have two or three cloths, so they often resort to wearing damp cloths. This can cause health risks and can also lead to potential embarrassment when the cloth gives off a strong, distinctive scent.(6)

In a Malawian study, most respondents state that their feminine hygiene protection is inadequate.(23) Ninety-five percent of the schoolgirls indicate that they use reusable menstrual cloths all or some of the time. The girls cannot afford to buy disposable pads habitually, or they are unable to find them in local shops.(23) Most girls keep their reusable cloths in place with underwear, but several girls from the rural schools affirm that they do not have money to buy underwear. The girls report several problems with menstrual cloths smelling bad or falling out at school. Furthermore, the menstrual cloths are large, quickly become saturated, trigger rashes, and can be seen through uniforms. In schools where girls sit on the floor, they delay rising until everyone else departs for fear of leakage. Girls skip school on their heaviest days or leave early when their menstrual cloths soak through.(23)

Several studies examine correlations between the feminine hygiene products that mothers and daughters use for menstrual protection. One finding suggests that a mother's education is a predictor for the type of menstrual protection her daughter uses. This Nigerian study, conducted among 1500 secondary schoolgirls, finds that girls with literate mothers are much more likely to use sanitary pads compared to those with illiterate mothers (25). This is because literate mothers are more likely to belong to a

higher SES and are more likely to introduce less traditional MHM methods. A second Nigerian study illustrates a generational gap between mothers and their adolescent daughters. Whereas 81% of daughters wear sanitary pads for menstrual protection, only 39% of mothers report the use of sanitary pads. Instead, 44% of mothers claim they reuse a cloth after boiling or washing.(26)

### **Financial Barriers**

Each of the previous sections has indirectly addressed the financial burden that MHM places on schoolgirls. Although most schoolgirls prefer to use sanitary pads to manage their menses, it is often out of their financial means. Multiple studies from different countries in sub-Saharan Africa value a pack of 10 sanitary pads between \$1 and \$2, depending on the brand and location. Most girls use three sanitary pads a day, with average menstrual periods lasting between three and five days.(6,14,32,34) A Ugandan study reveals that sometimes the schoolgirls stay in their sanitary pads longer than recommended to lessen the number used per cycle.(12)

Many studies indicate that rural families often find it more challenging to afford sanitary pads than urban families.(6,9,12) A Ghanaian study highlights this trend, reporting that girls in urban settings typically use sanitary pads because they are more readily available and families can more frequently afford them. However, in rural and peri-urban areas, the adults state that their daughters wear cloth or toilet paper because they cannot afford sanitary pads. Each female family member often has one or two pieces of cloth. They usually wear one while the other one is cleaned and dried. In some cases, female family members have to share cloths. Some families communicate that



even toilet paper is expensive because it is disposable and has to be purchased every menstrual cycle.(6)

Though sanitary pads are continually cited as an out-of reach of expense for many families, it may be more a question of household priority. A noteworthy observation from a Ghanaian article remarks that a pack of sanitary pads cost approximately the same as a bottle of beer, a product that is often consumed by males in even the poorest villages. The assertion is that when sanitary pads are deemed “unavailable” to families, it is actually a matter of household priority, not cost.(6) Other articles find that often male heads of household do not place much value on purchasing feminine hygiene products for their daughters. Some researchers maintain this is associated with the lack of male education or involvement regarding menstruation.(19)

Since cost is often a barrier to schoolgirls’ preferred feminine hygiene product, some research explored a middle-price alternative between the cost of a package of commercially produced disposable sanitary pads and reusable cloths. The most preferred option, a package of commercially produced disposable sanitary pads, is valued at greater than the daily income of many working parents. Though reusable cloths are made from materials already found in the home, most schoolgirls express that this second option is inadequate menstrual protection. A Ugandan study champions several initiatives<sup>4</sup> which are producing low-cost pads locally as a third option. These initiatives seek to minimize the financial barriers that schoolgirls face and offer more eco-friendly options, while also providing sufficient menstrual protection.(34)

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<sup>4</sup> More information on these initiatives can be found in Table 2 on page 28.

### **Lack of Adequate Sanitation Facilities in Schools**

Many studies indicate that most schoolgirls do not have adequate sanitation facilities at school to manage their menses.(6,14,30,34-36) This problem is more severe in rural areas than in urban areas. Some rural schools have communal latrines or no facilities at all. Many sanitation facilities are open to both sexes and do not afford the girls the privacy they need to manage their menses. Frequently, the facilities do not have locks, doors, water for washing, or disposal mechanisms. Girls complain that the lack of privacy in the bathrooms increases their discomfort and fear of discovery.(14) Furthermore, the sanitation facilities are often dirty and smell badly.

Responses from a Malawian study illustrate the importance of this issue.(23) Girls assert that the maintenance of basic restroom facilities is often deficient or nonexistent. At some schools, girls are responsible for cleaning the facilities, although they have no training or cleaning materials. The girls report that all toilets smell intensely of feces and that many are filled with flies and mosquitoes. Researchers asked the girls why they do not want to use school toilets at two time points: first, when they are menstruating, and second, when they were not menstruating. Across the board, girls are less likely to use school sanitation facilities while menstruating. The most common reasons girls do not want to use the sanitation facilities while menstruating are the following: they are able to see blood in the school toilets, the toilets are dirty, they cannot wash, the toilets are located far from class, and for fear that boys can see. Since girls report changing menstrual protection materials several times a day,(23) demonstrating that it is vital to have hygienic sanitation facilities at school.

Many studies reveal that schoolgirls do not have places to properly dispose of their feminine hygiene products; this creates many problems.(6,12,23,30,34) Studies carried out in Malawi and Lesotho report that used sanitary pads are often discarded in open pits, due to the lack of adequate disposal mechanisms. Subsequently, they are carried around the school grounds by dogs and crows, becoming visible to everyone.(23) A Ugandan study highlights that sanitary pads are disposed of in the latrines or toilets in most schools.(12) This poses problems because it causes the latrines to fill up quickly and the toilets to become clogged. Other girls dispose of them in school dustbins, while some girls resort to burying them in their home gardens in rural areas. A small proportion of schools use incinerators to burn menstrual waste, although this presents environmental hazards and should not be viewed as the ideal solution.(12) To help schoolgirls manage their menstruation, school sanitation facilities need to have disposal mechanisms available as well as privacy, water, soap, and available materials to wrap used feminine hygiene products.

### **Menstrual Pain**

The majority of schoolgirls describe experiencing some type of menstrual pain. The most commonly reported menstrual pain is abdominal cramps. Other discomforting symptoms girls recount include back pain, swelling, fatigue, mood swings, itching, abnormal duration of the cycle, vomiting, loss or increase of appetite, headache, and greasy skin.(12,25) Many studies demonstrate that the causes of menstrual pain are informed by various cultural beliefs. Some Malawians believe that menstrual pain is caused by witchcraft.(23) Some Tanzanians suppose that women with irregular menses or menstrual pain suffer from an illness.(28) Menstrual pain also contributes to school

absenteeism and reduces concentration at school. In an Ethiopian study, girls report that they ask permission from the teachers to go home when they experience menstrual pain, without disclosing the reason. Girls add that all of their teachers are male, which makes it more difficult to divulge information about menstruation. (37)

Schoolgirls report that painkillers effectively minimize menstrual pain, but studies demonstrate that many girls do not typically use them. The most common reasons that girls do not use painkillers are because they are cost-prohibitive or because some girls lack knowledge of their existence.(14,23) In absence of painkillers, applying cloths soaked with hot water to the abdomen is often a technique employed to relieve pain. Girls from urban areas typically have more access to painkillers for many reasons. Urban schools are more likely to provide painkillers and urban parents are more likely to be able to afford them, while rural girls more often go without medications. One urban school in Kenya even requires in a written policy that teachers to provide painkillers to girls during menstruation.(14)

## **Interpretation of Findings**

The literature review reveals that MHM in sub-Saharan Africa is a widespread multifaceted problem. To improve the situation, MHM must be viewed through a wide lens. Currently, there is a lack of MHM education and knowledge, suitable feminine hygiene products, adequate sanitation facilities, and methods to manage pain during menses. These are factors that contribute to school absenteeism and reduced performance, myths and misconceptions, and negative feelings and experiences regarding menstruation. In addition to schoolgirls, many other groups desire more education about MHM, including mothers, teachers, men and boys, and community and government

leaders. There is a lack of IEC materials about menstruation and puberty. There is a need to provide accurate education to eliminate the many existing myths and misconceptions regarding MHM. Schoolgirls' experiences with MHM have not been widely studied nor discussed, largely because it is a sensitive and taboo subject. There is a dearth of literature pertaining to MHM in sub-Saharan Africa, with many of the studies being conducted by graduate students and few being published in peer-reviewed journals.

Some literature suggests that the provision of free sanitary pads to schoolgirls increases attendance among schoolgirls.<sup>(6)</sup> For example, Ghanaian researchers conducted a pilot test in four schools in poor areas. Two treatment sites received sanitary pads in addition to puberty education, one treatment site was provided education only, and one control village received no intervention. After six months of providing free sanitary pads, quantitative results demonstrated that school absenteeism declines significantly. The girls who were the recipients of the sanitary pads respond that they are better able to concentrate in school, have higher confidence levels, and can more easily participate in a range of everyday activities during menses. Negative experiences such as soiling and embarrassment have decreased. The girls prefer sanitary pads over traditional methods, mostly because they provide greater protection against accidental soiling and minimize the embarrassing scent. The results are most pronounced in the most rural school.<sup>(6)</sup> The results indicate that more schoolgirls can be provided with sanitary pads to reduce school absenteeism and improve performance.

Based on the current status of MHM in sub-Saharan Africa, some researchers draw the conclusion that tampons and menstrual cups are not feasible options because of practical and cultural reasons.<sup>(23,34)</sup> Practically, they believe their cost is prohibitive.

They also claim that insertion materials are often seen as culturally inappropriate. Thus, girls commonly question the effects insertion materials have on their fertility and health.

However, other researchers suggest that menstrual cups are a reasonable option in sub-Saharan Africa.(15,38) For example, a Kenyan research study explores the feasibility of introducing menstrual cups among adolescent and adult females.(38) The study participants receive menstrual cups combined with MHM educational sessions. Girls state they are less likely to miss school since they began using menstrual cups. Girls believe there is less chance of embarrassment because menstrual cups minimize the risk of soiling clothes. Furthermore, they report not having to change as often and feeling more comfortable at school. Additionally, girls claim that using a menstrual cup reduces the burden of purchasing sanitary pads monthly. They still experience challenges with finding ways to clean and sterilize the menstrual cup. Yet, the girls note that it takes less water to clean the menstrual cup compared to the water needed to wash and reuse menstrual cloths. Girls state that while other methods caused them to need more baths than usual because of their perceived smell and level of discomfort during menses, menstrual cups reduce the necessity for additional baths. The girls express their gratitude for receiving supplementary educational sessions, which teach them how to use the menstrual cups as well as about other reproductive health content. Some of the challenges related to using the menstrual cups include limited access to water, toilets, privacy, and security.(15) This study demonstrates that menstrual cups and other insertion materials may become more culturally acceptable as long as they are introduced with proper education and guidance.

Besides the components of MHM that were addressed in the problem statement, there are many other underlying factors that compound the MHM issue in sub-Saharan Africa. These include the social systems, political indifference, cultural customs, poverty, educational achievement of parents, the distance to school, and the domestic workload many girls are faced with in sub-Saharan Africa.(12) None of these things can easily be changed through a single program or intervention, which all add to the challenge of improving MHM. Some of these interventions are beyond the scope of what will be discussed in the recommendations and policy implications, but all are important to consider.

## **Recommendations and Policy Implications**

Interventions, programs, and policies that address MHM necessitate a multifaceted approach to be successful. They need to incorporate several interrelated issues, including water hygiene and sanitation, gender sensitivity, information provision, financial barriers, and cultural acceptability, as well as consider sustainable methods. Many key players and ministries can work together to improve the MHM situation in schools, including the Ministry of Education (MOE), Ministry of Health (MOH), water authorities, school officials, non-governmental organizations (NGOs), and parents. Institutional systems within schools require improvement to help girls manage their menses. Infrastructure needs to be built, instructional methods at school may need to be altered, and the content of puberty education needs to be improved. This section will outline some recommendations and policy implications that aim to address the many aspects related to improving MHM for schoolgirls.

## **Expansion of Menstruation Hygiene Management Education in Schools and Communities**

Schools can integrate MHM and puberty education into their curriculums to address the lack of correct knowledge regarding menstruation. The schools that already teach puberty education can improve their implementation by training teachers, providing educational materials, and separating some of the sessions to create a more comfortable environment for girls and boys. Some researchers posit that puberty education can contribute to behavior changes and provide psychological support for both sexes. Presently, only a few countries have information available on education and communication materials related to MHM.(18) Tanzania, Sierra Leone, and Zimbabwe are the countries that have educational booklets that have been developed for schoolgirls to teach them about puberty and menstruation. Similar booklets are being developed to use in Ghana, Ethiopia, and Uganda.(18)

*Growth and Changes* serves as an example of a successful puberty educational booklet that has been widely reproduced.(13,18,36) Dr. Marni Sommer, a MHM advocate and researcher, originally developed the booklet in Tanzania to address adolescence issues and menstruation in a culturally sensitive manner.(18) The *Growth and Changes* booklet is supplemented with lesson plans for teachers and other sensitization materials. These additional materials address the fact that many teachers have stated feeling uncomfortable about teaching puberty education. Evidence demonstrates that *Growth and Changes* is an effective tool. Schoolgirls' knowledge and attitudes about puberty issues have been tested before and after reading and learning from the booklets. Many girls show significant improvement in knowledge and adopt more positive attitudes from pre-



to post-tests. The schoolgirls that have used *Growth and Changes* believe that all girls should have a copy. Additionally, they think that boys need a parallel learning material. This feedback has led Sommer to create a booklet for male adolescents that includes a section on menstruation as a parallel to the female version.(18) The teachers note that the girls enjoy learning about puberty education from this booklet, but the extra time and efforts it makes for teachers is challenging. Nevertheless, *Growth and Changes* creates an entry point for parent- and teacher-led conversations with girls about menstruation and puberty. Many NGOs requested copies and Family Health International (FHI) reprinted the booklet with United States Aid for International Development (USAID) funds, demonstrating significant demand.(36) Booklets such as this can be developed for use in all countries in sub-Saharan Africa with culturally specific information.

In addition to expanding the educational materials available, it is also important to train teachers, communities, and families to confront the low levels of knowledge about puberty and menstruation many schoolgirls demonstrate in the studies. Since many teachers think that discussing menstruation is uncomfortable or out of their scope of work, teachers can be instructed at teacher training colleges on ways to teach this subject and how to disseminate accurate information to their students. At the community-health level, female health groups or “big sister” groups can be created to teach adolescents about menstruation and promote the production or distribution of feminine hygiene products. Families can be invited to participate in the educational activities because mothers often lack knowledge of MHM and are unfamiliar with the unique challenges to MHM in school settings. Girls can be instructed that menstruation is a natural event that can be managed. Girls can be guided on how to choose or make appropriate menstrual

materials, how to maintain personal hygiene during menses, and how to safely dispose of the materials. Furthermore, they can be taught how to track their cycles, as well as when they are most likely fertile, to dispel myths and reduce negative emotions.

The formation of adolescent groups is another way to teach schoolgirls about MHM. *EmpowerNet* is an example of a successful adolescent education program in Kenya, created through a partnership among ZanaAfrica, The Girl Effect, and Upanda. The purpose of *EmpowerNet* clubs is to support girls' education in slums by providing sanitary pads to encourage school attendance during menses, while also establishing afterschool groups to converse about puberty and provide role models for the adolescents. They also invite males to participate in the afterschool groups. Currently over 1,000 male and female students participate in groups of 15-20 students.(18) The adolescent education program can be replicated in other sub-Saharan African countries to deliver accurate information to both male and female students.

Additionally, countries in sub-Saharan Africa need to increase the number of adolescents utilizing health care providers and other reliable resources as sources of information about menstruation. Healthcare providers can strive to make youth-friendly services available, effective, safe, and affordable in order to accomplish this goal. Other efforts to increase education can include dissemination of MHM messages through electronic and print media and tapping into community organization and faith-based organizations as resources.(8)

## **Integration of Menstruation Hygiene Management into Educational Policies and Programs**

Though most of the research from sub-Saharan Africa indicates that menstruation is a major cause of absenteeism,(6,23,31) a few studies disagree.(14,30) In many countries, regions, and schools there is no system to monitor school attendance. There are no attendance rosters available at some schools, which makes it difficult to verify if girls are missing school and for what reason.(12) Establishing a structure that records missed school days with reasons can provide better data on the association between menstruation and nonattendance among schoolgirls.

Schools can create more gender-sensitive educational policies. There are many programs that already exist with the goal of promoting inclusion of girls in schooling, but they often fail to directly address menstruation. These programs can be more effective if they add a MHM component. Furthermore, schools can create educational policies to provide better sanitation to students by building girl-friendly toilets using the successful United Nations Children's Fund (UNICEF) initiative with this goal as a model. Schools can also create policies aimed at helping girls manage their menstrual pain by providing them with painkillers or partnering with local youth-friendly services.(26)

Some of the literature suggests that training a smaller subset of people to teach menstruation might be more realistic than trying to train all teachers to be comfortable with puberty education. One proposal is to train puberty educators to travel around to schools to explain puberty to both sexes.(23) Another proposition is to create a policy and enforce guidelines to guarantee that at least one teacher or adult staff member in every primary and secondary school is trained and designated as a menstrual support figure.

Leaders in each country can get together and choose to implement whichever strategy would be most effective according to their particular context.

NGOs can become supporters of the inclusion of puberty education into school programs and help with the creation of MHM school packages. This can include advocating the development of puberty booklets specific to each country in Sub-Saharan Africa. Additionally, policies and programs can be intentional about providing MHM education to boys as well as to girls.(14,19)

### **Expansion of Affordable Feminine Hygiene Products**

Although researchers agree that there needs to be an expansion of affordable feminine hygiene products available to schoolgirls, many differ on the approach. While some think that countries should strive for the creation of subsidized prices within school premises of MHM materials, (31) others believe that market-based approaches are best.(34) Despite the growing number of NGOs and donors providing free or subsidized sanitary pads, market-based advocates argue this approach does not tackle the underlying poverty-related problem. These researchers argue that low-cost locally produced sanitary pad businesses are more sustainable because they provide jobs and foster local economic development. Locally produced sanitary pad businesses are also more environmentally friendly because they leave smaller ecological footprints and the products do not contain petroleum-based superabsorbent gels like commercially produced sanitary pads. Currently, the market potential for low-cost pads is large and the likelihood of competition is high if donations of commercially produced sanitary pads do not flood the markets and undermine local production.(34) The table below highlights some initiatives

that locally produce sanitary pads out of various materials. The descriptions of each business provide a brief history, price comparison, and product feedback, when available.

<b>Table 2: Examples of Innovative Feminine Hygiene Products</b>		
<b>Business/ Product</b>	<b>Country</b>	<b>Description</b>
JaniPads	Kenya	JaniPads are made from biodegradable plastic and locally available water hyacinth, which is a plant considered a nuisance weed in Kenya. The low-cost sanitary pads are not yet commercially produced, but the Swedish students who invented them are working with a NGO named The Village Volunteers to develop a business plan and begin commercial production.(39)
AfriPads	Uganda	Afripads are produced locally from sewn materials that are created to be washed and reused and are sold directly to schoolgirls and NGOs. The manufacturer uses materials that do not require energy, which allows them to have workshops in rural areas. An Afripads menstrual kit lasts one year. An annual supply of commercially produced disposable sanitary pads costs approximately ten times more than an annual supply of Afripads. The schoolgirls report choosing Afripads to wear for the following reasons: they are soft to wear, leak-proof, and less expensive in comparison to commercially produced sanitary pads. Schoolgirls who have access to Afripads, but choose not to use them typically cite two reasons. More affluent girls attending higher income schools consider washing materials to be dirty and a nuisance. Meanwhile, girls from lower income schools state that Afripads were expensive compared to traditional materials.(34)
Makapads	Uganda	Makapads were created in 2008 by a Makerere University professor as disposable, one-use sanitary pads from papyrus and waste paper. The supply to NGOs has grown rapidly, and most Makapads are provided to girls at no cost. Typically, a year of commercially produced disposable sanitary pads costs three times more than an annual supply of Makapads. Girls who try out Makapads are often concerned with the absorbency and thinness. Leakages are more common when compared to AfriPads. Many girls who have tried them reverted back to cloths. The main reason for their use is that they are provided to the schoolgirls for free, but only 30% said they would buy them.(34)
Sustainable Health Enterprises (SHE)	Rwanda	SHE utilizes a market-based strategy to produce and distribute sanitary pads. SHE believes that sanitary pad donations will not be sustainable over the long-term. Instead, SHE employs approximately 100 females. Jobs include fiber suppliers, fiber processors, manufacturers, sales representatives, and trained community health workers. SHE's impact allows 100,000 girls and women access to affordable pads.(18)

Duet Menstrual Cups	Zimbabwe	The Duet menstrual cup is presently undergoing regulatory approval. It was piloted in Zimbabwe as a cervical barrier contraceptive and for STI/HIV prevention, in addition to being used as a menstrual cup. A few advantages of the Duet menstrual cup include that it can be used monthly for many years, cleaned with a small amount of water, and worn during sexual intercourse.(40)
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### **Expansion of Adequate Sanitation Facilities in Schools**

Schools need to supply girls with clean sanitation facilities from a carefully considered design and layout, to include doors, locks, water, toilet paper, and ventilation to facilitate adequate MHM. The facilities should also have separate toilets for boys and girls, as well as a disposal mechanism. Providing disposal mechanisms can minimize the amount of menstrual materials that girls throw in the latrines and reduce the environmental hazard caused by this common improper latrine use. Ideally, there should be bathing areas and water kept near the toilets so that girls can properly wash at school. The latrines should have some exposure to natural light so that the girls can check for leakages as well as their cleanliness.(34) Rough latrine and bathing slab surfaces should be avoided because they encourage unsanitary conditions and smell badly. Blood, urine, feces, and grey water can more easily be removed from smooth surfaces, compared to coarse flooring.(34) Private companies, NGOs, and school groups can partner with schools to work on improving sanitation facilities. Many schoolgirls in the studies also believe that the communities can help construct and provide materials to enhance school latrines.(30)

To improve MHM for schoolgirls, many private companies, NGOs, and communities can become involved in constructing adequate sanitation facilities. FemCare, a part of Procter and Gamble, is an example of a private company that has a

vested interest in increasing sanitary pad use among African schoolgirls. FemCare realizes the issue is bigger than just providing the products, and so it partners with schools to build bathrooms, construct water pipelines to the facilities, provide disposal containers, and show teachers how to incinerate menstrual waste.(41) UNICEF is an example of a NGO that builds girl-friendly toilets in sub-Saharan Africa to encourage school attendance.(42) At the community level, Ethiopian schoolgirls provide a creative example of way to improve sanitation facilities at schools. The girls believe the creation of a tea and hygiene club can solve the problem of poor maintenance of sanitation facilities in their schools.(30) The tea club can be used as a means to generate funds so that the hygiene club can use the proceeds to keep the school latrines stocked with necessary supplies, such as water, paper, and sanitary products. They suggest that the clubs can also provide money to hire someone to clean the latrine. Furthermore, the hygiene club can also provide education and IEC materials on puberty and menarche to both boys and girls at the school.(30) These examples show that groups from all levels can get involved to tackle the inadequate sanitation facilities that plague many schools serving as a MHM barrier.

### **Greater Menstruation Hygiene Management Advocacy**

MHM is often a taboo topic that is not talked about much in societies, yet it affects a large proportion of each population both directly and indirectly. Thus, greater advocacy is required from diverse sources. Three examples of creative outlets that have been successfully utilized to disperse knowledge about menstruation are NGOs, males, and social media; these efforts can be expanded.

The Forum for African Women Educationalists (FAWE) is an example of a NGO that does ample advocacy work regarding MHM in sub-Saharan Africa. It successfully implemented a Sexual Maturation Management program in Ugandan schools, with the goal of improving girls' attendance, retention, completion, attainment, and achievement in education.(43) The project was implemented in 60 primary schools in five districts. FAWE advocated for policy reforms at the national level, involving the Parliament of Uganda and the Ministry of Education and Sports. At the district level, FAWE coordinated with the Directorate of Education. In schools, they met with teachers, parents, school management committees, and local leaders to sensitize them about the importance of addressing sexual maturation management. Senior female teachers helped start teen clubs to create a space for learning about puberty along with provision of IEC materials. FAWE helped 24 of the schools create separate latrines for girls and boys. They trained both female and male leaders to discuss sexual maturation management issues. FAWE advocated for affordable sanitary pads. Some head teachers considered including sanitary pads on the fees bill, while others accessed them from private companies. Men, especially fathers, involved realized the responsibility of providing sanitary materials for their daughters. Many shops and school canteens became stocked with sanitary materials in response to this advocacy. A handbook on MHM was distributed to all 60 schools. Teen clubs used songs, drama, trainings, and conversations as a means to discuss these sensitive issues. The campaign was publicized through television, newspapers, and radios to break the silence.(43) This project was made possible because the Ugandan government prioritized girls' education, and it can be replicated in other countries.



Male advocacy can be a powerful way to raise awareness about MHM. For instance, a young Kenyan schoolboy named Nixon Otieno Odoyo was awarded the Shiela McKechnie Foundation's International Young Campaigner Award in 2009 after tackling MHM.(18) Odoyo noticed that girls dropped out of his secondary school at a higher rate than the boys. He participated in a Teens Watch Club at school and listened to female members talk about not being able to afford sanitary pads and being embarrassed to stay in school. Odoyo created a campaign called Keeping Girls in School, which raised money through a football tournament to buy several sets of sanitary pads for ten schools in the area. It was a great opportunity for the community to learn about MHM, and it contributed to increased girls' attendance. Other male MHM advocates have helped invent low-cost locally produced sanitary pads, created sanitary pad production businesses, and helped develop menstrual hygiene books.(18) Male advocacy is an important way to help improve MHM, particularly by decreasing the bullying and stigmatization experienced by many schoolgirls.

Other resourceful advocacy avenues to break the silence about menstruation can include the use of celebrities and the Internet. Zimbabwean beauty queen Primrose Mutsigiri used her celebrity status to support the *Dignity! Period* campaign to make sanitary pads more accessible for females in her country.(18) Mutsigiri made the campaign more visible by speaking out frequently about the discomfort and risks females without adequate sanitary protection face each month during menses. ZanaAfrica is an example of an organization that provides information about MHM on its website and also uses social media such as Twitter as a means of dissemination.(18) Countries in sub-

Saharan African can capitalize more on celebrities' influence and the Internet to raise awareness of MHM and disperse important information about menstruation.

### **Increased Government Support**

Governments in sub-Saharan Africa need to recognize how MHM affects schoolgirls and respond by creating policies and delegating resources to improve the situation. Recently a few presidents and governments demonstrated their support of MHM directly, but often it has been in narrow ways. In 2012, the South African President Jacob Zuma acknowledged the problem by stating that sanitary pads were necessary for schoolgirls. Zuma proposed that free sanitary pads should be provided to schoolgirls who cannot afford them.(44) In 2010, the Rwandan president launched the Hygiene and Sanitation Presidential Initiative to promote sanitation and hygiene in households, communities, and schools.(45) The Rwandan government also established a minimum standard for acceptable latrines. Even though these were positive steps, researchers found that many of the school latrines still did not meet minimum standards. Although these steps will indirectly improve MHM, much is left unaddressed and more needs to be accomplished to help schools meet those standards. It is important to integrate policy and practice at the national, regional, and local levels. It is vital to synchronize the norms and local practices regarding latrines and MHM with prescribed standards and guidelines. It will take more direct mention of MHM in campaigns by public leaders and more policy-making to help change beliefs, promote education, and dispel myths.

Tanzania has tackled MHM on a larger scale by integrating *The Girl's Puberty Book* into national policy in two important ways. The Ministry of Education approved the booklet's use in primary schools, which added MHM to the curriculum.(13) Secondly,

UNICEF and local ministry officials embraced this book and decided to incorporate it into the new ‘Water, Sanitation, and Hygiene (WASH) in Schools’ national strategy throughout Tanzania in 2011. The strategy was created from collaboration between four differing ministries in Tanzania, including health, education, water, and sanitation. It integrates MHM interventions such as sufficient latrines, water, and disposal mechanism in addition to the book. Other sub-Saharan African countries could follow Tanzania’s lead and involve multiple ministries to directly focus on improving menstruation education and experiences among students.

### **Incorporation of Menstruation Hygiene Management into the Water, Sanitation, and Hygiene Agenda**

WASH is a sector dedicated to improving water, sanitation and hygiene to people without access to these basic resources, and it is a large focus of the Millennium Development Goals. Some researchers and policymakers claim that menstrual hygiene has been an insufficiently recognized problem in WASH agendas.(21) While the broad aim of Millennium Development Goal 7 is to ensure environmental sustainability, Target 7C is more specifically aimed at halving the proportion of the population without sustainable access to basic sanitation by 2015. There is no explicit mention of menstrual hygiene in Goal 7, and consequently this has often been left out of sanitation programs. The WASH sector can incorporate MHM into trainings, meetings, reviews, policies, and procedures to raise awareness both within and outside the sector. Some WASH groups have begun to integrate MHM, but this practice is not yet mainstreamed. For example, at a recent WASH training in Uganda, a session focused on MHM was taught to a predominantly male audience.(18) Efforts like this can be replicated in other countries so

that WASH leaders widely recognize MHM as a problem and can focus their efforts on finding solutions.

### **Further Research on Menstruation Hygiene Management in sub-Saharan Africa**

MHM has been a neglected area in international development until recently. In recent years, a few academic studies related to MHM have been conducted by masters and doctoral students and research institutions.(18) Additionally, some international conferences have placed MHM in their agendas and some development agencies have carried out action-based research. Researchers and development agencies working with MHM suggest that further research is needed to grasp the relationship between improved MHM and girls' schooling. Although evidence demonstrates that poor MHM is associated with health risks, more research is needed to pinpoint the exact health hazards. There needs to be research to inform development of MHM-intervention indicators to monitor implementation and efficacy, as well as to inform best practices related to the social marketing of feminine hygiene products.(18) More information is needed to find effective strategies and materials to involve boys and men in MHM. Further data is needed on the relationship between school sanitation facilities and their impact on ability to help girls manage menstrual hygiene. All these areas are gaps in the research that need to be studied and published to more effectively solve the MHM problems plaguing many schoolgirls in sub-Saharan Africa. Future research can also address other populations because many older women and younger girls who do not attend school face similar challenges with MHM.

## **Incorporation of Menstruation Hygiene Management into the Maternal and Child Health Curriculum**

One reason that MHM may not be researched often is because it is not typically included in the maternal and child health (MCH) curriculum. Since it affects such a large population of women and crosses over into so many widely researched areas in MCH, it needs to be part of the MCH curriculum. Inclusion in the curriculum can increase the awareness of this problem among MCH leaders, positioning them to be part of the answer to solving the challenges associated with MHM. This is particularly important in the context of sub-Saharan Africa, since the proportion of youth is increasing as well as the number of girls attending school. Thus, in the future a rising number of schoolgirls will likely encounter challenges with MHM.

## **Conclusion**

There are key limitations to this literature review. There is a dearth of literature; consequently, many countries in sub-Saharan Africa do not have any academic studies or action-based research related to MHM. This is a disadvantage because it is difficult to gauge how MHM affects schooling in all countries without data specific to each region. Most MHM research studies have small sample sizes, with specific populations, and so they are not necessarily generalizable to larger populations. Larger sample sizes in more diverse areas are necessary to gain a better understanding of underlying trends.

Despite these limitations, the research clearly demonstrates that MHM is a problem for many schoolgirls in sub-Saharan Africa. Numerous schoolgirls are missing school, underperforming, and living with negative emotional experiences and physical

pain. The existing research provides many recommendations and examples of promising initiatives to resolve the MHM situation. Further research will add to this base and help define the problem more clearly. With more attention and resources devoted to MHM on a global scale, schoolgirls will be able to adequately manage their menses and attend school normally. The tools for the solution already exist, but it will require more advocacy, infrastructure, resources, and education to make MHM a positive experience among schoolgirls.

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