



MENSTRUAL HEALTH AND HYGIENE AMONG SCHOOL GIRLS IN TANZANIA

Research Report
June 2021



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Authors

Robert M. Njee¹, Calister P. Imeda¹, Said M. Ali², Adiel K. Mushi³, Doris D. Mbata³, Albert Kapala⁴, Vitus A. Nyigo³, Albert M. Majura⁵, Winfrida O. Akyoo⁶, Yolanda Mbatia³, Germana Baraka⁵, Judith Msovela³, Emmanuel A. Makundi³, Esther Ngadaya³ Dhahia Mmbaga⁷ Robert M. Kitundu⁵, and Hamisi M. Malebo⁸

Reviewers

Mbazi Senkoro⁹, Gibson Kagaruki⁹, Kahabi Isangula¹⁰, Clara Lubinza⁹ Theresia Kuiwite¹¹, Edson Mapunda¹¹, Emmanuel Gibai¹², Mwanaidi M. Ali¹³

Collaborating institutions

President's Office – Regional Administration and Local Government, Dodoma

Ministry of Education, Science and Technology, Dodoma

Ministry of Health, Community Development, Gender, Elderly and Children, Dodoma

Public Health Laboratory Ivo de Carneri (PHL-IdC)

United Nations Children's Fund (UNICEF)

Menstrual Hygiene Coalition of Tanzania

Authors' correspondences:

Address: National Institute for Medical Research, 3 Barack Obama Drive, P.O. Box 9653, 11101 Dar es Salaam, Tanzania.

Office contacts: Tel. +255-222-121400;

Email: hq@nimr.or.tz , info@nimr.or.tz

Website: www.nimr.or.tz

Private contacts: Mob. +255-655-697888;

Email: robert.mussa@nimr.or.tz/robertmussa@gmail.com

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Foreword


Menstrual health and hygiene (MHH) is recognized as one of the essential requirements for the well-being of women. Specifically, the journey through the first menstrual periods profoundly impacts adolescent girls' immediate and future well-being. The Government of Tanzania has taken a number of measures to address the comprehensive menstrual needs of adolescent girls, especially those in schools, by devising a number of policies that not only supports school girls but also school boys, who need to be sensitized about this important physiological function. Over the last decade, financial and material resources have also been allocated for improving the MHH infrastructure, services and menstrual materials for schools in Tanzania.

Following a successful period of preparation and implementation of the *National Guidelines for Water, Sanitation, and Hygiene for Tanzania Schools, 2016*, which provides for MHH services in primary and secondary schools, a need for systematic data to assess the progress and identify gaps is being felt. Key stakeholders who are either devising policies or involved in their implementation in Tanzania stressed that an investigation of sociocultural factors and their impact on menstrual hygiene practices is essential, recognizing the diverse cultural systems that are strongly linked to menstrual practices across the country. We acknowledge the important role of earlier studies, including local research and other reports, that informed the current policy guidelines and actions on the subject of menstrual health and hygiene.

This document is the product of collaborative efforts of stakeholders supporting menstrual health and hygiene for Tanzanian women and girls in their quest for evidence on the state of MHH in the country, and to assist MHH programming. The goal of this research project was to provide up-to-date and comprehensive information on the status of MHH among school girls across Tanzania's primary and secondary schools. Covering 19 districts and 17 regions in Tanzania Mainland and Zanzibar, the report aimed to provide a rigorous scientific analysis of MHH services in schools across diverse cultures.

The report provides an introduction to the topic and also presents the methods adopted to gather information on menstrual practices. Then the results of this research are provided. The report broadly highlights Tanzanian school girls' knowledge, attitude and practices, sociocultural aspects surrounding menstruation and school water, sanitation and hygiene (SWASH) infrastructure and its management. How girls with disability negotiate their menstrual periods is specifically given prominent attention. After the discussion of the results, major conclusions of the study are drawn. Further, the researchers working on this report provide policy and practice recommendations for bettering menstrual health among school girls to the Tanzanian Government.

The Government commends the collaborative effort of stakeholders and the leadership of research institutions represented by The National Institute for Medical Research from Mainland and the Public Health Laboratory Ivo de Carneri of Zanzibar. This work is a crucial technical reference assessing the progress made so far and informs future planning.



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Permanent Secretary
PO – RALG

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Prof. Yunus D. Mgaya

Director General
National Institute for Medical Research

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Definition of terms

Menarche refers to the first menstrual cycle or first menstrual bleeding in a female from both social and medical perspectives; it is often considered the central event of female puberty, as it signals the possibility of fertility.

Menstruation, also known as monthly period or simply period, is a cyclical discharging of blood, secretions and tissue debris from the uterus. This process recurs in non-pregnant women normally at monthly intervals, which also represents a readjustment of the uterus to the nonpregnant state following proliferative changes accompanying the preceding ovulation.

Menstrual hygiene materials are products used to catch menstrual flow, such as pads, cloths, tampons or cups.

Cloths are reusable pieces of fabric worn externally to the body in underwear or tied to the waist to absorb menstrual flow.

Menstrual hygiene management refers to the practice of a woman or an adolescent girl using clean menstrual management materials to absorb or collect menstrual blood, which can be changed in privacy as often as necessary for the duration of a menstrual period, using soap and water for washing the body as required, and having access to safe and convenient facilities to dispose of used menstrual management materials. Menstrual health management entails understanding the basic facts linked to the menstrual cycle and how to manage it with dignity and without discomfort or fear.

Changing/special room is a special space located within or away from the toilet dedicated to menstrual hygiene.

Matron/Patron is a dedicated female/male person who takes care of students while at school. In some of the schools, matrons are not necessarily teachers by profession.

Acronyms

AJSC	Annual Joint Scientific Conference
CBOs	Community-based organization
FGDs	Focus group discussions
IDIs	In-depth interviews
KAP	Knowledge, attitude and practice
KIIs	Key informant interviews
LGA	Local government authority
LMIC	Low and middle-income countries
MHH	Menstrual health and hygiene
MoEST	Ministry of Education, Science and Technology
MoEVT	Ministry of Education and Vocational Training
MoHCDGEC	Ministry of Health, Community Development, Gender, Elderly and Children
MRCC	Medical Research Co-ordinating Committee
NGOs	Non-governmental organizations
PO-RALG	Presidents' Office – Regional Administration and Local Government
SET	Social engagement, Exercise and Touching
SDGs	Sustainable Development Goals
SNV	Netherlands Development Organization
SWASH	School Water, Sanitation and Hygiene
UNICEF	United Nations Children's Fund
WHO	World Health Organization

Executive summary and key findings

Background: Menstrual hygiene and management (MHH) is not only vital to the empowerment and well-being of girls and women worldwide but also constitutes a basic requirement for personal hygiene, reproductive health, dignity and prosperity for girls and women. In fact, it is more than just access to menstrual materials and toilet facilities though these are important, too. Moreover, it is also about ensuring women and girls live in an environment that values and supports their ability to manage their menstruation with dignity. In Tanzania, no comprehensive assessment has hitherto been done to establish the status and drivers of MHH among girls, including those with disabilities.

Objective: The aim of this study therefore was to establish the MHH situation and identify challenges related to MHH faced by school girls in the Tanzania Mainland and Zanzibar, and provide policy recommendations for MHH programming in the country.

Methods: A cross-sectional exploratory study using both quantitative and qualitative data collection techniques were conducted in 19 districts of the United Republic of Tanzania (URT) between February and September 2019. The information was gathered from 10,517 individuals including 8,012 girls who responded to self-administered questionnaires. In all, 2,013 girls and boys participated in the focus group discussions (FGDs); 341 community-owned resource persons (CORPs) took part in FGDs; 102 matrons and patrons took part in in-depth interviews (IDI); 33 officials from local government authorities (LGAs) and 15 officials

from the central government, and NGOs participated in key informant interviews (KIIs).

The study involved two-stage cluster sampling techniques whereby individual schools were selected based on probability proportional to size (PPS). From each district, 20 schools (10 primary and 10 secondary schools) were selected. Schools formed the Primary Sampling Unit (PSU) and students constituted the Secondary Sampling Unit (SSU). In each selected school, up to 30 post-menarche girls were purposively selected for the self-administered questionnaire survey and participation in FGDs. In addition, 10 adolescent boys were randomly selected to participate in FGDs designated for boys. The school matrons or patrons were selected and invited for the IDIs. CORPs were purposively selected to represent community leaders, 'Kungwis', religious leaders, teachers and members of school committee. Adequate knowledge, positive attitude and good practices among school girls were ascertained using these methods. Participants were considered to have adequate knowledge of MHH if they had a mean percentage score of more than 70per cent, and inadequate knowledge if they had a mean percentage score of 70per cent or less. Furthermore, we used the Bloom technique to assess the overall attitude towards MHH. The categorization was negative (<60per cent or score of 0–19), moderate positive (60–79.9per cent, score of 20–23) and positive (80–100per cent or a score of 24–30). The level of practices was classified as follows: poor (<60per cent or score of 0–5), relatively good (60–79.9per cent, score of 6–7) and good (80–100 per cent or a score of 8–9). Finally, logistic

regression modeling was used to calculate both unadjusted and adjusted odds ratios, with 95 per cent confidence intervals. When the outcome of interest was <10per cent, we applied modified Poisson logistic regression and reported both crude and adjusted prevalence ratios with 95per cent confidence intervals. The results are presented to demonstrate baseline MHH issues affecting post-menarche girls in Tanzania while taking into account disparities among districts in the Tanzania Mainland and Zanzibar. Furthermore, the results are presented to show MHH issues among post-menarche girls with and without disabilities in rural and urban areas in both the Mainland and the Zanzibar archipelago.

Results: In all, there were 210,784 students and 760 teachers in all the schools involved in the study. Among the 210,784 students, 0.2 per cent (n=436) were reported to have disability, an average of two students per school. The study was conducted in 294 schools located in 16 districts in the Tanzania Mainland and Zanzibar. The majority, 86.4 per cent (n=254), of the schools were government owned, and almost two-thirds, 60.5 per cent (n=178), were based in rural areas. In the study, 10,516 individuals from the selected schools participated, including 8,012 in-school post-menarche adolescent girls who responded to the quantitative questionnaire. Out of these 8,012 school girls, 2.6per cent (n=205) had a disability and 97.4 per cent (n=7,807) were students without disability.

Social demographic characteristics: A total of 8,012 in-school post-menarche adolescent girls responded to the quantitative questionnaire. Out of them, 86.8 per cent (n=6953) were from Tanzania Mainland. Their mean age (SD) was 14.9 years (0.02). Grade 5, 6 and 7 pupils constituted 9, 24 and 67 per cent, respectively,

of the participants from primary schools. Day scholars were the majority as they accounted for 70.2per cent (n=5,626) of the study respondents, and 96.2per cent (n=7,711) were in co-schools whereas 58.4per cent (n=4,679) were in secondary schools. Nearly half of the respondents (48per cent) had their school needs met by their male parents in both Tanzania Mainland and Zanzibar and 56.1per cent (n=588) of the girls without disability informed that they were supported by their male parents. Only 46.8per cent of the girls with disability were supported by their male parents.

MHH knowledge among girls: Overall in Tanzania, MHH mean knowledge score among girls was 64.9per cent, with Tanzania Mainland demonstrating an overall higher mean percentage score of 64.9 per cent compared to 64.4 per cent for Zanzibar(p-<0.05). Likewise, girls from rural areas demonstrated an overall higher percentage mean score of 65.3per cent than girls from urban areas who scored 64.6per cent (p-<0.001). The low mean scores on knowledge were observed in Namtumbo (62.3per cent), Kaskazini Pemba (63.1per cent) and Rorya (63.3per cent) districts whereas Moshi (67.3per cent), Mbeya (66.1per cent) and Msalala (66.0per cent) districts registered the highest scores.

Overall, only 28.1 per cent (n=2,251) of the girls had adequate knowledge of MHH, with 87.8per cent (n=1974) reported in the Tanzania Mainland. Among all the girls from Tanzania Mainland and Zanzibar, 28.4per cent (n=1,974) and 26.2 per cent (n=277) had adequate knowledge, respectively. Out of (n=2,251) girls with adequate knowledge, only 2.2per cent (n=49) were girls with disabilities. Among the girls with and without disabilities, 24.3per cent (n=49) and 28.2per cent (n=2,202) had adequate knowledge, respectively. Knowledge adequacy

varied only modestly among the districts. Girls in Moshi, Msalala, Tandahimba, Mbeya DC, Lushoto and North Pemba had modest but adequacy rate of knowledge whereas girls in Namtumbo and Kaskazini displayed the least of scores.

Factors associated with low level of MHH

knowledge: Girls from Zanzibar who study in urban areas were more likely to have low level of knowledge of MHH. Results also show that the chances of having low knowledge on MHH decreased with the girl going up the class. Irrespective of whether the girls had received education on menstruation before, the timing and the source of the first information were significantly associated with their level of knowledge on MHH at the time of the interview. Girls who had never received any education on menses or received information on menses after their first menstrual cycle, and those who first found information on menses from the media and other sources, stand a higher chance of having low knowledge on MHH. In fact, the lower the socioeconomic status of the school, the higher the chance that their girls will have low level of knowledge of MHH.

Girls' attitude towards MHH: Overall in Mainland Tanzania, girls scored an average of 48.9per cent on having a positive attitude towards MHH, with Zanzibar demonstrating an overall higher mean percentage in terms of positive attitude scores (54.6per cent) than Tanzania Mainland (48.0per cent) ($p<0.001$). Likewise, girls from urban areas demonstrated an overall higher mean percentage score on the positive attitude of 49.2per cent than girls from rural areas who scored 48.3per cent ($P<0.01$). Low mean positive attitude score towards MHH was observed in Mbeya DC (43.7per cent), Temeke (46.0per cent) and Mpwapwa (46.7per cent) districts whereas Kaskazini Unguja (55.1per cent), North Pemba (50.4per

cent) and Kibondo (50.3per cent) districts were the leading districts with the highest positive attitude scores. Overall, only 1.8per cent ($n=147$) of the girls had a positive attitude score towards MHH, with a positive score of 75.5per cent ($n=111$) reported in the Tanzania Mainland based on the Bloom scoring approach. Out of the 1.8per cent ($n=147$) girls with a positive attitude score, 4.1per cent ($n=6$) were girls with disabilities. Positive MHH attitude score varied only modestly among districts; with Muleba (4.7per cent), Kaskazini Unguja (3.9per cent) and Kibondo (3.4per cent) districts having the highest proportion of girls with high positive attitude than girls from Mufindi (0.2per cent), Karatu (0.3per cent), Mbeya DC (0.7per cent) and Msalala (0.7per cent) districts.

Factors associated with negative attitude: Living in Tanzania Mainland, going to a school with both boarding and day students, going to girls-only schools, being in lower classes, relying on persons other than parents or caretakers for school fees and other needs and receiving information on menstruation before or during menarche were found to be significantly associated with negative attitude towards MHH among school girls. Other factors such as the age of the girl, whether the school was in an urban or rural area, the school ownership, education level of the parent/caretaker, where and how they first learned about menstruation and socioeconomic status of the school did not affect the girls' attitude towards MHH.

Girls adopting good MHH practices:

Overall in Tanzania, girls scored an average of 56.5per cent on good practices regarding MHH, with Tanzania Mainland demonstrating overall higher mean percent scores (57.5per cent) than Zanzibar (49.4per cent) ($p<0.001$). Likewise, girls from rural areas had overall higher percent mean good practice scores

of 57.1 per cent than girls from urban areas who scored 56.1 per cent ($p < 0.001$). Low mean good practice scores was observed in Kaskazini Unguja (49.3 per cent), North Pemba (49.5 per cent) and Namtumbo (51.2 per cent) districts, whereas Karatu (61.2 per cent), Mufindi (60.4 per cent), Rorya (60.4 per cent) and Moshi (60.4 per cent) districts were the leading districts with the highest good practice scores. Overall, only 0.4 per cent ($n=34$) of the girls demonstrated good MHH practices, with 91.2 per cent ($n=31$) reported on Tanzania Mainland, based on Bloom's technique categorization. Out of the 0.4 per cent ($n=34$) girls with good practices, 2.9 per cent ($n=1$) were disabled.

Factors associated with poor practices: Girls from urban schools were more likely to adopt poor practices than girls from rural schools. Although girls from the Mainland were more likely to have negative attitude towards MHH than their counterparts from Zanzibar, girls in Zanzibar conversely were more likely to adopt poor MHH practices than their counterparts in the Mainland. Multiple factors contributed to poor practices among in-school girls including studying in a government, girls-only and day schools. Poor practices also emerged among primary school girls whose caretakers had no education and those who were supported by a male caretaker. Poor practices related to MHH decreased with the increasing education level of the female caretaker. Education on menstruation and the circumstances where and when girls obtain information on menstruation for the first time was found to have an affect on their MHH practices. Moreover, girls who had never received education on menstruation and those who first learned about them in the class, through books or other sources had a higher chance of adopting poor MHH practices. Furthermore, the timing of MHH education has

an effect on the girls' MHH practices. Girls who received information on menstruation after their first menstrual cycle were more likely to adopt poor practices than girls who received menstrual information before menarche or during their first menstruation. This signifies that the earlier girls receive information on menstruation the less likely their practices will be poor. The school's socioeconomic status was also found to affect the girls adopting practices about MHH. In fact, the lower the socioeconomic status of the school, the more likely the girls were to adopt poor practices.

Source of information: Most of the girls across research settings (Tanzania Mainland and Zanzibar; rural and urban); with and without disabilities, and school level (primary and secondary) appear to have a fair awareness of menstruation. Some, however, continue to struggle with the skills of using MHH materials. Schools, female family members, female friends and peers appeared to be the dominant sources of MHH information. But male figures— both within school and family —continue to be unreliable sources of information and support for the girls. The majority of the students (61.9 per cent) reported to have learned about menstruation for the first time in the classrooms, 8.6 per cent from school clubs, 15.3 per cent from reading materials, 12.1 per cent from outside the school and 2.1 per cent from other sources. Within school environment, teachers— science teachers in particular— further emerged as the main source of information. Moreover, majority of the girls were taught menstruation starting from grade 5 and 6 in primary school and form three in the secondary school.

The media— Internet, social media, TV and radio—weakly emerged as sources of information on menstruation, hence suggesting a need to examine their content and priorities.

The distribution of first source of information on menstruation among girls did not differ significantly between girls with or without disabilities, rural and urban schools, between age groups, level of schools or even school ownership. However, there were modest variability in the first-time sources of knowledge between study districts, whereby Kaskazini Unguja, North Pemba and Mufindi districts had relatively low percentage of students who get information from the classrooms, 40, 49 and 54 per cent, respectively.

Interpersonal trust during menstruation:

Beyond family, despite a few disagreements, peers emerged as trustworthy individuals. At home, mothers are considered to be trustworthy and supportive when compared to fathers. Outside the home environment, either mostly peers and friends were trustworthy, whereas in the school environs, it was mostly matrons and female teachers who are mostly trustworthy and supportive. In some instances, the absence of female teachers appears to a major barrier to safe MHH practices in some schools. Finally, though teachers offered a broad range of information on menstruation using constructive and friendly strategies, most of the community members, particularly parents, often adopt an authoritative position towards the girls' hygiene, their dress code, respect and interaction with boys during menstruation. All these accounts imply that much more needs to be done to equip girls with requisite skills of using MHH materials including capacity-building in communication skills for community members during menstruation.

Organization of MHH in schools: Menstrual hygiene was found to be an integral component of the core curriculum in schools; however, the same subject is treated differently depending on whether the teachers are aware of its presence in the curricular. More than half of

schools provided MHH education through counselling services, whereas others use special modules, co-curricular materials, extracurricular modules and other means. Variations were observed between urban and rural schools in respect to teaching MHH as part of the core curriculum whereby schools that recognize MHH as a curricular subject in urban areas were nearly twice the number of those in rural areas. Temeke and Mbeya districts had greater than 50 per cent of the schools recognizing MHH as a core topic in the curriculum. Moreover, counselling services on MHH are more predominant in rural than in urban schools. Responses from school representatives show that in the majority of cases training on MHH in schools is provided as supplementary education through a variety of programmes such as counselling services, special module arrangements or offered through invited external instructors or support programmes.

Availability of teachers oriented on MHH:

Most of the schools do not have teachers who are oriented on MHH. The findings of this study showed only 21 per cent of the schools with at least one teacher who received training on MHH. Relatively, a higher proportion of rural schools (24.7 per cent) compared to urban schools (15.5 per cent) and higher proportion (30.0 per cent) of non-government compared to government school (19.7 per cent) had teachers oriented on how to train pupils on MHH in the school. Only four districts, namely Mufindi, Mbeya, Moshi and Mtwara, had around 40 per cent of the schools with teachers trained on MHH. None of the schools in Lushoto and North Pemba districts had at least one teacher with a formal training on MHH. As much as 94.9 per cent of the schools did not have any formal tool to guide teachers in training students on MHH. It is important to note that 8 out of 19 study districts did not have any school with guidelines/tools for teachers. Only

Karatu DC and Mufindi DC districts had at least 20 per cent of the schools not having any tools to guide teachers for providing MHH education.

SWASH and MHH infrastructure and services

in schools:

Pit-latrines were available in almost all the schools studied in the country, with the ratio of students per toilet/pit-latrine per student (ratio = #students/#pit) of 62, with one pit-latrine for every 61 girls and for every 67 boys. The ratio of students per toilet/pit-latrine in Zanzibar was 87, and in Tanzania Mainland, it was 58 and the difference in the mean was significant ($p < 0.001$). Likewise, there was one toilet for 68 students in government schools as compared to one for every 21 students in private schools; the mean difference was significant ($p < 0.001$). The ratio was 68 in day schools as compared to 28 in boarding schools and the difference was significant ($p < 0.001$). The ratio of students per pit-latrine in rural and urban settings was 60 and 65, respectively. However, the difference was insignificant. According to the national guidelines for water, sanitation and hygiene for Tanzania schools standards guidelines set the student-to-toilet compartment ratio at 20 for girls and 25 for boys when a urinal is available. Concerns related to privacy due to the absence of doors, door-bolts and even roofs as well as shared toilets were mentioned as shortcomings. Most of the toilets had inadequate hygiene, with many considered filthy with no water and essential supplies. Due to these challenges, most of the girls tend to avoid toilets and opt to stay with pads for longer than required, a practice that poses a risk of offensive odour, which may cause them shame and social stigma. In fact, some often change pads in the bush or choose to stay at home during menstruation, a choice that was found to impact their academic performance. Similarly, water appeared to be available only

in 75 per cent ($n=220$) of the schools though female students still had to grapple with the problem of unreliable supply and safety.

In addition, special changing rooms were found to be missing in 83 per cent ($n=243$) of the schools studied, with challenges of a lack of hygienic materials in the majority of the changing rooms not being available. The 51 schools that had changing rooms were on the Tanzania Mainland. Changing rooms were available in about 28 per cent ($n=11$) of private-owned schools and 16 per cent ($n=40$) of government-owned schools. About 49 per cent ($n=25$) were accessible to people with disability, and 15 per cent ($n=26$) of the schools in rural areas had changing rooms compared with 22 per cent ($n=25$) of the schools in urban areas. There were disparities among districts when it comes to the availability of changing rooms with Mbeya and Tandahimba districts having few schools with changing rooms as compared to Moshi, Kibondo and Arusha districts.

SWASH clubs were functioning in 72.8 per cent ($n=185$) of government-run schools compared to only 57.5 per cent ($n=23$) of the privately owned schools. Regarding SWASH, 97 per cent ($n=38$) of the schools in Zanzibar had SWASH clubs compared to 67 per cent ($n=170$) of the schools in the Tanzania Mainland. About 70 per cent ($n=124$) of the schools in rural areas had SWASH clubs compared to 72 per cent ($n=84$) of those in urban areas. Nearly twice the proportion of primary schools (11.0 per cent) compared to secondary schools (6.5 per cent) incorporated MHH topic into their SWASH club programmes. Mpwapwa and Igunga were the only districts with significant coverage of MHH in their SWASH club programmes with 45 per cent and 44 per cent of their schools incorporating MHH into SWASH clubs, respectively. None of the schools

in Mbeya, Moshi, Muleba, Rorya, Kaskazini Unguja, Tandahimba or North Pemba had incorporated MHH training in their SWASH club programmes. Students' involvement in SWASH was consistently high across the districts except for Rorya DC (30 per cent) and Temeke DC (25 per cent).

Disposal of used hygienic products: There appears to be a range of disposal practices. Burning, throwing the used pads into pit-latrines and burying them in the ground emerged as dominant disposal strategies. On the one hand, throwing them into pit-latrines appeared to be a common practice at home and, mostly, in rural settings where pit-latrines are common. On the other hand, in urban areas where flushing toilets are common, burning appears to dominate. In general, the availability of disposal facilities, the nature of materials used (sanitary pads or reusable cloths) and fear of witchcraft, shame and contamination appear to influence the disposal practices, especially when choosing between burning and throwing them into pit-latrines or bushes.

Commonly used MHH materials: Quantitative results reveal that around half of the girls (52 per cent) reported regular use of commercial disposable sanitary pads. The rest used reusable cloths (29.2 per cent) and pieces of cloths such as *khanga/kitenge*, which they used once and disposed of (16 per cent). It was also observed that students from non-government schools used more commercial disposable pads (81 per cent) than those from government school (48 per cent). The use of commercial menstrual pads was the highest in Moshi district (73 per cent) followed by Karatu (67 per cent) and the lowest in Kaskazini Unguja (25 per cent) and Mufindi (39 per cent). Reusable cloths are mostly used in rural areas, with the determinants being poverty, availability, ease of making and misconceptions about sanitary pads. On the

other hand, those who can afford and use pads utilize their own financial capacity to purchase them, durability, effectiveness, comfort, freedom and disposal practices as driving their choice. These accounts offer insights for stakeholders who continue to develop solutions for menstruation to consider accommodating these features as much as possible.

Accessibility of sanitary pads: Sanitary pads were reported not to be readily accessible. As a result, the girls resorted to using home-made substitutes as they were easily accessible and were mostly self-made. Others use pads because their parents buy for them or give them money to buy them. There were three reported sources of pads: shops, friends and peers, and free supply. Within school environments, *school shops* emerged as a dominant source, especially among girls in boarding schools. The challenges with buying from shops are twofold. First, the shops are often closed whenever the girl needed pads. Second, the price of the pads that ranged between TSH 1,500 and 3,000 was generally prohibitive for many of the girls. To overcome some of these challenges, a few girls indicated obtaining the pads from *friends and peers*. Another dominant source of pads in school is *free supply* from teachers and matrons. Indeed, participants confirmed that some schools offered them pads free-of-charge. The problem with free pads is that sometimes the pads run out of stock and the teachers, secretaries or matrons, who dispense them, are nowhere to be found when the girls needs them. Also, data suggests that free pads are offered only in a few schools with adequate resources at their disposal and these tended to be mostly private institutions. However, even within private schools, some girls reported that when pads were available, teachers and matrons only had a few available for emergencies. Some teachers were exemplary in offering their own pads, money for buying

pads or sometimes improvising for students in emergency situations.

Girls with disability came up with a particular need. This is because of practical management limitations for students who were visually challenged. It is more difficult for these girls to clean reusable menstrual materials once they are soiled because of their physical limitations. Visually challenged girls have difficulty in identifying dirty and soiled hygiene products. In cases where girls are fully dependent on others to help them with physical duties, cleaning used pads is even more challenging. So the use of disposable materials for this group of girls should be regarded as a regular basic need.

Missing school due to menstruation: About 16.8 per cent (n=1346) of the students reported to have missed school due to menstruation in the past three months prior to our visit. Out of those who missed schools, 78.8 per cent (n=1061) were from Tanzania Mainland. Among all the girls from Tanzania Mainland and Zanzibar, 15.3 per cent (n=1061) and 26.9 per cent (n=285), respectively, reported missing schools due to menstruation and there was a significant difference ($p < 0.001$). However, there was no difference between rural and urban areas or between primary and secondary school students. More students from government schools (17.2 per cent; n=1182) reported to have missed school compared to 14.6 per cent (n=164) in non-government schools. Higher proportions of girls who missed schools due to menstruation were recorded in North Pemba (29.4 per cent), Kaskazini Unguja (24 per cent) and Tandahimba DC (20 per cent) whereas the lowest proportion was recorded in Moshi district (9 per cent). Pain and discomfort (74 per cent), lack of menstrual materials (42 per cent), fear of embarrassment in case of visible stains

on her clothes (34 per cent), lack of changing room (34 per cent) and absence of clean and suitable toilet facilities (26 per cent) were some of the reasons given for missing school during menstruation.

Ways in which menstruation impacts

academic performance: Despite limited disagreements, there is broader consensus among participants that menstruation reduces academic performance among girls. Four mechanisms through which menstruation is perceived to impact negatively on the girls' academic performance can be inferred: (i) reduced school attendance; (ii) class discontinuation; (iii) reduced attentiveness and (iv) psychological impact. In fact, class attendance is further impacted upon by poor financial access to sanitary pads; severity of menstrual symptoms; lack of encouragement from parents and teachers; and girls' fear of the durability and effectiveness of the MHH materials used as well as fear of shame and stigmatization at school during menstruation. Thus, ensuring sustainable supply of free, durable and effective sanitary pads and availability of anti-pain medications in schools, equipping parents and teachers with the skills to support and encourage girls to continue with studies during menstruation, ensuring the availability of WASH infrastructure and concerted efforts to normalize menstruation among boys were suggested to be among factors that may boost the girls' school attendance and consequently enhance their academic performance.

Religious-based myths, beliefs and norms:

Religion emerged in many participants' accounts as a strong basis for some prevailing norms related to menstruation. There were differences in how the two religions – Islam and Christianity

– perceive and treat a menstruating girl or woman. In fact, a consensus emerged among girls, boys, religious leaders and community members that Islam is stricter with menstruation than Christianity, enforcing many prohibitions for girls or women during their monthly periods. Muslim girls are, as a result, not allowed to enter the mosque, restricted from reading religious books (*'juzuu'* or *'msahafu'*) and from performing religious rites such as fasting. These prohibitions appear to be embedded in the widespread religion-backed beliefs that menstrual products such as blood are 'dirty' and *najisi* or *haram* and religious teachings. On the other hand, Christians appear to be lenient towards menstruation and do not impose restrictions associated with menstruation. Though these accounts point to inconsistency in religious approaches to menstruation, religion is complex and multifaceted. Religions often vary in how they tackle issues within the communities given the dissimilarity in the core doctrines, perspectives, values and teachings that form the basis for their existence in multiplicity. Our intention is to neither discredit nor credit any religion but rather to show how some religions handle menstruation.

Myths, beliefs and norms based on sociocultural practices:

Despite the non-amenability of religiously constructed beliefs and norms to change, most of the participants offered some accounts that could enable MHH stakeholders to understand mythological beliefs and norms surrounding menstruation. The promotion of the notion of secrecy toward menstruation can be better understood by grouping the participants' accounts into: Social engagement, Exercise and Touching ('SET') taboos. These social taboos include a set of prohibitions imposed on the girls during menstruation mainly because of equating the experience to being 'dirty'.

Social engagement taboos: Many of the girls in this study reported being prohibited from visiting friends, relatives and from social gatherings during menstruation. Related to this aspect is a dominant theme across the participants' groups related to promoting secrecy around menstruation. There was a broad consensus among participants from different groups (even top government officials, both male and female) that menstruation should only be discussed at the family level. Terms such as 'dirty', 'unclean' and 'shameful' were further used by many respondents particularly in Islam-dominated research settings to justify why menstruation should be kept a secret and not discussed in public. Treating menstruation as 'dirty' and shameful may explain why most of the participants in some areas, particularly rural or Islam-dominated, insisted that people would be surprised and shocked to see someone talking about the experience publicly because it involves discussion of 'women's nakedness'. This indicates that efforts to normalize menstruation as an essential biological process is necessary in some conservative communities.

Discussion of menstruation taboos: Though most of the participants supported the premise that menstruation is only to be discussed at the family level, prohibitions were extended to the inability of girls to sit near or even talk with a male parent. This premise emerged most frequently in rural as compared to urban areas, and in Zanzibar as compared to Tanzania Mainland. Some of the girls with and without disabilities reported experiencing such restrictions as well. What this implies is that efforts to address negative beliefs and norms within the community must put the family and, most importantly, the male parent's involvement at the centre of activities. However, addressing hygienic concerns towards menstruation needs to come first before seeking community-wide normalization of menstruation.

Exercise taboos: Most of the participants affirmed that girls are prohibited from strenuous exercises or performing heavy duties during menstruation. Prohibition of strenuous exercises appears to be constructed around three types of fears. First, the fear of the negative consequences that such exercise might bring (e.g. excessive bleeding or aggravating abdominal pain). Second is the fear of the durability of the materials girls use during menstruation, particularly in rural areas. The final reason is the fear of shame when 'people see stains of menstrual blood'. The problem with the exercise taboos is that they appear to depict largely the poor quality of MHH materials that girls, particularly in rural areas, use.

Touching taboos: Another important pattern of the data emerging from the participants' discussions on sociocultural norms is a myth that depicts *menstruation as a curse*. There was a broad consensus among all the participating groups that touching something during menstruation brings about negative consequences. For example, participants asserted that during menstruation, touching vegetables or crops (e.g., tomatoes, mushrooms and sweet potatoes) could lead to death or dryness; touching eggs could spoil them; touching newborn children could bring them skin rashes; and picking and eating fruit from a tree could cause severe abdominal pain. Due to these perceived 'menstruation curses', some community members (including religious leaders) prescribed resorting to traditional practices such as placing hedgehog's spines or snails' shells at the corners of the farm for protection against the effect of menstruation-related 'curses' on crops and vegetables. Some participants indicated that during menstruation girls are not only prohibited from touching vegetables and crops but also from cooking and eating certain foods. Sugary foods such

as tea, too much pepper, peas and tomatoes emerged in the accounts of the participants as some of the prohibited foods. Fear of increased menstrual flow or prolonged duration emerged as supportive justifications. Finally, touching prohibitions extended to 'shaving off the pubic hair' and use of modern sanitary pads. The latter was linked to 'infertility' as an Education Officer in a rural southern part of Tanzania Mainland viewed it.

Touching taboos were not limited to the girls but also extended other people in the community. For example, there were accounts pertaining to treating menstruation as an antecedent of witchcraft. Some participants suggested that someone with 'bad intentions' or 'witches' may touch or get hold of the menstrual products (e.g. blood-stained pads) and use them to bewitch others and which could cause infertility later in life. This taboo may promote secrecy and stigma around menstruation, and also promote fear among girls that lead to unsafe disposal of MHH materials. Furthermore, some girls and boys further explained that during menstruation, sexual practices were not prohibited. We understand that menstrual sex has received a conflicting debate; however, often issues of hygiene and infection appear to surpass the benefit of pleasure. Though terms related to infection were observed in some accounts as the reason behind the prohibition of menstrual sex, hygienic terms were rarely used in this context. Most of the participants, particularly boys, linked menstrual sex to the possibility of pregnancy. This may suggest that some boys may have limited knowledge on the biology of conception of menstruation.

Menstruation and initiation rituals: Menstruation for the first time was an indicator of the need for initiation rituals in some communities. There was consensus that the first menstruation

cycle (menarche) is an opportunity for traditional initiation rituals as a girl transitions to womanhood. Some participants suggested that initiation rites often help to teach girls about hygiene, especially during menstruation. Whereas these rituals remain important cultural rites of passage, the problem appears twofold. First, the prime focus is on preparing a girl to become a 'good wife'. Though the discussion around this topic is beyond the scope of the present study, focusing on preparing girls for marriage from a tender age may discourage them from pursuing other personal development desires and continue to support the culturally and socially constructed male dominance engendered by patriarchal norms and values. Such male dominance could further fuel the culture of secrecy surrounding menstruation, especially when hygienic concerns predominate. Second, even if initiation rites appeared as the source of MHH knowledge and skills among girls, they are not performed in all the cultures in Tanzania. This suggests that initiation rituals could form an entry point for the promotion of safer MHH practices only among communities that still conduct them.

Gender roles in menstruation: Looking at the data across participant groups, there appears to be a broad consensus that menstruation is 'a woman thing' and therefore, it should be handled by women and not men. This may somewhat explain why women – female friends, mothers, grandmothers, sisters, matrons and female teachers – emerged strongly as people who are socioculturally charged with educating and supporting girls during menstruation. The male gender– boys, fathers and male teachers– emerged strongly as largely unsupportive and often held perceptions of social stigma pertaining to menstruation. Culture and traditions were cited frequently as a justification for these menstruation-related

gender roles. However, some cultures such as reported in Pemba, Tandahimba and Dodoma suggest indirect male involvement through mothers informing them about their girl child's menarche and subsequent traditional ceremonies. In some regions such as it was learned in Muleba, communities had sign rituals to let the society know that a girls has reached menarche where that girl is asked to come out and jump through items a few times, which also signals to the grown-ups that she has attained menarche. As a rule in the western and lake zone districts though, men were not culturally even supposed to know whether their daughters are menstruating. This was prominent is Kibondo, Msalala and Butiama. Drawing from the accounts of how boys, fathers and male teachers manage menstruation may help us understand how gender impacts menstruation practices. Although men were considered to own the family resources that are essential for purchasing MHH materials (e.g., money for sanitary pads), males emerged as neither dependable nor responsible for MHH issues at the family level. Irresponsible involvement of males on the other hand may bring more harm by allowing older men to take advantage of the needy younger girls, leading to early pregnancies, stigma and social disorder. This explains at least partly why girls do not prefer male involvement at a personal level and prefer to have matrons rather than patrons. In fact, a consensus emerged among many participants that men are not obliged to talk about menstruation with their daughters, let alone provide financial support. On the contrary, a handful of girls in urban areas indicated that some fathers often provide financial support for MHH materials.

Governance and political landscape for MHH: The MHH political landscape in the study settings appears to be characterized by weak

political commitments at the village, ward, district and regional levels with promising commitments at the national level. A group of parliamentarians emerged as champions of MHH campaigns at national level to the extent of even influencing national policy. In response to their efforts on MHH, the Tanzanian Government waived VAT on sanitary pads in 2018. However, it was reinstated in the following year as this measure did not have any impact on price reduction to end users who were the target beneficiaries of the exemption. Lack of preparation to implement the desired tax relief, structural and administrative barriers are thought to have played the role. The education and health sectors have been the first to embrace the inclusion of MHH into national policy. Policy commitments became more pronounced as a follow-up to 2014 MHH report by SNV, after which MHH was adopted into SWASH guidelines. MHH is consequently a priority of the National Sanitation Campaign, which is part of the Sector Wide Water Sector Development Program. Through this research, MHH was found to find a prominent place in the current national primary and secondary school curricula. Finally, though there appears to be no national-level government initiative to support MHH, training for capacity-building for teachers and classroom sessions, school clubs, health education, coalitions and networks were revealed as the prevailing initiatives. Networks and coalitions are working to formalize their structure even as calls are being made for more formalization efforts.

MHH stakeholders: A range of stakeholders took part or implemented several activities to support MHH in Tanzania. In this regard, boys, peers and female family members, teachers and matrons and community members emerged as primary stakeholders whose impact on menstruation is mediated by daily interactions

with the girls. Most of the development partners such as CAMFED, AMREF, TAYOA, PSI and FEMINA, for instance, implemented activities necessitating some interactions with girls through free pad distribution and knowledge as well as skill improvement through school clubs. Finally, some development partners, private industry and governmental agencies were considered as tertiary stakeholders because they have limited to no interaction with the girls by either working through intermediaries or focusing on policy-level interventions. To improve the contribution of these stakeholders, strategies to increase the affordability of sanitary pads primarily require government interventions and negotiations with industries coupled with the promotion of local production. Finally, it was also suggested that political leaders should increase their commitment and political will, with the government developing the MHH policy and reviewing the current curriculum to ensure MHH receives much weightage.

Conclusions:

1. Generally, knowledge, attitude and practice scores on MHH were low across the study areas with most of the girls from Tanzania Mainland demonstrating higher knowledge scores and adopting better practices than girls from Zanzibar. However, the girls from the Isles demonstrated a higher positive attitude scores than those from the Mainland.
2. Overall, the rural dwellers registered higher knowledge and practice scores than girls from urban areas. This was also true for attitude scores.
3. The factors associated with low level of MHH knowledge included studying in urban located schools in Zanzibar, being in

lower level classes, never having received any education on menstruation before or having received such information after menarche and the source of information being the media. Moreover, the lower the socioeconomic status of the school the higher the chances that girls will have low level knowledge of MHH.

4. Visually challenged girls sometimes face social stigma from other girls with disabilities in some special schools because of their tendency to unwittingly contaminate the surroundings with menstrual blood owing to their inability to see.
5. Girls who lived in the Tanzania Mainland had higher chances of having negative attitude towards MHH than the rest of the girls under the following conditions: When studying in girls-only schools or those with both boarding and day scholars, or when they happen to be in lower classes and rely on persons other than parents or caretakers for school fees and other needs.
6. Girls from urban schools, living in Zanzibar and studying in a girls-only and day schools run by the government had a higher chance of adopting poor practices than other girls. Likewise, poor practices were also demonstrated among primary schools girls whose caretakers had no education and those who were supported by a male caretaker. The MHH-related poor practices decreased with increasing education level of the female caretaker. Girls who had never received education on menstruation and those who first learned about them in class either through books or other sources stand a higher chance of adopting poor MHH practices than those who received MHH education in schools

clubs. Moreover, the timing of education has an effect on the girls' practices; they adopted poor practices if they received information on MHH after their menarche as opposed those who did so before menarche. This signifies that the earlier girls receive information on menstruation the better. The school's socioeconomic status was also found to affect the girls' practices related to MHH. The lower the socioeconomic status of the school the more likely the girls studying in them adopt poor practices.

7. There is a broader consensus among participants that menstruation reduces the girls' academic performance due to reduced school attendance, class disruption to handle menstruation, reduced attentiveness and psychological impacts. Poor financial access to sanitary pads, severity of menstrual symptoms, encouragement from some parents and teachers, girls' fear pertaining to the durability and effectiveness of MHH materials used and fear of shame and stigmatization at school during menstruation were the main reasons cited to having an impact on class attendance, consequently reducing the academic performance among girls.
8. Norms, myths and beliefs on menstruation included religious and socially constructed taboos around menstruation in the study settings. Religiously constructed restrictions around menstruation related to worshipping and touching of holy books.
9. There is a range of socioculturally constructed myths and norms existing in the study areas. The 'SET' taboos– social engagement, exercise and touching– dominated the participants' accounts.

Girls reported being prohibited from participating in social gatherings and visiting some family members during the menstruation period. Girls were also prohibited from undertaking strenuous exercise, pointing to uncertainties about the durability of MHH materials they used. Prohibitions also emerged when it came to cooking, touching babies and vegetables and eating sugary foods. The touching taboos appeared to depict menstruation as a 'curse' against crops or vegetables that some believed would wither and die when the girls touched them during menstruation.

10. Trust issues were observed to shape the interaction and relationships girls have with other people during menstruation. Mothers, female peers, female relatives, female teachers and matrons emerged as the supportive group. From a gender lens, males are socioculturally conditioned not to be concerned with menstruation.
11. Schools, female family members, female friends and peers are the dominant sources of MHH information. Female teachers and matrons within schools and mothers within families are the common sources of information and support before and during menstruation. The mass media – Internet, social media, TV and radio– did not emerge strongly in qualitative interviews as sources of information on menstruation. This may suggest a need to examine and invest in content dissemination and mass media channel penetration so that they reach the girls and cater to their MHH information needs.
12. Male figures– both within school and family– continue to be unreliable sources of information and support for both girls with and without disability. However, as compared to the actions of boys without disability towards girls, boys with disabilities appear to be more lenient in terms of stigmatizing their colleagues of the opposite gender than boys without disability during menstruation.
13. Although teachers offered a broad range of information on menstruation using constructive and friendly strategies, most of the community members, particularly parents, often adopt an authoritative and restrictive position towards girls' hygiene, dress code, respect and interaction with boys during menstruation.
14. Sanitary pads and reusable cloths appear to carry equal weight as materials commonly used for menstruation among girls without disability. The findings suggest that the use of cloths is common among girls mostly in the rural areas, with single use sanitary pads commonly used by girls in urban areas. Those who use cloths appear to ignore the concerns about safety and hygiene as they are commonly made from sometimes dirty, discarded, old pieces of cloth. Though financial accessibility has always dictated the choices of materials used, our findings indicate that, on top of financial accessibility, local availability, reusability, ease of making and misconceptions about sanitary pads are the important drivers of girls' use of cloths.
15. On the contrary, sanitary pads emerged as more beneficial among girls with disability than cloths due to their ease of disposal. The challenges associated with washing reusable cloths due to lack of

washing equipment and the limitations imposed by the disability itself were good enough reasons for them preferring pads. The limited availability of pads at school and home, on the other hand, continue to dictate the application of reusable cloths despite the attendant challenges. Indeed, reusable pads emerged as the most preferred because of their cost-effectiveness, but their use among girls with disabilities appeared to be less common. This appears to hint at their limited accessibility for girls with disabilities.

16. Throwing into pit-latrines and burying in the ground are the dominant disposal strategies for sanitary materials. Throwing menstrual products into pit-latrines is a common practice at home and in rural settings where pit-latrines are common. On the other hand, burning appeared to be a common practice in urban areas where flushing toilets are common. In some schools, concerns of blockage of sewage systems due to improper disposal practices were voiced. Furthermore, fears of witchcraft, shame and contamination and the type of MHH materials used, have strong influences on the disposal practices, especially the choice between burning, throwing in pit-latrines or in bushes.
17. In many schools, the toilets available appear to be surrounded by concerns of inadequate hygiene and most are considered unclean with no water and essential supplies. Pit-latrines dominated the participants' account as the most available facility, but they lacked privacy and were unclean, hence posing challenges to proper utilization. In addition, water appeared to be available

in a few schools, but even then the supply was erratic, causing hygiene concerns. The special changing rooms appeared missing in almost all the schools, with challenges of the absence of hygienic materials improvised options were available only in few schools. Even where toilets were considered user-friendly, for instance, in some schools for students with special needs, concerns over erratic water supply, the absence of special changing room and hygienic products such as soap as well as privacy emerged in participant accounts.

18. Inadequate political commitment at the village, ward, district and region levels was also observed. Weaker political commitment was indicated by inadequate prioritization of and inadequate budget for MHH at these levels. Weaker political commitments may explain why some participants from schools for the disabled considered village executive officers and chairpersons to be in dire need of capacity-building on MHH. Promising political commitment at the national level was also observed. Many female parliamentarians and few male parliamentarians were at the forefront of advocacy for safer MHH strategies. The findings further indicate that following intense advocacy, the government waived off VAT on sanitary pads in 2018; however, a year later, VAT was reinstated because it had not resulted in price reduction to end users who were the target beneficiaries.
19. Females, peers and friends, and teachers form an important group of primary MHH stakeholders within the school environment. Outside the school premises, female family members form the primary stakeholders within the

community environment. Similarly, the female peers, friends, family members and teachers form the trustworthy circle of primary stakeholders. Male figure– boys, fathers and male teachers– emerged as untrustworthy circle of primary stakeholders. A range of development partners supporting MHH in Tanzania such as CAMFED, AMREF, TAYOA, PSI, FEMINA and UNICEF were mentioned. Some development partners, private industry and government ministry were secondary and/or tertiary stakeholders because they have limited or no interaction with the girls by either working through intermediaries or focusing on policy-level interventions.

20. Whether specific policy or guidelines for MHH do exist remain largely unknown to the majority of the stakeholders. SWASH guidelines and school curriculum were found to be the predominant existing policy tools in which MHH is a component. However, the tools though useful were reported not to give much weightage to menstruation issues.

Recommendations for disabled and non-disabled girls

In view of these findings, the following recommendations are made to the government and all actors working to make sure girls in the country manage menstruation in a hygienic manner:

1. To reduce the impact of menstruation on girls' academic performance, there is a need to:
 - a. Ensure sustainable access to safe and convenient menstrual materials

through cost reduction, increased local production, and mandatory provision of free emergency menstrual materials in schools.

- b. Strengthen the menstrual care systems within schools, particularly by ensuring the availability of pain medication and psycho-social support.
 - c. Equip parents and teachers with the evidence-based skills to support and encourage girls to continue with studies during menstruation.
2. Improving WASH infrastructure could be central to addressing the impacts of menstruation on girls. Indeed, improving WASH infrastructure and ensuring access to menstrual materials may be key ingredients of successful MHH practices, hence the need for the following additive action:
 - a. Advocating for the construction of sanitary facilities including changing rooms in schools taking account of the specific needs of menstruating girls.
 - b. Increasing the capacity of sanitary facilities tailored to meet the specific needs of in-school girls.
 - c. Availing sanitary facilities to ensure healthier and safe disposal of sanitary materials in schools. Specifically, this entails ensuring the availability of dustbins and incinerators in schools to improve the disposal practices among girls.
 - d. Equipping school medical supplies with menstrual materials, painkillers and other hygiene products so that school

girls do not have to go home every time a menstrual period starts while they are at school.

3. Continued community education and sensitization to address the SET taboos and normalize menstruation for both genders.
4. The government and stakeholders need to design and implement capacity-building strategies within schools and communities focusing on male figures for normalization of menstruation among fathers and boys as well and increasing their support to girls during MHH. In addition, there is a need to educate boys, fathers and male teachers on menstruation in addition to ensuring the availability of sufficient female teachers as a way of promoting safe MHH practices. The lack of awareness and education as well as sociocultural conditioning around menstruation were cited as major contributors to male disengagement from menstruation generally.
5. In consideration of the materials school aged girls use, the following recommendation are made:
 - a. Provision of menstrual materials for school girls should be culturally appropriate, practical and economically feasible, hence a mixture of approaches should be used to respond to local needs; recommended approaches include subsidies, regulated tax incentives and promotion of local production and technologies.
 - b. Stakeholders involved in sanitary pad manufacturing need to consider local availability, reusability, financial

access, durability and effectiveness, comfortability and freedom and easiness to dispose of as important features of sanitary pads preferred by girls.

- c. The government and stakeholders may need to institute a price guide (bei elekezi) and provision of free sanitary pads and other MHH materials for school girls with disability.
- d. Development partners should consider providing sanitary pad donations to schools with a focus on students with disabilities.
- e. Special research focus should be developed towards identification, processing, and usage of locally available materials safe menstrual flow management in conjunction with building local skills and production capacity.
6. Though the research did not look into whether menstruation is a topic in the teachers' training curriculum, including MHH in the teachers' training is central and an important entry point. In our view as a research team, two more approaches may be embraced to motivate male teachers to become 'menstruation friendly.' First, identifying a few male teachers who are supportive of girls and publicly rewarding them as champions of menstruation. Second, establishing a system that will allow girls to communicate the negative encounters with male teachers during menstruation. The latter approach is widely applied for many issues within the country, for instance, the establishing of a gender desk in police stations.

7. Strengthening on-the-job training for teachers and parents on how to better communicate with girls during menstruation and cascading the trainer of trainer approaches to grassroots levels.
8. There is a need for MHH guidelines and curriculum review to give MHH greater consideration, especially related to disability.
9. Strategies should be put in place to ensure that MHH content is available in the current SWASH guidelines and up-to-date primary school and secondary school curricula is taught effectively in school as much as revising them with addition of comprehensive needs for girls with disability: The two most practicable opportunities are to include MHH topics into examinable subjects (where Stadi za Kazi is currently not an examinable subject) and to ensure that SWASH Clubs are functional and that they include MHH among practical subjects that are being taught.
10. There is a need to formalize existing networks and coalitions on MHH. The

networks and coalition may work with development partners to:

- a. Increase efforts that seek to arouse political commitment to the prioritization of MHH issues and inclusion of MHH materials within the school and local budgets appears one of the ways for stimulating political commitments.
- b. Increase advocacy efforts for establishing policy guidelines pertaining to MHH as well as curriculum review to give more weightage to MHH issues in schools than at present.
- c. Continue to leverage resources from and in support of the Government, including institutionalization of subsidy schemes and tax reliefs, particularly for the most vulnerable groups putting into practice the lessons from past draw backs. This should include leveraging support from private sector stakeholders.
- d. Formalize and strengthen formal network and/or coalition on MHH within and outside the country.

Introduction

Menstruation is an integral part of a woman's reproductive life, occurring naturally in pubescent girls and women. It is estimated that menstruation is experienced by about one-quarter of the global population, or about 1.8 billion women and girls of reproductive age between 15 and 49 years (ADB, 2013). Menstruation signals the onset of puberty, which usually occurs first in girls aged between 11 and 14 years. Women spend a significant proportion of their lives menstruating. Thus, menstrual health and hygiene (MHH) of women is one of the critical public health issues. Despite being an important issue, MHH is often overlooked, especially in low-income countries (LICs) due to limited resources. Existing cultural factors, beliefs, myths and taboos also influence MHH to a significant extent.

In recent years, MHH has attracted worldwide attention. Menstrual health and hygiene is defined 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 management materials' (JMP WHO/UNICEF 2012, p. 3). Despite this growing attention, MHH management remains poor due to various reasons. First, evidence suggests that millions of adolescent girls across the world are denied the right to manage their monthly menstrual cycle in a dignified and healthy way (McMahon et al.,

2011; Castaneda et al., 1996; Sivakami et al., 2019; Kaur et al., 2018; Budhathoki et al., 2018). Second, MHH is often overlooked, especially in LICs, which typically have limited resources; moreover, existing cultural factors, beliefs, myths and taboos influence MHH significantly, for instance in Zambia (Cotropia, 2019). Furthermore, the growing number of adolescents and the under-preparedness of the LICs to meet the demand for safe MHH mean that girls in these countries would continue to be disadvantaged despite MHH garnering global attention.

Women account for 51 per cent of the total population in Tanzania, one of the LICs, and 23 per cent of women's population is made up of adolescent girls (URT, 2012; UNICEF, 2011)

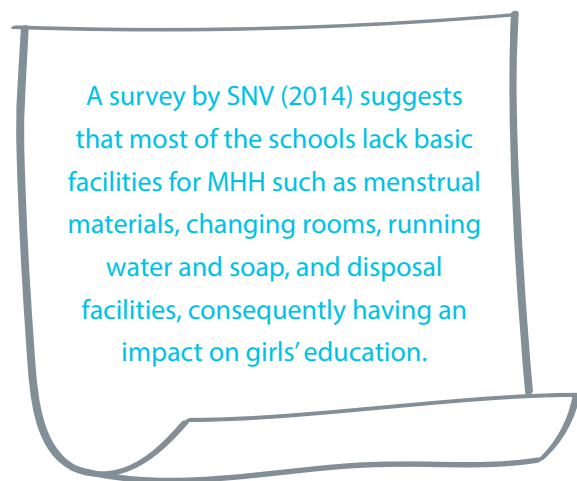
Safe MHH is quite important for women in Tanzania as they strive to navigate through the complexities of life. Realizing the significance of the issue, MHH has received much attention from policymakers and implementing agencies in Tanzania in recent years. In the past decade, for instance, various MHH initiatives were launched by the government and both local and international organizations. Following a heated debate in the Tanzanian Parliament on

value-added tax (VAT) exemption for sanitary pads, the Tanzanian Government announced that VAT will not be levied on sanitary pads in 2018. But this exemption was short-lived as it was reinstated a year later due to growing concerns about its effectiveness in bringing about the desired results of cutting down the cost and boosting women and girl's access to sanitary pads. The concerned ministries have developed guidelines, incorporating issues related to MHH, and are said to be reviewing them. The Water, Sanitation and Hygiene (WASH) guidelines were issued in 2016. As the Ministries of Health and Education are currently reviewing their policies, scholarly evidence is needed to ensure that MHH issues are well-embedded in the future policy documents for the planning and prioritization of resources for MHH. Providing evidence about the importance of MHH is one of the justifications for this study.

For devising effective policy measures, scientific evidence of issues related to MHH is necessary, but there are limited scholarly studies on MHH in Tanzania. Most information on MHH in the country is largely based on anecdotal sources, surveys and media reports. Anecdotal information suggests that menstruation remains a taboo in many parts of the country, especially in rural communities where social stigma and poor communication among girls, women and the community on healthy menstrual practices prevail. Small-scale surveys and media reports show that in many communities, especially in rural areas, girls avoid talking to their parents on issues related to menstruation fearing punishment and being barred from going to school (SNV, 2014; Robi, 2018). These sources further indicate that prevailing cultural norms, religious and traditional beliefs surrounding menstruation are associated with poor MHH (SNV, 2014; Robi, 2018).



Second, the existing information further reveals that most of the schools in Tanzania do not have adequate facilities to promote safe MHH among girls.



A similar survey reported that 48 per cent of school girls missed classes during their menstrual period and academic performance dipped in a significant number of them due to poor concentration resulting from stress in managing menstruation. These findings, however, rely on small-scale surveys conducted in Sengerema, Chato, Magu, Siha, Babati, Karatu, Njombe and Mufindi districts. Thus, an extensive investigation of the whole range of MHH issues in Tanzania is necessary to offer a comprehensive understanding of the topic and provide recommendations for improving MHH among women in the country.

Against this backdrop, this study was carried out to address the scientific gaps in Tanzania with regard to MHH, as only a limited evidence is available on the existing MHH challenges and their impact on adolescent school girls. Hence, there is an urgent need to explore the magnitude of the MHH situation and challenges that school girls face and provide appropriate sectoral recommendations on how these hurdles could be addressed to improve health and education outcomes in the country.

Literature review

The unified definition of MHH given above offers insights into the gaps that exist in ensuring safe MHH practices. The use of clean and hygienic MHH materials, privacy, availability of water and soap as well as disposal facilities for MHH materials are essential for safe MHH management. Studies have shown how these factors have an impact on MHH practices among girls (Kaur et al., 2018; Sivakam et al., 2019; Geertz et al., 2016; House & Mahon, 2012; Budhathoki et al., 2018). Water and sanitation, for instance, has been identified to play a key role in MHH. Reports indicate that globally 663 million people lack access to safe water and 2.4 billion lack access to adequate sanitation (WHO/ UNICEF 2017). Inadequate access to water is one of the impediments to safe MHH that women and girls in LICs continue to face (Kaur et al., 2018; Sivakam et al., 2019; Robi, 2018; Sommer et al., 2012). In fact, many adolescent girls who are menstruating, particularly those in schools, have to contend with significant unmet needs when managing their menstrual period.

Furthermore, comprehensive MHH requires women to understand the basic facts linked to the menstrual cycle and how to manage it with dignity and without discomfort or fear (Sommer, 2013). Yet, research has consistently shown that women, especially school girls, in LICs face more challenges in managing their menstruation than those from better endowed countries (Geertz et al., 2016; House & Mahon, 2012). In fact, a number of researchers have found that menstruating girls face shame, fear and confusion in different country contexts. Lack of social support, entrenched social and hygiene taboos and shortage of suitable water, sanitation and waste disposal facilities in school environments were also found to disadvantage

girls (Sommer & Sahin, 2013; McMahon et al., 2011; Mahon & Fernandes, 2010; Mason et al., 2013). In sub-Saharan Africa, poor management of MHH by girls is reflected in poor health, education and psychosocial outcomes (Kaur et al., 2018; Chinyama et al., 2019). These studies indicate that girls endure substantial amount of stress in changing their menstrual materials, with many of them referring to quality, safety and privacy concerns as contributing to their lower school attendance (Sommer et al., 2012; Kaur et al., 2018; Chinyama et al., 2019; SNV, 2014). Clearly, menstruating girls are put at a disadvantage relative to boys in school. However, researchers in Tanzania have not examined menstruation in much detail. Existing studies on menstruation have only been carried out in a small number of areas.

It is also known that girls with disabilities endure more challenges related to menstruation as compared to girls without disabilities.

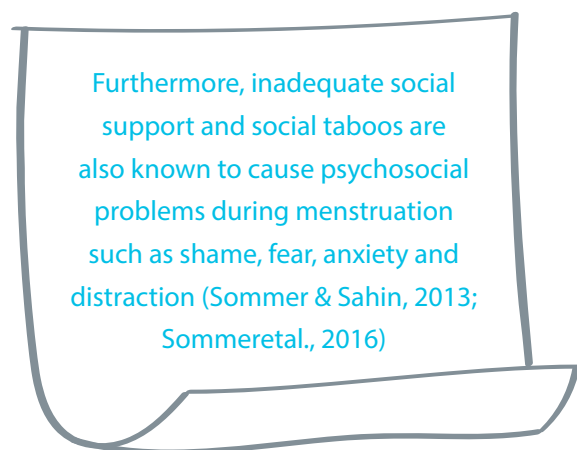
Although some studies have reported similarity in the age of menarche between girls with disability and the general population (Burke et al., 2010; Angelopoulou et al., 1999), some indicate that parents or guardians have more anxiety when menstruation impacts the well-being of girls with disability (Zacharin et al., 2010). Literature suggests that parents/guardians are particularly concerned about girls' capacity to handle menstruation and cope with the increasing risk of sexual abuse due to their disability. Research further indicates that people with disabilities are relatively more disadvantaged in accessing appropriate water, sanitation and hygiene (WASH) services in low-

and middle-income countries (LMICs) than their counterparts who have no disability (Cavill et al., 2016; White et al., 2016). These challenges notwithstanding, menstruation was not widely spoken about before as it was a taboo subject (McMahon et al., 2011; Castaneda et al., 1996) until recently when different stakeholders started directing their efforts to addressing the issue. Despite wide recognition of the impact of disability on menstruation, what we know about this issue is largely based on empirical studies in other contexts. To the best of our knowledge, no research has so far examined how girls with disabilities handle menstruation and the challenges they face in Tanzania.

As noted above, many women and particularly girls, in both urban and rural contexts of Tanzania face multiple challenges associated with MHH in specific contexts. Anecdotal information suggests that these challenges often range from inadequate preparation and lack of basic knowledge on MHH before the onset of menstruation; inadequate water and soap to keep them clean during menstruation, especially in rural areas of the country; poor management of menstruation due to lack of sanitary materials for managing menstrual hygiene; limited private space and wash rooms, first-aid kits with pain relief medicine in schools,



especially in rural areas; and inappropriate facilities for disposal of used materials and pads in schools. Some of these challenges were pointed out in existing surveys and media reports (for example, see Sommer et al. 2018; SNV, 2014; Robi, 2018).



Literature also suggests that these factors can potentially affect girls' ability to thrive and succeed within the school environment (Sommer et al., 2015 a,b). In similar school settings, especially in LMICs, these factors contribute to female pupils opting to stay at home and not attend school during the three to four days of menstruation every month, which amounts to about 48 school days lost per annum (Sahin, 2013; Sommer et al., 2016). Maintaining health and hygiene during menstruation in schools is important for adolescent girls' health, well-being, mobility and dignity. However, limited reliable evidence is available in Tanzania on how girls handle menstruation at schools, including disposal practices adopted by them.

Menarche basically marks the onset of the reproductive phase of a girl's life. Literature suggests the average age at menarche ranges from 12 to 14 years across different populations globally (Nicolaidis, 2016). However, lack of knowledge about menstruation preparedness remains a challenge for many adolescent girls, especially in developing countries (Kaur et

al. 2018; Kuhlmann et al., 2017; Sommer et al., 2015). Girls in Tanzania also face similar problems, especially with regard to lack of menstruation preparedness knowledge, even after menarche. Limited data exists specifically focusing on menarche in Tanzania. However, a survey in eight districts in Tanzania identified the challenges that girls face during menstruation (SNV, 2014). It found that more than half of Tanzanian girls fail to properly manage their menstruation and cannot afford menstrual products. The survey further reported that about 40 per cent of the girls experience pain such as stomach ache, headaches and backaches, which make them uncomfortable to stay in the class. So, many female students end up missing classes. As noted above, though this survey offers important information, still there are no extensive scholarly studies that specifically examine a whole range of challenges that girls endure during menstruation in Tanzania.

Currently, one of the important discussions on MHH centres around the impact of various cultural and religious beliefs. Menarche is marked by coming-of-age rites in many societies all over the world with great variation in practices across communities (Brama, 2018). Anecdotal information indicates that menarche signifies a girl's readiness for sexual activity and marriage in many parts of Tanzania. Consequently, many ethnic groups perform a range of rituals during this period. For instance, girls belonging to some ethnic groups in Dar es Salaam, Pwani (Coast), Lindi and Mtwara are subjected to unyago, a form of initiation rites when girls attain menarche to prepare them for adulthood. The rituals involve keeping girls indoors for months and subjecting them to training on marital customs, including cultural norms on sex and sexuality. Upon completion of the rite of passage activities, girls perform traditional dances during which

they are displayed in front of the community and prospective suitors and then married off, irrespective of age. Some studies have linked these traditional rituals to increased risk of HIV infections (see, for example, Phillips-Howard et al., 2015; Sommer, 2010). Only limited literature has specifically examined norms, beliefs and traditions related to menstruation in the country, offering an additional justification for this inquiry.

Central to sociocultural and religious beliefs are restrictions imposed on girls during menstruation. Studies focusing on various parts of the world have revealed that girls are restricted from cooking, work, sexual intercourse, bathing, worshipping and eating certain foods while menstruating (Hennegan, Shannon, Rubli, Schwab, & Melendez-Torres, 2019; Kaur, Kaur, & Kaur, 2018; Mohamed et al., 2018). These restrictions are mostly linked to the belief that women are 'dirty' during menstruation (Vora, 2016; Wall, Teklay, Desta, & Belay, 2018). Tanzania is rich in culture and traditions owing to existence of more than 120 ethnic groups (Gabriel, 2016). Previous studies on sociocultural issues related to MHH show that in some areas of Tanzania menstruating girls are not allowed to touch water sources, cook, wash food utensils, touch plants or pass through planted fields (Sommer, 2010; Sommer et al., 2012; Sahin, 2015). Arguably, though restrictions on work activities may be beneficial, on the one hand, the curbs on diet and hygiene may affect the health of menstruating girls and women, on the other.

Moreover, some reports further indicate that cultural barriers to effective menstrual management are associated with traditional taboos, particularly ideas relating to impurity, witchcraft and local superstitions, which lead to negative attitudes towards practices associated with menstruation (United Republic of Tanzania [URT], 2007). Some qualitative

studies suggest that dread triggered by the potential of leaking of blood and body odour generate fear of humiliation, and lead to girls regularly being absent from school (Sommer, 2010); however, little quantitative data exists to confirm this situation (for instance, Sahin, 2015). Therefore, a mixed methods study combining both qualitative and quantitative inquiries was deemed necessary to offer a comprehensive understanding of cultural barriers to menstruation in the country.

Knowledge, attitude and practices concerning MHH

Knowledge, attitude and practices (KAP) concerning MHH have received considerable critical attention. Current reviews suggest that menstrual knowledge is influenced by location, age, school attendance and education level. An example is a review by Chandra-Mouli and Patel (2017), which shows that girls in developing countries generally have an inadequate knowledge on the understanding of menstruation prior to reaching menarche. A study covering high-school girls in Ethiopia and primary school girls from pastoral communities in Kenya shows that 40 per cent of the respondents had inadequate knowledge about menstruation (Korir, Okwara, & Okumbe, 2018; Upashe, Tekelab, & Mekonnen, 2015). However, only few girls were able to correctly identify the uterus as the source of menstrual blood and associated the attainment of menarche with the capacity to conceive.

Studies show that the attitudes of girls regarding menarche and menstruation vary according to their cultural backgrounds. Reviews indicate that menstruation is often treated as a curse, a disease, something that occurs as a result of sin or that makes menstruating women dirty in countries such

as India, Nigeria, Uganda and Ghana (Chandra-Mouli & Patel, 2017). In Ghana, a study on MHH among adolescents shows that, despite universal awareness of menstruation and high levels of adequate knowledge of menstrual health and hygiene, only one-tenth of the respondents had a positive attitude towards MHH (Boakye-Yiadom et al., 2018). In Tanzania, however, limited data exists on the knowledge and attitude towards menstruation among adolescent girls. A survey on MHH conducted in the Lake Zone in SNV, 2014 found that 82 per cent of adolescent girls had no prior information on menstruation and were not prepared both psychologically and physically when their first period occurred. The survey further suggests that inadequacies in girls' knowledge stem from parents' failure to provide sufficient education on MHH to their daughters. Additionally, the survey suggests an inter-generational trend of inadequacy in knowledge on MHH due to myths and misconceptions being carried from one generation to another. Finally, the survey suggested that many girls had been told rumours or misinformation, including that menstrual pads can cause cancer and that if MHH materials are disposed of in open spaces, they can be used in witchcraft that can ultimately lead to infertility or even death. Despite these useful findings, it is critical to examine whether these issues manifest in regions other than Lake Zone where this survey was conducted.

Several reviews and studies on MHH indicate that sources of information for girls regarding menstruation varies across different settings. Recent reviews suggest that mothers and other female family members are common sources of information in developing countries (see, for instance, Chandra-Mouli & Patel, 2017; Kaur et al., 2018). These reviews further indicate that mothers and female family members are not necessarily well equipped to fill the gaps in girls' knowledge. Other less common sources of menstrual information such as teachers

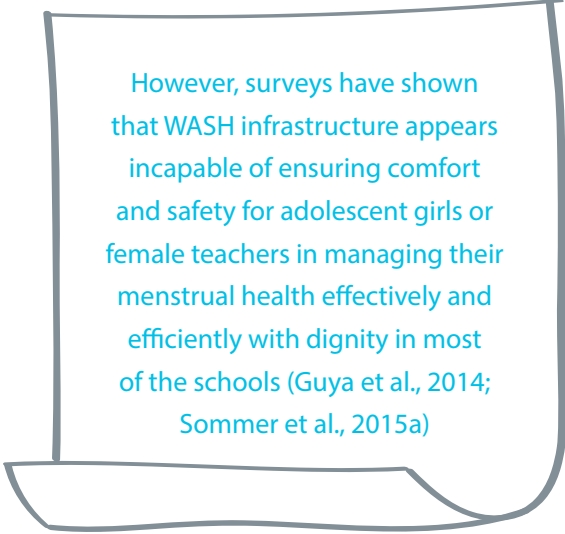
and/or health professionals are also identified in the reviews. In some settings, the mass media, such as radio, television, newspapers, magazines, books and the Internet, are reported as either the only resource available to the girls or as complementary sources of information. Nevertheless, some girls do not receive information from any source (Kaur et al., 2018; Chandra-Mouli & Patel, 2017). Within Tanzania, a study by Guya, Mayo and Kimwaga (2014) conducted among secondary school students in two districts shows that mothers were the main source of information on menstrual hygiene for girls before their menarche, followed by elder sisters. However, after menarche, many of the students received information from friends followed by mothers. The same study shows that girls receive some MHH information at school; however, MHH education in schools is internally initiated as there are no guidelines, rules or regulations requiring schools to provide it. Despite the information available in these findings, much might have changed from the time this study was conducted. Therefore, a new study that would offer up-to-date information is needed.



Evidence suggests that absorbent materials used during menstruation in Tanzania vary across urban and rural settings. Disposable sanitary pads appear to be mostly used in urban areas and locally made reusable materials or cloths in rural areas. Guya et al. (2014), for instance, shows that 97.3 per cent of secondary school girls from urban areas reported using disposable sanitary pads only, and 85 per cent of the girls from rural areas reported having never used commercial pads. In the same study, some girls reported using commercial pads, but only when they had an excess of money. This suggests that financial affordability may be a significant determinant of what MHH materials girls use. In support of this premise, Guya et al. (2014) show that the price of disposable sanitary towels ranges from TSh 1,500 (\$0.60) for low-quality materials to TSh 3,500 (\$1.30) for high-quality ones. Similarly, reusable pads cost about TSh10,000 (\$4.33) in 2014. Anecdotal information indicates that prices have remained stable for some years. However, these prices are still unaffordable for many of the women and girls in resource-limited settings. Consequently, some girls reportedly use natural materials such as mud, leaves, dung or animal hides and skin. Other materials girls reported using included toilet paper, tissue or cotton wool and pieces of cloth recycled from sheets and clothes. Although these materials may be locally available and freely accessible, they carry concerns of ineffectiveness, discomfort and maybe unhygienic for the girls.

As noted above, inadequate water, sanitation and disposal facilities for the management of menstruation with privacy and dignity emerged in the literature as well as surveys in Tanzania as challenges that girls face during their menstruation. The absence of guidance to help them feel confident enough to attend school during menstruation without feeling

embarrassed or ashamed was also observed. Some studies have found that poor water, sanitation and hygiene (WASH) facilities in schools, inadequate puberty education and lack of hygienic MHH items (absorbents) make girls treat menstruation as shameful and uncomfortable (Sommer, 2010; Sommer & Sahin, 2013; Sahin, 2015). Furthermore, adequate WASH facilities aid in the safe practice of MHH in Tanzania.



However, surveys have shown that WASH infrastructure appears incapable of ensuring comfort and safety for adolescent girls or female teachers in managing their menstrual health effectively and efficiently with dignity in most of the schools (Guya et al., 2014; Sommer et al., 2015a)

As part of school water, sanitation and hygiene (SWASH) guidelines, the Ministry of Education, Science and Technology has set a minimum standard of one toilet per 20 girls and one toilet per 25 boys. However, previous evaluation of SWASH infrastructure indicated that more than half of all primary and secondary schools in 16 districts of Tanzania had no doors on their latrines, 92 per cent had no functional hand-washing facilities, 99 per cent had no soap and 63 per cent of the school latrines had no place to dispose of sanitary pads (SNV/WaterAid/ UNICEF, 2011). These SWASH challenges make it increasing difficult for girls to safely manage their menstruation in the school environment.

MHH studies focused on Tanzania have two shortcomings. First, there has been no scientific

evaluation of the MHH infrastructure, services and challenges in Tanzania's schools. This creates an urgent need for a comprehensive study to fill the existing gaps, paving the way for improvement of education and psychosocial outcomes for school girls. Second, many of the previous studies had limitations related to small sample sizes and data not being specific to MHH. Limited evidence-based data on the effectiveness of MHH interventions has been highlighted by the 'MHH in Ten' group, which is a consortium of stakeholders including the United Nations agencies, non-governmental agencies and academics who came together to discuss the need to advance the MHH agenda in SWASH infrastructure. As noted in Sommer et al. (2016), the priorities identified are for improving MHH infrastructure in schools by 2024. The first priority was to expand scientific evidence for understanding adverse health and educational impacts of inadequate MHH and identify evidence-based and cost-effective interventions aimed at improving MHH in schools. This study therefore seeks to stress the need for adequate MHH services in schools with the aim of providing an environment that is conducive for learning and development for girls and boys.

Local reports suggest that the Tanzanian Government's commitment to the improving MHH among girls in schools has increased substantially in recent years. The education sector has taken a number of measures to improve MHH among girls in schools. An example is the development of the School Water, Sanitation and Hygiene (SWASH) Guidelines in 2010 and subsequently the National Strategic Plan for SWASH 2012–2017, which collectively offer clear directives for all school girls and schoolboys to receive information on adolescence and menstrual health (URT, 2012). These policy tools further recommend the availability of restrooms for girls in each school.



Another policy milestone was the commencement of the implementation of a five-year strategic plan to upgrade SWASH infrastructure so as to ensure adequate safe water, sanitation and hygiene facilities, thereby improving academic performance, school attendance and overall health of school children in 2012 (URT, 2012).

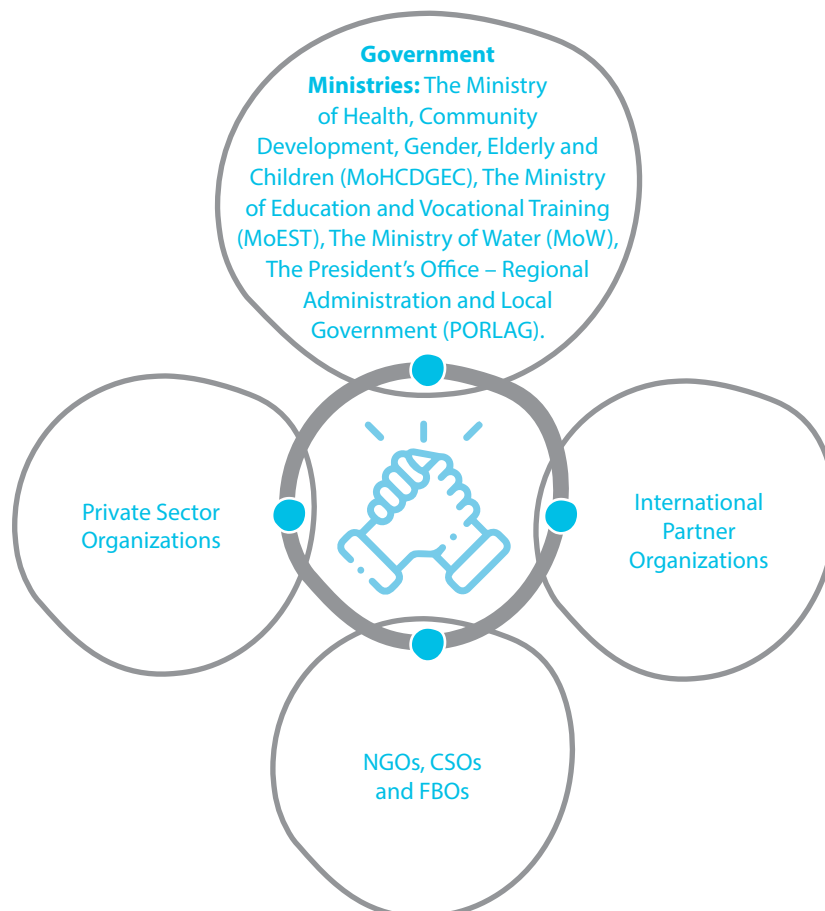
The Tanzania Education and Training Policy (ETP) of 2014 (which superseded the 1995 ETP) focuses on increasing access to primary and secondary education and enhancing the quality of education. Moreover, to achieve Sustainable Development Goals, laid out by the United Nations and set to be achieved by 2030, the Tanzania Government issued Circular 5 on 27 November 2015 as part of execution of the Education and Training Policy 2014, which directed public bodies to ensure that public primary education is universally free. This circular shows that the Government is committed to providing free quality primary education in public schools. This policy appears to align with SDG4, which sets a target for all countries to offer all children free, equitable and quality primary and secondary education by 2030. More specifically, SGD4 focuses on ensuring the provision of inclusive and equitable quality education in promoting lifelong learning opportunities for all. To further ensure WASH, the Government issued national guidelines to guarantee a minimum level of water, sanitation and hygiene in schools in 2016 (URT, 2016). Since then, various initiatives and interventions have been undertaken by both public and private agencies in the country to

boost access to MHH education, materials and WASH, and disposal facilities in schools. Though we cannot offer an exhaustive list, some of the initiatives are: (1) Twaweza programme, which combines education, conversation and distribution to reduce social stigma associated with menstruation and empower girls to stay healthy and in-school, thereby subsequently improving their quality of life; (2) SNV's school girls' MHH project in eight districts of Chato, Magu, Sengerema, Karatu, Babati, Siha, Njombe and Mufindi; (3) Project Concern International that constructs latrines, rainwater harvesting tanks and boreholes to ensure that girls have functional a MHH room with running water; and (4) UNICEF, which implements Health, Water, Sanitation and Hygiene (WASH), Education, Child Protection and Social Policy.

These guidelines set standards for ensuring WASH compliance in schools, including the provision of a special room for MHH management and for girls with disabilities. The approval of the guidelines was then followed by a campaign to build national capacity for implementation, which included training of a core national facilitation team. However, only limited evidence exists at present on how SWASH has impacted girls' safe MHH practices. Though this study does not directly evaluate SWASH implementation, it offers evidence that could provide insights into the effectiveness of SWASH from participants' perspective.

Another initiative on MHH within the country is the training of trainers (ToTs) by the Water Supply and Sanitation Collaborative Council (WSSCC) in collaboration with key ministries

Entities who supported the SWASH initiative



and UNICEF. Anecdotal information suggests that 73 participants comprising 20 men and 53 women from different social groups such as people with disabilities, key ministries and Local Government Authorities (LGAs) from all the regions in Tanzania were trained. The development partners also continue to train teachers and engage with key influencers, especially religious leaders on key MHH issues to strengthen social support for MHH.

Alongside the policy and capacity-building initiatives, a number of entities came together to publish and disseminate MHH materials aimed at improving knowledge and skills. The Government through its sectoral ministries and partners, such as the NIKE Foundation, UNICEF and UNFPA, supported the publication and dissemination of menstrual hygiene education guidebooks targeting girls known as *Vipindi vya Maisha* (Growth and Changes) and *Kuwa Kijana* (Being an Adolescent) for boys. These materials aim to empower 10- to 14-year-old girls and boys with knowledge of their growth/changing bodies and puberty issues from actual stories of young Tanzanians. The guidebooks have proved to be a success in improving knowledge of both girls and boys during their transition into adulthood and meeting menstruation and puberty needs in schools (Sommer, Likindikoki & Kaaya, 2013; Sommer, 2016). TAI, a youth-led NGO in Dar es Salaam, initiated the Jali project, which was completed in 2018. The major aim of this project was to help girls stay in school during menstruation by raising their awareness of MHH and teaching skills for effective MHH management for both boys and girls in addition to donating sanitary pads to girls. It is also important to note that many local initiatives have been taken in several regions and districts in Tanzania focused on MHH.

Furthermore, WASH partners in collaboration with LGAs and partners initiated the implementation of the national SWASH



guidelines at the sub-national levels to provide models that could be replicated in other parts of the country. Anecdotal information indicates that the current programme has enhanced proper MHH knowledge in targeted schools and communities in a bid to break the 'culture of silence' on menstruation through the SWASH clubs. The Government, through its sector ministries together with other partners, continues to support the construction of gender-sensitive WASH facilities in addition to promoting hygiene in schools. This construction work covers facilities and services such as the provision of running water and both temporary and permanent disposal facilities that enable girls to manage their menstruation safely and in privacy with dignity. The facilities also include a room dedicated for pupils with disabilities.

Finally, in response to various advocacy initiatives by WASH partners including UN agencies, Government officials, Parliamentarians and civil society organizations (CSOs), the Tanzanian Government exempted menstrual products from value-added tax (VAT) to reduce their cost in the 2018–19 financial year; however, this decision was reversed in the 2019–20 fiscal year due to concerns of its limited impact on the prices of sanitary pads in the market.

The positive impact of these initiatives and interventions may be limited and has not been formally quantified. First, they are limited in scope and coverage; second, there appears to be limited evidence on their effectiveness.

Rationale for this study

Menstruation signals a girl's entry into womanhood and is a crucial time for adolescent girls to learn about their bodies and take control of their health. In Tanzania, there is scant literature on how MHH issues are addressed in schools, including taboos, religious norms and beliefs. This study was conducted in the context of existing limited comprehensive or empirical evidence on MHH in Tanzania. Therefore, this study aims to gather empirical evidence on the effectiveness of existing policies, challenges, barriers, programmes and outcomes of MHH interventions in Tanzania and to map out current and potential strategic partnerships that seek to address MHH in a broader context.

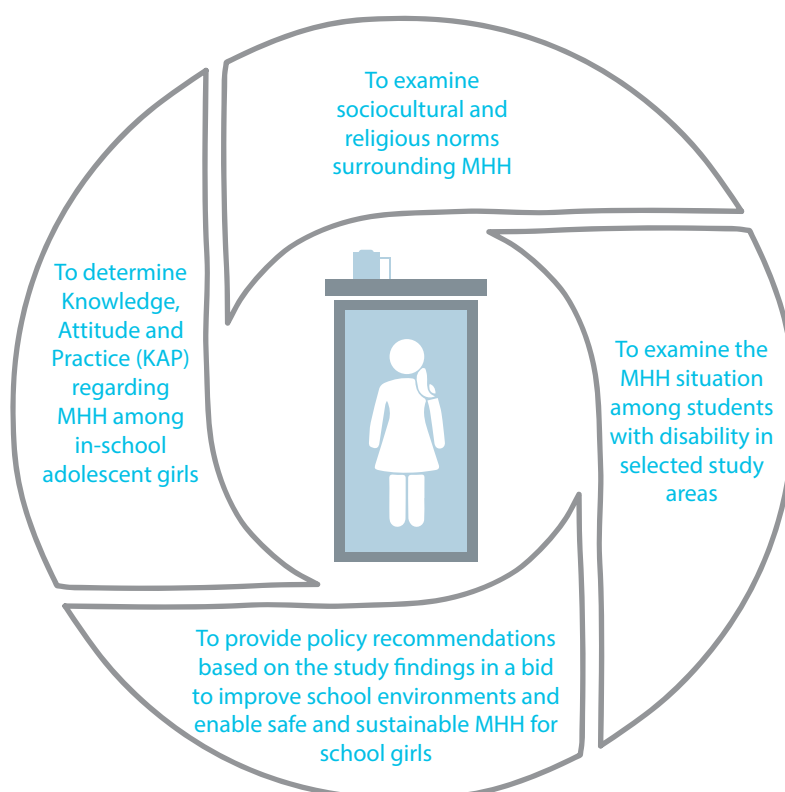
It is anticipated that the study findings would establish baseline data on the current knowledge, attitudes and practices regarding the issue of MHH among both in- and out-of-school girls and boys and examine the status of MHH-related WASH facilities in school settings. The findings would also inform the development of an advocacy strategy to guide the concerned ministries and departments as well as relevant stakeholders to plan for better provision of WASH services in schools in addition to creating awareness among communities to help break the culture of silence on menstrual health management.

Research objectives

Main objective

The main objective of this study was to ascertain the status of MHH for in-school girls in rural and urban areas and provide policy recommendations for designing effective MHH programmes in Tanzania.

Specific objectives



Methods

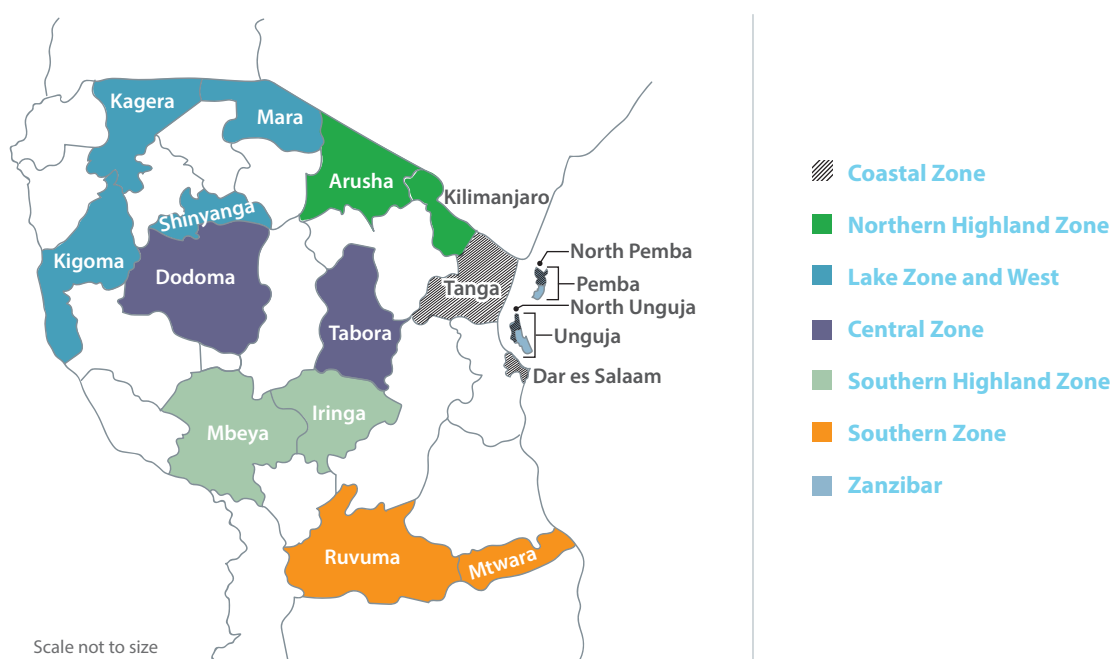
Study design

To fulfil the study's specific objectives, a cross-sectional analytical design was developed in which quantitative and qualitative data were collected. The cross-sectional analysis allows for the investigation of not only the knowledge, attitude and practice (KAP) among in-school girls regarding MHH but also sociocultural factors underlying menstruation.

Study areas

The study was conducted in 19 districts, which were purposively selected from 16 administrative regions from all the six zones in the Tanzania Mainland and also included Zanzibar:

At least one study district was selected from each region except Dar es Salaam, Dodoma and Kagera in which an additional district was also chosen to include special schools for children with disabilities. Hence, the following districts ($n = 19$) were selected: (1) Kibondo DC in Kigoma, (2) Muleba DC and Bukoba MC in Kagera, (3) Tandahimba DC in Mtwara, (4) Namtumbo DC in Ruvuma, (5) Moshi District in Kilimanjaro, (6) Lushoto DC in Tanga, (7) North Pemba Region in Pemba Island, (8) North Unguja Region in Unguja Island, (9) Mpwapwa DC and Chamwino DC in Dodoma, (10) Karatu DC in Arusha Region, (11) Temeke MC and Ilala MC in Dar es Salaam, (12) Rorya DC in Mara, (13) Mufindi DC in Iringa, (14) Mbeya DC in Mbeya, (15) Igunga DC in Tabora and (16) Msalala DC in Shinyanga.



Selection of study schools and participants

Study population

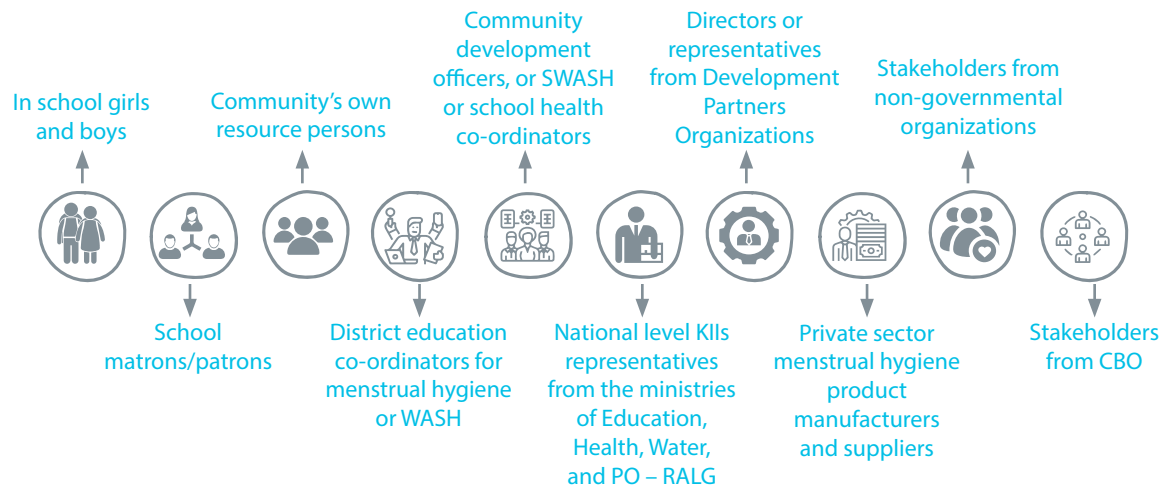
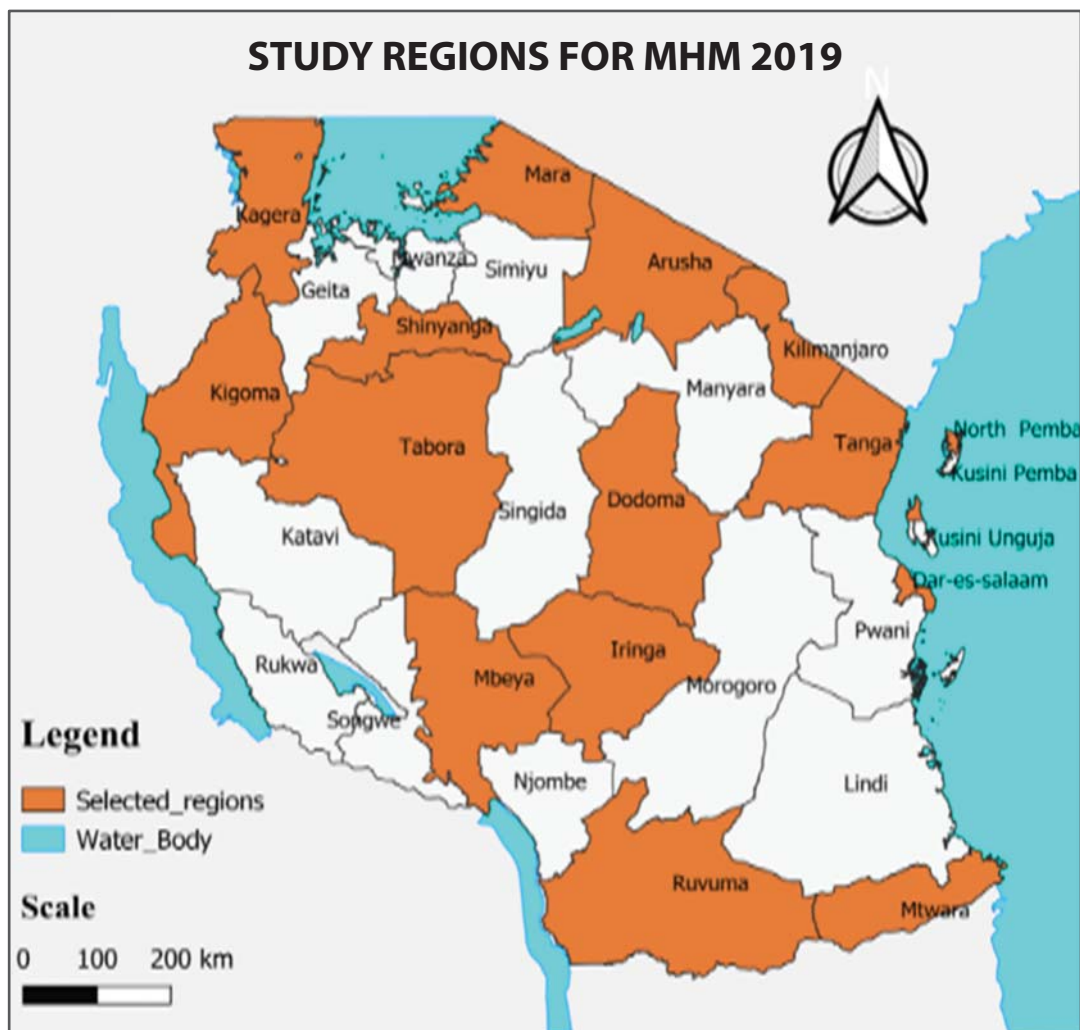


Figure 1: Map of Tanzania showing the study regions



Selection of schools

The schools for this study were selected randomly from the National Bureau of Statistics comprising a complete list of schools in Tanzania including key information such as region, district, ward, village or *Mtaa* (street), name of school, location, and level of school, ownership and number of students. Individual schools were selected based on the probability of proportional to size (PPS) using Microsoft Excel software. PPS sampling was done to ensure that schools with the highest number of girls are selected. From each district, 20 schools – 10 primary and 10 secondary schools – were selected prior to the field visit taking into account aspects such as public–private ownership and inclusion of those targeting people with disability.

Selection of study participants

During visit to the schools post-menarche girls (with a target of 30 girls per school) were purposively selected to receive self-administered questionnaires. A parallel group of 12 post-menarche girls were also selected to participate in the focus group discussion (FGD) in each school. Additionally, a group of adolescent boys ($n=12$) was purposively selected to participate in the boys' FGD. School matrons or teachers responsible for children social affairs facilitated the identification of eligible girls and boys before inviting them to participate in the study. In each district, two FGDs (one in rural and one in urban areas) were held with a group, involving community-owned resource persons (CORPs), who included members of school committees, village leaders, village health workers, traditional birth attendants or local custodians of culture

on reproduction, representatives of religious organizations and members of civil service organizations. These were identified by the respective school administration in liaison with district education coordinators and invited verbally to attend research sessions. The school matron or teacher responsible for children social affairs were also purposively invited to participate in in-depth interviews (IDIs). In each district, various implementers including district education coordinators for menstrual hygiene or WASH, the community development officer, or SWASH or School Health Coordinator were also purposively invited for key informant interviews (KIs). National level KIs were identified and enlisted to represent various national level stakeholders from government ministries, and non-governmental organizations, and the private sector to represent Tanzania Mainland and Zanzibar.

Data collection methods and tools

The study triangulated quantitative and qualitative methods and data, which were aligned with standard assessment criteria for relevance, effectiveness, impact and synergy, sustainability, scalability, gender, accountability and inclusiveness.

Quantitative data was collected using a self-administered questionnaire designed to test girls' knowledge, attitude and practice (KAP) of MHH in schools and at home. Additional quantitative information was collected using a checklist to guide direct observation of the availability of safe water supply, latrine type, latrine design and built infrastructure, number and type of hand-washing stations, availability of water and soap, MHH infrastructure and facilities and hygienic practices in schools.

Qualitative information was collected through FGDs held for adolescent girls and boys, IDIs with the school matron or teacher responsible for children social affairs and KIs with district (SWASH coordinators, school health coordinators, NGO and CBO directors) and national level officials (Ministries of Education, Health, Water and PO-RALG, directors or representatives from development partner organizations and national-level NGOs, menstrual hygiene product manufacturers and suppliers). A special emphasis was placed on issues that impact in-school adolescent girls. The focus was on the guidelines they received before and after menarche, challenges they faced at home and in-school, whom they talked or report to, how they managed MHH and their suggestions on how to improve menarche management. A documentary was also screened to supplement the information collected.

The study also involved desk review of key documents from the Ministries of Health, Education, Regional Administration and local governments. Secondary sources of information also included key national documents and sectoral documents and peer-reviewed research on MHH in Tanzania. A review of what has been included pertaining to MHH in national policies and guidelines was also conducted.

Furthermore, a review of grey literature from NGOs, CBOs and multilateral organizations engaged in advocacy on MHH and hygiene education and their impact was also done.

Ethical considerations

Standard ethical procedures were followed including obtaining ethical approval from Medical Research Coordinating Committee (MRCC). Thereafter, an approval was sought from the PO-RALG, which granted the research teams

permission to carry out the study in the respective regional, district and schools. Written informed consent was obtained from adult participants in the study, whereas the teachers accented to the school children to be interviewed.

Training of enumerators

Before data collection, the identified research assistants were trained on the application of data collection tools and techniques pertaining to this study. These tools were pre-tested in selected settings that resembled study settings. After pre-testing, the data collection tools were refined to ensure that they were ready for application in the actual data collection process. Close and supportive supervision was done throughout data collection and analysis stages to ensure data quality. The English versions of the questionnaire were translated into Kiswahili language and then back into English and checked for conceptual equivalence.

Data processing and analysis

Qualitative data analysis

Audio files from the field were organized and transcribed verbatim to generate transcripts from all the FGDs and IDIs. The transcripts were subsequently coded in line with qualitative content analysis approach whereby project themes were determined based on the study objectives. This involved an active identification of patterns within the data and organizing them into categories or themes to facilitate interpretation and reporting. Thematic analysis involves coding of transcripts, defining and naming sub-themes and themes and then synthesizing analysis. In thematic analysis, an

inductive 'bottom-up' or a deductive 'top-down' approach may be adopted for data coding. On the one hand, inductive thematic coding is a process whereby themes/sub-themes or categories are identified without trying to fit them into a pre-existing data analysis matrix. On the other hand, a deductive approach is a data analysis approach that allows a researcher to accommodate the data into pre-existing themes within the coding framework/matrix or research questions. This analysis involved a deductive analytical strategy (top-down approach). Each thematic content analysis was accompanied by extraction of supporting verbatim quotation and drawing of conclusions and recommendations.

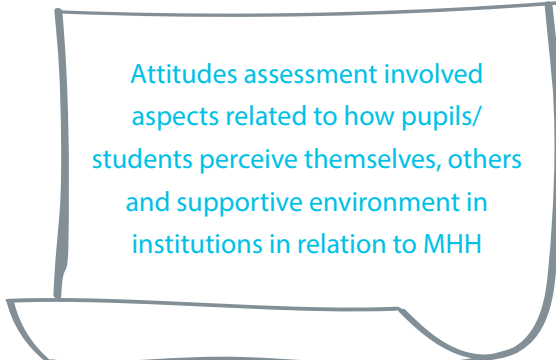
Quantitative data analysis

Data was processed using Census and Survey Processing System 7.2 (CSPPro 7.2) and STATA 15. For the checklist questionnaire, electronic data collection was implemented whereby CSPPro data capture programme was created and uploaded into the Android devices. For the girls' questionnaire, the CSPPro data entry programme was created and uploaded into the desktop. Data was keyed into the desktop at the office after the completion of fieldwork. In the initial stages, the codebook was prepared for creating a data entry system, data entry process and statistical analysis. Descriptive analysis including frequencies, percentages and measures of the central tendency was carried out to produce different sets of indicators based on the study objectives. Data processing entailed data cleaning, cross-checking, coding and recoding of the main variables. The quantitative data was summarized and descriptive statistics were calculated. Summary statistics were tabulated to depict distributions and the interconnection of variables. Advanced analysis including student *t*-test, analysis of variance and multivariate

models helped to describe the dichotomous and continuous data. Significance of differences and association was tested at 5 per cent alpha level.

Correct knowledge, positive attitude and good practice domains

In this study, we assessed the knowledge level of students. Issues that were assessed included the knowledge of when menstruation begins, facts and misconceptions about menstruation, preparation for menstruation and proper steps to be taken by a girl when she starts her periods, especially while at school.



Attitudes assessment involved aspects related to how pupils/students perceive themselves, others and supportive environment in institutions in relation to MHH

Finally, the assessment was done on behavioural practices in relation to effective MHH among pupils/students.

Dependent variables

An overall score per domain per individual was obtained by summing up all scores of every participant. A weight of '1' was given to each item, which denoted correct knowledge of MHH, positive attitude and good practice. For example, those who 'agreed' with any positive statement were considered to have 'correct knowledge', 'positive attitude' or 'good practice' depending on the domain assessed. Likewise, those who

'disagreed' with any negative statement were given a weight of '1'. Those who 'agreed' with any negative statement were given a weight of '0'. Likewise, those who 'disagreed' with any positive statement were termed to have 'incorrect knowledge', 'negative attitude' or 'poor practice' depending on the domain assessed. Participants who were either not sure or did not know any issue were given a weight of '0' to indicate possession of 'incorrect knowledge', 'negative attitude' or 'poor practice' depending on the domain assessed. As the appendices illustrate, 33, 30 and 10 items were used to assess the level of MHH knowledge, attitude and practices, respectively. An overall individual score per each domain was converted into a percentage by dividing each individual score by the maximum score multiplied by 100 per cent. Participants were considered as having adequate knowledge of MHH if they had a mean percentage score of more than 70 per cent, and inadequate knowledge if they had mean percentage score of 70 per cent or less. Furthermore, we used the Bloom technique to assess the overall level of MHH attitude and practices. Under this technique, for the overall attitude, categorization was negative (<60 per cent or scores of 0–19), moderate positive (60–79.9 per cent or scores of 20–23), and positive (80–100 per cent or scores of 24–30). Finally, the level of practices was classified as follows: poor (<60 per cent or scores of 0–5), relatively good (60–79.9 per cent or scores of 6–7) and good (80–100 per cent or scores of 8–9). To obtain two categories for binary logistic analysis, for knowledge and attitude, the two categories (moderate and high) were combined to form 'high' whereas for the practice domain, the two categories (relatively good and good) were combined to form one category (good), and for attitude, we combined moderately positive and positive to come up with positive category. Therefore, inferential

analysis to assess the factors associated with outcomes variables of interest included low knowledge, negative attitude and poor practices.

Independent variables

The aforementioned factors were associated with socioeconomic and demographic factors/variables. We also generated an independent variable for socioeconomic status (SES) of the school using principal component analysis with 17 socioeconomic items, which are included in the appendices. The SES was categorized into five categories namely lowest, second, middle, fourth and highest. These variables were extracted from both the primary and secondary school girls' questionnaires and school checklist.

Modelling

Logistic regression was applied for both unadjusted and adjusted odds ratios with 95 per cent confidence intervals when the outcome of interest was <10 per cent; otherwise we



applied modified Poisson logistic regression and reported both crude and adjusted prevalence ratios with 95 per cent confidence intervals. Modified Poisson is proposed when the outcome of interest is ≥ 10 per cent since it fits well with the explanatory and outcome variables. All the variables with a p -value < 0.2 in the unadjusted analysis were included in multi-variable model.

However, only variables with a p -value < 0.05 were retained in the final model and considered to be statistically significant. For bivariate analysis, the difference and association were significant at $p < 0.05$. We also assessed the mean positive attitude, good practices and correct knowledge percentage scores using analysis of variance (ANOVA).

Items used to assess the socioeconomic status of the school

Does the school have any funds set aside for supporting children with disability including catering for their WASH and MHH supplies?
What is the main source of water for the school?
Does the school have a water storage tank?
Where is that water source located?
In the past two weeks, was water from the main source available throughout (the day on daily basis)?
What types of toilets are there for the pupils/student uses?
Do the girls' latrines have lockable doors?
Are there hand-washing points close (within 5 metres) to girl's latrines?
Is water available for personal hygiene inside the latrine block?
Are there materials (other than water) available for personal hygiene after using toilet?
Does the school have a dedicated convenience room for girls?
Are there covered bins for collecting used menstrual hygiene materials in the girls' toilets?
Does the school provide any type of menstrual hygiene materials for adolescent girls (e.g. sanitary pads, tampons or cups)?
Are there disposal mechanisms for menstrual hygiene material waste at the school?
Does the school have a first aid kit?
Is there at least one usable toilet/latrine that is accessible to pupils with physical disability or impaired vision?
Are there hand-washing facilities at the school?
Maximum scores=17



Quantitative Results

Study participants in MHH research

For evaluating the menstrual health and hygiene (MHH) of girls across Tanzania, a total of 210,784 students and 760 teachers in all the schools were enrolled into this study. Out of them, 436 students (2 per cent) had some form of disability. The MHH study covered 294 schools across 16 districts (Table 1) in the Tanzania Mainland and Zanzibar. The majority of these schools (86.4 per cent) were government-owned and almost two-thirds (60.5 per cent) were in rural areas. In the selected schools, a total of 10,516 individuals participated in the study. Among them, 8,012 adolescent school girls responded to the self-administered quantitative

questionnaires. Other adolescent students (2,013 girls and boys) participated in the focus group discussions (FGDs). In addition, 341 members of school committees and community representatives participated in FGD. Further 102 matrons and patrons provided in-depth interviews (IDIs). Key informant interviews (KII) were conducted with 33 officials in the councils and 15 officials at the national level.

The results section is divided into three main subsections. Section 3.1 of the report presents baseline MHH issues affecting post-menarche girls in the Tanzania Mainland and Zanzibar; Section 3.2 covers MHH issues among post-menarche girls without disability; and section 3.3 focuses on the MHH issues faced by girls with disabilities.

Table 1: Population distribution of students and teachers in study schools

District						
Temeke	24	22.0	8,727	7,901	3	2
Karatu	30	29.0	5,781	5,389	46	48
Namtumbo	22	23.0	5,868	5,218	8	7
Kibondo	19	20.0	7,640	8,452	5	6
Lushoto	24	24.0	5,039	4,576	7	12
Tandahimba	18	18.0	6,194	5,778	3	4
Igunga	15	16.0	4,529	4,719	11	15
Mufindi	24	24.0	6,107	5,518	16	17

Background characteristics	Number of teachers		Number of pupils		Number of pupils with disability	
	Male	Female	Girls	Boys	Girls	Boys
Mbeya DC	31	32.0	12,106	9,750	37	51
Msalala	24	25.0	8,671	8,324	3	4
Moshi	32	27.0	4,487	3,478	6	8
Mpwapwa	20	22.0	8,129	7,369	33	38
Muleba	22	23.0	6,260	7,030	10	9
Rorya	14	15.0	6,581	6,739	3	12
North Pemba	26	29.0	6,530	6,483	4	6
Kaskazini A	33	33.0	6,415	4,996	1	1
Total	378	382.0	109,064	101,720	196	240



Section 3.1

Baseline MHH issues affecting post-menarche adolescent girls in the Tanzania Mainland and Zanzibar

The findings are structured according to the research objectives and evaluation questions. For each question, the findings are presented based on the data collection methodologies used and the results obtained.

Objective 1: Knowledge, attitude towards and practice of MHH among in-school adolescent girls

Research question 1: What is the level of knowledge, attitude and practice of MHH among in-school post-menarche adolescent girls? This section describes the overall MHH knowledge, attitude and practice among post-menarche girls on the Tanzania Mainland and in Zanzibar.

What is the level of knowledge on MHH among in-school post-menarche adolescent girls in Tanzania (both in Mainland and Zanzibar)? The MHH knowledge among study participants is given as a mean score in percentage. We describe the extent to which girls and boys are informed about, can provide information on and identify correct or incorrect statements on the basic concepts of menstruation. We also look at the details that participants can provide on good menstrual hygiene practices. Using this information, we describe the proportion of girls with adequate

and inadequate knowledge. Participants were considered to have adequate knowledge of MHH if they had a mean percentage score of more than 70 per cent and inadequate knowledge if they had mean percentage score of 70 per cent or less. Finally, we calculated factors that contribute to inadequate knowledge regarding MHH. In all 8,012 post-menarche girls in primary and secondary schools in Tanzania participated in the structured interviews from which we aimed to generate quantitative data. Their demographic characteristics are detailed in Table 2. Among the participants, 2.5 per cent of these girls had disabilities. The mean age of the girls was 14.9 years (standard deviation SD = 0.02). Although the majority of the girls (56.3 per cent) were older than 15 years. On average, girls from Zanzibar were older (mean age = 16 years) than girls from the Tanzania Mainland (mean age = 14.7 years). The majority of the participants lived in urban areas (61.3 per cent) and went to public, day and co-education schools (86.0, 70.2 and 96.2 per cent, respectively). Girls in standards V and VII in primary schools and those from forms I to IV in secondary schools were enrolled in the study. Girls studying in standard VII and form IV constituted a larger proportion of the participants. Fathers and, in some cases mothers, mainly paid the school fees and provided support for other needs to girls in both Tanzania Mainland and Zanzibar. Overall, the education level of the female caretaker was primary education (41.4 per cent). However, in

Zanzibar, most of the girls' female caretakers were educated up to the secondary school level followed by those who had college education. In the Tanzania Mainland, on the other hand, most of the female caretakers had primary education, followed by those with secondary

education and those with college education. A significant proportion of the girls (15.5 per cent), however, did not know the education level of their female caretakers. Generally, most of their parents were either farmers, employed or self-employed.

Table 2: Sociodemographic characteristics of primary and secondary school girls in Tanzania (N=8,012)

Factor	Tanzania Mainland, n (%)	Zanzibar, n (%)	Total, N (%)
Total	6,953 (86.8)	1,059 (13.2)	8,012 (100)
Age			
Mean (SD)	14.7 (0.02)	16.0 (0.05)	14.9 (0.02)
Age group			
<15	3,277 (47.1)	222 (21.0)	3,499 (43.7)
15+	3,676 (52.9)	837 (79.0)	4,513 (56.3)
Location			
Rural	2,712 (39.0)	387 (36.5)	3,099 (38.7)
Urban	4,241 (61.0)	672 (63.5)	4,913 (61.3)
School ownership			
Public	5,942 (85.5)	948 (89.6)	6,890 (86.0)
Private	1,011 (14.5)	110 (10.4)	1,121 (14.0)
Type of school			
Boarding	409 (5.9)	474 (44.8)	883 (11.0)
Boarding & Day	1,454 (20.9)	48 (4.5)	1,502 (18.8)
Day	5,090 (73.2)	536 (50.7)	5,626 (70.2)
Gender orientation of the school			
Only girls	296 (4.3)	5 (0.5)	301 (3.8)
Co-education	6,657 (95.7)	1,054 (99.5)	7,771 (96.2)
Class level			
STD V	281 (4.0)	0 (0.0)	281 (3.5)
STD VI	672 (9.7)	95 (9.0)	767 (9.6)
STD VII	2,146 (30.9)	2 (0.2)	2,148 (26.8)
Form I	460 (6.6)	14 (1.3)	474 (5.9)

Factor	Tanzania Mainland, n (%)	Zanzibar, n (%)	Total, N (%)
Form II	1,093 (15.7)	133 (12.6)	1,226 (15.3)
Form III	945 (13.6)	405 (38.2)	1,350 (16.9)
Form IV	1,356 (19.5)	410 (38.7)	1,766 (22.0)
School level			
Primary	3,195 (46.0)	137 (13.0)	3,332 (41.6)
Secondary	3,758 (54.0)	921 (87.0)	4,679 (58.4)
Main providers of support (paying school fees and taking care of other needs)			
Father	3,237 (46.6)	591 (55.9)	3,838 (47.8)
Mothers	2,164 (31.1)	340 (32.1)	2,504 (31.3)
Male caretaker	249 (3.6)	40 (3.8)	289 (3.6)
Female caretaker	559 (8.0)	81 (7.7)	640 (8.0)
Friend	7 (0.1)	4 (0.4)	11 (0.1)
Others	735 (10.6)	2 (0.2)	737 (9.2)
Education level of female parent/caretaker			
None	237 (3.4)	63 (6.0)	300 (3.7)
Some primary	479 (6.9)	95 (9.0)	574 (7.2)
Primary	3,197 (46.0)	116 (11.0)	3,313 (41.4)
Secondary	1,369 (19.7)	278 (26.2)	1,647 (20.6)
College	793 (11.4)	144 (13.6)	937 (11.7)
Don't know	878 (12.6)	363 (34.2)	1,241 (15.5)
Occupation of parent/caretaker			
Farmer	3,910 (56.2)	466 (44.0)	4,376 (54.6)
Employed	1,034 (14.9)	232 (21.9)	1,266 (15.8)
Self employed	1,649 (23.7)	228 (21.5)	1,877 (23.4)
Retired officer	181 (2.6)	48 (4.5)	229 (2.9)
Don't know	177 (2.6)	84 (7.9)	261 (3.3)
Other	2 (0.03)	1 (0.09)	3 (0.04)
Disability status			
Without disability	6,759 (97.2)	1,048 (99.1)	7,807 (97.5)
With disability	192 (2.7)	10 (0.9)	202 (2.5)
Missing	2	1	3

Table 3 describes the main providers of support of female students in paying school fees and meeting other needs by disability status. In the Tanzania Mainland, fathers (46.8 per cent) followed by mothers (31 per cent) paid school fees and took care of other needs for girls without disabilities. However, for girls with disabilities, fathers (37.5 per cent) and mothers (37.5 per cent) provided support to an equal

proportion of girls. On the other hand, half of the girls with disability in Zanzibar mentioned mothers as their main providers of support paying school fees and taking care of other needs. Regardless of the disability status, in both the Mainland and Zanzibar, female caretakers were mentioned as main providers of support more often than male caretakers.

Table 3: Main providers of support (paying school fees and taking care of other needs) of the girl child by disability status

Factor	Without disability, n (%)	With disability, n (%)	Total, N (%)
Tanzania Mainland			
Father	3,165 (46.8)	72 (37.5)	3,237 (46.6)
Mothers	2,092 (31.0)	72 (37.5)	2,164 (31.1)
Male caretaker	241 (3.6)	8 (4.2)	249 (3.6)
Female caretaker	544 (8.0)	15 (7.8)	559 (8.0)
Friend	7 (0.1)	0 (0.0)	7 (0.1)
Others	710 (10.5)	25 (13.0)	735 (10.6)
Missing			2
Zanzibar			
Father	588 (56.1)	3 (30.0)	591 (55.9)
Mothers	335 (32.0)	5 (50.0)	340 (32.1)
Male caretaker	39 (3.7)	1 (10.0)	40 (3.8)
Female caretaker	80 (7.6)	1 (10.0)	81 (7.7)
Friend	4 (0.4)	0 (0.0)	4 (0.4)
Others	2 (0.2)	0 (0.0)	2 (0.2)
Missing			1
Tanzania			
Fathers	3,753 (48.1)	75 (37.1)	3,828 (47.8)
Mothers	2,427 (31.1)	77 (38.1)	2,504 (31.3)
Male caretaker	280 (3.6)	9 (4.5)	289 (3.6)
Female caretaker	624 (8.0)	16 (7.9)	640 (8.0)

Factor	Without disability, n (%)	With disability, n (%)	Total, N (%)
Friend	11 (0.1)	0 (0.0)	11 (0.1)
Others	712 (9.1)	25 (12.4)	737 (9.2)
Missing			3

MHH knowledge among girls by state,

location and district: The overall mean score for the girls' knowledge of MHH was 64.8 per cent. The mean score for girls in the Tanzania Mainland (64.9 per cent) was slightly higher than that of girls from Zanzibar (64.4 per cent), and this finding was statistically significant ($p < 0.05$). Girls in rural areas scored higher (65.2 per cent) than girls in urban areas (64.6 per cent). This finding was also statistically significant ($p < 0.001$). In all the districts, the scores ranged between 62.3 per cent in Namtumbo district and 67.3 per cent in Moshi district as Figure 2

illustrates. These scores indicate that most of the girls on both the Tanzania Mainland (71.6 per cent) and Zanzibar (73.8 per cent) and in both urban and rural schools had inadequate knowledge of MHH (Table 4). Among those with adequate knowledge, the majority (87.7 per cent) were from the Mainland. Of all girls with adequate knowledge, girls with disabilities accounted for only 2.2 per cent. Namtumbo district, Kaskazini A and Rorya were the leading districts with most of the girls with adequate knowledge, as Figure 3 illustrates.

Figure 2: MHH knowledge mean scores (%) among girls by state, location and district.

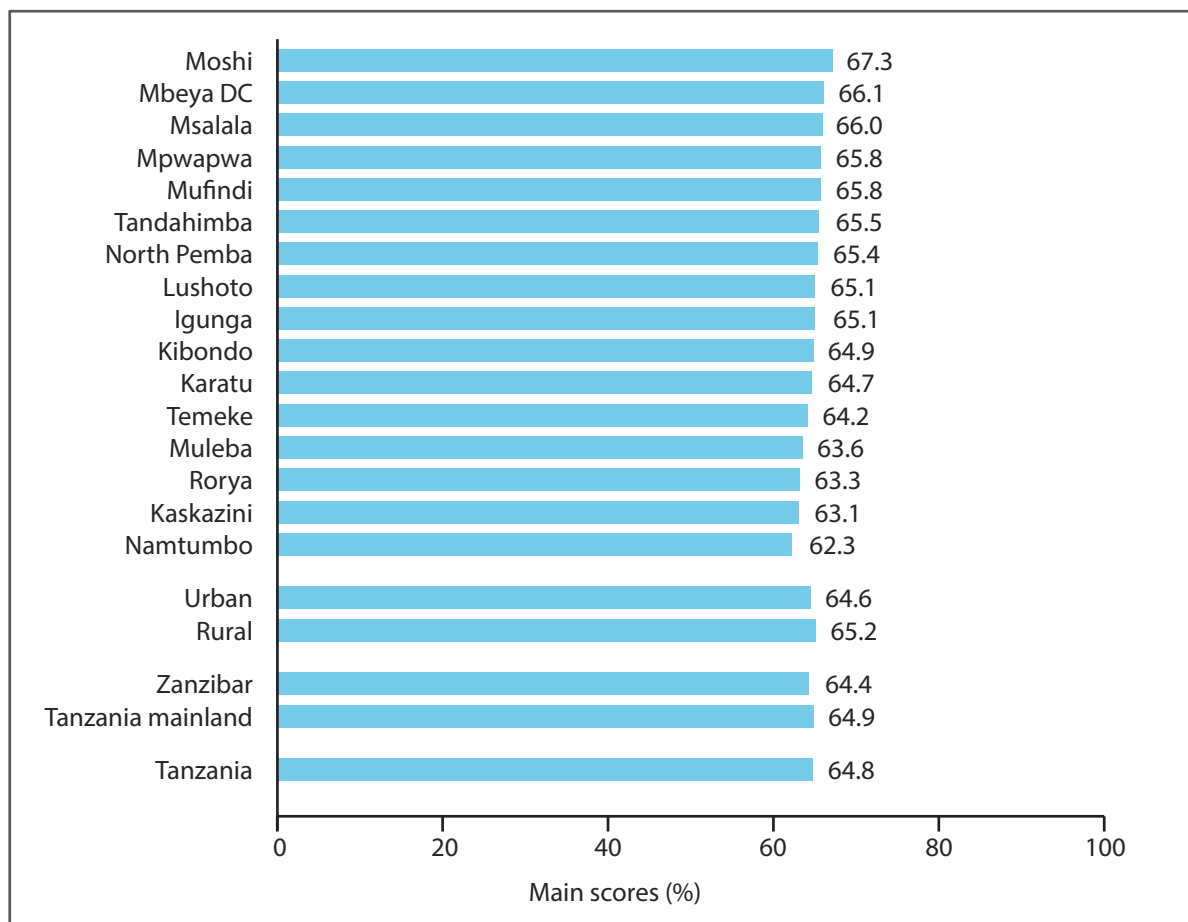
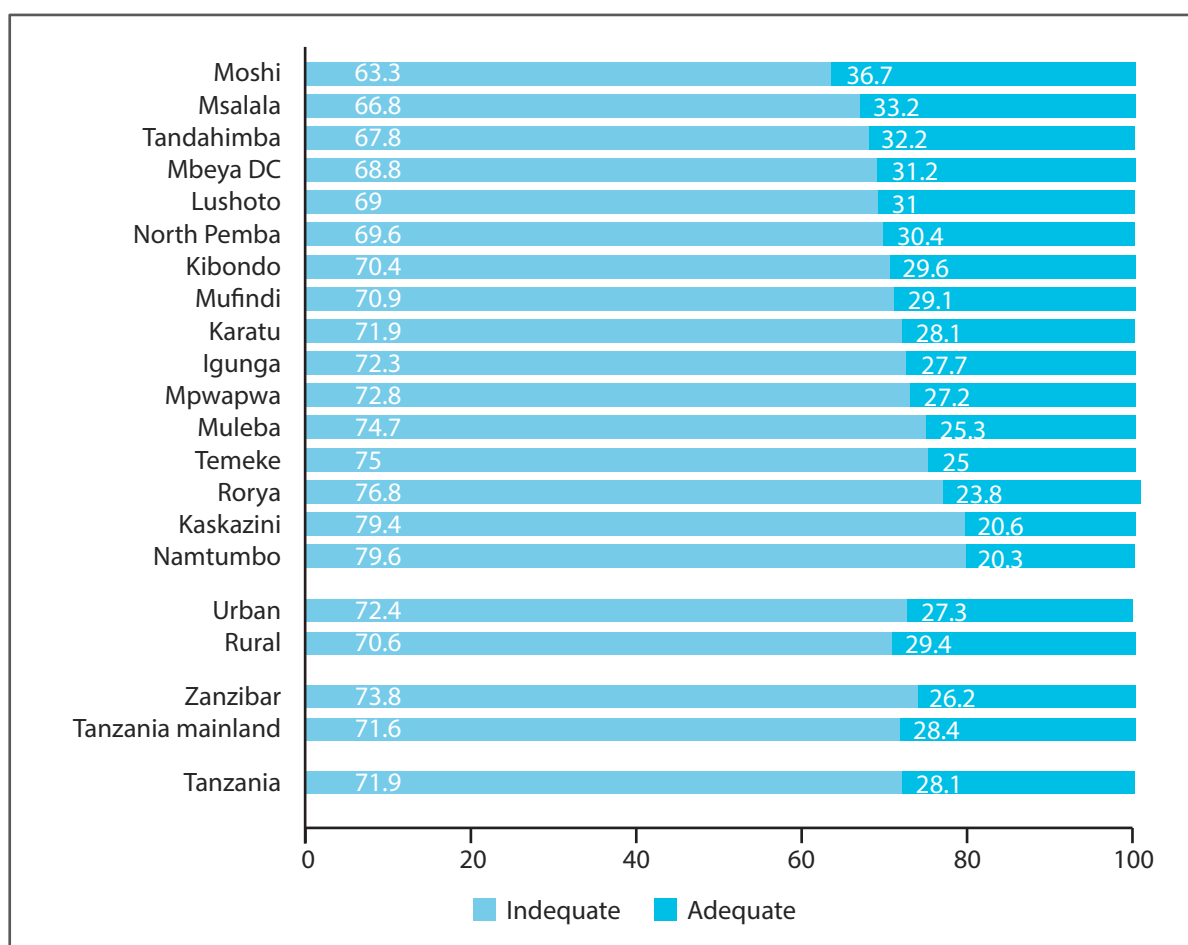


Table 4: Proportion of girls with adequate and inadequate MHH knowledge by state, location and district

Factor	Inadequate, n (%)	Adequate, n (%)
State		
Tanzania Mainland	4,979 (71.6)	1,974 (28.4)
Zanzibar	782 (73.8)	277 (26.2)
Tanzania	5,761 (71.9)	2,251 (28.1)
Adequate knowledge by state		
Tanzania Mainland		1,974 (87.7)
Zanzibar		277 (12.3)
Adequate knowledge by disability status		
Without disability		2,202 (97.8)
With disability		49 (2.2)
Missing		3
Location		
Rural	2,188 (70.6)	911 (29.4)
Urban	3,573 (72.4)	1,340 (27.3)
District		
Igunga	234 (72.3)	93 (27.7)
Karatu	427 (71.9)	167 (28.1)
Kaskazini	365 (79.4)	95 (20.6)
Kibondo	414 (70.4)	174 (29.6)
Lushoto	358 (69.0)	161 (31.0)
Mbeya DC	399 (68.8)	181 (31.2)
Moshi	228 (63.3)	132 (36.7)
Mpwapwa	417 (72.8)	156 (27.2)
Msalala	308 (66.8)	153 (33.2)
Mufindi	329 (70.9)	135 (29.1)
Muleba	395 (74.7)	134 (25.3)
Namtumbo	447 (79.6)	114 (20.3)
North Pemba	417 (69.6)	182 (30.4)

Factor	Inadequate, n (%)	Adequate, n (%)
Rorya	401 (76.8)	121 (23.8)
Tandahimba	343 (67.8)	163 (32.2)
Temeke	270 (75.0)	90 (25.0)

Figure 3: Proportion of girls with adequate and inadequate MHH knowledge by state, location and district



What attitudes regarding MHH exist among post-menarche girls in Tanzania (both Mainland and Zanzibar)?

This section describes the mean percentage score of attitude towards MHH among the study participants. Later in the section, we use the Bloom method to calculate the proportion of in-school post-menarche adolescent girls with negative, moderately positive or positive attitude. Details of individual score of the MHH attitude are

presented in Table 26 attached at the end of this report in Appendix 2 . Participants were considered to have a positive attitude to MHH if they 'agreed' with any positive statement on attitude towards MHH. Likewise, those who 'disagreed' with any negative statement on attitude were also treated to have a positive attitude towards MHH. Finally, we calculated the factors contributing to negative attitude among the study participants. Attitude towards

supportive institutional and the environment in which they live was regarded as positive if the girl agreed that it was easy to get menstrual supplies from school when they needed them, felt free to report to teachers/caregivers when they had menstrual problems and when they

were satisfied with the support they received from teachers during the menstruation period. Table 5 presents the statements that were used to generate the variable perception of others. Statements used to generate the variable 'self-perception' are presented in Table 6.

Table 5: Measurement of perception of others based on girls' disagreement/agreement or with the statement about attitude towards MHH

Perception of others on some MHH issues	Disagree with the statement that many girls are embarrassed to buy a sanitary product in shops
	Disagree with the statement that girls experiencing their menstrual period should avoid physical exercise
	Disagree with the statement that when girls are experiencing their menstrual periods, they should stay home
	Disagree with the statement that girls are very worried that blood will soil through their clothes
	Disagree with the statement that girls often have different feelings (anger, joy, sadness) during the menstrual periods
	Disagree with the statement that when girls menstruate, they should not take part in sports activities
	Disagree with the statement that girls feel sick when they are experiencing menstruation
	Disagree with the statement that girls who experience pain during their menstrual period should be worried that they have a problem
	Disagree with the statement that girls are worried about learning about menstruation at school
	Disagree with the statement that girls do not like to be seen throwing their sanitary pads in the trash
	Agree with the statement that girls tend not to be afraid of buying sanitary pads even when men are around
	Disagree with the statement that when girls are experiencing their menstrual period, they often feel nausea
	Agree with the statement that girls do not like to be seen while changing menstruation materials

Table 6: Measurement of positive self-perception based on girls disagreeing/agreeing with the following statement

Self-perception	Disagree with the statement that 'when I am in my period, I am afraid that the boys will know'
	Disagree with the statement that 'I was very scared when I experienced my menstruation period for the first time'
	Agree with the statement that 'I often talk about my menstruation periods with friends'
	Agree with the statement that 'I often find a teacher or matron for help when I encounter menstrual-related challenges at school'
	Agree with the statement that 'I do not feel any difference when I have my period'
	Disagree with the statement that 'I tend to be very afraid of menstruation coming unexpectedly'
	Disagree with the statement that 'I am not free to talk to my parents about menstruation period'
	Agree with that statement that 'I quickly became accustomed to seeing my normal menstrual cycle'
	Disagree with the statement that 'often when someone mentions menstruation, I get goose bumps'
	Agree with the statement that 'I'm glad I've grown up when I have reached menstruating age'
	Disagree with the statement that 'when you are experiencing your menstruation period, it is important to keep yourself quiet, so no one will know'
	Agree with the statement that 'when I first started menstruating, I changed and became a woman'
	Disagree with the statement that 'It is okay to miss school if you have pain due to menstruation'
	Disagree with the statement that 'I feel bad and dirty when I am experiencing my menstruation period'

Attitude scores among girls by state, location and district:

As Table 7 and Figures 4 and 5 illustrate, the overall mean attitude score was 48.9 per cent. Girls in Zanzibar scored higher than girls from the Mainland. These findings were statistically significant ($p < 0.001$) as Figure 4 affirms. Also, girls in the urban areas scored slightly higher than girls in the rural areas. This finding was also statistically significant ($p < 0.01$). In the districts, the mean attitude scores ranged between 43.7 per cent in Mbeya district and 55.1 per cent in Kaskazini district as presented in Figure 4. These scores show

that overall, most of the girls had a negative attitude (75.8 per cent). Specifically, more girls in Zanzibar had a moderate to positive attitude (41.5 per cent) than girls in the Mainland (21.6 per cent). Among those with positive attitudes, 75.5 per cent were from the Mainland and only 4.2 per cent had disabilities. Additionally, there were more girls with a positive attitude towards MHH in urban areas (2.0 per cent) than in rural areas (1.5 per cent). Muleba district had the highest proportion of girls with a positive attitude (4.7 per cent) than other districts as Table 7 illustrates.

Figure 4: Mean MHH positive attitude scores (%) among girls by state, location and district

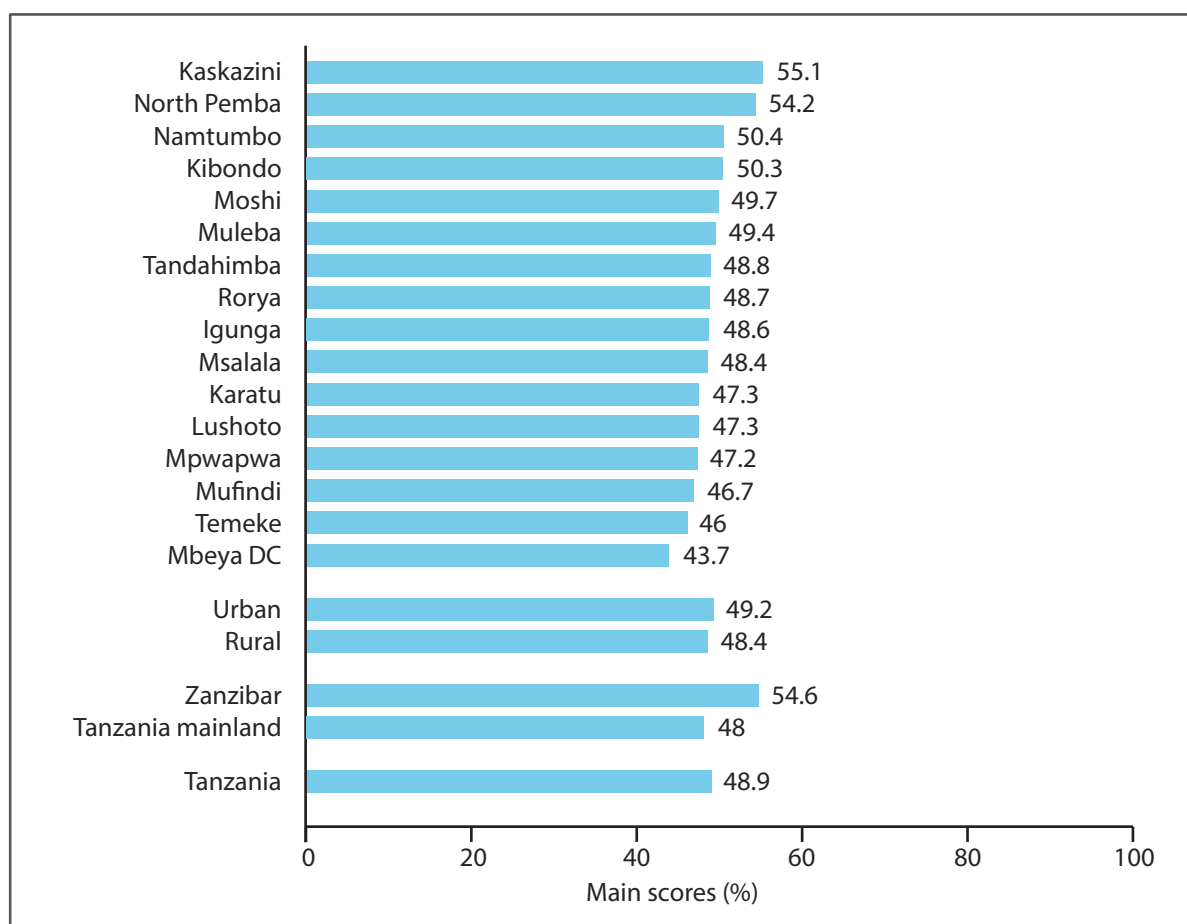
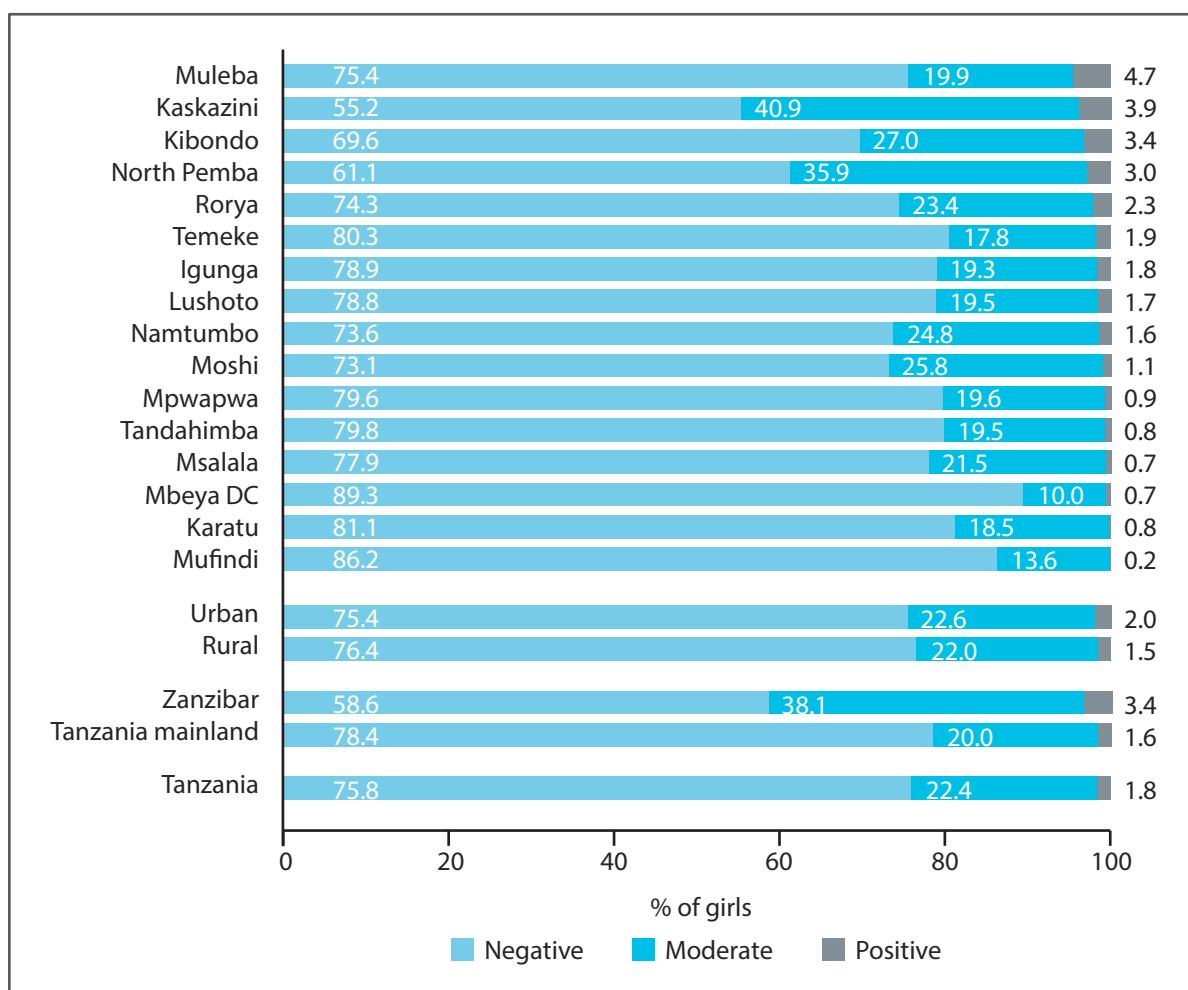


Table 7: Proportion of girls with negative, moderately positive and positive MHH attitudes by state, location and district

Tanzania	6,074 (75.8)	1,791 (22.4)	147 (1.8)
State			
Tanzania mainland	5,454 (78.4)	1,388 (20.0)	111 (1.6)
Zanzibar	620 (58.6)	403 (38.1)	36 (3.4)
Location			
Rural	2,369 (76.4)	683 (22.0)	47 (1.5)
Urban	3,705 (75.4)	1,108 (22.6)	100 (2.0)
District			
Igunga	265 (78.9)	65 (19.3)	6 (1.8)
Karatu	482 (81.1)	110 (18.5)	2 (0.3)
Kaskazini	254 (55.2)	188 (40.9)	18 (3.9)
Kibondo	409 (69.6)	159 (27.0)	20 (3.4)
Lushoto	409 (78.8)	101 (19.5)	9 (1.7)
Mbeya DC	518 (89.3)	58 (10.0)	4 (0.7)

Factor	Negative, n (%)	Moderate, n (%)	Positive, n (%)
Moshi	263 (73.1)	93 (25.8)	4 (1.1)
Mpwapwa	456 (79.6)	112 (19.6)	5 (0.9)
Msalala	359 (77.9)	99 (21.5)	3 (0.7)
Mufindi	400 (86.2)	63 (13.6)	1 (0.2)
Muleba	399 (75.4)	105 (19.9)	25 (4.7)
Namtumbo	413 (73.6)	139 (24.8)	9 (1.6)
North Pemba	366 (61.1)	215 (35.9)	18 (3.0)
Rorya	388 (74.3)	122 (23.4)	12 (2.3)
Tandahimba	404 (79.8)	98 (19.4)	4 (0.8)
Temeke	289 (80.3)	64 (17.8)	7 (1.9)

Figure 5: Distribution of girls' attitudes (Positive, Negative, Moderate) towards MHH by study districts



Girls' attitude towards specific aspects of

MHH: Most of the girls were positive about participation in sports during menstruation whereas very few of them were positive about involving boys and men on MHH issues, with scores ranging from 22 to 73 per cent respectively (Figure 6).

What are the MHH practices followed by girls in Tanzania (both Mainland and Zanzibar)?

This section describes the mean score (in percentage) of MHH practices among the study participants. Later in the section, we use the Bloom method to categorize the proportion of in-school post-menarche adolescent girls

who follow good or poor practices. Details of individual score of MHH practices are presented in the table attached at the end of this report as Appendix 3. Participants were considered to follow good practices of MHH if they 'agreed' with any positive statement on MHH practices. Likewise, those who 'disagreed' with any negative statement on practices were also regarded as following good practices of MHH. Finally, we calculated the factors contributing to poor practices among the study participants. Table 8 shows different parameters/items used to determine the participants' MHH practices either separately or in combination.

Figure 6: Girls' perception of specific MHH issues

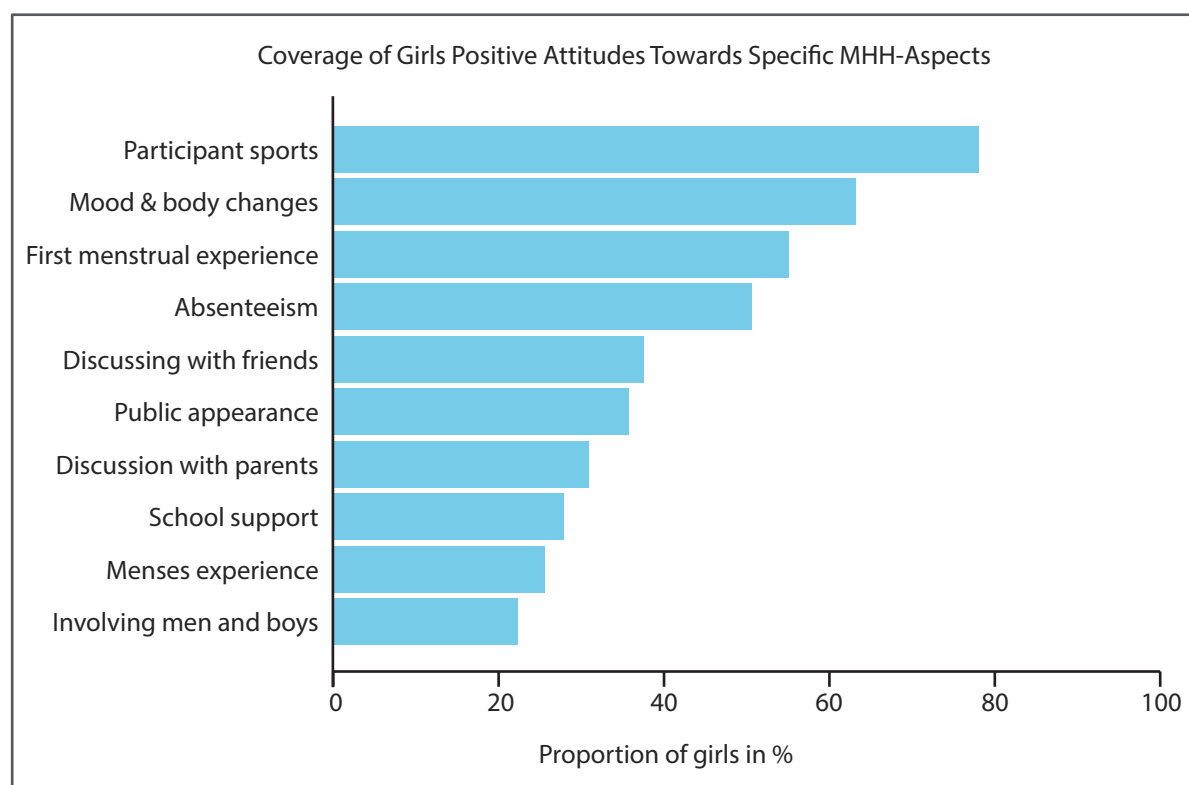


Table 8: MHH management practices

They currently use recommended types of menstrual products.
They report having a reliable source of getting menstrual products.
They report that they can afford menstrual products when needed.
Proper and recommended disposal of used menstrual products.

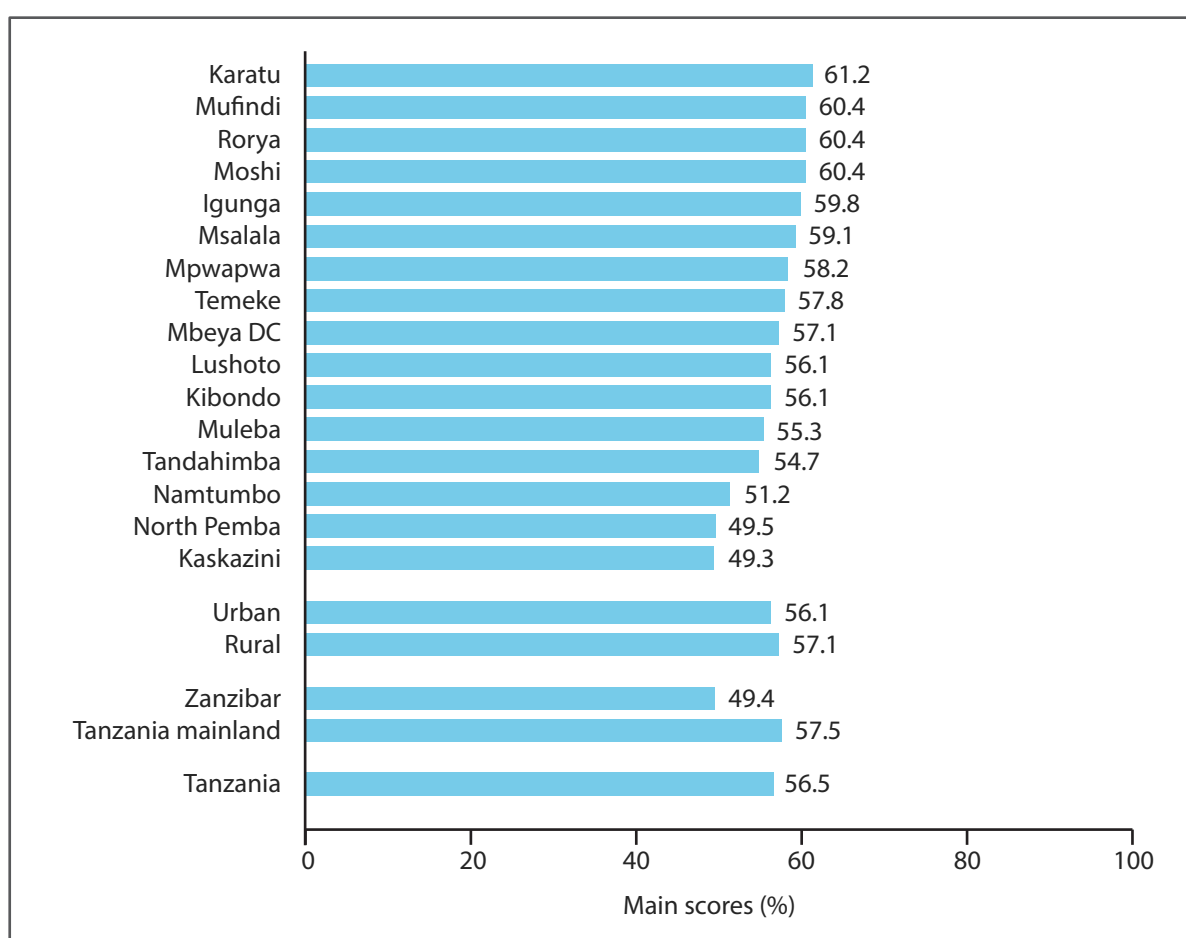
Items
Proper and recommended storage mechanism of reusable menstrual products.
Proper and recommended cleaning mechanism of reusable menstrual products.
Proper and recommended drying mechanism of reusable menstrual products.
Reported usage of special room for changing menstrual products.
Reported other places used for changing menstrual products.

MHH practice scores among girls by state,

location and district: As Figure 7 demonstrates, the overall mean score of good practices towards maintaining MHH was 56.5 per cent. On average, girls in the Mainland (57.5 per cent) scored higher than girls in Zanzibar (49.4 per cent). This finding was statistically significant ($p < 0.001$). Also, girls from rural schools (57.1

per cent) scored slightly higher than girls from urban schools (56.1 per cent). This finding was also statistically significant. There was a substantial variation in the mean practice scores among districts, ranging from 49.3 per cent in Kaskazini district to 61.2 per cent in Karatu district. Overall, most of the girls (64.3 per cent) were observed to follow poor practices towards

Figure 7: MHH good practices mean scores (%) among girls by state, location and district



MHH. There was a statistically significant association between schooling in Zanzibar and having poor MHH practices ($p < 0.001$), with Kaskazini and North Pemba districts having the highest proportion of girls following poor

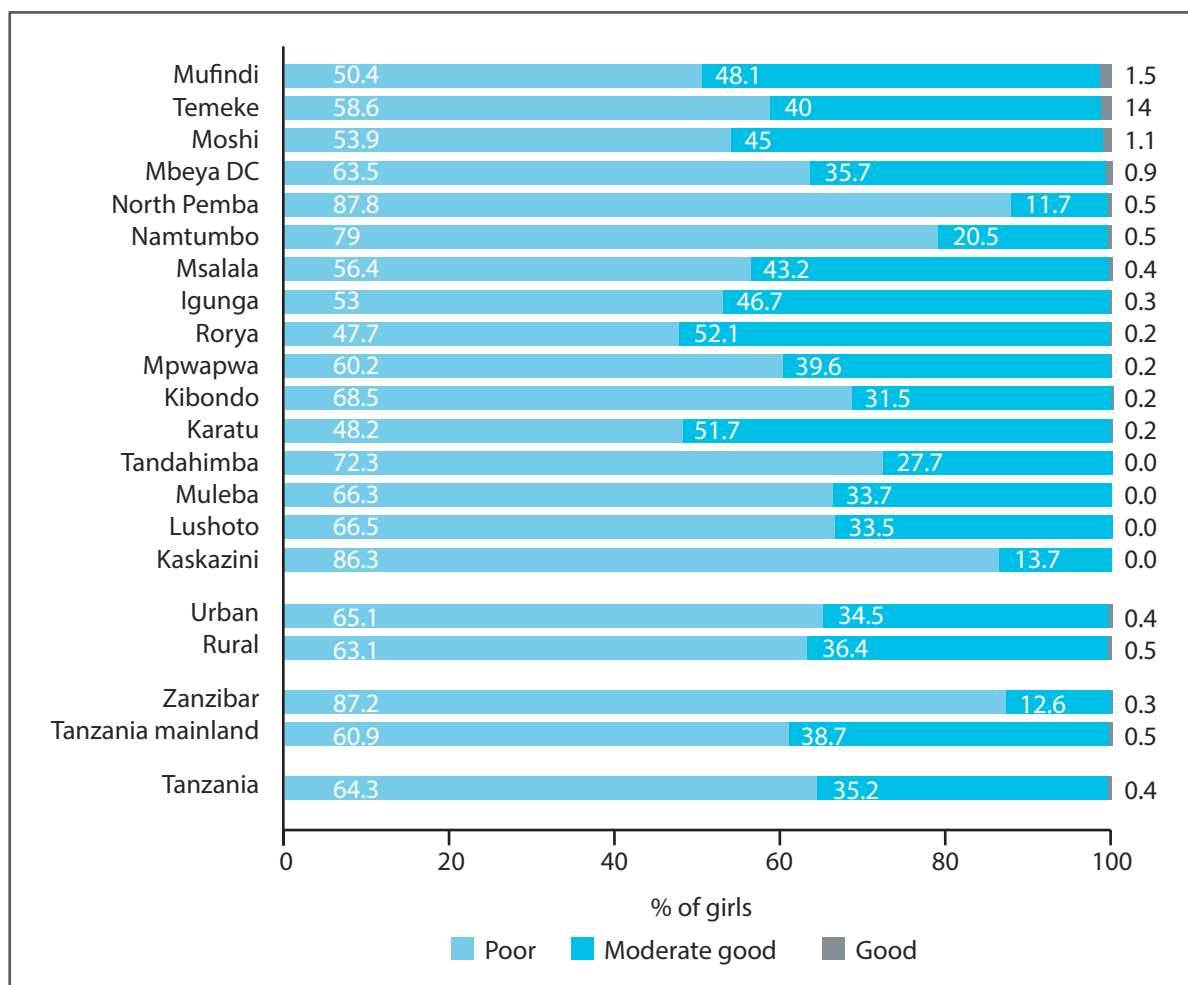
practices (Table 9 and Figure 8). Out of all the girls who demonstrated good practices, 91.2 per cent were from the Mainland and only 2.9 per cent of the participating girls had disabilities.

Table 9: Proportion of girls with poor, moderate and good MHH practices by state, location and district

Factor	Poor, n (%)	Moderately good, n (%)	Good, n (%)
Tanzania	5,155 (64.3)	2,823 (35.2)	34 (0.4)
State			
Tanzania Mainland	4,232 (60.9)	2,690 (38.7)	31 (0.5)
Zanzibar	923 (87.2)***	133 (12.6)	3 (0.3)
Location			
Rural	1,955 (63.1)	1,128 (36.4)	16 (0.5)
Urban	3,200 (65.1)	1,695 (34.5)	18 (0.4)
District			
Igunga	178 (53.0)	157 (46.7)	1 (0.3)
Karatu	286 (48.2)	307 (51.7)	1 (0.2)
Kaskazini	397 (86.3)	63 (13.7)	0 (0.0)
Kibondo	402 (68.5)	185 (31.5)	1 (0.2)
Lushoto	345 (66.5)	174 (33.5)	0 (0.0)
Mbeya DC	368 (63.5)	207 (35.7)	5 (0.9)
Moshi	194 (53.9)	162 (45.0)	4 (1.1)
Mpwapwa	345 (60.2)	227 (39.6)	1 (0.2)
Msalala	260 (56.4)	199 (43.2)	2 (0.4)
Mufindi	234 (50.4)	223 (48.1)	7 (1.5)
Muleba	351 (66.3)	178 (33.7)	0 (0.0)
Namtumbo	443 (79.0)	115 (20.5)	3 (0.5)
North Pemba	526 (87.8)	70 (11.7)	3 (0.5)
Rorya	249 (47.7)	272 (52.1)	1 (0.2)
Tandahimba	366 (72.3)	140 (27.7)	0 (0.0)
Temeke	211 (58.6)	144 (40.0)	5 (1.4)

*** Significant, in statistical terms

Figure 8: Proportion of girls following poor, moderately good and good MHH practices by state, location and district



Effect of menstruation on school attendance

Girls were asked to indicate whether they had ever missed school due to menstruation.

Among the study participants, 17 per cent of the students reported to have missed school due to reasons associated with menstruation within the past three months.

Arguably, a higher rate of absenteeism from school would be expected for longer past

duration like 12 months. There were no differences between rural and urban areas or between primary and secondary school students (see Table 10) on missing school during menstruation. More students from government schools were found to have missed school than those in non-governmental schools. Higher proportions of girls absent from schools due to menstruation were recorded in North Pemba (29 per cent), Kaskazini Unguja (24 per cent) and Tandahimba DC (20 per cent) whereas the lowest absence due to menstruation was recorded in Moshi district (9 per cent). School Construction and Maintenance Strategy (2019–2028), which is yet to be launched, recommends that special changing rooms of a good standard should be made available in schools

for menstruating girls. However, the situation on the ground was different from what was stated in the strategy. In this study, we observed that only around 16 per cent of schools had special rooms for girls. So, the availability good

standard changing rooms could address the problem of absenteeism in schools. Another study in Tanzania (SNV, 2016) showed that 12 per cent of the girls interviewed missed schools during their menstrual period.

Table 10: Proportion of girls who missed school due to menstruation by state, location, school level, ownership, disability status and district

Tanzania	8,012 (100)	1,346 (16.8)
State		
Tanzania Mainland	6,953 (86.8)	1,061 (15.3)
Zanzibar	1,059 (13.2)	285 (26.9)***
Age group (years)		
<15	3,499 (43.7)	512 (14.6)
15+	4,513 (56.3)	834 (18.5)***
Location		
Rural	3,099 (38.7)	495 (16.0)
Urban	4,913 (61.3)	851 (17.3)
School level		
Primary	3,332 (41.6)	549 (16.5)
Secondary	4,679 (58.4)	797 (17.0)
Ownership		
Governmental	6,890 (86.0)	1,182 (17.2)*
Non-governmental	1,121 (14.0)	164 (14.6)
Disability status		
Without disability	7,807 (97.5)	1,307 (16.7)
With disability	202 (2.5)	39 (19.3)
District		
Moshi	360 (4.5)	33 (9.2)
Muleba	529 (6.6)	62 (11.7)

Factor	Total, N (%)	Ever missed, n (%)
Namtumbo	561 (7.0)	70 (12.5)
Mbeya DC	580 (7.2)	76 (13.1)
Karatu	594 (7.4)	83 (14.0)
Igunga	336 (4.2)	51 (15.2)
Rorya	522 (6.5)	80 (15.3)
Kibondo	588 (7.3)	95 (16.2)
Lushoto	519 (6.5)	86 (16.6)
Mpwapwa	573 (7.2)	97 (16.9)
Mufindi	464 (5.8)	79 (17.0)
Temeke	360 (4.5)	63 (17.5)
Msalala	461 (5.8)	86 (18.7)
Tandahimba	506 (6.3)	100 (19.8)
Kaskazini	460 (5.7)	109 (23.7)
North Pemba	599 (7.5)	176 (29.4)

*** Significant, in statistical terms

Reasons for missing school during menstruation

Girls who stated they missed school in the previous three months were asked to provide reasons for their absence. The responses were not mutually exclusive. It was found that most of the girls (74 per cent) reported pain and discomfort as reasons for missing school, followed by lack of menstrual materials (42 per cent), fear of embarrassment in case of stains on clothes (34 per cent), lack of changing rooms (34 per cent) and lack of clean and suitable toilet facilities (26 per cent), as Figure 9 illustrates.



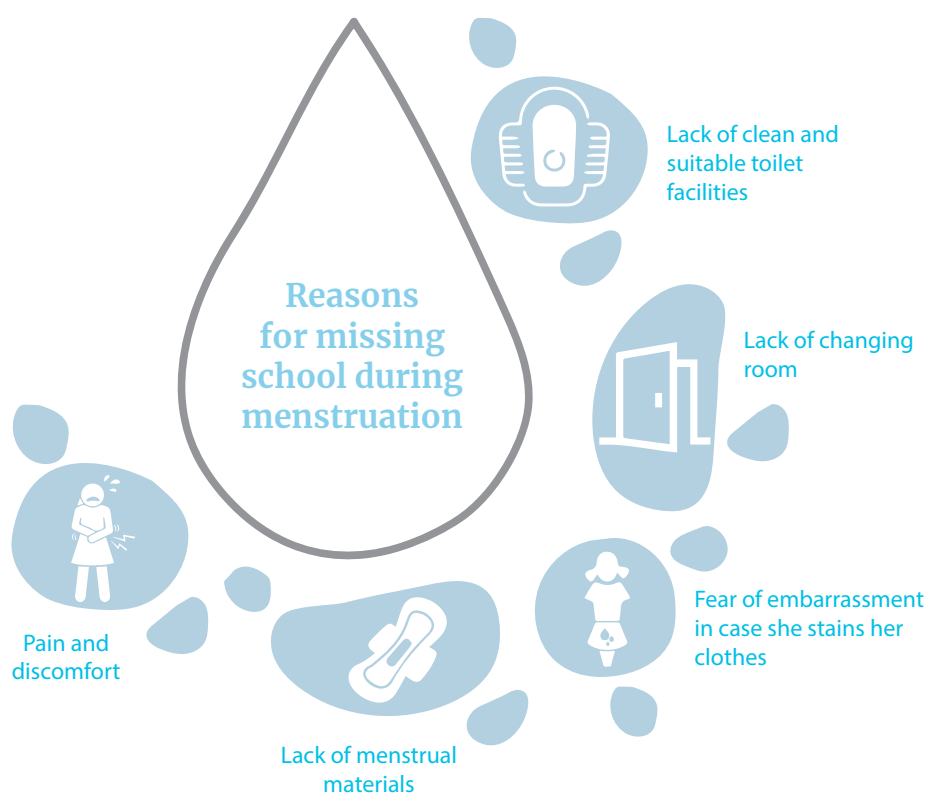
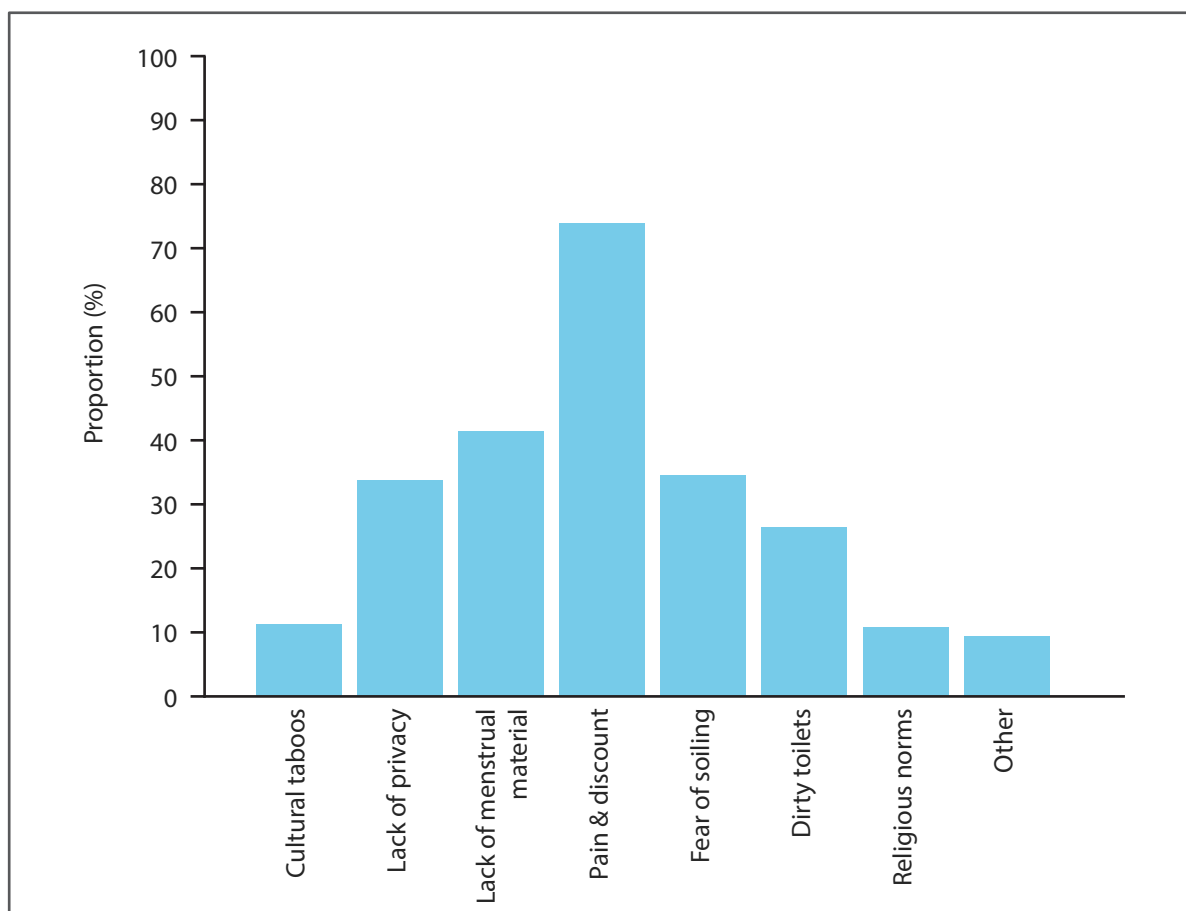


Figure 9: Reasons for missing school during menstruation as stated by girls in the self-administered questionnaire



SWASH and MHH infrastructure and services in schools

Pit-latrines were available in almost all the schools under review in the country. An average number of one toilet/pit-latrine was available for every 62 students on the whole, and for every 61 girls and for every 67 boys. The mean students per toilet/pit-latrine ratio in Zanzibar was 87 and in the Tanzania Mainland it was 58. The difference in the mean was significant ($p < 0.001$). Likewise, the ratio of students per toilet/pit-latrine in government schools was 68 as compared to 21 in private schools; the mean difference was significant ($p < 0.001$). This ratio was 68 in day schools as compared to 28 in boarding schools and the difference was significant ($p < 0.001$). The ratio of students per toilet/pit-latrine in rural and urban settings was 60 and 65, respectively (Table 11). However, the difference was not significant. However, there were concerns relating to privacy due to the absence of doors, door-bolts and roofs. Sharing

toilets was also another obstacle to ensuring good MHH practices in schools. Inadequate hygiene was prevalent in most of the toilets, with most of them reported to be in a poor condition with no water and essential supplies. As a result of unavailability of adequate facilities, most of the girls tended to avoid toilets and opted instead to stay with menstrual materials for longer than required, a practice that poses a risk of offensive odour and could earn them shame and social stigma. In fact, some often changed menstrual material in the bush or chose to stay at home during menstruation, a choice that was found to impact on their academic performance.

Similarly, water appeared to be available only in 75 per cent ($n=220$) of the schools though the girls still had to grapple with the problem of unreliable supply and safety. Also, special changing rooms were missing in 83 per cent ($n=243$) of the schools studied, with hygienic materials not available in many of the changing rooms. Out of 51 schools with changing rooms, all were in the Tanzania Mainland.

Table 11: Distribution of students per toilet/pit-latrine ratio by gender and other factors

Tanzania	61	67
State		
Zanzibar	88***	87*
Tanzania Mainland	57	63
Location		
Rural	60	64
Urban	63	70
Ownership		
Government	67***	72***
Non-government	21	23

Factors	Girls	Boys
Level of school		
Primary	73***	81***
Secondary	51	54
Type of school		
Day	66***	72*
Boarding	31	30
Tanzania	61	67
District		
Temeke	100	106
Msalala	93	93
North Pemba	86	92
Kaskazini	90	82
Muleba	77	89
Kibondo	67	76
Lorya	64	81
Igunga	55	69
Mpwapwa	57	65
Tandahimba	58	56
Namtumbo	53	54
Mbeya DC	49	67
Lushoto	40	39
Moshi	36	41
Arusha	30	33

***Statistically significant

Changing rooms were found to be available in 28 per cent (n=11) of the private schools and 16 per cent (n=40) of the government-owned schools. Water was available during the day of inspection in 98 per cent (n=39) of the private schools compared to 71 per cent (n=181) of the government institutions. About 73 per cent (n=29) of the private schools had access to water for those with limited mobility or vision compared to 47 per cent (n=120) of the government schools. On the other hand, the government schools did better in the following areas: SWASH clubs were available

in 72.8 per cent (n=185) of the government schools and only in 57.5 per cent (n=23) in private schools. About 19 per cent (n=47) of the government schools had funds set aside for SWASH compared to only 10 per cent (n=4) of the private schools. Other areas where the government schools outperformed private ones include having at least one usable toilet/pit-latrine that is accessible to students with physical disability or impaired vision and having hand-washing facilities accessible to those with physical disability or impaired vision (Table 12).

Table 12: In-school SWASH and MHH infrastructure and services stratified by school ownership

WASH	Public schools, n (%)	Private schools, n (%)
Availability of water on the day of inspection	181 (71.3)	39 (97.5)
Funds set aside for SWASH management	47 (18.5)	4 (10.0)
Availability of a water storage tank	131 (51.6)	38 (95.0)
Accessibility of a water to those with limited mobility or vision	120 (47.2)	29 (72.5)
Girls' latrines with lockable doors	181 (71.3)	36 (90.0)
Availability of hand-washing points within 5 meters of girls latrines	89 (35.0)	31 (77.5)
Availability of water for personal cleansing inside the latrine block	120 (47.2)	36 (90.0)
Availability of a dedicated convenience room for girls	40 (15.8)	11 (27.5)
Clean water provided in the girls' convenience/ changing room	26 (65.0)	6 (81.8)
Toilet tissue provided in the girls' convenience/ changing room	5 (12.5)	5 (45.5)
First aid kit provided in the girls' convenience/ changing room	12 (30.0)	6 (54.6)
Emergency menstrual materials provided in the girls' convenience/ changing room	22 (55.0)	9 (81.8)
Convenience/ changing rooms with lockable door	35 (87.5)	10 (90.9)

WASH	Public schools, n (%)	Private schools, n (%)
Availability of dedicated area for drying reusable menstrual materials	2 (0.8)	5 (12.5)
Availability of covered bins for collection of used menstrual hygiene materials in girls' toilets	41 (16.1)	20 (50.0)
Availability of disposal mechanisms for menstrual hygiene material waste at the school	77 (30.3)	30 (75.0)
Availability of at least one usable toilet/latrine accessible to pupils with physical disability or impaired vision	30 (11.8)	3 (7.5)
Availability of hand-washing facilities at the school	108 (42.5)	36 (90.0)
Hand-washing facilities accessible to those with physical disability or impaired vision	44 (40.7)	9 (25.0)
Currently have pupils involved in any type of school health club/school WASH club/school Mazingira Club	185 (72.8)	23 (57.5)

Regarding the presence of SWASH and MHH infrastructure and services, schools from urban areas did relatively better than those from rural areas. Water availability during inspection, the presence of water storage tanks, water availability for personal cleansing inside the latrine block and disposal mechanisms for menstrual hygiene material waste at the school are among the categories in which urban schools did better than those in rural areas. Also, about 15 per cent (n=26) of the schools in rural

areas had changing rooms compared with 22 per cent (n=25) of the schools in urban areas. In a few areas, rural schools did better than urban schools. There were SWASH clubs in 70 per cent (n=124) of the schools in rural areas compared to 72 per cent (n=84) of those in urban areas. Other categories where rural schools did better include funds set apart for SWASH management and hand-washing facilities accessible to those with physical disability or impaired vision (Table 13).

Table 13: SWASH and MHH infrastructure and services stratified by school setting

WASH	Rural, n (%)	Urban, n (%)
Availability of water at the day of inspection	129 (72.5)	91 (78.5)
Funds set aside for SWASH Management	32 (18.0)	19 (16.4)
Availability of a water storage tank	89 (50.0)	80 (69.0)
Accessibility of a water to those with limited mobility or vision	79 (44.4)	70 (60.3)
Girls' latrines with lockable doors	130 (73.0)	87 (75.0)

WASH	Rural, n (%)	Urban, n (%)
Availability of hand-washing points within 5 metres of girls latrines	71 (39.9)	49 (42.2)
Availability of water for personal cleansing inside the latrine block	91 (51.1)	65 (56.0)
Availability of a dedicated convenience room for girls	26 (14.6)	25 (21.6)
Clean water provided in the girls' convenience/changing room	15 (57.7)	20 (80.0)
Toilet tissue paper provided in the girls' convenience/changing room	5 (19.2)	5 (20.0)
First aid kit provided in the girls' convenience/changing room	6 (23.1)	12 (48.0)
Emergency menstrual materials provided in the girls' convenience/changing room	13 (50.0)	18 (72.0)
Convenience/changing rooms with lockable door	23 (88.5)	22 (88.0)
Availability of dedicated area for drying reusable menstrual materials	3 (1.7)	4 (3.5)
Availability of covered bins for collection of used menstrual hygiene materials in girls' toilets	34 (19.1)	27 (23.3)
Availability of disposal mechanisms for menstrual hygiene material waste at the school	58 (32.6)	49 (42.2)
Availability of at least one usable toilet/pit-latrines accessible to pupils with physical disability or impaired vision	18 (10.1)	15 (12.9)
Availability of hand-washing facilities at the school	81 (45.5)	63 (54.3)
Hand-washing facilities accessible to those with physical disability or impaired vision	31 (38.3)	22 (34.9)
Currently have pupils involved in any type of school health club/school WASH club/school Mazingira Club (environmental club)	124 (69.7)	84 (72.4)

The difference in SWASH and MHH infrastructure and services also appeared among schools in the Tanzania Mainland and those in the Zanzibar archipelago. For example, 97 per cent (n=38) of schools in Zanzibar had SWASH clubs compared to 67 per cent (n=170) of the schools in the Tanzania Mainland. Funds were set aside for SWASH management in 19 per cent (n=49) of the schools in the Tanzania Mainland and 5 per cent (n=2) of the schools in

Zanzibar. None of the schools in Zanzibar had dedicated convenience/changing room. But the accessibility of hand-washing facilities to those with physical disability or impaired vision was higher in Zanzibar schools than in schools in the Mainland. Zanzibar schools had more pupils involved in any type of school health club, school WASH club or school Mazingira Club (Table 14) compared to those in the Mainland.

Table 14: SWASH and MHH infrastructure and services in the Tanzania Mainland and Zanzibar

WASH	Mainland, n (%)	Zanzibar, n (%)
Availability of water on the day of inspection	189 (74.1)	31 (79.5)
Funds set aside for SWASH management	49 (19.2)	2 (5.1)
Availability of a water storage tank	137 (53.7)	32 (82.1)
Accessibility of water to those with limited mobility or vision	112 (43.9)	37 (94.9)
Girls' pit-latrines with lockable doors	184 (72.2)	33 (84.6)
Availability of hand-washing points within 5 metres of the girls' latrines	109 (42.8)	11 (28.2)
Availability of water for personal hygiene inside the latrine blocks	125 (49.0)	31 (79.5)
Availability of a dedicated convenience room for girls	51 (20.0)	0 (0.0)
Clean water provided in the girls' convenience/ changing room	35 (68.6)	–
Toilet tissue provided in the girls' convenience/ changing room	10 (19.6)	–
First aid kit provided in the girls' convenience/ changing room	18 (35.3)	–
Emergency menstrual materials provided in the girls' convenience/ changing rooms	31 (60.8)	–
Convenience/ changing rooms with lockable door	45 (88.2)	–
Availability of dedicated area for drying reusable menstrual materials	7 (2.8)	0 (0.0)
Availability of covered bins for the collection of used menstrual hygiene materials in girls' toilets	59 (23.1)	2 (5.1)
Availability of disposal mechanisms for menstrual hygiene material waste at the school	105 (41.2)	2 (5.1)
Availability of at least one usable toilet/latrine accessible to pupils with a physical disability or impaired vision	29 (11.4)	4 (10.3)
Availability of hand-washing facilities at the school	125 (49.0)	19 (48.7)
Hand-washing facilities accessible to those with a physical disability or impaired vision	39 (31.2)	14 (73.7)
Currently have pupils involved in any type of school health club/school WASH club/school Mazingira Club	170 (66.7)	38 (97.4)

When we compared primary and secondary schools in terms of SWASH and MHH infrastructure and services, we observed variations. Secondary schools had better water availability and water storage tanks compared to primary schools. Nearly twice the proportion of primary schools (11.0 per cent) compared to secondary schools (6.5 per cent) incorporated the MHH topic in the SWASH club programmes. Secondary schools also had water accessible

for those with limited mobility or vision and lockable doors in girls' latrines compared to the primary schools. Some of the categories in which primary schools did well compared to secondary schools include having hand-washing points nearby (within 5 metres of the girls' toiletry facilities), having a dedicated convenience room for girls and having hand-washing facilities at the school (Table 15).

Table 15: SWASH and MHH infrastructure and services stratified by level of school

WASH	Primary n (%)	Secondary n (%)
Availability of water on the day of inspection	95 (70.4)	125 (78.6)
Funds set aside for SWASH Management	20 (14.8)	31 (19.5)
Availability of a water storage tank	64 (47.4)	105 (66.0)
Accessibility of water to those with limited mobility or vision	65 (48.2)	84 (52.8)
Girls' latrines with lockable doors	92 (68.2)	125 (78.6)
Availability of hand-washing points within 5 metres of the girls' latrines	58 (43.0)	62 (39.0)
Availability of water for personal hygiene inside the latrines block	57 (42.2)	99 (62.3)
Availability of a dedicated convenience room for girls	37 (27.4)	14 (8.8)
Clean water provided in the girls' convenience/changing room	25 (67.6)	10 (71.4)
Toilet tissue paper provided in the girls' convenience/changing room	8 (21.6)	2 (14.3)
First aid kit provided in the girls' convenience/changing room	12 (32.4)	6 (42.9)
Emergency menstrual materials provided in the girls' convenience/changing room	21 (56.8)	10 (71.4)
Convenience/changing rooms with lockable doors	32 (86.5)	13 (92.9)
Availability of dedicated area for drying reusable menstrual materials	2 (1.5)	5 (3.1)
Availability of covered bins for the collection of used menstrual hygiene materials in girls' toilets	22 (16.3)	39 (24.5)
Availability of disposal mechanisms for menstrual hygiene material waste at the school	39 (28.9)	68 (42.8)

WASH	Primary n (%)	Secondary n (%)
Availability of at least one usable toilet/latrine accessible to pupils with physical disability or impaired vision	17 (12.6)	16 (10.1)
Availability of hand-washing facilities at the school	70 (51.9)	74 (46.5)
Hand-washing facilities accessible to those with physical disability or impaired vision	25 (35.7)	28 (37.8)
Currently have pupils involved in any type of school health club/ school WASH club/school Mazingira Club	98 (72.6)	110 (69.2)

There were also disparities district-wise in SWASH and MHH infrastructure and services in schools. For example, regarding the availability of changing rooms, Kaskazini A, North Pemba, Mbeya and Tandahimba districts had fewer schools with changing rooms as compared to schools in Moshi, Kibondo and Arusha districts. Mpwapwa DC and Igunga districts were the only districts with significant coverage of MHH in their

SWASH club programmes with 45 per cent and 44 per cent of their schools incorporating MHH into SWASH clubs, respectively. None of the schools in Mbeya, Moshi, Muleba, Rorya, Kaskazini Unguja, Tandahimba or North Pemba incorporated MHH training in their SWASH club programmes. Student's involvement in SWASH was consistently high across districts except for Rorya DC (30 per cent) and Temeke DC (25 per cent) (Figures 10–12).

Figure 10: Availability of changing rooms per district

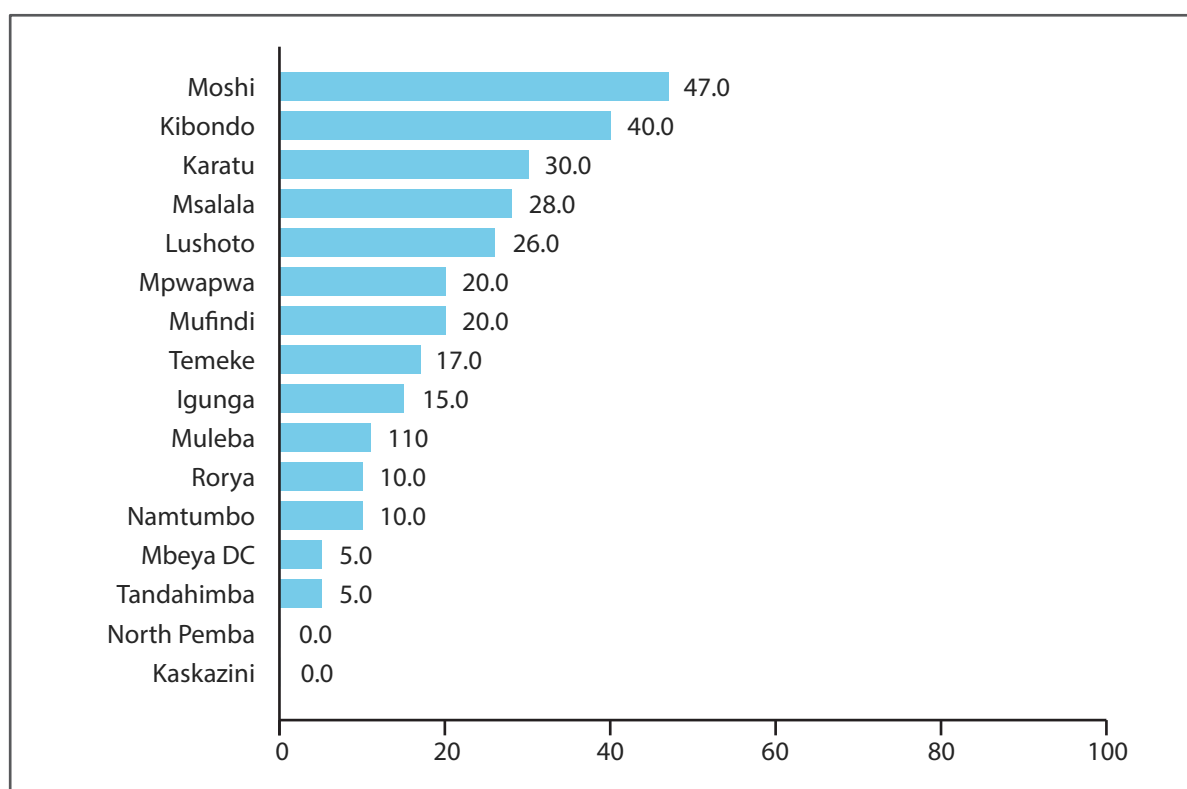


Figure 11: Incorporation of MHH topic in SWASH club programmes per district

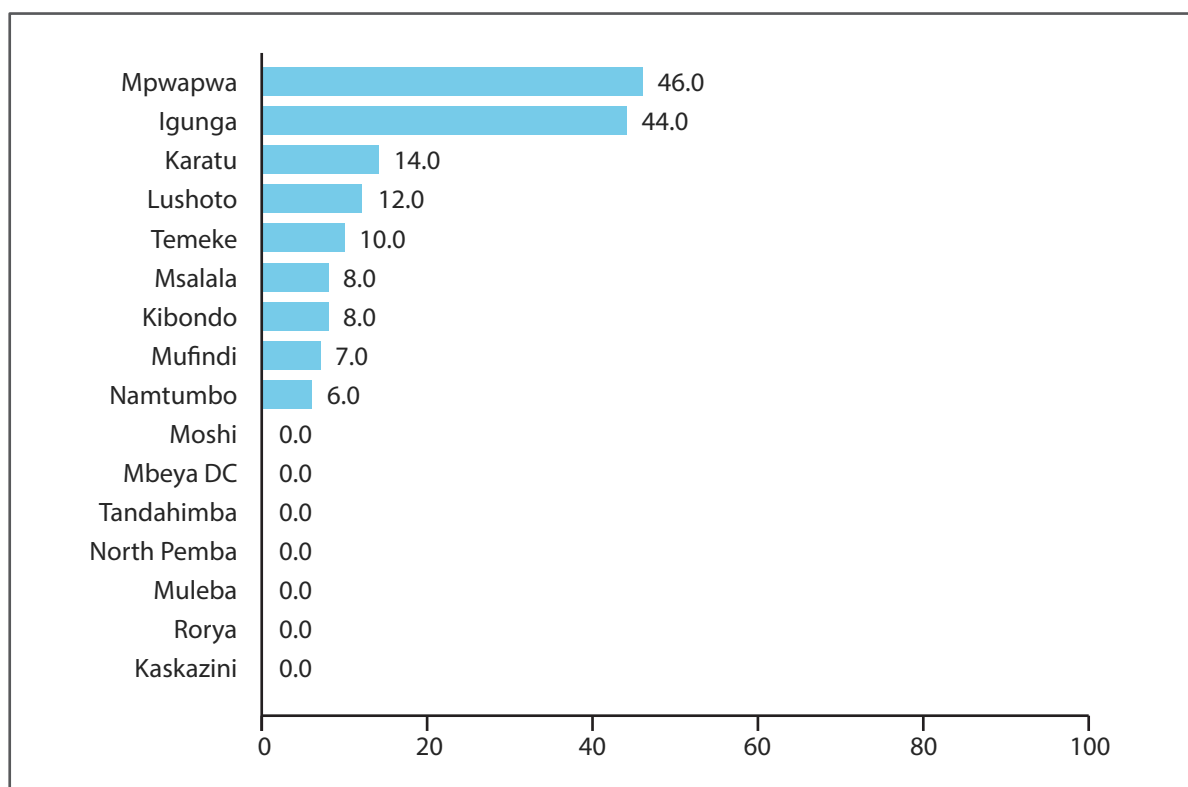
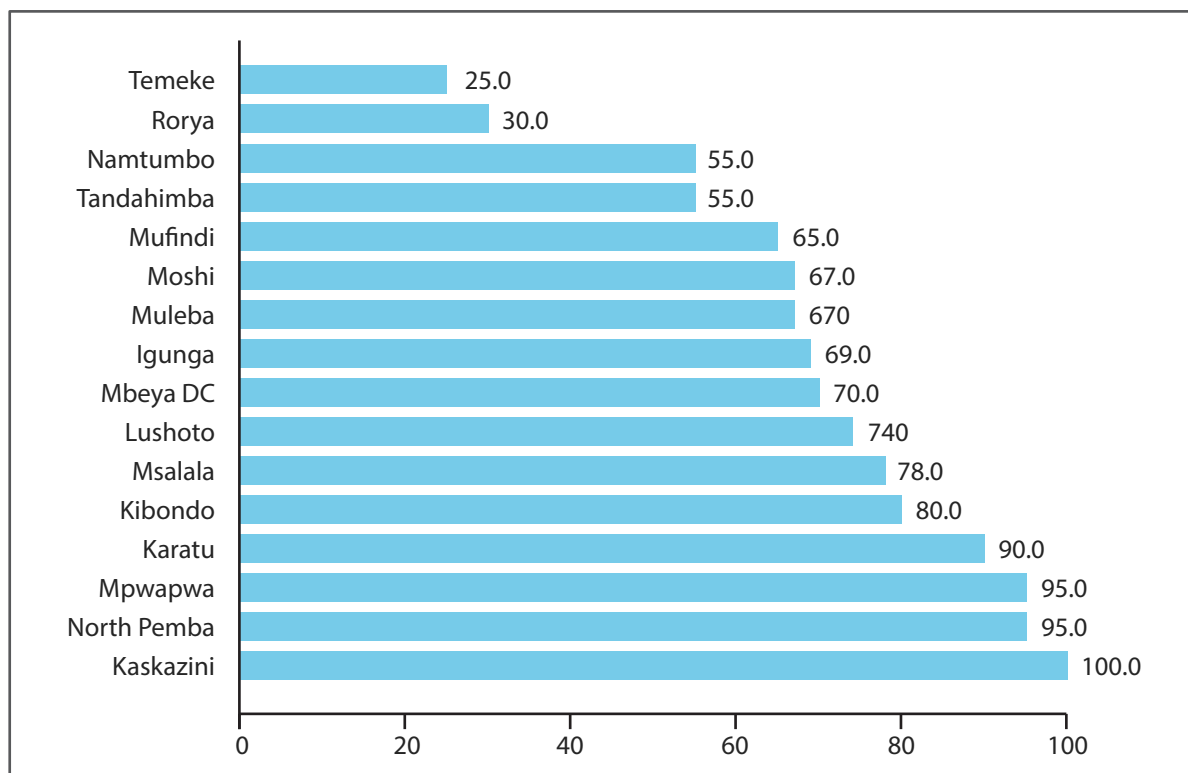


Figure 12: Students' involvement in SWASH per district



Quantitative findings on menstrual materials commonly used by school girls are presented below. The findings reveal that a little over half of the girls (52 per cent) reported regular use of commercial disposable sanitary pads; the rest indicated using reusable menstrual product (29.2 per cent) and pieces of cloth such as khangas/kitenge (wrappers) which they use only once and dispose of (16 per cent). It was also observed that

school girls in non-government schools used more commercial disposable pads (81 per cent) than government school students (48 per cent), as Table 15 illustrates. The use of commercial menstrual pads was the highest in Moshi district (73 per cent) followed by Karatu (67 per cent) and the lowest in Kaskazini Unguja (25 per cent) and Mufindi (39 per cent) (Table 16).

Disposable and reusable pads

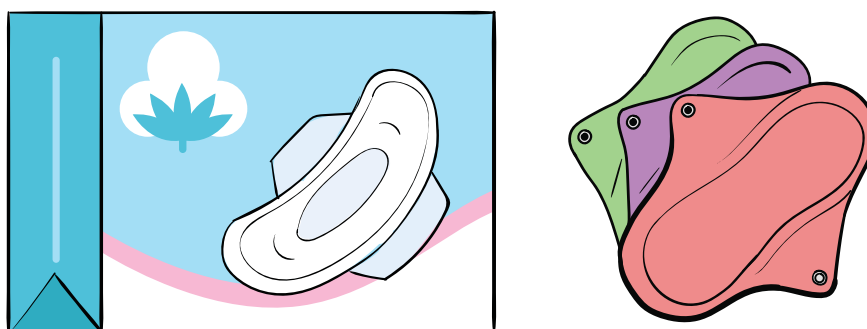
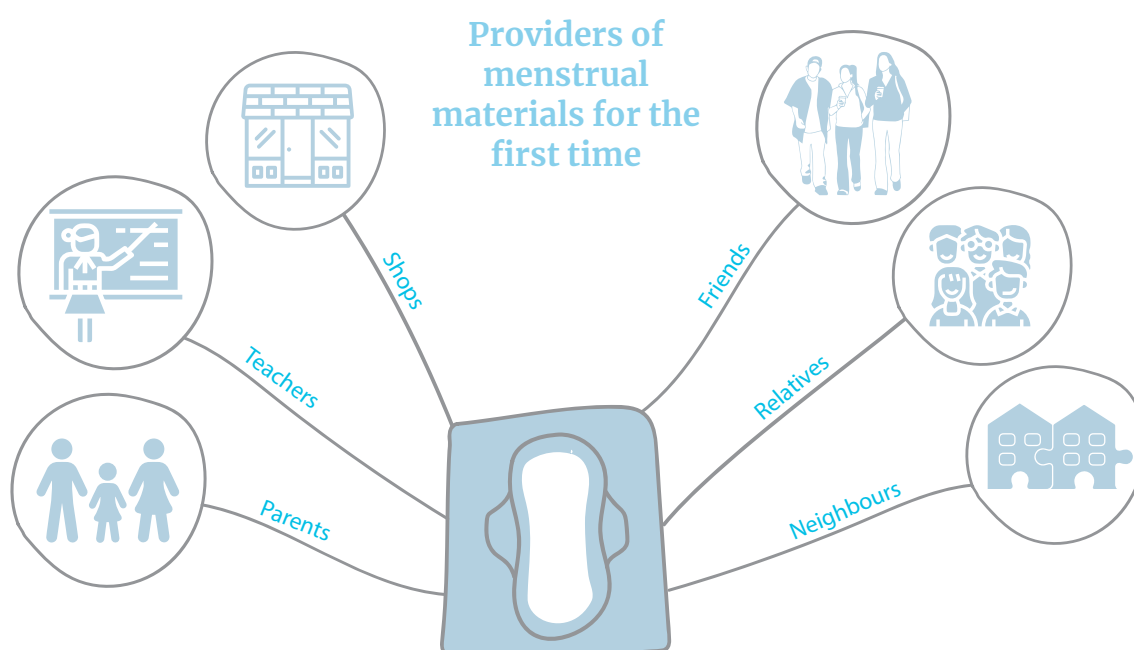


Table 16: Distribution of materials commonly used by school girls during menstruation

Commonly used menstrual materials							
Background characteristics	Disposable commercial menstrual materials	Disposable piece of cloth	Reusable menstrual product	Paper or toilet paper	Others	Total	N
Location							
Rural	58.5	15.2	23.6	0.9	1.8	100	3,099
Urban	48.5	16.6	32.8	0.9	1.2	100	4,913
Age group							
8–11	50.5	23.4	18.2	2.6	5.2	100	192
12–17	52.7	16.0	29.1	0.9	1.3	100	7,200
18–23	49.7	13.7	34.2	0.8	1.6	100	620
Level of school							
Primary	46.6	21.4	28.8	1.7	1.6	100	3,332
Secondary	56.5	12.2	29.6	0.3	1.4	100	4,679
Ownership							
Government	47.8	17.7	32.3	0.8	1.3	100	6,890
Non-government	80.6	5.7	10.2	1.2	2.2	100	1,122

Commonly used menstrual materials							
Background characteristics	Disposable commercial menstrual materials	Disposable piece of cloth	Reusable menstrual product	Paper or toilet paper	Others	Total	N
District							
Igunga	59.8	21.7	17.3	0.6	0.6	100	336
Karatu	67.0	15.8	15.3	0.5	1.3	100	594
Kaskazini	24.8	18.9	55.9	0.2	0.2	100	460
Kibondo	52.4	15.3	30.1	1.7	0.5	100	588
Lushoto	48.9	17.9	29.7	2.9	0.6	100	519
Mbeya DC	52.1	16.0	30.5	0.5	0.9	100	580
Moshi	73.9	7.8	17.5	0.0	0.8	100	360
Mpwapwa	59.7	13.1	23.4	0.7	3.1	100	573
Msalala	43.8	18.0	33.8	0.4	3.9	100	461
Mufindi	39.2	13.4	46.6	0.6	0.2	100	464
Muleba	53.1	15.9	26.8	2.8	1.3	100	529
Namtumbo	45.8	15.0	38.0	0.4	0.9	100	561
North Pemba	40.7	12.7	44.9	0.3	1.3	100	599
Rorya	64.4	15.7	16.1	1.1	2.7	100	522
Tandahimba	57.1	24.3	17.4	0.4	0.8	100	506
Temeke	61.1	15.8	17.8	0.6	4.7	100	360
Total	52.4	16.0	29.2	0.9	1.5	100	8012



Most (76 per cent) of the school girls cited parents as providers of menstrual materials used during menarche, with higher proportions (ranging from 63 to 93 per cent) reported from Kaskazini Unguja, Kaskazini Pemba, Temeke, Mpwapa and Moshi districts, but the lowest proportion was reported in Msalala district. Other

sources of menstrual materials used for the first time included shops, friends, teachers, relatives and neighbours, as Table 17 demonstrates. It was found that about 8 per cent of the primary school students obtained their first menstrual materials from teachers as compared to 4 per cent of secondary school students.

Table 17: Distribution (in percentage) of sources of menstrual materials used by school girls during their first menstruation

Source of menstrual materials for your first menstruation period (%)							
Background information	Given by a parent	Given by a relative	Given by a teacher	Given by a friend	Bought in the shop	Given by neighbour	Other
Location							
Rural	80.4	3.4	4.5	4.5	4.5	0.7	2.0
Urban	73.2	3.3	6.0	7.5	7.5	0.6	2.1
Age group							
8–11	68.8	4.2	12.5	3.1	6.8	2.1	2.6
12–17	75.8	3.3	5.4	6.4	6.5	0.6	2.0
18–23	79.5	3.4	3.5	6.6	4.4	0.5	2.1
Level of school							
Primary	73.4	4.0	7.5	4.7	7.9	1.0	1.6
Secondary	77.8	2.9	3.9	7.5	5.2	0.4	2.3
Ownership							
Government	75.7	3.5	5.7	5.7	6.8	0.6	2.0
Non-government	77.8	2.4	3.4	9.8	3.8	0.5	2.2
District							
Igunga	78.0	1.2	6.3	7.1	5.7	0.0	1.8
Karatu	71.0	2.7	10.9	8.6	5.1	0.0	1.7
Kaskazini	93.0	3.5	0.7	1.1	0.9	0.2	0.7
Kibondo	69.9	1.9	9.2	5.8	11.7	1.2	0.3
Lushoto	69.6	3.3	7.1	9.4	8.1	0.2	2.3
Mbeya DC	75.5	3.3	3.1	8.4	6.0	0.3	3.3
Moshi	81.7	1.4	6.7	6.1	1.1	1.1	1.9

Source of menstrual materials for your first menstruation period (%)							
Background information	Given by a parent	Given by a relative	Given by a teacher	Given by a friend	Bought in the shop	Given by neighbour	Other
Mpwapwa	83.6	2.3	5.8	2.8	2.4	0.5	2.6
Msalala	62.7	2.0	18.9	4.6	9.5	0.4	2.0
Mufindi	81.3	3.7	3.0	7.3	2.6	0.6	1.5
Muleba	75.4	5.9	2.3	4.2	9.6	0.6	2.1
Namtumbo	69.2	3.9	1.6	13.4	6.6	3.2	2.1
North Pemba	91.0	5.5	0.7	0.7	1.2	0.2	0.8
Rorya	63.6	4.2	4.6	9.6	13.8	0.2	4.0
Tandahimba	67.8	4.5	3.6	9.1	12.3	0.4	2.4
Temeke	88.3	2.2	2.8	0.8	1.9	0.6	3.3

Mode of obtaining menstrual materials in schools

Our findings show that 41 per cent of the schools provide menstrual materials free of charge in emergency situations, with higher proportions reported from urban schools (47 per cent), non-government (43 per cent) and secondary schools (46 per cent). There is a greater variation in the availability of menstrual materials across the districts surveyed, with Karatu, Igunga, Msalala, Moshi and Mpwapwa reporting that in over 60 per cent of schools, menstrual materials were provided free of charge during emergencies. None of the schools in North Pemba reported doing so. Despite having 41 per cent of schools providing menstrual materials in school free of charge during emergency situations, participants in FGDs and IDIs reported inadequacy of menstrual materials and irregular supplies of these materials in schools due to lack of funds. Sometimes, students asked for support from fellow students, matrons and teachers. This situation was also confirmed by KIs at the national level.

Washing, drying and storage of reusable materials

Hygienic practices in using reusable materials was measured by asking girls who have used reusable materials, regarding how they washed, how they dried and how they stored the reusable menstrual materials. Girls responded to this question in the questionnaire.

Furthermore, information was obtained from the girls during FGDs, IDIs with matrons and district and national level KIs aiming to establish the common practices as presented in the quantitative questionnaire.

Washing: For the purpose of this study, washing menstrual materials with water (cold or hot) and soap was regarded as a correct practice. Results from girls' self-administered questionnaire show that 52 per cent of the girls use cold water and soap whereas 41 per cent reported using hot water and soap. This means that 93 per cent of the girls wash their reusable menstrual materials properly (cold or hot water with soap) whereas 7 per cent reported using either cold or hot water only without soap.

Drying: More than 40 per cent of the girls reported drying reusable materials in the sun. Relatively higher scores for drying reusable material in the sun were reported in Msalala (64 per cent), Rorya (62 per cent), Moshi (61 per cent) and Karatu (60 per cent). North Pemba (22 per cent), Tandahimba (31 per cent), Kibondo (33 per cent) and Kaskazini (34 per cent) registered low scores. Proper drying of reusable menstrual materials in the sun was mostly reported among older girls (46 per cent) in the age group of 18–23 years followed by those in the age group of 12–17 years (44 per cent) and the lowest (39 per cent) was in the youngest group of 8- to 11-year-old girls. Less than 47 per cent of the girls in urban and rural schools reported proper drying of reusable menstrual materials.

Storage: On assessing storage of reusable materials, students were asked to choose one among the following options to show how they store their menstrual materials: 'Store in the bag', 'Store under the mattress' and 'Store in a plastic bag'. Students who reported storing menstrual materials in the bag were considered to use proper storage. Overall, 59 per cent of the students reported storing their menstrual material in the bag. The highest score (78 per cent) was observed in Mufindi and the lowest in North Pemba (38 per cent). Younger students (aged 8–11) reported a low percentage (43 per cent) on the proper storage of reusable menstrual materials as compared to older students in the 12–17 age group (60 per cent) and the 18–23 age group (55 per cent). Table 18 presents the results.

Table 18: Percentage distribution of proper and improper storage of reusable materials in schools

District	Safely stored n (%)			Not safely stored n (%)	
Location					
Rural	1,771	57.1	1,328	42.9	3,099
Urban	2,987	60.8	1,926	39.2	4,913
Age Group					
8–11 years	83	43.2	109	56.8	192
12–17 years	4,333	60.2	2,867	39.8	7,200
18–23 years	342	55.2	278	44.8	620
Level of school					
Primary	2,065	62.0	1,267	38.0	3,332
Secondary	2,693	57.5	1,987	42.5	4,679

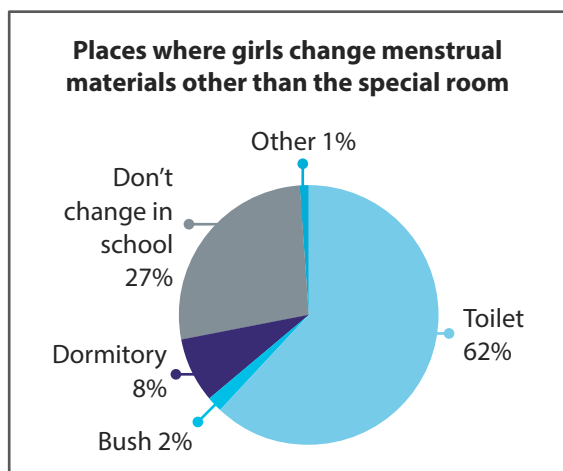
District	Safely stored n (%)			Not safely stored n (%)	
Ownership					
Government	4,279	62.1	2,611	37.9	6,890
Non-government	479	42.7	643	57.3	1,122
District					
Igunga	223	66.4	113	33.6	336
Karatu	415	69.9	179	30.1	594
Kaskazini	179	38.9	281	61.1	460
Kibondo	371	63.1	217	36.9	588
Lushoto	321	61.8	198	38.2	519
Mbeya DC	368	63.4	212	36.6	580
Moshi	157	43.6	203	56.4	360
Mpwapwa	357	62.3	216	37.7	573
Msalala	273	59.2	188	40.8	461
Mufindi	362	78.0	102	22.0	464
Muleba	307	58.0	222	42.0	529
Namtumbo	350	62.4	211	37.6	561
North Pemba	226	37.7	373	62.3	599
Rorya	358	68.6	164	31.4	522
Tandahimba	304	60.1	202	39.9	506
Temeke	187	51.9	173	48.1	360

Location where girls change their used menstrual materials

Due to a lack of special changing rooms, most of the students change their menstrual materials

in the toilets (62 per cent) whereas others do so in the dormitory (9 per cent), nearby bush (2 per cent) and rest (27 per cent) reported not changing their menstrual pads while at school (see Figure 13).

Figure 13: Places where girls change their used menstrual materials



Most school girls (74 per cent) in schools with changing rooms reported that they used that facility for changing menstrual materials (Table 19).

It was further established that students in non-government schools (86 per cent) were more likely to use changing rooms than students in government schools (72 per cent).

Table 19: Distribution of students according to their use of special rooms

Background characteristics	Yes		No		Total
	N	Per cent	N	Per cent	
Location of school					
Rural	1,157	74.4	398	25.6	1,555
Urban	1,503	74.5	515	25.5	2,018
Age					
8–11 years	83	63.4	48	36.6	131
12–17 years	2,439	75.6	786	24.4	3,225
18–23 years	138	63.6	79	36.4	217
Level of school					
Primary	1,331	74.9	445	25.1	1,776
Secondary	1,329	74.0	468	26.0	1,797
Ownership					
Government	2,082	71.8	818	28.2	2,900
Non-government	578	85.9	95	14.1	673
District					
Igunga	153	69.2	68	30.8	221
Karatu	318	79.9	80	20.1	398

Background characteristics	Yes		No		Total
	N	Per cent	N	Per cent	
Kaskazini	43	70.5	18	29.5	61
Kibondo	204	78.2	57	21.8	261
Lushoto	220	67.7	105	32.3	325
Mbeya DC	150	76.9	45	23.1	195
Moshi	159	85.0	28	15.0	187
Mpwapwa	279	79.9	70	20.1	349
Msalala	133	61.3	84	38.7	217
Mufindi	171	82.2	37	17.8	208
Muleba	122	65.6	64	34.4	186
Namtumbo	94	74.6	32	25.4	126
North Pemba	77	58.8	54	41.2	131
Rorya	269	78.0	76	22.0	345
Tandahimba	42	61.8	26	38.2	68
Temeke	226	76.6	69	23.4	295
Total	2,660	74.4	913	25.6	3,573

Reasons for non-use of special room in school



Students who had changing rooms in their schools but were not using them were further asked to provide reasons for not doing so. The following reasons were reported: lack of water (28 per cent), lack of privacy (26 per cent) and unclean rooms (21 per cent). Other reasons reported by a small but important proportion

of the respondents were discrimination (by younger girls), insult (by boys) and long distances from the classrooms, stigma and inaccessibility. A changing room ought to have a high level of privacy, facilities that support the management of menstruation, such as soap and water, in addition to a clean

environment. But the findings suggest that the absence of a lockable door, lack of water and unclean environments undermined the use of changing room at school. Moreover, stigma-related reasons were mentioned, for example, boys insulting girls. Other problems

included inaccessibility and long distance to the changing room, which also have a significant impact on the use of changing rooms. These concerns need to be addressed to enable girls use changing rooms comfortably and with dignity.



Section 3.2

Girls without disability

Sociodemographic characteristics of post-menarche girls

Table 20 presents the sociodemographic breakdown of 7,807 in-school post-menarche adolescent girls without disability who participated in the study for structured interviews that generated quantitative data. Over three-quarters (n=6,759, 86.6 per cent) were from Tanzania Mainland and 38.5 per cent

(n=3004) were from rural areas, and 56.5 per cent (n=4414) were aged 15 years and above. Day scholars constituted the majority (n=5,485, 70.3 per cent) of the study participants. Over 96 per cent (n=7,515) of the participants were in co-education schools and 60.3 per cent (n=4,708) in secondary schools. Fathers or male caretakers were the main providers of the school fees to 46.8 per cent (n=3,165) and 56.1 per cent (n=588) students in the Tanzanian Mainland and in Zanzibar, respectively.

Table 20: Sociodemographic characteristics of students in the Tanzanian Mainland and Zanzibar by settings (rural and urban)

Item	Tanzania Rural, n (%)	Mainland, Urban, n (%)	Zanzibar, Rural, n (%)	Urban, n (%)	Total Tanzania Mainland, n (%)	Zanzibar, n (%)
Age group						
<15	1,457 (55.5)	1,716 (41.5)	70 (18.5)	150 (22.4)	3,173 (46.9)	220 (21.0)
15+	1,168 (44.5)	2,418 (58.5)	309 (81.5)	519 (77.6)	3,586 (53.1)	828 (79.0)
School ownership						
Public	2,175 (82.9)	3,608 (87.3)	304 (80.2)	635 (94.9)	5,783 (85.6)	939 (89.6)
Private	450 (17.1)	526 (12.7)	75 (19.8)	34 (5.1)	976 (14.4)	109 (10.4)
Type of school						
Boarding	172 (6.6)	219 (5.3)	99 (26.1)	374 (55.9)	391 (5.8)	473 (45.1)
Boarding and day	395 (15.1)	1,016 (24.6)	46 (12.1)	1 (0.2)	1,411 (20.9)	47 (4.5)
Day	2,058 (78.4)	2,899 (70.1)	234 (61.7)	294 (44.0)	4,957 (73.3)	528 (50.4)

Item	Tanzania Rural, n (%)	Mainland, Urban, n (%)	Zanzibar, Rural, n (%)	Urban, n (%)	Total Tanzania Mainland, n (%)	Zanzibar, n (%)
Gender orientation of the school						
Only girls	97 (3.7)	191 (4.6)	3 (0.8)	1 (0.2)	288 (4.3)	4 (0.4)
Co-education	2,528 (96.3)	3,943 (95.4)	376 (99.2)	668 (99.9)	6,471 (95.7)	1,044 (99.6)
Class level						
Std V	83 (3.2)	189 (4.6)	0 (0.0)	0 (0.0)	272 (4.0)	0 (0.0)
Std VI	281 (10.7)	374 (9.1)	34 (9.0)	60 (9.0)	655 (9.7)	94 (9.0)
Std VII	935 (35.6)	1,141 (27.6)	0 (0.0)	2 (0.3)	2,076 (30.7)	2 (0.2)
Form I	155 (5.9)	293 (7.1)	2 (0.5)	12 (1.8)	448 (6.6)	14 (1.3)
Form II	401 (15.3)	660 (16.0)	25 (6.6)	107 (16.0)	1,061 (15.7)	132 (12.6)
Form III	277 (10.6)	646 (15.6)	138 (36.4)	266 (39.8)	923 (13.7)	404 (38.6)
Form IV	493 (18.8)	831 (20.1)	180 (47.5)	222 (33.2)	1,324 (19.6)	402 (38.4)
Main providers of support for school fees and other needs						
Father	1,179 (44.9)	1,986 (48.0)	223 (58.8)	365 (54.6)	3,165 (46.8)	588 (56.1)
Mother	888 (33.8)	1,204 (29.1)	112 (29.6)	223 (33.3)	2,092 (31.0)	335 (32.0)
Male caretaker	94 (3.6)	147 (3.6)	14 (3.7)	25 (3.7)	241 (3.6)	39 (3.7)
Female caretaker	230 (8.8)	314 (7.6)	28 (7.4)	52 (7.7)	544 (8.1)	80 (7.6)
Others	234 (8.9)	483 (11.7)	2 (0.5)	4 (0.6)	717 (10.6)	6 (0.6)

Sociodemographic characteristics of the parents/guardians of the post-menarche girls

All 7,807 in-school post-menarche girls who participated in this study were also interviewed to gather information on sociodemographic

characteristics of their parents/guardians. Less than 15 per cent of the parents had college education, with the majority (n=140, 13.4 per cent) reported in Zanzibar. Most of the parents/guardians were subsistence or peasant farmers. Over half (n=4,091, 52.4 per cent) of the parents/guardians had education at the primary level or less, as Table 21 illustrates.

Table 21: Educational background of students' parents/guardians in the Tanzania Mainland and Zanzibar by settings (rural and urban)

Item	Tanzania Rural n (%)	Mainland, Urban n (%)	Zanzibar, Rural n (%)	Urban, n (%)	Total Tanzania Mainland, n (%)	Zanzibar, n (%)
Education level of female parent/caretaker						
No formal education	62 (2.4)	167 (4.0)	10 (2.6)	53 (7.9)	229 (3.4)	63 (6.0)
Primary	1,122 (42.7)	2,467 (59.7)	51 (13.5)	159 (23.8)	3,589 (53.1)	210 (20.0)
Secondary	667 (25.4)	663 (16.0)	102 (26.9)	174 (26.0)	1,330 (19.7)	276 (26.3)
College	402 (15.3)	363 (8.8)	85 (22.4)	55 (8.2)	765 (11.3)	140 (13.4)
Don't know	372 (14.2)	474 (11.5)	131 (34.6)	228 (34.1)	846 (12.5)	359 (34.3)
Occupation of parent/caretaker						
Farmer	1,012 (38.6)	2,807 (67.9)	128 (33.8)	337 (50.4)	3,819 (56.5)	465 (44.4)
Employed	500 (19.1)	499 (12.1)	113 (29.8)	117 (17.5)	999 (14.8)	230 (22.0)
Self-employed	935 (35.6)	660 (16.0)	88 (23.2)	135 (20.2)	1,595 (23.6)	223 (21.3)
Retired officer	84 (3.2)	92 (2.2)	19 (5.0)	29 (4.3)	176 (2.6)	48 (4.6)
Don't know	94 (3.6)	76 (1.8)	31 (8.2)	51 (7.6)	170 (2.5)	82 (7.8)



1. What is the level of knowledge, attitude and practice on MHH among in-school post-menarche adolescent girls without disabilities?

The overall (Table 22 and Figure 14) mean percentage score of MHH knowledge among post-menarche adolescent girls was 64.9 per cent, with girls in the Tanzania Mainland demonstrating a higher overall mean percentage scores (64.9 per cent) than girls in Zanzibar (64.5 per cent). Likewise, girls from rural areas demonstrated overall higher mean percentage scores of 65.3 per cent than girls from urban areas 64.6 per cent ($p < 0.01$). When comparing between Zanzibar and the

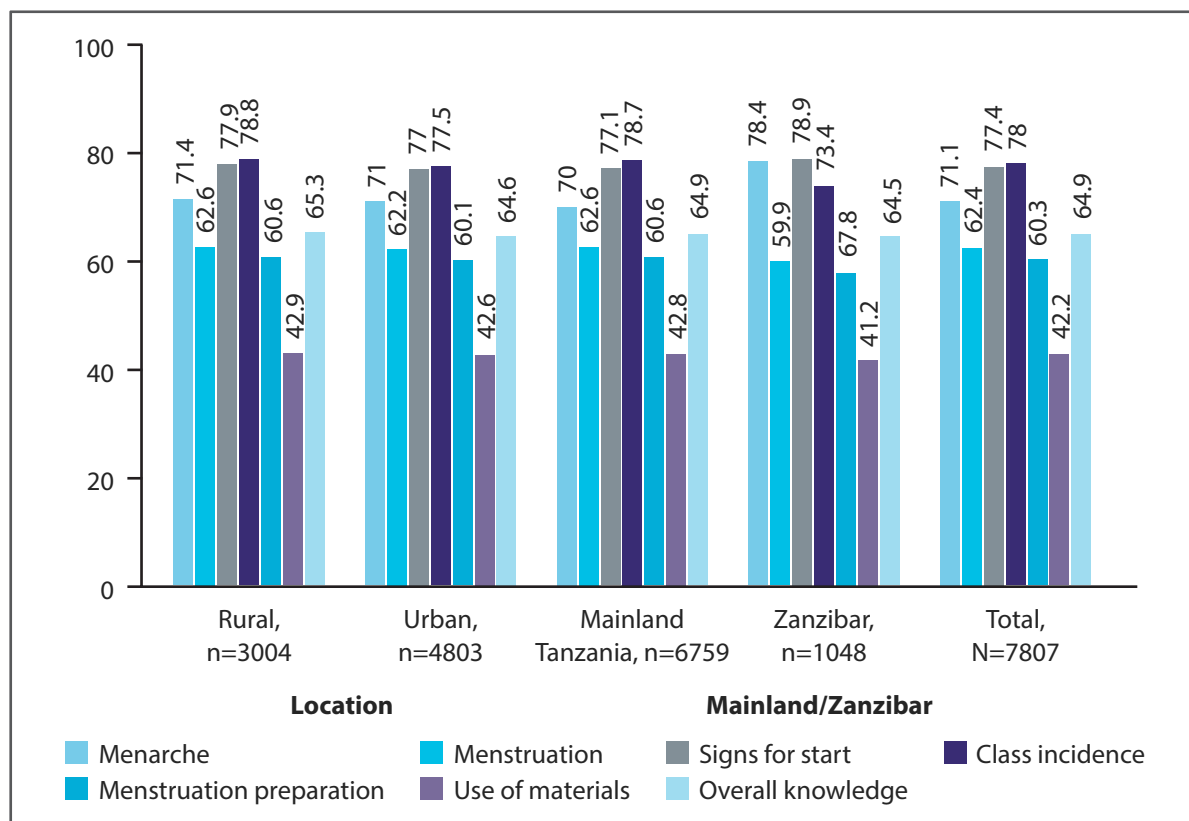
Tanzanian Mainland on individual categories of MHH knowledge such as knowledge on menarche (78.4 vs 70.0 per cent), and signs for starting menstruation (78.9 vs 77.1 per cent) girls in Zanzibar showed a higher mean percentage score for adolescents those in Tanzania Mainland ($p < 0.05$). On the contrary, post-menarche girls from the Tanzania Mainland relative to those from Zanzibar demonstrated a higher mean percentage scores on knowledge in the area of right steps to take in case of a sudden menstrual incident while in school, preparations needed before menstruation and recommended materials for use during menstruation ($p < 0.001$).

Table 22: Mean percentage score of MHH knowledge among in-school post-menarche adolescent girls in the Tanzanian Mainland and Zanzibar

Domain	Location		State/Country		Total
	Rural, n=3004	Urban, n=4803	Tanzania, n=6759	Zanzibar, n=1048	N=7807
Menarche	71.4	71.0	70.0	78.4 ***	71.1
Menstruation	62.6	62.2	62.6 ***	59.9	62.4
Signs for start	77.9	77.0	77.1	78.9*	77.4
Right steps to take in case of an incident of menstruation while at school (class incidence)	78.8 ***	77.5	78.7 ***	73.4	78.0
Preparation for menstruation	60.6	60.1	60.6 ***	57.8	60.3
Use of materials	42.9	42.6	42.8	41.7	42.7
Overall knowledge	65.3 ***	64.6	64.9	64.5	64.9

*** Statistically significant

Figure 14: Mean percentage (%) score of MHH knowledge among post-menarche in-school adolescent girls in the Tanzanian Mainland and Zanzibar



We also analysed data to establish how the level of knowledge differs between rural and urban dwellers in the Tanzanian Mainland and Zanzibar separately. For Tanzania Mainland, the overall mean percentage score of MHH knowledge was 65.3 per cent in rural areas compared to 64.7 per cent in urban areas; the

mean percentage score on MHH knowledge in rural Zanzibar was 65.4 per cent compared to 64.0 per cent in urban Zanzibar ($p < 0.05$). Likewise, rural dwellers from Tanzania Mainland as compared to their urban counterparts demonstrated a high mean percentage score of knowledge on the right steps to take in case



of an incidence of menstruation while at school ($p<0.001$). A high mean percentage score of knowledge on recommended materials used during menstruation was also established

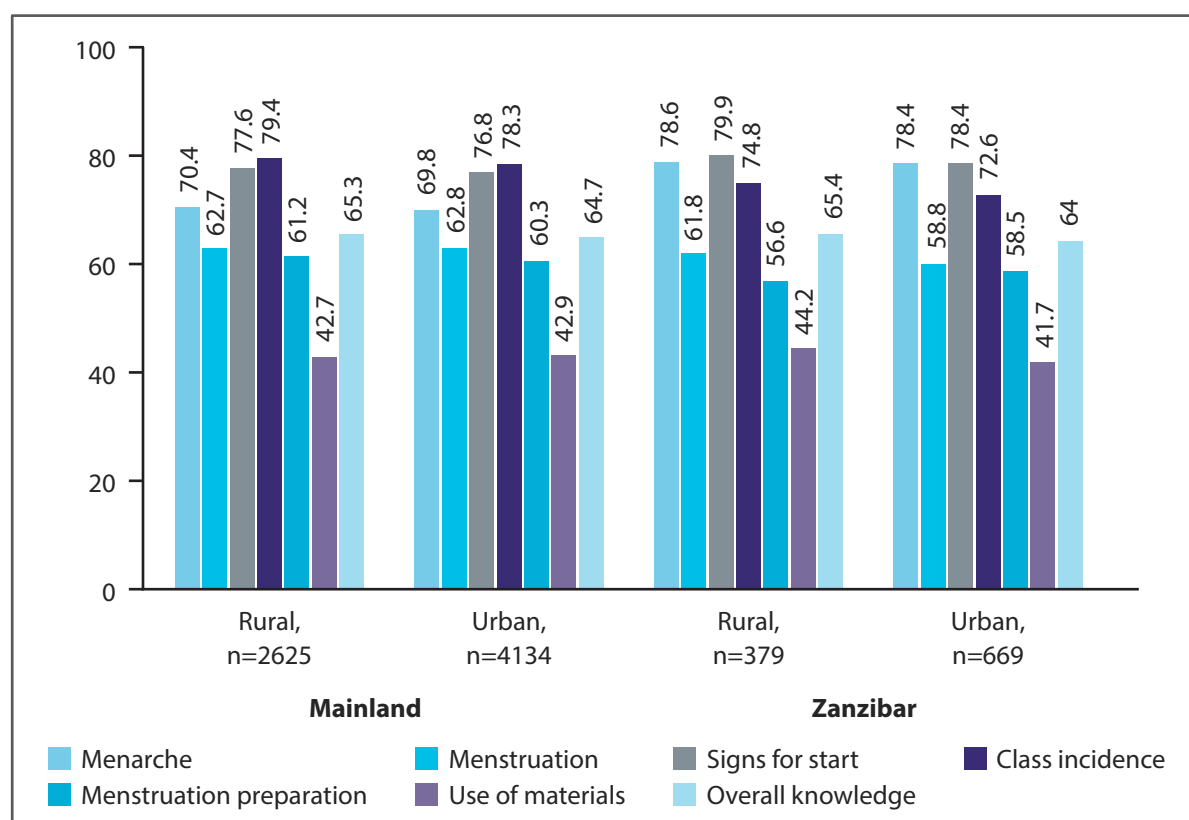
among adolescent girls living in rural Zanzibar than their urban counterparts ($p<0.001$). Table 23 and Figure 15 present the results.

Table 23: Mean percentage score of MHH knowledge among post-menarche in school adolescent girls stratified by Tanzania Mainland and in Zanzibar

Domain	Tanzania		Zanzibar	
	Rural, n=2625	Urban, n=4134	Rural, n=379	Urban, n=669
Menarche	70.4	69.8	78.6	78.4
Menstruation	62.7	62.8	61.8	58.8
Signs for start	77.6	76.8	79.9	78.4
Right steps to take in case of an incident of menstruation while at school (class incidence)	79.4***	78.3	74.8	72.6
Preparation for menstruation	61.2	60.3	56.6	58.5
Use of materials	42.7	42.9	44.2**	41.7
Overall knowledge	65.3*	64.7	65.4*	64.0

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Figure 15: Mean percentage (%) score of MHH knowledge among post-menarche in school adolescent girls stratified by Tanzania Mainland and Zanzibar, respectively



Finally, a cut-off point for knowledge index was introduced to categorize knowledge as either adequate or inadequate. Knowledge score equivalent or higher than 70 per cent was regarded as adequate and scores below 70 per cent was considered as inadequate. Inferential analysis to assess the factors associated with inadequate knowledge was done. Figures 16 and 17 describe the proportion of girls with different levels of MHH knowledge stratified

by setting and state. Only 28 per cent of the girls had adequate knowledge on MHH. There was no statistically significant difference on knowledge adequacy between girls from Zanzibar or Tanzania Mainland and between those from urban and rural settings. Knowledge adequacy varied only modestly among regions: Kilimanjaro, Shinyanga and Mara had modest but most adequate rates whereas Unguja and Ruvuma had low scores (Figure 18).

Figure 16: Proportion of girls with different levels of MHH knowledge stratified by setting and state

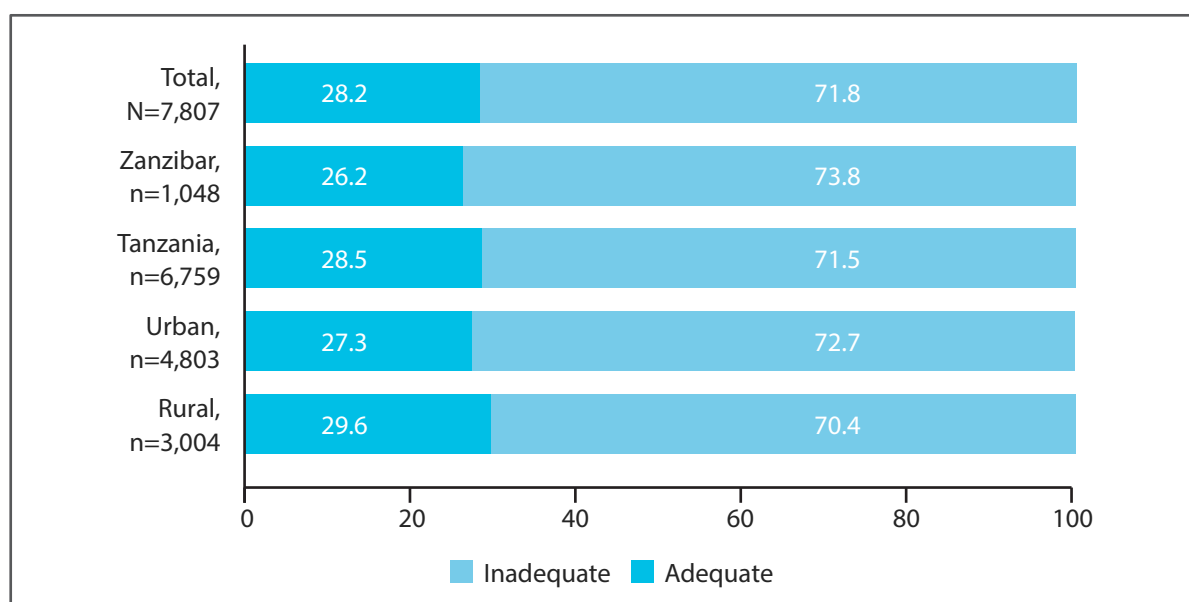


Figure 17: Proportion of girls with different levels of MHH knowledge among adolescent girls stratified by rural and urban settings

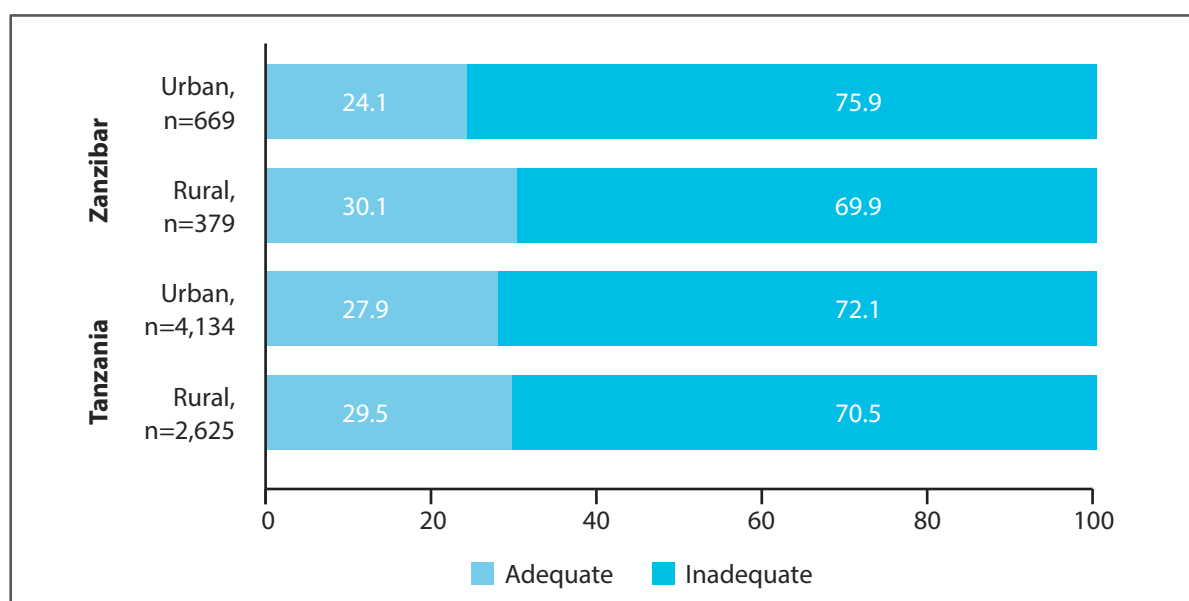
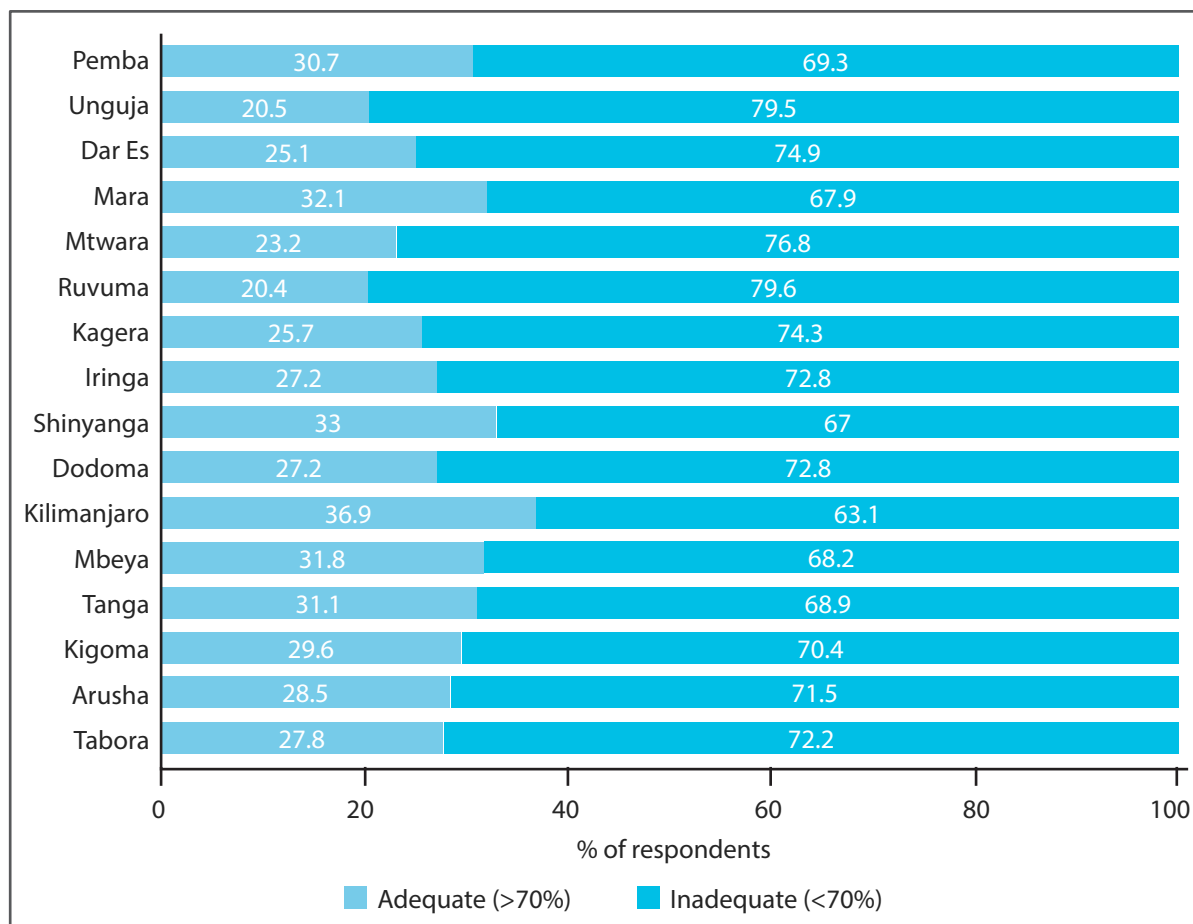
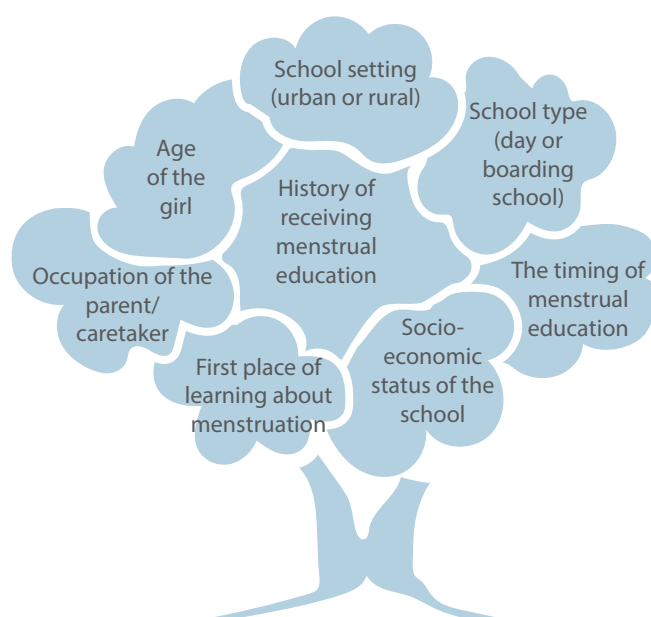


Figure 18: Proportion of girls with different levels of MHH knowledge among adolescent girls stratified by region



Factors associated with inadequate level of MHH knowledge



Factors associated with inadequate level of MHH knowledge

Significant and possible underlying factors regarding the low level of knowledge of MHH were assessed. Table 24 describes factors associated with inadequate level of knowledge among study participants with and without adjustments.

However, when fitted into multivariate analysis, factors that showed significant association with the girls' level of knowledge included the type of school, girl's class level, history of receiving menstrual education, the timing of menstrual education, and the school's socioeconomic status. On multivariate analysis, girls from boarding schools were 1.2 times more likely to have inadequate knowledge on MHH than

those from a school with both boarding and day students. Girls in lower classes (standards V–VII) and Forms I and II were 1.2 times more likely to have inadequate knowledge than girls in Form IV. Whether girls had received education on menstruation before and the timing of the first information were significantly associated with their level of knowledge on MHH at the time of the interview ($p < 0.001$).

Our results also show that girls from schools in the lowest socioeconomic strata were 1.1 times more likely to have low knowledge on MHH than girls from schools in the highest socioeconomic status.

Table 24: Factors associated with inadequate MHH knowledge among students in Tanzania Mainland and in Zanzibar

Factors	Total, N=7,807 (%)	With inadequate knowledge, n=1,709 (%)	UOR (95% CI)	AOR (95% CI)
Age group				
<15	3,393 (53.5)	2,523 (74.4)*	1.1 (1.1–1.14)	1.0 (0.9–1.04)
15+	2,944 (46.5)	1,980 (67.3)	Ref	Ref
Settings				
Rural	3,004 (38.5)	2,115 (70.4)	Ref	Ref
Urban	4,803 (61.5)	3,490 (72.7)*	1.03 (1.0–1.1)	1.0 (1.0–1.03)
State				
Tanzania Mainland	6,759 (86.6)	4,832 (71.5)	Ref	
Zanzibar	1,048 (13.4)	773 (73.8)	1.03 (1.0–1.1)	

Factors	Total, N=7,807 (%)	With inadequate knowledge, n=1,709 (%)	UOR (95% CI)	AOR (95% CI)
School ownership				
Government	6,722 (86.1)	4,852 (72.2)	1.04 (1.1–1.1)	1.05 (1.0–1.1)
Non-government	1,085 (13.9)	753 (69.4)	Ref	Ref
Type of school				
Boarding only	864 (11.1)	683 (79.1)***	1.2 (1.2–1.3)	1.2 (1.1–1.3)
Boarding and day	1,458 (18.7)	945 (64.8)	Ref	Ref
Day only	5,485 (70.3)	3,977 (72.5)	1.1 (1.1–1.2)	1.03 (1.0–1.1)
Gender orientation of the school				
Only girls	292 (3.7)	215 (73.6)	1.02 (1.0–1.1)	
Co-education	7,515 (96.3)	5,390 (71.7)	Ref	
Grade level				
Std V–VII	3,099 (39.7)	2,360 (76.2)	1.2 (1.1–1.2)	1.2 (1.1–1.3)
Form I	462 (5.9)	356 (77.1)	1.2 (1.1–1.3)	1.2 (1.1–1.3)
Form II	1,193 (15.3)	869 (72.8)	1.1 (1.1–1.2)	1.2 (1.1–1.2)
Form III	1,327 (17.0)	913 (68.8)	1.1 (1.02–1.12)	1.02 (1.0–1.1)
Form IV	1,726 (22.1)	1,107 (64.1)	Ref	Ref
Main provider of support for school fees and other needs				
Father	3,753 (48.1)	2,722 (72.5)	1.1 (1.0–1.2)	1.04 (0.9–1.1)
Mothers	2,427 (31.1)	1,714 (70.6)	1.1 (1.0–1.2)	1.0 (0.9–1.1)
Male caretaker	280 (3.6)	188 (67.1)	Ref	1.02 (0.9–1.2)
Female caretaker	624 (8.0)	447 (71.6)	1.1 (1.0–1.2)	1.1 (0.9–1.2)
Others	723 (9.3)	534 (73.9)	1.1 (1.0–1.2)	Ref
Education level of female parent/caretaker				
None	850 (12.9)	634 (74.6)	1.1 (1.0–1.2)	1.03 (1.0–1.1)
Primary	3,241 (49.1)	2,304 (71.1)	1.02 (1.0–1.1)	1.01 (1.0–1.1)
Secondary	1,606 (24.3)	1,143 (71.2)	1.0 (1.0–1.1)	1.01 (0.9–1.1)
Tertiary/College	905 (13.7)	630 (69.6)	Ref	Ref
Occupation of parent/caretaker				
Farmer	4,284 (56.7)	3,148 (73.5)**	1.1 (1.02–1.1)	1.02 (1.0–1.1)

Factors	Total, N=7,807 (%)	With inadequate knowledge, n=1,709 (%)	UOR (95% CI)	AOR (95% CI)
Employed	1,229 (16.3)	845 (68.8)	Ref	Ref
Self-employed	1,818 (24.1)	1,262 (69.4)	1.01 (1.0–1.1)	1.0 (0.9–1.033)
Retired	224 (3.0)	158 (70.5)	1.02 (0.9–1.1)	1.0 (0.9–1.1)
Ever received education on menstruation				
Yes	7,187 (92.1)	5,104 (71.0)	Ref	Ref
No	620 (7.9)	501 (80.8)***	1.1 (1.1–1.2)	1.1 (1.05–1.2)
Where did you first learn about menstruation?				
In the class	4,834 (61.9)	3,422 (70.8)	1.0 (1.0–1.1)	1.0 (0.9–1.03)
school clubs	671 (8.6)	490 (73.0)	1.04 (1.0–1.1)	1.0 (0.9–1.1)
Books	1,190 (15.2)	910 (76.5)**	1.1 (1.03–1.1)	1.03 (1.0–1.1)
Others	1,112 (14.2)	783 (70.4)	Ref	Ref
When did you receive information about menstruation?				
Before begining menstruation	5,354 (68.6)	3,740 (69.9)	Ref	Ref
During first menstruation	1,339 (17.2)	999 (74.6)	1.1 (1.03–1.1)	1.05 (1.01–1.1)
After the first menstruation	1,114 (14.3)	866 (77.7)**	1.1 (1.1–1.2)	1.1 (1.01–1.1)
How did you first know about menstruation?				
Teachers/matron	3,072 (39.4)	2,188 (71.2)	Ref	
Friends	1,214 (15.6)	880 (72.5)	1.02 (1.0–1.1)	
Parents/caretakers/ relative	2,420 (31.0)	1,731 (71.5)	1.0 (1.0–1.04)	
Kungwi	936 (12.0)	682 (72.9)	1.02 (1.0–1.1)	
Media/others	165 (2.1)	124 (75.2)	1.1 (1.0–1.2)	
School's socioeconomic status				
Lowest	1,598 (20.9)	1,222 (76.5)***	1.1 (1.1–1.2)	1.1 (1.003–1.14)
Second	1,460 (19.1)	1,084 (74.3)	1.1 (1.04–1.1)	1.01 (1.0–1.1)
Middle	1,500 (19.6)	1,065 (71.0)	1.04 (1.0–1.1)	1.01 (0.9–1.1)
Fourth	1,471 (19.3)	1,012 (68.8)	1.0 (1.0–1.1)	1.0 (0.9–1.05)
Highest	1,607 (21.1)	1,100 (68.5)	Ref	Ref

*p<0.05, **p<0.01, ***p<0.001; UOR, unadjusted odds ratio; AOR, adjusted odds ratio.

What attitudes towards MHH exist among post-menarche girls in the study areas?

The results presented in Table 25 and Figure 19 show that the overall mean percentage score on positive attitude towards MHH was 48.9 per cent; however, the score was higher (57.6 per cent) in Zanzibar than on the Tanzania Mainland (48 per cent). The mean percentage score on

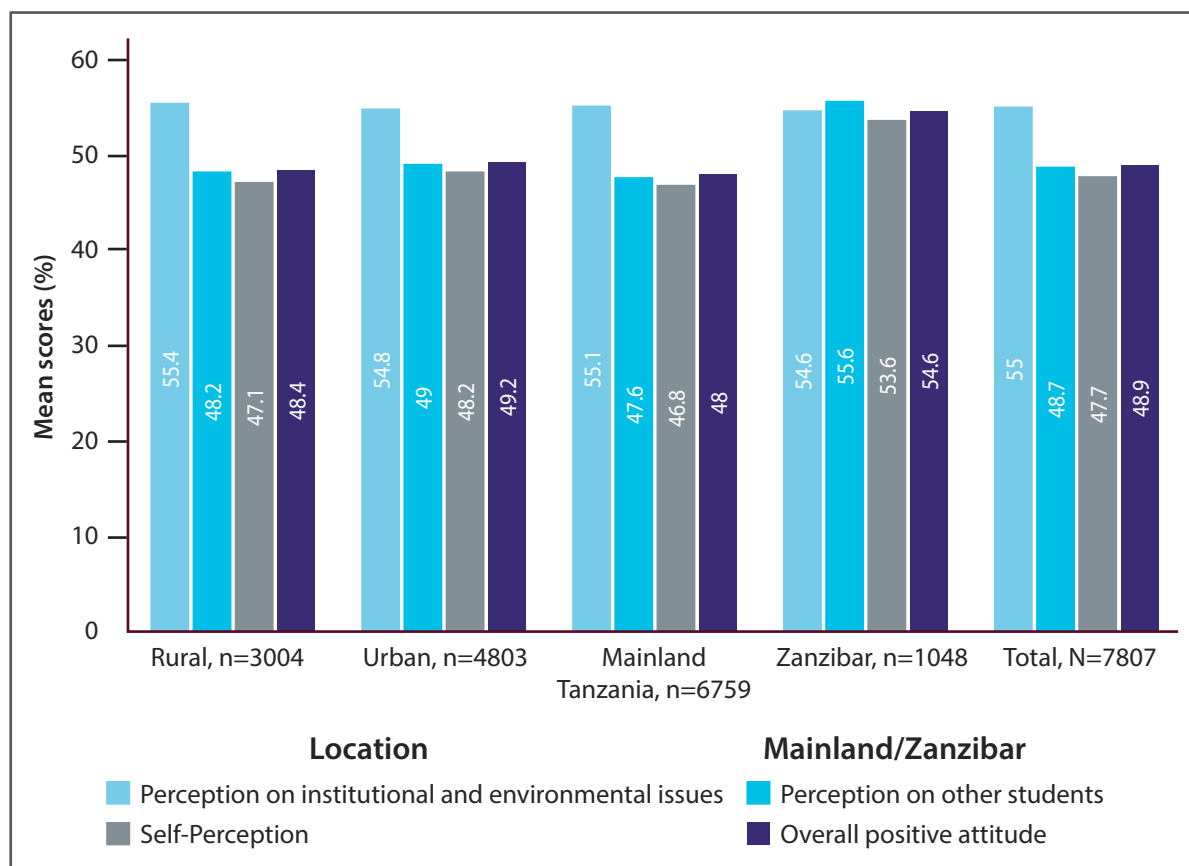
positive attitude towards support institutions and environment was 55 per cent. When comparing the urban and rural areas, the mean percentage score for MHH attitude towards other students on some MHH issues in urban areas was higher at 49 per cent than 48.2 per cent in rural areas ($p < 0.05$). Overall, the mean self-positive attitude score was 47.7 per cent, with girls from urban settings demonstrating a slightly higher self-attitude score (48.2 per cent) than those from rural areas (47.1 per cent) ($p < 0.05$).

Table 25: Mean percentage score of positive attitude (combined) towards MHH stratified by setting for Tanzania Mainland and Zanzibar

Domain	Rural n=3,004	Urban n=4,803	Tanzania n=6,759	Zanzibar n=1,048	Total N=7,807
Perception of institutional and environmental issues	55.4	54.8	55.1	54.6	55.0
Perception of other students	48.2	49.0*	47.6	55.6***	48.7
Self-perception	47.1	48.2*	46.8	53.6	47.7
Overall positive attitude	48.4	49.2*	48.0	54.6***	48.9

* $p < 0.05$, *** $p < 0.001$.

Figure 19: Mean percentage score on positive attitudes (combined) towards MHH stratified by setting for Tanzania Mainland and Zanzibar



We also measured the attitude towards MHH by comparing rural and urban areas in Tanzania Mainland and Zanzibar separately as demonstrated in Table 25 and Figure 20. Parameters used are as shown in Table 24 and Figure 19. The mean positive attitude score on supportive environment towards menstruation

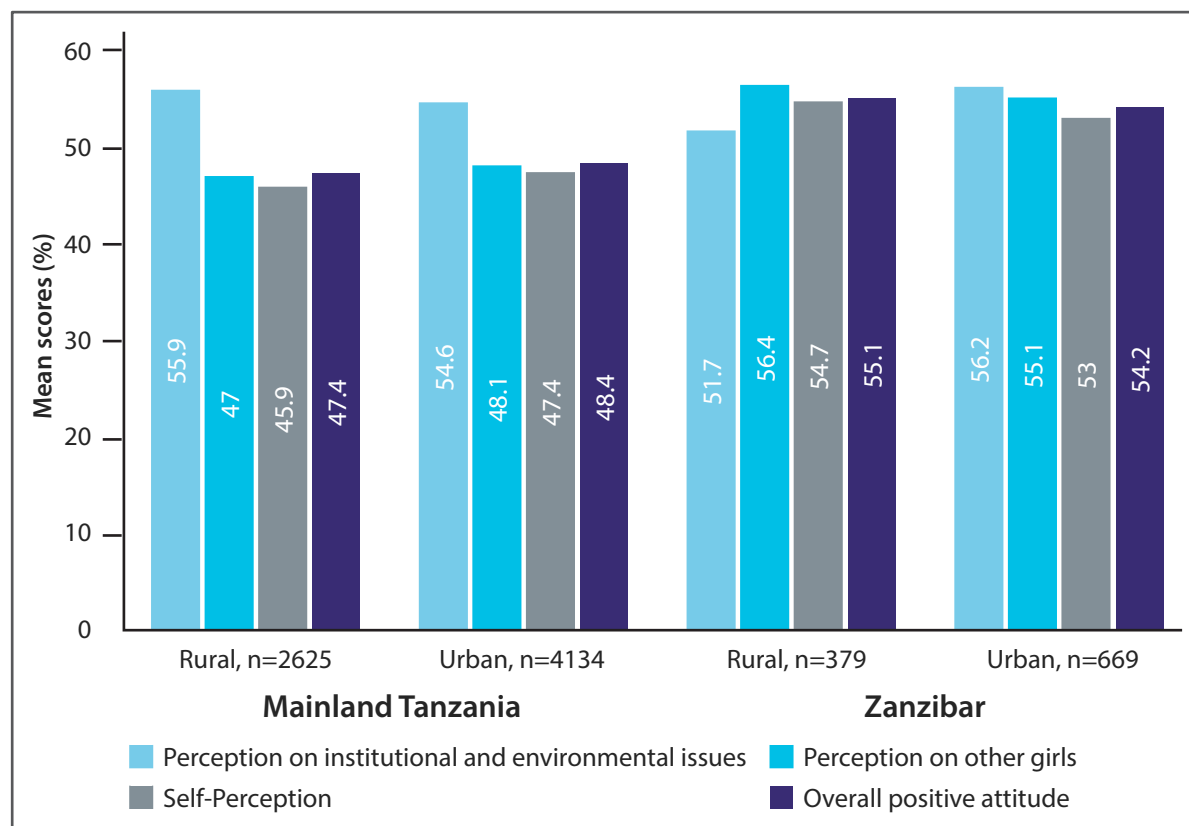
was 56.2 per cent in urban Zanzibar as compared to 51.7 per cent in rural Zanzibar ($p < 0.05$). Likewise, post-menarche girls living in urban Tanzania Mainland tended to have a positive attitude towards other students compared to girls living in rural Mainland Tanzania (48.1 vs 47.0 per cent) ($p < 0.05$).

Table 26: Mean percentage score of positive attitudes (combined) towards MHH among students in urban and rural Tanzania Mainland and Zanzibar

Domain	Tanzania Rural n=2625	Mainland Urban n=4134	Zanzibar Rural n=379	Urban n=669
Perception of institutional and environmental issues	55.9	54.6	51.7	56.2*
Perception of other girls	47.0	48.1*	56.4	55.1
Self-perception	45.9	47.4	54.7	53.0
Overall positive attitude	47.4	48.4**	55.1	54.2

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Figure 20: Mean percentage score of positive perception (combined) towards MHH among students in urban and rural Tanzania Mainland and Zanzibar



Finally, we used the Bloom technique to assess the proportion of post-menarche girls with negative, moderate positive and positive attitude towards MHH. Attitude was categorized as follows: negative (<60 per cent or score 0–19), moderate positive (60–79.9 per cent, score 20–26) and positive (80–100 per cent or score 27–33). To obtain two categories for binary logistic analysis, the two attitude categories (moderate positive and positive) were combined to form the ‘positive’ attitude. Inferential analysis was performed to assess the factors associated with negative attitude. Table 27 and Figure 21 describe the cumulative attitude among post-menarche adolescent girls towards MHH stratified by setting and state. Overall, over 75.9 per cent (n=5,926) of the study participants had a negative attitude

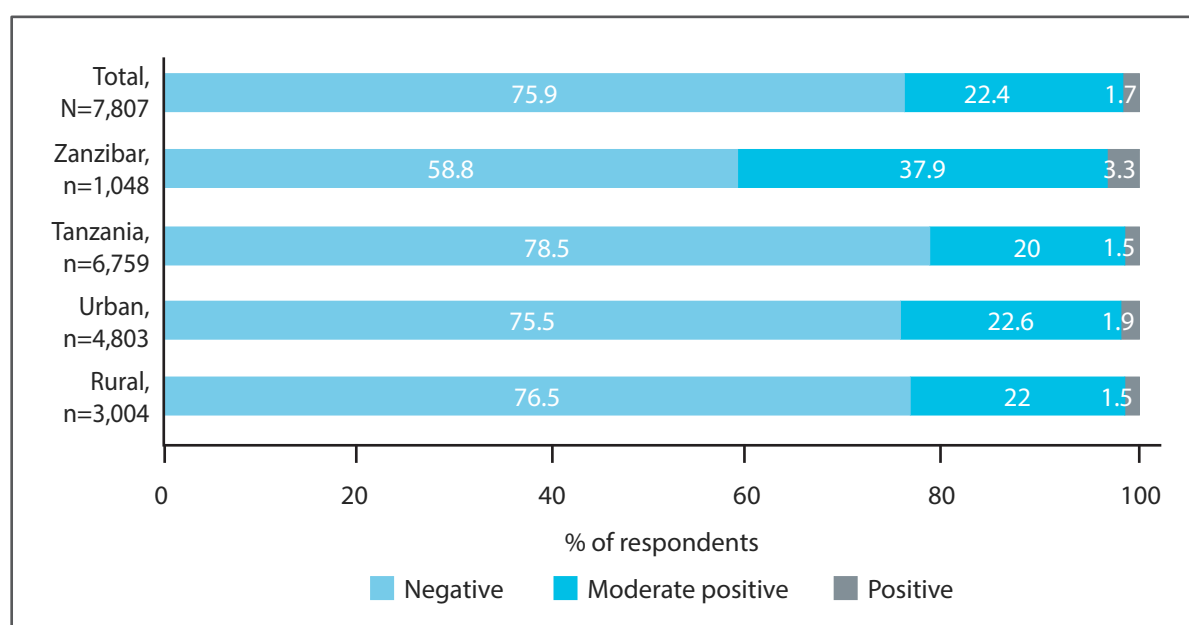
towards different aspects of MHH, with statistically significant proportion (n=5,306, 78.5 per cent) of girls from Tanzania Mainland found to have negative attitudes than those from Zanzibar (n=616, 58.8 per cent) ($p<0.001$). Likewise, the majority (n=2,298, 76.5 per cent) of rural dwellers as compared to urban dwellers (n=3,626, 75.5 per cent) had moderate positive attitude. Comparing girls from Tanzania Mainland and Zanzibar, the majority of girls with a moderate positive attitude were from Zanzibar (37.9 vs 20.0 per cent: $p<0.001$). Although only 1.7 per cent (n=133) of girls had a positive attitude towards MHH, the majority 3.3 per cent (n=35) of these were reported in Zanzibar as compared to only 1.5 per cent (n=101) from Tanzania Mainland ($p<0.001$).

Table 27: Proportion of girls with different levels of perception stratified by setting and Tanzania Mainland and Zanzibar

Overall perception	Rural n=3,004	Urban n=4,803	Tanzania n=6,759	Zanzibar n=1,048	Total N=7,807
Negative	76.5	75.5	78.5*	58.8	75.9
Moderate positive	22.0	22.6	20.0	37.9	22.4
Positive	1.5	1.9	1.5	3.3	1.7

*p <0.05

Figure 21: Proportion of girls with different levels of attitude stratified by setting and location of Tanzania Mainland and Zanzibar



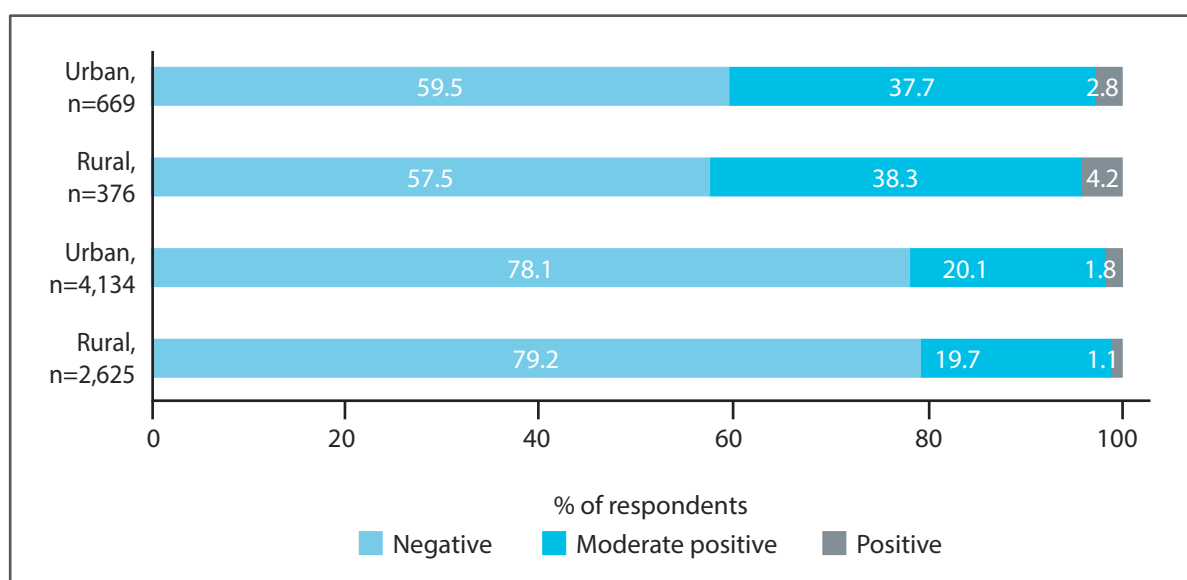
We also measured the proportion of girls with different levels of attitude by comparing rural and urban areas in Tanzania Mainland and Zanzibar separately (Table 27 and Figure 22). Parameters used are as shown in Table 26 and 21 above. Zanzibar had a high proportion (n=398, 59.5 per cent) of girls with negative attitude in urban areas than those in rural areas (n=216, 57.5 per cent). The majority of girls (n=2079, 79.2 per cent) from rural Mainland demonstrated a high level of negative attitude compared to girls from urban Mainland Tanzania (n=3,229, 78.1 per cent).

A majority of the girls from rural Zanzibar demonstrated higher level of moderate positive attitude than their urban counterparts. But the level of positive attitude was very low across the study areas (Table 28 and Figure 22).

Table 28: Proportion of girls with different levels of attitude stratified by urban and rural in Tanzania Mainland and Zanzibar

Overall perception	Tanzania		Zanzibar	
	Rural n=2, 625	Urban n=4,134	Rural n=376	Urban n=669
Negative	79.2	78.1	57.5	59.5
Moderate positive	19.7	20.1	38.3	37.7
Positive	1.1	1.8	4.2	2.8

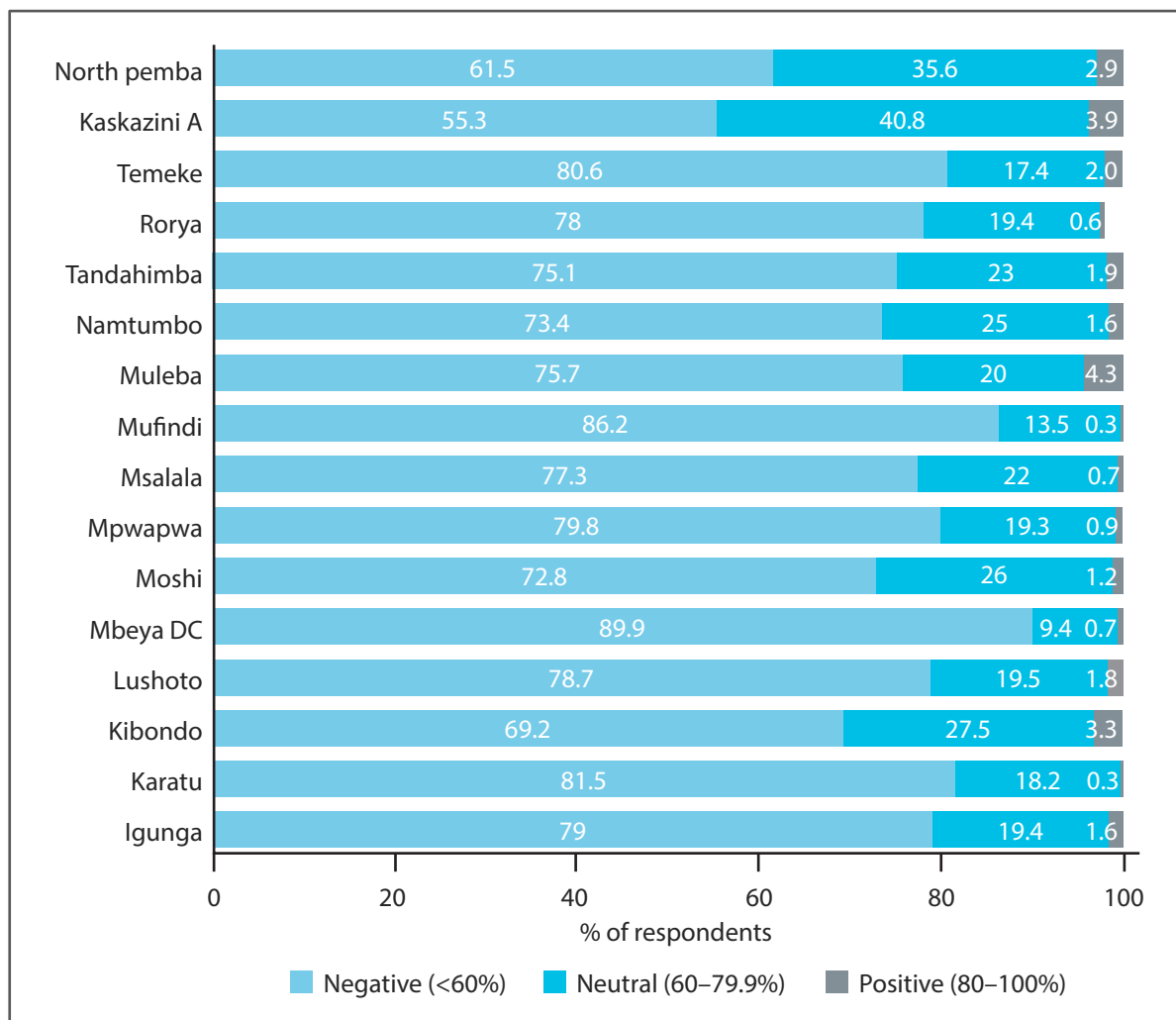
Figure 22: Proportion of the girls with different levels of attitude stratified by urban and rural in Tanzania Mainland and Zanzibar



We also measured proportion of girls with different levels of attitude by district. Most of the girls with negative attitude in Tanzania Mainland were from Mbeya DC, Mufindi, Karatu

and Temeke. In Zanzibar, North Pemba had lower proportion of girls with negative attitude towards MHH in Zanzibar (Figure 23).

Figure 23: Proportion of girls with different levels of perception stratified by district in Tanzania Mainland and Zanzibar



The attitude of girls towards MHH in both Tanzania Mainland and in Zanzibar was mostly negative. Thus, the study explored factors contributing to such negativity. On a bivariate analysis, factors such as living in Tanzania Mainland, going to a school with both boarding and day students, going to girls-only schools, being in lower classes, relying on persons other than parents or caretakers for school fees and other needs and receiving information on menstruation before or during menarche were found to be significantly associated with a negative attitude towards MHH among school girls (Table 28). When those factors were subjected to multivariate analysis, the school location was found to significantly influence the attitude of girls towards MHH. Even though most of the girls in both areas of Tanzania had a negative attitude (78.5 per cent in Mainland Tanzania, 58.8 per cent in Zanzibar), girls from Tanzania Mainland were 1.4 times more likely to have a negative attitude than girls from Zanzibar (95 per cent CI = 1.3–1.6). This finding was statistically significant ($p < 0.001$).

Other factors that were found to affect the girls' attitude towards MHH, as we inferred from the multivariate analysis were, though to a lesser extent, class level, the main provider of support for school fees and taking care of their needs and the timing of receiving information on menstruation. Most of the girls from all classes (from Standard V to Form IV) showed a negative

attitude towards MHH. The peak was, however, among Form I and II students who were 1.1 times more likely to have a negative attitude. These findings were statistically significant ($p < 0.001$).

Girls who received support from persons other than their parents or male/female caretakers for paying their school fees and taking care of other needs were 1.1 times more likely to have negative attitude towards MHH than other girls. These findings were statistically significant ($p < 0.001$). The timing of receiving information on menstruation, on the other hand, showed little effect on the attitude of the girls on multivariate analysis. Whether the girls received information on menstruation before menarche, during their first menstruation or afterwards, most of them had a negative attitude towards MHH. However, girls who received menstrual information before menarche were 1.1 times more likely to have a negative attitude than others. These findings were statistically significant ($p < 0.001$).

Other factors such as the age of the girl, whether the school was situated in urban or rural area, school ownership, education level of the parent/guardian, where did they first learn about menstruation, how they first learn about menstruation and the socioeconomic status of the school did not affect their attitude towards MHH, as Table 29 illustrates.

Table 29: Factors associated MHH negative attitude among pupil/students in Tanzania Mainland and Zanzibar with a negative attitude

Factors	Total, N=7,807 (%)	With negative attitude, n=5,922 (%)	UPR (95% CI)	APR (95% CI)
Age group				
<15	3,393 (53.5)	2,591 (76.4)	1.0 (1.0–1.03)	NS
15+	2,944 (46.5)	2,231 (75.8)	Ref	
Settings				
Rural	3,004 (38.5)	2,297 (76.5)	1.0 (1.0–1.04)	NS
Urban	4,803 (61.5)	3,625 (75.5)	Ref	
State				
Tanzania Mainland	6,759 (86.6)	5,306 (78.5)***	1.3 (1.3–1.4)	1.4 (1.3–1.6)
Zanzibar	1,048 (13.4)	616 (58.8)	Ref	Ref
School ownership				
Government	6,722 (86.1)	5,047 (75.1)	Ref	Ref
Non-government	1,085 (13.9)	875 (80.6)***	1.1 (1.04–1.1)	1.0 (0.9–1.0)
Type of school				
Boarding only	864 (11.1)	610 (70.6)	Ref	Ref
Boarding and day	1,458 (18.7)	1,188 (81.5)***	1.2 (1.1–1.2)	1.0 (0.9–1.04)
Day only	5,485 (70.3)	4,124 (75.2)	1.1 (1.02–1.1)	1.0 (0.9–1.02)
Gender orientation of the school				
Only girls	292 (3.7)	253 (86.6)***	1.1 (1.1–1.2)	1.02 (0.9–1.1)
Co-education	7,515 (96.3)	5,669 (75.4)	Ref	Ref
Level of school				
Standard V–VII	3,099 (39.7)	2,274 (73.4)	Ref	Ref
Form I	462 (5.9)	369 (79.9)	1.1 (1.03–1.1)	1.1 (1.04–1.2)
Form II	1,193 (15.3)	957 (80.2)***	1.1 (1.05–1.1)	1.1 (1.06–1.2)
Form III	1,327 (17.0)	1,327 (75.0)	1.02 (1.0–1.1)	1.1 (1.1–1.2)
Form IV	1,726 (22.1)	1,327 (76.9)	1.05 (1.01–1.1)	1.1 (1.06–1.2)
Main provider of support for school fees and other needs				
Father	3,753 (48.1)	2,833 (75.5)	Ref	Ref
Mothers	2,427 (31.1)	1,808 (74.5)	1.0 (1.0–1.01)	1.0 (1.0–1.03)
Male caretaker	280 (3.6)	211 (75.4)	1.0 (0.9–1.1)	1.01 (0.9–1.1)

Factors	Total, N=7,807 (%)	With negative attitude, n=5,922 (%)	UPR (95% CI)	APR (95% CI)
Female caretaker	624 (8.0)	464 (74.4)	1.0 (0.9-1.03)	1.0 (0.9–1.05)
Others	723 (9.3)	606 (83.8)***	1.1 (1.1-1.2)	1.1 (1.03–1.1)
Education level of female parent/caretaker				
None	850 (12.9)	610 (71.8)	Ref	Ref
Primary	3,241 (49.1)	2,511 (77.5)	1.1 (1.03-1.1)	1.0 (1.0–1.06)
Secondary	1,606 (24.3)	1,203 (74.9)	1.04 (1.0-1.1)	1.0 (1.0–1.05)
Tertiary/College	905 (13.7)	706 (78.0)**	1.1 (1.02-1.2)	1.0 (1.0–1.1)
Occupation of parent/caretaker				
Farmer	4,284 (56.7)	3,179 (74.2)	Ref	Ref
Employed	1,229 (16.3)	940 (76.5)	1.03 (1.0–1.1)	1.03 (1.0–1.1)
Self-employed	1,818 (24.1)	1,448 (79.6)**	1.1 (1.04–1.1)	1.1 (1.02–1.1)
Retired	224 (3.0)	167 (74.6)	1.0 (0.9–1.1)	1.01 (1.0–1.1)
Ever received education menstrual education?				
Yes	7,187 (92.1)	5,444 (75.7)	Ref	
No	620 (7.9)	478 (77.1)	1.01 (1.0–1.1)	
Where did you first learn about menstruation?				
In the class	4,834 (61.9)	3,715 (76.8)	1.1 (1.02–1.1)	1.04 (1.0-1.1)
School clubs	671 (8.6)	527 (78.5)	1.1 (1.03–1.2)	1.05 (1.0-1.1)
Books	1,190 (15.2)	879 (73.9)	1.02 (1.0–1.1)	1.04 (1.0–1.1)
Others	1,112 (14.2)	801 (72.0)	Ref	
When was first information about menstruation received?				
Before beginning of menstruation	5,354 (68.6)	4,184 (78.1)***	1.1 (1.1–1.2)	1.1 (1.02–1.1)
During first menstruation	1,339 (17.2)	974 (72.7)	1.1 (1.01–1.12)	1.03 (1.0–1.1)
After the first menstruation	1,114 (14.3)	764 (68.6)	Ref	Ref
How did you first know about menstruation?				
Teachers/matron	3,072 (39.4)	2,426 (79.0)***	1.01 (0.9–1.1)	
Friends	1,214 (15.6)	887 (73.1)	0.9 (0.9–1.02)	
Parents/caretakers/ relatives	2,420 (31.0)	1,769 (73.1)	0.9 (0.9–1.02)	
Kungwi	936 (12.0)	711 (76.0)	1.0 (0.9–1.1)	

Factors	Total, N=7,807 (%)	With negative attitude, n=5,922 (%)	UPR (95% CI)	APR (95% CI)
Media/others	165 (2.1)	129 (78.2)	Ref	
School's socioeconomic status				
Lowest	1,598 (20.9)	1,168 (73.1)	Ref	Ref
Second	1,460 (19.1)	1,082 (74.1)	1.01 (1.0–1.1)	1.02 (1.0–1.1)
Middle	1,500 (19.6)	1,084 (72.3)	1.0 (0.9–1.03)	1.0 (0.9–1.03)
Fourth	1,471 (19.3)	1,160 (78.9)	1.1 (1.03–1.1)	1.1 (1.02–1.1)
Highest	1,607 (21.1)	1,296 (80.6)***	1.1 (1.1–1.2)	1.03 (1.0–1.1)

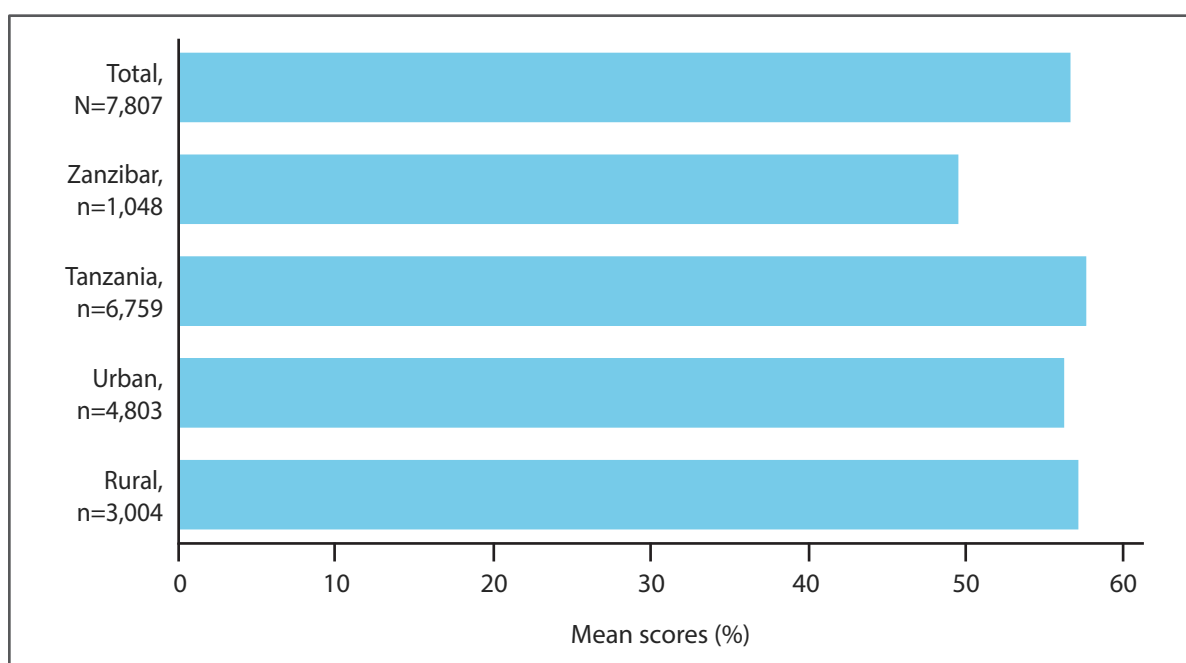
*p<0.05, **p <0.01, ***p <0.001; UPR, unadjusted prevalence ratio; APR, adjusted prevalence ratio. Note: Some explainable variables had missing values, but they were reported in the table.

What MHH practices exist among girls in the study areas?

As Figure 24 illustrates, the overall mean age score of good practices regarding MHH was 56.5

per cent. A high mean score of good practices of 57.5 per cent were demonstrated by girls from Tanzania Mainland as compared to a score 49.4 per cent obtained by girls from Zanzibar (p<0.001). Overall, rural dwellers demonstrated a high level of good practices scores (57.0 per cent) than urbanites (56.1 per cent) (p<0.01).

Figure 24: Mean percentage (%) score on good practices (combined) towards MHH stratified by setting for Tanzania Mainland and Zanzibar



We also measured the mean percentage score on good practices comparing girls from rural and urban Tanzania Mainland and Zanzibar separately (Figure 25). Parameters used are as shown in Figure 25. The mean percentage score on good practices of 57.9 per cent was demonstrated by rural dwellers from Tanzania Mainland as compared to 53.3 per cent obtained by girls from rural Mainland. Likewise, rural dwellers in Zanzibar demonstrated a high mean percentage scores of good practices as compared to only 48.4 per cent in urban Zanzibar ($p<0.001$).

Using the Bloom technique, we managed to estimate the proportion of girls following either poor, moderately good and good practices

among the study participants. Table 30 and Figure 26 describe practices prevailing in rural and urban as well as Tanzania Mainland and Zanzibar. Generally, over two-thirds ($n=5,028$, 64.4 per cent), of post-menarche girls demonstrated a high level of poor practices, with the majority ($n=916$, 87.4 per cent), reported in Zanzibar as compared to 60.8 per cent ($n=4,109$) from Tanzania Mainland ($p<0.001$). Likewise, urban dwellers (65.1 per cent; $n=3,127$) demonstrated poor MHH practices as compared to 63.2 per cent ($n=1,899$) of the girls from rural areas. Overall, 35.2 per cent ($n=2,748$) of the girls followed moderately good practices, and only 0.4 per cent ($n=31$) followed good practices.

Figure 25: Mean percentage (%) score of good practices (combined) towards MHH stratified by rural and urban Tanzania Mainland and Zanzibar

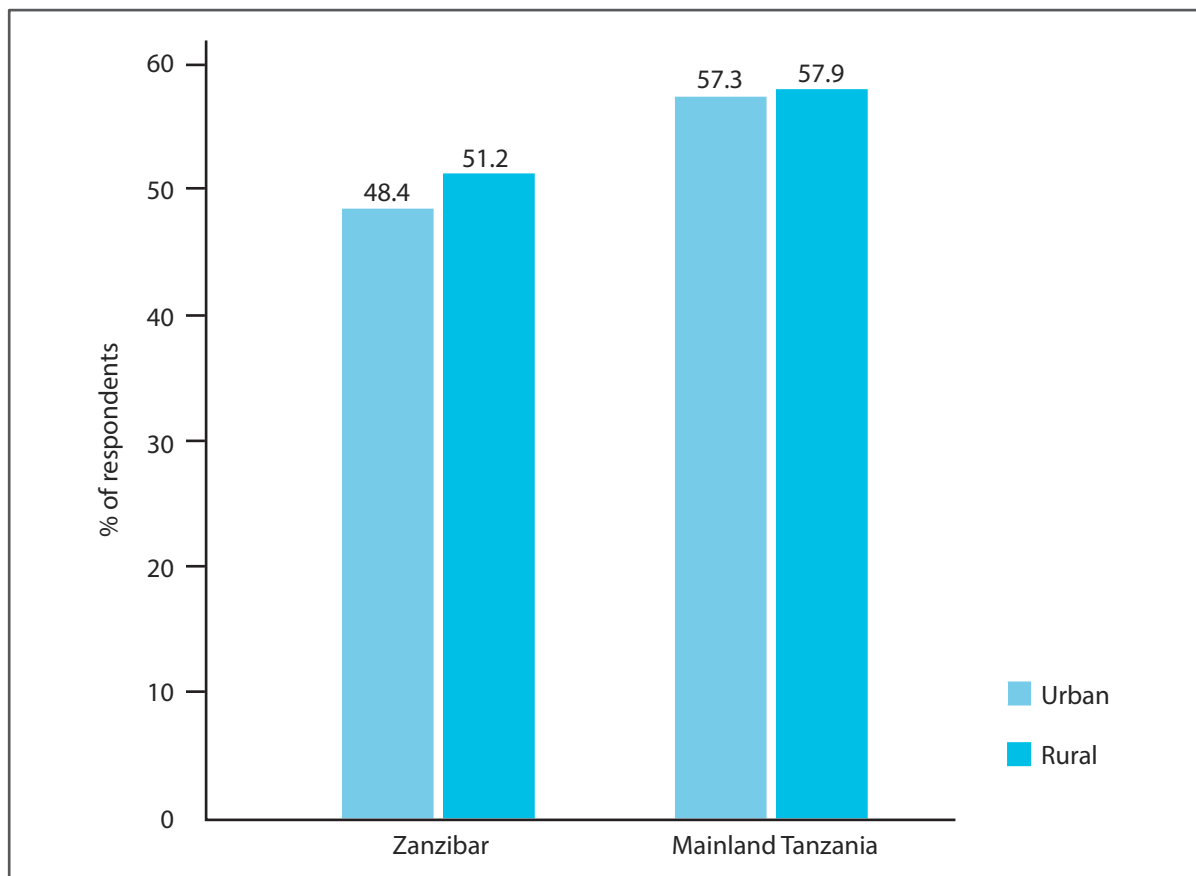
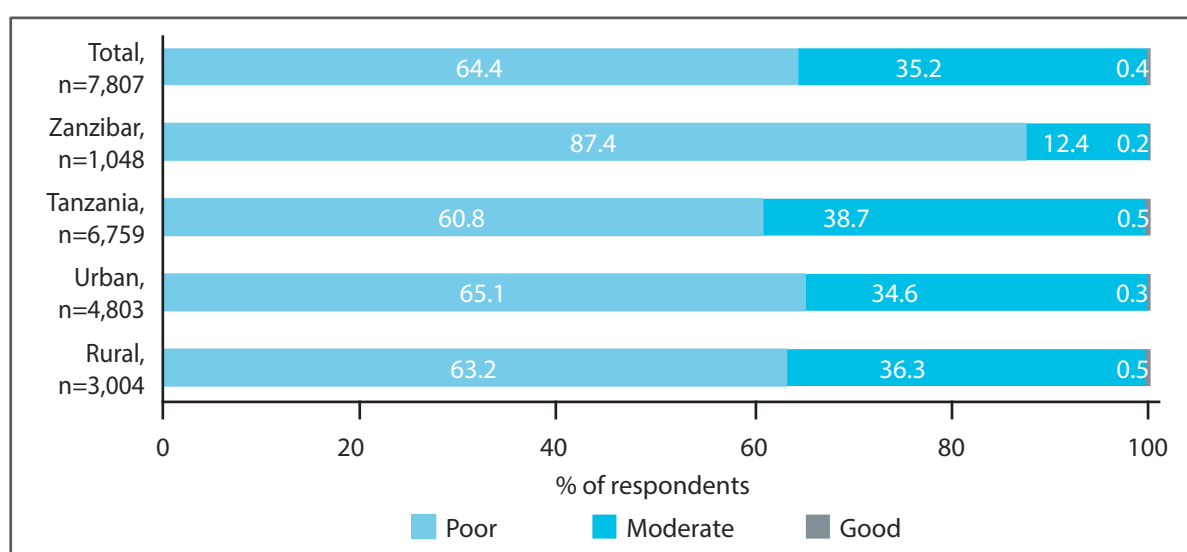


Table 30: Proportion of girls with different levels of MHH practices stratified by setting for Tanzania Mainland and Zanzibar

Level of practice	Rural, n=3,004	Urban, n=4,803	Tanzania, n=6,759	Zanzibar, n=1,048	Total, N=7,807
Poor	63.2	65.1	60.8	87.4***	64.4
Moderate	36.3	34.6	38.7	12.4	35.2
Good	0.5	0.3	0.5	0.2	0.4

*p<0.05, **p<0.01, ***p<0.001

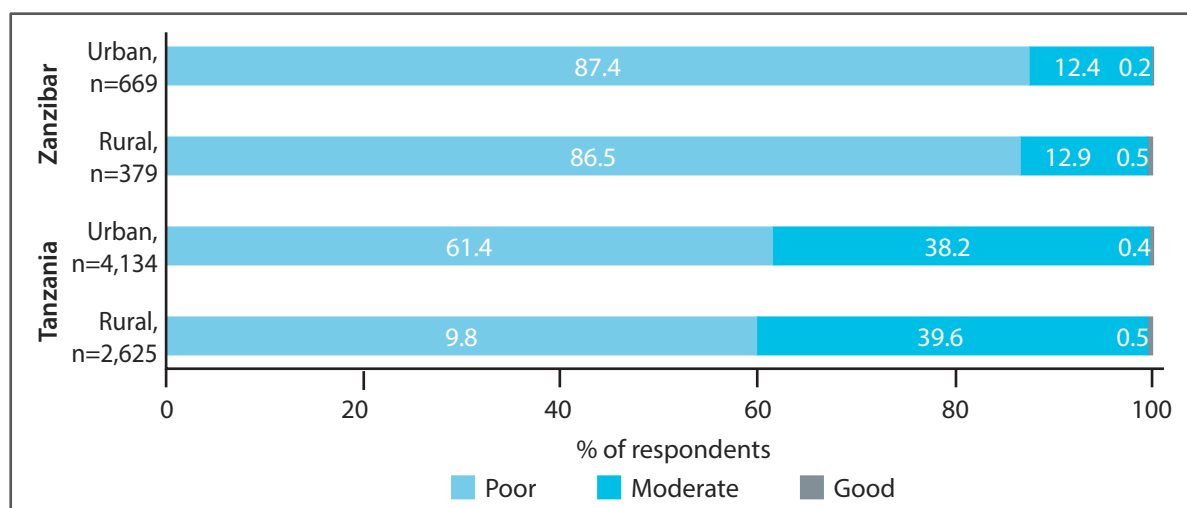
Figure 26: Overall proportion of girls with different levels of MHH practices stratified by setting for Tanzania Mainland and Zanzibar



We also analysed the level of practices among post-menarche girls by comparing rural and urban areas of Tanzania Mainland and Zanzibar separately (see Figure 27). Parameters used

are as shown in Table 28. Although it was not statistically significant, most of the girls from urban areas on both Tanzania Mainland and Zanzibar demonstrated poorer practices than

Figure 27: Overall proportion of girls with different levels of practices stratified by rural and urban settings of Tanzania Mainland and Zanzibar

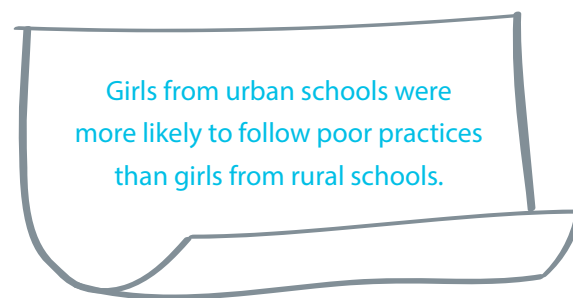


their rural counterparts, as Figure 27 illustrates. We also measured the proportion of girls with different levels of practices by district. Most of girls following poor MHH practices were from Namtumbo, Rorya and Kibongo in Tanzania Mainland. In Zanzibar, poor practices were found to be followed by girls from Kaskazin A Unguja and North Pemba (Figure 28).

Factors associated with poor practices

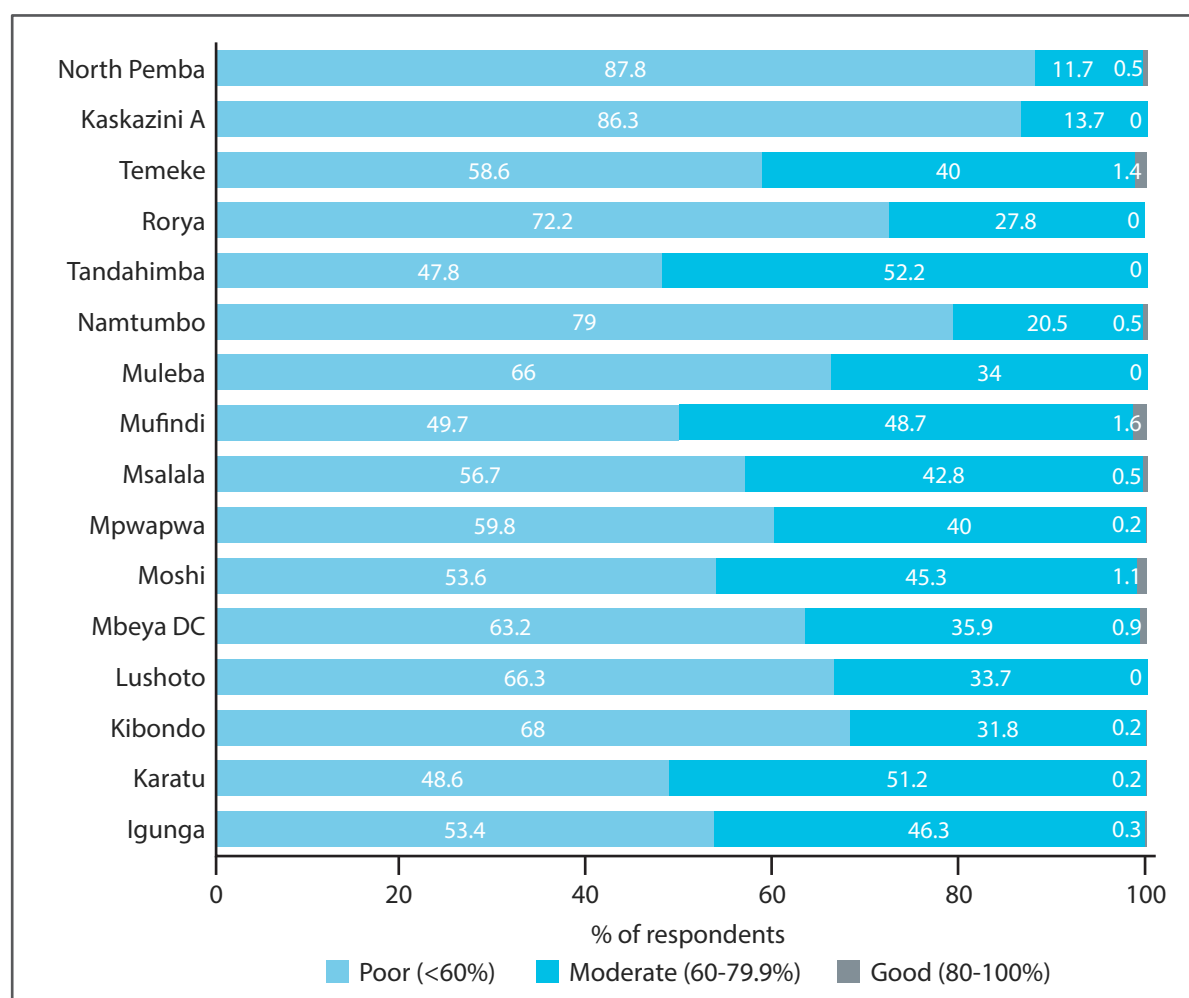
As described above, a significant proportion of girls followed poor MHH practices. Thus, associated factors were analysed.

When adjusted for confounding, being in an urban school was associated with 1.1 times more likelihood of following poor MHH



practices (95 per cent CI = 1.03–1.2). This finding was statistically significant ($p < 0.001$). Although girls from the Mainland were more likely to have negative attitude towards MHH than their counterparts from Zanzibar, girls from the latter region were more likely to follow poor practices than their counterparts from the former region (APR = 1.5; 95 per cent CI = 1.3–1.6). These findings were statistically significant ($p < 0.001$).

Figure 28: Proportion of girls with different levels of MHH practices stratified by district in Tanzania Mainland and Zanzibar



In multivariate analysis, school ownership did not show any effect on the level of knowledge of or attitude towards MHH. Regarding practices however, girls from government schools were 1.3 times more likely to follow poor practices than girls from non-government schools (95 per cent CI = 1.1–1.5). This finding was statistically significant ($p < 0.001$).

School systems were found to be among factors that significantly affected the MHH practices followed by girls. Girls who went to day schools were at a higher risk of following poor MHH practices than their colleagues who went to boarding schools or schools with both boarding and day students (APR = 1.4 (95 per cent CI = 1.2–1.5)). Additionally, girls who went to girls-only schools were 1.2 times more likely to follow poor practices than girls who went to co-education schools (95 per cent CI = 1.2–1.5). These findings were statistically significant ($p < 0.001$).


Although age was not found to affect the girls' MHH practices significantly, girls in primary schools (standard V–VII) were 1.2 times more likely to follow poor practices than girls in secondary schools. These findings were statistically significant (APR = 1.2; 95 per cent CI = 1.1–1.4; $p < 0.001$).

Girls who were provided support by a male guardians for paying school fees and taking care of other needs were 1.3 times more likely to follow poor MHH practices than girls who were supported by either a parent or a female guardian (95 per cent CI = 1.2–1.6). The results remained consistent after adjusting for confounding and were statistically significant.

Girls whose female caretakers/guardians had no education were more likely to follow poor MHH practices than girls whose female caretakers had received primary, secondary or tertiary/

college education. The proportion of girls with poor practices decreased with increasing education level of the female caretaker. These findings were statistically significant (APR = 1.2; 95 per cent CI = 1.1–1.4, $p < 0.001$).

Education about menstruation and the circumstances where and when girls obtained information about menstruation for the first time were found to affect their MHH practices.



Girls who had never received education on menstruation were 1.1 times more likely to follow poor practices than those who had ever received such education.

Girls who first learned about menstruation in school clubs were 0.9 times less likely to follow poor practices than girls who first learned about menstruation in the class through books or other sources. Moreover, girls who received information on menstruation after their first menstrual cycle were more likely to follow poor MHH practices than girls who received menstrual information before menarche or during their first menstruation (APR = 1.2, 95 per cent CI = 1.1–1.2). The results show that the earlier the girls received information on menstruation, the less likely their practices would be poor. These findings were statistically significant ($p < 0.001$).

The school's socioeconomic status was found to affect the girls' MHH practices. The lower the socioeconomic status of the school, the more likely the girls follow poor MHH practices. This finding was statistically significant. Table 31 presents the results.

Table 31: Factors associated poor MHH practices among students in Tanzania Mainland and Zanzibar

Factors	Total, N=7,808 (%)	Follow poor practices, n=5,024 (%)	UPR (95% CI)	APR (95% CI)
Age group				
<15	3,393 (53.5)	1,901 (56.0)*	1.1 (1.03–1.1)	1.02 (0.9–1.1)
15+	2,944 (46.5)	1,521 (51.7)	Ref	Ref
Settings				
Rural	3,004 (38.5)	1,497 (49.8)	Ref	Ref
Urban	4,803 (61.5)	2,687 (55.9)***	1.1 (1.1–1.2)	1.1 (1.03–1.2)
State				
Tanzania Mainland	6,759 (86.6)	3,485 (51.6)	Ref	Ref
Zanzibar	1,048 (13.4)	699 (66.7)***	1.3 (1.2–1.4)	1.5 (1.3–1.6)
School ownership				
Government	6,722 (86.1)	3,844 (57.2)***	1.8 (1.7–2.0)	1.3 (1.1–1.5)
Non-government	1,085 (13.9)	340 (31.3)	Ref	Ref
Type of school				
Boarding only	864 (11.1)	389 (45.0)	Ref	Ref
Boarding and day	1,458 (18.7)	594 (40.7)	0.9 (0.8–1.0)	1.2 (1.04–1.4)
Day only	5,485 (70.3)	3,201 (58.4)***	1.3 (1.2–1.4)	1.4 (1.2–1.5)
Gender orientation of the school				
Only girls	292 (3.7)	74 (25.3)	Ref	Ref
Co-education	7,515 (96.3)	4,110 (54.7)***	2.2 (1.8–2.6)	1.2 (1.2–1.5)
Level of school				
Standard V–VII	3,099 (39.7)	1,842 (59.4)***	1.2 (1.2–1.3)	1.2 (1.1–1.4)
Form I	462 (5.9)	210 (45.4)	0.9 (0.8–1.04)	1.03 (0.9–1.2)
Form II	1,193 (15.3)	580 (48.6)	1.0 (0.9–1.1)	1.1 (1.0–1.2)
Form III	1,327 (17.0)	711 (53.6)	1.1 (1.02–1.2)	1.1 (1.03–1.2)
Form IV	1,726 (22.1)	841 (48.7)	Ref	Ref
Main provider of support for school fees and other needs				
Father	3,753 (48.1)	2,033 (54.2)	1.2 (1.1–1.3)	1.2 (1.05–1.3)
Mothers	2,427 (31.1)	1,336 (55.0)	1.2 (1.1–1.4)	1.2 (1.04–1.3)

Factors	Total, N=7,808 (%)	Follow poor practices, n=5,024 (%)	UPR (95% CI)	APR (95% CI)
Male caretaker/ guardian	280 (3.6)	163 (58.2)***	1.3 (1.2–1.5)	1.3 (1.2–1.6)
Female caretaker/ guardian	624 (8.0)	330 (52.9)	1.2 (1.1–1.3)	1.1 (1.0–1.3)
Others	723 (9.3)	322 (44.5)	Ref	Ref
Education level of female parent/caretaker				
None	850 (12.9)	539 (63.4)***	1.6 (1.4–1.7)	1.2 (1.1–1.4)
Primary	3,241 (49.1)	1,824 (56.3)	1.4 (1.3–1.5)	1.0 (0.8–1.2)
Secondary	1,606 (24.3)	791 (49.2)	1.2 (1.1–1.3)	1.1 (1.0–1.2)
Tertiary/College	905 (13.7)	367 (40.5)	Ref	Ref
Occupation of parent/caretaker				
Farmer	4,284 (56.7)	2,512 (58.6)***	1.2 (1.03–1.4)	1.02 (0.9–1.2)
Employed	1,229 (16.3)	556 (45.2)	0.9 (0.8–1.1)	1.0 (0.8–1.2)
Self-employed	1,818 (24.1)	858 (47.2)	0.9 (0.8–1.1)	0.9 (0.8–1.1)
Retired	224 (3.0)	111 (49.5)	Ref	Ref
Ever received education menstrual education?				
Yes	7,187 (92.1)	3,786 (52.7)	Ref	Ref
No	620 (7.9)	398 (64.2)***	1.2 (1.1–1.3)	1.1 (1.0–1.2)
Where did you first learn about menstruation?				
In the class	4,834 (61.9)	2,558 (52.9)	Ref	Ref
School clubs	671 (8.6)	325 (48.4)	0.9 (0.8–1.0)	0.9 (0.8–1.0)
Books	1,190 (15.2)	681 (57.2) **	1.1 (1.02–1.1)	1.03 (1.0–1.1)
Others	1,112 (14.2)	620 (55.8)	1.05 (1.0–1.1)	1.1 (1.0–1.1)
When did you receive information about menstruation?				
Before the beginning of menstruation	5,354 (68.6)	2,715 (50.7)	Ref	Ref
During first menstruation	1,339 (17.2)	760 (56.8)	1.1 (1.06–1.2)	1.01 (0.9–1.1)
After the first menstruation	1,114 (14.3)	709 (63.6) ***	1.2 (1.2–1.3)	1.2 (1.1–1.2)

Factors	Total, N=7,808 (%)	Follow poor practices, n=5,024 (%)	UPR (95% CI)	APR (95% CI)
How did you first know about menstruation?				
Teachers/matron	3,072 (39.4)	1,598 (52.0)	Ref	Ref
Friends	1,214 (15.6)	703 (57.9)	1.1 (1.05–1.2)	0.9 (0.8–1.0)
Parents/caretakers/ relatives	2,420 (31.0)	1,269 (52.4)	1.0 (0.9–1.1)	0.9 (0.9–1.02)
Kungwi	936 (12.0)	515 (55.0)	1.06 (1.0–1.1)	1.0 (0.9–1.02)
Media/others	165 (2.1)	99 (60.0) **	1.2 (1.01–1.3)	1.04 (0.9–1.2)
School's socioeconomic status				
Lowest	1,598 (20.9)	968 (60.6)***	1.7 (1.6–1.9)	1.3 (1.1–1.4)
Second	1,460 (19.1)	886 (60.7)***	1.7 (1.6–1.9)	1.2 (1.1–1.4)
Middle	1,500 (19.6)	892 (59.5)	1.7 (1.6–1.8)	1.3 (1.1–1.4)
Fourth	1,471 (19.3)	778 (52.9)	1.5 (1.4–1.6)	1.2 (1.05–1.3)
Highest	1,607 (21.1)	561 (34.9)	Ref	Ref

*p <0.05, **p <0.01, ***p <0.001; UPR, unadjusted prevalence ratio; APR, adjusted prevalence ratio.



Effect of menstruation on academic

performance: Girls were also asked to indicate whether they had ever missed school due to menstruation. About 17 per cent of the students reported to have missed school due to menstruation in the past three months prior to our visit. Higher proportions of girls who

missed schools as a result of menstruation were recorded in Kaskazini Pemba (29 per cent), Kaskazini Unguja (24 per cent) and Tandahimba DC (20 per cent) whereas the lowest was recorded in Moshi district (9 per cent). Table 32 presents the results.

Table 32: Students who missed school in the last three months due to menstruation stratified by region and district in Tanzania Mainland and Zanzibar

Region	District	Total, n (%)	Missed school, n (%)
Tanzania Mainland			
Tabora	Igunga	320 (4.1)	46 (14.4)
Arusha	Karatu	572 (7.3)	81 (14.2)
Kigoma	Kibondo	578 (7.4)	92 (15.9)
Tanga	Lushoto	517 (6.6)	86 (16.6)
Mbeya	Mbeya DC	554 (7.1)	69 (16.6)
Kilimanjaro	Moshi	358 (4.6)	33 (9.2)
Dodoma	Mpwapwa	545 (7.0)	89 (16.3)
Shinyanga	Msalala	446 (5.7)	84 (18.8)
Iringa	Mufindi	443 (5.7)	74 (16.7)
Kagera	Muleba	506 (6.5)	60 (11.9)
Ruvuma	Namtumbo	553 (7.1)	70 (12.7)
Mtwara	Tandahimba	513 (6.6)	100 (19.8)
Mara	Rorya	504 (6.5)	79 (15.4)
Dar Es Salaam	Temeke	350 (4.5)	63 (18.0)
Zanzibar			
Unguja	Kaskazini A	459 (6.6)	109 (23.7)
Pemba	North Pemba	589 (7.5)	172 (29.2)

Reasons for missing school during

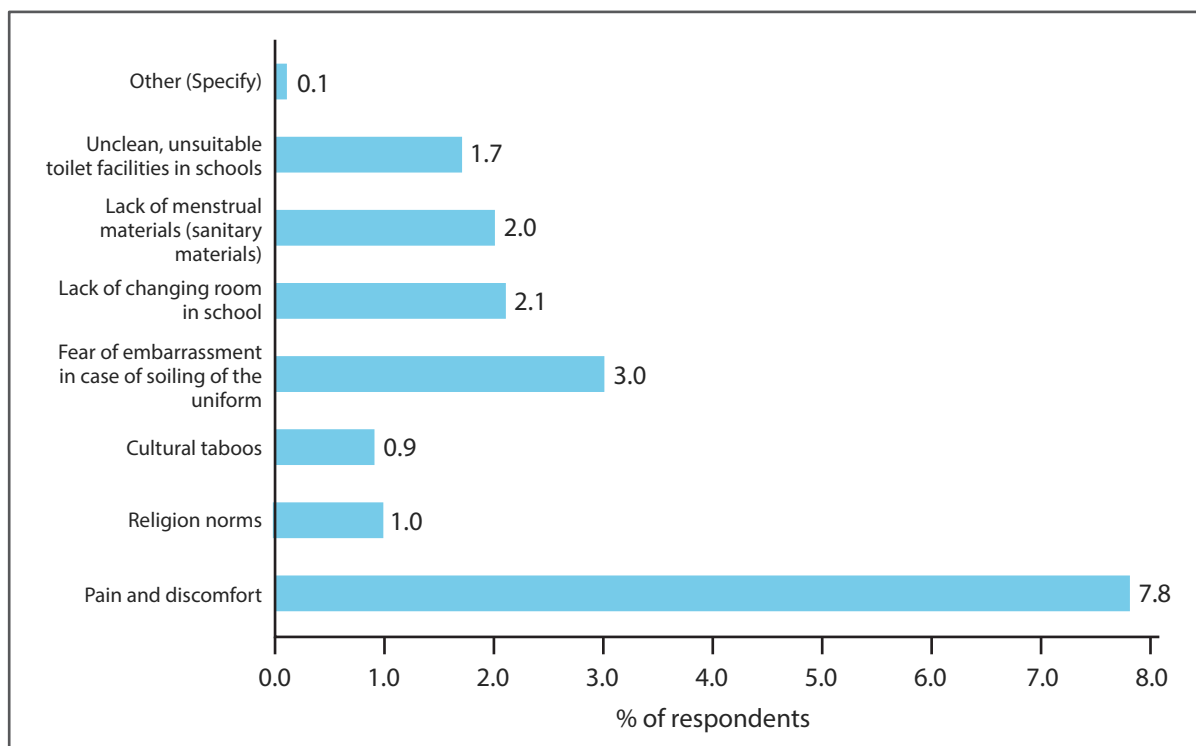
menstruation: Among 1,307 girls who missed schools in the previous three months prior to our visit, 7.8 per cent cited pain and discomfort, followed by those who stated fear of embarrassment in case of soiling of their uniform (3.0 per cent), lack of menstrual materials (2.0 per cent), lack of changing room (2.1 per cent) and lack of clean and suitable toilet facilities in schools (1.7 per cent). Figure 29 presents the results.

The study explored the factors associated with missing school due to menstruation in the last three months prior to the interview. Univariate analysis revealed that factors such as being older than 15 years, going to a public school, being in Form Four class and having a male caretaker/guardian as the main provider of school fees and other needs were found to be significantly associated with missing school during menstruation. Moreover, circumstances

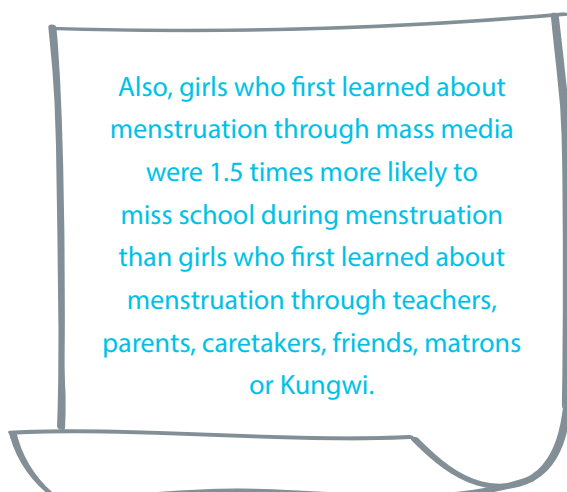
around learning about menstruation for the first time such as where, when and from who were found to have influence on missing school during the menstrual period. These findings were statistically significant.

When these factors were subjected to multivariate analysis, we found that girls living in Zanzibar were 1.5 times more likely to miss school during menstruation than girls from the Mainland (95 per cent CI = 1.2–1.7). These findings were statistically significant ($p < 0.001$). Although girls older than 15 years were slightly more likely to miss school than younger girls (APR = 1.1, 95 per cent CI = 0.9–1.3), girls in Form Four class were 1.7 times more likely to miss classes during menstruation than girls in lower classes (95 per cent CI = 1.4–2.2). These findings were statistically significant ($p < 0.001$). When and how girls learned about menstruation for the first time remained significant after adjusting

Figure 29: Reasons for missing school during menstruation in the last three months (n=1,307)



for confounders. The results show that girls who received information on menstruation for the first time after menarche were 1.4 times more likely to miss school than girls who received that information before menarche or during their first menstruation.



These findings were both statistically significant ($p < 0.001$). Additionally, having a male caretaker/guardian as the main provider of school fees and other needs was significantly associated with missing school during menstruation (APR = 1.3, 95 per cent CI = 1.0–1.8).

Furthermore, the location of school (rural or urban), school ownership, whether the school was a day or boarding, girls-only or co-school, parents' occupation, whether the girl had ever received education about menstruation or not, where they first learned about menstruation and the school's socioeconomic status had little or no bearing on missing school during menstruation, as Table 33 illustrates.

Table 33: Factors associated with missing school in the last three months due to menstruation

Factors	Total, N (%)	Missed school, n (%)	UPR (95% CI)	APR (95% CI)
Age group				
<15	3,393 (53.5)	493 (14.5)	Ref	Ref
15+	2,944 (46.5)	594 (20.2)***	1.4 (1.3–1.6)	1.1 (0.9–1.3)
Settings				
Rural	3,004 (38.5)	476 (15.9)	Ref	Ref
Urban	4,803 (61.5)	831 (17.3)	1.1 (1.0–1.2)	1.1 (1.0–1.2)
State				
Tanzania Mainland	6,759 (86.6)	1,026 (15.2)	Ref	Ref
Zanzibar	1,048 (13.4)	281 (26.8)***	1.8 (1.6–2.0)	1.5 (1.2–1.7)
School ownership				
Government	6,722 (86.1)	1,149 (17.1)*	1.2 (1.01–1.4)	1.0 (0.8–1.2)
Non-government	1,085 (13.9)	158 (14.6)	Ref	Ref
Type of school				
Boarding only	864 (11.1)	155 (17.9)	1.2 (1.0–1.5)	1.0 (0.8–1.3)

Factors	Total, N (%)	Missed school, n (%)	UPR (95% CI)	APR (95% CI)
Boarding and day	1,458 (18.7)	216 (14.8)	Ref	Ref
Day only	5,485 (70.3)	936 (17.1)	1.2 (1.01–1.3)	1.1 (1.0–1.4)
Gender orientation of the school				
Only girls	292 (3.7)	43 (14.7)	Ref	
Co-education	7,515 (96.3)	1,264 (16.8)	1.1 (0.9–1.5)	
Level of school				
STD V–VII	3,099 (39.7)	489 (15.8)	1.3 (1.1–1.6)	1.3 (1.02–1.6)
Form I	462 (5.9)	58 (12.6)	1.04 (0.8–1.4)	1.1 (0.7–1.5)
Form II	1,193 (15.3)	144 (12.1)	Ref	Ref
Form III	1,327 (17.0)	217 (16.4)	1.4 (1.6–2.3)	1.3 (1.0–1.6)
Form IV	1,726 (22.1)	399 (23.1)***	1.9 (1.6–2.3)	1.7 (1.4–2.2)
Main provider of support for school fees and other needs				
Father	3,753 (48.1)	611 (16.3)	1.2 (1.0–1.5)	1.0 (0.8–1.2)
Mothers	2,427 (31.1)	423 (17.4)	1.3 (1.1–1.6)	1.1 (0.9–1.4)
Male caretaker/guardian	280 (3.6)	60 (21.4)**	1.6 (1.2–2.2)	1.3 (1.0–1.8)
Female caretaker/guardian	624 (8.0)	117 (18.8)	1.4 (1.1–1.8)	1.2 (0.9–1.6)
Others	723 (9.3)	96 (13.3)	Ref	Ref
Education level of female parent/caretaker				
None	850 (12.9)	153 (18.0)	1.1 (0.9–1.4)	
Primary	3,241 (49.1)	516 (15.9)	1.0 (0.8–1.2)	
Secondary	1,606 (24.3)	275 (17.1)	1.1 (0.9–1.3)	
Tertiary/College	905 (13.7)	144 (15.9)	Ref	
Occupation of parent/caretaker				
Farmer	4,284 (56.7)	708 (16.5)	1.02 (0.9–1.2)	
Employed	1,229 (16.3)	217 (17.7)	1.1 (0.9–1.3)	
Self-employed	1,818 (24.1)	296 (16.3)	Ref	
Retired	224 (3.0)	41 (18.3)	1.1 (0.8–1.5)	
Ever received menstruation education?				
Yes	7,187 (92.1)	1,197 (16.7)	Ref	
No	620 (7.9)	110 (17.7)	1.1 (0.9–1.3)	
Where did you first learn about menstruation?				
In the class	4,834 (61.9)	764 (15.8)	1.03 (0.9–1.2)	1.02 (0.8–1.3)
School clubs	671 (8.6)	103 (15.4)	Ref	Ref
Books	1,190 (15.2)	235 (17.8)	1.3 (1.04–1.6)	1.1 (0.9–1.4)

Factors	Total, N (%)	Missed school, n (%)	UPR (95% CI)	APR (95% CI)
Others	1,112 (14.2)	205 (18.4)**	1.2 (1.0–1.5)	1.01 (0.8–1.3)
When did you receive information about menstruation?				
Before the beginning of menstruation	5,354 (68.6)	798 (14.9)	Ref	Ref
During first menstruation	1,339 (17.2)	254 (19.0)	1.3 (1.1–1.5)	1.2 (1.04–1.4)
After the first menstruation	1,114 (14.3)	255 (22.9)***	1.5 (1.4–1.7)	1.4 (1.2–1.6)
How did you first know about menstruation?				
Teachers/matron	3,072 (39.4)	450 (14.7)	Ref	Ref
Friends	1,214 (15.6)	238 (19.6)	1.3 (1.2–1.5)	1.2 (1.03–1.4)
Parents/caretakers/	2,420 (31.0)	422 (17.4)	1.2 (1.1–1.3)	1.01 (0.9–1.2)
Kungwi	936 (12.0)	159 (17.0)	1.2 (1.0–1.4)	1.1 (0.9–1.3)
Media/others	165 (2.1)	38 (23.0)***	1.6 (1.2–2.1)	1.5 (1.1–2.1)
School's socioeconomic status				
Lowest	1,598 (20.9)	277 (17.4)	1.3 (1.1–1.5)	1.1 (0.9–1.3)
Second	1,460 (19.1)	241 (16.5)	1.2 (1.02–1.4)	1.1 (0.9–1.3)
Middle	1,500 (19.6)	273 (18.2)**	1.3 (1.1–1.6)	1.1 (0.9–1.4)
Fourth	1,471 (19.3)	249 (17.0)	1.2 (1.1–1.5)	1.1 (0.9–1.3)
Highest	1,607 (21.1)	219 (13.6)	Ref	Ref

*p<0.05, **p<0.01, ***p<0.001; UPR, unadjusted prevalence ratio; APR, adjusted prevalence ratio.



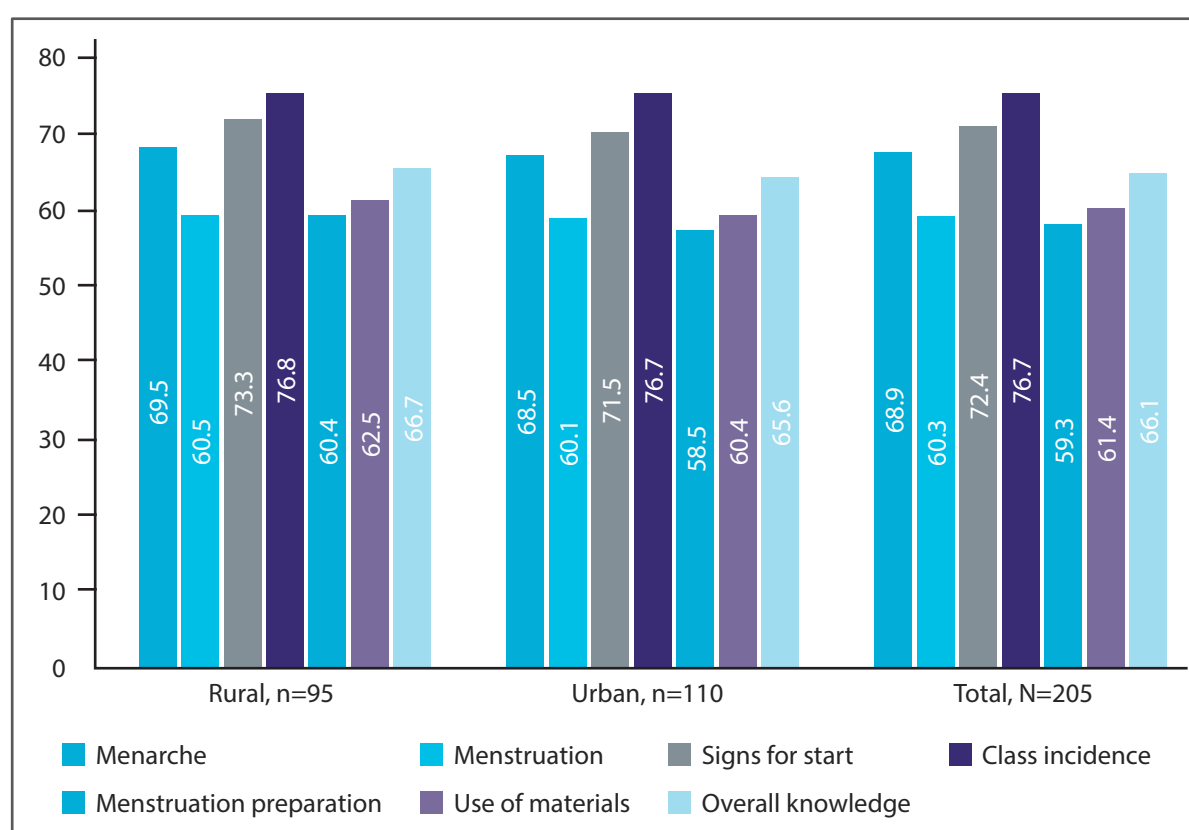
Section 3.3

Findings about MHH in girls with disability

Figure 30 shows that overall the knowledge score on MHH among girls with disability was 66.1 per cent, with girls from the rural areas scoring higher (66.7 per cent) than girls with disability from urban areas who scored 65.6

per cent. Overall, the average score in their understanding of menarche was (68.9 per cent), menstruation (60.3 per cent), signs of start of menstruation (72.4 per cent), and essential preparation before menstruation (59.3 per cent).

Figure 30: Mean percentage (%) score for MHH knowledge among post-menarche in-school adolescent girls with a disability from rural and urban Tanzania Mainland and Zanzibar



The majority of girls with disability demonstrated a moderate level of knowledge (n=141, 68.8 per cent), with a higher proportion (n=76, 60.1 per cent) of girls coming from urban areas. Among the 23.4 per cent (n=48) of girls with a disability with low level of knowledge,

the majority were rural dwellers. Less than one-tenth (n=16, 7.8 per cent) of the girls with a disability had a high level of MHH knowledge (Figure 31). Overall, 37 per cent of girls with a disability demonstrated adequate MHH knowledge (Figure 32).

Figure 31: Proportion of girls with disabilities with different levels of MHH knowledge stratified by setting

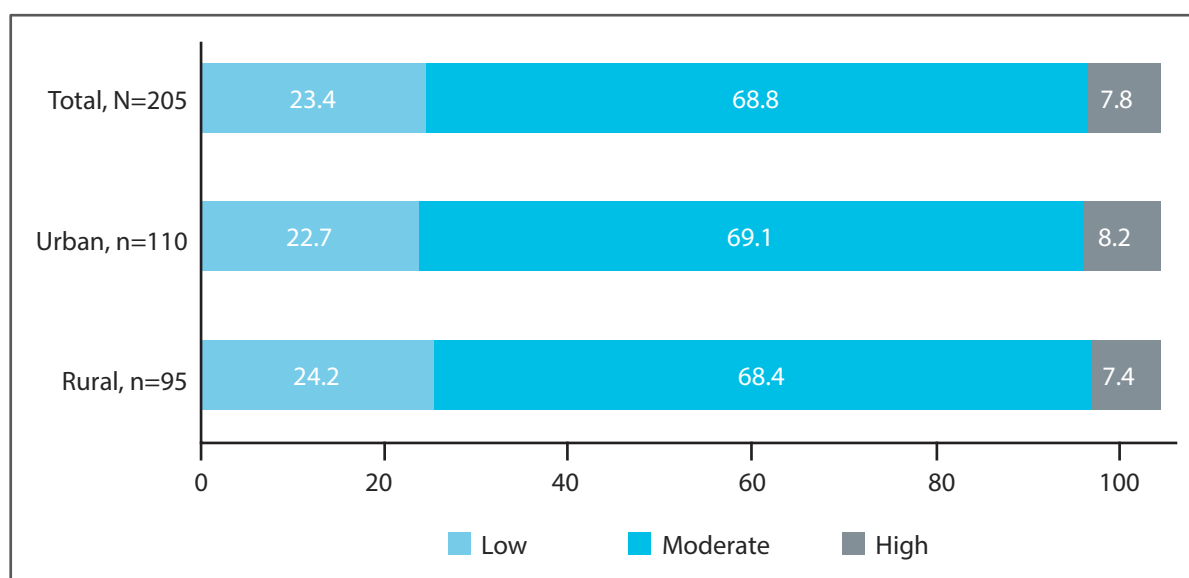
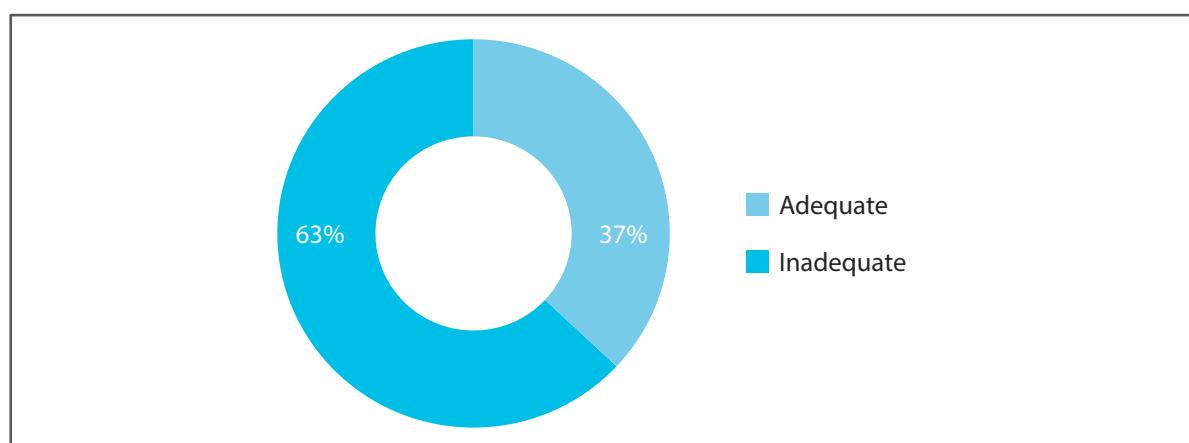


Figure 32: Overall knowledge level among students with disabilities in Tanzania Mainland and Zanzibar



Factors associated with low MHH knowledge among students with disabilities in Tanzania Mainland and Zanzibar

Factors that could be associated with low knowledge among school girls with disabilities were explored and the results are shown in Table 34. The source from which girls with

disabilities first encountered information on menstruation was found to significantly influence their level of knowledge. Girls who obtained information about menstruation for the first time from books (38.2 per cent) or school clubs (41.2 per cent) were more likely to have lower knowledge than girls who first obtained the information through classes or other sources. These findings were statistically significant ($p < 0.05$).

Table 34: Factors associated with inadequate MHH knowledge among in-school adolescent girls with disabilities in Tanzania Mainland and Zanzibar

Factors	Total, N (%)	With inadequate knowledge, n (%)
Age group		
<15	106 (51.7)	70 (66.0)
15+	99 (48.3)	60 (60.6)
Settings		
Rural	95 (46.3)	62 (65.3)
Urban	110 (53.7)	68 (61.8)
School ownership		
Government	168 (82.3)	122 (62.9)
Non-government	36 (17.6)	8 (72.7))
Type of school		
Boarding only	19 (9.3)	14 (73.7)
Boarding and day	44 (21.6)	27 (61.4)
Day only	141 (69.1)	88 (62.4)
Gender orientation of the school		
Only girls	9 (4.4)	7 (77.8)
Co-education	196 (95.6)	123 (62.8)
Level of school		
Standard V–VII	97 (47.3)	62 (63.9)
Form I	12 (5.8)	10 (83.3)

Factors	Total, N (%)	With inadequate knowledge, n (%)
Form II	33 (16.1)	20 (60.6)
Form III	23 (11.2)	16 (69.6)
Form IV	40 (19.5)	22 (55.0)
Main provider of support for school fees and other needs		
Father	75 (37.1)	53 (70.7)
Mothers	77 (38.1)	51 (66.2)
Male caretaker/guardian	9 (4.5)	4 (44.4)
Female caretaker/guardian	16 (7.9)	7 (43.8)
Others	25 (12.4)	12 (48.0)
Missing	3	
Education level of female parent/caretaker		
None	24 (14.2)	14 (58.3)
Primary	72 (42.6)	45 (62.5)
Secondary	41 (24.3)	28 (68.3)
Tertiary/College	32 (18.9)	17 (53.1)
Missing	3	
Occupation of parent/caretaker		
Farmer	91 (46.4)	58 (63.7)
Employed	35 (17.9)	22 (62.9)
Self-employed	59 (30.1)	37 (62.7)
Retired	11 (5.6)	7 (63.6)
Missing	9	
Ever received menstruation education?		
Yes	181 (88.3)	110 (60.8)
No	24 (11.7)	20 (83.3)*
Where did you first learn about menstruation?		
In the class	129 (62.9)	79 (61.2)
School clubs	17 (8.3)	12 (70.6)

Factors	Total, N (%)	With inadequate knowledge, n (%)
Books	34 (16.6)	24 (70.6)
Others	25 (12.2)	15 (60.0)
When did you receive information about menstruation?		
Before the beginning of menstruation	138 (67.3)	79 (57.3)
During the first menstruation	35 (17.1)	28 (80.0)*
After the first menstruation	32 (15.6)	23 (71.9)
How did you first know about menstruation?		
Teachers/matron	70 (34.7)	43 (61.4)
Friends	27 (13.4)	17 (63.0)
Parents/caretakers/relatives	62 (30.7)	37 (59.7)
Kungwi	31 (15.4)	22 (71.0)
Media/others	12 (5.9)	8 (66.7)
Socioeconomic status		
Poorest	25 (12.2)	18 (72.0)
Second	35 (17.2)	23 (65.7)
Third	43 (21.1)	29 (67.4)
Fourth	46 (22.6)	22 (47.8)
Wealthiest	55 (27.0)	37 (67.3)

*p<0.05, **p<0.01, ***p<0.001; UPR, unadjusted prevalence ratio; APR, adjusted prevalence ratio.

Attitudes towards MHH among post-menarche girls with disabilities in the study areas

The overall mean positive attitude score among girls with disabilities was low at 48.7 per cent with girls from urban schools demonstrating a higher attitude scores (49.6 per cent) than girls from rural areas, whose attitude scores was 47.4 per cent.

Girls from rural areas had a higher positive attitude scores based on the institution and environment they live in (59.3 per cent) than girls from the urban areas who had a lower attitude (58.2 per cent).

Girls with disabilities from rural areas had a higher self-attitude towards MHH than girls from urban areas. Table 35 presents the results.

Table 35: Mean percentage score of positive perception (combined) towards MHH among girls with disabilities from Tanzania Mainland and Zanzibar stratified by setting

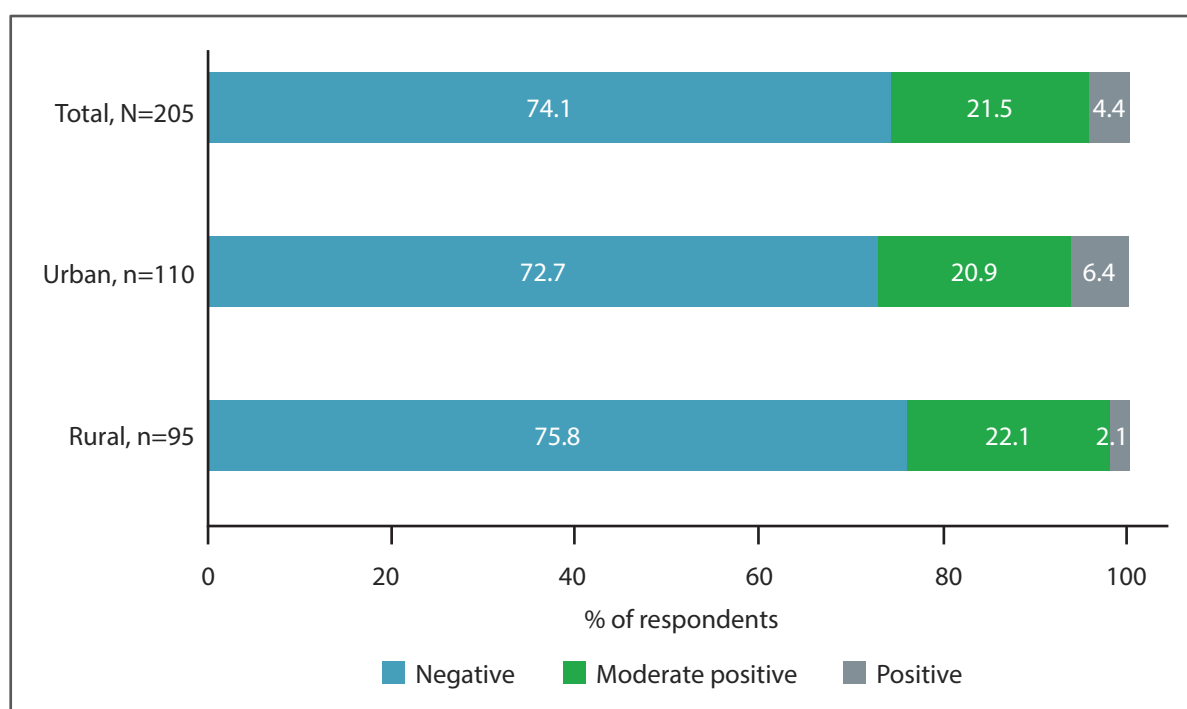
Domen	Rural, n=95	Urban, n=110	Total, N=205
Perception of institutional and environmental issues	59.3	58.2	58.7
Perception of other girls	48.5	49.0	48.8
Self-Perception	44.5	48.2	46.5
Overall positive attitude	47.7	49.6	48.7

Level of attitude among girls with disabilities:

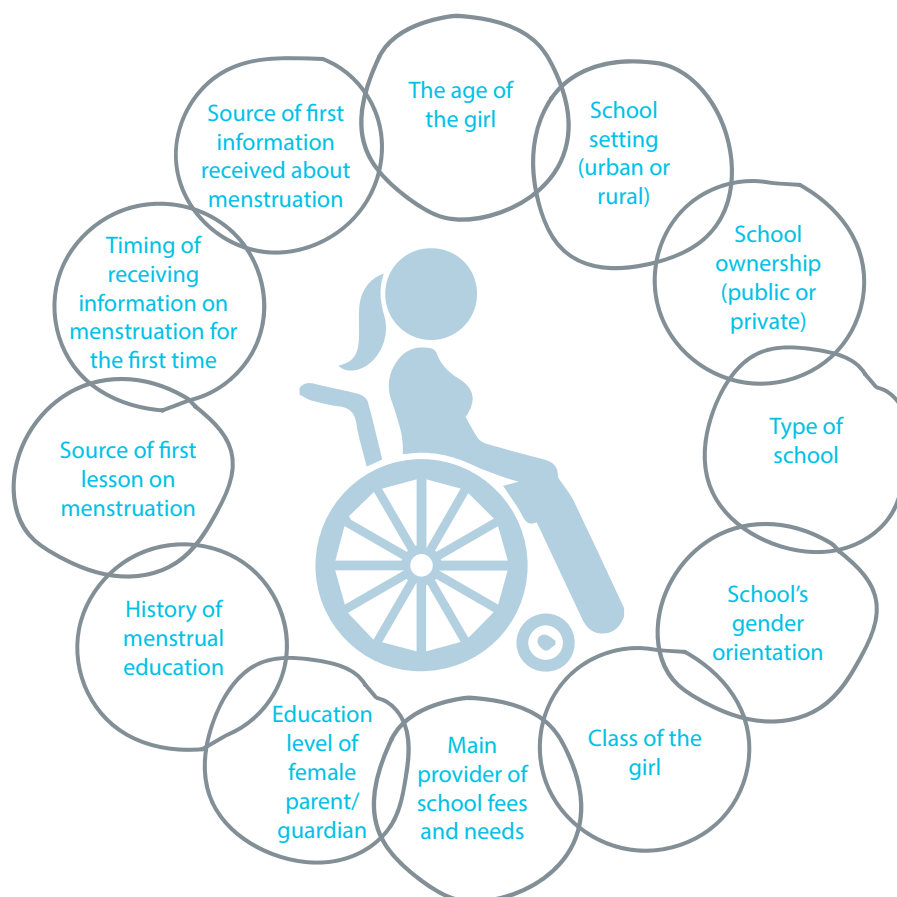
As shown in Figure 33, majority of girls with disabilities had a negative attitude towards MHH regardless of their school location (75.8 and 72.7 per cent in rural and urban schools, respectively). The proportion of girls

who had positive attitude was very low, with only two out of 95 girls from rural schools and seven out of 110 girls from urban schools demonstrating positive attitude towards MHH (Figure 33).

Figure 33: Proportion of girls with different levels of positive perception (combined) of MHH among girls with disabilities from the Mainland and Zanzibar stratified by setting



Factors associated MHH negative attitude among girls with disability



Possible associated factors such as the age of the girl, school setting (urban or rural), school ownership (public or private), type of school, school's gender orientation, class of the girl, main provider of school fees and other needs, education level of female parent/guardian, history of menstrual education, source of first lesson on menstruation, timing of receiving information on menstruation for

the first time and source of first information received about menstruation were explored and results are presented in Table 35. However, in both comparison groups for each factor, a staggeringly high proportion of girls demonstrated a negative attitude. There were no significant differences between the compared categories. Table 36 illustrates the results.

Table 36: Factors associated MHH negative attitude among pupils with a disability and students in Tanzania Mainland and Zanzibar with negative attitude

Factors	Total, N (%)	With negative attitude, n (%)
Age group		
<15	106 (51.7)	78 (73.6)
15+	99 (48.3)	74 (74.7)
Settings		
Rural	95 (46.3)	72 (75.8)
Urban	110 (53.7)	80 (72.7)
School ownership		
Government	168 (82.4)	125 (74.4)
Non-government	36 (17.6)	27 (75.0)
Type of school		
Boarding only	19 (9.3)	13 (68.4)
Boarding and day	44 (21.6)	35 (79.6)
Day only	141 (69.1)	104 (73.8)
Gender orientation of the school		
Only girls	9 (4.4)	6 (66.7)
Co-education	196 (95.6)	146 (74.5)
Level of school		
Standard V–VII	97 (47.3)	73 (75.3)
Form I	12 (5.8)	6 (50.0)
Form II	33 (16.1)	29 (87.9)
Form III	23 (11.2)	16 (69.6)
Form IV	40 (19.5)	28 (70.0)
Main provider of support for school fees and other needs		
Father	75 (37.1)	55 (73.3)
Mother	77 (38.1)	60 (77.9)
Male caretaker	9 (4.5)	7 (77.8)
Female caretaker	16 (7.9)	11 (68.7)
Others	25 (12.4)	19 (76.0)

Factors	Total, N (%)	With negative attitude, n (%)
Education level of female parent/caretaker		
None	24 (14.2)	18 (75.0)
Primary	72 (42.6)	54 (75.0)
Secondary	41 (24.3)	34 (82.9)
Tertiary/College	32 (18.9)	26 (81.2)
Occupation of parent/caretaker		
Farmer	92 (46.9)	71 (77.2)
Employed	37 (18.9)	28 (72.9)
Self-employed	59 (30.1)	43 (72.9)
Retired	8 (4.1)	3 (37.5)
Ever received education about menstruation?		
Yes	181 (88.3)	134 (74.0)
No	24 (11.7)	18 (75.0)
Where did your first learn about menstruation?		
In the class	129 (62.9)	92 (71.3)
School clubs	17 (8.3)	12 (70.6)
Books	34 (16.6)	29 (85.3)
Others	25 (12.2)	19 (76.0)
When did you receive information about menstruation?		
Before beginning of the menstruation	138 (67.3)	107 (77.5)
During the first menstruation	35 (17.1)	22 (62.9)
After the first menstruation	32 (15.6)	23 (71.9)
How did you first know about menstruation?		
Teachers/matron	70 (34.6)	51 (72.9)
Friends	27 (13.4)	20 (74.1)
Parents/caretakers/relatives	62 (30.7)	46 (74.2)
Kungwi	31 (15.4)	23 (74.2)
Media/others	12 (7.9)	12 (100)

*p<0.05, **p<0.01, ***p<0.001; UPR, unadjusted prevalence ratio; APR, adjusted prevalence ratio.

Practices regarding MHH among post-menarche girls with disabilities in the study areas

Overall, girls with disabilities scored an average of 56.3 per cent on good MHH practices. Rural dwellers scored higher (57.9 per cent) than girls with disabilities in the urban areas (54.8 per cent) as Figure 34 illustrates. However, when looking at their practices level, the majority (n=131, 63.9 per cent) of the girls with disability demonstrated poor MHH practices. In fact, a higher proportion

(n=75, 68.2 per cent) of girls from urban areas were more likely to demonstrate poor practices than girls with disabilities from the rural areas (n=56, 58.9 per cent).

Out of the 205 girls interviewed, only one stated that she followed good MHH practices. Figure 34 and Table 37 present the results.

Figure 34: Mean percentage (%) score for good MHH practices (combined) among girls with disabilities from Tanzania Mainland and Zanzibar stratified by settings

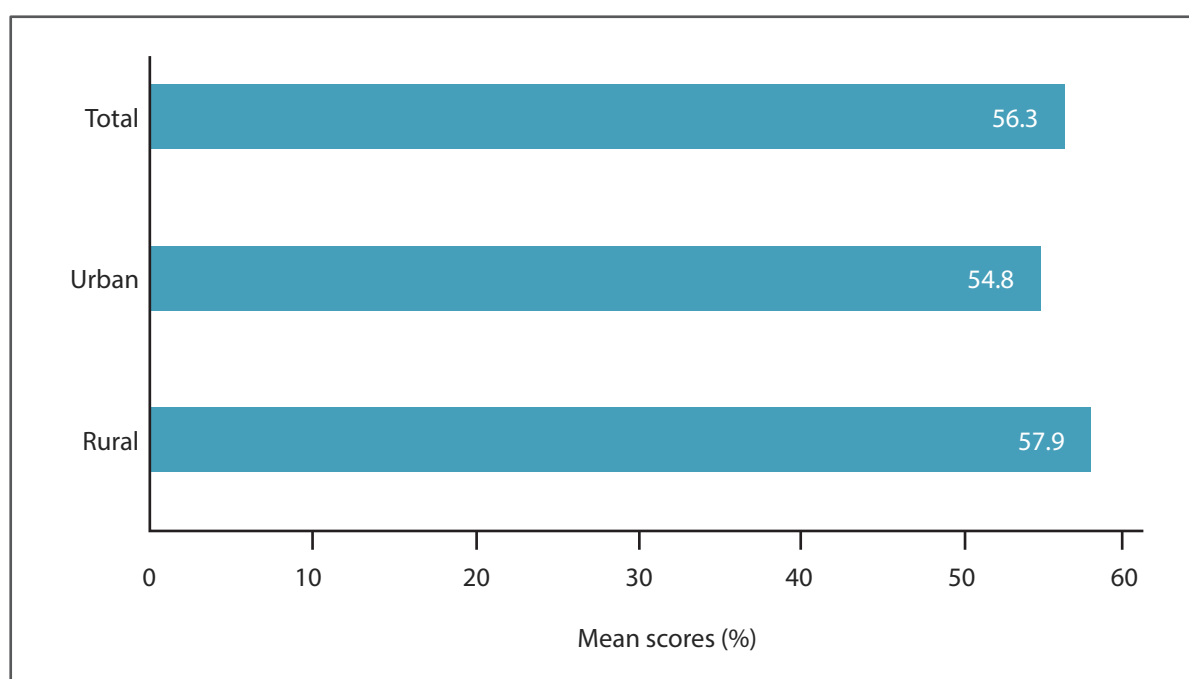


Table 37: Proportion of girls with disabilities displaying varied levels of MHH practices from Tanzania Mainland and Zanzibar stratified by setting

Level of practice	Rural, n=95	Urban, n=110	Total, N=205
Poor	56 (58.9)	75 (68.2)	131 (63.9)
Moderate	39 (41.1)	34 (30.9)	73 (35.6)
Good	0 (0.0)	1 (0.9)	1 (0.5)

Factors associated with poor MHH practices among girls with disabilities:

Factors associated with poor practices were analysed and the results are presented in Table 38. The education level of female caretakers was found to significantly influence the level of girls' MHH practices.

Girls with disabilities whose mothers had primary education (77.8 per cent) were more likely to follow poor practices than girls whose mothers had a higher levels of education such as secondary (36.6 per cent) or tertiary education (53.1 per cent). These findings were statistically significant ($p < 0.001$).

Table 38: Factors associated with poor MHH practices among students with disabilities in Tanzania Mainland and Zanzibar

Factors	Total, N (%)	With poor practices, n (%)
Age group		
<15	106 (51.7)	65 (61.3)
15+	99 (48.3)	66 (66.7)
Settings		
Rural	95 (46.3)	56 (58.9)
Urban	110 (53.7)	75 (68.2)
School ownership		
Government	168 (82.3)	108 (64.3)
Non-government	36 (17.6)	22 (61.1)
Type of school		
Boarding only	19 (9.3)	9 (47.4)
Boarding and day	44 (21.6)	28 (63.6)
Day only	141 (69.1)	93 (66.0)
Gender orientation of the school		
Only girls	9 (4.4)	6 (66.7)
Co-education	196 (95.6)	125 (63.8)

Factors	Total, N (%)	With poor practices, n (%)
Level of school		
Std V–VII	97 (47.3)	59 (60.8)
Form I	12 (5.8)	8 (66.7)
Form II	33 (16.1)	21 (63.6)
Form III	23 (11.2)	14 (60.9)
Form IV	40 (19.5)	29 (72.5)
Main provider of support for school fees and other needs		
Father	75 (37.1)	47 (62.7)
Mothers	77 (38.1)	48 (62.3)
Male caretaker	9 (4.5)	6 (66.7)
Female caretaker	16 (7.9)	13 (81.2)
Others	25 (12.4)	14 (56.0)
Missing	3	
Education level of female parent/caretaker		
None	24 (14.2)	14 (58.3)
Primary	72 (42.6)	56 (77.8)*
Secondary	41 (24.3)	15 (36.6)
Tertiary/College	32 (18.9)	17 (53.1)
Missing	36	
Occupation of parent/caretaker		
Farmer	92 (46.9)	62 (67.4)
Employed	37 (18.9)	19 (51.3)
Self-employed	59 (30.1)	37 (62.7)
Retired	8 (4.1)	6 (75.0)
Missing	9	

Factors	Total, N (%)	With poor practices, n (%)
Ever received menstruation education?		
Yes	181 (88.3)	112 (61.9)
No	24 (11.7)	19 (79.2)
Where did you first learn about menstruation?		
In the class	129 (62.9)	79 (61.2)
School clubs	17 (8.3)	11 (64.7)
Books	34 (16.6)	23 (67.6)
Others	25 (12.2)	18 (72.0)
When did you receive information about menstruation?		
Before the beginning of menstruation	138 (67.3)	87 (63.0)
During the first menstruation	35 (17.1)	20 (57.1)
After the first menstruation	32 (15.6)	24 (75.0)
How did you first know about menstruation?		
Teachers/matron	70 (34.6)	41 (58.6)
Friends	27 (13.4)	23 (85.2)
Parents/caretakers/relatives	62 (30.7)	39 (62.9)
Kungwi	31 (15.3)	18 (58.1)
Media/others	12 (5.9)	7 (58.3)

*p<0.05, **p<0.01, ***p<0.001; UPR, unadjusted prevalence ratio; APR, adjusted prevalence ratio.

Qualitative Results

This chapter presents the findings obtained from qualitative interviews through which we sought to understand the challenges that school girls face in menstrual health and hygiene (MHH) in both urban and rural areas of Tanzania. A cross-sectional qualitative descriptive approach was employed to address the six research questions that were central to the inquiry. The first research question sought to examine the perceptions on the sociocultural and religious norms that govern MHH and their impacts show these norms shape the role of boys, parents, guardians and other community members. The second research question aimed to gain insights into girls' awareness of MHH as well as the type and sources of MHH information they had. The third research question examined the perceptions around the types of MHH materials, their accessibility and disposal practices both at home and schools. The fourth research question probed the perceptions on the status, availability and suitability of water, sanitation and hygiene (WASH) infrastructure and their impacts on MHH practices. The fifth research question explored the perceptions related to governance and the political landscape of MHH in the country. The sixth and final research question sought to understand the various MHH stakeholders and their activities. Furthermore, the research analysed the transcripts of girls with disabilities separately, keeping in mind that the challenges they face may be unique. Moreover, to ensure completeness of the

assignment after examining all the transcripts, the research team added an important question to the analytical matrix that appears to form the backbone of the assignment but weakly addressed within the six research questions. This question aimed at assessing the perceived impacts of menstruation on school attendance and performance among girls. We view the participants' accounts related to this question as a cornerstone of this research study and not including them in the report would have made our work incomplete.

Study population

As described previously, the study population for the qualitative interviews consists of girls in primary and secondary schools as well as boys; community members and religious leaders; government officials at local, district and national levels; and potential MHH stakeholders such as matrons, teachers, traditional birth attendants and representatives from some development partners, non-governmental organizations and private companies. We conducted in-depth and key informant interviews with the following groups of respondents: 205 girls with disabilities, 102 matrons and patrons, 33 officials from councils and 15 officials at the national level. In addition, focus group discussions (FGDs) with 2,013 girls and boys and 341 members of school committees and community representatives were conducted.

Data gathering

As noted above, various tools were employed for gathering data for qualitative and quantitative research. These ranged from focus group discussions to key informant and in-depth interviews.

Qualitative data analysis

To fulfil the research objectives, qualitative data analysis employed the thematic analysis strategy as described by Braun and Clarke (2006). Thematic analysis involved active identification of patterns within the data and organizing them into categories or themes that could facilitate interpretation and reporting. More specifically, thematic analysis covered the coding of transcripts, defining and identifying the sub-themes and themes and then performing an analysis.

Thematic analysis may take an inductive 'bottom-up' or a deductive 'top-down' approach for data coding. On the one hand, inductive thematic coding is a process in which themes/sub-themes or categories are identified without trying to fit them into pre-existing data analysis matrix (Braun and Clarke, 2006). In other words, inductive approach is a time-intensive data-driven analysis in which themes are identified in the coding process without paying much attention to pre-established themes from the research questions. The benefits of inductive analysis, however, are that it allows all key themes and sub-themes

to be included in the analysis. On the other hand, a deductive approach is a data analysis strategy where the researcher attempts to accommodate the data into pre-existing themes within the coding framework/matrix or research questions (Braun and Clarke, 2006). Though the deductive approach appears to be accomplished faster, there is a risk of losing some key themes and sub-themes that may not fit within the research question. Therefore, given the nature of the consultancy and time limitations, data analysis involved a deductive analytical strategy. However, care was taken to ensure that important themes that could not fit within the sixth research questions were also accommodated. An example is a recurrent theme related to the perceived impacts of menstruation on school attendance and performance among girls as noted above.

A stepwise approach was used for a deductive thematic analysis of qualitative data. To begin with, the research team examined the research questions and generated several themes on a consensual basis. This resulted in an analytical matrix of the main themes and sub-themes. Table 39 summarizes a matrix of major themes and sub-themes that our team developed from the research questions. As described above, a most critical question regarding what are the perceived impacts of menstruation on school attendance and performance among girls was added to the matrix. Similarly, an additional space was provided at the end to ensure that other themes and sub-themes that could not fit into the research questions but appear central to the study have also been accommodated.

Table 39: Research questions and related themes and sub-themes

Research question	Main themes	Sub-themes
What are the various sociocultural and religious norms that govern menstrual health and hygiene in Tanzania and how do they impact the current state of infrastructure, services and school girls' MHH practices? How can the role of boys, parents, guardians and other community members be described?	Sociocultural and religious norms guiding MHH in Tanzania	<ul style="list-style-type: none"> ♦ Social norms ♦ Cultural norms ♦ Religious norms ♦ Impacts of norms on MHH practices ♦ Role of boys ♦ Role of parents/guardians ♦ Role of community members
What is the level of awareness of MHH among girls? How do they obtain the information regarding MHH? And what type of information is given to them at various levels from childhood to adolescence both in schools (including policies related to MHH) and communities? Who informs them, when and through which channels?	Girls' awareness of MHH	<ul style="list-style-type: none"> ♦ Level of awareness ♦ Source of information ♦ Type of information at school ♦ Type of information at communities ♦ Policies on information
What types of materials are used by school girls to manage menstruation (how suitable are they?) How are they accessed, used, handled and disposed of in schools and among school girls?	Materials used by girls for MHH	<ul style="list-style-type: none"> ♦ Type of materials used ♦ Accessibility of the materials ♦ How are they used (at school and home)? ♦ Disposal practices (at school and home)
<i>Added question:</i> How does menstruation impact school performance/attendance among girls?	Impact of menstruation on school girls	<ul style="list-style-type: none"> ♦ Impacts on school performance ♦ Impacts on school attendance
What is the state of WASH infrastructure available for menstruating girls in schools, their suitability and their impact on current MHH practices? Does the home environment impact on current girls' practices?	WASH infrastructure for MHH	<ul style="list-style-type: none"> ♦ Availability of infrastructure at school and home ♦ Suitability of infrastructure ♦ Usage tendencies among girls ♦ Impact on MHH practices
What is the governance and political landscape for MHH in Tanzania? To what extent is MHH streamlined into policy and political priorities?	Governance and political landscape for MHH	<ul style="list-style-type: none"> ♦ Political support at the local level – village, district or region? ♦ Political support at the national level ♦ Existing policy tools ♦ Existing mechanisms/initiatives to support MHH
Who are the various MHH stakeholders in Tanzania and what roles do they play currently at various administrative levels?	MHH stakeholders in Tanzania	<ul style="list-style-type: none"> ♦ MHH stakeholders ♦ Their activities/initiatives or contribution ♦ Suggestions to increase their contribution

Second, individual transcripts were intensively examined and phrases (codes) representing participants' responses to the investigators' questions were assigned to relevant themes and related sub-themes within the data analysis matrix. It is worth noting that some of the phrases (codes) appeared to fit into more than one theme and sub-theme. It is important also to note that some of the participants' responses could not fit into any of the main themes and related sub-themes. A consensus was reached between team members on whether to include the responses into the central themes that could not fit within the matrix or discard them when they were subjectively and objectively deemed to be of no critical value to the study.

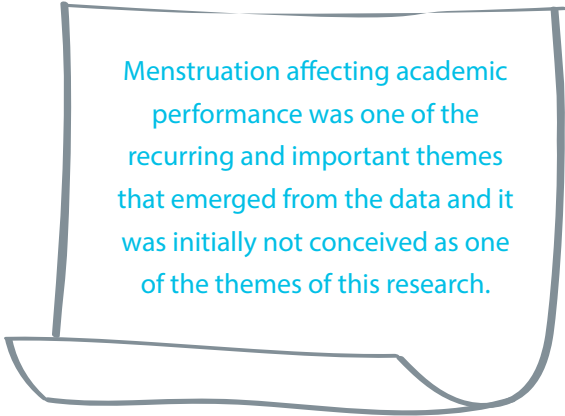
Upon reaching data saturation when no new information emerged from subsequent interviews (see Isangula, 2018), the data within the matrix were exported to MS Word for report generation. Analytical description of the results, however, starts with the description of respondents before examining the perceived impact of menstruation on the girls' school attendance and performance. The results section then probes the myths, beliefs and norms that surround menstruation in the study settings. Then, girls' awareness of menstruation is looked at next. This is followed by examining MHH materials used by girls as well as their disposal practices. Accounts related to the availability of WASH infrastructure for menstruation and MHH stakeholders are scrutinized next. Finally comes the examination of the governance and political landscape around MHH within the country.

The results are organized around the main themes related to the research questions. It is also important to highlight that our focus was on data richness in response to research questions. Therefore, some participants' quotes generated from some schools, districts or

regions may be overrepresented just to show the richness of the accounts in response to research questions. This approach also is an acknowledgement that equal geographical representation is not a focus of qualitative inquiries (Isangula, 2018). However, we employed triangulation in presenting the results by considering verbatim quotes from multiple sources within and beyond schools, districts or regions in which the study was conducted.

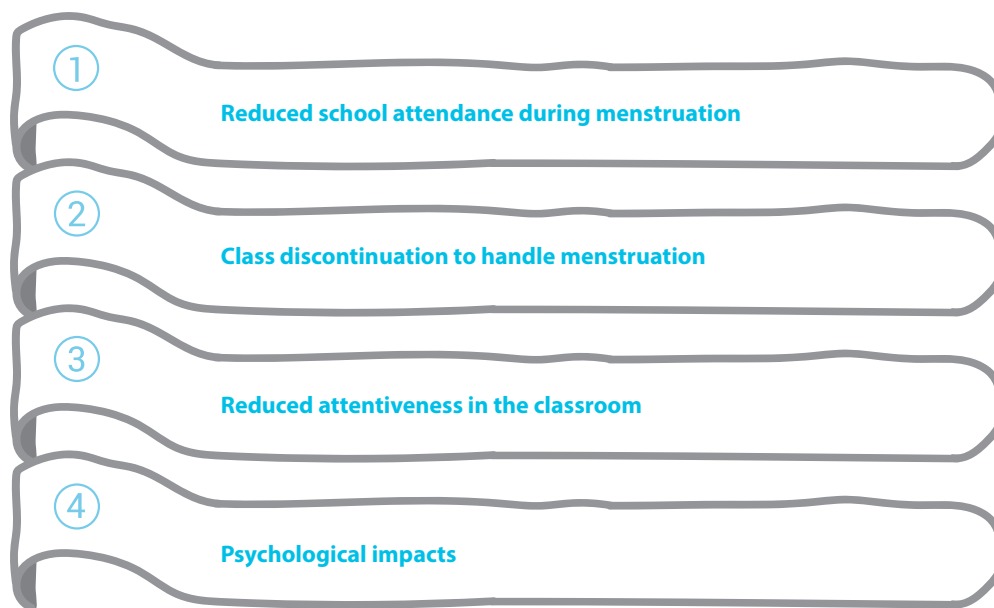
Impact of menstruation on academic performance

Menstruation affecting academic performance was one of the recurring and important themes that emerged from the data and it was initially not conceived as one of the themes of this research. When responses from participant groups were analysed, there was a consensus that menstruation impacts school performance among girls. To elaborate further, the mechanism through which menstruation is perceived to reduce the girls' academic performance can be examined from four perspectives: (1) reduced school attendance; (2) class discontinuation; (3) reduced attentiveness; and (4) psychological impact. Each of these mechanisms are now examined in detail.



Menstruation affecting academic performance was one of the recurring and important themes that emerged from the data and it was initially not conceived as one of the themes of this research.

Impact of menstruation on academic performance



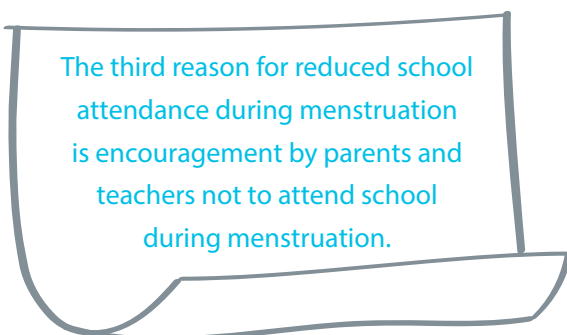
Reduced school attendance during menstruation

A broad agreement exists among many participants across research settings that girls often fail to attend schools during menstruation. A few responses can be used to substantiate girls' absence during menstruation. A teacher in a rural school observed: *"A large percentage of students do not come to school during menstruation. They do not come during the three days of menstruation. If you calculate in a year, the girl will not be coming to school for many days."* In support of this view, some participants suggested that the number of days that girls miss school may extend to a week depending on the severity of the symptoms they experience. A secondary school girl in Dar es Salaam explained: *"There are some girls who may extend leave up to seven days and some three days depending on the situation."* Another secondary school girl from Msalala in Shinyanga, sharing her personal experience, affirmed: *"Personally, I*

cannot go to school during menstruation because of severe abdominal pain. As a result, it is very easy to have poor academic performance." These accounts encouraged to explore the reasons for not attending school.

Participants provided several reasons for low school attendance due to menstruation. Girls' poor access to MHH materials because of poverty is the principal reason for not attending school during menstruation. A primary school girl in Dar es Salaam said: *"The unavailability of sanitary pads prevents a student from coming to school because if she cannot wrap herself well she might get dirty (stained by menstrual blood)."* The student's suggestion was supported by a teacher in a rural school: *"Here at our school, many girls do not come to school during menstruation because most of them do not have MHH materials to effectively shield them."* Another girl from Malagarasi specifically linked the absence of sanitary pads to poverty: *"Not coming to school is largely because of poverty. A girl realizes that she is unshielded. So, if she comes to school she will be uncomfortable throughout;*

therefore, she decides to stay at home until menstruation is over.” These responses were substantiated by matrons, boys and NGO leaders. What these accounts suggest is that increasing access to MHH materials among girls during menstruation could improve school attendance and, in turn, possibly help to improve their academic performance.



Severe abdominal pain, back pain, headache and vomiting emerged as the common symptoms that girls experience during menstruation, which were associated with reduced school attendance. A girl in a boarding school in Karatu described:

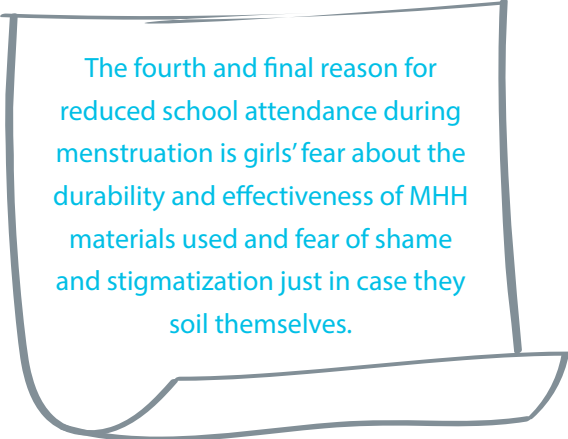
“There is a relationship between menstruation and academic performance because some girls experience severe abdominal pain contributing to missing classes. When peers continue to attend classes, she stays in the dormitory sleeping because of pain. That contributes to reduced performance because peers continue with classes in her absence and it is difficult to catch up.”

Another girl in Malagarasi supported this idea by suggesting that “another reason (for not attending school/class) is abdominal pain, headache and back pain during menstruation”. Relatedly, a primary school girl in Dar es Salaam commented: “There are some who experience severe abdominal pain that leads to inability to walk; therefore they cannot come to school.” Some suggested that the severity of menstruation symptoms may force the girl to prioritize

hospital visit over coming to schools. A girl from Karatu observed: “In most cases [girls] become seriously sick and they are taken to the hospital at a time when classes are continuing; as a result her academic performance deteriorates.” The girls’ views were substantiated by an officer from the Ministry of Health in Tanzania Mainland and some community members. What these accounts suggest is that having a menstrual symptom management plan may contribute to increasing school attendance among girls, consequently improving their academic performance.

Some girls affirmed that parents encouraged them to stay at home during menstruation. The account of a girl in Dar es Salaam explains this idea: “When I started having abdominal pain, I went home and inserted the reusable cloth and went back to school, but when I came back home my mother started verbal reprimands as to why didn’t I just stay home.” The premise that parents encourage school girls to stay home during menstruation was supported by a community member in Namtumbo: “Girls are kept inside and they are told not to go out including going to school; therefore, they miss their classes, and when they return to school they lack academic confidence and their performance declines.” Teachers also encouraged girls to stay at home during menstruation. Some girls described the tendency of teachers permitting girls to go home. A primary school girl commented: “If menstruation happens in a classroom, a teacher tells you to tie your sweater in the waist and go home.” An officer at the Ministry of Health also affirmed: “Most girls stay at home during menstruation. I think they are instructed by parents and their class teachers that during menstruation they should stay home.” Most importantly, the officer revealed not having first-hand information from girls themselves about this happening. However, what all

these accounts suggest is that more efforts are needed to equip parents and teachers with essential skills needed to support and encourage girls to attend schools even during menstruation, unless the pain is unbearable.



The fourth and final reason for reduced school attendance during menstruation is girls' fear about the durability and effectiveness of MHH materials used and fear of shame and stigmatization just in case they soil themselves.

In examining fear about MHH materials, most participants suggested that the fear of leakage of reusable cloth, in particular, during the school hours forces them not to attend school. A girl in rural school said: *"When a girl with no sanitary pads wears a reusable cloth that gets wet after using for a short period, she decides to stay at home because if she come to school she has no other alternative. So, she stays home consequently missing classes while others are taught, contributing to a decline in her academic performance."* What these accounts suggest is that access to durable and effective sanitary pads may contribute to increased school attendance among girls during menstruation.

Accompanying the fear of leakage is the fear of shame and stigmatization. A secondary school girl in Mbeya commented:

"A girl may get dirty in the classroom and other students seeing the blood stains start laughing at her and engage in verbal harassment. When she goes home, she becomes afraid of coming back to school because she fear getting dirty again and being laughed at. Therefore, she stays home without coming to school until menstruation is

over. During all this period, the classes continue and she misses them... So, [menstruation] affects them significantly."

The possibility of being laughed at forcing girls not to come to school during menstruation was supported by some boys. A secondary school boy commented: *"Boys often laugh at girls during menstruation making them stop coming to school until their period is over because if she come to school she will be unhappy throughout."* In contrast, an officer at the Ministry of Health in Zanzibar tied the fear of shame and stigmatization to the secrecy around menstruation and the absence of WASH infrastructure: *"Menstruation is surrounded with secrecy; for instance, if it occurs in the classroom the girl will feel ashamed to return to the school."* The absence of WASH infrastructure, in particular water supply, also emerged in the accounts of many girls as impacting academic performance. For example, a secondary school girl commented:

"Because of the challenges related to availability of water, in most cases, we do not come to school because if you come in the absence of water, you may start generating offensive smell and boys may start laughing at you. So, we opt to stay home instead. Some schools do not have water and toilets. So, a student cannot go to school during menstruation because she is afraid of shame. Therefore, she decides to stay at home."

Furthermore, not coming to school because of fear of shame and stigmatization, particularly by boys, also was recounted by a majority of girls and community members as would be discussed in the subsequent sections. What these accounts suggest is that efforts to normalize menstruation among boys may increase school attendance and academic performance among girls who fear shame and stigmatization during their monthly periods.

Class discontinuation to handle menstruation

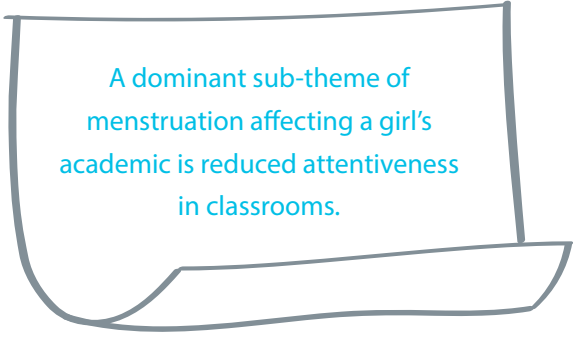
The second mechanism through which menstruation is perceived to reduce girl's academic performance is through class discontinuation. Some participants suggested that in most cases girls discontinue class sessions to handle menstruation at home, outside or in dormitories. A girl in Mbeya expressed what she saw:

"Some girls experience severe abdominal pain during menstruation and others back pain. So they become restless in the classroom and ask for permission from the teacher and are often allowed to go home. Going home means the girl misses the sessions consequently affecting her academic performance."

Furthermore, a girl in Namtumbo rural drew from her friend's experiences: *"I have a friend who becomes very sick during menstruation, necessitating her going back home. This has been affecting her studies a lot especially on academic performance. At present, she is not doing well academically."* Some described a tendency of going home without seeking teacher's permission, especially if a male teacher is in-charge. A girl in Igunga commented: *"Sometimes other girls go home without permission because if you ask for it from a male teacher, he refuses. So, you decide to go home without permission and the next day you get punished as an absentee."* Some went further to describe how menstruation personally impacted them. A girl in Pemba narrated how menstruation reduced her academic performance: *"There was a day when I was menstruating during examination. The examination was very simple, but I had severe abdominal pain, so I left the examination room and went back home for rest. Consequently, the teacher scored me 53 per cent."* Some suggested that leaving classroom may not be necessarily

for going home but also for going to the toilet to change menstrual materials frequently. A boy in Pemba suggested: *"A teacher may be running a session and perhaps a girl has spare pads in her bag. So, she goes outside the classroom to change. She comes back just to find others have moved forward with the session."* These accounts suggest that class discontinuation to handle menstruation may be one of the significant factors reducing girls' academic performance.

Reduced attentiveness in the classroom



A dominant sub-theme of menstruation affecting a girl's academic is reduced attentiveness in classrooms.

Concerns about durability and effectiveness of the MHH materials emerged as contributing to reduced concentration in classrooms from many participant accounts. A girl in Zanzibar school noted:

"A teacher is running the session, but the girl's thoughts are somewhere else. Therefore, it impacts performance. Some experience abdominal pain and they just sleep in a classroom. They cannot listen to the teacher effectively."

In support, a primary school girl commented: *"When a teacher is in a classroom and you experience abdominal pain, you cannot listen to the teacher. Your thoughts are directed towards the abdominal pain, you keep thinking, for example, what if the skirt become stained with blood and boys start laughing at you? So, you become afraid even to answer questions in the class and academic performance goes down."*

Another girl in Usambara also commented: *"You lose concentration completely. You can't listen to the teacher carefully so you don't understand the lesson."*

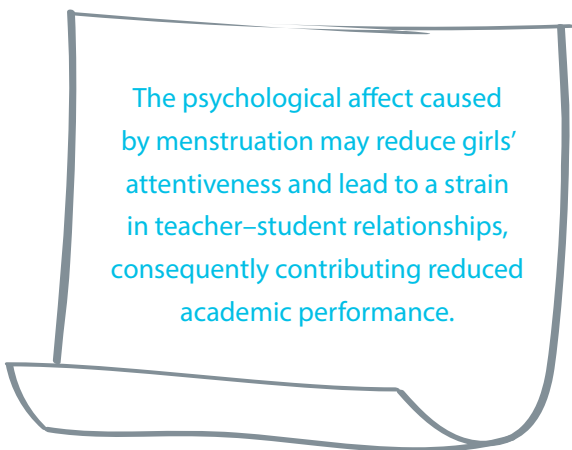
Some went further to link menstruation to reduced confidence. A girl in Malagarasi observed: *"Another reason is losing confidence. I live in a boarding school and I always shield myself well, but I never had confidence in a classroom. I keep thinking that everyone knows. I mean I keep thinking that I will be stained with blood."* These accounts were also supported by some boys. A boy in Mbeya rural noted: *"They lose confidence when menstruation occurs in a classroom and people see her... She feels ashamed and becomes totally unhappy."* What these accounts suggest is that more efforts may be needed to ensure that the MHH materials girls use are of maximum durability and effectiveness to heighten their confidence and increased attention in the class.

Menstruation was also found to reduce girls' participation in class activities. Self-perceived stigma was cited as a reason for reducing their group work participation. A girl in Pemba stated: *"The teacher may give a group assignment in a classroom and a girl (in menstruation) may be generating an offensive smell and she decides to sit far from others. You may find that in group discussions she is emotionally down and does not contribute anything to the discussion because she fears and believe that other students know her status."* What these accounts suggest is the menstruation may impact girls' academic performance by limiting their freedom of participating in group learning activities.

Psychological impact

The fourth and final mechanism through which menstruation is perceived to reduce girls' academic performance is through the

psychological impact it creates. In addition to losing confidence (as explained above), the accounts of some girls pointed to psychological impact as possible mediators of reduced academic performance. A girl from a rural school explained: *"When menstruation comes during exams, you start having too much thoughts and worries of how you will perform. At the end of the day, you write strange things and you fail the exam."* Another girl from Usambara noted: *"You may harbour hate even towards a teacher (reducing attentiveness)."* This indicates that psychological support during menstruation may be one of the essential measures to improve girls' academic performance.



The psychological affect caused by menstruation may reduce girls' attentiveness and lead to a strain in teacher–student relationships, consequently contributing reduced academic performance.

Contrary view: Menstruation does not impact girls' academic performance

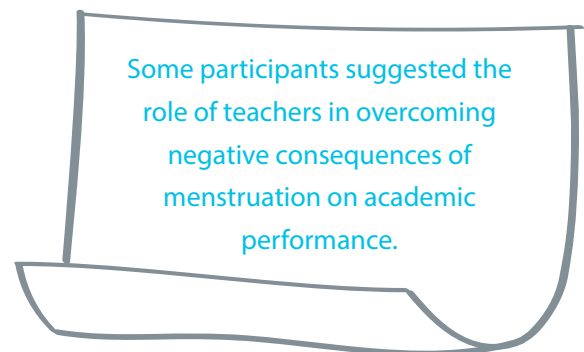
Although the majority of the participants, mostly girls, perceived a relationship between menstruation and academic performance, a few of the study participants held opposing views. A school board member in Lushoto, for instance, suggested that *"Menstruation is a normal condition. It cannot prevent girls from going to school because parents often instruct them to base align if possible rest on the way*

to school.” In support, a girl in Pemba, talking about students living near her school, observed: *“I think menstruation does not impact girls because they all live here. If someone notices smell, then she asks for permission, goes home to change and comes back to continue with the lessons.”* Looking at the accounts of these participants, the time the girl is absent from the classroom for changing the menstrual materials at home, let alone those who live far from school, appeared to not carry much weight in this assessment. Another girl in Pemba also echoed the same view: *“Academically, menstruation is not negatively impacting girls because they come to school all the time and they attend all the classes. They participate in group discussions because you can’t know if someone is in menstruation or not because they shield themselves well.”* This account conflicts with the account of many other participants who linked menstruation to reduced participation in classroom activities. These accounts, however, were supported by a community member in Namtumbo rural who commented: *“Menstruation does not impact girls because the school attendance is more than 95 per cent, which is very high.”* To this community member, the 5 per cent that do not attend schools appears not to deserve further. What these few disagreements indicate is that some girls and community members may be unaware of the experiences that girls in other contexts pass through, which impact their academic performance.

Participants’ suggestions on the solutions

Finally, some participants offered insights that may provide solutions to reduce the perceived

negative consequences of menstruation on girls. First, some identified the role of girls. A girl in Msalala Shinyanga suggested to other girls that *“Being in your period is not a reason for not coming to school. You can take spare pads and ask your friend to remind you to change. When the time comes, you ask permission from a female teacher and you go to change.”* The practicality of this suggestion is contingent on addressing the challenges of financial access to menstrual materials identified in many participant accounts, the absence of changing rooms in many schools, the absence or limited number of female teachers in many schools and the strained interpersonal relationships in schools that girls have particularly with boys. These issues will be highlighted in the upcoming sections.



The first solution is ensuring accessibility of pain medications. A girl from Tandahimba observed: *“Sometimes menstruation commences at school and you suffer from severe abdominal pain, but you cannot access pain medications.”* As a remedial strategy, a community member in Igunga suggested: *“I suggest that (teachers) buy anti-pain medicines for girls for them to continue with their studies.”* The practicality of this suggestion, however, depends on making available sustainable first-aid kits in schools and equipping teachers with first aid skills, in particular on the type and dosage of essential

medications that are effective in reducing menstrual pain. Second, some participants recommended the availability of emergency menstrual materials at schools. A primary school girl suggested: *“Sometimes we are told by a female teacher that if you are stained with menstrual blood, you go to the teacher for free pads. When you don’t find them, you go home.”* A girl from a rural school further noted: *“Sometimes menstruation commences at school. You have no pads and you ask the teacher who also says she does not have them. So, you go home without teachers’ permission to insert a reusable cloth.”* What these point to is that the practice of offering free sanitary pads to girl students during menstruation may help girls continue their classes without interruption. As we will see in subsequent sections, girls who detailed experiences of being given free pads at schools appear to have fewer concerns in relation to menstruation as compared to those with no access to free pads, especially whose parents have limited financial capacity to purchase the pads for them. Finally, some participants called for the role of the government. A girl in Pemba suggested: *“We request the government to offer free treatment to girls during menstruation because they suffer and do not come to school.”* The proposition of free medical care to girls during menstruation is debatable given the experiences of underutilization of other adolescent care services offered in the country.

In summary, despite a few disagreements, there is a broader consensus among participants that menstruation reduces academic performance among girls. Four mechanisms through which menstruation is perceived to negatively impact girls’ academic performance are (i) reduced school attendance; (ii) class discontinuation; (iii) reduced attentiveness and (iv) psychological

impacts. Class attendance is further impacted by poor financial access to menstrual materials, severity of menstrual symptoms, encouragement from parents and teachers to stay at home during menstruation and girls’ fear towards durability and effectiveness of MHH materials used as well as fear of shame and stigmatization at school during menstruation. Ensuring a sustainable supply of free, durable and effective menstrual materials and availability of anti-pain medications in schools, equipping parents and teachers with the skills to support and encourage girls to continue with studies during menstruation, ensuring availability of WASH infrastructure and efforts to normalize menstruation among boys may increase girls’ school attendance, which, in turn, may reflect in their improved academic performance.

Myths, beliefs and norms about menstruation

Examining the participants’ accounts of the sociocultural and religious norms around menstruation, two recurring themes emerged strongly. Some myths, beliefs and norms appear difficult to change and/or may require time, more resources and multiple strategies to address. These are mostly religiously constructed beliefs, myths and norms that most participants were reluctant to change. The other set of myths, beliefs and norms appear amenable to change. These include socially constructed beliefs across different participant categories described by many as amenable to change. Health education and community sensitization were often cited as the avenues to change socially constructed beliefs around menstruation. These two categories are discussed in detail.

Religiously constructed myths, beliefs and norms

As mentioned above, religion emerged in many participants' accounts as a strong basis for some prevailing norms related to menstruation. Two sub-themes were evident in participants' accounts. The difference in how the two religions – Islam and Christianity – perceive and treat a menstruating girl or woman was important. Religious leaders (Sheikh) and some community members affirmed that Islamic girls are restricted from entering the mosque, reading religious books ('juzuu' or 'msahafu') and performing religious rituals such as fasting when they are menstruating. A girl in Karatu commented: *"A dirty person is not allowed to enter the mosque because menstrual blood is considered dirty. That is why they say a menstruating girl is not allowed to enter the mosque."* A girl from a rural primary school, expressing similar sentiments, observed: *"We*

are not allowed to go to mosque because blood is 'najisi'." Relatedly, a girl from Dar es Salaam affirmed: *"We are prohibited from going to the mosque or touching 'juzuu' (a sacred religious book) because [menstrual] blood is haram."* On the other hand, participants suggested that Christians are lenient towards menstruation. A consensus emerged across various participant groups that Christians are tolerant and do not impose restrictions because of menstruation. A matron in Karatu commented: *"Christians are allowed to go anywhere [during menstruation] without any problem."* A girl in Isaka, who also experienced the same, stated: *"For Christians if you are in menstruation, you can touch the Bible and go to church."* To further support this proposition, a padre in a rural district commented: *"For issues of religious traditions, we are not that strict. That is why the girls take a holy communion without any restriction."* The padre went further to narrate a biblical story of a woman with long-standing menstruation



who touched Jesus and became healed as the reason why menstruating women are allowed into the church. While these accounts point to inconsistency in religious approaches to menstruation, it is also acknowledged that the subject of religion is complex and multifaceted. Most religions often vary in how they tackle issues within the communities given the dissimilarity in core doctrine, perspectives, values and teachings that form the basis for their existence. Our intention is neither to discredit nor credit any religion, rather to show the attitudes of some religions towards menstruation.

Socioculturally constructed myths, beliefs and norms

Despite the non-amenability of religiously constructed beliefs and norms to change, most participants offered some accounts that help MHH stakeholders understand the mythological beliefs and norms around menstruation. Many respondents appear to support and promote the notion of secrecy towards menstruation largely because it is 'dirty' and somewhat 'shameful'. The promotion of the notion of secrecy toward menstruation can be better understood by grouping the participants' accounts into social engagement, exercise and touching ('SET') taboos. These include a set of prohibitions imposed on girls during menstruation mainly because of equating it to being 'dirty'.

Social engagement taboos

One of the important restrictions to emerge across participant groups are the prohibitions of social visitation during menstruation. Most affirmed that during menstruation, girls are prohibited from visiting friends, relatives and

social gatherings. Some participants went further to identify local areas to which girls are prohibited from going during menstruation. A community member in Pemba commented: *"In our place for example, when a girl is facing such problems (menstruation) there are some areas she is prohibited from going. Along the coast there is a place called Kuchano and Kohowe."* A matron in Kibondo also said: *"I have heard that women are not allowed to attend funerals (misiba) during menstruation."*

Related to this restriction is a dominant theme emerging across participant groups that is related to promoting secrecy around menstruation. There was a broad consensus among participants from different groups (even top government officials, both male and female) that menstruation should only be discussed at the family level. Terms related to hygiene such as 'dirty' or 'unclean' were used by many particularly in Islam-dominated research settings to justify why menstruation should be kept a secret and not to be discussed in public. An environment officer in Zanzibar commented: *"Menstruation is dirty. The person is not clean."* Also, an officer at the Ministry of Health in Zanzibar commented: *"In our traditions, the issues of menstruation is not something to be discussed in public. As a personal view, I think culture does not allow menstruation to be discussed in public. We consider it to be a secret and no one should know about it."* Considering menstruation as dirty may explain why most participants in particularly Islam-dominated and rural (e.g., Rorya) areas insisted that people will be shocked to see someone talking about it publicly because it involves 'women's private parts'. For instance, a community member in Rorya commented: *"To our community, menstruation is very secretive. So, talking about it publicly people will be a surprise as you are*

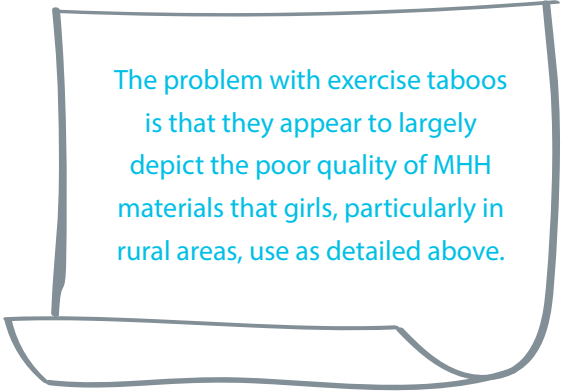
talking about woman's nakedness." This indicates that efforts to normalize menstruation as an essential biological process may be much more needed in some communities than others.

While most participants supported the premise that menstruation is only to be discussed at the family level, prohibitions were extended to the inability of girls to sit near or even talk about it with the male parent. This attitude was seen most frequently in rural areas as compared to urban areas. For instance, a community member in a rural village observed: *"A girl in menstruation is prohibited from sitting near her father because menstruation is dirty and she is not clean."* What this implies is that efforts to address negative beliefs and norms within the community must put family and most importantly male parents at the centre of such efforts. However, addressing hygienic concerns towards menstruation become a priority before seeking community-wide normalization of menstruation.

Exercise taboos

One of the recurring themes among girls when asked about prohibitions around menstruation is related to exercises. Most participants affirmed that girls are prohibited from strenuous exercise or performing heavy duties during menstruation. Prohibition of strenuous exercise appears to be constructed around three types of fears. First, the fear of the negative consequences that such exercise may bring, for instance, as a girl in Mbeya explained: *"excessive bleeding or aggravating abdominal pain"*. The second relates to the first reason is the fear of durability of the menstrual materials girls use during menstruation, particularly in rural areas. Finally, related to the second reason is the fear of shame when 'people see stains of menstrual blood'. A girl from Tandahimba detailed these fears: *"[A menstruating girl] is prohibited from exercise, for example, athletics because sanitary*

pad may rupture/dislodge leading to gushing out of blood ...people will laugh at her." This suggests that ensuring access to durable MHH materials that can withstand strenuous exercise may be an effective way of addressing this taboo apart from taking measures to improve community sensitization to normalize menstruation.



The problem with exercise taboos is that they appear to largely depict the poor quality of MHH materials that girls, particularly in rural areas, use as detailed above.

Touching taboos

Another important insight from data when participants were discussing sociocultural norms is a myth depicting *menstruation as a curse*. A director of one major organizations in an urban city said: *"There are some beliefs that when a girl is menstruating is like she is lacking something or she is cursed; as a result, some culture and traditions promote stigmatization."* Due to the perceived 'menstruation curse', there was a broad consensus among all participant groups that touching something during menstruation brings negative consequences. For example, participants asserted that during menstruation, touching vegetables or crops (e.g., tomatoes, mushrooms and sweet potatoes) will make them rotten or go dry; touching eggs would rot them; touching neonates will bring them skin rashes and, picking and eating a fruit from a tree will cause severe abdominal pain. A girl in Lushoto commented: *"For example there are some crops that girls are told not to touch. They are told not to pass through a tomato farm because they will*

dry out, not to pass near potatoes farm as they will burn out, told not to pick pumpkin leaves as they will dry out." Relatedly, due to the perceived 'menstruation curse', some community members (even religious leaders) described traditional practices such as using hedgehog's spines or snails' shells at the corners of the farm to protect it from the effect of menstruation-related curse on crops and vegetables. A religious leader in Isaka commented: *"I heard that they [farmers] put 'Karunguyeye's thorns' on the four corners of the farm so that when a menstruation woman passes. Then nothing bad will befall the crops."* Echoing the same attitude, a head teacher commented: *"I also heard that tomato farmers they put snail shells in the farm so that when a menstruating woman passes through tomatoes, they will not die. They put on each stick [used to support tomato plant] about five feet apart. In Sukuma we call it 'Ngula'; even when I put it in cotton farm the yield increases as the snail takes its place in a shell."* Some participants indicated that during menstruation, girls are not only prohibited from touching vegetables and crops but also from cooking and eating certain food. Sugary food such as tea, too much pepper, peas and tomatoes are to be avoided as participants in Karatu, Pemba and Dar es Salaam suggested. Fears of increased menstrual flow or prolonged duration emerged as a supportive justification. A girl in Karatu commented: *"We are not allowed to eat sugary food. It causes the menstruation to increase. You are not allowed to drink coloured tea and lemon."* A girl in Pemba said: *"You are not allowed to eat bean-like vegetables because they increase the menstrual flow."* A girl in Dar es Salaam also observed: *"We are told not to consume too much pepper or tomato source because you will bleed more."* Finally, touching prohibitions extended to *"the need of shaving of pubic hair"* (a girl in urban city) and the use of modern sanitary pads. The latter was linked

to 'infertility' as an Education Officer in a rural district suggested.

The implication of considering menstruation as a curse plays out in two ways. On the one hand, they may promote secrecy around menstruation. Girls are more likely to hide their periods to avoid being prohibited from touching something, passing on someone's farm or even performing hygienic activities such as shaving. Resorting to hiding menstruation, however, may depend on the strength of individual girls' beliefs towards these taboos. For instance, if a girl is socioculturally conditioned to believe menstruation is a curse, she is more likely to accommodate and uphold the touching taboos. The consequence is, for example, avoidance of foods that are needed the most for energy and absorbing nutrients during menstruation. The opposite may be true and it may further promote the secrecy around menstruation.

On the other hand, touching taboos may prove to be beneficial to some girls during menstruation. Prohibitions of touching crops, vegetables or cooking may reduce social responsibilities among girls who may be facing negative symptoms, for example, abdominal pain that may require adequate rest. This, however, occurs at the expense of promoting the notion of menstruation as a curse within the community.

Some girls and boys mentioned that during menstruation, sexual activities are not recommended. For instance, a girl in Namtumbo rural commented: *"There are prohibitions towards having sex intercourse during menstruation because of health reasons."* However, while terms related to infection were used in some accounts as the reason for prohibition of menstrual sex, terms related to hygiene were rarely used. Most

participants linked menstrual sex with the possibility of pregnancy. A girl in a rural school commented: *"When a girl is menstruating, she is prohibited from having sex. We are always prevented from having sex with boys because a boy may make you pregnant since your eggs are ripe."* In support, a boy from Msalala for instance stated: *"A girl is not permitted to have sex during menstruation because she will become pregnant while still young leading to teenage pregnancy."* This may suggest that some girls and boys may have limited knowledge on the biology of pregnancy. Taken together, what these accounts suggest is that while some beliefs carry the risk of promoting stigma and secrecy around menstruation, they may also be carrying some positive benefits as we seek to support safe MHH practices.

Interpersonal trust during menstruation

Another pattern that emerged from the transcripts relates to trust issues. Isangula (2018) define trust as *"an individual's beliefs and willingness to accept vulnerability with positive expectations of and reliance on another individual's future actions, intentions and behaviours"* (p. 70). In terms of trust, school girls identify two kinds of people during menstruation: trustworthy people and untrustworthy people.

Trustworthy individuals

Trustworthy people is a group of individuals that girls hold positive expectations towards their supportive actions, information backed by intentions and expect to behave positively towards them. A broad consensus emerged

across participant groups that mothers are the most trusted, the first line of support and source of information during menstruation. Within the realm of family, older sisters, grandmothers, aunts and other close relatives were also cited as trustworthy. A girl in Mbeya commented: *"I told my mother that I am now an adult [menstruating] and she told me to maintain hygiene, respect adults and listen to what I am being told, not being harsh to my fellows."* Likewise, another girl observed: *"I always discuss with my elder sister and she instructs me how to use clean cloth. She gives all the instruction and pad for use during menstruation."* Beyond the family, despite a few disagreements, peers emerged as the trustworthy individuals. They are relied upon for support as well as information during menstruation. Recalling experience of supporting peers, a primary school girl noted: *"One day, my friend came and told me that she is menstruating and asked if someone bleeds for two days, what happens? I told her that no problem... She asked how to use materials for menstruation. I explained and instructed her how to use and she went back to do her things."* Friends, in particular, emerged as the first tier of trustworthy individuals for not only exhibiting a favourable behaviour but also maintaining secrets about menstruation and offering skills, emotional and material support during menstruation.

Within the school environment, despite a few disagreements, most girls (in many private and few public schools) also considered matrons trustworthy and supportive during menstruation.

A girl in a secondary school observed: *“When you begin menstruation and you experience abdominal pain, you go to the toilet and inspect and noticing blood stains means you entered your period. You go to your friend or matron for instructions.”* Similarly, a broad consensus emerged that female teachers are the cornerstone of MHH in schools. The absence of female teachers in some schools was described by many as one of the critical barriers to safe MHH practices. An NGO officer in Dar es Salaam commented: *“When you go to primary schools, it is very challenging because some schools I visited, like five schools, do not have female teachers. When I asked how they talk about menstruation issues, they [male teachers] said they do not want to hear about it and that if it happens a student comes and says she is experiencing abdominal pain, the teacher calls her friend to accompany her home.”*

Untrustworthy individuals

Untrustworthy people is a group of individuals that girls hold negative expectations towards their actions, information backed by bad intentions and expect to behave negatively towards them. A consensus emerged among girls and other respondents (except a few in urban settings) that fathers are untrustworthy and less supportive, portraying fears and uncertainties towards them. A community member affirmed: *“When a girl is menstruating, informing her father is very difficult. Even asking for money for pads is very difficult. She can easily tell her mother but not her father, if mother is not around, she may ask for money citing other purposes but not mentioning pads.”* The prevailing social, cultural, religious and hygienic taboos were used to explain why fathers are not concerned with their daughter’s

menstruation. A participant from a rural district went further to suggest that *“Some women often hide their daughters’ menstruation from fathers when they come of age.”* The respondent, however, did not shed much light on the reasons for this attitude. The fathers’ role in menstruation will be examined in detail shortly.

Beyond the realm of family, a few respondents expressed distrust and fear towards peers. Some girls in Kagera, for instance, considered peers who have not reached menarche as more likely to “tell/advertise to others” about what is happening to them. This was likely lead to a situation where the girl who had attained menarche is put to shame or being laughed at. A girl in Kagera noted: *“If you discuss about menstruation, there are some who have not reached menarche, they may go to tell others about you. This could bring you shame.”* Another girl added: *“Some girls are afraid of discussing menstruation with peers because they may go and tell others in the street that so and so has started menstruating (menarche) and that is why they are afraid because they may be laughed at.”* These accounts suggest that although peers are a reliable source of support and information, attempts should be made to emphasize trust as a way of addressing the feeling of shame during menstruation.

Within the school environment, while matrons and female teachers enjoy the trust of many girls, some girls in public schools and few in private schools detailed unsupportive encounters with some female teachers and matrons. However, male teachers were the first tier of untrusted individuals within the school environment when compared to female teachers. Verbal reprimands and shaming were often cited as attitudes that male teachers exhibit towards girls who are accidentally

discovered to be menstruating (e.g., with abdominal pain or blood-stained skirts). A girl in Karatu emphasized: *"Another challenge is that you find yourself starting menstruation in a classroom but there is a male teacher. You cannot request for permission to go to the toilet to cover yourself. Because most ask where are you going? To do what?"* Another girl commented: *"We only have one female teacher. During class hours, it is very difficult to go out when a male teacher is in class. Most are very harsh and do not allow you to go out. They need to avoid harshness. They need to avoid verbal reprimands when a female student asks for permission to go out of the classroom."* Some of these issues will be re-examined in detail shortly.

In summary, at the home environment, mothers are considered trustworthy and supportive when compared to fathers. Outside the home

environment, most peers and friends, most matrons and female teachers are considered trustworthy and supportive. The absence of female teachers appears to be a major barrier to safe MHH practices in some schools.

Gender roles in menstruation


The first research question was set to examine how sociocultural and religious norms shape the role of boys, parents and other community members. This question can be answered better by using a gender lens, particularly its perceived impact on menstruation practices among girls. Looking at the data across participant groups, there appears to be a broad consensus that menstruation is 'a woman thing' and therefore it should be handled by women and not men.



This may somewhat explain why women – female friends, mothers, grandmothers, sisters, matrons and female teachers – emerged strongly as people who are socioculturally charged with educating and supporting girls during menstruation. The males – boys, fathers and male teachers – emerged strongly as unsupportive and often promoting stigma around menstruation. Culture and traditions were cited frequently as a justification for these menstruation-related gender roles. Drawing from the accounts of how boys, fathers and male teachers manage menstruation may help us understand how gender impacts menstruation practices.

Role of boys during menstruation

Despite a few disagreements, there appears to be a broad consensus among participant groups, including girls, that most boys are unsupportive and harbour negative perceptions about menstruation. Patterns of data suggest the ways through which boys negatively impact menstruation. That is, boys often insult or laugh at girls, especially when they notice menstrual stains. Although these concerns emerged mainly in girls' accounts, boys also confirmed this attitude. For instance, a secondary school boy in Tandahimba commented: *"If boys see a girl stained with dirty cloth [menstrual blood], they will despise her and her respect will decline for about a month."* As a way of promoting their negativity, boys are said to have invented and be using offensive phrases to describe menstruation. Phrases like 'slaughtering chicken without a knife', 'breaking a pot' or 'shedding water', 'going to Wete', 'receiving a salary' and many others were described as being used by boys to denote menstruation. For instance, an



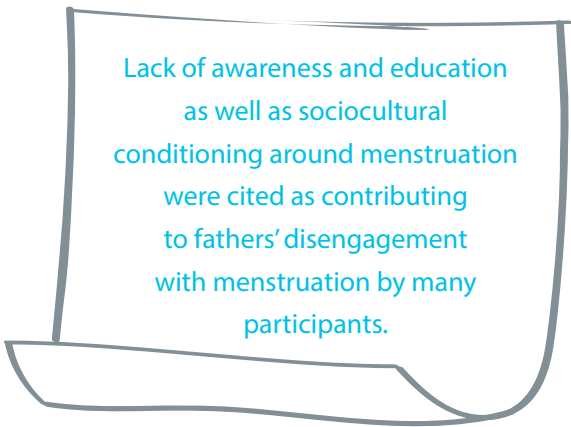
Lack of education about menstruation among boys was often cited as the reason for their behaviour.

educational officer commented: *"Boys do not know what menstruation is to date. They do not know the challenges faced by girls."*

Negativity towards menstruation brings us to the question of how girls adapt to boys' behaviours. They do it in three ways. First, girls tend to maintain secrecy about menstruation by excluding boys from their 'inner trust circle'. This may explain why boys did not emerge in participants' accounts as among the trustworthy people during menstruation. Second, related to this, girls often use words to conceal menstruation when communicating with fellow girls. Words such as 'I am running a torch', 'the lion is playing today', 'I am in a match between Simba and Yanga', 'I am drawing a map', 'I am in a danger zone' and many others emerged in girls' accounts as often used among peers to hide menstruation. Finally, girls tend to 'stay away' from boys during menstruation. Not only fear of mockery and insults contribute to avoiding boys but also fear of inappropriate behaviour such as unconsented physical touching or tickling. A girl from Kahama observed: *"There are troublesome boys. They can slap you on the buttocks or tickle. It may cause your sanitary pad to dislodge."* This suggests that efforts are needed to educate school boys not only about menstruation but also to develop respect towards women. Curriculum review may rectify this issue.

Role of fathers during menstruation

As noted above, mothers emerged as trustworthy and dependable for education and support of girls during menstruation. On the contrary, although men often control the family resources that are essential for access to MHH materials (e.g., money for sanitary pads), they emerged as neither dependable nor responsible for MHH at a family level. Many participant accounts suggest that men are not obliged to talk about menstruation with their daughters or even provide financial support. There appears to be a huge sociocultural taboo that men are not even supposed to know that their daughters are menstruating. A focus group participant explained that *“A community perspective is that telling a father about menstruation is disrespectful because he does not even know the materials used. Culture and traditions do not allow a father to know.”* Relatedly, a WASH coordinator in Zanzibar, for example, insisted that *“It is very difficult for men to talk about menstruation not only with their daughters but also their wives.”* Some participants noted that men should only be concerned with school fees, uniforms and stationeries. These perspectives emerged mainly in rural, Islam-dominated and some urban settings. In contrast, a handful of girls in urban areas indicated that some fathers often provide financial support for MHH materials.

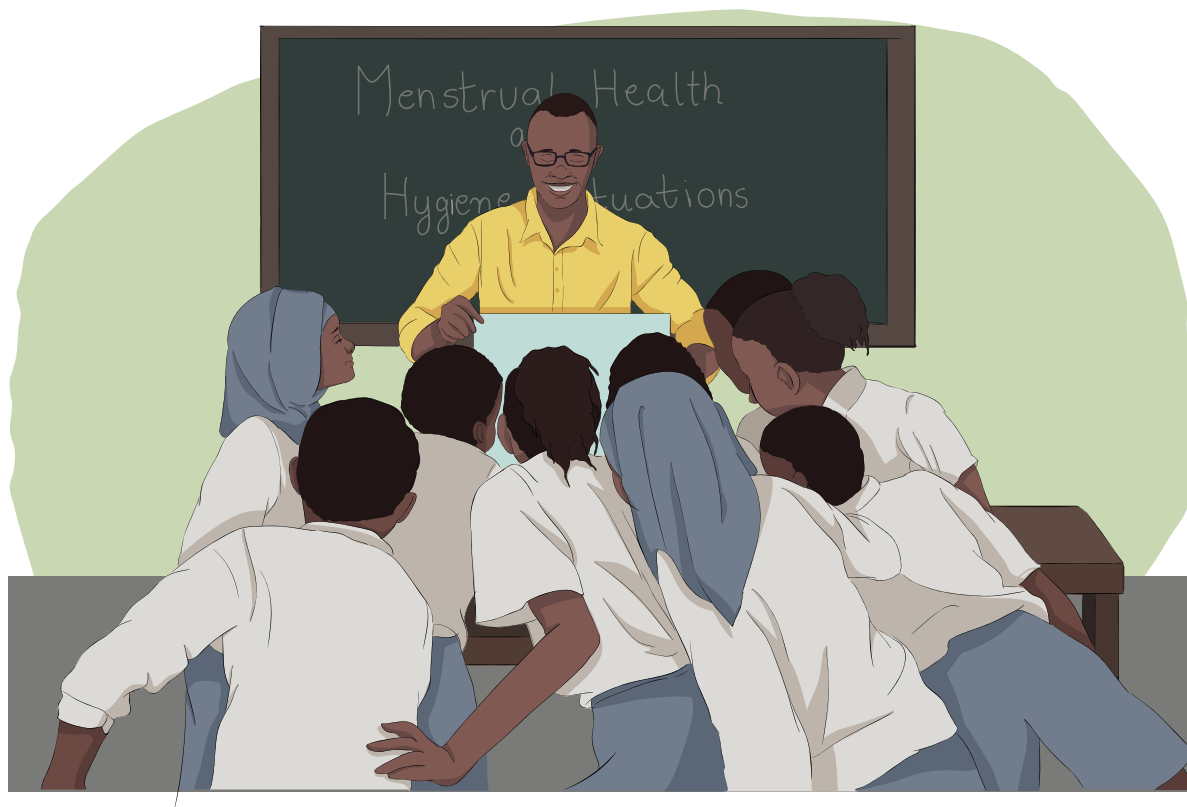


Lack of awareness and education as well as sociocultural conditioning around menstruation were cited as contributing to fathers' disengagement with menstruation by many participants.

This suggests that successful normalization of menstruation community-wide requires a particular focus on male parental figures in the first place.

Role of male teachers during menstruation

As noted above, male teachers emerged as the least supportive adults during menstruation. Although some adults held a view that teachers of any gender can assist and support menstruating students, most girls favoured female teachers. As cited above, some girls described unfavourable encounters with male teachers when they experienced signs and symptoms of menstruation during class hours. Furthermore, the presence of male-only teachers in some schools, particularly in rural areas, emerged as one of the major barriers towards safe MHH practices in the school environment. A participant in Rorya, for instance, pointed out that *“Some schools do not have female teachers.”* Even when female teachers are available, teacher–student ratio matters. The participant casted uncertainties in teacher's ability to offer support, for instance, when she found *“One school with 721 students only has one female teacher”* in Rorya. This suggests that promotion of safe MHH requires not only education and sensitization of male teachers on MHH but also increasing the number of female teachers. While this research did not inquire whether menstruation is a topic in teachers' training curriculum, a few participants pointed to this as an important way to foster sensitization. In our view as a research team, two more approaches may be embraced to motivate male teachers to become 'menstruation friendly'. First, identifying few male teachers who are supportive towards girls and publicly rewarding them as champions of menstruation.



Second, establishing a system where girls can communicate the negative encounters with male teachers during menstruation. The latter approach is widely applied for many issues within the country, for instance, a gender desk in police stations.

Menstruation and initiation rituals

Before concluding the discussion on sociocultural norms, let us examine an important issue that emerged in the transcripts. This is the widespread notion that the menstruation is an indicator of the need for initiation rituals. There was a consensus that the first menstruation cycle (menarche) is an opportunity for traditional initiation rituals as a girl transitions to womanhood. Some participants implied that initiation rituals are often used to teach girls about hygiene, especially during menstruation. A participant in Namtumbo noted: *"In our community when a girls starts menstruating,*

parents become so happy. They take them to a secret place and conduct initiation rituals (kumcheza). They also instruct them on hygiene and how to appear as a woman." A community member in Mufindi commented: *"When I told my aunt that I have started menstruation, she said I have grown up and kept me in the house. She invited five close relatives who came to instruct me how to take care of myself as a woman."*

While these rituals remain important in the cultural milieu, there are a couple of problems associated with it. First, the prime focus is on preparing a girl to become a 'good wife' and not on other aspects. While discussing this is beyond the scope of the present study, focusing on preparing girls for marriage from a young age may discourage them from pursuing other personal development ambitions and continue to reinforce the culturally constructed notion of male dominance. Such male dominance could further fuel the secrecy of menstruation, especially when hygienic practices are important. Second, even as if we

accept initiation rituals as the source of MHH knowledge and skills among girls, they are not performed in all cultures. This suggests that initiation rituals could be one of the ways for the promotion of safer MHH practices among the communities that still conduct them.

In summary, participants of this study described a range of myths, beliefs and norms around menstruation. On the one hand, religiously constructed restrictions around menstruation appear dominant among Muslims, with Christians taking a more lenient position. Any attempt to address religious restrictions was considered by many as not feasible. The socioculturally constructed myths and norms – social engagement, exercise and touching (SET) – dominated participants' accounts. However, there appears to be a consensus that they could be addressed through community education and sensitization. Trust issues also emerged as shaping the interaction and relationships girls have with other people during menstruation. Mothers, female peers, female relatives, female teachers and matrons emerged as a supportive group. Looking at this using a gender lens, males are socioculturally conditioned not to be concerned with menstruation. So we recommend educating boys, fathers and male teachers as well as hiring more female teachers as a way of promoting safe MHH practices. The unanswered question is whether the participants who are unsupportive during menstruation understand it to be a natural biological process.

Girls' awareness of menstruation

The second research question examined girls' awareness of menstruation. This question could be better answered by the girls themselves. However, the research team went further to

draw from the accounts of other participant groups to understand their perceptions on girls' awareness of menstruation. Generally, the findings suggest a complex and contradictory pattern of views among girls and other participant groups. There is a broad consensus among most girls, some teachers and matrons that they (girls) possess high awareness/knowledge of menstruation. On the contrary, most adults (community members, leaders, government officials) and some boys held a view that most girls are unaware of menstruation. What this contradictory perspective points to is possibly a socially constructed 'communication wall' that prevents some people within the community from grasping what girls really know, leading to unfounded generalization. But a few girls and some boys held a perspective that awareness/knowledge is not a major concern among girls, but what matters is the practical skills of 'what to do' during menstruation. On the contrary, when asked about 'what do they always do' during menstruation, most girls delved into the specifics of a full spectrum of activities that they perform during menstruation, pointing to more than sufficient skills. These contradictions and their implications are examined in detail next.

Menstruation: A transition to adulthood

When asked about what menstruation means, most girls demonstrated adequate understanding of the topic as can be gleaned from our data. First, many girls across school levels (primary and secondary) and study contexts (rural and urban) described an understanding of menstruation as a *transition from childhood to adulthood*. An example is a girl in Karatu who commented: "*Menstruation is a situation where a woman transitions from being a*

child to an adult." This suggests that most girls are aware that menstruation is an indication of entering womanhood. Such an understanding may explain why many girls commented on the need to "stay away from boys" for the fear of becoming pregnant. Surprisingly, the same understanding was likewise shared among some boys as discussed before. Second, most girls and few boys were able to detail the biology of menstruation. Many used reproductive terms such as "mature egg or gamete", "failed fertilization", "monthly bleeding" and "uterine cleaning" to explain how menstruation occurs. For instance, a primary school girl in Dar es Salaam commented: "Menstruation is a process occurring when mature woman's egg fails to meet male gamete for fertilization. Consequently the unfertilized egg comes out as blood." Conceiving menstruation as a normal biological process suggests that most girls are aware that it is an essential part of the human reproductive process.



Third, most girls and some boys went further to mention a range of signs and symptoms of menstruation. Abdominal pain, nausea and lethargy were most mentioned in the focus group discussions as a sign of menstruation. A girl in Karatu commented: "The signs of menstruation is abdominal and waist pain and tiredness." However, other signs cited were

shyness, being angry, softening of voice as well as the enlargement of waist, buttocks and breasts. A girl in Malagarasi noted: "In class five we were taught that a person who attains puberty has pimples, breast and hips enlargement." What this suggests is that girls' understanding of menstruation is largely associated with their understanding of puberty. Finally, some girls described the risks menstruation poses to a woman. For instance, acceptable risks within scholarly domain such as "maximized chances of infection (HIV in particular) during menstrual sex" emerged in some accounts. The problem with girls mentioning of the risks of menstruation is that they were often cited other risks that may manifest beyond menstruation event such as increased risk of pregnancy (see above). This may suggest that girls may have access to mixed messages as far as menstruation is concerned.

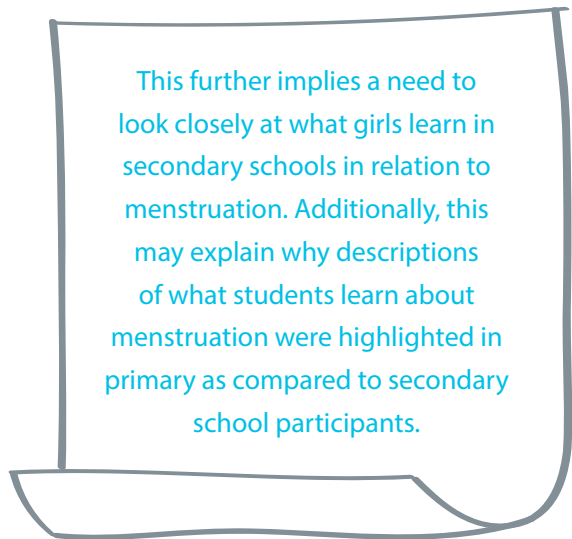
How to use MHH materials is a key concern

While the findings suggest that most girls possess high level awareness and knowledge, on the contrary, most community members, some boys, few teachers and some matrons, held a view that girls have limited skills of 'what to do' when menstruation occurs. Some girls specified that a concern is the skills needed for using MHH materials. A girl in Isaka, for example, observed: "Some girls do not know [how to use menstrual materials]. They have to ask their mothers or sisters." Surprisingly, when asked about what they always do during menstruation, most girls mentioned a set of activities using hygienic terms to demonstrate their knowledge. Most girls mentioned "frequent changing and washing pads/reusable cloth (vitambaa)", "bathing to keep oneself clean", "washing cloth" and "drying/ironing" them.

Offensive smell and increased risk of infection were often cited as outcomes of poor hygiene during menstruation. Some girls suggested that *“Offensive smell could contribute to stigmatization”* (for instance, a girl in Karatu). In connection with this, a few girls narrated a full range of personal experiences of handling menstruation particularly during menarche. A secondary school girl commented: *“When [first menstruation] occurred to me, I knew what to do. I had already learned from my friends who have had it before me.”* These accounts suggest that while many girls may be entering menarche with sufficient knowledge of what to do, some may be struggling, particularly with skills of proper usage of MHH materials.

A contrasting situation emerged when participants in the same focus group discussion held opposing views. An example is a focus group discussion among school girls in Isaka. Some believed that girls know what to do while a few others felt the girls do not know what to do. On the one hand, those who believed girls know what to do explained that most girls now in secondary schools have already been educated in primary schools. A girl in Isaka observed: *“A large per cent of girls know what to do because we learn about menstruation in standard six [primary school].”* Similar views were held by community members, government officials and matrons. A matron in Karatu noted: *“Most students in our secondary school know what to do (during menstruation) because they have been taught in primary schools.”* The implications of grounding the ‘know how’ of menstruation among girls in what they learned in primary schools is twofold. First, primary schools may be an effective entry point for MHH education. Attempts to increase knowledge and skills among girls may necessitate a heightened

focus on primary as compared to secondary schools because they appear to provide long-lasting understanding among girls. Second, reliance on primary school knowledge and skills suggest that secondary schools may be lacking effective menstruation education sessions. This suggests that teachers in secondary schools may be taking for granted the issue of menstruation knowledge and skills by holding presumptuous beliefs that girls know everything already. This may be happening amidst the possibility that a significant number of girls are experiencing menarche at the secondary level.



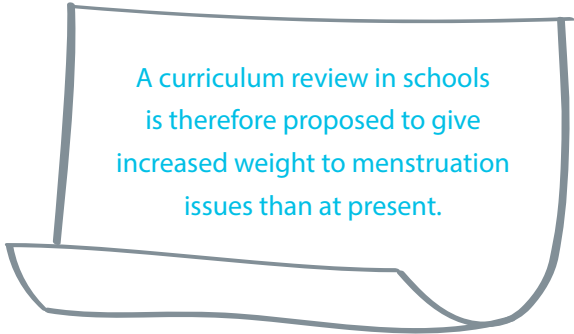
This further implies a need to look closely at what girls learn in secondary schools in relation to menstruation. Additionally, this may explain why descriptions of what students learn about menstruation were highlighted in primary as compared to secondary school participants.

On the other hand, those believing that girls do not know what to do during menstruation offered three reasons. The first reason is that the knowledge about and skills needed for handling menstruation are taught very late in secondary schools. A girl in Isaka stated: *“In the topic of reproduction, you may be told about menstruation and how to use sanitary pads starting from form three.”* Form three is a class far ahead as compared to the demand for the knowledge and skills among girls in early years of secondary schools. The second reason is what a MHH NGO leader in Dar es Salaam cites as problems with

“Educational curricula used in schools that do not delve into the topic of menstruation in much detail.” This suggests a need to examine the existing school curricula to give much weight to menstruation. Enriching the curriculum with menstrual education and skills could be one of the ways towards its normalization among students, particularly boys. The third reason cited is the young age of some girls at which they experience menarche. A boy in Mara region suggested: *“Some [girls] are very young. They do not know what to do during menstruation.”* This indicates that the younger the girl starts experiencing menstruation, the more likely that she has inadequate knowledge and skills of what to do when it occurs. This may explain why an adult in Lushoto suggested that *“Teachers need to develop a tendency of teaching students about (menstruation) issues as young as nine years.”*

In summary, there appear to be many disagreements across participant groups on issues concerning girls’ awareness of and skills needed for handling menstruation. Considering girls’ own perceptions, most indicated that they have good awareness and knowledge of menstruation. However, the tendency of most adults and boys contending that girls may not have adequate knowledge raises a question as to whether they communicate well with them to understand what they truly know. This suggests that adults may be generalizing menstruation knowledge among girls without sufficient knowledge. Furthermore, primary schools appeared to be the backbone of girls’ knowledge and skills on what to do during menstruation. This implies that efforts to use

schools as an avenue to teach safer MHH practices should pay special attention to primary schools as they appear to offer sustainably impactful knowledge for girls. This does not discount the need to strengthen what girls learn in secondary schools. This will, first,

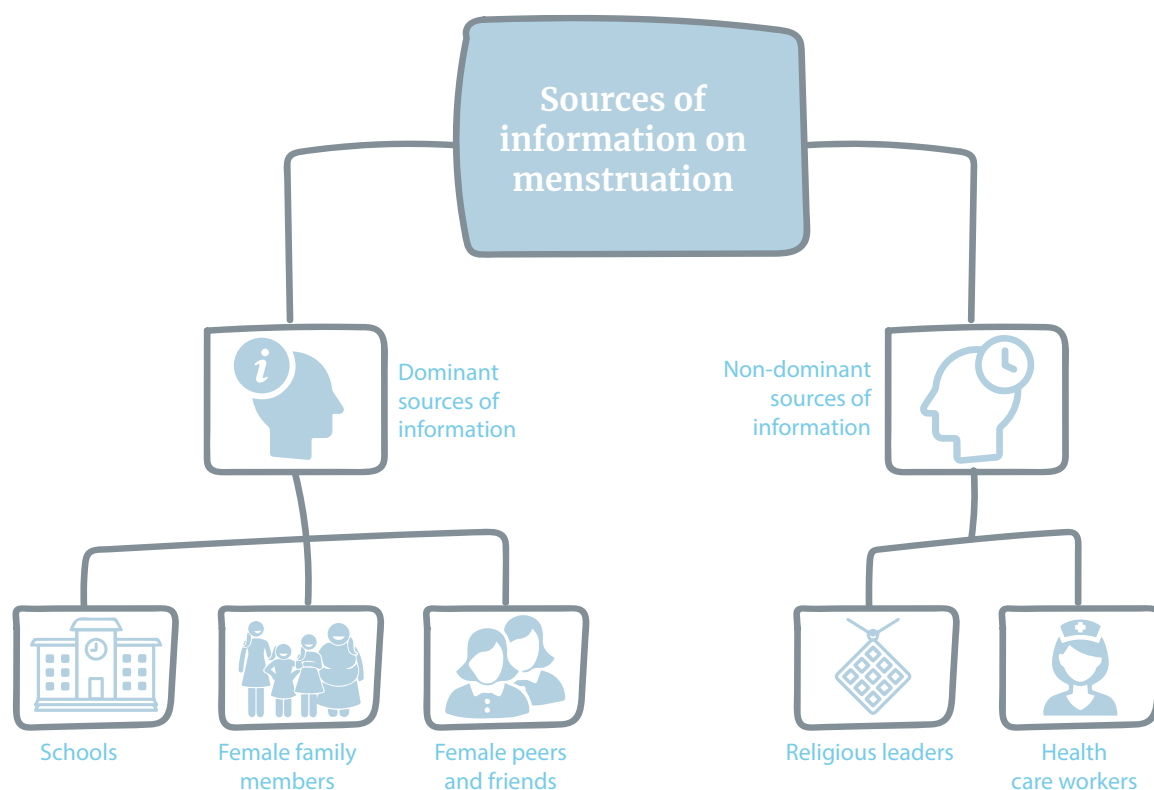


A curriculum review in schools is therefore proposed to give increased weight to menstruation issues than at present.

refresh girls’ knowledge and skills for continued safe MHH practices and, second, pave the way for normalization of menstruation in academic settings. Finally, despite some disagreements, there appears to be a general consensus that some girls often struggle with how to use MHH materials, particularly at menarche. This suggests that girls’ skills of using these materials need to be prioritized over knowledge issues.

Sources of information on menstruation

Before we examine the information sources among girls, we need to first accept that they have knowledge and skills about menstruation in the first place. Keeping this in mind, we now look for their sources of information. Looking at the transcripts, we can divide information sources for menstruation among girls into two categories:



Dominant sources of information

The dominant sources of information in the order of their occurrence in participants' accounts are schools, female family members and female peers and friends.

Schools

Schools emerged across participant groups as the prime source of menstruation information to girls. However, within the school environment, teachers were found to be the main source of information. Science teachers as information sources was predominant in the accounts of some girls. An officer in the Ministry of Health in Tanzania Mainland noted: *"[Girls] learn in primary schools, for example, from Class Five, but also in secondary, they learn in biology classes."*

There are three problems with teachers being the source of information. First, what

they teach students in primary schools appears to have sustained impact on girls' awareness of menstruation as compared to secondary schools (see above). Nonetheless, disagreements emerged about from which class girls start learning about menstruation in schools. Most cited classes between four and six in primary schools and form three in secondary schools. What this points to is the need for a harmonized starting point of menstruation education in schools. Second, female teachers and matrons prevailed in participants' accounts as sources of information to girls at school as compared to male teachers. The absence of female teachers and matrons was considered as a barrier to safer MHH practices. In addition to accounts of participants cited previously, a girl in Unguja observed: *"At schools, female teachers offer advice and information to girls. In most cases it is the female teachers because they are very close to girls."* Finally, teachers appear to offer only a tip of an iceberg information on MHH. This was described as resulting

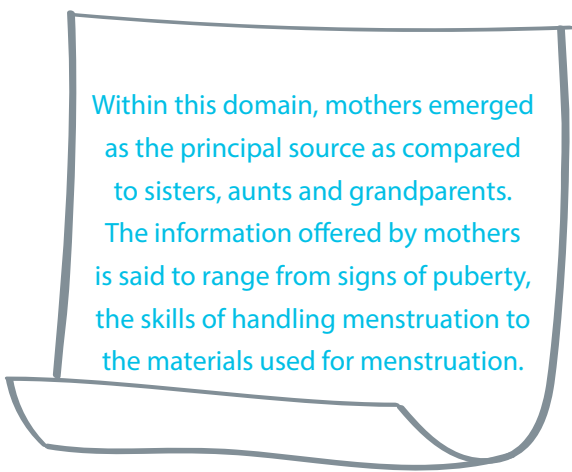
from menstruation education occupying a small part in the bigger topics of puberty and reproduction in science subjects. A 19-year-old girl commented: *"We are given education (on menstruation) every Friday when we are taught reproduction topic."* A possible explanation may be inadequate MHH training among teachers. A matron in Kigoma commented: *"We do not have enough teachers who are trained on menstruation. This limits girls' awareness and preparedness when they mature."* Another possible explanation of why teachers do not delve much into menstruation in classrooms is the presence of both boys and girls. A teacher in Mbeya commented: *"We face a problem in teaching [menstruation] because the classroom consists of both boys and girls. Therefore you cannot go into details."* The teachers' position suggests that boys are not socially expected to learn about menstruation. We will address this issue shortly. Put together, despite these issues, teachers appear to be the prime source of MHH information among girls.

Some participants cited school clubs as another source of information within the school environment. This emerged in the description of girls in Malagarasi, Dar es Salaam and Pemba. In Malagarasi, for example, a girl suggested that *"Before menstruation, students in classes as low as standard four (primary schools) rely on school clubs principally before seeking information from home sources."* A matron in Temeke suggested that *"[club] leaders are trained by teachers and go on to teach fellow students"*. The problem with school clubs is twofold. First, they appear to operate only in a few schools. The view of a girl from a rural school reinforces this situation: *"Here we do not have school clubs."* This may explain why girls in many schools failed to mention school clubs as a source of information on menstruation. Second, school clubs appear to comprise a subset of girls. This was evident by what a matron in Kahama said: *"There is an*

organization that established school clubs not for all students but only few like 40 and they discuss different topics including menstruation." This suggests that school clubs may be a reliable source of information; however, if they focus exclusively on MHH, it may have an impact on many girls.

Female family members

As described previously, female family members dominated some participants' descriptions as the source of information on menstruation. A



Within this domain, mothers emerged as the principal source as compared to sisters, aunts and grandparents. The information offered by mothers is said to range from signs of puberty, the skills of handling menstruation to the materials used for menstruation.

primary school girl commented: *"My mother tells me to maintain hygiene during menstruation and she buys me sanitary pads to make sure that I am clean all the time."* The problem with mothers as the source of information is that they appear to work alone without deliberate efforts to engage fathers. Some were said to even hide their daughter's menstruation to fathers. This continues to promote the socially constructed premise that 'menstruation is a woman thing' as mentioned previously while discussing sociocultural norms.

As noted previously, sisters, aunts and grandparents also emerged as the sources of information. Similar to mothers, their support was not limited to knowledge but also building the practical skills and handling symptoms

of menstruation. A girl in Karatu commented: *"During menarche, my sister helped me a lot. About two weeks before, she saw me having abdominal pain and skin rashes and told me that I am approaching menstruation. She then taught me how to place the sanitary pads and gave me pain medication."* The practice of female family members acting as sources of information to girls was also supported by officials of the Ministry of Health both in Zanzibar and Tanzania Mainland. The problem with sisters, aunts and/or grandmas is that their impact is limited to girls who have access to them. We understand that not all girls have sisters, aunts or grandmothers. Still, female family members may be the prime source of information to out-of-school girls because a teacher can convey information only in a school environment.

Female peers and friends

The final dominant source of menstruation information for girls is female peers and

friends. Most girls suggested a range of topics they discuss with their friends. They include *"dangerous and safe days"* in relation to pregnancy (girl, Karatu), *"disposal of menstruation materials"* (a primary school girl) and *"hygiene issues"* (girl, Morogoro) among other topics. Similar to female members of the family, peers and friends emerged also as not only offering information but also providing emotional, physical and material support when needed. What came out more clearly is what we shall call 'big sisters'. There was one pattern of data indicating that some girls rely on the guidance and support of other older girls who are more experienced on menstruation, particularly during menarche. A school girl in a rural district commented: *"If you face [menstruation], you just go to someone who is older than you and ask for advice. We do not have school clubs. Instead of waiting for them to be created, you just go to someone older who gives you information and instruction and you will also*

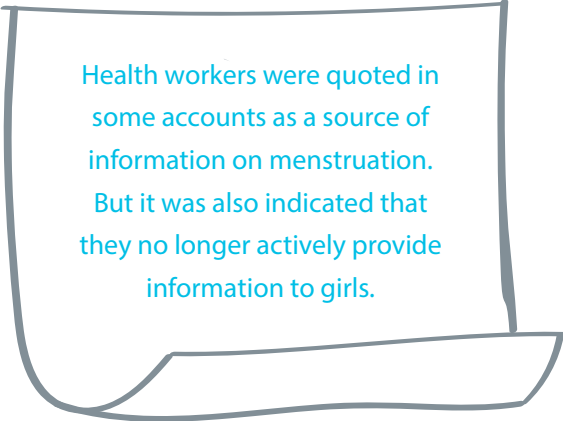


relay the information to other girls. That is how we help each other." The 'big sister' practice was confirmed by an officer at the Ministry of Health. These accounts further suggest that one of the possibly an effective ways to impart girls with essential knowledge and skills on menstruation is investing in 'big sisters' – older girls who are much experienced and can offer on demand guidance when needed. The big sisters could serve as mentors, for example, for those who are struggling with how to use MHH materials.

Non-dominant sources of information

The non-dominant sources of information are those channels emerging in the accounts of a few participants, some of whom are not girl participants in the study. An example is a religious leader in Msalala (Sheikh) who commented that *"education about menstruation is provided as part of Islamic religion teachings"*. A Christian leader also suggested that *"girls from class six or seven are taught about menstruation in churches"*. The problem with religious leaders is that they did not emerge in girls' accounts as the sources of information on menstruation. Still, religious leaders could be an effective source of menstruation in some communities.

Initiation rituals were also cited as one of the sources of information on menstruation among girls. This was mentioned by community members in Unguja and Dar es Salaam. Similar to religious leaders, initiation rituals did not emerge strongly in girls' accounts. However, where widely practised, initiation rituals potentially could be another avenue for imparting girls with menstruation skills and knowledge.



Health workers were quoted in some accounts as a source of information on menstruation. But it was also indicated that they no longer actively provide information to girls.

An education officer in a rural district commented: *"In old days, people from health sector used to come to schools to teach girls."* A few participants cited hospitals as the source of MHH information and materials. This suggests that health care workers could be another valuable source of menstruation information among girls. It may further explain why a health and environmental instructor in one NGO expressed the need for health care workers to visit schools: *"What we need here is one doctor and nurse to come at least once per week to offer us education [on the topic]."* The practice of health care workers visiting schools may provide an 'expert view' in addressing some prevailing misconceptions about menstruation among both girls and boys.

Private companies was cited as a source of information to girls by one of the directors in the description of their activities. However, there was no evidence from girls' accounts to support these assertions. This suggests that private companies may be focusing more on marketing their MHH products than on girls' education and skills. Similarly, some NGO leaders described *"menstruation education as one of their core areas of focus"*. However, girls did not cite NGOs as sources of information. This indicate that NGOs



may either be largely focusing more on policy-level interventions than ground-level activities or it may be that their efforts are not visible to girls because they mostly build the capacity of teachers and community members (see the discussion on stakeholders). Pamphlets were mentioned by some government officials, but they were not mentioned by girls. This may be point to the limited accessibility of pamphlets.

The media (social, internet, radios or TVs) was not quoted by participants as a source of information in both rural and urban areas. On one hand, it speaks volumes on the contents of media programmes. There is a likelihood that education and skills for handling menstruation is not a priority of many media outlets. The few who cited media were primarily referring to the advertisements about expensive modern sanitary pads but not education and skills. On the other hand, non-dominance of media as the source of information among girls may be pointing to poor access of these channels among girls. We know that some schools prohibit students from owning mobile phones, therefore limiting their access to social media and internet. Likewise, there is a narrow possibility that a school girl would own a radio. Some schools may own TVs, but again the contents of TV programmes may be a point

of contention. This indicates a gap in media content and accessibility that MHH stakeholders need to fill.

Types of menstruation information

After examining the sources of information, it is important to delve into the specifics of information provided. Despite many overlaps with previous accounts of girls' understanding of menstruation, there are two major patterns in the data: information given in a school environment and those given in a non-school environment.

Information given in a school environment

As noted above, participants repeatedly suggested that menstruation information in a school environment is commonly nested within reproduction and puberty education. Girls also recalled learning about reproduction in primary schools even before experiencing menarche. This was substantiated by some teachers who stated that they include all girls regardless of commencement of menstruation. A teacher in a rural school commented: *"All students always listen regardless of puberty status. So all children when they attain puberty know everything because they have been trained on signs and symptoms and how to cover themselves as it is explained in the syllabus."* As noted above, science subjects emerged as the first information source on puberty and reproductive education for girls as early as in primary schools. Some community members suggest that girls learn reproductive issues in primary school including the female reproductive system. This reinforces our earlier assertion that primary schools are the backbone of menstruation education among girls.

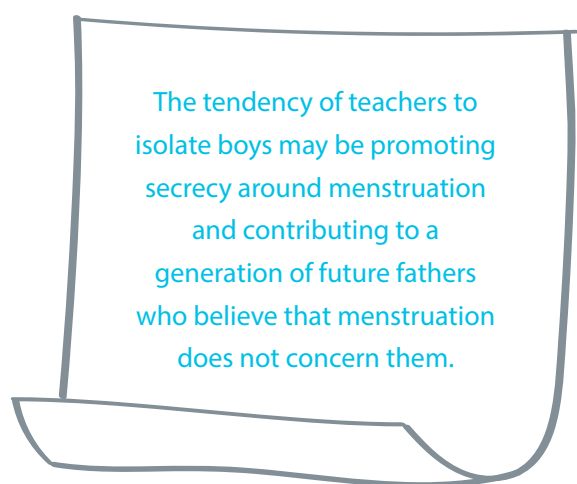
Within the realm of puberty and reproductive education, participants shared a range of specific subtopics they learn about menstruation. Cited mostly are the *why*, *how*, *what* and *where* of menstruation. First, girls described learning about the science of how menstruation occurs. A 15-year-old primary school girl commented: *"We learn how menstruation occurs within our body and where does it start from until the point of coming out."* Second, girls learn about what are the clinical manifestations of menstruation. A girl from Morogoro commented: *"We are told about the signs and symptoms during menstruation and that we are not supposed to worry or be afraid."* Third, girls learn *how to use MHH materials*. Hygienic terms dominated girls' descriptions on what they learn about menstruation. Learning how to correctly use and place the pad or clean reusable cloth (*'vitambaa'*) so that it does not fall off, the frequency of changing, cleaning, drying and disposal practices emerged as the dominant sub-themes when the transcriptions of girls transcript were analysed. A girl in a rural school commented: *"We learn how to place the pads, how many times to change and where to dispose them of."* Another girl in Mbeya commented: *"At our school we are taught to change menstrual materials whenever it is full."* Some are taught the effects of prolonged use of menstrual materials such as causing *"bacteria overgrowth leading to problems at a later time"*. Another girl from a rural school suggested: *"We are instructed to wash our reusable cloths (vitambaa) and if using a pad then not throwing it randomly but in a pit latrine or dustbin."*

Also, bathing frequently at least twice a day and cleaning private parts to avoid offensive smell and infection dominated girls' accounts of hygienic practices. These accounts were supported by some teachers. Fourth, girls learn about *what to avoid during menstruation*. Avoidance of unprotected sex during and after



menstruation to minimize the possibility of infection and pregnancy respectively, being cognizant of *danger days*, avoiding *heavy duties and exercise* and avoiding boys and bad influence fearing pregnancy also primarily emerged from girls' accounts. A girl in Kagera commented: *"We are told that we are not supposed to build close relationship with boys because it is easy to become pregnant."* This may be pointing to avoidance of unprotected sexual relationship and not friendship with boys. Fifth, some girls learn *where to go for support in a school environment*. A girl in Shinyanga noted: *"We are told that if we have any challenge for example abdominal pain we go to matron for medication."* Sixth, girls learn about confidence during menstruation. A girl in Mbeya suggested: *"We learn that during menstruation, do not change your voice and be comfortable as much as possible and without fear because menstruation is a normal event for every woman."* To further boost their confidence, some boys suggested that girls should have an emergency plan, that is, *"knowing the menstruation circle and keeping spare pads or handkerchiefs so that when menstruation commences they clean their private parts."* There are two problems with what girls

learn in a school environment. First, there is no uniformity in what they are taught in schools. For instance, while girls in Shinyanga mentioned learning where to go for support, this did not emerge in the accounts of girls in other schools. This raises questions as to whether the question was well probed, syllabus is uniform across schools or whether some teachers deliver less content or go beyond what is available in the syllabus. It may also signify the way students conceived and remembered the subjects at the time of our interview. The second problem is isolation of boys during menstruation sessions. A boy in Pemba suggested that: *"[Our teachers] do not give us education about menstruation; they give it to girls by just isolating them from us."* This was substantiated by a teacher in an urban school who suggested that *"boys should be isolated because menstruation does not concern them and it is difficult to teach them [menstruation] together with girls."*



Information given in a non-school environment

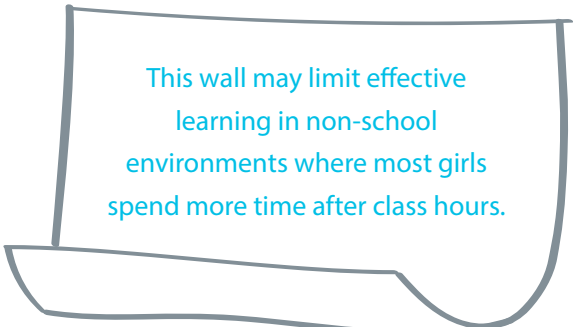
It was observed that the information girls receive from schools and that offered in the community is almost similar. Mothers, for example, offer informal education on menstrual hygiene – correct use of pads and folded reusable cloths (*vitambaa*), cleaning

menstruation materials and private parts as well as danger days and risks of unprotected sex. This may suggest the influence teachers have beyond the school environment, existence of other information sources within the community or that some community members may have retained the information from schools when they were students themselves.

Despite similar information provided to girls, there are a few differences. One interviewee, for instance from Igunga, expressed that *"most community members, particularly parents, possess limited information on menstruation"*. This view could not be justified from other transcripts. Another issue is the usage of parental authority when talking to girls. Phrases like 'tell', 'remind', 'stop' or 'warn' were used frequently when describing what information girls receive from community members. A Kungwi in Namtumbo commented: *"We tell [the girls] to avoid men so that they don't get teenage pregnancy and warn them not to play with men to avoid dislodging the pads."* Giving an insight into what happens in initiation rituals among the Zaramos, aunts are said to *"tell [girls] all the taboos, they put something in the waist and keep it inside for seven days. The aunt starts telling her what to do, for example, avoidance of playing with men and stop playing with children because she is now an adult."* In Unguja, a girl being reminded that *"[she] is now an adult, must be obedient, not roam around and cover [her] self"* emerged in girls' accounts of what they are told by parents. In some areas, girls stated being told to *"respect adults and dress well by avoiding short cloths as well as respecting their fathers"*. A community health worker affirmed teaching girls *"how to prepare traditional reusable cloths as well as washing, ironing and storage, avoidance of teenage pregnancy and sexually transmitted diseases"*. Religious leaders also asserted offering instructions to girls. A church leader in Shinyanga affirmed *"teaching*

and directing girls to not play or sit together with boys at night to minimize the possibility of sexual encounters". A Sheikh also confirmed "teaching girls on how to keep clean and warn them against teenage pregnancy". A girl in Bukoba, for instance, stated that "sisters instruct them on maintaining a firm position against men during menstruation". Some pointed to discussing with female friends about hygiene, avoidance of boys and taking care of self.

In general, there appear to be great similarities between what girls learn in a school environment and what they are told in the community. The difference appears in the approach where parental authority appears to dominate how parents and other community members communicate with girls. Telling, reminding and warning girls about the *dos and don'ts* of menstruation in relation to hygiene, dress code, respect, sexual matters, pregnancy and sexually transmitted diseases is the community's way of teaching girls as compared to teaching in schools. This suggests that community members may be weakly equipped to effectively communicate with girls about menstruation. This may explain why girls remember better what they learn in schools than in the communities. The problem with adopting a 'authoritative power' strategy when instructing girls is two-fold. First, asserting authority has never been an effective way of learning as it may further create a communication wall between parents and girls, particularly around puberty (Eisenberg et al., 2008; Mastrotheodoros et al., 2020). Second,



This wall may limit effective learning in non-school environments where most girls spend more time after class hours.

asserting authority may create girls' over reliance on peers and friends, risking them into falling in troubles that parents and community members attempt to prevent in the first place. A recommendation is therefore made for MHH stakeholders to equip community members – family members in particular – with effective communication skills about menstruation.

Policy about menstruation information

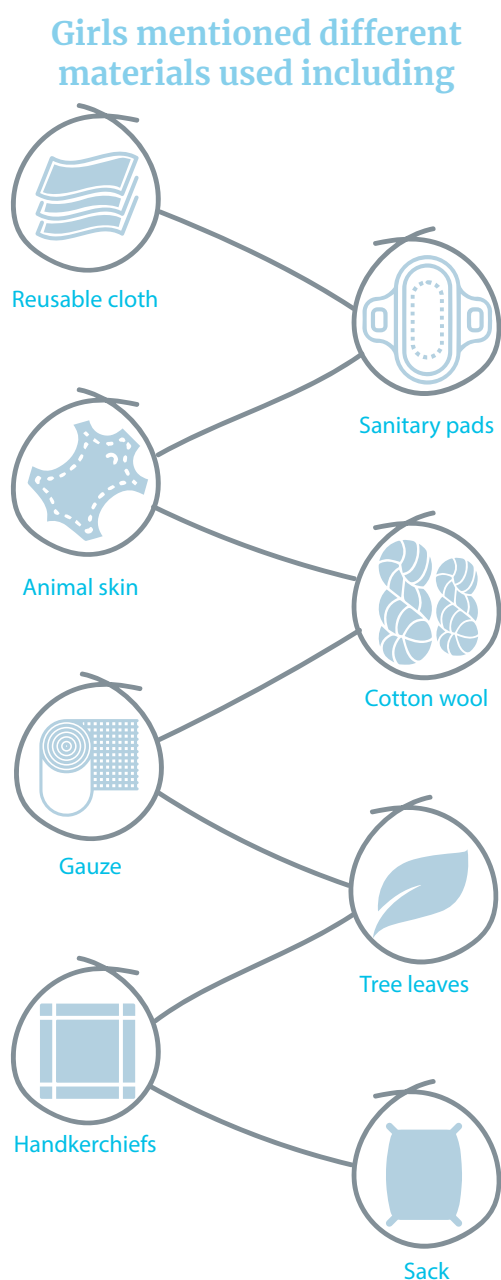
Participants were asked about whether any policy or guidelines exist with regard to MHH information. A response of an official from the Ministry of Health in Zanzibar offers an insight into this: "We don't have a stand-alone policy or guideline that you can say this is for menstruation, but we have a guideline on reproductive health particularly for adolescents, but we don't have one for safe menstruation." This view was supported by NGO leader in Dar es Salaam with regard to the absence of a stand-alone MHH policy in the Tanzania Mainland. While an official cites reproductive health guidelines for adolescents, some participants cited the dependency on "what the curriculum says about puberty and reproduction," identifying weekly reproductive health sessions on Fridays (a primary school girl). This view – existence of curriculum – was supported by a secondary school girl who went further to say that "the curriculum starts talking about menstruation in class five of primary schools and form three in secondary schools". In general, participants agreed on the non-existence of a stand-alone policy or guideline specifically for menstruation in both Tanzania Mainland and Zanzibar; rather, menstruation is both a subtopic of the adolescent reproductive health guidelines and school curricula on similar topics and subcomponent of WASH guidelines (described below). This suggests a need for a specific stand-alone policy or guideline around menstruation or finalization of the existing draft, if any.

In summary, most girls across research settings (rural and urban) and school level (primary and secondary) appear to have a fair awareness of and knowledge about menstruation. Some, however, continue to struggle with the skills of using MHH materials. Schools, female family members, female friends and peers were found to be the dominant sources of MHH information. However, female teachers and matrons within schools and mothers within families are the common sources of information and support about and during menstruation. Male figures – both within school and family – continue to be unreliable sources of information and support for girls. The media – internet, social media, TV and radio – weakly emerged as the sources of information about menstruation, suggesting a need to examine content and priorities for them to offer effective MHH education. Finally, while teachers are seen to offer a broad range of information about menstruation using constructive and friendly strategies, most community members, particularly parents, often adopt an authoritative position towards girls' hygiene, dress code, respect and interaction with boys during menstruation. All these accounts suggest that more needs to be done to impart girls with the skills of using MHH materials including capacity building for community members on communication skills during menstruation.

MHH materials used by girls

The third question explored issues around MHH materials used by girls. There appear to be three major patterns in participants' responses. The first pattern offers insights into the type of MHH materials used, related drivers and challenges. Three main categories of products emerged

in participants' descriptions of materials used by girls: (1) home-made reusable cloths; (2) sanitary pads and (3) other improvised materials. The second pattern provided a peek into the accessibility of MHH materials, with a focus on sanitary pads. The third and final pattern revealed disposal practices, related justifications and challenges. Accessibility of disposal facilities, type of materials used and girls' fears emerged as dictating their practices. These issues are examined in detail next.



MHH materials used by girls: An overview

Participant accounts suggest a range of materials used by girls during menstruation. In many transcripts, home-made reusable cloth made from pieces of cloths ‘vitambaa’ or ‘madaso’, commercially available sanitary pads ‘pedi’ and other improvised materials were mentioned repeatedly. Other improvised materials emerging in some accounts included tissue papers, papers from exercise books, handkerchiefs, several layers of underwear, menstrual cups and mattress sponges as well as unconventional materials such as animal skins and tree leaves. The following section examines each of these materials.

Reusable cloth

Most girls and other participants agreed on the widespread use of reusable cloth. The home-made reusable cloths, which we shall now refer to as ‘reusable cloths’, were commonly cited as ‘vi/ki/tambaa’, ‘matambala’ or ‘madaso’. Why reusable cloth is used has five underlying reasons. Rurality emerged as the first reason. It has been observed that girls in rural areas use reusable cloths frequently as compared to those in urban areas. A girl from rural areas commented: *“In most cases [girls] use reusable cloths.”* This pattern was supported by an official from the Ministry of Health in Zanzibar: *“In rural areas, they mostly use reusable cloths and they clean and dry them on the sun.”* It was further revealed from the participant accounts that rurality contributes to the widespread use of reusable cloths because of poor accessibility to modern sanitary materials. This premise was evident in the account of a girl from a rural school in Msalala within Shinyanga: *“I used to live in a rural village and it was so difficult to get sanitary pads.”* Another girl in a rural school observed: *“It is expensive to get sanitary pads.”* This

suggests that limited supply of sanitary pads in rural areas promotes the use of reusable cloth.

The difficulty in accessing sanitary pads in the rural villages brings us to second reason for the preferred use of reusable cloths – the ease of accessibility. Most girls, some boys and other participants affirmed that reusable cloths are easily accessible compared to sanitary pads. The ‘home-made’ nature of reusable cloths made them easier to produce compared to sanitary materials, which must be purchased. A girl in Pemba commented: *“Reusable cloths are easily accessible. To get pads you need to travel to Wete and you need money to purchase.”* Reusable cloths were usually made at home from a range of readily available body-covering materials as Khanga, Vitenge, Dira and even bedsheets. Some girls affirmed that reusable cloths can be ‘self-made’ after a brief orientation from family members on how to make them. A girl in Pemba commented: *“On the first day [of menstruation] parents give you, but the following day they show you how to make reusable cloths yourself. You just cut pieces of your Khanga. I often cut from my Dira.”* This suggests that parents, particularly mothers, are very resourceful in building informal skills among girls in making home-made materials for menstruation.

Across all participant groups, poverty emerged as third reason for using reusable cloth. Monetary considerations were visible in the accounts of many girls and adults for favouring reusable cloths over sanitary pads. For instance, a girl in cloths Tandahimba commented: *“[Girls] use reusable cloths from old cloths because they do not have the financial capability to buy pads.”* In support, an adult in Mbeya commented: *“For those with no money, they use papers and others use reusable cloth.”* Therefore, poverty induces an inability to purchase sanitary pads for girls who resort to using only reusable cloths but

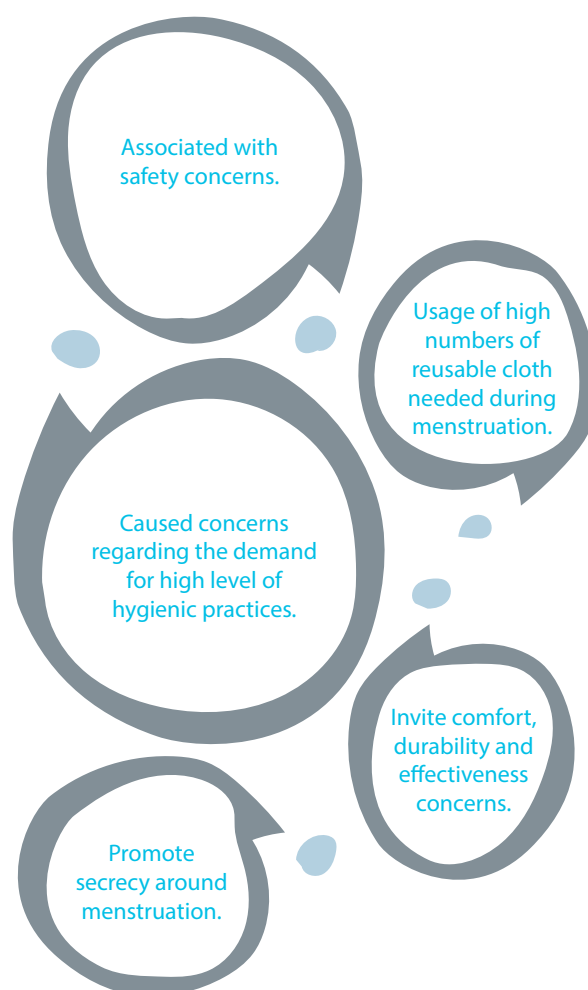
also other improvised materials. This further suggests that increasing girls' financial capacity will ultimately improve their accessibility to sanitary pads.

Reusability was another reason for girls preferring reusable cloth. Most participants indicated that compared to pads, reusable cloths can be used many times. Supporting this premise, a girl in Karatu with an experience of using pads suggested: *"Pads are not suitable because you use it once and throw it away"*. On the contrary, a school committee member commented: *"Once a reusable cloth is used, it is washed and kept for use in the coming months."* This may imply that affordable reusable materials may be more acceptable in the rural contexts. The term 'affordable' is used here because cost concerns for reusable pads available currently in the market were widespread.

Finally, misconceptions towards sanitary pads also drove the usage of reusable cloth among girls. Several misconceptions were cited by girls that appear to discourage them from using sanitary pads, making them heavily reliant on reusable cloths. First, sanitary pads are linked to perceived cancer risks. Comparing reusable cloths and sanitary pads, a girl in Pemba commented: *"Reusable cloth is healthier because people say using pad can cause cancer."* Second, sanitary pads are linked to perceived risks of infection and infertility. For instance, a girl in Tandahimba commented: *"Many use reusable cloth because they believe that pads have bacteria and some say they can cause inability to conceive... That is why many are using reusable cloth."* Finally, some believe that sanitary pads in the market are of very poor quality. An adult in Mbeya suggested that some girls have reverted to reusable cloths because of the quality of pads: *"Initially girls were using reusable cloths from old cloths. Then, the pads came around and*

they started using them... But they now complain that pads are very light so they have gone back to using reusable cloths." Surprisingly, it appears that the girls' misconceptions towards sanitary pads and favouring reusable cloths are socially constructed by some adults. For instance, a girl in Tandahimba commented: *"When you go to the shop to buy pads and miss them, they ask who told you to use pad. They say 'haven't you heard that pads have negative impacts?' So, you become afraid and decide to use reusable cloths."* So, misconceptions toward sanitary pads have to be addressed for girls to prefer them over reusable cloths and these efforts should go beyond community education of girls.

The problem with the widespread use of reusable cloths



First, reusable cloths are associated with safety concerns. Most participants suggested that reusable cloths are made from old dirty pieces of cloths (*madaso*), therefore making them unsafe for human use. Girls themselves expressed safety concerns. For instance, a secondary school girl commented: *"Reusable cloths are not safe. They do not use new cloths [in making them]. They use very old cloths. So they can even cause diseases."* The premise that reusable cloths are prepared from old and dirty cloths was reinforced by a community member in Rorya: *"They take very dirty cloths (vitenge) and those reusable cloths are not kept in good environment. Those who are in school make reusable cloths even from discarded cloths in garbage."* This may explain why another community member in the same focus group linked the usage of reusable cloths to a range of infections: *"Reusable cloths are not safe. So [girls using them] get fungus, urinary tract infection and abdominal pain because the materials are not safe."* This suggests that if reusable cloths are to be promoted for usage during menstruation, girls have to be emphasized on the need to use clean cloths or even new ones to prepare them.

Second, reusable cloths have also invited comfort, durability and effectiveness concerns. Unfriendliness of reusable cloths and the possibility of dislodging emerged in the accounts of some girls. A girl from Mbeya rural said: *"Reusable cloth is not friendly. It denies comfort. Others may be doing rope jump, and you want to do it. But when you think of the reusable cloth you are wearing, you become afraid that it may dislodge."* During a focus group discussion, girls in Tandahimba, for instance, expressed deep concerns about durability and effectiveness. One of them commented: *"If you use a reusable cloth, it can dislodge and fall out in front of people and you become ashamed to pick it up."* Another girl said: *"If you wear a*

reusable cloth, blood can stream through skirt to the outside." To what appears as supporting the durability concerns, a teacher commented: *"Reusable cloths produce small threads in private parts. So they can cause friction and lacerations."* Comfort, durability and effectiveness concerns toward using reusable cloths may be discouraging some girls from using them and they in turn may favour sanitary pads.

Fourth, reusable cloths also have significant quantity concerns. Most participants suggested that a high number of reusable cloths are needed during menstruation. A secondary school girl expressed apprehensions over quantity: *"Personally, I use ten reusable cloths, but if I were using a pad, I could be only using one."* Some went further to suggest that usage of lower quantity of cloths increased the risk of fungus. A girl from Malagarasi commented: *"One girl had only two reusable cloths. Consequently she was using without adequately drying them and at the end, she suffered from fungus infection."* These concerns indicates that some girls who use reusable cloths disfavour them because of the quantity needed for the duration of the menstruation cycle.

Fifth, reusable cloths caused concerns regarding the demand for high level of hygienic practices. Most participants used hygienic terms to describe the somewhat complex and challenging process of managing reusable cloths before and after menstruation. Reusable cloths require frequent washing, drying and sometimes ironing. A girl in Dar es Salaam observed: *"For those using reusable cloths, you must wash them with clean water and soap. And if they are not cleaned, they will produce offensive smell."* The same girl expressed the risk of not washing them effectively as crows may take them away from the drying ropes assuming them to



be meat. Some girls went further to identify problems with washing and drying during the rainy season. A girl from Karatu affirmed: *“The challenge girls who use reusable cloths face is when you have few items, then you wash in a season like this [rainy] where there is no sun, so they don’t dry appropriately.”* Some also indicated a challenge with ironing. Another girl in Karatu said: *“When a girl uses a reusable cloth, it is a must be ironed. The challenge is you don’t have access to an iron box to kill the bacteria.”* What all these accounts point to is that the safety reusable cloths is heavily compromised in places where hygiene cannot be optimally maintained. These may include the contexts where water supply is a challenge or during the rainy season.

Finally, reusable cloths appear to promote secrecy around menstruation. As we seek to normalize menstruation, reusable cloths require secrecy in the washing and drying process. A school committee member commented: *“Girls wash and dry in the backyard because they must not be seen. It is like a girl’s secret and sometimes they hide under the bed.”* In support of the premise of secretive management of reusable cloths, a girl in Pemba commented: *“You need to wash it and dry it in a place where people cannot see. You can dry inside or if outside, you have to cover it with another cloth (Khanga) for other people not to see.”*

In general, traditional reusable cloths are preferred for menstruation in rural areas because of accessibility, reusability and misconceptions towards Western reusable cloths. However, the concerns about their safety, comfort, durability, effectiveness and quantity needed and hygienic practices appear widespread. This indicates that for the promotion of usage of reusable cloths, efforts are needed to address the concerns associated with their usage in the first place.

Sanitary pads

Sanitary pads appear to carry equal weight as reusable cloths in participants’ description as a commonly used MHH material. However, on analysing the transcripts, sanitary pads appear more common in urban as compared to rural areas. It is important to note that most accounts offered a comparison of sanitary pads and reusable cloths when talking about these issues.

The first reason is purchasing power (financial accessibility). Most girls who used sanitary pads are found to be in a better financial position to purchase them. Better financial position is described as parents giving girls money to purchase sanitary pads. An example is a girl from Pemba who commented: *“Sanitary pads*

Reasons mentioned by participants for using sanitary pads



are sold at TSh 2,500 and mother always gives me money to buy.” Parental support to girls during menstruation was extensively examined in previous sections.

The second reason is durability when compared to reusable cloths. While reusable cloths have durability concerns, sanitary pads received massive acknowledgement for their durability. A girl from Tandahimba commented: *“I like using pads because if you use a reusable cloth at school it can dislodge and fallout in front of other people and you feel ashamed to pick it up as they will laugh at you.”*

The third reason for using sanitary pads is effectiveness. While some participants indicated their worry about the quality of sanitary pads (as discussed earlier), they nonetheless earned approval among some as being highly effective. A girl from Tandahimba urban commented: *“Most use pads because if you use reusable cloths in a classroom, you may stand up just to find out your skirt is covered in blood.”* This suggests that pads are generally considered effective as compared to reusable cloths.

The fourth reason for using a sanitary pad is comfort and freedom. Pads emerged as offering maximum comfort and freedom during menstruation. A secondary school girl noted: *“For students, we are told to use pads because they make you feel free.”* This suggests that pads are generally considered comfortable as compared to reusable cloths.

The fifth reason for using pads is their easy disposability. While this factor did not emerge in relation to the usage of reusable cloths, pads emerged as easily disposable after being used for menstruation. A school girl commented: *“I was told to use reusable cloths but I now use pads because it is very easy to dispose them even by burning.”* This suggests that pads are considered by some as easy to dispose as compared to reusable cloths.

The final reason for using sanitary pads is modernity. The usage of reusable cloths was considered somewhat ‘old-fashioned’. On the contrary, use of sanitary pads was associated with being educated and modern. Consequently, some participants appeared to believe that girls use pads because they are educated therefore have moved away from the old-fashioned ways of doing things. A girl in an urban area suggested: *“The large percentage of us use sanitary pads because we are educated*

and modern as compared to old days when we used reusable cloth." This indicates that those using sanitary pads may consider themselves educated and more modern than those using reusable cloths.

A few girls had a tendency to use both reusable cloth and sanitary pads. This also emerged when the discussion centred on materials commonly used in menstruation. For instance, a girl in Malagarasi said: *"60 per cent use sanitary pads and 40 per cent use reusable cloth."* This was also evident in a FGD in Tandahimba where some girls preferred reusable cloths while others used sanitary pads. However, some respondents specifically indicated alternating between reusable cloths and pads in different circumstances. A girl from Kagera commented: *"At school, I use pads but at home I use a reusable cloth."* Financial challenges emerged as the main reason for alternating between pads and reusable cloths. A girl in Usambara commented: *"I buy pads here at school and when I run out of pads I use reusable cloth."* This suggests that circumstances often dictate what to use for menstruation.

Other improvised materials

A range of other materials cited by few participants as being improvised and used by girls for menstruation. Animal skin, cotton wool and gauze were mentioned by girls in Malagarasi when asked about what they use during menstruation in a focus group discussion. One of the girls commented: *"Cotton wool. You can fold it within a gauze and use it as a pad. A friend of mine is using cotton wool as gauze."* Furthermore, heavy sacks and tree leaves were also cited by an officer of the private college in Zanzibar who quoted their research findings: *"We found that they use reusable cloth, some sacks and tree leaves for menstruation."* Girls using tree leaves as an

MHH material was substantiated by an adult in Mbeya. She said: *"Some use tree leaves for menstruation during emergency situation by folding them together to avoid shame."* Moreover, to our surprise, Pampers was mentioned in the accounts of some boys. A boy from rural area stated: *"Women use Pampers."* Additionally, handkerchiefs were also cited in some accounts. For instance, similar to tree leaves, a girl from Malagarasi observed that *"handkerchiefs are used in emergency situation when you start menstruation suddenly"*. Some stated using toilet papers by *"folding within the underwear"* (a girl from Usambara). Mattress sponges were also used particularly in emergency situations as clear from what this girl has to say: *"Pick a sponge piece from pillow and use it. Mostly for those with no financial access to sanitary pads"* (adult, Mbeya). Pages of exercise books also were also used by some adults in Mbeya. Layers of underwear supported by skin-tight clothing also was used by some participants. Supporting this premise, a girl from Mbeya rural commented: *"She can wear five to six underwear together and blood cannot escape."* Finally, a boy in a rural school cited the usage of 'menstruation cup'. Calling it *hedhi cup*, one key informant perceived them as very expensive in some areas: *"In some places hedhi cups are sold for up to TSh 35,000 and in other places for TSh 26,000."* What is clear in these accounts is that first, girls use other improved materials mostly in emergency situations to avoid the shame associated with other people spotting blood stains in their cloths. Second, the use of materials other than reusable cloth and pads mainly happened in rural areas. Third, most of the materials were taken from adults' accounts and not mentioned by girls themselves. This may indicate the whole range of irrational fears that some adults may be harbouring about the material girls use. Table 40 summarizes the reasons for using different materials.

Table 40: Drivers of usage of different MHH materials among girls

Home-made reusable cloth	Sanitary pads	Other materials
Rurality	Modernity	Emergency situations
Easy accessibility (self-made)	Purchasing power	Rurality
Poverty	Durability	Financial accessibility of pads
Reusability	Effectiveness	
Misconceptions towards sanitary pads	Comfort and freedom	
Poor quality of pads	Disposability	

In summary, sanitary pads and reusable cloths appear to carry equal weight as materials used for menstruation among girls. Those who use reusable cloth mostly live in the rural areas and are usually poor. The ease of preparation of reusable cloths and misconceptions towards the use of sanitary pads are important drivers of their decision. On the other hand, those who use pads regard their own financial capacity to purchase them, durability, effectiveness, comfort, freedom and disposal practices as important. These accounts offer insights for stakeholders who continue to develop solutions for menstruation to consider these features as much as possible when suggesting suitable alternatives.

Accessibility of sanitary pads

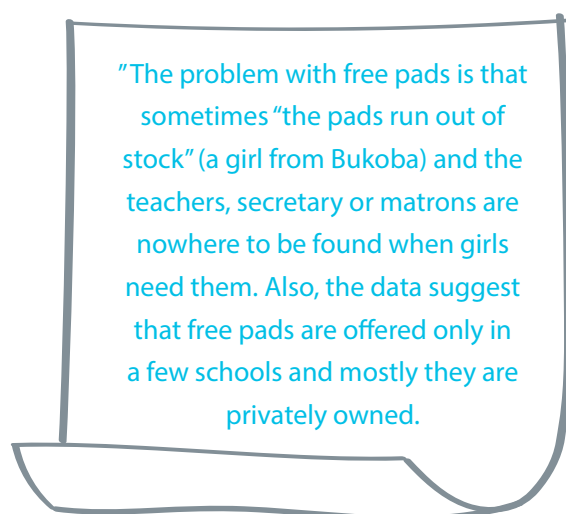
As noted above, one of the reasons for use of home-made materials is mainly because they can be made from materials available at home. On the contrary, accessibility of sanitary pads requires a deeper look.

Many girls affirmed using sanitary pads; however, only those who had better accessibility to pads used them.

As noted above, affordability is important – their parents buy or give them money to buy. Those who are unable to buy pads end up using home-made materials, which have no significant cost implications. This brings us to the question of from where do girls obtain sanitary pads.

The accounts of girls suggest three places from where they source the pads: shops, friends and peers and free supply. Within school environments, school shops emerged as a dominant source. A girl from a boarding school in Karatu said: *“When you run out of these materials, you can buy them from the school shops.”* However, this mostly appears to be a common practice mainly among girls in boarding schools. Buying from shops poses two challenges. First, the shops are often closed whenever one needs pads. A girl from a boarding school stated: *“You find the school shop is closed when you want to buy and no one else can sell. That is a challenge.”* Second, the price of pads was generally considered to be high by many. An adult from Mbeya suggested the price as ranging “between TSh 1,500 and 3,000.” As small as it may look, this was considered too expensive that they went back to using reusable cloth. Some girls indicated obtaining the pads from friends and peers. For example, another secondary school girl pointed out: *“If you have no pocket money, you can borrow pads from a*

friend and you will return later.” Another dominant source of pads in school was free supply of pads offered by teachers and matrons. Participants stated that some schools offer them pads free of cost. A girl from a boarding Islamic school observed: “You just go to the secretary and she gives you.” A matron in Karatu observed: “Accessibility is easy because head teacher buys one carton every month for students.” A secondary school girl affirmed: “When you get dirty you just go to the teacher, the teacher will open the school store and give you [pads] for free.”



A WASH officer said in Zanzibar: “There are a few schools in which girls get pads in private schools, but it is very difficult to get free pads in a public school.” Even within private schools, some girls however suggested that when pads are available, teachers and matrons only have a few for emergencies.

Some teachers were commended by some of the study participants for offering their own pads, or they would buy or sometimes improvised for students in emergency situations. A primary school girl commented: “If you don’t have pad in school environment you go to a female teacher who can help you.” Furthermore, a girl in Pemba said, in emergency

situations, “The teacher can give you a piece of cloth to use as pads.” This suggests that female teachers are the critical partners in an effort to improve MHH practices in school settings.

Finally, some participants suggested obtaining pads from pad dispensers. Recalling the practice of obtaining pads from dispensers, a girl in Dar es Salaam suggested: “There used to be a dispenser that sold pads for TSh 200 and 500. But now it is not around and it has been removed.” This suggests that pad dispensers could be offer one of the important ways of improving MHH practices, especially when cost implications are taken into account.

Within the community environment, as noted above, girls who are in good financial position buy from shops but the cost was cited as a concern by many participants. Consequently, those with limited income turn to reusable cloth. Financial ability as a driver of using home-made materials was discussed in previous sections.

Disposal practices of MHH materials

The discussion on the third research question cannot end without examining how the girls dispose MHH materials after use. Looking across participant groups, it can be noted that similar strategies are applied for disposing of both reusable cloth and sanitary pads. The difference, however, is at the timing of disposal. The reusable materials such as reusable cloths are thrown away when they become old, but pads are disposed immediately after use. A girls in a rural school commented: “We burn pads (immediately) and the reusable cloths only when they are too old.”

Probing the disposal practices further, girls, boys and adults find that throwing down the toilets, particularly pit latrines, burying underground

and burning are the common disposal approaches. However, disposal practices are largely shaped by several circumstances.

The first circumstance is the availability of disposal facilities. For instance, the absence of incinerators emerged as a driver for burying used materials underground or dumping them in toilets. A girl in Isaka observed: *"We don't have an incinerator here at school to burn [the materials] or any other place to throw except the toilets."* A boy in Pemba also commented: *"An incinerator is not available but there is a special hole where they can bury underground."* So the presence of an incinerator appears to promote burning as an option. A secondary school girl noted: *"We have an incinerator here. You just throw in and they burn."* Similarly, availability of dustbins emerged as common disposal facilities in some schools. A girl from an Islamic school indicated that they always *"put [the used pads] in black plastic bag and throw in dustbins."* In Msalala Shinyanga, a girl considered dustbins as a safe facility: *"Dustbins are friendlier because they protect our health instead of throwing carelessly."* This suggests that availability of waste management facilities such as incinerator and dustbins shapes how MHH materials are disposed.

Furthermore, the availability of pit latrines appeared to largely promote toilet dumping. This was found to be a common practice at home environment although it is also a practice in schools with pit latrines. A girl in Karatu asserted: *"At home it is not necessary to burn. You just throw in a pit latrine."* A girl in Isaka, drawing a comparison between home and school, said: *"At home we throw in pit latrines. But in schools we have flushing toilets"*. The absence of pit latrines was cited by few as contributing to disposal of pads or reusable cloths in flushing toilets for those who ignore the consequences.

This may explain, first, why some commented about the sewage system blockage. A boy from Zanzibar observed: *"Here they throw in (flush) toilets. The sewage systems get blocked every now and then and when they clear the system they find abnormal quantity of reusable cloths."* The practice of disposing pads and reusable cloths in flush toilets was substantiated by a religious leader (Sheikh) in Lushoto. He commented: *"I witnessed sewage systems being blocked because most throw pads in toilets."* This may further explain why some schools impose restrictions on disposal of pads through toilet. A girl commented: *"Here we are prohibited from throwing [the used pads] in toilets because the sewage system will be blocked."* Moreover, a girl in Pemba requested pit latrines: *"We need pit latrines constructed for us to dispose pads in them."* Additionally, the absence of pit latrines may explain why most opt for burning used pads.

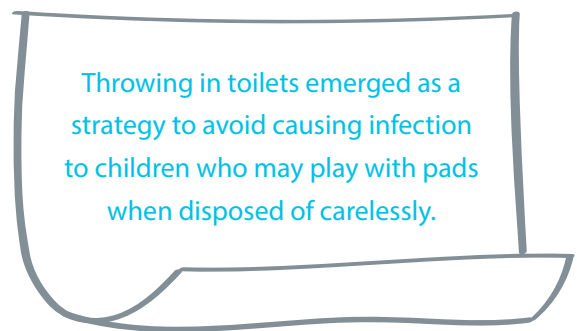
There are three problems associated with burning however. First, plastics bags are commonly used accessories for burning and this may pose environmental concerns. For instance, a girl in Malagarasi commented: *"We put in plastic bags, Rambo' we send to the hole and burn."* A primary school girl also noted: *"You collect all your pads, fold them in a plastic bag 'Marlboro', you light with match sticks near dump site, and you burn until only the ashes remain."* It is not clear whether this continues to be a practice as the plastic bags have been banned in the country. Second, burning appears to be a challenge during the rainy season. A girl in Karatu commented: *"The challenge with burning is that during a season like this, there are times when it rains and you fail to burn because they will not burn effectively."* Finally, burning is associated with some misconceptions. A girl from a rural school noted that: *"Wandendeule tribe believes that burning pads is like burning yourself. You*

could die. [Therefore], we always throw in toilet or bury underground.” This suggests that culturally constructed beliefs may also shape how MHH materials are disposed. Despite these challenges, burning is considered an appropriate disposal strategy by many.

The second circumstance shaping disposal practices is the nature of material used for menstruation. Some girls described using different disposal strategies for different materials. A girl in Malagarasi commented: “For pads, we are told to throw in the toilets or burn but for reusable cloth we are told to wash the blood off and throw it in the toilet.” Therefore, it is clear that the nature of materials used may prompt different disposal practices. The third and final reason contributing to disposal practices is the girls’ fears. In addition to the culturally constructed fear of death from burning the pads, fears of witchcraft, contamination and shame emerged as shaping the disposal practices. To begin with, a recurrent sub-theme that could be observed in the participant interviews is the fear of witchcraft. Throwing in a pit latrine, burying underground or burning were cited as commonly used to avoid ‘bad people’ from accessing the used menstrual materials, bewitching the girl and causing infertility. A girl in Karatu, for instance, observed that: “Someone with bad intentions or witches may touch or get hold of the menstrual products (e.g., blood stained pads) using them for bewitchment that brings infertility in later years.” Another girl from Shinyanga noted: “Some girls throw carelessly and the witches can take the blood and do bad things leading to them not having babies later.” The concerns of witchcraft also emerged in urban contexts. A girl in Dar es Salaam commented: “If we throw carelessly people with different beliefs, you may find some taking [the blood stained materials] and use them to do their things. You may face some health

problems later. Some may send them to traditional healers and the healer may do things that may bring you some health problems, for example bleeding continuously. Not every person you see has good intentions. Some harbour bad intentions in their heart. They can take a used pad stained with your blood to a healer who can do things that may lock your uterus and you will never bear children.” Looking at this from a positive angle, fear of witchcraft could be promoting good disposal practices among some girls.

Fear of contamination was also expressed by some participants. First was the fear of contaminating children.



Throwing in toilets emerged as a strategy to avoid causing infection to children who may play with pads when disposed of carelessly.

A girl from Msalala, Shinyanga, said: “If it is a sanitary pad, we always throw in toilets to prevent children from playing with it.” A boy in Tandahimba delved into the possibility of HIV transmission through unsafe disposal. He commented: “After using they throw in the toilet so that children cannot access them. If children get hold of the used pads they may get infected, for example, if the person has an HIV infection.” Second was the fear of environmental contamination. A girl from Islamic school suggested that burning is good “because if you throw carelessly, it destroys the environment.” Similar concerns could be observed among girls in Dar es Salaam. One commented: “We are prohibited from throwing the pads around carelessly because they contaminate the environment and cause disease outbreaks.”

Despite these fears of contaminating children and environment, some people appear to disregard them and continued to throw the used material in the bushes.

Those who support throwing pads in the bush consider this as a good strategy for decomposition. A community member in Rorya stated: *“Most throw in the bush. Throwing in the bush means the pad is self-degrading.”* The challenge with throwing in the bush, however, is that it also caused concerns of witchcraft (as discussed above), environmental contamination and the secrecy involved in the process. A community member in Rorya noted: *“When throwing in the bush she has to look around if anyone is watching.”* This suggests that participants may have opposing opinions for some disposal strategies. It is important therefore to leverage the beliefs and fears to arrive at a common ground to improve MHH practices.

Finally, fear of shame was seen as contributing to better disposal practices. A boy in Tandahimba commented: *“Used pads are dirty. If neighbours see them inappropriately disposed, it will be a shame to the girl.”*

In addition to burning, underground burning and throwing in toilets, other disposal strategies were also practised. The first is throwing in septic tanks. Surprisingly, a girl in Zanzibar stated that *“We always throw [used pads] in a septic tank at school.”* The problem with septic tank disposal may be the possibility of blockage of the sewerage systems. The second practice was keeping used materials under the bed. A boy in Pemba suggested that *“some women have*

a behaviour of putting used pads under the bed especially those who are not hygienic.” It is not clear whether the boy was referring to temporary storage or disposal practices.

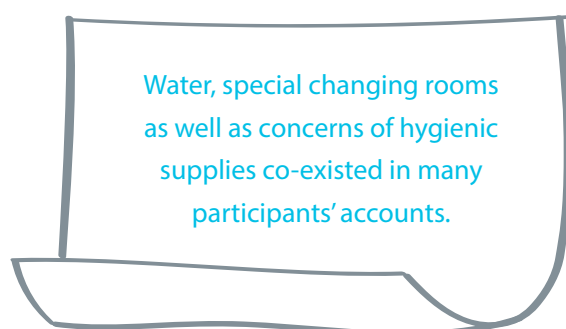
In summary, there appears to be a range of disposal practices. Burning, throwing in pit latrines and burying underground are the dominant disposal strategies. On the one hand, throwing in pit latrines appeared to be a common practice at home and mostly in the rural settings where pit latrines are available. On the other hand, in urban areas where flushing toilets are common, burning appears to dominate. In general, availability of disposal facilities, nature of materials used, whether sanitary pads or reusable cloth, and fear of witchcraft, shame and contamination appear to shape the disposal practices, especially burning, throwing in pit latrines or in bushes.

WASH infrastructure

WASH facilities for MHH



The fourth research question examined the availability of WASH infrastructure to support safe MHH practices among girls. Analysing the transcripts, three WASH infrastructure facilities dominated participants' accounts: (1) toilet, (2) water availability and (3) special changing room for menstruation. Despite some disagreements, most girls and other participants highlighted the unavailability and availability of water posing some challenges.



For instance, a school girl in Isaka commented: *"A major challenge is a changing room, water and soap. Our wish is to get a special changing room, safe water and soap so that we can clean ourselves well."* Girls' concerns on WASH infrastructure were supported by some leaders. A local political leader affirmed: *"In terms of infrastructure we are far behind because investments occur in few areas we have visited. There are some schools we visited that have very old infrastructure."* These concerns were supported by a WASH coordinator who emphasized external support: *"Most of the schools that I can confidently say have good WASH infrastructure are those receiving support from development partners."* This brings us to the question of what is the current status of WASH infrastructure. In response to this question, WASH infrastructure will be commonly examined from three standpoints: (1) availability, (2) availability with some challenges and (3) unavailability.

Toilet facilities

Most participants agreed that toilet facilities, mostly pit latrines, are available in most schools. Where the variation was noted was in some citing availability of toilets with some challenges and a few citing availability with no challenges. We first examine the accounts related to availability and then those related to availability with some challenges.

Toilet available

Few participants noted that toilets (mostly pit latrines) are available in schools. A common tendency among the participants was to describe what is available as compared to what is not available. A teacher in a rural school commented: *"Here at our school we have normal toilets, but we do not have a special changing rooms. They are just pit latrines."* In the same way, comparing schools in terms of availability of modern toilets, a community member in Lushoto stated: *"In our town we have eight schools and only two do not have improved toilets."* Even some boys affirmed the availability of toilets. A boy in Rorya commented: *"[Girls] have been assigned some toilets meaning if the pad is full it is very easy. It will be nice to make water available as well."* Some went further to highlight the availability of flush toilets. A secondary schoolteacher commented: *"We do not have [pit latrines]. Girls use flush toilets."* These accounts suggest that most schools may have pit latrines. However, some challenges still persist.

Toilets available with some challenges

Some participants who noted the availability of toilets cited some challenges. The first dominant challenge was the lack of privacy. The absence

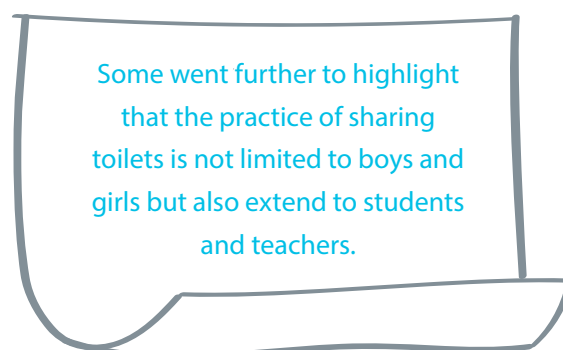
of doors contributed to lack of privacy where toilets are available. A primary school girl in Mbeya rural cited lack of privacy as contributing to lack of freedom: *"It is not that we do not have somewhere to change pads. We use toilets but they do not have doors. You may be inside changing and suddenly another girls comes. So you lack the freedom."* The premise of lack of privacy in toilets also emerged in some accounts by adults.



A WASH coordinator explained the absence of both doors and locking system: *"You find the toilets have no doors [inside]. Just a wall is in place. So privacy becomes a problem. Most schools truly do not have doors. No doors at all. But when the door is in place, you find it has no bolts for locking from the inside."* Some went further to describe the alternatives that girls use due to lack of privacy in the school toilets. A teacher in Rorya commented: *"Our toilets do not have privacy. That is why girls go to change pads very far from school and sometimes in the bush."* Some others highlighted the problem with the floor and roofing in some toilets. A community member in Mbeya noted: *"To be honest, toilets are in a terrible shape. Some are just covered with pieces of wood. You can see everything inside [faeces] and if you are not careful, you may fall inside."* In peripheral areas, the situation is much worse. Toilets have no privacy and some do not have a roof. What all these accounts suggest is that although some schools have toilets, they do not

have provision for privacy. The lack of privacy in toilets contribute to some girls not changing pads and reusable cloths in the toilets. This situation may also explain why some girls were concerned about generating offensive smell and consequently not coming to school (see impact of menstruation).

Lack of privacy was also cited by some participants from the standpoint of shared toilets. A teacher in an urban school observed: *"Here at my school we have toilets but shared. Both girls and boys, older or young all enter. Truly the environment is not friendly."* The presence of shared toilets was also confirmed by a community member in Rorya: *"Some schools have shared toilets among girl and boys. We are lucky that our ward has toilets for each gender."*



A girl in Pemba noted: *"We use the same toilets. The same for students and teachers and it has no door. Even if you change (the pad) where will you put it?"* This may explain why some girls indicated a desire for a separate toilet for them. A secondary school girl for example emphasized: *"I suggest that we girls be given our own toilet."*

The second dominant challenge with available toilets is inadequate hygiene. A secondary girl in Mbeya observed: *"Our toilets are filthy. No water and if you are dirty (when the pad fills*

up) you cannot go to the toilet because they are not conducive.” The concern of toilet hygiene emerged as a common problem not only in schools but also in communities. A ward councilor commented: *“I am the ward councillor. The toilet hygiene is a national problem. I visit many schools in my ward but toilets is a major challenge. No water and most toilets are filthy.”* A community member in a rural district affirmed: *“Our toilets are neither clean nor safe. Even girls face challenges because of unclean toilets. If you take a look, only 20 per cent of toilets in all school are good.”*

Inadequate toilet hygiene was often cited along with the concerns of hygienic supplies, particularly dustbins, soap and water. For instance, a primary school girl noted: *“Our toilets do not have dustbins, so you find pads disposed of carelessly.”* Relatedly, another primary school girl in a rural district observed: *“If you go to the toilet, they are filthy. Even if your underwear is stained with menstrual blood, you cannot find water and soap.”* A girl in Dar es Salaam affirmed: *“No soap in the toilet.”*

It can be summarized that toilets are available in almost all the schools. However, concerns of privacy due to the absence of doors, door bolts and even roofs as well as shared toilets were clear in participants’ accounts. Similarly, available toilets appear to be have inadequate hygiene and most are considered unclean with no water and essential supplies. Due to these challenges, most girls tend to avoid toilets for changing pads. Instead they opt to stay with pads for longer, a practice that poses a risk of offensive smell, which may earn them shame and stigma (as discussed above). Some change pads in the bush. The lack of privacy in toilets, their unclean environment and absence of hygienic supplies may explain why some girls chose to stay at home during menstruation, a choice that was found to impact their academic performance as discussed before.

Water facilities

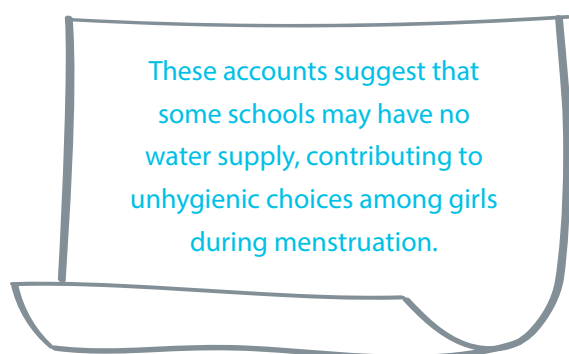
Clean and safe water supply is known to be an essential ingredient of safe MHH practices (Hennegan et al., 2018, 2019; Chinyama et al., 2019). The accounts of participants indicated three scenarios (in terms of pre dominance): water not available, water available with some challenges and water available with no challenges.

Water not available

A recurring sub-theme in most participants’ accounts is the absence of water supply in many schools in both urban and rural settings. To begin with, a girl in Malagarasi noted: *“The main challenge is the absence of water during menstruation. Both in schools and at home.”* Water availability was a problem at home as well as in school. Boys and some community members also confirmed the unavailability of water in schools. A boy in Mbeya observed: *“Girls face a big challenge related to water access. So it is very difficult to keep themselves clean.”* An officer from the Ministry of Health in Zanzibar pointed out: *“Some schools neither have clean and safe water nor water at all.”*

Some participants commented on how schools and girls handle the absence of water. First, the teachers instruct students to bring water from home. A community member in Rorya stated: *“Water is a big challenge in schools. During dry season, teachers instruct students to bring water from home. The water is not safe though.”* In some schools, girls are said to carry water in plastic bags to schools. A local leader commented: *“I went to one school and found students are carrying water in plastic bags [Rambo] to school for cleaning purposes.”* Second, most girls decide not to change pads. Participants mentioned this when describing the negative impact of water not being available to girls. A girl in Dar es

Salaam commented: *“Water is a major challenge. For example, you go to the toilet to change pad and you find no water so you fail to clean yourself well. So, some postpone changing and decide to stay with the pad for a long time and this has consequences.”* To what appears as unmasking ‘the consequences’ of girls staying with pads/ reusable cloths for longer, an assistant head teacher in a secondary school commented: *“Most often, there is no water. Therefore girls are unable to keep themselves clean enough, consequently generating offensive smell.”* Some girls considered rainy season as bringing relief. A girl in Usambara noted: *“We get water at school whenever it rains. But if no rain we go to fetch very far from here.”*

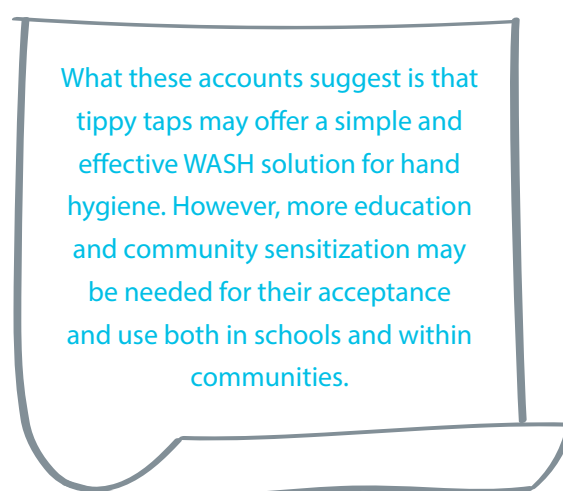


Water available with some challenges

Another recurring sub-theme that was noted from participant discussions is the availability of water though with some challenges. The first challenge is unsustainable supply of tap water. For instance, a girl in Mbeya stated: *“We have a water challenge. Sometimes we have more than enough but sometimes no water. Water needs to be more than enough.”* A girl in Karatu observed: *“A challenge is that sometime water is off. It is not flowing throughout.”* Some went further to describe water bill payment as problematic contributing to unstable supply of water. A teacher in Mbeya pointed out: *“We have water, but the problem is bill payment because the usage is very high as compared*

to payment ability and the government is not giving us money for bill payment. Another thing is that we have the capacity to accommodate 160 boarding students but now we have 360 students and our infrastructure cannot sustain the number of students we have.” This suggests that even if water is available in schools, some may be lacking the financial capacity to sustain the supply. Second are concerns of safety, particularly those using sources other than tap water. A school board member in Isaka observed: *“Water is available but it is not safe because we do not have a sustainable source. Some fetch it from ponds and some from dams.”*

When asked about what girls use for hand hygiene, a teacher commented: *“We have tippy taps in place.”* However, some challenges were highlighted. The first challenge was their absence in most schools and communities. A village ward executive officer commented: *“We have encouraged the community members to have tippy taps (vibuyu chirizi) in every toilet. We educate them. Some understand and some do not but there are some schools with tippy taps and many do not have them.”* Second, tippy taps are easily stolen or play with it. A community member in a rural district commented: *“You may find someone stole it [tippy taps] or someone may come and consume all the water in a tippy tap playfully.”*



Water is available

A number of participants affirmed availability of water without any challenge. Comments related to availability of sustainable supply of water emerged in some accounts of participants in Muleba, Lushoto, Mbeya, Bukoba and Unguja. In Lushoto, for instance, water was cited *“to flow in tunnels and used as an alternative to tap water when not available”* (Education Officer). In Unguja and Pemba, shallow wells were cited as sustainable source of water in some schools. In one secondary school in Mbeya, a girl stated: *“Water is available. Every toilet has a water tap and the surrounding environment has water except the pit latrines. To use the pit latrine, you have to pick water outside for use in the latrine but water is available.”* These accounts suggest that some schools may have a stable supply of water. Nevertheless, more studies may be needed to establish statistical relationship between availability of water and girls’ menstruation practices.

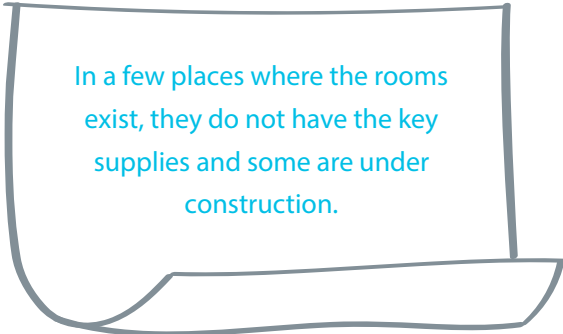
Special changing room for menstruation

Another recurrent theme in participants’ accounts is related to availability of special changing room for school girls during menstruation. Most participants pointed to their unavailability, but a few said they are available but with some challenges.

On the one hand, it was a common perception among many participants that most schools do not have special rooms for girls to handle menstruation. This is in contrast to what a school WASH coordinator in Zanzibar said: *“A provision has to be there that female students’ toilet construction needs to include a special room for MHH.”* A 15-year-old primary school girl noted: *“We do not have that special room for*

changing pads.” Most participants suggested the need to have such a room in place. For instance, a community member in Igunga suggested: *“Schools need to have special room for girls during menstruation and the rooms need to have materials that can help them when they are at school.”* On the other hand, few participants pointed to the availability of special rooms but with some challenges. A primary school girl in Morogoro noted: *“A special room for girls is available. But no essential supplies. You need to carry the supplies from home.”* Some indicated that the special room is under construction. A matron in Karatu commented: *“There is a special room. It is being built. But it is for girls to change the pads.”*

What these accounts point to is that girls and community members acknowledge the importance and the need for special room during menstruation. However, the rooms are unavailable in many schools despite SWASH provisions.



In a few places where the rooms exist, they do not have the key supplies and some are under construction.

However, some accounts suggest that some girls are untrustworthy as they are stealing the WASH supplies if provided in the rooms. Teachers in one secondary school confirmed this. One teacher said, *“We buy cups for cleaning, but they do not last for a week. They are stolen.”* Another teacher noted: *“You may put soap but within one hour it disappears, the girls themselves steal it.”* Yet another teacher also observed: *“You can put soap on Friday but you don’t find it on Monday. Students steal it.”* This suggests that

there is a need to mobilize community and resources to ensure availability of special rooms for girls during menstruation in every school as well as educating girls on communal living.

WASH infrastructure at home

Contrasting statements were made regarding the availability of WASH infrastructure at home. On the one hand, some indicated homes to have friendly WASH infrastructure for girls. Three boys in Mbeya respectively suggested that *“homes have everything and the environment is friendly”; “homes do not have water challenges”;* and *“85 per cent of communities have improved toilets and people are moving from traditional toilets.”* A boy from Rorya affirmed saying, *“home environment is friendly because it is easy to enter the bathroom, clean and dress well and water is available as compared to school.”* On the other hand, some expressed doubts about hygienic supplies at home for poor families. A primary school girl commented: *“The challenge is soap at home. You have to wait until mother gets money because soap is not available every day.”* As noted above, the absence of water in some schools is related to its absence in communities, making home similarly unreliable for water supply. What these accounts suggest is that while home may be providing privacy and optimum hygiene during menstruation, the absence of water and WASH supplies may be impacting some girls equally at schools and at home.

Perceived impact of WASH infrastructure on MHH practices

An important and final sub-theme emerging from participant accounts is the perceptions around the impacts unreliable WASH infrastructures have on girls during

menstruation. There are four possible impacts identified. First, girls avoid toilets. As a result, they stay ‘dirty’, generating offensive smell. As noted above, an assistant head teacher commented: *“Sometimes, water is not available contributing to girls becoming unclean consequently generating offensive smell.”* A primary school girl commented: *“The challenge we face is water because you find no water, blood is coming out, you can’t clean yourself well and the blood start smelling so you fear even sitting near your peers.”* The offensive smell during menstruation emerged as the contributing to girls’ fear of shame and stigmatization particularly from boys and reduced school attendance as noted in previous sections.

The second impact is not coming to school. The accounts supporting the premise that girls stay home because of menstruation was detailed in previous sections (see impact of menstruation on academic performance).

The third impact is discontinuing classrooms to handle menstruation. Some girls indicated that they discontinue classes and go home or to a neighbour’s house to handle menstruation because of WASH challenges. A girl in a rural village commented: *“No water. Therefore I run home to clean myself, take bath and change cloths during menstruation.”* Another girl in the same focus group said: *“For now we ask neighbours [for water] or go home to clean ourselves.”* These accounts suggests that girls who live far from school face more serious challenges.

The fourth and final impact of poor WASH infrastructure is the careless disposal of MHH materials. The absence of better WASH infrastructure was cited by some girls as contributing to unfavourable disposal practices. A girl in Mbeya commented: *“Sometimes a person uses a reusable cloth and upon reaching the toilet, she finds no water. If she tries to throw*

the pad in the toilet, it does not happen. When another person comes, she finds it lying there carelessly.” Careless dumping of MHH materials due to inadequate WASH infrastructure was further linked to blockages of the sewage systems. A secondary school girl commented: “Another challenge is that initially the sewage system of our toilets kept blocking and boys were helping us to clean. They used verbal reprimands that we are dirty because they used to find pads blocking the sewage.”

In summary, toilet, water facilities and special changing room for menstruation emerged as the key WASH infrastructure for MHH in the study settings. The availability of pit-latrines dominated participants’ accounts, but lack of privacy and unclean environment emerged as challenges. Similarly, water appeared to be available in a few schools but it had issues of unreliable supply and safety. Finally, special changing rooms were not available in many schools but where available, challenges of hygienic materials existed in a few schools.

Unreliable WASH infrastructure during menstruation appears to dictate the choices that girls make during menstruation.

Offensive smell, not coming to school, discontinuing classes and unsafe disposal of MHH materials are largely the result of the absence of reliable WASH infrastructure in schools. Therefore, improving WASH infrastructure could be central to addressing the adverse impacts of menstruation on girls. Improving WASH infrastructure and ensuring access to sanitary pads may lead to successful MHH practices.

Governance and political landscape for MHH

The fifth research question centred on the governance of and political importance accorded to MHH in the study settings. The political landscape of MHH predominantly was explained by community members and key informants during the focus group discussions and boys and girls did not touch upon this aspect. This may point to limited understanding of the politics of menstruation among students or may have resulted from their limited focus on these issues.



The politics of menstruation

The politics of menstruation may be examined from two standpoints: (1) political commitment at local level – villages, districts and regions and (2) political commitment at the national level. There appears to be a consensus that MHH is not a political priority at the local levels, but the perception of some commitment was seen at the national level.

The politics of menstruation at the local level

A broad consensus emerged among participants that MHH is not a priority at the village, district and regional levels. Participants pointed to two aspects for MHH not being a priority at the local level. First, is the specific statements in some participants' accounts that MHH is not a priority.



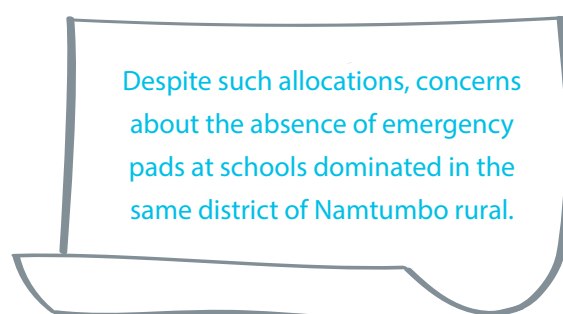
Local leaders, especially ward councillors for instance, were seen as not giving much weightage to MHH issues at the local level. A district WASH coordinator commented: "Menstruation is not a priority. The ward councillors need to give much weight to this issue." It was further stated by a government official that menstruation is not a topic even in WASH committee meetings: "WASH committees are available but we do not talk about it [menstruation]. We meet every three months. We talk about water issues. Issues of cholera and WASH in general and we talk about toilets but we do not talk about that topic (menstruation)." These accounts suggest the need for more political mobilization at local levels for MHH initiatives to be successful.

The second aspect is the absence of budget at school and district level for MHH. Most of the schools and districts do not have a specific budget for MHH as many participants pointed

out. A SWASH coordinator commented: "Teachers do not have materials for MHH because no budget to purchase MHH materials and sometimes a plan is there but no money. Not only for MHH materials but also for other SWASH issues such as cleaning and water. The school budget is very small and cannot accommodate these issues." This may explain why an officer at TAMISEMI called upon school committees to "put in place strategies to ensure availability of pads for girls in school".

The premise of limited budget at schools was supported by a national NGO officer who further highlighted the absence of guidelines for MHH expenses: "The money schools get are for different expenses such as chalks but no specific guideline for using it to purchase pain medications for girls. Few [head teachers] decide to use the money to buy emergency pads but if a school does not see the need, they do not buy." Budgetary limitations manifest even in contexts where ward executives have been trained by NGOs "to ensure that local budgets set aside small funds to purchase sanitary pads for girls in schools". This may explain why an officer in the Ministry of Health recommended the need for "budget at schools to ensure availability of MHH materials".

In contrast, a community member in Namtumbo rural suggested that a budget is available: "Every school has a budget for purchasing MHH materials and first aid. The money comes in percentage depending on the number of students. A school with fewer students get TSh 5,000 and with large number gets TSh 46,000 for primary and TSh 80,000 for secondary."



Additionally, concerns of budgetary limitations also was visible in the same district. A district officer in a rural district commented: *"As the district we do not have such budget [for MHH], we only offer health education for ward coordinators or teachers so that they can support the students."* This suggests that the community member may be tapping onto the capitation grant and not MHH funds. In general, these accounts suggest that MHH is neither a priority at the local level nor do budgets for MHH materials exist.

The politics of MHH at the national level

There appears to be some political commitments at the national level as some participants have stated. For instance, an officer of a pad manufacturing company commented: *"The politicians we met are very positive. Most understand us, but there is the need for some noise for things to move forward."* Most commonly, Members of Parliament were cited as politicians who show some commitments at the national level. One of the national level NGO leaders interviewed affirmed that there is political commitment but with no concrete strategy and that not all parliamentarians are committed on MHH:

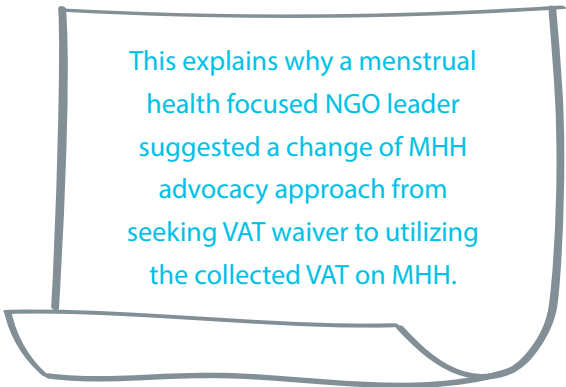
"Political readiness is there...I saw female Members of Parliament fundraising for toilets for their regions but we do not have a tangible strategy for moving forward the agenda in its totality. We used to work with all parliamentarians, but it was quite problematic and we decided to select few male and female parliamentarians who are at the forefront of talking about MHH even in the parliament."

As part of political commitment discussion, the issue of value added tax (VAT) waivers was also brought in. Some NGOs engaged in advocacy efforts to persuade the government to waive off

VAT for sanitary pads, which was first withdrawn and then reintroduced in a subsequent year. Narrating about experiences with VAT waiver, a gender-focused NGO leader commented:

"Last year, during menstrual hygiene week in Dodoma, we invited the deputy minister and other parliamentarians who are at the forefront on the fight for MHH in the parliament. We asked them to waive VAT. As a result, last year's budget was celebratory to us after hearing the VAT was waived for sanitary pads. [However] last year, we had another opportunity to present our arguments to the parliament. We represented a hundred other stakeholders, but I think the government had already passed a resolution on removal of VAT waiver."

Despite the outcry to extend VAT waiver on sanitary pads from various stakeholders, concerns of sanitary pad prices not going down with waivers had dominated media reports, painting a bad image on the good intentions of the government (see Mti, 2019; Mogoatlhe, 2019; Bwana, 2019).



This explains why a menstrual health focused NGO leader suggested a change of MHH advocacy approach from seeking VAT waiver to utilizing the collected VAT on MHH.

The leader suggested: *"Personally, I think resuming VAT is okay but the tax collected needs to be channelled to purchasing sanitary pads for girls."* What these accounts suggest is VAT exemption appears to have been an important strategy to ensuring affordability of sanitary pads. However, the market price not going down after exemption indicate a more complex

business narrative. Given this experience, an outcry for the introduction of VAT does not seem to be convincing. However, if VAT were to be waived off, it must parallel with regulatory mechanisms for the MHH industry on sanitary pad prices. The proposal of advocating for purchase of free MHH materials using the VAT collected from sanitary pads may be promising at present.

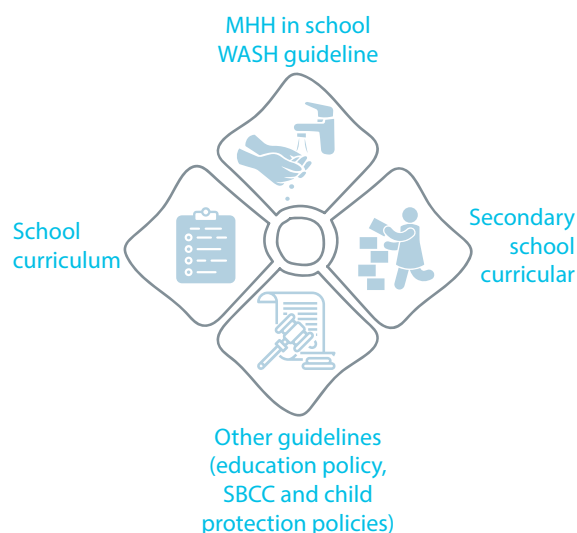
In summary, there appears to be inadequate political commitment at village, ward, district and regional levels. Inadequate prioritization of and inadequate budget for MHH at these levels indicate lack of political commitment for MHH.



However, some do not seem to consider MHH a priority. Due to intense advocacy, the government waived VAT for MHH materials. However, such a waiver did not impact the price of sanitary pads in the market contributing to its reinstatement. These accounts suggest that more efforts are needed mostly at local levels to ignite political commitments. Under current circumstances, regulating the MHH industry and advocating for use of VAT collected for free pads to girls may somewhat increase its access among girls.

Existing policy tools

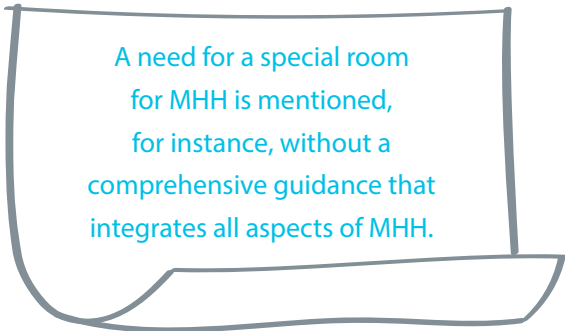
As noted previously, participants have pointed to the absence of a stand-alone policy specific to MHH in the country. Government officials,



school committee and community members, officers in private companies, teachers and matrons expressed a need for specific national MHH policy. In addition to the accounts of a teacher who presented her thoughts when examining policy around MHH information previously, a coordinator at the Ministry of Health suggested: *"Honestly we do not have MHH guidelines. We are just employing personal commitment but we do not have a guideline."* Another officer at the Ministry of Health affirmed not knowing about *"the existence of any guideline on menstruation... [and that they] talk about MHH normally."* A school committee member noted: *"We have not received any guideline. The presence of guideline could have been helpful."* Citing MHH policy, a district official in Namtumbo commented: *"As a policy, we do not have one but we have health coordinators who visit schools for educating girls about menstruation."* A secondary school teacher pointed out *"having not received any guideline"* and this was supported by a matron in urban school who commented: *"We neither have books for girls nor guidelines and working tools for menstruation."* However, MHH issues emerged as being a component of SWASH guidelines, school curriculum and other guidelines.

MHH in SWASH guidelines

Some participants mentioned SWASH guidelines as a policy tool in which MHH issues are given some consideration. An officer at the Ministry of Health commented: *“Personally I have never received a guideline that specifically talks about menstruation but within SWASH guidelines, MHH issues are mentioned.”* Similar assertions were made by a SWASH leader: *“Within SWASH guidelines, safe menstruation issues are mentioned. The ministry has not taken MHH separately. It is a component of SWASH. SWASH, for example, has a provision that whenever you build school toilets, you must assign a special room for girls. A special room for MHH is a must.”* This statement contradicts the findings reported earlier that most schools with toilets in the study settings did not provision a special room for MHH. A review of relevant documents indicated that the SWASH guidelines (MoEST, 2016) describe how aspects of WASH, including MHH, need to be managed in relation to planning, management, disposal of menstrual materials and resource mobilization for interventions at both primary and secondary schools. Nevertheless, despite MHH being a component of SWASH, several problems were highlighted. First, as noted above, MHH issues are not given much weight in SWASH guidelines.



A need for a special room for MHH is mentioned, for instance, without a comprehensive guidance that integrates all aspects of MHH.

Second, SWASH suffers from budgetary deficits for a full range of MHH activities. A water coordinator in Zanzibar commented: *“The plan [SWASH] does not have money for MHH. They just offer training. MHH materials are not part of it.”* Finally, SWASH appears to have limited oversight from some ministries. An officer at the Ministry of Health commented: *“In our budgets at the ministry, I have never seen we set aside the budget for SWASH monitoring.”* This suggests that SWASH, within the present policy framework, may not be addressing MHH issues to its totality.

School curriculum

A few of the participants mentioned that MHH is a component of school curriculum. An officer at the Ministry of Education commented: *“Menstruation is one of the topics being taught in the school curriculum especially science subjects.”* This resonates with many girls’ accounts that indicated schools as the main source of information on MHH. It can also be verified from the findings of our document review, which indicates that MHH is covered in Science and Technology subject under ‘Stadi za Kazi’ topic in the revised 2006 primary school curriculum that is taught from Class Five. MHH also can be added in the Biology syllabus as part of the Ordinary Secondary Education of 2005. In this subject, detailed biology of reproduction is part of the syllabus in which menstruation hygiene is also added.

The content from the new curriculum is well presented in the schoolbooks. See details in Figure 35.

Figure 35: Selected pages from students 'Stadi za Kazi' student book showing coverage of MHH in the new primary school curriculum.



As the hygiene perspectives are covered in Stadi za Kazi, details about human reproductive system are included in the science and technology book.

From our observations, we noted that teachers in schools were not aware of the existence of this information in the book.

Stadi za Kazi is also a non-examinable subject. Hence it received less attention among teachers and students. This could explain why most schools have not even realized that MHH is part of the curriculum for primary schools.

Secondary school curriculum


In secondary school, the subject of menstrual hygiene is provided under the Biology syllabus for Ordinary Secondary Education as summarized below:

Subject content is taught as covered in the Forms 1 and 2 Biology student book (per 2005 syllabus), Longman in its Subject. This book provides detailed coverage on biology of reproduction, which covers menstruation and a small bit about menstrual hygiene. In our opinion, the book should have provided broader and more practical perspectives of menstruation and prepare students to advance in menstrual hygiene and use of improved menstrual services.

There are two issues with the curriculum. First, the curriculum only offers a superficial-level content on MHH. An MHH leader affirmed: *"The challenge is if you look at the curriculum, students study menstruation issues, but these they are not discussed in detail. There are a lot of misconceptions."* In support, a SWASH coordinator highlighted the tendency for curriculum developers to add only a small bit of information on MHH issues instead of developing a specific curriculum for it. The coordinator commented: *"Curriculum developers only insert small subtopics that do*

not go into much details. That's how they do. The issue of MHH is very critical. There is a need to be a separate toolkit with MHH as a sole topic, which can be taught in detail for it to be helpful to students." This account may explain why some other participants recommended the need for a specific curriculum and/or subject for menstruation. A school board member suggested: *"I think it is possible to have a curriculum that is specific to menstruation in girls. There needs to be a separate subject that will be taught from class five to seven."* These views suggest a need for curriculum review to give MHH issues much weight or introduce a new subject on menstruation.

Second, there is a dependence on the level of teachers' knowledge and commitment to deliver MHH contents effectively. An officer of the Ministry of Health commented: *"Menstruation is a topic in the school curriculums, particularly science subjects. But it depends on the teachers' knowledge of MHH issues to help students to understand. I think teachers need to have skills. They need to go deeper in preparing and training girls about self-awareness."*



Some teachers are said to have an unfriendly approach in delivery of MHH contents.

A SWASH coordinator commented: *"You may find a teacher with sufficient knowledge on MHH but they cannot help students because his/her approaches are not friendly."* All these accounts suggest a need for continued capacity building of teachers to increase their confidence, knowledge and skills to deliver MHH contents effectively.

Other guidelines

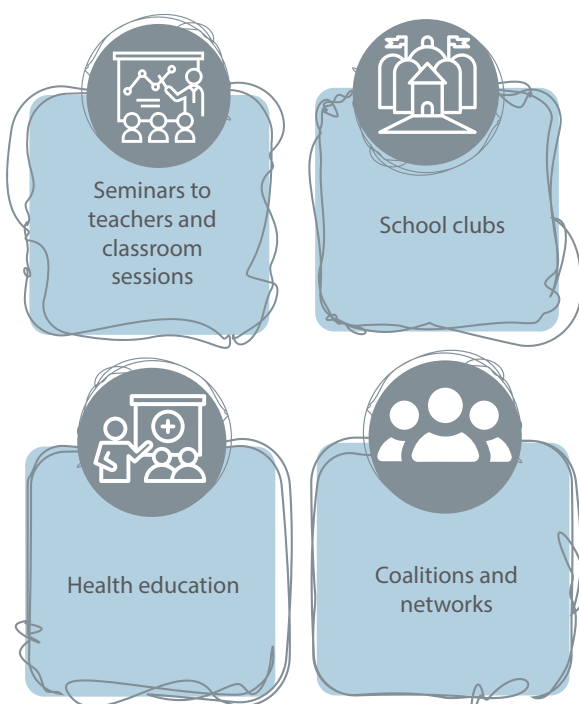
A range of other guidelines were cited that make a mention of MHH. The first is the education policy. A SWASH leader commented: *"The education policy mentions health issues in general. It does not mention menstruation specifically. It mentions that school children need to study in a friendly and safe environment. The policy instructs the Ministry of Education to create an environment that will allow students to stay in schools throughout."* The leader went further to cite SWASH as a strategy to fulfil the requirements of education policy. SBCC and child protection policies were potential focus areas in education policies going by some accounts, but MHH issues appeared to have limited scope in these policies. Guidelines for use of capitation grants for secondary schools (MoEST, 2015) have a provision for use of 10 per cent of the total grants to be allotted for girls' special needs including purchase of medicines for students. But these guidelines do not specifically mention MHH issues.

Some of the participants call for a policy that involves an interministerial collaboration. An officer at the Ministry of Health in Zanzibar commented: *"I suggest we make a joint policy because if we leave this to the Ministry of Health alone things will not move, if we say the Ministry of Education alone makes the MHH policy, things will not move because menstruation concerns health directly. We need a joint policy."* In contrast, a gender-focused NGO leader affirmed that a strategy exists, but it is not yet finalized: *"At the national level, there is an MHH strategy in which sanitation, hygiene and WASH issues are included, but I do not think it is finalized yet. I think the government needs to put strategies and guidelines in place and consider the budget to ensure they are implemented."* Although the latter assertions

could not be verified, this account indicates the need for comprehensive guidelines with a minimum package of information and services that are critical for addressing MHH in schools.

Existing initiatives to support MHH

Participants had divergent views on the initiatives to support MHH in Tanzania. Some suggested that no specific country-level overarching initiative to support MHH. An officer at the Ministry of Youth in Zanzibar commented: *"We do not have a specific mechanism which is nationally recognized that you can confidently cite as being presently used."* At the Ministry of Health, there is no national strategy as yet, in particular no specific project focusing on MHH is being implemented. An officer at the ministry commented: *"Nationally, at the ministry we do not have a project that we can say it is for girls. I never heard of it."* Despite the presumed absence of a national-level initiative to support MHH within the government realm, some initiatives to support MHH could be noted:



Seminars for teachers and classroom sessions

Seminars for teachers was one of the initiatives to support MHH in the country. Teachers are trained as part of the WASH and SWASH activities and through specific seminars organized by the districts. An official in Namtumbo commented: *"In most cases, we organize seminars at the district twice a year for training on how to support girls. Teachers come twice a year."* Teachers are then expected to support MHH by delivering classroom sessions to students. A focus group member in Igunga commented: *"We are thankful that menstruation education is now offered in primary schools. This is very helpful to school children especially those experiencing menarche because they know what to do. In totality, this education is highly needed in schools."* The premise that teachers support MHH by delivering sessions emerged strongly when examining sources of MHH information among girls as explained earlier. This suggests that teachers in schools represent one of the best resources for safe MHH at present.

School clubs

School clubs emerged as one of the important initiatives to equip girls with skills on MHH apart from other reproductive knowledge. Femina, POE, CDF and TAYOA are supporting club activities in some schools. A primary school girl commented: *"Whenever we meet in a school club we discuss about menstruation and diseases that can arise from usage of pads. Mostly we encourage each other for buying reusable pads to avoid diseases such as fungus because other pads are not good."* Another girl stated: *"We receive education through Femina Club and POE. They teach us about hygiene during menstruation: how to cover up and how to use pads."* A matron in Namtumbo suggested that these clubs are

ongoing: *"We have ongoing programmes at school in relation to menstruation. There is a POE club offering education on menstruation."*

The existence of school clubs may explain why peers were identified as one of the most essential sources of information on menstruation among girls as explained before.

Health education

Health education programme through health care workers emerged as another initiative to support MHH in Tanzania. An officer at the Ministry of Health affirmed: *"There is a program for health education in schools."* The problem with health education through health care workers is that some participants indicated that this activity has stopped because health care workers are no longer going to schools for educational sessions.

Coalitions and networks

The fourth and final initiative on MHH is the MHH coalition and MHH coordinating team that appears to be more informal. The accounts of few NGO leaders indicated existence of 'Hedhi coalition' in the country. A water and sanitation focused NGO leader commented:

"We have a coalition formed by stakeholders working on clean and safe water and toilets targeting dispensaries and schools within in the country because the budget for sanitation and hygiene is very minimal. So, the stakeholders decided to raise funds to support initiatives that will ensure menstruation is no secret but

discussed openly at the national level bodies such as the parliament. Menstruation was not being discussed openly. On 28 May 2015, we invited government leaders at Mnazi Mmoja to attend the World Menstruation Day celebrations. But now, menstruation is being discussed openly in big platforms. We are thankful that even female parliamentarians have been at the forefront to talk about it. Therefore our coalition was not born accidentally. It resulted from research."

Some participants highlighted how an informal MHH coordination group carries forward the discussion on menstruation through social networks. A SWASH coordinator commented: *"[MHH coordination team] is very helpful. There are issues we discuss in the group. We discuss strategies in a WhatsApp group and email. We are more than 70 stakeholders. We are all in the group discussing MHH issues. If we move forward this way, it is easy. It is not a formal network but more of a social network."*

Generally, these accounts suggest that informal MHH networks exist in the country. Therefore, an effective approach to carry on the MHH agenda will be tapping into and strengthening these existing MHH networks and work towards their formalization.

In summary, the MHH political landscape in the study settings is characterized by inadequate political commitments at the village, ward, districts and regional levels with promising commitments at the national level. Some female parliamentarians are at the forefront of MHH campaigns, but some Members of Parliament treat MHH as a low priority. To support MHH, the

government waived VAT on sanitary pads with no positive impact on their prices. This led to the government reinstating VAT. Consequently, some believe a focus should be on how the collected tax money is spent on MHH rather than advocating for waivers. Furthermore, there is neither a specific policy nor guidelines for MHH. SWASH guidelines and school curriculum are the existing policy tools in which MHH is a component, but these tools do not assign much weightage to menstruation issues. Finally, while there appear to be no national-level government initiative to support MHH, seminars for teachers and classroom sessions, school clubs, health education, coalitions and networks were found to be the initiatives being carried out at present. Networks and coalition are more informal and they need to be formalized.

MHH stakeholders

The sixth and final research question examined MHH stakeholders in the study settings and their roles at various levels. Participants suggest that stakeholders are divided into but are not limited to the three broad categories:

1. Primary stakeholders: Boys, female peers, friends and female members, teachers and matrons, and community members
2. Secondary stakeholders: AMREF, CAMFED, Red Cross, BBC Radio, CDF & TAYOA, Femina & POE, PCCB, PSI, TGNP, EQUIP, Milele Foundation, UNICEF, Barefoot College, World Education and the Maji Safi Group
3. Tertiary stakeholders: Anofly Industries Limited, Barefoot College, HQ Company, World Vision, MHH Coalition/TGNP, UNICEF, UMATA, TGNP, Milele Foundation, Ministry of Health, Ministry of Education, Regulatory boards.

(1) the primary stakeholders, whose influence and MHH activities hinge on a healthy direct contact with girls on a daily basis; (2) the secondary stakeholders, whose influence and MHH activities depend on some contact with girls mostly on an occasional basis; and (3) tertiary stakeholders, whose influence and MHH activities circumvent direct contact with girls but focus on addressing their challenges. Each of these partners are examined below.

Primary stakeholders

The influence of and activities performed by boys, female peers and friends, female family members, teachers and the community depend on their interactions with girls during menstruation, mostly on a daily basis. In discussing the primary stakeholders, it is important to note that girls themselves are the cornerstone of MHH matters for which this inquiry was constructed. They form not only the focus of MHH initiatives within the country but the focus of this research. It is important to acknowledge a whole range of information they offered to this inquiry. Although most girls appeared to have adequate knowledge on MHH, the challenges of accessibility, durability, quality, comfort and disposal of MHH materials during menstruation, for instance, were found to largely reduce their academic performance. It is our wish that girls' own insights in this inquiry will be considered as the basis for new initiatives to relieve them of the sufferings they face during menstruation.

Boys

Boys form another important group of MHH stakeholders. As noted previously, boys fueled the feelings of shame and stigmatization among girls during menstruation. They either ignore or do not understand that menstruation is a

normal biological process. Consequently, they make fun of and/or verbally harass girls who accidentally stain skirts with blood due to poor durability of MHH materials used.

Therefore, the value of normalization of menstruation among boys cannot be understated. Boys could benefit from education efforts focusing on or reduction of negativity towards menstruation.

Female peers, friends and female family members

As detailed previously, female peers, friends and female family members (e.g., mothers, sisters, aunts and grandparents) emerged as a trustworthy group. They form a trusted circle that girls relied on for support during menstruation. Knowledge and skills in handling menstruation, emotional support and MHH materials are the main type of support that peers and family members offered to girls. On the other hand, fathers were found to be less trusted by girls, yet they own financial resources for buying materials that could be useful during menstruation.

Therefore, a successful MHH initiative needs to build on female peers, friends and family members at the centre as they form a vital support circle during menstruation.

Nevertheless, attempts to normalize menstruation requires that fathers are not excluded.

Teachers and matrons

Teachers and matrons emerged as one of the main stakeholders. An officer in Zanzibar observed: *"Teachers are the main stakeholders [in MHH] because they interact with the students for a very long time."* In some areas where no programme or development partners were offering menstrual health education, teachers were the only reliable source of such knowledge. A primary school girl commented: *"No any organization has ever came here to tell us what to do during menstruation. The only education we get come from our teachers."* The teachers as stakeholders pose two problems. First, female teachers are more trusted than male teachers. Some girls suggested that male teachers are often harsh and sometimes deny them the permission to handle menstruation outside the classroom. Second, some teachers trained on menstruation were not committed to share the knowledge and skills with girls. An officer in Zanzibar further commented: *"Teachers who are trained on MHH are required to educate girls directly. But, it often depends on how serious an individual teacher is. There are some who are not motivated to educate girls on safe menstruation because it is a shameful event."* Some teachers follow unfavourable approaches, such as segregating boys during menstrual health education sessions, consequently fuelling the secrecy around menstruation. In summary, teachers form the main stakeholders in MHH matters within school environment.

It is therefore important to sustain capacity building initiatives to ensure that teachers create a friendly environment for girls to learn about menstruation, approach and rely on them for support during the menstrual cycle.

Community members

Community members other than boys, teachers, female peers, friends and family members interact with girls constantly almost on a daily basis. As detailed previously, these community members emerged as the main drivers of social construction of myths, norms and beliefs that govern menstruation within the community. For instance, the findings indicated that socially constructed myths, beliefs and norms play a major role in sustaining the 'SET' taboos (social engagement, exercise and touching) that limit girls' social freedom during menstruation.

Community awareness campaigns are of paramount importance for de-construction of myths, beliefs and norms and normalization of menstruation even among girls within the community.

In summary, boys, female peers and friends, and teachers are important primary MHH stakeholders within the school environment. Likewise, female family members and community members are the main primary stakeholders within the community environment. While female peers, friends, family members and teachers form the trustworthy circle of primary stakeholders, boys, fathers and male teachers appear to form the untrustworthy circle of primary stakeholders. Continued capacity building within the school environment and community awareness outside school environment are needed for normalization of menstruation.

Secondary and tertiary stakeholders

The influence of and MHH activities of secondary stakeholders depend on some occasional contact with girls in schools or communities. Development partners supplying free or affordable pads to girls and implementing capacity building activities that emphasize on knowledge and skills to handle menstruation among girls fall in this



category. CAMFED, Maji Safi Group, AMREF and Femina school clubs exemplify some of the the secondary stakeholders. On the other hand, tertiary partners may not have direct contact with girls, but they implement activities that focus on addressing challenges the girls face during menstruation. Most of secondary partners largely work on policy level initiatives and oversight issues. MHH material manufacturers/importers fall under tertiary stakeholders. TGNP, HQ Company and

government authorities are also considered tertiary stakeholders. It is important to note that some stakeholders may be implementing activities that fall in both secondary and tertiary categories, such as TGNP, UNICEF and others. It is also important that the activities cited here may not be exhaustive as they are generated from participants' accounts without examining individual stakeholders' documents. Table 41 describes the activities of both secondary and tertiary stakeholders.

Table 41: Secondary and tertiary stakeholders and their activities

A. Secondary Stakeholders		
Key activity	Stakeholder	Illustrative quotes
Distribute free or affordable sanitary pads to girls	AMREF	"There is a company called AMREF that supplies free pads to matron who then gives us for free"(Girl, Isaka)
	CAMFED	"It is Commission for Female Education (CAMFED). They offered free pads to students from poor families. We manufacture and sell to CAMFED for TSh 1,700 and they distribute free to schools. They are not selling"(Manager, sanitary pad industry)
	Red Cross	"Red Cross supported girls who reached menarche" (Girls, Isaka Msalala)
Training girls on puberty and menstruation (e.g., through school clubs)	AMREF	"AMREF trained (girls) and offered cards for them to go to health facilities for investigations related to reproductive health" (Teacher, secondary school)
	BBC Radio	"In most cases I hear through BBC. They visit schools and streets to gather people's perspective in the streets" (Community member)
	CDF and TAYOA	"There is CDF and TAYOA club moderated by a matron and few students. They learn many things. Some become ToTs to teach others on menstruation" (a primary school girl)
	Femina and POE	"We get education through Femina Club and POE. They teach us about hygiene, how to cover up and use pads during menstruation" (Secondary school girl, Karatu)
	PCCB	"PCCB and educator club came to teach us puberty issues"(Secondary school girl)

	PSI	"We have a project within PSI. They have an advocacy phrase saying 'Girl Know Yourself' for girls in the rural areas. They talk about teenage pregnancy. They also provide support for menstruation" (Teacher, Namtumbo rural)
	TGNP	"TGNP network promotes safe menstruation in schools through books and school gender clubs in Dar es Salaam" (Official, TGNP).
Training and/or funds on how to make sanitary pads	EQUIP	"EQUIP offered training on how to make pads. They brought reusable cloths (a) for students entering Form One for them to be able to make pads" (district officer, Isaka, Msalala)
	Milele Foundation	"People from Milele want to teach students how to make pads" (government official)
	UNICEF	"Safe menstruation initiative in Zanzibar within education sector commended in 2017 after UNICEF conducted a training for various participants" (a government official, Zanzibar)
	Barefoot College	"We teach girls on how to make pads" (Official, Barefoot College)
	World Education	"There is an organization called World Education. They train on how to use pads" (ward executive counsellor)
B. Tertiary Stakeholders		
Manufacturing or importing pads	Anofly Industries Limited	"We have hygiene sanitation and skin care products. We seek to base on hygiene first" (Official, Anofly Industry)
	Barefoot College	"One of our activities is to make sanitary pads" (Official, Barefoot)
	HQ Company	"We are manufacturing sanitary pads and cosmetics" (Official, HQ Company)
Community awareness	World Vision	"World Vision is very helpful. They teach parents on how to support their children without shame" (A teacher)
Training of Trainers on MHH	MHH Coalition/TGNP	"With other partners we organized a training on national ToTs for MHH for about 70 who started going to low levels to educate" (NGO leader)

Financial support for SWASH initiative (e.g., support for school infrastructure including special room for girls)	UNICEF	"UNICEF came built toilet and that (special) room. UNICEF have supported us a lot. Our dormitory made us look filthy. So when they came, they saw this problem. And decided to construct infrastructure including that (special) room" (Matron, Bukoba)
	UMATA	"We received one project dealing with menstruation issues called UMATA in Dodoma. Mostly it deals with environmental and ensure availability of WASH services" (local leader)
Policy influence/ advocacy	TGNP	"We also do advocacy targeting policymakers from local district to parliamentarians for capitation budget increase" (Officer, TGNP)
	MHH Coalition	"After the research was conducted, we started working together with organizations; development partners, Ministry of Health, Ministry of Education and Ministry of Water" (NGO leader)
	Barefoot College	"We had to look for women leaders in the government to help us like ministry secretaries, deputy speakers and we strive to involve them" (Official, Barefoot)
Research on MHH issues	Milele Foundation	"I was in a meeting with people from Milele Foundation. They want to conduct a survey and provide safe menstruation services in schools" (government official)
Oversee safe menstruation initiatives in the country	Ministry of Health/ the Government	"We have a special department within the Directorate of Health for supporting girls and one of the component is to ensure safe menstruation"(Officer, Ministry of Health, Tanzania Mainland)
Oversee curriculum implementation	Ministry of Education	"In a syllabus, there is a need for a guideline that guide teachers on MHH issues" (Officer, Ministry of Education, Zanzibar)
Regulate quality of sanitary pads and imports	Regulatory boards	"In Zanzibar, we have two boards dealing with imports [including MHH materials]" (Officer, Ministry of Health, Zanzibar)

Suggestions to increase the contribution of stakeholders

Participants suggested how to maximize the activities of MHH stakeholders. The first set of recommendations focused on strategies to improve affordability of sanitary pads, thereby increasing their accessibility to most girls. To improve affordability of sanitary pads, it was suggested that the government holds meetings with manufacturers to reach a consensus on the price of sanitary pads. A safe menstruation NGO officer commented: *"If only the government has an opportunity to sit on the same table with stakeholders because they also need to profit. But if they fail to reach a consensus, at least the price guidance be instituted because the price varies between suppliers and they always compare quality between them. The government should see this and if possible give guidance on price."*

Moreover, related to the first, to cushion against high price of pads, it was suggested that the government offer import levy and VAT exemption on machines and raw materials, not pads per se. Requesting for import levy waiver, an officer in a pad making factory commented: *"Pad manufacturing machinery is unimaginably expensive and we must import the raw materials. You may also have the machinery with no technicians to run them. It is conceivable that the government cannot offer free pads to all students countrywide. We are very small. We can't win a battle with the government [on import levy and VAT]. We have tried and failed."* These accounts, however, did not explain why pad prices remained the same after VAT waiver contributing to its reinstatement recently.

Additionally, to further reduce the price, it was suggested that the government now promote programmes that focus on making pads locally. An officer at the Ministry of Health in Zanzibar commented: *"Some programmes make some sort of sandwich pads – half local and half modern. Such programmes need to be continued. Such pads are very cheap. Also, there are institutions like Barefoot who manufacture reusable pads and it can be used thorough a year with washing after use."*

In general, these accounts suggest that participants are very much concerned about the price of sanitary pads. Therefore, government negotiations with pad industry, waiver of import levy and promotion of locally made pads are considered as solutions for cutting down the price.

The second set of recommendations focused more on policy interventions. First, it was suggested that government leaders be committed to MHH matters. A gender-focused NGO leader discussing readiness from the policy perspective commented: *"Our readiness depends on the commitment of our leaders."* He may have stated this in cognition of weaker political commitment at local levels and by some leaders at the national level. Second, establishment of a national menstruation (hedhi) day was stressed upon. A local NGO officer in Muleba suggested: *"Establish a national hedhi day that will be conducted annually."* Finally, a call for a specific curriculum on menstruation in schools was made by some participants. A teacher in a rural school commented: *"I think, if possible let us have a curriculum that is specific to menstruation among girls. The issue of education need to be given much weight."* These accounts suggest a need for a national policy specific to menstruation.

In summary, a range of stakeholders are taking part or implementing several activities to support MHH in Tanzania. Boys, peers and female family members, teachers and matrons and the community members emerged as the primary stakeholders whose impact on menstruation is mediated by their daily interactions with girls. Most development partners such as CAMFED, AMREF, TAYOA, PSI and Femina, for instance, were involved in implementing activities necessitating some interactions with girls through free pad distribution and knowledge and skill improvement through school clubs. Finally, some development partners, private industry and government ministry were considered as tertiary stakeholders because they have limited to no interaction with girls by either working through intermediaries or focusing on policy level interventions.

To improve the contribution of these stakeholders, strategies to increase affordability of sanitary pads primarily through government negotiations with the industries and promotion of local production were suggested. Finally, it was also suggested that political leaders increase their commitment to MHH issues the government develop MHH policy and current curriculum be reviewed to ensure MHH receives much weightage. So, it is clear that a range of stakeholders including some coalitions work on MHH in the country.

Findings related to girls with disabilities

The research team was also tasked with understanding menstruation-specific issues among girls with disabilities. In-depth interviews with matrons and focus group discussions with girls were conducted in some schools for children with disabilities in Kagera,

Dodoma and Dar es Salaam. Although the findings are not extensive as compared to those arising from girls without disabilities and other respondents, there are many similarities. Some issues were found to specifically impact them. The key findings are discussed below.

Impact of menstruation on girls with disabilities

Similar to the findings on girls with no disabilities, there was a great consensus among participants that menstruation impacted the academic performance of girls with disabilities. There are three ways in which the academic performance of students with disabilities is impacted by menstruation. The first is reduced class attendance. Contrary to the findings of girls with no disability, the reasons for reduced attendance in girls with disability were cited as (1) advice from their school nurse and (2) incidences of heavy menstruation. A girl in Dodoma noted: *"Some students with disabilities do not attend classes during menstruation because of the school nurses' advice. So she won't come to class until she finished all four days."* A matron confirmed that 'heavy menstruation' is a reason for girls with disabilities not attending classes. The second issue is reduced attentiveness during menstruation. Some side effects of menstruation such as severe abdominal pain occurring during class hours was cited as contributing to reduced attentiveness of girls with disabilities. According to another girl with disability, *"during menstruation, one may experience severe abdominal pain and other terrible symptoms. Consequently, when a teacher is running the class, one experiencing these symptoms may not be paying much attention as her colleagues with disabilities."* Third, related to the second reason, the availability of durable of sanitary pads is another problem for girls with disabilities.

Durability of sanitary pads was linked to comfort and attentiveness in classroom, thereby enhancing the academic performance of girls with disabilities.

One of the important findings is that there were conflicting views on whether menstruation has negative impact on the academic performance of girls with disabilities. Some participants were of the opinion that menstruation does not have a significant impact on girls with disabilities. Asked about the potential impact of menstruation on girls with disabilities, a matron in Kagera for instance, commented: *"No incidence of a student not going to classroom because of menstruation. Not that much. May be if she is very sick but those who experience abdominal pain are offered support. Hot tea and Panadol. First aid kits are available with the school nurse."* The availability of 'school nurse' was not mentioned by students with no disability. In support, another matron commented: *"On one side, yes [menstruation can impact] but on the other side, no. Perhaps poverty could be a reason. The notion that I don't have pads so let me stay at home until the four days are over does not exist. Or those with severe abdominal pain. But in most cases they endure until they finish school*

sessions. They rarely stop studying because of menstruation. I never saw anyone here at school [not attending classes because of menstruation]."

But despite conflicting views, we strongly feel that menstruation may be impacting the academic performance of girls with disabilities in some schools but not in MHH-supportive schools.

Norms, myths and beliefs about menstruation

A number of socially constructed norms emerged in participants' accounts as applicable to menstruation. Similar to participants with no disability, most of the socially constructed norms cited points to the SET taboos described previously. As compared to the explanations related to girls with no disability, religiously constructed norms were not forcefully mentioned by girls with disabilities.

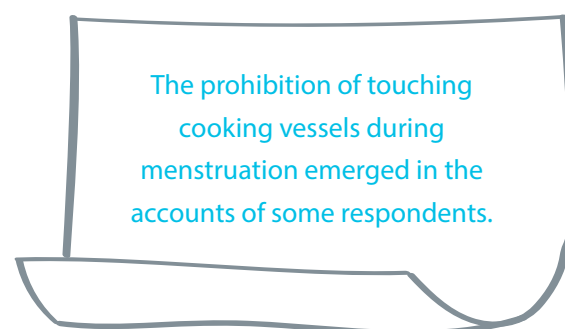
Similar to accounts of girls without disability, a few girls with disabilities affirmed being prohibited from engaging with other members of the society during menstruation. Some girls were not allowed to meet their elder sisters. What appears as an attempt at protecting the girls with disabilities from learning bad



manners and behaviours, immaturity is provided as a justification for prohibition of meeting elder sisters during menstruation. A girl with a disability in Dodoma commented: *"I was prohibited from seeing my sisters during menstruation because I am not mature."* Prohibitions from meeting elder sisters did not strongly emerge in the accounts of girls with no disability. Similar to the accounts of girls with no disability, some girls with disabilities affirmed prohibitions on initiating any boy – girl relationships. A girl with disability commented: *"My mother instructed me not to initiate bad relationships at menarche. Not joking or have sexual relationships with boys because I may become pregnant."* The latter prohibition points to the protectionist desires of some parents in shielding their daughters with disabilities from teenage pregnancy. The premise that girls are not permitted to socially engage with select community members were substantiated by the matron who observed: *"A girl is neither permitted to attend community event nor go to school sometimes until menstruation is over."* What these accounts suggest is that some socially constructed norms around menstruation may be seeking to prevent girls with disability from learning bad manners from adults as well as the desire to prevent early pregnancy. The problem with these accounts is directly linking menstruation with teenage pregnancy while the biology of pregnancy dictates its occurrence beyond the menstruation period.

Furthermore, similar to what have been explained related to girls with no disability, some participants suggested that girls with disabilities are prohibited from performing activities that may involve energy consumption such as carrying out 'heavy duties' and 'walking for a very long time carrying heavy objects'. Similar to accounts related to girls with no

disability, some girls with disabilities affirmed being prohibited from touching several items.

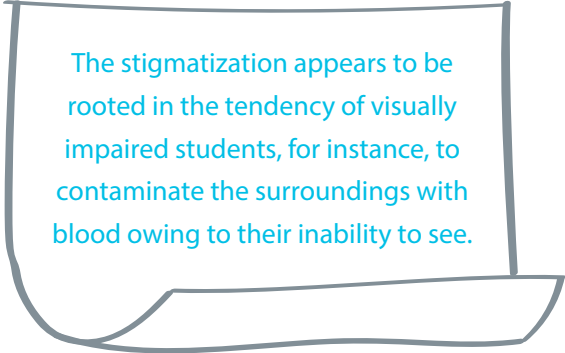


A matron in Dodoma school commented: *"A girl is not allowed to cook for the family."* Touching a range of foods and eating a few of them were also prohibited during menstruation. Another matron in Dar es Salaam affirmed: *"A girl is not allowed to eat hot foods especially watery foods like tea or porridge."* Touching prohibitions extended to rain as a matron stated that *"a girl is expected to avoid rain."* Some also pointed to prohibitions on touching leaves during menstruation. A girl with disabilities in Dar es Salaam commented: *"Some girls are told not to touch leaves during menstruation – that touching leaves may cause them to die."* One girl with disabilities narrated how she attempted to deconstruct the touching taboos from a friend unsuccessfully. Some even affirmed being prohibited from *"touching water in boreholes because it will go dry"* as a girl with disabilities in an urban secondary school stated. Some of these touching prohibitions did not emerge strongly in the accounts of girls with no disability; however, the reasons for these prohibitions did not come out clearly. The problem with these taboos is an observation that most of accounts appear to rely on second hand knowledge by respondents "having heard from someone else" without having first-hand knowledge of these prohibitions. This suggests that these prohibitions may be socially constructed over a long time without evidence

of their practicality among girls with disabilities. Continued community education may be a better way of addressing these taboos.

Stigmatization during menstruation

Contrary to the accounts of girls with no disability, girls with disabilities indicated in the focus group discussions that no negative attitude exists towards them in relation to menstruation. However, the findings from in-depth interviews indicated some stigmatization arising from students with disabilities themselves.



The stigmatization appears to be rooted in the tendency of visually impaired students, for instance, to contaminate the surroundings with blood owing to their inability to see.

A matron in a primary school commented: *"There is some stigmatization because a student may commence menstruation without knowing consequently staining the desk with blood. Her colleagues may complain and start segregating her. Even in dormitories, you may find a menstruating girl walking without being aware that blood is coming out because she cannot see. Blood lines may start from door to her bed. Fellow students may complain about it although it does not occur frequently. Sometimes you find blood stains in bath room."* This account suggests that some girls with disabilities may be stigmatizing their fellow students, especially the visually impaired.

While the findings related to girls without disabilities unmasked a dominant sub-theme

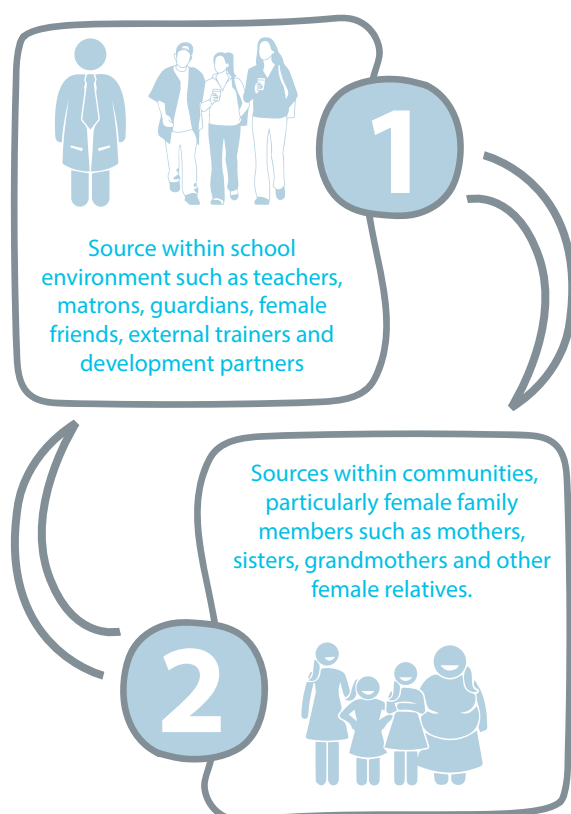
of boys' tendency to stigmatize them during menstruation, such tendency emerged to be less among boys with disabilities. Some boys with disabilities were found to laugh at girls during menstruation although not always noticeably. A matron in Dar es Salaam affirmed: *"Boys often laugh but inaudibly because they lack awareness. Some just follow on what their fellow students do."* This suggests that boys with disabilities may be more lenient towards girls with disabilities as compared to boys with no disability.

Awareness of MHH among girls with disabilities

Despite concerns of weaker knowledge on menstruation among some matrons, there was a broad consensus among girls with disabilities that they perceive menstruation as transitioning from childhood to adulthood. Similar to girls with no disability, some girls with disabilities went on to offer the specifics of menstruation such as "blood coming out of woman's private parts" (Girl, Kagera). Some went further to mention the signs and symptoms of menstruation such as "feeling warmth in the genitalia" and "abdominal pain" and some mentioned the use of "calendar" to predict menstruation. In contrast, a matron in Dodoma held a view that some students have a weaker understanding of menstruation. They continued to insist that: *"They [girls with disabilities] do not have enough knowledge about menstruation because of not having access to frequent seminars. Very few are getting the training, mainly those in schools. So, there should be a system of providing education to all girls with disabilities including the ones at home who didn't get a chance to come to school."* The account of this matron may be presumptuous of weaker knowledge because the girls with disabilities themselves indicated a commendable awareness of menstruation.

Type and source of information

Similar to students with no disability, the sources of information for girls with disabilities can be grouped into two categories:



Similar to the accounts of girls with no disability, science subjects emerged as one of the ways through which teachers use to relay menstruation information to girls with disabilities. A visually impaired primary school girl commented: *"We learn about hygiene from matrons and guardians. They teach us the skills on how to use sanitary pads, wash the underwear and drying in the sun by covering with Khangas to prevent other people from seeing them."* This suggests that matrons may be much more supportive in schools of girls with disabilities as compared to schools of girls with no disability.

Within the school environment, puberty, menarche, menstruation, hygiene and danger days emerged as the main type of information girls with disabilities receive from teachers, matrons and guardians. Further, some girls reported learning about hygiene from teachers and matrons. A girl with disabilities commented: *"At school we are taught about what to do when menstruation occurs. Hygiene, cleaning ourselves, changing pads and avoiding staying with it for longer period."* Another girl with disabilities also expressed the same view: *"We are taught that many people enter the toilets so we are taught about toilet hygiene to avoid UTI and other diseases."* In addition to friends, school clubs and science subject trainers from outside the school were additional sources of information. In contrast with girls with disabilities who stated segregation of boys and girls during menstruation sessions in classes, some of the participants with disabilities noted that they were engaged in joint classes. A 15-year-old girl commented: *"We were taught in class six about menstruation. One woman came to teach us. She taught us together. Both boys and girls."* However, some pointed out that boys' conduct may contribute to segregation. A visually impaired girl commented: *"Boys tend to wither after we are taught about menstruation. After classroom, they make fun of us as to that is why we bleed."* This suggests that teachers in school for the students with disability tend to include boys in menstruation classes despite some concerns. Finally, development partners, specifically NGOs, emerged clearly as one of the entities that educate girls with disability. A matron from a school for the students with disability commented: *"NGO personnel often come here to provide education to students on menstruation."* What these accounts suggest is that there is a whole range of human resources within school environments that students with

disabilities often draw MHH information from. This may explain why most students exhibited commendable awareness of MHH in the study settings.

Outside the school environment, female family members teach girls “everything” ranging from “what to do during menstruation and hygiene sustenance” (girl, Kagera). Avoidance of boys dominated the accounts of girls with disabilities as the key message they received from female family members. A girl in Dodoma noted: “They teach us that when a girl enters menstruation, you have to avoid boys because they may trick you into doing undesirable things which can lead to teenage pregnancy.” Another girl in Dar es Salaam observed: “[female family members]... instruct me that for example during menstruation I must avoid playing with boys. Not allowing them to touch my breasts, not allowing him to speak to me romantically.” However well intended, the problem with the information about avoidance of boys is that it may promote secrecy around menstruation in the long run.

Contrastingly, some respondents held a view that only a few girls with disabilities receive information from female family members. One of the matrons interviewed commented: “Very few students receive information from mothers or aunts. Most of students here do not live with their mothers. Some live with a single parent – mother or father. One of the parents might have run away.” Even then, some parents provide their daughters with disabilities with information about menstruation. There are three reasons for parents not talking to their daughters with disabilities about menstruation. First, some parents are busy. A girl in Dar es Salaam commented: “Most of our parents here in Tanzania are not ready to sit with their daughters and show them. Some are very busy with work. Some parents leave home early in the morning

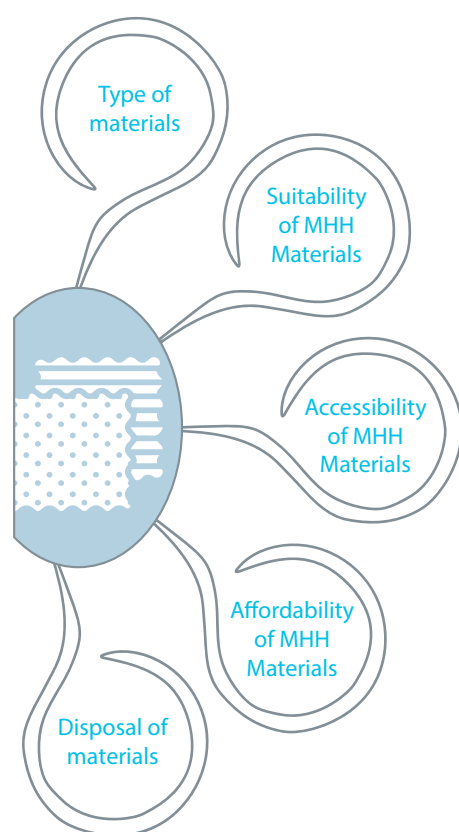
and come back at night. Therefore, they don’t have the intimacy needed with their daughters.” This explains why another girl with disabilities from the same school suggested relying on mothers and sisters because father is “too busy and comes home very late.” This suggests that busy schedule of parents particularly in urban areas limits fathers’ engagement with their daughter son MHH issues. Second, some parents shy away from discussing menstruation issues with daughters. A girl with disabilities in an urban school commented: “In some families mothers may not be around. A father is like that. He may feel shy away from talking with his daughter. He may not be able to prepare her daughter well (for menstruation).” This may explain the need for fathers to discuss menstruation with their daughters. A girl in urban school stated: “It is very suitable for male parents to teach their daughters about menstruation. They have the responsibility of showing their daughters because they are also parents. Some parents are doctors and they know many things. It is not that they don’t know. It is just that they don’t want to sit with their daughters to instruct them.” These accounts do not, however, explain why some believed menstruation does not concern male gender, bringing us to the third reason.

Finally, trust issues were the reason behind why fathers may not be talking to their daughters with disabilities about menstruation.

When asked about who they can talk to, tell or ask for support about menstruation, most girls with disabilities indicated female friends and family members as the trustworthy circle of people they can converse about menstruation.

At the same time, male family members emerged as non-trusted individuals. A girl with skin disabilities commented: *"I can tell my mother, sister and aunt but not my brother or my father. It is a bit shameful to tell a male."* A visually challenged girl asserted that menstruation does not concern males: *"I can tell a sister, mother or female friend but not bother uncle because menstruation does not concern my brother, uncle or father."* The premise that menstruation does not concern male gender emerged also in physically and other visually challenged participants. The mistrust of the male gender arises from the secrecy constructed around MHH, reducing the possibility of fathers talking to their daughters about it and the support that they could offer if it is normalized across gender. It also conflicts with some participants' accounts that suggested a need for more male engagement in MHH issues.

MHH materials



Type of materials

Sanitary pads and reusable cloth emerged as the commonly used materials during menstruation. Few participants cited skin tights and underwear as supportive accessories as well as menstrual cups. Not a single participant commented ever using menstrual cups apart from saying they have been taught about them. Nevertheless, sanitary pads was the most used MHH material. A matron commented: *"The materials used for menstruation are the sanitary pads. Only few use reusable cloths. Out of 10 students, 9 may be using sanitary pads."* However, some girls stated combining both sanitary pads and reusable cloth depending on the circumstances. The first circumstance is when the free sanitary pads run out of stock. A girl with visual disturbance commented: *"Sometimes I may go to the matron and find the pads are finished. Therefore I use reusable cloth."* That girls use pads and reusable cloths interchangeably when pads go out of stock emerged in the accounts of a matron in Dodoma. She asserted: *"Honestly, many students use sanitary pads in school but I always advise them to continue using reusable cloths when the pads are out of stock."* This suggests the unreliable supply of pads in some schools for the students with disability.

The second circumstance is when a girl moves from the school to home environment. A girl with skin impairment commented: *"Sometimes I use sanitary pads (at school) and sometimes I use reusable cloths when I go back home."* This account suggests that some girls with disabilities may have no access to pads at home. These participant accounts may explain why some requested for additional pads to use at home during school breaks. A visually challenged girl commented: *"When we go for*

breaks, we have to be supported with free pads because washing reusable cloths clean is very challenging.” This may further explain why some girls with disabilities requested for price reduction of sanitary pads. A visually impaired girl commented: *“I would request that when we go home for school breaks because we come from different economic situations. When we go back we are using reusable cloth, which is not safe. I would prefer all of us use pads instead. The price need to be reduced to at least TSh 1,000–2,500 per pack.”* An exception was one visually challenged girl who affirmed never using reusable cloth and was surprised to hear that girls with disabilities are using reusable cloth.

Suitability of MHH materials

Comparing disposable and reusable pads, some participants indicated that reusable pads are less commonly used. A matron commented: *“If you look at the average usage between disposable and reusable pads, most girls use disposable pads that you use once and throw away. Among 10 girls, only one may be using reusable pads.”* Although the use of reusable pads appeared to be less common, some considered them as more suitable and cost-effective. For instance, a girl with disabilities in an urban school commented: *“Personally, I think reusable pads are more suitable because you use and re-wash. You may run out of disposable pads and you have no money. Menstruation can occur at a time when you have no money. Reusable pads are more suitable.”*

Some compared the benefits of pads versus reusable cloths. Most participants emphasized that sanitary pads are the most preferred MHH materials than reusable cloths. Disposability

of pads and inability to wash reusable cloths clean due to lack of washing equipment was cited as a reason for preference of pads. A girl with disabilities in Dodoma commented: *“I prefer more sanitary pads than reusable cloths. Sometimes the reusable cloths don’t become clean because of lack of soaps, water basin and bucket for washing.”* Some participants cited the disability itself as a limitation for cleaning reusable cloths hence a preference of disposable pads. A matron in a primary school commented: *“Some materials used for menstruation are unfriendly to girls because those with visual disability find it very difficult to wash them clean. Mostly they don’t wash them thoroughly before drying. We have no washing machine. They use hands. Therefore you have to provide instructions to girls to wash them perfectly. Also, there is no ironing here that could be used to kill bacteria. So, other students end up with frequent incidences of urinary tract infection and genital itching.”* These accounts suggest that girls prefer sanitary pads over reusable cloths but are often faced with the circumstances that necessitate using both materials interchangeably.

Accessibility of MHH materials

Participant statements on accessibility of MHH materials can be discussed from two perspectives: (1) accessibility within the school environment and (2) accessibility outside the school environment.

Accessibility within the school environment

Many participants suggested occasional availability of free MHH materials at school from

matrons and guardians in the schools for the students with disabilities. A girl with disabilities in Dodoma commented: *"Sometimes I go to the matron who gives me free pads."* Some indicated that pads are often available in the toilets. A primary school girl in Kagera commented: *"Sanitary pads are available in the toilets. If you go and miss them, you go to the matron who gives you for free."* Free sanitary pads were not available as easily to girls with no disability. Some pointed to the availability of sanitary pad dispenser. A secondary school girl in Dar es Salaam commented: *"Here at school, some girls face challenges in getting pads, but now there is an equipment in which pads are put. But some used to face challenges in old days and they ended up using reusable cloth. In most cases, they were not washing them clean enough."*

Comparing the accessibility of reusable and disposable pads, some indicated that disposable pads are commonly available with the matron and in the pad dispenser. However, the pad dispenser was cited not always functional. A secondary school girl in Dar es Salaam commented: *"Disposable pads are available with the matron. There was a machine that you put TSh 200 you get a disposable pad, and if you put TSh 500 you get reusable pads. I went day before yesterday but I did not find it. The machine was here for 3 to 4 months. It malfunctioned and it has been sent for repair."* Some suggested that reusable pads are not commonly available because most girls with disabilities do not prefer them. A matron commented: *"There are some people who feel nauseated when they see the long-standing blood. They feel nauseated to re-wash the pads. Only very few do not care [to use the reusable pad]."*

Nevertheless, a matron in Dodoma gave an insight into where the free pads comes from. She commented:

"We sometimes receive support from church volunteers who offer two to three boxes to support girls. There was a time when people from TAMISEMI brought various items including four boxes of sanitary pads. Development partners offered a training on safe menstruation and free sanitary pads after the training. I think we still have some in stock. Sometimes we go two to three months without sanitary pads depending on the donors' decision to bring or not. Sometimes a head teacher may use a small amount of money from school fund to purchase a few because there is no specific budget for sanitary pads."

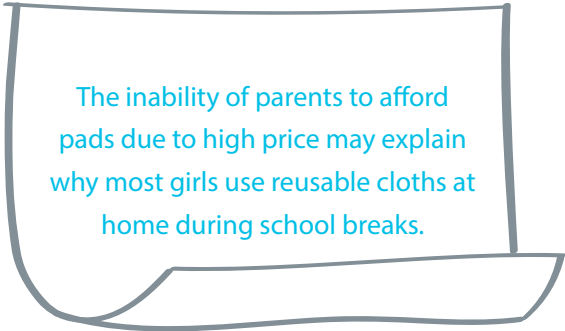
The absence of specific budget for pads also dominated the accounts of girls with no disability.

Accessibility outside the school environment

Outside the school environment, similar to girls with no disability, female family members emerged as the main sources of MHH materials. Some specifically indicated that it is the reusable cloth that is mainly used at home. A primary school girl commented: *"I usually get reusable cloths from home and sanitary pads from matron in school if available."* Although girls affirmed using reusable cloths at home, they also suggested that pads are available in local shops, but they cannot afford it due to high price. Another girl with disabilities in Kagera commented: *"Sanitary pads are sold in local shops but at a very higher price. However some villages do not have pads. They should be supplied"*. The concerns of higher price brings us to the question of affordability, which is discussed next.

Affordability of MHH materials

The perception is that girls with disabilities receive free pads at school. But beyond the school environment, the girls with disabilities found pads unaffordable due to their higher price. Citing a specific price, a girl in Dodoma commented: *“Sanitary pads are sold at a very high price. One pack is sold for TSh 3,000 to 3,500. Therefore, most parents do not have the financial capacity to buy for us. They should talk to the government to reduce the price.”* The proposition that most parents of girls with disabilities cannot afford pads was substantiated by a matron in the same school. The matron affirmed that parents not only did not get pads for their daughters, but also they fail to meet other hygienic necessities such as soaps.



The inability of parents to afford pads due to high price may explain why most girls use reusable cloths at home during school breaks.

This may further explain why one of the girls with disabilities requested for spare pads during school breaks and another recommended lowering prices to between Tshs 1,000 and 2,500.


Disposal of materials

Disposal of MHH materials among some girls with disabilities appeared not to be a challenge. A visually challenged girl commented: *“There*

is a dedicated place. Toilet number five. Where we dispose the used pads. Toilet number five is a place where a girl who is menstruating, for example, goes; if you experience menarche you go in there. There is a pit that has been dug there (for disposing pads).” Some indicated availability of dustbins in the toilets for disposing of MHH materials. A girl with disabilities in Dodoma commented: *“There are dustbins in the bathrooms and toilets at the school. The matron instructs us to burn the waste when they are full and we actually burn them on ourselves.”* The presence of dustbins and the procedure for burning were confirmed by the matron in the same school.

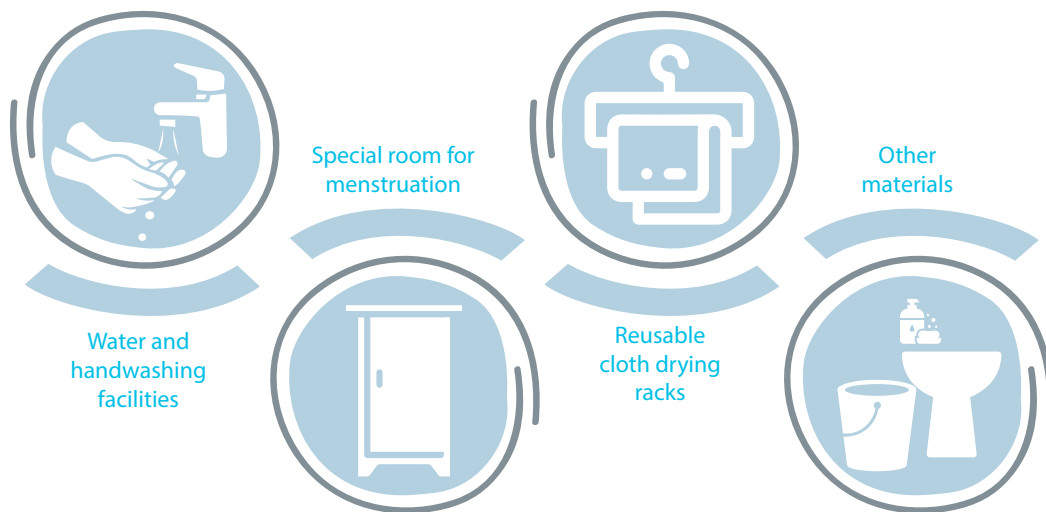
Some, however, indicated the unavailability of places to dispose of MHH materials citing the prohibition of plastic bags. A matron in a primary school commented: *“There is no place to dispose the materials. Black plastic bags have been banned. Currently I do not know where they dispose.”* These accounts suggest that some schools for the student with disabilities may be facing challenges of MHH disposal facilities.

Some participants suggested that disposal practices are shaped by fears of witchcraft.



The premise that fear of witchcraft may be driving safe disposal practices for MHH materials among girls with disabilities also emerged as a dominant sub-theme in the accounts of girls with no disability.

WASH infrastructure



Water and handwashing facilities

One of the recurring themes from participant accounts is that water is not much of a problem at present in schools for the student with disabilities barring a few instances. Alternatives to tap water such as borewater supply was made available due to support from a cellular phone company, for instance in Dodoma. Handwashing facilities were also available. A primary school girl commented: *"A small water container is available close to the toilet. It is always filled with water and soap is also available although the tap is not directly connected to the toilets."* In contrast to participants in Dodoma schools who indicated availability of water and soap just outside the toilets, girls with disabilities in Kagera indicated availability of water and hygienic products within toilets. A visually challenged girl in Kagera commented: *"There is water and soap [in the toilets]. You just go in, do your things and come back to class. The toilet is only used by boarding students. Day students have their own toilets on the other side."*

Some participants commented on the quality and suitability of toilets. A student with

disabilities in Dodoma commented: *"The toilet is very safe. No challenge. It is very friendly for all students."* Some girls with disabilities credited the WASH programme and the President of Tanzania with providing them facilities: *"WASH offers menstruation education and construction of toilets. I would like to thank our president John Pombe Magufuli. We do not buy pads and WASH has built toilets."* The privacy of the toilets also appeared to add to their friendliness. Another girl commented: *"The toilets have doors and can be locked successfully."* Even a matron in the same school agreed on the friendliness of the toilets: *"Toilets are very friendly to students. They are attractive and have containers that are always full of water although they are not directly connected to the toilets."*

Contrastingly, participants in some schools stated that toilets are not friendly, especially for students with lower limb disabilities. A matron in one primary school in Kagera commented: *"Toilets are not at all friendly to girls. There are girls who crawl."* A matron recommended three types of toilets: *"One for those who are crawling; another for menstruation and for those who are normal."* Some participants in Dar es Salaam, for instance, expressed concerns

about unsuitability of toilets to girls using wheelchairs, lack of privacy as some toilets have no doors and unsustainable supply of water. A girl in Dar es Salaam commented: *"You go to the toilets for example. Some have no doors. So, another person comes in wanting to change the pad. She feels embarrassment thinking she may be seen by another girl. So she decides to just stay with the pad. Sometimes she may stay with the pad for the whole day. Some toilets for day scholars have no doors. Another challenge is the availability of water. Water is not available every time. It is very rare to find water is available throughout."*

Special room for menstruation

Almost all participants pointed to the absence of a special room for girls to handle menstruation. Consequently, they use dormitory or common toilets for the purpose. A girl in Dodoma commented: *"We do not have a special changing room. We often go to the*

dormitory or any other place where no one can see you." A matron further cited 'guardian's office' another place used by girls to change pads in addition to dormitories.

Reusable cloth drying racks

Some of those using reusable cloths expressed concerns about places to dry them after washing. A girl with disabilities in one school commented: *"No rope for drying reusable cloths after washing them. We just mix with other cloths. We don't have a special rope. We are not allowed to dry below the beds because they must be dried on the sun for the remaining bacteria to die from sunlight."* This suggests a need for providing a special drying rack where reusable cloths can be stored.

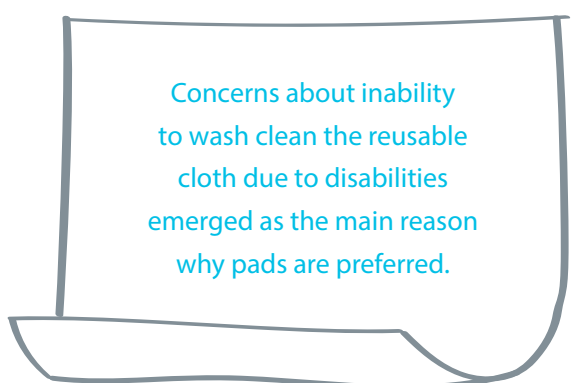
Other materials

While the availability of WASH infrastructures and hygienic materials appeared not to be a challenge in some schools, some however indicated the inadequacy of washing materials



such as basins, buckets and soap. One girl with disabilities in Dodoma commented: *"Sometimes we run short of basins, buckets and soaps".* A matron on the other hand indicated the insufficiency of soaps: *"Soap is highly needed to maintain hygiene. It is highly used because of the large number of students. It doesn't suffice the demand."*

On top of the challenges of washing items, participants also cited the limitation that disabilities pose to WASH practices. A visually impaired girl commented: *"You may find a girl who cannot see washing the reusable cloths, but they may not be clean enough because she can't see until someone [who can see] tells her."* This suggests that ensuring sustainable supply of sanitary pads may address these challenges.




Concerns about inability to wash clean the reusable cloth due to disabilities emerged as the main reason why pads are preferred.

Navigating through WASH infrastructure

One of the possible challenges that students with disabilities could be facing is how to navigate the school environment, for instance, locating toilet facilities. As expected, students face some challenges when they have to go to toilets particularly for handling menstruation. Some, however, pointed out being trained

on how to navigate the school environment upon arrival although not all of them fully comprehend it. For instance, a matron in Dodoma indicated the struggles that students with disabilities face when they want to go to places like toilets. She affirmed that some touch *"here and there to locate WASH infrastructure."* Some rely on other students and some end up carelessly disposing menstrual wastes in bathrooms and toilets just because they cannot see the dustbins. A matron in a primary school commented: *"Visually challenged students often touch here and there to reach the bathroom. They all use the same bathroom. It is really challenging for them to see where to dispose of menstrual waters. As a result, we sometimes find wastes thrown carelessly on the floor. Sometimes you pick the waste for her, look for her and instruct her to become more careful in the future. The students with disabilities often rely on their peers for support was also stated by a matron of a primary school. She commented: "Students themselves support each other. For example, one with one hand (may support another with no hand)".* This points to a suggestion that more efforts are needed to improve accessibility and friendliness of WASH infrastructures to students with disabilities.



In general, students with disabilities, in particular, those with visual disabilities, appear to face challenges of navigation through school environment to WASH infrastructure.

Suggestions for improving MHH among girls with disabilities

Participants offered several suggestions on how MHH can be improved among girls with disabilities.

The first set of suggestions pointed towards the need for continued capacity building among girls themselves and parents on MHH issues from the government and teachers. A girl with disabilities in Dodoma suggested: *"I would like to ask the government to continue holding seminars on menstruation. Parents also need to be trained about safe menstruation. Teachers need to continue with spirit of instructing students about menstruation for us to become more knowledgeable. Students should learn about safe menstruation regardless of their puberty status. Safe menstruation must be taught not only in schools but also in the community/villages." The proposition of the need for continued capacity building on menstruation also emerged in the accounts of a matron in Kagera who further added "village executive officers and chairpersons to the list of people who need capacity building to be able to channel the same knowledge and skills to parents".*

The second set of suggestions pointed to the price and availability of sanitary pads. A girl in a Dodoma commented: *"The government should reduce the price of sanitary pads and make them available even in rural villages."* The call for supply of sanitary pads extended to the development partners. A matron commented: *"There are many donors for example development partners, churches, government and individuals. Development partners provided a seminar and sanitary pads, but the rest always bring food related items only. Sometimes they come, cook*

the food and eat with students." The matrons' account appears to suggest that donors need to support schools with sanitary pads apart from other material support. Some went further to request not only pads but also other supplies such as gloves and soap to ensure that girls receive optimum care and support.

The third set of suggestions were centred on providing support for students with special needs. The support for toilets for students who crawl came out more clearly. A matron in a primary school suggested: *"Those with no legs [who crawl] require a special toilet. A special room and a rail to hold on. I call upon stakeholders to support students who have disabilities around the waist [impacting legs]. Special toilets for them and rooms for menstruation."* Similar concerns emerged in Dar es Salaam with reference to girls who may be using wheelchairs.

The fourth set of suggestions were on WASH items. The request for dustbins to match the amount of waste generated, privacy in the toilets and sustainable supply of water where not available came through in the accounts of girls in Dar es Salaam.

The fifth set of suggestions called for male engagement in menstruation issues. More capacity building for boys was seen as a need for two reasons. First, boys were said to making fun of girls during menstruation and sometimes telling others about which girl is menstruating. A girl in Dar es Salaam suggested: *"There is a problem because a boy may see a girl with menstrual blood stains and consider it a hilarious and shocking thing."* As a result, another girl suggested: *"It is very beneficial to educate boys about menstruation because they can also teach other girls. As they grow, boys may marry. Without knowledge, he will not be able to advise*

his daughter about menstruation or if he has a relationship with a girl, they may end up having teenage pregnancy if he doesn't know about menstruation and danger days."

The sixth and final set of suggestions pointed to the need for policy tools on menstruation. A matron suggested: *"We do not have guidelines. We employ our own experience in working with girls with disability because we have seen and faced menstruation ourselves while at home. So we just instruct them what to do based on our own experience."* Another matron called for a school curriculum specific to menstruation. She emphasized: *"The government needs to implement the curriculum on menstruation in school with students with disabilities at least stage wise from class three."*

In summary, the findings related to girls with disabilities appear to have a greater resemblance to the accounts related to those without disabilities. However, it appears that a few girls with disabilities may have access to free pads in a school environment where external support exists. Similarly, a few schools for girls with disabilities seem to have friendly WASH infrastructures despite many schools facing notable challenges. One of the key findings is the limitations girls face as a result of their disabilities. Girls with disabilities face challenges with navigating through the WASH infrastructures and inability to washing reusable cloths clean. Further, they are impacted by unsustainable supply of sanitary pads and hygienic materials. This calls for continued support from stakeholders to eliminate these challenges.

Discussion, Conclusions and Recommendations

Discussion

Adolescence is recognized as a critical period of a female's life and significant hormonal and emotional changes take place during this phase, including their menarche (Dasgupta et al., 2008). Although menstruation is a normal physiological process in female's reproductive age, it is often characterized by taboos and supernatural perceptions (Kumar A et al., 2011). As a result, many adolescent girls are unable to access adequate information regarding menstruation and its hygienic practices. As a result, more often, they enter menarche without preparing themselves, particularly in rural areas (Shanbhag et al., 2012). This situation leads to adverse health outcomes and poor academic performance of adolescent school girls (Ayele et al., 2013).

In the current study, it was found that majority of in-school post-menarche adolescents girls, both with and without disabilities, had low knowledge, negative attitude and followed poor MHH practices. These findings are in line with other similar studies done in southern Ethiopia (Tangchai et al., 2004) and Nigeria (Adinma et al., 2008). In our study, girls from rural areas were more knowledgeable than those from urban areas. Likewise, chances of having low knowledge on MHH decreased as the girl progressed through each class.

Even though girls had received education on menstruation earlier, the timing and the source of first information were significantly associated with their level of knowledge on MHH at the time of the interview. Girls who had never received any education on menstruation or received information on menstruation after their first menstrual cycle and those who first found information on menstruation from media and other sources are likely to have a poor knowledge of MHH. The lower the socioeconomic status of the school the higher the chances that their girls possess a lower level of knowledge of MHH. Thus, there is a need to strengthen availability of correct information about MHH through media that are accessed by adolescent girls in Tanzania. For girls with disability, schools were found to be more likely to help girls gain correct knowledge about MHH. Girls possessing poor MHH knowledge was also a concern for some matrons. This may also be a reason why some literature in developing countries continues to show that girls generally have inadequate knowledge and understanding of menstruation (Chandra-Mouli and Patel, 2017; Korir, Okwara and Okumbe, 2018; Upashe, Tekelab and Mekonnen, 2015). However, while some studies indicate that a few girls could correctly identify the biology of menstruation (Chandra-Mouli and Patel, 2017), our study indicated that not only girls but also some boys appear to have a fair knowledge

of the biology of menstruation. The possible reasons for low knowledge, poor attitude and practices of menstruation among girls are highlighted below.

Majority of the girls, both with and without disabilities were found to have a low perception of the institutions where they study and environments in which they live. This may be as a result of poor WASH infrastructure and difficulties in accessing menstrual supplies when they need them. Although toilets were available in all schools, mostly they had pit-latrines, which were wrought with problems such as lack of privacy due to the absence of doors, door bolts and even roofs. Even more difficult for girls, especially during menstruation, was shared toilets used by both girls and boys.

In addition, in most schools, available toilets were beset with problems of inadequate hygiene and most were not clean enough and had no water and essential supplies. Though water was available in a few schools, there were concerns of unreliable supply and safety. The special changing rooms were not built in many schools. Hygienic materials (e.g., soap) were not supplied to girls during menstruation in many schools, but an improvised option was available in a few schools. Even where toilets were considered friendlier, for instance, in some schools the students with disabilities (not all) did face issues of sustainable water supply, absence of special changing room and poor supply of hygienic products such as soap as well as privacy.

Unfriendly and unreliable WASH infrastructure appears to dictate the choices that girls make during menstruation in the study settings. Avoiding toilets due to lack of privacy, unavailability of water and poor hygiene made some girls stay with pads for a longer periods, risking generating offensive smell, which poses

a risk of shame among peers, particularly boys, and may endanger one's health as well. As a result, girls opted not to come to school, discontinuing classes, and indulged in unsafe pad changing practices such as, for instance, changing in the bush.

They also resorted to unsafe disposal of MHH materials. Most of these WASH concerns and their impacts on girls during menstruation have been previously documented within Tanzania (Guya et al., 2014) and in other settings (Sommer et al., 2015; Sommer, 2010; Sommer and Sahin, 2013; Sahin, 2015). This suggests that improving WASH infrastructure is critical to address the difficulties girls face during menstruation. A recommendation is therefore made to the government and stakeholders to improve WASH infrastructure to optimize standards (especially building a separate room for girls for changing MHH material during menstruation) and ensure access to sanitary pads as these measures may ensure successful MHH practices.

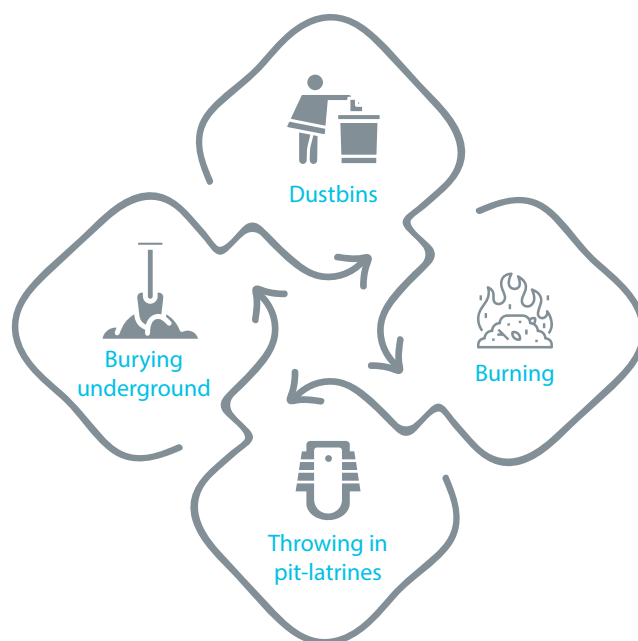
The findings further indicate that WASH infrastructure poses unique challenges to girls with disabilities. Visually challenged girls and those with lower limb disabilities found it difficult to navigate their path to WASH facilities. Not only girls themselves but also matrons and guardians expressed concerns about the inability of girls with disabilities to access toilets, inability to clean reusable cloths and inability to carefully dispose MHH materials as well as the shame and anxiety associated with inability to recognize and handle menstruation around peers. It is relevant to note that parents in previous studies have expressed concerns on the disproportionate impact of menstruation on the well-being of girls with disabilities (Zacharin et al., 2010). A recommendation is therefore made to the government and stakeholders to

improve friendliness of WASH infrastructure for students with special needs and continue educational interventions to build their capacity on better MHH practices. A special attention needs to be paid for ensuring easy access to WASH facilities for the visually challenged, provision of driveways for those using wheelchairs, dustbins to match the amount of waste generated, privacy in the toilets and sustainable supply of water where not available.

Availability and accessibility of MHH materials posed a major challenge that could also result in poor attitude and practices among girls in the study areas. The predominant MHH materials used by girls were sanitary pads and reusable cloths. The findings suggest that the use of cloths is common among girls in rural areas whereas sanitary pads are commonly used in urban areas. Those who use cloths seem to ignore the concerns about safety and hygiene as they are commonly made from dirty,

discarded or old cloths. The widespread use of reusable cloths in the rural areas and disposable sanitary pads in the urban areas has been previously reported among secondary school girls in Tanzania (Guya et al., 2014). However, while financial accessibility has always dictated the choices of materials used, our findings indicate that, beyond financial accessibility, local availability, reusability, ease of preparation and misconceptions towards sanitary pads are the important drivers of girls' decision to use cloths. At the same time, durability, effectiveness, comfort, freedom and disposal practices were important reasons for sanitary pad use among girls. Girls with disabilities had a tendency to use sanitary pads and reusable cloths interchangeably, particularly when the free pads were out of stock or when at home. The study also revealed the use of other materials such as several layers of underwear, toilet paper, tissues, cotton wool, exercise books and even animal skins during emergency situations.

Different disposal practices



Some studies indicate dustbins as the common disposal option in schools in Africa, for instance, in Swaziland (Murphy and Mamba, 2017), and our findings indicate that burning, throwing in pit-latrines and burying underground are the dominant disposal strategies. The findings further suggest that throwing menstrual materials in pit-latrines is a common practice at home and the rural settings where pit-latrines commonly exist. However, in urban areas where flushing toilets are common, burning of menstrual materials was a common disposal practice. In some schools, concerns of blockage of sewage systems due to improper disposal practices emerged. Furthermore, fears of witchcraft, shame and contamination, and the type of MHH materials used have strong influence on the disposal practices, especially

on the choice between burning, throwing in pit-latrines or in bushes. These findings suggest that more efforts are needed to ensure availability of healthier disposal facilities in schools. Ensuring availability of dustbins and incinerators in schools may improve disposal practices among girls.

As it was reported elsewhere (van Eijk et al., 2015; Aduka, 2018; Phillips-Howard et al., 2016; Chandra-Mouli et al., 2017), this study also indicated that menstruation has a negative impact on girls' academic performance. Reduced school attendance, class discontinuation to handle menstruation, reduced attentiveness and psychological impacts caused the negative affects of menstruation on girls' academic performance.

Reasons for poor class attendance of girls during menstruation



The findings related to girls with disabilities show that despite availability of free pads in some schools, such a measure is still unable to prevent the negative impacts of menstruation. Reduced class attendance due to the advice of school nurse, the severity of menstruation and reduced attentiveness due to side effects of menstruation such as abdominal pain were some of the reasons mentioned by girls with disabilities as causing a drop in their academic performance. However, some participants suggested that menstruation has little to no impact on the academic performance of girls with disabilities. However, these findings were only seen in schools that have better supportive systems to students, as matrons and guardians mention. This suggests that menstruation, if properly managed, is less likely to impact girls' academic performance. The finding that menstruation impacts girls' school attendance is not new. Our findings are supported by a significant body of research reporting that menstruation impacts school girls' attendance, such as in Sommer and Sahin (2013), Sommer et al. (2016), Sommer et al. (2015 a,b) and Sahin (2013). The findings that menstruation causes fear, shame, anxiety and distractions that may impact their academic progression has been broadly documented (Sommer and Sahin, 2013; Sommer et al., 2015a,b; 2016). In Tanzania for instance, a survey by SNV (2014) reported almost half of school girls missed classes during menstruation with a significant number having lower academic performance due to reduced class attentiveness. The negative consequences of menstruation have also been recently reported in Uganda (Miiró et al., 2018) and East and Southern African countries (Tellier and Hyttel, 2018). In other low- and middle-income countries, evidence suggests that menstruation contributes to girls opting to stay at home and not attend school during the

three to four days of their periods on a monthly basis (Sahin, 2013; Sommer et al., 2016). Beyond Africa, menstruation has been documented to contribute to school absenteeism among nearly half of the girls who participated in a study in India (Vashisht, 2018). The same study suggested the durability of MHH materials used, concerns of privacy at school, some restrictions imposed on girls during menstruation and source of information, pain, shame, anxiety about leakage and staining of their uniform as the reasons for school absenteeism. Relatedly, a study by Ahmed and Piro (2012) in Iraq suggested that menstruation impacted school homework, school attendance, examination, participation in class activity and presentation among girls.

One of the important findings of this study is the religiously and socially constructed taboos around menstruation in the study settings. Religiously constructed restrictions around menstruation related to worshipping and touching holy books appeared dominant among followers of one religion, with followers of another religion taking a more lenient stance towards menstruation. Bhartiya (2018) offers a detailed examination of religious attitudes around menstruation. In this study, it appears that changing restrictive religious taboos towards menstruation requires adoption strategies that are friendlier towards some religious doctrines. Such attempts may not be possible to implement but may require more time to bring about a social change.

The findings of this study also revealed a range of socioculturally constructed myths and norms. The SET taboos – social engagement, exercise and touching – dominated participants' accounts. Girls were seen to be prohibited from participating in social gatherings and visiting some family members during menstruation.

Girls were also prohibited from strenuous exercise as there were doubts on the durability of MHH materials used. Prohibitions were also placed on cooking, touching babies and vegetables and eating sugary foods. The touching taboos appeared to depict menstruation as a curse with items like crops or vegetables believed to die when touched during menstruation.

The construction of religious and social taboos around menstruation has received significant attention in previous research. Restrictions imposed on cooking, work activities, sexual intercourse, bathing, worshipping and eating certain foods during menstruation have been reported from various parts of the world (Hennegan, Shannon, Rubli, Schwab and Melendez-Torres, 2019; Kaur, Kaur and Kaur, 2018; Mohamed et al., 2018). Some studies have documented the beliefs that menstruation is considered to be 'dirty' in some cultures (Vora, 2016; Wall, Teklay, Desta and Belay, 2018), which also was identified in this study. While some of the restrictions may appear to be disadvantageous to menstruating girls, some, however, appeared to be beneficial to them. For instance, while restrictions related to diet may affect the health of menstruating girls, the restrictions on exercise and cooking may somewhat provide rest to a girl during menstruation. However, rest appears to be not the basis for menstruation-related restrictions. As such, we strongly believe that continued community education and sensitization of the society are needed to address the SET taboos.

The findings of this study further provided an insight on trust issues that shape the interaction and relationships girls have with other people during menstruation. Mothers, female peers, female relatives, female teachers and matrons emerged as the supportive group. Looking at this using a gender lens, males are

socioculturally conditioned not to be concerned with menstruation. Therefore, we recommend educating boys, fathers and male teachers on menstruation and ensuring availability of sufficient female teachers for promoting safe MHH practices.

The findings from our qualitative analysis suggested that schools, female family members, female friends and peers are the dominant sources of MHH information for girls. Female teachers and matrons within schools and mothers within families are the common sources of information and support before and during menstruation. Similar findings have been previously reported in Tanzania by Guya, Mayo and Kimwaga (2014). However, friends, mothers and elder sisters emerged as the dominant sources of support for girls during menstruation in Guya et al.'s study as compared to teachers. On the contrary, this study indicates that teachers are the dominant sources followed by mothers pointing to growing emphasis and institutionalization of MHH in schools. Science subjects, for instance, were frequently cited by girls in this study as the source of menstruation education. Similar findings have been recently reported in rural Gambia by Shah (2019) in which, teachers, mothers, peers and sisters emerged as the dominant sources of menstruation information among girls. The mass media – internet, social media, TV and radio – however did not emerge strongly in the present study as information sources and were found to be unsatisfactory sources of knowledge in quantitative interviews. This may suggest a need to examine and invest in content and penetration of mass media channels to which girls have access.

One of the important findings in our study is that male figures – both within school and family – continue to be unreliable sources of information and support for girls. Specific

recommendations to enhance the contribution of male figures during menstruation is provided here. Furthermore, although the findings indicate that teachers offer a broad range of information about menstruation using constructive and friendly strategies, most community members, particularly parents, often adopt an authoritative position towards girls' hygiene, dress code, respect and interaction with boys during menstruation. This may explain why some studies in developing countries indicate that mothers and other female family members are not necessarily well-equipped to fill the gaps in girls' knowledge about menstruation (Chandra-Mouli and Patel, 2017). A recommendation is therefore made for stakeholders to continue capacity-building of teachers and parents on how to better communicate with girls during menstruation.

MHH governance and the political landscape

Inadequate political commitment at village, ward, district and region levels was also found to have a negative impact on MHH. Inadequate political commitment was inferred from not prioritizing and allocating no or insufficient budget for MHH at these levels. Inadequate political commitments may explain why some participants from schools for the students with disabilities considered village executive officers and chairpersons as people who need be involved in capacity-building initiatives on MHH. The findings, however, indicate a promising political commitment at the national level. Some parliamentarians, many women and few men were seen to be at the forefront of advocacy for safer MHH strategies, but still for some leaders MHH still remains an issue of low priority. The findings further indicate that following intense advocacy few years ago, the government waived value added tax

(VAT) on sanitary pads, but this measure did not bring down the prices. The failure of VAT waiver to impact the price of sanitary pad contributed to its reinstatement a year later. Consequently, some NGO leaders are of the view that a focus should be on the expenditure of the tax collected for sanitary pads rather than advocating for waivers. The findings further indicated the absence of a specific policy or guidelines for MHH. SWASH guidelines and school curriculum were found to be the existing policy tools in which MHH is a component. These tools, though useful, do not assign much weightage to menstruation issues. So this study calls for developing MHH guidelines and a curriculum review to give MHH issues increased weightage, which was dominant dominated even in the accounts related to girls with disabilities. Similar concerns have been reported in a previous study by Guya, Mayo and Kimwaga (2014) who noted the absence of guidelines, rules or regulations requiring schools to provide MHH education.

Various initiatives and interventions have been undertaken by both public and private agencies in the country to boost access to MHH education, materials and WASH and disposal facilities in schools. The findings, however, suggest the absence of an all-embracing strategy for MHH at the national level. Continued reliance on seminars for teachers from development partners, classroom sessions, school clubs, health educators and coalitions and networks emerged as the prevailing initiatives. Though useful, the existing networks and coalitions appeared to be more informal, which calls for a formalization of their efforts.

The findings indicate that boys, female peers and friends, and teachers are primary MHH stakeholders within the school environment. The findings further suggest that female family members are the primary stakeholders

within the community environment. Relatedly, female peers, friends, family members and teachers form the trustworthy circle of primary stakeholders. As noted above, male figures – boys, fathers and male teachers – emerged as untrustworthy circle of primary stakeholders. The lack of support from men during menstruation has been documented in many communities. Mahon, Tripathy and Sing (2015), for instance, explain not only the negative impact of male figure exclusion in MHH issues but also they went a step further to sensitize groups of men and boys as well as training male teachers to provide MHH services in schools in India. After the sensitization exercise, men and boys begun to talk more freely about menstruation and became more supportive of MHH needs of women and girls within the household, community and at school.

Finally, the findings of this study identified a range of development partners supporting MHH in Tanzania. Most development partners such as CAMFED, AMREF, TAYOA, PSI and Femina, for instance, emerged as implementing activities necessitating some direct interaction with girls through free pad distribution and knowledge and skills improvement in class and through the school clubs. Some development partners, private industry and government ministries were considered as secondary and/or tertiary stakeholders because they have limited to no interaction with girls by either working through intermediaries or focusing on policy-level interventions. It is also important to highlight that the list of development partners working on MHH as gleaned from the participants' accounts is not exhaustive. A range of other partners work at both national and subnational levels implementing advocacy, training and infrastructure improvement that directly or indirectly impact MHH. Examples are Msichana Initiative, Project Concern

International, Hope Centre, Maji Safi Group, UNFPA, AFRIPADS and BINTI PADS just to cite a few. To improve stakeholders' contribution, strategies to increase affordability of sanitary pads primarily through government negotiations with the industries and promotion of local production were suggested as very important recommendations. An important suggestion is the need to form collaborative voice towards formalization of existing MHH networks and coalitions, as proposed above.

Limitations

This study fulfilled its objective of depicting the current situation of MHH among school girls in rural and urban areas of Tanzania and providing policy recommendations for MHH programming in Tanzania. The perceived impact of menstruation among school girls; the norms, myths and beliefs around menstruation; the awareness of girls on menstruation; the MHH materials that girls use; the WASH infrastructure and MHH material disposal practices; the political landscape of MHH; and MHH stakeholders within the country have been examined and discussed in detail. However, the study is not without limitations. First, this was an ambitious endeavour conducted in multiple regions, districts and schools through both focus group discussions and in-depth interviews with students, NGO leaders, matrons and community members. This may be a strength in terms of trustworthiness of the research through a triangulation of multiple sources, but a limitation may be the prolonged engagement with the participants that might have reduced data richness. It is also important to highlight that our main focus was on data richness in response to research questions. This may have resulted in over representation of participants' quotes from particular schools, districts or regions, because of the richness of the

participants' accounts. This is in keeping with the fact that equal geographical representation is not a focus of qualitative inquiries (Isangula, 2018). However, data were triangulated from multiple sources from all regions in which the study was conducted. Second, the study largely relied on school girls and community members to understand the challenges that girls face within communities. While the accounts of girls and community members provided an insight into what they face in communities, future studies should seek to engage out-of-school adolescents to understand the lived experiences of the challenges they face during menstruation. Despite the limitations, we strongly believe the evidence generated in this study will form the basis for designing effective practical interventions and policy tools with a focus on addressing the challenges that girls face during menstruation, which would help in improving their academic performance.

Conclusions: Girls with and without disabilities

1. Generally, knowledge, attitude and practice scores on MHH was low across the study areas with majority of girls from the Mainland demonstrating higher knowledge scores and better practices than girls from Zanzibar. However, girls from Zanzibar demonstrated higher positive attitude scores than those from Tanzania Mainland.
2. Overall, rural dwellers demonstrated high mean knowledge and practice scores than girls from urban areas. This was also true for attitude scores.
3. Factors associated with low level of MHH knowledge included studying in schools located in urban areas, being in lower level classes, never received any education

on menstruation before or received information after menarche and the source of information being the media. The lower the socioeconomic status of the school the higher the chances that their girls will have low level of knowledge of MHH.

4. Visually challenged girls sometime face stigma from other girls with disabilities in special schools for students with disabilities because of their tendency to contaminate the surroundings with menstrual blood owing to their inability to see.
5. Girls who lived in the Tanzania Mainland, studying in a school that is either girls only or has both boarding and day students, are in lower classes and rely on persons other than parents or caretakers for school fees and other needs had higher chances of having negative attitudes towards MHH than the rest of the girls.
6. Girls from urban schools, living in Zanzibar and studying in a government school for girls only and day schools had higher chances of following poor practices than other girls. Likewise, poor practices were also observed among primary schools girls whose caretakers had no education and those who were supported by a male caretaker. Poor practices about MHH decreased with increasing education level of the female caretaker. Girls who had never received education on menstruation and those who first learned about menstruation in the class either through books or other sources stand a higher chance of following poor MHH practices than those who received MHH education in schools clubs. Moreover, timing of education has an effect on a girl's practices as they followed poor practices if they receive information about MHH after their menarche than those who received such information before menarche.

This signifies that the earlier girls receive information about menstruation the better. The socioeconomic status of the school was shown to affect girls' practices about MHH. The lower the socioeconomic status of the school, the more likely were the girls studying there to follow poor practices.

7. There is a broader consensus among participants that menstruation reduces girls' academic performance as a result of reduced school attendance, class discontinuation to handle menstruation, reduced attentiveness and psychological impacts. Poor financial access to sanitary pads, severity of menstrual symptoms, encouragement from the female parent and teachers to stay at home, girls' doubts about durability and effectiveness of MHH materials used and fear of shame and stigmatization at school during menstruation were the main reasons for girls missing school during menstruation, consequently reducing their academic performance.
8. Norms, myths and beliefs on menstruation included religiously and socially constructed taboos around menstruation in the study settings. Religiously constructed restrictions around menstruation related to prohibitions on worshipping and touching holy books.
9. There is a range of socioculturally constructed myths and norms existing in the study areas. The SET taboos – social engagement, exercise and touching – dominated participants' accounts. Girls were prohibited from participating in social gatherings and visiting some family members during menstruation. Girls were also prohibited from strenuous exercises, as there were uncertainties in the durability of MHH materials used. Prohibitions also extended to cooking, touching babies and vegetables and eating sugary foods. The touching taboos appeared to depict menstruation as a curse with items like crops or vegetables believed to die when touched during menstruation.
10. Trust issues were seen to shape the interaction and relationships girls have with other people during menstruation. Mothers, female peers, female relatives, female teachers and matrons emerged as the supportive group. Looking at this using a gender lens, males are socioculturally conditioned not to be concerned with menstruation.
11. Schools, female family members, female friends and peers are the dominant sources of MHH information. Female teachers and matrons within schools and mothers within families are the common sources of information and support before and during menstruation. The mass media – internet, social media, TV and radio – however did not emerge strongly in the present study as the sources of information about menstruation. This may suggest a need to examine and invest in contents and penetration of mass media channels among girls if they are to become reliable sources of information on menstruation.
12. Male figures – both within school and family – continue to be unreliable sources of information and support for both girls with and without disability. However, as compared to actions of boys without disability towards girls, boys with disabilities were found to be more lenient in terms of stigmatizing girls with disabilities.
13. Although teachers offered a broad range of information about menstruation using constructive and friendly strategies, most community members, particularly

- parents, often adopt an authoritative position towards girls' hygiene, dress code, respect and interaction with boys during menstruation.
14. Sanitary pads and reusable cloths were found to carry equal weight as materials commonly used for menstruation among girls without disability. The findings suggest that the use of cloths is common among girls who live mostly in the rural areas and sanitary pads were commonly used by girls living in urban areas. Those who use cloths appear to ignore the concerns about safety and hygiene as they are commonly made from dirty, discarded and old clothes. However, while financial accessibility has always dictated the choices of materials used, our findings indicate that, beyond financial accessibility, local availability, reusability, ease of making and misconceptions towards sanitary pads are the important determinants of a girl's decision to use cloths.
 15. On the contrary, sanitary pads emerged as more beneficial among girls with disability as compared to cloths as they are easily disposable. The challenges associated with washing clean reusable cloths due to unavailability of washing equipment and the limitations of the disability were the major reasons why pads are preferred by girls with disabilities. The limited availability of pads at school and home continue to dictate the use of reusable cloths despite challenges faced by girls with disabilities in using them. Reusable pads emerged as the most preferred because they are cost effective, but their usage among girls with disabilities appeared to be less common. This may be pointing to their limited accessibility to girls with disabilities.
 16. Throwing the used MHH material in pit-latrines and burying them underground are the dominant disposal strategies. Throwing in pit-latrines was a common practice at home and in the rural settings where pit-latrines commonly exist. However, urban areas where flushing toilets are common, burning appeared to be a common practice. In some schools, concerns of blockage of sewage systems due to improper disposal practices can be observed. Furthermore, fears of witchcraft, shame and contamination, and the type of MHH materials used have a strong influence on the disposal practices, especially in the choice between burning, throwing in pit-latrines or in bushes.
 17. In most schools, available toilets are beset with concerns of inadequate hygiene and most are considered lacking in cleanliness with no water and essential supplies. Pit-latrines, in particular, dominated participants' accounts as being available, but lack of privacy and unhygienic environments prevent their proper utilization. Water appeared to be available in a few schools but accompanied by concerns of unreliable supply and safety. The special changing rooms were not built in almost all schools. In addition, non-availability of hygienic materials (such as soap) and in some schools an improvised option for disposal were observed. Even where toilets were considered friendlier, for instance, in some schools for the students with disability (not all), concerns of sustainable water supply, absence of special changing room and non-availability of hygienic products such as soap as well as privacy emerged.
 18. Inadequate political commitment at village, ward, district and regional levels was the

overwhelming view of the participants. A weaker political commitment was indicated by not prioritizing and not allocating inadequate budget for MHH at these levels. Weaker political commitment may explain why some participants from schools for the students with disability considered village executive officers and chairpersons as people who need be included in capacity-building initiatives on MHH. Promising political commitment at the national level was observed. Many female parliamentarians and a few male parliamentarians were seen at the forefront of advocacy for safer MHH strategies. The findings further indicate that following intense advocacy few years ago, the government waived off VAT on sanitary pads, but it did not result in reduced prices. The failure of VAT waiver to reduce sanitary pad prices contributed to its reinstatement a year later.

19. Female, peers, friends, and teachers are primary MHH stakeholders within the school environment. Female family members are the primary stakeholders within the community environment. Relatedly, female peers, friends, family members and teachers form the trustworthy circle of primary stakeholders. Male figures – boys, fathers and male teachers – emerged as untrustworthy circle of primary stakeholders. A range of development partners supporting MHH in Tanzania such as CAMFED, AMREF, TAYOA, PSI, Femina and UNICEF were mentioned by participants. Some development partners, private industry and government ministries were considered as secondary and/or tertiary stakeholders because they have limited to no interaction with girls by either working through intermediaries or focusing on policy-level interventions.

20. Whether specific policy or guidelines for MHH exist was unknown to the majority. SWASH guidelines and school curriculum are considered as the existing policy tools in which MHH is a component. However, these tools, although though useful, do not assign much weight to menstruation issues.

Recommendations

In view of the findings made from quantitative and qualitative analyses, the following recommendations are made to the government and all stakeholders working to make sure girls in the country manage menstruation in a hygienic manner.

1. For attempts to reduce the impact of menstruation on girls' academic performance, there is a need to:
 - a. Ensure sustainable supply of free durable and effective sanitary pads to schools.
 - b. Strengthen the menstruation care systems within schools, in particular, ensuring availability of pain medications and psychosocial support.
 - c. Equip parents and teachers with the evidence-based skills to support and encourage girls to continue with studies during menstruation.
2. Improving WASH infrastructure could be central to addressing the negative impact of menstruation on girls. Further, ensuring access to sanitary pads may be the key ingredient of successful MHH practices.
 - a. Advocate for the construction of sanitary facilities, including changing rooms, in schools taking into account the specific needs for girls.

- b. Increase the capacity of sanitary facilities tailored to the specific needs of in-school girls.
 - c. Sanitary facilities need to ensure availability of healthier disposal facilities in schools. Ensuring availability of dustbins and incinerators in schools may improve disposal practices among girls.
 - d. Equip school medical supplies with sanitary pads, painkillers and other hygiene products so that school girls do not have to go home every time they start their period at school.
3. Continued community education and sensitization are needed to address the SET taboos and normalize menstruation.
4. The government and stakeholders need to design and implement capacity-building strategies within schools and communities focusing on male figures for normalization of menstruation among fathers and boys as well and increasing their support to girls during MHH. Educating boys, fathers and male teachers on menstruation and ensuring availability of sufficient female teachers would promote safe MHH practices. Lack of awareness and education as well as sociocultural conditioning around menstruation were cited as contributing to a male's disengagement from menstruation by many participants.
5. In view of the materials used by girls the following recommendation are made:
 - a. Stakeholders involved in sanitary pad manufacturing need to consider local availability, reusability, financial access, durability and effectiveness, comfort and freedom and ease of disposal as important features of sanitary pads preferred by girls.
 - b. As proposed by students with disabilities, the government may need to institute price guide (*bei elekezi*) on sanitary pads and other MHH materials. This should go hand in hand with strategies to improve their availability even in rural villages.
 - c. Development partners should consider provision of MHH materials and services to schools with a particular focus on students with disabilities.
6. While the research did not look into whether menstruation is a topic in teachers' training curriculum, but including MHH in the teachers training is central and an important method of imparting MHH education for girls. In our view as a research team, two more approaches may be attempted to motivate male teachers to become 'MHH friendly'. First, identifying few male teachers who are supportive towards girls and publicly rewarding them as champions of MHH. Second, establishing a system where girls can communicate the negative encounters with male teachers during menstruation. The latter approach is widely applied for many issues within the country, for instance, a gender desk in police stations.
7. Continue with on-the-job training to teachers and parents on how to better communicate with girls during menstruation.
8. There is a need for MHH guidelines and curriculum review to give MHH much weightage, especially related to girls with disability.
9. There is a need for a strategy for MHH at a national level. Continued reliance on seminars for teachers from development

partners, classroom sessions, school clubs, health education and coalitions and networks is also emphasized.

9. There is a need to formalize existing networks and coalitions about MHH. The networks and coalition may work with development partners to accomplish the following:
 - a. Increase efforts that seek to stimulate political commitments in the prioritization of MHH issues. Inclusion of MHH materials within school and local budgets appears to be one of the ways to stimulate political commitment.
 - b. Increase advocacy efforts for establishment of policy guidelines for MHH as well as curriculum review to assign more weightage on MHH issues in schools.
 - c. Regulating the MHH industry and advocating for the use of VAT collected for issuing free pads may somewhat increase access among girls.
 - d. Establish more formal networks and/or coalitions for MHH within the country.

NOTES

- 1 Co-Principal Investigator, National Institute for Medical Research (NIMR), Dar es Salaam
- 2 Co-Principal Investigator, Public Health Laboratory Ivo de Carneri (PHL-IdC), Wawi, Chake, Pemba
- 3 Investigator, National Institute for Medical Research (NIMR), Dar es Salaam
- 4 Investigator, National Bureau of Statistics, Dodoma
- 5 Investigator, Independent Researcher
- 6 Investigator, Muhimbili University of Health and Allied Sciences, Dar es Salaam
- 7 Investigator, Ministry of Education Science and Technology
- 8 Principal Investigator, National Institute for Medical Research (NIMR), Dar es Salaam
- 9 National Institute for Medical Research (NIMR), Dar es Salaam
- 10 The Aga Khan University, Dar es Salaam
- 11 Ministry of Education Science and Technology
- 12 President's Office Regional Administration and Local Government
- 13 Ministry of Youth Development, Zanzibar

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ANNEXES

Appendix 1: MHH correct knowledge scores of pupils/students in Tanzania Mainland and Zanzibar by settings (rural and urban)

Domain and item	Tanzania Mainland		Zanzibar		Total	
	Rural, n (%)	Urban, n (%)	Rural, n (%)	Urban, n (%)	Tanzania mainland, n (%)	Zanzibar, n (%)
Menarche						
Bleeding from a wound	2,583 (98.4)	3,973 (96.1)**	366 (96.6)	636 (95.1)	6,556 (97.0)	1,002 (95.6)**
Bleeding from the genitals without problem	1,662 (63.3)	2,700 (65.3)	270 (71.2)	525 (78.5)**	4,362 (64.5)	795 (75.9)**
Getting the first menstrual blood	1,108 (42.2)	1,782 (43.1)	251 (66.2)	430 (64.3)	2,890 (42.8)	681 (65.0)**
When a girl goes from childhood and into adulthood	1,986 (75.7)	2,982 (72.1)**	287 (75.7)	498 (74.4)	4,968 (73.5)	785 (74.9)
The onset of puberty in girls	1,213 (46.2)	1,857 (44.9)	252 (66.5)	433 (64.7)	3,070 (45.4)	685 (65.4)**
End of virginity	2,533 (96.5)	4,009 (97.0)	361 (95.3)	624 (93.3)	6,542 (96.8)	985 (94.0)**
Menstruation						
When it begins it lasts for the whole life of a girl/woman	1,778 (67.7)	2,781 (67.3)	230 (60.7)	405 (60.5)	4,559 (67.5)	635 (60.6)**
Menstruation begins in puberty	1,150 (43.8)	1,776 (43.0)	257 (67.8)	415 (62.0)	2,926 (43.3)	672 (64.1)**
Normal menstruation can cause anaemia	2,397 (91.3)	3,759 (90.9)	344 (90.8)	536 (80.1)**	6,156 (91.1)	880 (84.0)**
Menstruation often causes a girl to get sick	1,805 (68.8)	2,643 (63.9)**	188 (49.6)	300 (44.8)	4,448 (65.8)	488 (46.6)**
Blood flow usually ranges from 3 to 7 days	1,800 (68.6)	2,880 (69.7)	313 (82.6)	568 (84.9)	4,680 (69.2)	881 (84.1)**
Represents active reproduction age	951 (36.2)	1,730 (41.9)**	74 (19.5)	138 (20.6)	2,681 (39.7)	212 (20.2)**

Domain and item	Tanzania Mainland		Zanzibar		Total	
	Rural, n (%)	Urban, n (%)	Rural, n (%)	Urban, n (%)	Tanzania mainland, n (%)	Zanzibar, n (%)
Signs for start						
Rapid growth, weight gain, and soft voice	1,915 (73.0)	3,140 (76.0)**	298 (78.6)	511 (76.4)	5,055 (74.8)	809 (75.1)
Emotional changes, irritable mood, soft/large breasts	1,750 (66.7)	2,693 (65.1)	282 (74.4)	528 (78.9)	4,443 (65.7)	810 (77.3)***
Loss of appetite, coughing, sneezing and nausea	2449 (93.3)	3689 (89.2)***	328 (86.5)	535 (80.0)	6138 (90.8)	863 (82.4)***
Class incidence						
Changing her school schedules and work	2,445 (93.1)	3,843 (93.0)	348 (91.8)	572 (85.5)**	6,288 (93.0)	920 (87.8)***
Make sure she has menstrual supplies in her bag	1,940 (73.9)	2,948 (71.3)**	280 (73.9)	449 (67.1)**	4,888 (72.3)	729 (69.6)
Buy special fabrics and packaging	1,125 (42.9)	1,988 (48.1)***	202 (53.3)	374 (55.9)	3,646 (53.9)	472 (45.0)***
Avoid gatherings, games and socializing	2,226 (84.8)	3,469 (83.9)	263 (69.4)	468 (70.0)	5,695 (84.3)	731 (69.8)***
To send all her school items home	2,550 (97.1)	3,968 (96.0)**	349 (92.1)	592 (88.5)	6,518 (96.4)	941 (89.8)***
Preparing a clean and confidential place for exchange	1,850 (70.5)	3,038 (73.5)**	284 (74.9)	538 (80.4)***	4,888 (72.3)	822 (78.4)***
Preparations						
Go home very quickly	2,329 (88.7)	3,574 (86.5)**	185 (48.8)	305 (45.6)	5,903 (87.3)	490 (46.8)***
Tell friends about her condition	2,121 (80.8)	3,114 (75.3)***	308 (81.3)	509 (76.1)	5,235 (77.5)	817 (78.0)
Ask for supplies from teacher or matron	1,655 (63.1)	2,414 (58.4)***	219 (57.8)	335 (50.1)	4,069 (60.2)	554 (52.9)***
Ask for permission first before going home	823 (31.4)	1,498 (34.3)***	210 (55.4)	436 (65.2)**	2,321 (34.3)	646 (61.6)***
Going into special rooms for needs	1,245 (47.4)	1,958 (47.4)	142 (37.5)	325 (48.6)**	3,203 (47.4)	467 (44.6)

Domain and item	Tanzania Mainland		Zanzibar		Total	
	Rural, n (%)	Urban, n (%)	Rural, n (%)	Urban, n (%)	Tanzania mainland, n (%)	Zanzibar, n (%)
Go to the toilet and put on a pad or towel	1,468 (55.9)	2,400 (58.1)	224 (59.1)	437 (65.3)*	3,868 (57.2)	661 (63.1)***
Use of materials						
The menstrual devices should be replaced after 24 hours	1,394 (53.1)	1,959 (47.4)***	178 (47.0)	254 (38.0)**	3,353 (50.4)	616 (58.8)***
Used menstrual devices can be placed in any hole or toilet	2,272 (86.6)	3,549 (85.9)	307 (81.0)	486 (72.7)**	5,821 (86.1)	793 (75.7)***
The sun rays and the wind help prevent infections in cleaned pads	657 (25.0)	1,215 (29.4)***	125 (33.0)	234 (35.0)	1,872 (27.7)	359 (34.3)***
Only industrial menstrual materials should be recommended for use by school girls	1,165 (44.4)	1,904 (46.1)	181 (47.8)	294 (44.0)	3,069 (45.4)	475 (45.3)
Using unclean menstrual devices can lead to infections	122 (4.7)	242 (5.9)**	46 (12.1)	82 (12.3)	364 (5.4)	128 (12.2)***

*p-value<0.05, **p-value<0.01, ***p-value<0.001

Appendix 2: MHH positive attitude scores of pupils/students between rural and urban-Tanzania mainland and Unguja and Pemba-Zanzibar

Domain and item	Tanzania Mainland		Zanzibar		Total	
	Rural, n (%)	Urban, n (%)	Rural, n (%)	Urban, n (%)	Tanzania Mainland, n (%)	Zanzibar, n (%)
Perception on institutional and environmental issues						
It is easy to get menstrual supplies from school when I need them	1,200 (45.7)	1,874 (45.3)*	137 (36.2)	284 (42.5)*	3,074 (45.5)	421 (40.2)**
Girls feel free to report to teachers/caregivers when they have menstrual problems	1,370 (52.2)	2,163 (52.3)	240 (63.3)	386 (57.7)*	3,533 (52.3)	626 (59.7)***
Perception on other girls						
I am satisfied with the support we receive from teachers during menstruation period	1,834 (69.9)	2,730 (66.0)***	211 (55.7)	458 (68.5)***	4,564 (67.5)	669 (63.8)*
Disagree on that statement that many girls are embarrassed to buy a sanitary pad in the shops	579 (22.1)	1,055 (25.5)**	53 (14.0)	79 (11.8)	1,634 (24.2)	132 (12.6)***
Disagree on that statement that Girls in their menstruation period should avoid physical exercise	1,335 (50.9)	2,058 (49.8)***	132 (34.8)	243 (36.3)	3,393 (50.2)	375 (35.8)***
Disagree on that statement that when girls are in their menstrual periods, they should stay home	2,066 (78.7)	2,965 (71.7)***	227 (59.9)	344 (51.4)*	5,031 (74.4)	571 (54.5)***
Disagree on that statement that girls are very worried that blood will leak through their clothes	363 (13.8)	629 (15.2)	53 (14.0)	95 (14.2)	992 (14.7)	148 (14.1)
Disagree on that statement that girls who are in their menstruation periods often have different feelings (anger, joy, sadness)	476 (18.1)	792 (19.2)	61 (16.1)	154 (23.0)***	1,268 (18.8)	215 (20.5)
Disagree on that statement that when girls are menstruating, they should not attend sport activities	1,464 (55.8)	2,420 (58.5)	201 (53.0)	279 (41.7)***	3,884 (57.5)	480 (45.8)***
Disagree on that statement that girls feel sick when they are in their menstruation periods	656 (25.0)	1,093 (26.4)	75 (19.8)	131 (19.6)***	1,749 (25.9)	209 (19.7)***

Domain and item	Tanzania Mainland		Zanzibar		Total	
	Rural, n (%)	Urban, n (%)	Rural, n (%)	Urban, n (%)	Tanzania Mainland, n (%)	Zanzibar, n (%)
Disagree on that statement that girls who experience pain during their menstruation periods should be worried that they have some problems	1,112 (42.4)	1,599 (38.7)***	146 (38.5)	184 (27.5)***	2,711 (40.1)	330 (31.5)***
Disagree on that statement that girls feel uncomfortable while learning about menstruation at school	1,338 (51.0)	2,198 (53.2)*	149 (39.3)	234 (35.0)	3,536 (52.3)	383 (36.6)***
Disagree on that statement that girls do not like to be seen throwing their sanitary pads in the trash	364 (13.9)	671 (16.2)*	66 (17.4)	155 (23.2)**	1,035 (15.3)	221 (21.1)***
Agree with the statement that girls tend not to be afraid to buy sanitary pads even when men are around	645 (24.6)	1,178 (28.5)***	95 (25.1)	203 (30.3)*	1,823 (27.0)	298 (28.4)
Disagree on that statement that when girls are in their menstruation period, they often feel nausea	1,620 (61.7)	2,391 (57.8)***	179 (47.2)	273 (40.8)**	4,011 (59.3)	452 (43.1)***
Disagree on that statement that girls don't like touching soiled pads when changing	1,042 (39.7)	1,854 (44.9)***	120 (31.7)	218 (32.6)***	2,896 (42.9)	338 (32.3)***
Self-perception						
Disagree on that statement that "when I am in my period, I am afraid that the boys will know"	1,410 (53.7)	2,302 (55.7)	138 (36.4)	232 (34.7)*	3,712 (54.9)	370 (35.3)***
Disagree on that statement that "I was very scared when I went into my menstruation period for the first time"	427 (16.3)	672 (16.3)	49 (12.9)	59 (8.8)*	1,099 (16.3)	108 (10.3)***
Agree with that statement that "I often talk about my menstruation periods with friends"	484 (18.4)	1,021 (24.7)***	91 (24.0)	112 (16.7)**	1,505 (22.3)	203 (19.4)
Agree with the statement that "I often find a teacher or matron for help when I encounter menstrual-related challenges at school"	1,447 (55.1)	2,337 (56.5)***	211 (55.7)	273 (40.8)***	3,784 (56.0)	484 (46.2)***

Domain and item	Tanzania Mainland		Zanzibar		Total	
	Rural, n (%)	Urban, n (%)	Rural, n (%)	Urban, n (%)	Tanzania Mainland, n (%)	Zanzibar, n (%)
Agree with the statement "I do not feel any difference when I have my period"	661 (25.2)	1,128 (27.3)	92 (24.3)	186 (27.8)	1,789 (26.5)	278 (26.5)**
Disagree on that statement that "I tend to be very afraid of menstruation coming unexpectedly"	429 (16.3)	766 (18.5)	96 (25.3)	137 (20.5)	1,195 (17.7)	233 (22.2)***
Disagree on that statement that "I am not free to talk to my parents about menstruation period"	1,636 (62.3)	2,489 (60.2)***	226 (59.6)	405 (60.5)	4,125 (61.0)	631 (60.2)
Agree with that statement that "I quickly became accustomed to seeing my normal menstrual cycle"	1,495 (57.0)	2,497 (60.4)**	242 (63.9)	447 (66.8)**	3,992 (59.1)	689 (65.7)***
Disagree on that statement that "often when someone mention menstruation I get goose bumps"	1,395 (53.1)	2,298 (55.6)	224 (59.1)	286 (42.8)***	3,693 (54.6)	510 (48.7)***
Agree with the statement that "I'm glad I've grown up until have reached menstruating age"	1,952 (74.4)	3,074 (74.4)**	282 (74.4)	436 (65.2)**	5,026 (74.4)	718 (68.5)***
Disagree on that statement that "when you are in your menstruation period it is important to keep yourself quiet, so no one will know"	1,311 (49.9)	2,050 (49.6)	217 (57.3)	267 (39.9)***	3,361 (49.7)	484 (46.2)
Agree with the statement that "when I first started menstruating, I changed and became a woman"	1,117 (42.6)	1,897 (45.9)	297 (78.4)	415 (62.0)***	3,014 (44.6)	712 (67.9)***
Disagree on that statement that "It is okay to miss school if you have pain due to menstruation"	1,372 (52.3)	2,031 (49.1)	64 (16.9)	154 (23.0)**	3,403 (50.4)	218 (20.8)***
Disagree on that statement that "I feel bad and dirty when I am in my menstruation period"	1,090 (41.5)	1,839 (44.5)	58 (15.3)	166 (24.8)***	2,929 (43.3)	224 (21.4)***

*p-value<0.05, **p-value<0.01, ***p-value<0.001.

Appendix 3: List of items used to assess level of knowledge

Menarche	Correct response (Yes/No) for correct knowledge	Weight for correct knowledge
Bleeding from a wound	No	1
Bleeding from the genitals without problem	Yes	1
Getting the first menstrual blood	Yes	1
When a girl goes from childhood and into adulthood	Yes	1
The onset of puberty in girls	Yes	1
End of virginity	No	1
Average scores (max scores=6)		
Menstruation		
When it begins it lasts for the whole life of a girl/ woman	No	1
Menstruation begins in puberty	Yes	1
Normal menstruation can cause anaemia	No	1
Menstruation often causes a girl to get sick	No	1
Blood flow usually ranges from 3 to 7 days	Yes	1
Involves the maternal age	Yes	1
Average scores (max scores=6)		
Signs for start		
Rapid growth, weight gain and soft voice	Yes	1
Emotional changes, irritable mood, soft/large breasts	Yes	1
Loss of appetite, coughing, sneezing and nausea	No	1
Average scores (max scores=3)		
Class Incidence		
Changing her school schedules and work	No	1
Make sure she has menstrual supplies in her bag	Yes	1
Buy special fabrics and packaging	No	1

Menarche	Correct response (Yes/No) for correct knowledge	Weight for correct knowledge
Avoid gatherings, games and socializing	No	1
To send all her school items home	No	1
Preparing a clean and confidential place for exchange	Yes	1
Average scores (max scores=6)		
Preparations		
Go home very quickly	No	1
Tell her friends about her condition	No	1
Ask for needs from teacher or matron	Yes	1
Apply for permission first before going home	Yes	1
Going into special rooms for needs	Yes	1
Go to the toilet and put on a pad or towel	Yes	1
Average scores (max scores=6)		
Use of materials		
The menstrual devices should be replaced after 24 hours	No	1
Used menstrual devices can be placed in any hole or toilet	No	1
The rays and the wind help prevent infections in cleaned pads	Yes	1
Only industrial menstrual materials should be recommended for use by school girls	No	1
Using unclean menstrual devices can lead to infections	Yes	1
Average scores (max scores=5)		
Overall knowledge (max=32)		32

Appendix 4: Members of the technical working group

S/N	Name	Organization
1	Mwanaidi M. Ali	MYCAS YUOTH D/DPT ZANZIBAR
2	Emanuel Gibai	PO-RALG
3	Hamisi Malebo	UNESCO COMISSION OF TZ
4	Wilhelmina Malima	SAWA
5	Dhahia R. Mbaga	ENVIHECO
6	Severine Allute	WaterAid/TONE HAI
7	Emanuel Makundi	NIMR
8	Regnihaldah Mpete	UNICEF
9	Robert M. Njee	NIMR
10	Adiel K. Mushi	NIMR
11	Judith msovela	NIMR
12	Calister Imada	NIMR
13	Said M. ali	PHLTDC
14	Salvata Silayo	MoHCDGEC
15	Rehema Darueshi	SHIVYULAWATA
16	Gedfrey M. Mubyazi	NIMR
17	Mwanangaza M. Hafidh	OCGS
18	Amina Mawazo Denge	OCGS
19	Justine Mwombeki	MOEST
20	Theresia Kuiwite	MOEST
21	Kiongo Itambu	TLB
22	Adeltus Katunzi	TLB
23	Mariam Mmbaga	UNICEF
24	Salamu Msenga	SHIVYAWATA
25	Winnie Nyato	WELL TOLD STORY
26	Max Perel-Slater	MAJI SAFI GROUP
27	Sheilla M. Mwinyi	MINISTRY OF YOUTH ZANZIBAR
28	Michael A. Mungi	NIME HQ
29	Vitus A. Nyigo	NIMR HQ
30	Anna Bwana	I4ID
31	Tulanoga Matimbwi	UNICEF
32	Hyasintha Ntuyeko	Kasole Secrets
33	Christina Motto	CCT
34	Halima Lila	I4ID
35	Asina Shenduli	BAKWATA
36	Upendo Judica	SAWA
37	Lydia Charles	FEMINA

S/N	Name	Organization
38	Halima Ali	MOH-ZANZIBAR
39	Rose Kasoga	SAWA
40	James Magai	M/NCHI
41	Glory Mbwanbo	RALUGH TANZANIA
42	Robert Kitundu	KROES
43	Augustino Dickson	PALEIGH TZ
44	Jack Ord	RALEIGH UK
45	Emanuel P. Tlemu	UDSM
46	Shabani Jumanne	UDSM
47	Joseph Banzi	WATERAID
48	Fuad Othman	MOH ZNZ
49	Dr. Sara Gabriellsson	Lund University
50	Abdukrhman Kwaza	MUE-ZNZ
51	Severine Allute	OHGOTO PLUS
52	Nguse Nglumbi	UDSM
53	Mwambe Edson	UDSM
54	Christine Mwanukuzi Kwayu	UNFPA
55	Sarah Mcevoy	UNFPA
56	Ian Tarimu	TAI TANZANIA
57	Jerome Mlaki	PPR
58	Gracia Sanga	NIMR
58	Glory Moshi	NIMR
60	Dr George Kinyashi	IDR - Dodoma
61	Athuman Tawakal	HKI
62	Mercy Nkya	Ideas In Action
63	Ross Mckenzie	RALEIGH UK
64	Said Mohamed Said	MOEVT-DPPR Zanzibar
65	Pendo Daudi	Barefoot international - Zanzibar
66	Zaina Ramadhan-	MOEVT -DPPE ZNZ
67	Asya Hassan-	MOEVT -DPPE ZNZ
68	Said Mohamed Said-	MOEVT –DPPE ZNZ
69	Jamila Yusuph	MOH ZNZ
70	Mwanahamis Mbarouk	MOEVT-OSEC
71	Ali Sheha	MOEVT
72	Mwangaza Hafidh	Government statistics (OCGS)
73	Amina Denge	Government statistics (OCGS)
74	Fatma Ramadhan	MOEVT –DPPE
75	Shahib Masoud	Save the Children ZNZ



