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Menstrual hygiene management practices among girls aged 9 to 17 years in Mathioya Sub-County, Murang'a County: A descriptive study on personal hygiene practices, menstrual management materials, and disposal methods

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ABSTRACT

Menstrual hygiene is an essential component of women's lives, particularly in underdeveloped nations. Nevertheless, numerous women encounter obstacles and hardships within their homes, schools, and workplaces. Girls living in rural areas may have limited knowledge and readiness in relation to menstruation, which can result in challenges and obstacles. More than 50% of teenage females in developing countries demonstrate unacceptable menstrual hygiene behaviors, particularly among those living in rural areas and attending public schools. Limited data exists regarding menstrual hygiene issues among economically disadvantaged adolescent females in Mathioya sub-county, situated in Murang'a County. This study's objectives were to evaluate the existing personal hygiene habits, the type of menstrual management material utilized, and the disposal techniques employed to improve menstrual hygiene practices and overall well-being among adolescent girls in the region. The study adopted a descriptive cross-sectional design and utilized a stratified random sampling technique. For participation, the study recruited a cohort of 387 adolescent females aged 9 to 17 years. Findings showed that 80% of the girls continuously adhered to appropriate personal hygiene practices by showering regularly, whereas 20% held a divergent viewpoint. Almost all (94%) of the female participants in the study reported changing their menstrual products every 4–6 hours, whereas 6% changed them twice within that time frame, depending on the intensity of their menstrual flow. Majority (98%), utilized soap and water for hand washing whereas 2%, relied solely on water. Eighty-six (86%) of the female participants utilized a cloth, soap, and water to cleanse their genitalia, whereas 14% relied solely on a cloth and water. In addition, 95% of these girls used disposable sanitary pads to efficiently manage their menstrual periods. Because of their poverty, they faced numerous challenges in acquiring these items (89%). Only 92% of the female participants showed a preference for disposable sanitary pads, despite having received information about various menstrual management options. Due to the issue of period poverty, 85% of people have stated that the government and ministry of education should offer complimentary sanitary products to meet their needs. In the end, 97% of participants indicated that the most efficient approach for disposing of menstrual waste was to dispose of it in pit latrines. However, only 10% had the opportunity to use such

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latrines, and a substantial 83% of those individuals were unaware of the adverse repercussions associated with the inappropriate disposal of menstrual waste. Following the study findings, the research recommends that the State Department of Basic Education in the MOE should include menstrual hygiene management into the National School Health strategy as part of their education strategy, with the goal of enhancing personal hygiene behaviors among girls. The Murang'a county government and school administration should collaborate to offer support in supplying sanitary items and undergarments to adolescent females. Additionally, schools should provide materials for the proper disposal of menstrual waste and explore alternate alternatives to minimize waste.

Introduction

Menstrual Hygiene Management

In 2017, Menstrual Hygiene Day was marked on May 28th to increase awareness of the challenges faced by adolescent girls due to menstruation and advocate for solutions to address these challenges. Despite these efforts, a significant proportion of adolescent girls lack sufficient prior information about menstruation and the proper sanitary procedures connected with it, leading to unsatisfactory menstrual hygiene practices (*Hema-Priya et al*., 2017). *Hennegan et al*., (2016) conducted a study that reveals over 50% of teenage girls in low- and middle-income countries engage in inadequate menstrual hygiene management (MHM) practices, with a larger proportion in rural areas compared to urban areas. Engaging in certain hygienic practices during menstruation has resulted in a higher likelihood of getting reproductive tract infections (*Baker et al*., 2017) and urinary tract infections (*Zulaika et al*., 2019). Hence, inadequate menstrual hygiene practices can directly or indirectly affect the achievement of Sustainable Development Goals 3, 4, 5, and 6 (*Sharma et al*., 2017). *Coast et al.'s* study demonstrates how managing menstrual hygiene can have non-physiological implications for young girls who are menstruating (*Coast et al*., 2019). Furthermore, there is a scarcity of data regarding present-day approaches to menstrual hygiene management (Hennegan, 2018).

Personal hygiene practices during menstruation

Maintaining hygiene is essential for evaluating the well-being of the reproductive organs of menstrual adolescent females. It aids in the prevention of various infectious diseases and associated disorders, including vaginal discharge, cervical cancer, genital skin irritation, allergies, and inflammation in the genital area (*Angrainy et al*., 2021). Additionally, providing safe and private spaces for girls to dry their reusable menstrual products can help address this issue and promote better menstrual hygiene practices (*Hennegan et al*., 2016).

Menstrual Management Materials

Menstrual Management Materials can be classified into two categories: internal and external hygienic materials. The vagina introduces various internal hygienic materials, such as menstrual tampons, menstrual cups, and menstrual sponges. On the other hand, external hygienic materials include disposable or washable sanitary pads and period panties (*Anaba et al*., 2022). Additionally, these materials can be classified into: disposable items like disposable pads and tampons, or reusable items like cloth pads, washable and reusable cloth pads, menstrual cups, and period panties (*Choi et al*., 2021). Individual preference, cultural suitability, financial feasibility, local market availability, menstrual flow intensity, duration of the menstrual cycle, geographic background, and received information influence girls' selection of a particular menstruation management material or product (*Gharacheh et al*., 2021). It is important for girls to have access to a variety of menstrual products in order to choose what works best for them based on their unique needs and circumstances.

Types of Disposal Methods Practiced among Girls

Understanding the environmental impact of disposable menstrual products, as well as exploring sustainable alternatives, is crucial for addressing the ecological footprint of menstruation. Research into the disposal and decomposition of these materials can provide valuable insights for developing more environmentally friendly solutions in menstrual hygiene management. It is crucial to consider the complete lifespan of these materials, particularly when developing the sanitary infrastructure for WASH programs such as toilets, bathing facilities, washing and drying facilities, incinerators, and solid waste management services (*Robinson et al*., 2021). According to *Van Eijk et al*. (2019), disposable menstrual management products produce more

trash annually than reusable menstrual management products. Additionally, the chemicals and plastics used in disposable products can have harmful effects on both the environment and personal health. Therefore, transitioning to reusable options like menstrual cups or cloth pads can greatly reduce the environmental footprint of menstrual waste.

Methods

Study settings

Mathioya Sub-County is situated in Murang'a County, central Kenya. The Mathioya subcounty consists of three wards: Kamacharia, Kiru, and Gitugi. The population is mostly members of the Kikuyu ethnic group.

Study design and sampling technique

A descriptive, cross-sectional design was used with a stratified random sampling technique.

Sample size

The Yamane formula below was used to calculate sample size of adolescent girls aged 9 to 17 years who participated in the study.

$$n = \frac{N}{1 + N(e)^2}$$

Where;
n= sample size
N = size of the population
e = margin error or level of precision (0.05)

According to 2019 Kenya Population and Housing Census, the population of girls aged 9 to 17 years were 12,147. Therefore

$$n = \frac{12147}{1 + 12147(0.05)^2}$$

n= 387.248

n=387

Using this equation, the sample size was 387 participants. Then, proportionately determined the sample size from each stratum;

Primary school level (8397/12147*387) = 268;
Secondary school level(3725/12147*387)=118;
and do not know level (25/12147*387) = 1

Data management

Data was collected using semi-structured questionnaires which were self-administered. Thematic analysis was deployed using Dedoose software. Thematic analysis is the systematic identification of patterns or themes in qualitative data *(Braun et al.*, 2022).

Ethical considerations

Prior to conducting the study, the research received approval from the MUST Institutional Research Ethics Review Committee (MIRERC) and strictly followed a do-no-harm approach. Parents signed the consent forms due to participants' age.

Results and Discussions

Demographic Characteristics of the Respondents

The respondents' personal information included age and current education level. The findings are presented in subsequent headings:

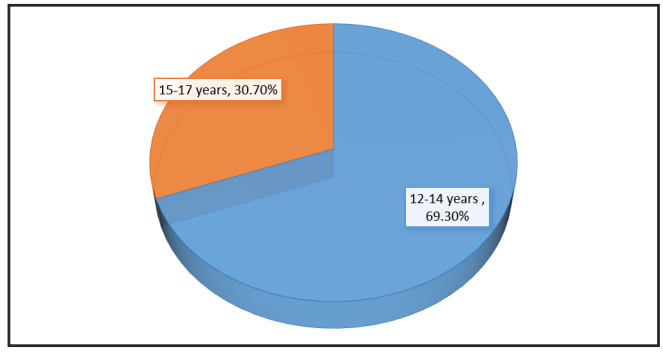

Figure 1: *Respondents Age*

Respondents Age

The study revealed that a significant majority (69.3%) of the participants were in the age range of 12–14 years, similarly to a study carried out in rural Puducherry (53.8%) (*Hema Priya S et al.*, 2017), 30.7% were between the age ranges of 15–17 years.

Education Level	Frequency	Percentage
Primary school	268	69.3%
Junior secondary	4	1.00%
Secondary school	115	29.7%
Total	**387**	**100**

Table 1:*Respondents Current Education Level*

Based on the results, 69.3% were in primary school, 29.7% were in secondary school, and 1.0% was in junior secondary. These findings suggest that the primary school demographic was the most represented in the survey, while secondary school students also made up a significant portion of the respondents. The low percentage of junior secondary students indicates a smaller presence in the sample population.

Personal hygiene during menstruation	Frequency	Percentage
Good	310	80
Poor	77	20
Total	387	100

Table 2: *Personal hygiene practices during menstruation*

Eighty (80%) of the respondents indicated that they maintain hygiene by bathing regularly, changing sanitary pads frequently, and properly disposing of menstrual waste which was referred as "Good", while 20% were of the contrary opinion referred as "Poor". The findings agree with a study by Angrainy et al. (2021), who state that it is important to practice suitable hygiene and have a daily body wash, which will make adolescent girls more confident during menstruation.

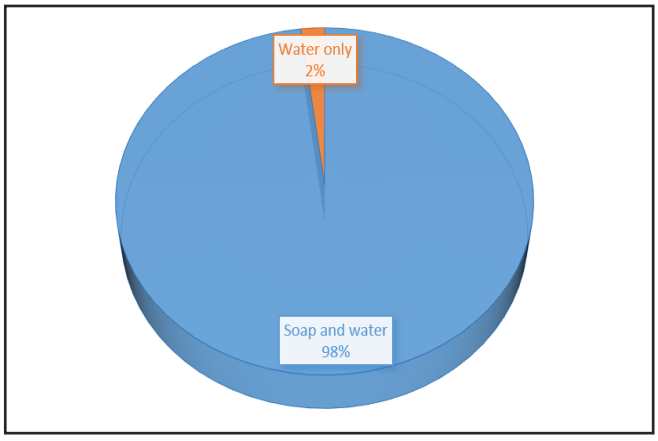

Figure 2: *Washing hands during change of menstrual management materials*

Ninety-eight (98%) of the respondents stated that washing hands is important, and they do so with soap and water. *Angrainy et al.* (2021) agree with the study findings, stating that hygiene during menses plays an important role in determining the health of the reproductive organs.

Changing Menstrual Management Material	Frequency	Percentage
4-6 hours	364	94
Twice a day	23	6
Total	**387**	**100**

Table 3: *Frequency of changing menstrual management material*

Ninety-four (94%) of the respondents reported changing their menstrual management materials every 4-6 hours. The findings are in accordance with a study by *Van Eijik et al.* (2019), who indicated that the change of menstrual materials should not take long and should be between a minimum of 4-6 hours.

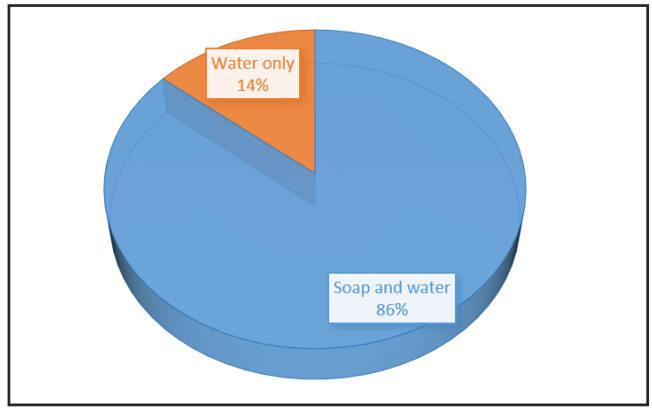

Figure 3: *Cleaning of genitalia during menstruation*

Cleaning of Genitalia during the Menstrual Period

Eighty-six (86%) of the respondents said they clean their genitalia with soap and water during their menstrual period and 14% of their counterparts used water only. In contrast, *Hamoonga et al.* found in their study that cleaning the genitalia with soap and water results in vaginal douching (*Hamoonga et al.*, 2019).

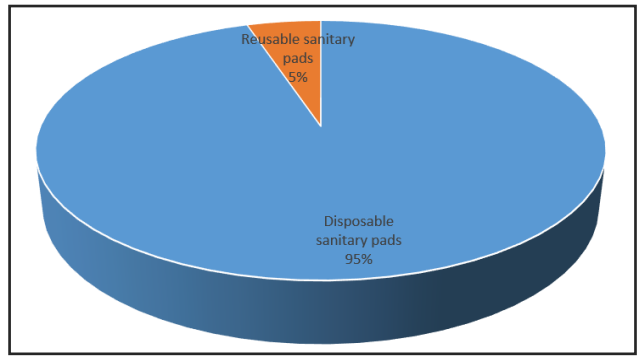

Figure 4: *Type of menstrual management materials used*

Menstrual management materials

According to the respondents, the majority (95%) of them used disposable sanitary pads as the most common menstrual management material as 5% used reusable sanitary pads. This study has similarities to another by *Kambala et al.* (2020) conducted in Malawi, where the majority of participants chose to use sanitary pads instead of menstrual cups because they thought the latter were too complicated to use (*Kambala et al.*, 2020). *Hema Priya et al.* made a similar observation, reporting that most of the girls in their study used sanitary pads (*Hema Priya et al.*, 2017

Acquisition of Menstrual management materials	Frequency	Percentage
Donations	356	92
Local shops	31	8
Total	**387**	**100**

Table 4: *Acquisition of menstrual management materials*

Acquiring of Menstrual Management Materials

Ninety-two (92%) of the respondents indicated that the acquisition of the menstrual management materials was through donations, as most of them come from low-income households where the purchase of the sanitary pads is an issue. Furthermore, 8% of the respondents indicated that they purchase the sanitary pads from the local shop around the area they live in. This is because the sponsors provided the school with sanitary materials. This runs counter to a comparable study done in India by *Jahan et al.* (2020), which found that a person's career did affect the sanitary pad they chose to use. While those in the middle class would be more concerned with cultural taboos, those in the lower income group would be more concerned with the financial consequences of purchasing sanitary pads, while those from the lower income class would prefer to use a piece of cloth. (*Jahan et al.*, 2020).

Challenges in Accessing Menstrual Management Materials

The respondents were asked if they had ever encountered difficulties in obtaining menstrual management materials and, if so, what those difficulties were. Eighty-nine (89%) of the respondents reported experiencing challenges in accessing menstrual management materials, including insufficient

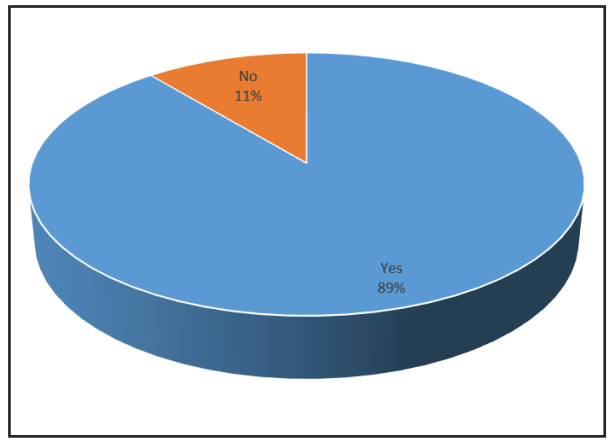

Figure 5: *Challenges faced in accessing menstrual management materials*

funds to buy sanitary pads. According to *Janoowalla et al.* (2020), the majority of the girls in this study reported having trouble getting access to sanitary pads during school breaks, which is consistent with the findings. Since the girls would typically receive sanitary goods at school, they chose to use alternative menstruation products instead of sanitary products, which were more expensive for their guardians to buy. This study is consistent with another one in Rwanda, where the majority of girls reported using homemade alternatives because sanitary pads were too expensive.

Information on different Menstrual management materials	Frequency	Percentage
Yes	317	82
No	70	18
Total	**387**	**100**

Table 5: *Information on different menstrual management materials*

Information/Education on Different Menstrual Management Options

Eighty-two (82%) of the respondents said they had received information on various menstrual management options through television, radio, and other communication channels, whereas 18% disagreed. According to *Sommer et a1* (2021), every teenage girl should have precise previous awareness about menstrual concerns in order to prevent anxiety, regret, and humiliation.

Feeling about the Menstrual Management Materials

Ninety-two (92%) of the respondents indicated that they feel comfortable with matters regarding menstrual management materials they use as they do have the serious side effects which may be termed as dangerous. Eight (8%) of the respondents expressed discomfort due to the material's impact on their normal bodily functions, as well as a sense of a foreign object interfering with their normal functioning. The findings agree with a study by *Kaur et al.* (2018), who stated that individual inclinations and levels of comfort significantly influence the selection of menstrual hygiene management materials and techniques. Furthermore, these practices vary among girls based on their geographical location, whether it is at home or outside of households (*Kaur et al.*, 2018).

Feeling	Frequency	Percentage
Comfortable	356	92
Uncomfortable	31	8
Total	**387**	**100**

Table 6: *Feeling about the current menstrual management material used*

Improvement in Access to and use of Menstrual Hygiene Products

Eighty-five (85%) of the respondents suggested that training on the proper use of menstrual hygiene management materials and the provision of free sanitary towels for all female students at each school would improve access to and use of menstrual hygiene products and facilities while 15% opted for the provision of free Menstrual management materials. This would make the girls confident and, at the same time, improve their hygiene, which translates to improved performance. According to a Ugandan study, girls often resorted to using unhygienic materials like leaves and newspapers due to their limited knowledge about menstruation (*Kansiime et al.*, 2020).

Access to and use of Menstrual management materials	Frequency	Percentage
Training on good user practice	329	85
Availability of free Menstrual management materials	58	15
Total	**387**	**100**

Table 7: *Access to and use of menstrual management materials*

Disposal Options of Menstrual Wastes

The third objective was to identify the types of disposal mechanisms practiced among girls aged 9 to 17 years in Mathioya Sub-County. This section presents findings on disposal options for menstrual waste. The following subsections display the findings.

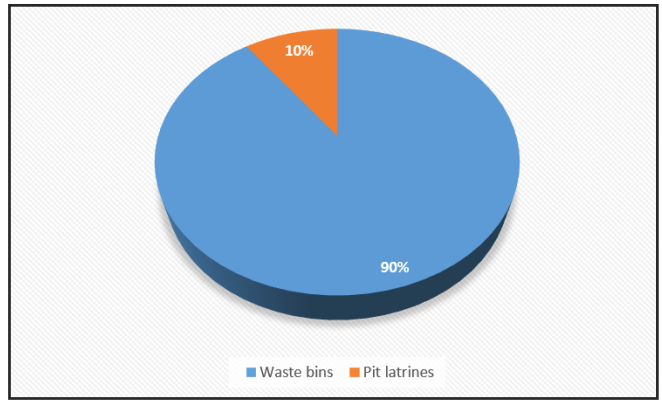

Figure 6: *Access to appropriate disposal facilities*

Access to Proper Disposal Facilities

Ninety (90%) of the respondents indicated that their schools have waste bins as well as pit latrines where they can dispose of the menstrual hygiene management materials, while 10% indicated pit latrines. This finding conflict with research conducted in Northern Kenya by *Korir et al.* (2018), which found that poor MHM practices were primarily caused by a lack of latrine privacy for one-third of the pastoralist teenage females attending school.

Dispose of Menstrual Management Materials

Pit latrines	Frequency	Percentage
Yes	375	97
No	12	3
Total	**387**	**100**

Table 8: *Pit latrines*

Ninety-seven (97%) of the respondents indicated that the best way to dispose of menstrual hygiene management materials is to throw them in the pit latrine, where they can dispose of them without any environmental impact, while 3% disagreed. This is consistent with research conducted in Dhaka, Bangladesh, which showed that spent menstruation products were discarded in a variety of locations, including sanitary bins, water bodies, and toilets (*Jahan et al.*, 2020). This study differs from one conducted in Zimbabwe previously, where almost all of

the participants preferred to dispose of their used menstrual products in private dumping areas far from their homes or places of education because it was considered improper for them to have their used sanitary products visible to others (*Calderon-villarreal et a*l., 2020), and Hema *Priya S et al*., where the majority of the girls (60.8%) burned or buried their used menstrual management materials (*Hema Priya S et al*., 2017).

Education or Guidance on Proper Disposal Methods

Menstrual waste disposal methods	Frequency	Percentage
Aware	379	98
Oblivious	8	2
Total	**387**	**100**

Table 9: *Menstrual waste disposal methods*

Ninety-eight (98%) of the respondents indicated that the school has offered a lesson on how they need to dispose of menstrual hygiene materials, while 2% were of the contrary opinion. This is similar to a study that *Chinyama et al*. reported in Zambia (2019). This is in line with the Menstrual Hygiene Management Policy (2014-2018) in Kenya, which promotes that women should have access to accurate information and be well-informed about their bodies prior to menstruation in order to lessen stigma and help adolescent girls choose menstrual products based on their financial capabilities and basic needs. (*Aidara et al*., 2020).

Conclusion

Personal Hygiene Practices among Girls

It's crucial to wash hands before changing menstrual management materials, and individuals typically do this by using soap and water. Respondents also used a clean piece of clothing and water, for optimal genital hygiene. Furthermore, the study concluded that poor personal hygiene practices during menstruation can lead to health risks such as irritation.

Type of Menstrual Management Materials used

Majority of the respondents used sanitary pads acquired donations and local shop. Respondents also faced challenges in accessing menstrual management materials, including insufficient funds to buy sanitary pads.

Types of Disposal Methods Practiced among Girls

The study concluded that the pit latrine is the best place to dispose of menstrual management materials, as it provides a safe disposal method without any environmental impact. They should also receive lessons on proper disposal of menstrual management materials, as they were unaware of the potential environmental impact of improper disposal.

Recommendations

In the MOE, the State Department of Basic Education should integrate menstrual hygiene management into the National School Health Policy. The Murang'a county government and school administration should support sanitary materials and pants for adolescent girls, along with affiliated NGOs and CBOs. Schools should provide materials for menstrual material disposal and alternatives to minimize waste, as recommended by the ministry of education.

Suggestion for Further Research

For comparative purposes, the researcher recommends conducting a study on the menstrual hygiene management of school-going adolescent girls at home in various counties in Kenya to determine the necessary policy measures for addressing menstrual hygiene management for adolescents.

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