

**KNOWLEDGE ON MENSTRUATION, MENSTRUAL HYGIENE
MANAGEMENT PRACTICES AND SCHOOL ABSENTEEISM
AMONG ADOLESCENT SCHOOL GIRLS IN KIGAMBONI
DISTRICT, DAR ES SALAAM**

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**MMed (Obstetrics and Gynecology) Dissertation
Muhimbili University of Health and Allied Sciences
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**Muhimbili University of Health and Allied Sciences
Department of Obstetrics and Gynaecology**



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By

Rahma Muhammad Bakari

**A Dissertation Submitted in (Partial) Fulfilment of the Requirements for the Degree
of Master of Medicine (Obstetrics and Gynaecology) of**

**Muhimbili University of Health and Allied Sciences
October, 2021**

CERTIFICATION

The undersigned certifies that she has read and hereby recommend for acceptance by Muhimbili University of Health and Allied Science a dissertation entitled: “**Knowledge on menstruation, menstrual hygiene management practices and school absenteeism among adolescent school girls in Kigamboni District, Dar es Salaam**”, in (partial) fulfilment of the requirement for the degree of Masters of Medicine (Obstetrics and Gynecology) of Muhimbili University of Health and Allied Sciences

Prof. Siriel N. Massawe (MD, MMed, PhD)

Supervisor

Date

DECLARATION AND COPYRIGHT

I, **Rahma Muhammad Bakari**, declare that this **dissertation** is my original work and it has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature.....

Date.....

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Finally, I am deeply indebted to my family for all the sacrifices they made on my behalf during this period of study.

DEDICATION

This work is dedicated to my beloved husband and son for their patience and support throughout my study period.

ABSTRACT

Background: Menstrual hygiene management (MHM) is an essential aspect of hygiene for women and adolescent girls. It is associated with negative implications if ineffectively and unhygienically managed. School girls require a supportive MHM environment in order to ensure regular school attendance and participation. In Tanzania, little is known about schoolgirls' knowledge, practice of MHM and magnitude of school absenteeism during menstruation. This study aimed to assess the knowledge on menstruation, menstruation hygiene management practices and school absenteeism among school girls in Kigamboni district, Dar es Salaam

Methods: A cross-sectional study employing mixed methods was conducted in 10 secondary schools in Kigamboni district, Dar es salaam. A total of 444 and 50 school girls aged between 13-19 years who had attained menarche were recruited for the quantitative and qualitative data collection methods respectively. Structured, self-administered questionnaire was used to collect quantitative data. Bivariate analysis was used to establish if there was an association between the dependent and independent variables, with those with a p-value of < 0.2 subjected for multivariate analysis to establish the degree of association. In addition, five Focused Group Discussions and ten in Depth Interviews were used to collect qualitative data. Qualitative data was transcribed verbatim, coded and organized into themes using thematic analysis

Results: In this study 58% of the school girls had good knowledge on menstruation and 67.8% reported poor menstrual hygiene management practices. Mothers, teachers, sisters and fellow students were the most common source of information on menstruation. Furthermore, there was a significant positive association between good knowledge on menstruation and parent's educational status and occupation (AOR= 2.19, CI: 1.09-4.14) and (AOR= 2.28, CI: 1.13-4.57) respectively. School absenteeism during menstruation was reported among 26% of the school girls where Menstrual pain and lack of absorbent materials were the most common indicated reasons for the school absence.

Conclusion: Despite good knowledge on menstruation, the practice of menstrual hygiene management among school girls was poor. Additionally, inadequate menstrual hygiene management practices were shown to contribute to school girl's school absenteeism hence they should form the emphasis of future interventions.

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LIST OF ABBREVIATIONS

FGD	Focused Group Discussion
IDI	In depth Interviews
MHM	Menstrual Hygiene Management
MUHAS	Muhimbili University of Health and Allied Sciences
RTI	Reproductive Tract Infections
SES	Socio Economic Status
SPSS	Statistical Package for the Social Sciences
TDHS	Tanzania Demographic Health Survey
UNESCO	United Nations Educational Scientific and Cultural Organization
UNICEF	United Nations International Children's Emergency Fund
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization

OPERATIONAL DEFINITIONS

ADOLESCENT	Any person between the ages 10-19 years
MENSTRUATION	Cyclical discharge of blood from the uterus of a non-pregnant woman.
MENSTRUAL HYGIENE MANAGEMENT	Using a clean menstrual management material to absorb or collect blood that can be changed in privacy as often as necessary for the duration of the menstruation period, using soap and water for washing the body as required, and having access to facilities to dispose of used menstrual management materials.
LEVEL OF KNOWLEDGE ON MENSTRUATION	Good knowledge defined as knowledge score between 0-5.0 and poor knowledge defined as knowledge score between 5.1-10
SCHOOL ABSENTEEISM	Having missed one or more days of school as a result of menstruation during a girl's most recent menstrual period

1.0 INTRODUCTION

1.1 Background

Adolescence is the transitional phase of physical growth and psychological development between childhood and adulthood involving changes in social, mental and biological health. The World Health Organization (WHO) defines adolescence as the period between 10–19 years.

Menstruation is a normal biological process experienced by millions of women and girls around the world each month. Globally they constitute approximately 52% of the female population (26% of the total population) by being in the reproductive age (1). Menarche indicates the start of a female's reproductive years and often signifies her transition to full adult female status within a society. On any given day, more than 800 million women between the ages of 15 and 49 are menstruating, suggesting that menstruation is a health aspect which needs serious 'eyes' to focus on in terms of how it should be properly managed to reduce women's vulnerability (2).

MHM focuses on practical strategies for coping with monthly periods that is, ways in which women keep clean and healthy during menstruation and how they acquire, use and dispose of blood-absorbing materials (3). It is now widely recognized as a rights and a development issue. While the Millennium Development Goals (MDGs) made no reference to MHM, the Sustainable Development Goals (SDGs) do so (indirectly) under Goal 3 (Good Health and well-being), 4 (Quality Education), 5 (Gender Equality) and 6 (Clean Water and sanitation).

The WHO defines adequate menstrual hygiene management as "women and adolescent girls using a clean menstrual management material to absorb or collect blood that can be changed in privacy as often as necessary for the duration of the menstruation period, using soap and water for washing the body as required, and having access to facilities to dispose of used menstrual materials" (4). Without these, the school environment is unhealthy, gender discriminatory and inadequate.

Typical preconditions that have been stipulated to be met for this include access to accurate and rational information (for females and males) about menstruation and menstrual hygiene; access to menstrual hygiene materials to absorb or collect menstrual blood; access to facilities that provide privacy for changing materials and for washing body with soap and water; access to water and soap within a place that provides an adequate level of privacy for washing stains from clothes and drying reusable menstrual materials and access to disposal facilities for used menstrual materials from collection point to final disposal (4).

Schools are essential settings to improve MHM as they present an influential platform to reach large numbers of adolescents with educational interventions to improve MHM knowledge and practices, and address harmful misconceptions and stigma. Unfortunately, school girls in Africa have been shown to face considerable challenges as a result of menstruation and its management. Common problems being faced by school girls during menstruation include; the expense of commercial sanitary pads, the lack of water for bathing and washing of menstrual materials, dirty latrines, unsuitable places to dry menstrual materials, lack of access to pain relief (analgesic), inadequate waste disposal facilities, lack of privacy for changing menstrual materials, leakage from poor-quality protection materials, lack of resources for washing such as soap and basins, limited education about the facts of menstruation, limited access to counselling and guidance, fear caused by cultural myths; embarrassment and low self-esteem, and the unsupportive attitudes of some men (5).

Moreover, girls are not receiving adequate support from home, schools, or the community, leaving them to address these challenges on their own which affects their school performance and in turn, can result in drop-out and reduced educational attainment which can have long term consequences for gender equality, as well as economic and health outcomes (6).

The present study was conducted with the aim of assessing knowledge on menstruation and menstrual hygiene management practices among adolescent school girls in Kigamboni District, Dar es Salaam, and its implication on school absenteeism.

1.2 Literature Review

1.2.1 Knowledge on menstruation and MHM

As menstruation is of huge significance to all females, hygiene during menstruation must be educated from the beginning. However, most studies have reported inadequate knowledge among adolescents with regards to menstruation and MHM.

In Indonesia a study done by Devis and colleagues reported that there was inadequate knowledge about menstruation and MHM, which was also shown to be an important and independent predictor of poor MHM. Among study participants, it was observed that those with lower knowledge were three times more likely to report poor MHM than girls with high levels of knowledge (6). These findings are consistent with findings from studies in Nepal, India and Ethiopia, where positive associations between knowledge and MHM among adolescent girls were reported (7–9).

Knowledge on menstruation prior to menarche has been presented with varying results from different studies. In Zambia, it was reported that girls did not know anything about menstruation before menarche and received only limited knowledge and alternative views on the biological process of menstruation and MHM when they attained menarche (10). Similar findings have been reported in studies done in South Asia, Nigeria, Ethiopia, Tanzania and Uganda (5, 11-15). In Kenya, Korir and colleagues reported that the knowledge on causation and origin of menstrual blood was low however, the overall knowledge level did not independently influence poor MHM practices (11). On the other hand, a study done by Tiwari and colleagues reported that more than half of the girls included in the study were aware about menstruation prior to attainment of menarche (12). Similar findings were shown in the study done in Nepal (13).

A study done by Chandra and colleagues across low and middle income countries, reported that mothers were often the most frequently mentioned source of information and advice for girls regarding menstruation (14). Following mothers, sisters were the next most common resource as reported in India, Nepal and Nigeria (7,15,16). A majority of studies which examined the roles of teachers and/or health professionals as providers of menstrual information ranked them as the least common sources compared to female relatives and friends. This was the case from studies done in Nepal, Ghana and India (15,17–19).

Menstrual knowledge has also been shown to be affected by cultural myths and taboos. These taboos often exclude girls from many aspects of social and cultural life including religious rituals during menstruation (20). A baseline survey conducted in Tanzania and Zimbabwe by Tamiru and colleagues (5), reported that girls are considered unclean or dirty during menstruation. They are not allowed to participate in public gatherings, especially mosques, religious prayers and ritual activities. Moreover, some girls were reported to separate themselves for an average of seven days in a separate house until they are called 'clean'.

These findings underscore the need to strengthen MHM in reproductive health education so that girls are well informed and can practice MHM effectively.

1.2.2 Factors affecting knowledge on menstruation

Residence, type of school, media (radio, television), parent's education level, occupation of the parents and living with both parents have been reported to influence menstrual knowledge.

In Nepal, Bhusal and colleagues reported that, girls whose fathers had education upto grade 10 were 5.15 times more likely to have good knowledge than their counterparts who were from illiterate backgrounds (21). Similar findings were reported in studies done in India, Ethiopia and Nigeria (22–24). Furthermore, Upashe and colleagues observed that girls whose mothers' educational status was secondary school and above were 1.51 times more likely to have good knowledge about menstruation and menstrual hygiene than those whose mothers were illiterate or had primary education (25). Similarly, a study done in Nigeria (15) reported that parental education was positively associated with girls' menstrual knowledge. However, a study done in China reported that, adolescent girls whose mothers had a higher degree of education and whose monthly family income was higher, had lower levels of menstrual knowledge (26).

Residence has also been shown to influence menstrual knowledge. In Ethiopia, Kitesa and colleagues reported that, girls living in rural areas (rural municipalities) were 0.27 times less likely to have good knowledge regarding menstrual hygiene compared to girls in urban areas (23). Similar findings were observed in another study done in Ethiopia (9). Moreover, another study conducted in Amhara province Ethiopia, found that urban girls were 1.80

times more likely to have good knowledge regarding menstruation and menstrual hygiene (27).

Influence of type of school on menstrual knowledge has been reported with conflicting results. In Nepal, girls who were studying in private schools were 6.10 times more likely to have good knowledge in comparison to the girls studying in government schools. On the contrary, a study conducted in North Western Nigeria, found that type of school was not statistically associated with knowledge on menstruation (24).

Regarding the person/parents living with the girls, Bulto and colleagues reported that in Ethiopia, girls who were living with only mothers were 0.50 times and relatives were 0.78 times less likely to have good knowledge of menstrual hygiene compared to living with both parents (20). This is supported by another study conducted in Nigeria (24).

Furthermore, mass media has been shown to play a prominent role in the dissemination of reproductive health information including menstruation and menstrual hygiene. Upashe and colleagues reported that availability of mass media (Radio/ TV) at home was the highest predictor of good menstrual knowledge (25). Similar results were reported in another study done in Nigeria (15).

Therefore, Awareness regarding the need for information about appropriate knowledge on menstruation and menstrual hygiene is very important. Policy makers and stakeholders should setup health education program to create awareness of good menstrual hygiene

1.2.3 Menstrual hygiene management practices

Globally, MHM have been shown to still be poor especially in low and middle income countries. According to a study done in Indonesia, poor MHM practices were reported among half to three quarters of adolescent school girls, particularly among those in rural areas, in lower school grades, and with lower knowledge of menstruation. This was despite the fact that almost all the girls reported use of disposable pads during their last menstruation. Indeed, pad usage was much higher than that reported in urban and rural populations in other Asian countries of Iran and Afghanistan (6).

WASH studies on menstrual hygiene management practices done in Iran, Afghanistan and India reported poor menstrual hygiene practices among the girls. More than half of the girls in Iran were reported not to take a bath for eight days after the onset of their period, and in Afghanistan more than 80% were reported to never wash their genital areas (22,28).

Poor MHM practices were also reported in a study done in Zambia among school girls. This was shown to be due to lack of preparedness for menarche, poor access to absorbent materials, and to water, soap and privacy while at school. Moreover, girls reported difficulties in finding appropriate female hygiene products that could have enabled them to comfortably manage their menses and in turn encourage school attendance. This study also reported that school WASH facilities were unable to support MHM as a result of poor water provision despite having enough space and privacy (29).

In Kenya McMahon and colleagues reported that, poor WASH facilities discouraged girls from using these facilities at school, with most girls not using them at all and deciding to stay home until they completed menstruating. Another study done by Korir and colleagues in Kenya reported similar observations. In Ethiopia lack of water was the determining factor for poor MHM in schools (9,11).

The use of disposable sanitary pads as a menstrual absorbent was considered a good hygienic practice in many of the studies as compared to the use of cloth, cotton wool or toilet paper (9). However, there are studies that have reported minimal use of sanitary pads as an absorbent among the school girls. A study conducted in Afghanistan found that cloth is still the most prevalent method among majority of school-going girls, with only 8% girls using sanitary pads and the remaining used pieces of cloth (30). A similar situation was reported in India where more than two thirds of the school girls were using cotton cloth rather than disposable pads as absorbents (31).

In sub-Saharan Africa studies have reported that among school girls the most commonly used feminine hygiene products were reusable cloths and a few used sanitary pads. Girls make reusable cloths using scraps from shirts, dresses, old towels, or blankets (32). Similarly, a study conducted in Ethiopia reported that utilization of sanitary napkins was low, and a significant proportion, more than half, were using rags and pieces of cloth (33). Studies of Nigerian school girls have also reported similar findings that girls were using

toilet tissue or cloth to absorb their menstrual blood as opposed to sanitary pads (15). The situation is not very different in Tanzania where sanitary pad usage was found to be as low as 18%, with the remainder using either a cloth or toilet paper during their menses (34,35).

It is therefore of importance that serious advocacy is conducted among school authorities and other relevant stakeholders to contribute to positive improvements in existing WASH structures to make them menstrual hygiene friendly.

1.2.4 School absenteeism

Absence from school, or drop-out from school during menstruation can have both physical and psychological causes. Few studies have reported on the implication of menstrual hygiene practices on school attendance. Studies on the education and health impacts of absenteeism indicated that absenteeism is associated with poorer school completion and education outcomes (36).

According to UNICEF, it is estimated that about one in ten school-age girls in Africa did not attend school during menstruation or dropped out as a result of lack of cleanliness and separate toilet facilities for female students at schools (37). In a systematic review of health and social effects of menstrual hygiene management, school attendance improved in those schools in which sanitary products were provided for the school girls (2). A Kenyan study reported similar findings where lack of resources for menstruation was reported to lead to disengagement from school and stigma (38). Similar findings were shown in a Tanzanian study conducted by Guya and colleagues (39).

Other factors that contributed to school absenteeism during menses included fear of leakage, foul smell, teasing by boys, pain and cultural beliefs. A study done in Ethiopia reported that 40% of girls missed school because of stress related to menstruation as they were made to be constantly alert for possible leakages, foul smell and discomforts which led to poor concentration in class. Teasing from boys was also a factor as the girls felt humiliated and lowered their self-esteem (9). In Egypt it was reported that more than half of students were absent from school ranging from one to four days as a result of menstruation related problems (5). Pain was also associated with school absenteeism as explained in studies done among adolescent school girls in Indonesia and Uganda (6,36).

Belief that menstruation should be kept secret was also associated with school absenteeism as shown in the Kenyan study by Korir and colleagues (11). This finding is consistent with that from a study done by Elledge and colleagues in low and middle income countries which reported that taboos and negative attitudes, including shame and secrecy, contribute to unhygienic practices and school absenteeism and support harmful norms and gender inequality (31).

These findings indicate that in order to address stigma, taboos and negative attitudes towards menstruation among girls, inclusion of boys and communities should be prioritised, along with improving knowledge so as to tackle challenges related to MHM.

1.3 Conceptual Framework

Within this study, considered menstrual hygiene practices were; use of absorbent material, number of times the absorbent material was changed, place to change the absorbent material, facilities to dispose used materials, bathing during menses, genitalia cleaning and hand washing practices using water and soap. Knowledge was assessed on definition of menstruation, cause of menstruation, which organ is involved in menstruation, duration of menses, and interval between the cycles. Also the effect of menstruation on school attendance was explored.

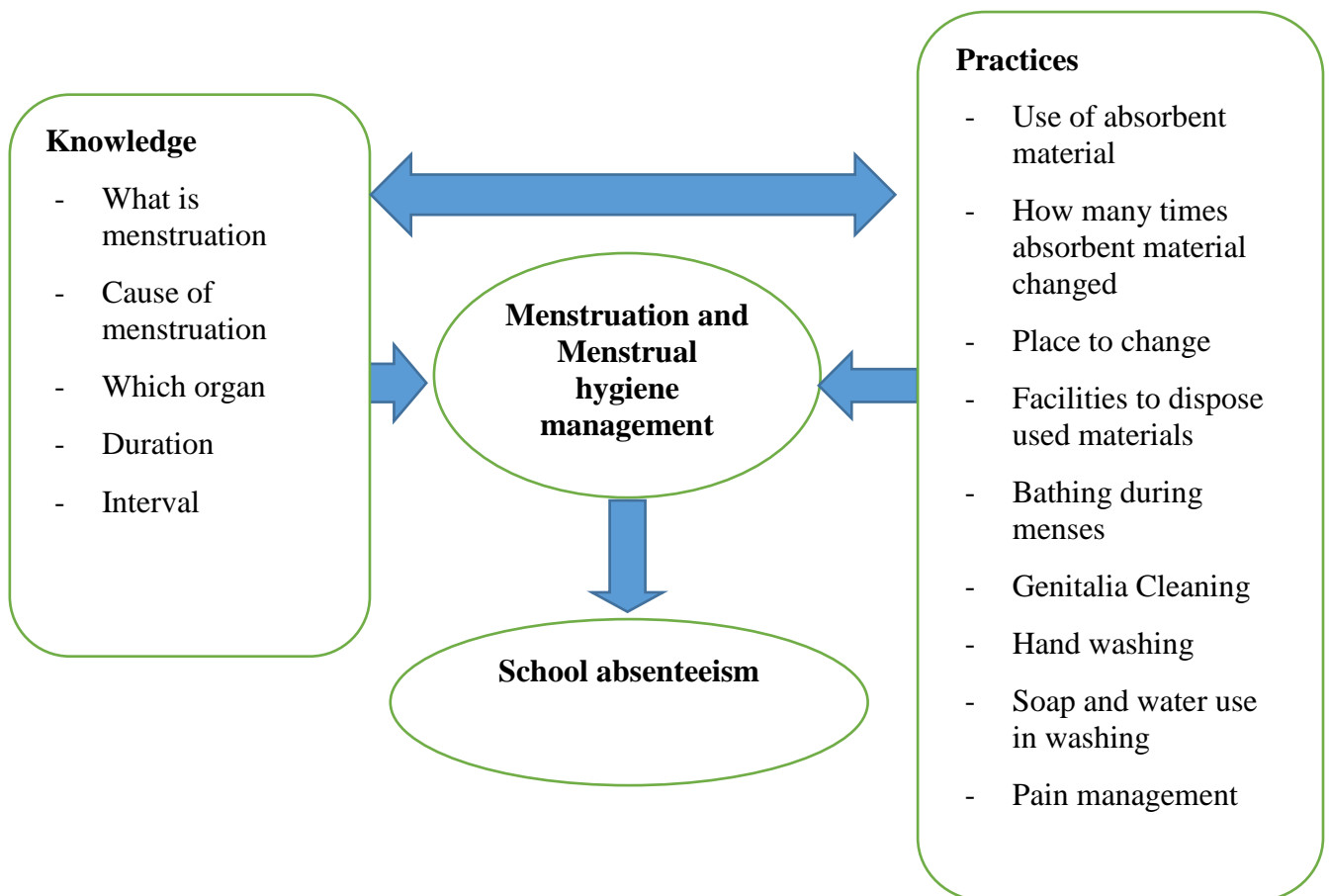


Figure 1: Conceptual framework showing knowledge on menstruation, practices of menstrual hygiene management and school absenteeism

1.4 Problem Statement

Menstruation is a fundamental and normal part of human life, and menstrual hygiene management is essential for the dignity and wellbeing of women and girls. Moreover, it is an important part of the basic hygiene, sanitation and reproductive health services to which every woman and girl has a right to (29).

Menstrual hygiene management (MHM) is a widespread problem not only in Kigamboni but throughout the country. Given multiple challenges adolescent school girls face, it is evident that promoting MHM is not only a sanitation matter but an important step towards safeguarding life opportunities for girls and promoting gender equality.

Unfortunately, MHM is a neglected topic as a result of gender inequality and cultural taboos. This is further compounded by lack of knowledge and awareness among women and girls themselves, and also among professionals on how to address menstrual hygiene resulting in a lack of necessary facilities and services like separate toilets for girls at schools and also lack of social support.

In Tanzania, MHM related knowledge, practices and impact on school attendance is not well understood leading to lack of an evidence-base for programming and interventions to improve MHM. Hence, this study was conducted in order to address this information gap.

1.5 Rationale

The study was important so as to identify the level of knowledge on menstruation and MHM practices among the adolescent school girls. School absenteeism as a result of challenges related to menstruation was also studied. The outcomes of the study will help in creating awareness regarding menstruation and creation of specific menstruation-related intervention strategies. This will lead to more information to be attained that will help break the silence and build awareness on the role MHM plays in enabling girls to reach their full potential. Moreover, policy makers can design sanitation systems that will better meet the needs of all the users and hence come up with appropriate policies and interventional programmes.

1.6 Research questions

1. What is the level of knowledge on menstruation among adolescent school girls in Kigamboni district?
2. What factors influence knowledge on menstruation among adolescent school girls in Kigamboni district?
3. What menstrual hygiene management practices are used among adolescent school girls in Kigamboni district?
4. What is the magnitude of school absenteeism during menstruation among adolescent school girls in Kigamboni district?

1.7 Objectives

1.7.1 Broad objective

To assess knowledge on menstruation, menstrual hygiene management practices and school absenteeism among adolescent school girls in Kigamboni district, Dar es Salaam.

1.7.2 Specific objectives

1. To determine the level of knowledge on menstruation among adolescent school girls in Kigamboni district.
2. To determine factors affecting knowledge on menstruation among adolescent school girls in Kigamboni district.
3. To describe menstrual hygiene management practices among adolescent school girls in Kigamboni district.
4. To identify the magnitude of school absenteeism during menstruation among adolescent school girls in Kigamboni district.

2.0 METHODOLOGY

2.1 Study Design

This was a cross-sectional study employing a mixed methods approach.

2.2 Study Setting

Kigamboni district is among the five districts in Dar es Salaam located on the South Eastern part of the city. The district is subdivided into 9 wards namely; Kibada, Kigamboni, Kimbiji, Kisarawe II, Mjimwema, Pemba Mnazi, Somangila, Tungi and Vijibweni. There are a total of 20 secondary schools in the district. Of these 14 are government (public) and 6 are privately owned, all of which are mixed schools. This study was conducted in 10 government and private secondary schools located in Kigamboni district.

2.3 Target Population

All female students studying in the selected public and private secondary schools in Kigamboni district.

2.3.1 Study population

All female students aged 13-19 years who were in form 1 and form 2 in the selected public and private schools in Kigamboni district.

2.4 Sampling Method and Sample Size

2.4.1 Sample size

As obtained from the Zonal Quality Assurance office of the Ministry of Education, Science and Technology in Dar es Salaam, the total number of students in both private and public schools in Kigamboni district as per 2019 was **12,213**.

Using the Yamane formula, sample size was calculated as follows

$$n = \frac{N}{1 + N\epsilon^2}$$

Where n=the minimum sample size required,

N=the population size,

ϵ =maximum likely error which is 5%

$$= \frac{12213}{1 + 12213(0.05)^2}$$

$$n = 400$$

Adjusting for non-response rate

$$= 400 \times \frac{(100)}{100 - f\%}$$

Where f% is non response percentage = 10%

$$= 400 \times \frac{100}{90}$$

$$= 444$$

2.4.2 Sampling technique

Quantitative sampling

Multi-stage cluster sampling was used in this study where schools in the district were clustered into the respective wards. The schools were then randomly selected and stratified into two categories, government and privately owned schools. Simple random sampling by random number counting method was used to select schools from the wards to get a total of 10 schools; three from private and seven from government schools. After getting the list of the schools one list of students in form one and form two was taken from each school. Then, sampling proportional to size was applied to get a representative sample of the students aged 13-19 years from each school and each class. Thereafter random sampling was used to select student who were present on the day of the study to participate in the study. Selection was done by the research team using random number counting method for participation in the study. Students who were willing to give informed consent and participate in the study were invited to participate in the study.

Qualitative sampling

Purposive sampling was used to select 5 schools, 2 being private schools (one high socio economic status (SES) and one low SES) and 3 being public schools (one which had the furthest distance from the Kigamboni ferry, one closest to the ferry and one with the poorest performance in the form 4 national examination). The criteria for SES was the amount of school fees paid, where the most expensive school was regarded as belonging to high SES and the least expensive regarded as of low SES. This selection was done with the

help of the school quality assurance officer for Kigamboni district. Class teachers were then asked to select 8-10 girls who could express themselves well for participation in the focus group discussions (FGDs). A total of five FGDs (1 from each school) were conducted. The teachers also selected 2 students, one who had attained menarche more than 4 years ago and one with less than 4 years for participation in in depth interviews. A total of ten IDIs (2 from each school) were conducted among the school girls.

2.4.3 Inclusion criteria

All female students aged 13-19 years in forms 1 and 2.

2.4.4 Exclusion criteria

- Those who had not attained menarche
- Did not consent to participate in the study
- Those absent on interview day
- Those with communication disabilities

2.5 Training of Research Assistants and Pretesting of Tools

Three (3) research assistants all being doctors who had recently graduated from MUHAS were recruited. Because of the culturally sensitive nature of menstruation and menstrual hygiene management, only female data collectors were recruited. They were trained on the purpose of the study, how to obtain consent, meaning of every question in the questionnaire and professional conduct in approaching study participants. Additionally, an experienced person on qualitative data collection from MUHAS department of public health trained the principal investigator and research assistants on how to perform the FGDs and IDIs properly. Researchers practiced through role plays during training to make sure they are well acquainted with the exercise. She also accompanied the research team on the first day of data collection.

The data collection tools were pre-tested among 30 adolescents with similar characteristics at Zanaki Secondary school before initiation of data collection. The purpose of the pretest was to ascertain the clarity, sensitivity and practicability of the tools and to identify ambiguous and poorly constructed items as well as other problems that may be encountered during data collection.

2.6 Data Collection

2.6.1 Quantitative

For the quantitative part, consented students were provided with a self-administered semi-structured questionnaire which was adapted and modified after reviewing relevant literature (5,9,25). The questionnaire consisted of 5 parts containing questions on socio-demographic details, knowledge on menstruation, MHM Practices and school attendance during menses.

The research assistants distributed the questionnaires to the students in classrooms with the help of schoolteachers. The students were sited apart from each other on their desks and the research assistants explained the study questionnaire to them. The students were given enough time to complete the questionnaire and all completed questionnaires were presented to the research assistants who moderated the data collection process in the classrooms. The principle investigator reviewed the questionnaires on a daily basis to ensure completeness and consistency. Questionnaires were then numbered to avoid double entry. Furthermore, regular meetings were held with research assistants to identify and address challenges faced during data collection.

2.6.2 Qualitative

Focused group discussions (FGDs) and in depth interviews (IDI) guides were used to gather the qualitative data. The questions from these guides were adapted from the tool for MHM assessment in schools from UNICEF (40). These were used to further explore knowledge, practices and traditions related to menstruation and menstrual hygiene management, school absenteeism, and views on recommended interventions. These were conducted in the most private classroom in the school so as to ensure confidentiality.

The students sat in a circle on their desks with principal investigator in the most private classroom in the school. One research assistant was also present as the note taker to observe the dynamics of the group. Questions were posed by the moderator (principal investigator) and probes used occasionally to elicit more responses when necessary. The students were assigned numbers to ensure anonymity. Overall, 40 students were engaged in the FGDs, 8 participants in each of the five separate discussions in the schools selected for FGD. Furthermore, ten IDIs (2 from each school) were conducted to further investigate issues explored in the FGDs. These were done in the teacher's office using a semi

structured guide. The interviews were recorded with a tape recorder and notes taken to capture the complete thoughts and perspectives of the students.

2.7 Data Analysis

2.7.1 Quantitative

Data was cleaned, coded, entered and analyzed using the statistical SPSS version 23. The socio-demographic characteristics were described using frequency distribution tables, mean and standard deviation.

Menstrual knowledge score was calculated out of the 10 knowledge specific questions in the questionnaire scoring system that was adopted from the previous study (25). Each correct answer earned one point, while any wrong or don't know response earned no mark and thus the sum score of knowledge totalled to 10. The mean score of menstrual knowledge (5.1 ± 1.67) was used to decide cut-offs of the rank. Good knowledge of menstruation was given to those respondents who scored 5.1–10 points and Poor Knowledge was given to those respondents who scored 0–5.0 points.

Menstrual hygiene management practice score was calculated from the practice specific questions as in the questionnaire. Each correct response earned one point, whereas any wrong or don't know response had no mark. Here, the sum score of practice totalled to 10 points. The mean score of practice (5.3 ± 1.75) was used to decide cut –offs of the rank. Good practice of menstrual hygiene was given to those respondents who scored 5.3–10 points and Poor practice of menstrual hygiene was given to those respondents who scored 0–5.2 points.

School absenteeism was measured as having missed one or more days of school as a result of menstruation during a girl's most recent menstrual period.

Bivariate analysis was performed between the dependent variables and each of the independent variables (Socio Demographic variables), one at a time. Odds ratios (OR), 95% confidence intervals (CI) and p-values was obtained to identify important candidate variables for multivariate analysis, P value <0.2 was considered statistically significant. All variables found to be significant at bivariate level were then entered into logistic regression model for multivariate analysis in order to control for confounding factors.

2.7.2 Qualitative

Data (audio recording) from the IDI and FGDs were transcribed verbatim and translated into English by the research assistants who conducted the interviews and then counter checked by the principle researcher. A printout of the transcript was read several times and the sections relevant to the study objectives were coded using inductive coding. The codes were discussed and modified where necessary. Thematic analysis as described by Braun and Clarke (41) was used for analyzing the qualitative data. During analysis three major themes emerged; awareness on menstruation, hygienic practices during menstruation management and school interference due to menstruation as summarized in table 1 below.

Table 1: Themes and subthemes which emerged from data collected from FGDs and IDI

THEMES	SUBTHEMES
Awareness on menstruation	<ul style="list-style-type: none"> - Preparation toward menarche - Menarche information - Cultural beliefs
Hygienic Practices during menstruation	<ul style="list-style-type: none"> - Use of menstrual hygienic products - Body hygienic practices
Menstrual challenges and schooling	<ul style="list-style-type: none"> - Missing school - Class participation

2.8 Ethical Consideration

The ethical clearance for the study was obtained from the Senate Research and Publications Committee of Muhimbili University of Health and Allied Sciences (MUHAS) Ref No. DA.287/298/01A/.

Permission to conduct the study was obtained from the Ministry of Education Science and Technology, Presidents' office- Regional administration and Local government (PO-RALG) and from the administration of each Secondary School through a formal letter. School Headmaster/headmistress were briefed on the relevance and objectives of the study. Prior to the study, parents/guardians were contacted through the school head-teachers and class teachers explained and distributed information sheets about the study and consent forms to their students in order to take them home and inform their parents/guardians. To participate in the study, written assent was required from students aged 13–17 years together with their parents'/guardians' consent, and written consent for those aged 18 years or older.

3.0 RESULTS

3.1 Socio demographic characteristics

The study included 444 students attending both private and government secondary schools in Kigamboni district. Their age ranged between 13-19 years with a mean age of 14.64 (SD 0.97). More than half of the students were above 15 years (56.2%) and were studying in form one 236 (53.37%). Moreover, 56.3% of the students were living with both parents. Most reported educational level for parents was no formal education and it was the same for both father and mother 31% and 32% respectively. Entrepreneurship was the most engaged occupational activity for both mothers and fathers (58% and 40%) respectively. Most students (89%) reported to be getting pocket money from their parents/guardians and most of them (87%) had television/radio in their homes. Table 2 below shows the socio demographic characteristics of the students and their parents/guardians.

Table 2: Social demographic characteristics of the study participants (N=444)

Variable	Frequency	Percentage
Age group in years		
less than 15	196	43.8
15 and above	248	56.3
Class		
Form 1	236	53.4
Form 2	208	46.6
Religion		
Christian	160	32.1
Muslim	283	64.7
Others	1	0.2
Living with at present		
Both parents	241	56.3
Single parent	99	20.4
Step father or mother	38	5.7
Relative	66	17.6
Fathers' education level		
No Formal education		
Primary education	143	31.5
Secondary education	99	22.5
College diploma and above	91	20.5
Mothers' education level		
No Formal education		
Primary education	141	32.5
Secondary education	126	28.8
College diploma and above	93	20.8
Occupation of father		
Farmer	84	17.9
Government employee	63	14
Entrepreneurship	97	21.5
Private organization	173	40.5
Occupation of mother		
Farmer	111	24
Government employee	70	14.9
Entrepreneurship	61	13.2
Private organization	247	58.7
Pocket money from parents		
Yes	66	13.2
No	386	89.4
Family TV or Radio		
Yes	58	10.6
No	377	87.3
Family TV or Radio		
Yes	67	12.7
No		

3.2 Knowledge on menstruation

This study reported good knowledge on menstruation in more than half (58%) of the students (Table 3). Almost all the students 379 (91.1%) knew that menstruation is a normal physiological process and that it is caused by hormones 421 (95.6%). However, some misconceptions especially about the physiology of menstruation were observed. More than half of the students 289(68.2%) reported that menstrual blood comes from the vagina and only 27.4% knew that the uterus was the source of menstrual blood. Furthermore, 87.5 % of the students, reported that menstrual blood was unhygienic and had a foul odour. Similarly, misconceptions were observed in the qualitative component of the research among the students.

In addition, the students reported being informed that menstrual blood is dirty which makes their bodies impure. One participant said,

“I was told by my mother that Menstruation is dirty blood released from the stomach in a monthly basis....and this blood makes the body impure...” (PZ FGD R2).

Another one added,

“Fallopian tube is the organ responsible for release of the menstrual blood” (ABD FGD R1).

Majority 380(87.9%) of the students had heard about menstruation before menarche, and their main source of information were mothers (48.35%) and teachers (35.9%). FGD and IDIs also revealed similar results were participants reported awareness about menstruation and its management prior to menarche. Sisters and fellow students were also reported as the sources of this knowledge. They said that:

“I got the information from my mother and my teachers, I was told that menstruation starts when you reach thirteen years old and above, you will grow pubic hairs and your breast will become big and you will start bleeding” (IHI ABD R7).

Another participant explained,

“Yes, I got the information from my sister and fellow students who were older than me. They were saying that when one matures they start to bleed and the bleeding can sometimes be heavy and associated with abdominal pain” (IHI IDI).

Most of the students reported that the normal age of menarche is 10–14 years (84.6%), the normal number of days for menstrual bleeding is 3–7 days (97.1%), and that the length of the menstrual cycle is 21–35 days (93.6%).

Furthermore, FGD and IDIs revealed that, Cultural myths and taboos affect knowledge on menstruation and its hygiene. The participants reported that many cultures consider menstrual blood and menstruating girls/women as ‘dirty’ and ‘unclean’. As a consequence of this perception, they reported being prevented from performing household tasks such as food preparation, cooking, housework and even engaging in religious activities while menstruating. One participant narrated,

“There is a day me, my mother and sister were picking up green vegetables (Tembele) and my mother asked me if I had finished my menses. When I told her not yet, she told me to immediately stop picking the vegetables because they will dry up and they won’t grow again” (PM IDI).

Another one pointed out,

” Do you know bread [mkate wa mayai and mkate wa kumimina], well for us people from Pemba when in your periods, you are not even allowed to cross the kitchen door when it is being cooked because they say it will come out bad. So you have to stay far away when it is being cooked” (PM FGD R5).

Regarding religious restrictions, one participant had this to say,

“In my religion (Muslim), when having menstruation a girl isn’t allowed to pray, fast, reciting the Qur’an and performing hajj because when you are in your menses you are considered impure” (PZ FGD R2)

Generally, majority of the respondents had good knowledge about menstruation and also had information about menstruation even before onset of menstruation. Main sources of information on menstruation were teachers, mothers, sisters and other students.

Table 3: Knowledge on menstruation among adolescent school girls in Kigamboni district

Variable	Frequency	Percent
What is menstruation		
Physiological	379	91.1
Dirty	35	6.3
I don't know	17	1.7
Pathological	12	0.7
Curse	1	0.2
Causes of menstruation		
Hormonal	421	95.7
Curse of God	9	1.9
Diseases	3	0.5
I don't Know	6	1.2
Others	5	0.7
Organ menstrual blood comes from		
Uterus	118	27.4
Vagina	289	68.3
Bladder	17	2.6
Abdomen	8	0.5
Don't Know	11	1.0
Others	1	0.2
Normal Age for menarche		
10-14	366	84.6
15-17	73	15.1
>18	5	0.24
Duration of menstruation in days		
1-3	8	1.4
4-8	428	97.1
>9	8	1.4
Length of menstrual cycle		
<21	30	5.1
21-35	406	93.7
>35	8	1.2
Menstruation information prior to menarche		
Yes	380	88.0
No	64	12.0
Source of information		
Mother	215	36.0
Sister	61	14.7
Aunt	28	6.7
Teacher	163	48.3
Friends	54	13.0
Books	77	18.5
Media (Tv/Radio)	15	3.6

Foul order during menstruation		
Yes	379	87.7
No	65	12.3
Menstrual blood is unhygienic		
Yes	378	87.5
No	66	12.5
Knowledge (summary)		
Good	255	58
Poor	189	42

3.3 Factors associated with knowledge on menstruation

Table 4 shows that; age, living with both parents, parents' education level and occupation of the mother were associated with good knowledge on menstruation. Students older than 15 years were shown to have good knowledge (59%) on menstruation as compared to the younger ones (55%). On the other hand, students living with both parents had higher chances of having good knowledge on menstruation unlike those living with single parents, stepparents and relatives ($p=0.018$). Moreover, this study showed that those students whose fathers had acquired primary school education and above had good knowledge on menstruation. In contrast, those students whose mothers had no formal education were found to have good knowledge as compared to those with formal education ($p=0.001$). Other variables in the table were not shown to be associated to the knowledge status of the students.

Table 4: Factors associated with knowledge status among study participants in Kigamboni district (N=444)

Variables	Poor Frequency (%)	Good Frequency (%)	Total	P-Value
Age group				
Less 15	81(44.5)	115(55.5)	196	0.374
15 and above	94(40.2)	154(59.8)	248	
Religion				
Christian	56(38.4)	104(61.6)	160	0.355
Muslim	119(44.2)	164(55.8)	283	
Others	0(0.00)	1(100.00)	1	
Living with at present				
Both parents	98(41.9)	143(58.1)	241	0.018
Single parent	38(36.5)	61(63.5)	99	
Step father or mother	15(33.3)	23(66.7)	38	
Relative	36(52.1)	30(47.9)	66	
Fathers education level				
Formal education	79(48.1)	64(51.9)	143	0.001
Primary education	57(55.4)	62(44.6)	99	
Secondary education	21(29.8)	59(70.2)	91	
College diploma and above	30(29.8)	72(70.2)	111	
Mothers education level				
Formal education	63(44.8)	78(55.2)	141	0.001
Primary education	69(54.6)	57(45.4)	126	
Secondary education	29(31.4)	64(68.6)	93	
College diploma and above	26(31.1)	58(68.9)	84	
Occupation of father				
Farmer	33(51.8)	30(48.2)	63	0.375
Government employee	36(37.2)	61(62.8)	97	
Entrepreneurship	72(41.4)	101(58.6)	173	
Private organization	41(40.6)	70(59.4)	111	
Occupation of mother				
Farmer	36(52.5)	32(47.5)	68	0.028
Government employee	29(48.2)	32(51.9)	61	
Entrepreneurship	101(40.4)	146(59.6)	247	
Private organization	24(35.2)	44(64.8)	68	
Pocket money from parents				
Yes	160(41.4)	226(58.6)	386	0.421
No	28(47.7)	30(52.3)	58	
Family TV or Radio				
Yes	157(41.6)	220(58.40)	377	0.612
No	31(45.3)	36(54.72)	67	

In multivariate analysis (Table 5), students having whose fathers had secondary education and above had twice the odds (OR 2.6, CI (1.19-5.68)) of having good knowledge as compared to those whose fathers had a lower education level. Furthermore, students whose mothers had secondary education and above had three times the odds (OR 3.08, CI (1.32-7.16)) of having good knowledge. Moreover, those students whose mothers were entrepreneurs and worked in private organizations had twice the odds to have good knowledge (OR 2.28 (1.13-4.57), (OR 2.92 (1.25-6.83)) respectively.

Table 5: Bivariate and Multivariate analysis using Binary Logistic Regression model

Variables	Bivariate analysis		Multivariate analysis	
	COR (95% CI)	P-Value	AOR (95% CI)	P-Value
Living with at present				
Both parents	Ref	Ref	Ref	Ref
Single parent	1.26(0.75 - 2.10)	0.385	1.59(0.90 - 2.80)	0.11
Step father or mother	1.44(0.59 - 3.50)	0.42	1.77(0.69 - 4.50)	0.233
Relative	0.66(0.39 - 1.12)	0.128	0.86(0.48 - 1.53)	0.606
Fathers education level				
No Formal education	Ref	Ref	Ref	Ref
Primary education	0.74(0.43 - 1.27)	0.28	1.38(0.64 - 2.99)	0.407
Secondary education	2.18(1.22 - 3.91)	0.008	2.60(1.19 - 5.68)	0.016
College diploma and above	1.91(1.11 - 3.26)	0.018	2.05(0.99 - 4.29)	0.055
Mothers education level				
Primary education	Ref	Ref	Ref	Ref
No Formal education	1.48(0.90 - 2.43)	0.119	2.03(0.97 - 4.21)	0.058
Secondary education	2.63(1.47 - 4.70)	0.001	2.19(1.09 - 4.14)	0.027
College diploma and above	2.66(1.44 - 4.91)	0.002	3.08(1.32 - 7.16)	0.009
Occupation of mother				
Government employee	Ref	Ref	Ref	Ref
Farmer	0.84(0.40 - 1.75)	0.645	1.76(0.74 - 4.16)	0.197
Entrepreneurship	1.36(0.75 - 2.47)	0.299	2.28(1.13 - 4.57)	0.02
Private organization	1.71(0.78 - 3.70)	0.173	2.92(1.25 - 6.83)	0.013

3.4 Menstrual hygiene management practices

Overall, this study showed that 67.8% students had poor menstrual hygiene management practices (Table 6). Almost all students 441 (99%) reported using absorbent material during their menses with the most common materials used being commercial pads (85%) followed by cloth (10%). Similarly, in the qualitative study participants reported to use various menstrual materials for hygienic purposes during the menstrual periods. The commonly reported materials used were sanitary pads, cloth and cotton wool. Many participants preferred to use sanitary pads. They said:

” During my periods, I use either a pad or cloth. During the first 2 days I normally use a pad to prevent staining my clothes since the bleeding is heavy. Thereafter when bleeding has reduced I use a cloth or cotton wool” (PZ FGD R7).

More than half of the students (54%) reported changing menstrual material three times a day. Of the students interviewed, 253 (57%) reported to be changing their underwear three times a day during menstruation. Almost all of the students 430 (96%) reported bathing daily and more than half (52%) of them reported cleaning their genitalia with only water.

In the interviews, respondents were asked about how often they changed the absorbent materials used during menstruation. Some said that they changed it often, while others reported to change it after every six hours. Others reported changing the absorbent materials at least three times per day during menstruation. Furthermore, they knew that infrequent changing could lead to infections. One participant said:

“It depends with your flow, ideally a pad is supposed to be changed within 6 hours because staying with it longer than that can lead to getting reproductive tract infections (ABD IDI).

Misperception about taking a bath during menstruation days was common as revealed from the focus group discussions. Girls didn't take a bath while having their menstruation thinking that bathing might aggravate the bleeding and it was a bad omen. One discussant said:

“I only bath on the seventh day of the period because It is believed that frequent bathing will cause excess bleeding...it is seen as a bad omen and it can even lead to infertility” (IHI FGD R1)

For those students using the cloth as an absorbent material, almost all (98.4%) were cleaning them with soap and water and 31(70.4%) reported drying the cloth in sunlight. However, 27% reported to be drying it inside the house. This finding was also observed in the qualitative study where some participants reported cleaning the cloth with only water and dried under their mattresses. One participant explained;

“I clean the cloth with just water and put it under the mattress for drying. After it is dry I fold it and store it in the drawer ready for use” (IHI IDI)

All participants using pads were aware of the proper ways for disposal of the menstrual materials after their use. Pads were reported to be disposed in a dustbin and prior to disposal the pads were wrapped using plastic bag or paper. They said:

“When at home, before throwing away the pad I wrap it with a paper first followed by a black plastic bag then I throw it in the dustbin. When am at school, I wrap as I said above and put it in the dustbin and it is then taken to the incinerator” (IHI FGD R6).

Table 6: Distribution of menstrual hygiene management practices among study participants (N=444)

Variable	Frequency	Percent
Usage of absorbent material (n=444)		
Yes	441	99.3
No	3	0.7
Absorbent Material Used		
Commercially Pad	381	85.8
Napkin (Soft Paper)	9	1.7
Cotton	10	1.9
Cloth	44	10.6
Cleaning the cloth (n=44)		
Soap and Water	41	98.4
Only Water	1	0.5
Others	2	1.1
Drying the cloth (n=44)		
Sunlight	31	70.5
Inside House	12	27.3
Others	1	2.2
Change cloth/pad per day (n=425)		
Once	23	4.6
Twice	84	20.8
Thrice	232	54.1
>3 Times	86	20.5
Disposing pads (n=381)		
Dustbin	134	35.6
Toilet	138	36.2
Pit (Damp)	35	9.6
Others	60	18.6
Pad wraps used for disposing (n=381)		
Papers	119	31.1
Plastic Bags	237	62.1
Not Wrap	23	6.3
Others	2	0.5
Change underwear		
Once	14	3.1
Twice	173	38.9
Thrice	253	57.0
Never Change	4	1.0

When do you bath		
Daily	430	96.9
First Day	8	1.7
Second Day	3	0.7
Others	3	0.7
Cleaning genitalia		
Water and Soap	204	45.9
Only with Water	232	52.2
Tissue Paper	5	1.2
Towel	3	0.7
Practice (summary)		
Good	148	32.2
Poor	296	67.8

3.5 School Absenteeism

As shown in Table 7, about a quarter (26.2%) of the students reported to be missing school during their last menstruation. While lack of absorbent material was an important factor contributing to school absence, more than half of the students (52%) listed pain as main reason for school absence.

Feeling distracted and inability to concentrate in class was another reported challenge amongst students which surfaced during the interviews. Furthermore, feelings of anxiety as a result of staining oneself negatively affected classroom participation. The students reported fear to go to the front of the class to write on the chalkboard and needing to be excused more frequently from class to go to the bathroom. Additionally, they reported to miss school even if they had an examination or did not do the examination with the required concentration leading to bad performance. They said:

“I stay home during the first 3 days of my menses because the bleeding is too heavy and I have abdominal pain so I get fear of leakage and being teased by the boys.....I have missed an exam twice because of this and it has affected my performance 5in school” (PM IDI)

“When I am in my periods I am not confident especially in the presence of boys, Therefore, I like to isolate myself in class. I would not respond to questions or go in front of the class to write on the board because I fear staining myself (IHI IDI).

Table 7: School attendance among study participants during menstruation

Variable	Frequency	Percent
Come to school during menstruation		
Yes	321	73.8
No	123	26.2
Reason for missing school		
Because menstruation started	3	2.1
Menstrual pain	63	51.6
Lack of absorbent material	57	46.3

4.0 DISCUSSION

This study has assessed knowledge on menstruation and menstrual hygiene management practices and its effect on school absenteeism.

This is an important subject since safe menstrual hygiene requires knowledge on the physiology of the female genitalia, menstruation and menstrual hygiene practices. However, in some societies, menstruation is a taboo that is rarely discussed thus affecting knowledge and menstrual practices among adolescents

It has been found in this study that more than half (58%) of the students had good knowledge about menstruation however, both the quantitative and qualitative results observed that there was a knowledge gap in specific areas like causation of menstruation and origin of menstrual blood. This finding might be a result of low parent to child communication about menstruation and its hygienic management leading to inadequate information and unpreparedness for the menstruation process.

Similar findings were observed in studies conducted in Kenya where the proportion was 51.6%, Northern Ethiopia where the proportion was 51.3% and in Nigeria where the proportion was 55.9% (9,11,24). Higher knowledge levels were reported from studies done in Northwest Nigeria 94.3%, Nepal 87%, Central Ethiopia 72% and Eastern Ethiopia 70% (15,20,21,23). These differences in knowledge level between the current study and other mentioned studies may be explained by the fact that study settings were different. Whereas the current study was done in a peri-urban setting, the other studies with higher rates were conducted in an urban setting. Additionally, the girls in our study might have not received adequate or accurate information about menstruation.

In this study, students were found to have knowledge about menstruation prior to menarche. This is a good thing as it has been reported that girls who had knowledge about menstruation prior to menarche were significantly more likely to know what was happening to their bodies and how to manage menses hygienically (42). Indeed the finding of this study are similar to those from studies done in Northern Ethiopia, Central Ethiopia, Nepal, Ghana and South-western Nigeria (9,15,20,21,43). However, a study in India (18) found a lower proportion of students who knew about menstruation before they had menarche possibly

reflecting on the influence of mothers' education level were in this study most had attained post primary education .

The role of parents was clear from both the qualitative and quantitative aspects of this study with mothers being the main source of information on menstruation. This finding is in line with studies done in other low and middle income countries such as Nepal, India Central and North Ethiopia, Nigeria and Ghana (9,18,20,21,24,43).

Therefore, menstrual education to adolescent school girls is needed so as to provide correct information on the mechanism of menstruation, hygienic management and detailed explanation on what happens to the body of a girl during menstruation.

Furthermore, it was found in this study that mother's education levels and parent's occupation were associated with knowledge on menstruation and its hygiene. Similar findings were seen in studies done in India (13), China (26), Nepal (21), Nigeria (24), Ethiopia (44) and Ghana (45). This can be explained by the fact that students whose parents have received higher education are more likely to provide correct information on menstruation and its hygiene and provide for the adequate products.

Hygiene during menstruation is key to the general wellbeing of the students and so emphasis is usually placed on the kind of self-care practices that they employ to manage their menses hygienically within recommended standards (45). This study showed that only one-third of students had good or adequate menstrual hygiene management practices (32.2%). This could be explained by the fact that information on MHM given by mothers, sisters and friends can sometimes be incomplete and improper frequently being based on cultural myths and personal experiences, which may result into false perceptions and unsafe practices regarding menstruation. This finding is in line with studies done in Ethiopia (20,25,46). However the finding of the current study is higher than those from Kamuli district, Uganda (28) and Bahir Dar city, Ethiopia (44) where only 9.5% and 24% respectively had adequate MHM. The possible reason for this might be the differences in study setting between these studies. The Bahir Dar study was a community-based study involving both adolescent girls attending and not attending school while the study done in Kamuli district was conducted in rural primary schools. It would appear therefore that, education plays an important additional role on awareness of MHM. Furthermore, the different school based

interventions that have been started as a result of more attention from different stakeholders dealing with MHM, could also result in improvement in menstrual hygiene practices. This fact is supported by a systematic review done on MHM (2) which reported effectiveness of educational programs in improving menstrual knowledge and its hygienic management.

It is of note that, findings in the current study on good MHM practices was lower than findings from studies conducted in Ghana (45), Nigeria Mehalmeda and Boset Districts in Ethiopia (23), (48) respectively. The variations were likely due to the differences in respondents' knowledge level, economic background, and socio-cultural factors.

This study found that a quarter of students reported missing at least one day of school due to menstruation. School absenteeism could be explained by the students being constantly alert for leakages, foul smell and discomforts and had poor concentration in class, which was further compounded by teasing from boys. Additional reasons for students missing school during menstruation that girls reported (fear of staining clothes, menstrual pain and a lack of sanitary pads) in this study have also been documented in other studies on menstrual-related absenteeism (49).

Similar findings were reported by a study done in Tanzania by Guya (39) where, 24.8% of students were absent from school or classrooms at least once because of lack of any of the MHM facilities at their schools. In Kenya the proportion of school absenteeism was higher were 53% of the students missed ≥ 1 day of school every month (11). Similarly, in Ethiopia 40% of the students missed school because of stress related to menstruation (9). Varying levels of menstrual related absenteeism are to be expected, due to the diversity of socio-economic settings where girls' MHM practices have been studied. Students from more socially deprived backgrounds are more likely to miss school during menstruation as they are less likely to have what they need for good MHM. This calls for appropriate measures to address equity in school settings to allow equal opportunity for education.

5.0 STRENGTH OF THE STUDY

The study used a combination of qualitative and quantitative tools to explore and quantify some aspects of this complex and sensitive topic. Quantitative approach helped to bring out numbers and percentages on knowledge about menstruation, menstrual hygiene management practices and the magnitude of school absenteeism during menstruation. Qualitative approach helped to further explain the situation of menstruation, menstrual hygiene and the practices i.e. how girls handle menstruation and misconceptions surrounding menstruation.

5.1 Limitations of the study

Response bias; some students were not comfortable to respond to some questions which required explanations on menstrual hygiene practices given the sensitive nature and stigma on the topic. This problem was mitigated by explaining well to the students the purpose of the study and assuring them on confidentiality.

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The topic of menstruation is surrounded by taboos, secrecy and embarrassment, which hinder adolescents from seeking advice from parents and teachers on appropriate menstrual hygiene practices. Moreover, these taboos and negative attitudes contribute to unhygienic practices and school absenteeism and support harmful norms and gender inequality.

This study found that the students had good knowledge on menstruation and that the parent's educational status and occupation influenced the knowledge level of these students. However, only a third of them had adequate menstrual hygiene management practices. Consequently, one third of the students missed at least one day of school during menstruation days due to lack of absorbent materials and menstrual pain.

Therefore, strategies to encourage positive social norms towards menstruation would help to promote more open discussions about it at the family and community level, which will contribute to the establishment of environments where girls can cope a healthy menstruation, with dignity, comfort and confidence.

6.2 Recommendations

Adolescents need to have access to accurate and adequate information on menstruation and its hygienic management. Menstrual education should be given at an early age before girls attain menarche and continue throughout adolescence. When taught earlier, girls would be better prepared emotionally, and psychologically for the experience of menstruation and they would be able to better care for themselves during menstruation, especially learning about hygiene practices.

MHM represents a crucial human rights issue that impacts social and economic impact. In order to demonstrate the magnitude of the problem to governments, donors and public health bodies, more studies which focus on providing substantiating evidence on MHM knowledge and practices are of importance.

Furthermore, schools should be able to support girls with measures such as menstrual hygiene products and pain killers to ensure hygienic management of menstruation in schools and prevent absenteeism during menstruation. Moreover, an emphasis should be given to implementing policy changes in resource-poor settings so as to improve the health and quality of life for adolescent girls.

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