

**AVAILABILITY OF WASH FACILITIES FOR EFFECTIVE MENSTRUAL  
HYGIENE MANAGEMENT AT HOME FOR KENYAN SCHOOL GIRLS**

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## ABSTRACT

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**Background:** Menstruation is a natural phenomenon of the reproductive system; however, lack of Water, Sanitation, and Hygiene (WASH) facilities and lack of guidance among others, add extra challenges for adolescent girls to manage their menstruation hygienically. Poor menstruation among school girls is linked with shame, health problems, school absenteeism, and an ability to concentrate.

**Purpose:** This study seeks to assess the availability of WASH facilities for Kenyan school girls for the management of menstrual hygiene at home. The aim of this study is to contribute to an information gap by providing a quantitative evaluation on WASH facilities in girl's home environment.

**Methods:** The data gathered by researchers of the Kenyan Medical Research Institute (KEMRI) and Liverpool School of Tropical Medicine (LSTM) was used for this purpose. Data was gathered by field staffs trained on WASH data collection using a pretested questionnaire. 902 participants agreed to participate in the questionnaire. The data was analyzed using SPSS 24 for windows. Results are mostly presented through frequency tables, pie charts and histograms.

**Results and Conclusion:** There was no latrine in one-fifth (20%) of the houses and many of the houses that had latrines lacked doors or walls, were unhygienic and improper. Latrine cleaning materials were absent in 8% of the houses. Only 62% of the houses had soap always available at home and only 45% had soap available after latrine use. Private space to maintain personal hygiene was not available for 20% of the girls. In contrast, satisfactory result was seen about availability of water at houses, with 99.8% having water. Overall, the result of this study demonstrates that the WASH facilities (water supply, sanitation and personal hygiene conditions) were inadequate for the rural Kenyan girls to effectively manage their menstruation.

**Keywords:** WASH, menstruation. Menstrual hygiene, MHM, Kenya

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## **ABBREVIATIONS**

LMICs      Low and Middle-Income Countries

MHM        Menstrual Hygiene Management

USAID      United States Agency for International Development

UN          United Nations

UNFPA      United Nations Population Fund

UNICEF     United Nations International Children's Fund

WASH       Water Sanitation and Hygiene

WHO        World Health Organization

## **GLOSSARY**

### **DALYs (Disability-adjusted Life Years)**

DALY is a measure of overall disease burden, expressed as the number of years lost due to ill health, disability or early death.

### **KEMRI (Kenya Medical Research Institute)**

Kenya Medical Research Institute (KEMRI) is a State Corporation established through the Science and Technology (Amendment) Act of 1979, as a National body responsible for carrying out health research in Kenya. The mission of KEMRI is to improve human health and quality of life through research, capacity building, innovation and service delivery. KEMRI has regional as well as international collaborations.

### **LMIC (Low and Middle-Income Countries)**

WHO Member States are grouped into, low, lower-middle, upper-middle, and high, based on the World Bank list of analytical income classification of economies, which is based on the Atlas gross national income (GNI) per capita estimates. Low and Middle-Income countries have GNI per capita between \$1,026 and \$4,035.

### **MHM (Menstrual Hygiene Management)**

MHM has been defined by Joint Monitoring Programme of WHO/UNICEF as: *“women and adolescent girls using a clean menstrual management material to absorb and collect blood, that can be changed in privacy as often as necessary for the duration of the period, using soap and water for washing the body as required and having access to facilities to dispose of used menstrual management materials”*. (JMP., 2012)

### **OD (Open Defecation)**

Open defecation is the practice of people defecating outside, often in the open with no privacy.

### **WASH (Water, Sanitation and Hygiene)**

WASH is the collective term for Water, Sanitation and Hygiene. Due to their interdependent nature, these three core issues are grouped together as WASH to represent a growing sector.

## 1 INTRODUCTION

Menstruation is a natural part of reproductive cycle in which blood is lost through vagina. Girls typically start to menstruate ('the time of menarche') during puberty or adolescence, typically between the ages of 10 and 19. At this stage, they experience physical changes (e.g. growing breasts, wider hips and body hair) and emotional changes due to hormones (House et. al., 2012). Women around the world have developed their own personal strategies to cope with menstruation, which vary from country to country, and depends upon economic status, the individual's personal preferences, local traditions and cultural beliefs, and education status. (Das et. al., 2015)

Joint Monitoring Program of the WHO and UNICEF in 2012 developed a definition of Menstrual Hygiene Management (MHM), defining MHM 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' (Sommer et. al., 2013). Taking this definition into consideration, MHM requires, clean sanitary products, privacy for changing, availability of soap and water, and disposal facility for menstrual management products.

In low-income countries, there is a strong recognition that women struggle to manage their menstruation effectively and hygienically (Sommer et. al., 2015). MHM is however important to woman for overall wellbeing and development. Neglecting MHM does not only affect girl's health (Das et. al.,2015; Montgomery et. al.), education, dignity and gender equity (Winkler et. al.,2015) but also has impacts on sustainability (House et. al 2012).

There are several studies about the limitations of school girls and woman regarding their MHM in school environment. Assessment about MHM in home environment has been very little. Most researchers who have studied the obstacles in school environment have focused on qualitative assessment. In this study, we

aim to address this information gap by using quantitative data to assess the availability of WASH facilities at home for school aged adolescents to manage their menstrual hygiene in rural Kenya.

## 2 THEORITICAL BACKGROUND

Menstrual Hygiene Management (MHM) cannot be separated from Water, Sanitation, and Hygiene (WASH). The availability of WASH facilities is essential for girls to manage their menstruation, and studies within schools are well published in the literature. In this study, our focus is on WASH facilities available at girl's home to manage their menstruation, as such studies are very limited.

### 2.1 Water, Sanitation, and Hygiene (WASH) for MHM

“WASH is the collective term for Water, Sanitation and Hygiene. Due to their interdependent nature, these three core issues are grouped together to represent a growing sector. While each a separate field of work, each is dependent on the presence of the other. For example, without toilets, water sources become contaminated; without clean water, basic hygiene practices are not possible”. (UNICEF, 2016) Research shows that the less readily available water, the less likely that good hygiene will be practiced in households (UNICEF 2003). Recognition and promotion of the importance of WASH is inevitable to improve health, education and gender equality and it has gained momentum in recent years (UNICEF 2010). Poor WASH conditions are the causes of many preventable diseases and deaths in developing countries. Globally, 64.2 million disability-adjusted life years (DALYs) are attributed to unsafe water, poor sanitation and hygiene practices, 4 of which 52.5 million (82 per cent) are in low-income countries (UNICEF, 2015).

Access to WASH facilities is very necessary for girls and women to manage menstruation hygienically and with dignity. Inadequate WASH represents a barrier to MHM, particularly the ability to clean absorbents and the body in private. They need somewhere private to change sanitary cloths or pads; clean water and soap for washing their hands, bodies, and reusable cloths; and facilities for safely disposing of used materials or a clean place to dry them if reusable. Various studies

have revealed the importance of proper WASH facilities for effective Menstrual Hygiene Management (House et. al 2012, Bacha et. al 2016, Teklemariam, 2014) and highlighted the need of advocacy to improve WASH facilities for women and girls in poor settings (Scorgie et. al., 2016; Sommer et. al., 2013).

MHM is still a neglected issue within the WASH sector and other related sectors such as reproductive health (Mahon et. al.,2010). The reasons behind this neglect is further discussed in the article by the authors. Exclusion of women from decision making in development and emergency relief programs, little control over whether they have access to a private latrine or money to spend on sanitary materials are listed as important ones. In addition, cultural sensitivity and taboos towards menstruation are reasons cited by authors as to why WASH programs often fail to address the need of women and girls.

In the context of Kenya, lack of safe water, inadequate sanitation, and poor hygiene practices in most parts of rural Kenya have posed a challenge that exposes the populace to poor health and possible deaths. It has been observed that 5.6 million people practice open defecation (OD), 21 million Kenyans use unsanitary or shared latrines, making the country to spend around KES 27 billion (US\$ 324 Million) annually on water, sanitation, and hygiene related problems (World Bank, 2012). WASH challenges for Kenyan girls regarding MHM is discussed further in chapter 2.5.

## 2.2 Impacts of Poor MHM

Poor MHM is seen to have impacts on various aspects, like health, education, social life and so on. Reports from international organizations working on this field (UN, 2015), and various researches have shown this connection between MHM and health (Das et. al.,2015; Montgomery et. al.); education (WHO, 2010; Montgomery et. al., 2016) and social life (House et. al., 2012).

These impacts are discussed in brief below.

### 2.2.1 Impact on Health

The percentage of women of reproductive age is approximately 51% of total female population (UN, 2015). Majority of these women menstruate every month as menstruation is part of the normal reproductive system. Poor menstrual hygiene management is linked with various health risks (Das et. al.,2015; Montgomery et. al.). For example, a study conducted in Chandigarh, India had results showing that almost 73% of women with RTI performed poor menstrual hygiene (Singh et. al., 2001).

Menstrual hygiene management is associated with urogenital infection and studies have been conducted to understand the relation of different menstrual adsorbents with various infections. A study by Phillips-Howard et. al., 2016 showed that provision of menstrual cups and sanitary pads was associated with lower STI risk, and cups with lower bacterial vaginosis risk as well. Similarly, a study done in Odisha, India revealed that women who used reusable absorbent pads were more likely to have symptoms of urogenital infection or to be diagnosed with at least one urogenital infection than women using disposable pads. In this study, increased wealth and space for personal hygiene in the household were protective for bacterial vaginosis. (Das et. al., 2015).

Interventions that ensure women have access to private facilities with water for MHM and that educate women about safer, low-cost MHM materials could reduce urogenital disease among women. Moreover, studies have also shown that training of nurses and, health workers on RTI identification and referral using syndromic approach would help in reduction of RTIs (Singh et. al., 2001). However, the syndromic approach is questioned by many as girls particularly are unable to accurately describe their symptoms (Kerubo et. al., 2016). Further studies of the effects of specific practices for managing hygienically reusable pads and studies to explore other pathogenic reproductive tract infections are needed (Das et. al., 2015).

### 2.2.2 Impact on Education

Many LMICs have priorities to increase female education. However, due to variety of reasons, boys remain ahead of girls in school attainment, and female education is regarded as crucial for various development outcomes (Wolfe et. al., 1987; Behrman et. al., 2002). It has been argued by many researchers and policy makers that menstruation plays a vital role in limiting girl's school attainment and attendance (World Bank, 2005; WHO, 2010; Montgomery et. al., 2016; Tegegne et. al., 2014; King et. al., 2015). Lack of privacy, pain or discomfort, fear of accidental leakage of menstruation, lack of disposal system, shortage of water, shame and sociocultural beliefs are seen to be reasons behind school absenteeism (Gultie et. al., 2014).

A study conducted in northern Ethiopia had results showing that more than half of the girls have been reported to be absent from school due to menstruation period. The study also concluded that those who did not use sanitary napkins were more likely to be absent from school. Almost sixty percent of girls experienced declination in school performance after menarche and school drop-out was common among girls who experienced teasing and humiliation due to blood stains (Tegegne et. al., 2014).

However, studies have also shown that school absenteeism due to menstruation only accounts for a very small proportion of all female absenteeism and does not create a gender gap (Grant et. al., 2013; Oster et. al., 2011) and moreover, improved sanitary technology has no effect on reducing this small gap (Oster et. al., 2011).

Nevertheless, studies recommend that school should play more effective role in educating girls about menstrual hygiene (King et. al., 2015) and MHM should be included in school curriculum so that girls can get information from teachers alongside with their mothers (Jarrah et. al., 2012; El-Gilany et. al., 2005). Also, the need for large scale studies is highlighted in order to quantify the extent and impact of poor MHM on girl's education (Boosey et. al., 2014).

### 2.2.3 Impact on Social Exclusion

Girls and women are excluded from various aspects of social and cultural life and menstrual hygiene services due to various taboos associated with menstruation. Such taboos include not being able to touch animals, water ponds, or food that others eat, and exclusion from religious rituals, the family home and sanitation facilities. As a result, girls are denied from access to WASH facilities during their menstruation and this happens when they need it most (House et. al., 2012).

Thomas, E. M. (2007) has discussed about the menstrual taboo and menstruation discriminations in her article citing examples from various scholars. It is said in the article that, woman associate the feeling of guilt and sin with menstruation due to the taboos that come along with it. Women participate in rituals of cleanliness due to this guilt and agree that bodily act during menstruation is pollution. The menstruation taboo differentiates women from men.

### 2.2.4 Other Impacts of Poor MHM

Adolescent girls and women face hindrances in the management of menstrual hygiene also outside of their home or school environment. Especially in LMICs (Low and Middle-Income Countries), despite of the global effort to reduce poverty and increase women empowerment, sufficient efforts have not been made for woman so that they can manage their menstruation with ease in their workplace or public places.

A research review done by Sommer et. al., 2016, on MHM in workplace in LMICs, showed that little has been documented about barriers that adolescent girls and women face in their workplaces regarding their menstruation. It is understood from the study that women working in both formal as well as informal settings face difficulties to manage their menstruation.

Factors that limited MHM standards in workplaces included problems of social norms and unvoiced needs (shame, hesitation, embarrassment), problems of advocacy and policy. The menstrual hygiene unfriendly environment may lead to stress and anxiety and moreover, reduce concentration and productivity. These problems should be addressed for improving health and economy. (Sommer et. al., 2016)

### 2.3 Knowledge and Attitude of Girls in LMIC's towards Menstruation

Adolescents girls across many LMICs have been found to lack knowledge of the physiology and management of the menstrual hygiene (Adnima et. al., 2009; Upashe et.al.,2015). The finding of a study carried out in western Ethiopia showed that more than half (60.9%) of the students had good knowledge about menstruation and menstrual hygiene. The majority (76.9%) of the girl knew that menstruation was a physiological process whereas 9.7% of them believed that it was curse from god. The authors considered this knowledge as low and suggested that education program should be setup to create awareness and improve the practice of good menstrual hygiene (Upashe et. al., 2015). This finding in western Ethiopia is however, higher than that in Northern Ethiopia, Nigeria and Nepal which were 51.36 %, 4.0 %, and 40.6 % respectively (Tegegne et. al., 2014, Lawan et. al., 2010; Adhikari, P., 2007). In contrast to the above findings, high knowledge about menstrual hygiene was seen in another study conducted in Northern Ethiopia, which was 90.7% (Teklemariam, K. G. 2014).

Many girls are seen to experience menarche without any prior guidance on menstruation and have feelings of fear and shame and embarrassment about blood and menstruation, especially in school environment (Sommer et. al., 2012). Mothers are seen in many studies to be primary information provider (Kavitha, 2012; ICMR 2005-2006), followed by siblings and friends. Mass media is also a good source of information, a study in Mansoura Egypt showed mass media as primary source of information followed by mothers (El-Gilany et. al., 2005). The same study by ICMR reported that 70.4% of mothers of adolescent girls considered

menses as dirty and polluting (ICMR 2005-2006). This way, adolescents receives information that is not complete or scientific but confusing and superficial and holds it roots to myths and misconceptions.

There is still need for adolescents to have accurate and adequate information about menstruation and its appropriate management (Seenivasan et. al., 2017; Upashe et. al., 2015; El-Gilany et. al., 2005) despite of the efforts that have been put to change the social norms and cultural taboos regarding menstruation by providing guidance regarding puberty and menstruation, sexual and reproductive health to adolescent school girls through different medium (Grow and Know; Save the Children, UNFPA).

#### 2.4 Sanitary Products Used During Menstruation

The choice of sanitary products is a personal decision and is usually based upon many factors such as cultural acceptability and preferences. It is also often influenced by a woman or girl's environment and access to funds, a water supply and affordable options (House et. al., 2012). Various studies have been conducted in different areas to assess the user experience with different sanitary products like menstrual cups, disposable sanitary pads, homemade pads, tampons, old cloths etc., (Kavitha 2012, Stewart et. al., 2010, Vostral 2011).

A systematic review and meta-analysis was carried out by van Eijk et. al., 2016 to assess the status of MHM among adolescent girls in India. Studies published from 2000 to September 2015 on girl's MHM were searched, and 138 were finally selected after applying many criteria, for instance, the removal of duplicates, information relevancy, and availability of the full text. The study revealed that although cloths are traditionally used as menstrual absorbents, they are slowly replaced by commercial pads, and the replacement is higher rate in urban compared with rural areas. Cloths are cheaper and environmentally friendly but are difficult to clean and dry due to lack of WASH facilities, and taboos displaying cleaned cloth in public. Commercial pads even though favoured by participants

and authors, was not accessible to all, especially, rural girls. The benefits of commercial pads according to House et. al., 2012, include; frequent availability (except in remote areas), a range of sizes and types, and well-designed materials through research and development.

Reusable pads appear to be liked in LMICs. A study was conducted in rural Uganda, to assess the experience of menstrual absorbents. Schoolgirls using reusable pads provided significantly higher ratings of perceived absorbent reliability across activities, less difficulties changing absorbents, and less disgust with cleaning absorbents. However, girls using reusable pads reported participating less in certain activities during menstruation like physical sports, working in the field, fetching water and cooking. (Hennegan et. al., 2016)

The menstrual cup is an alternative to disposable hygiene products and is gaining popularity in developed countries (Stewart et. al, 2010, Thornton et. al., 2013). Studies have also been conducted in LMICs to assess user experiences with menstrual cups (Oster et. al., 2011). In south Africa, menstrual cup was rated significantly better for comfort, quality, menstrual blood collection, appearance and preference over tampons or sanitary pads (Beksinska et. al., 2015). In western Kenya, it was seen that girls using menstrual cups had relatively lower prevalence of bacterial vaginosis compared to those using pads (Phillips-Howard et. al., 2016). However, studies have shown no evidence of impact of having access to the menstrual cup on school attendance (Oster et. al., 2011; Phillips-Howard et. al., 2016).

Although disposable products like tampons are used widely throughout the world, they are associated with potential health consequences for women. For instance, use of high absorbency tampons has been linked to toxic shock syndrome (Hajjeh, 1999, Vostral 2011), with a variety of brands causing vaginal dryness and ulcers (Friedrich, 1981), and exposure to dioxins (a known carcinogen), pesticides, and neurotoxins (Dudley et. al., 2009).

More research is needed to compare the impact of menstrual absorbents on girl's daily activities. Usually, menstrual management programs provide only one type of menstrual absorbent to a participant in the program (Mason et. al., 2015). Studies have found qualitative evidence of acceptability of given absorbent, but it remains unclear if they would prefer other products if offered. Quantitative studies would allow comparison between different products. Some researchers have highlighted the need for further research on menstrual management options that are practical, sustainable and culturally acceptable (McMahon et. al.,2011). Large trials of multiple products may be needed to best maximize outcomes for women and girls.

## 2.5 MHM Challenges for Kenyan Girls

Adolescents aged 10-19 make one fifth of world's population and 23% of them live in Sub Saharan Africa. Adolescents comprise approximately 23% of the Kenyan population (UNICEF, 2012). Given their sheer number, the health and development of adolescents have crucial implications for public health. The development of successful interventions to improve the health of adolescents worldwide relies on understanding the diverse needs of young people and identifying areas of risk and opportunity for improvement (USAID, 2012).

Health of female adolescents is highly associated with Menstrual Hygiene Management (MHM). Studies have shown the impacts of menstruation on the lives of adolescent girls in rural Kenya. For instance, a cross-sectional, laboratory supported survey carried out in rural western Kenya showed that there was high prevalence of RTI with schoolgirls (Kerubo et. al., 2016). Also, challenges associated with MHM may impact girl's academic continuity. gender inequality and further marginalize girls in low-income, rural areas of Kenya (Secor-Turner et. al., 2016).

In Kenya, only 54% and 29% of the rural population has access to improved drinking water sources and improved sanitation facilities respectively (UNICEF,

2012). Absence of proper sanitation is the reason for one third of Kenya's disease burden (WASH alliance Kenya, 2015) and 5.3% of mortality are due to unsafe water, sanitation and hygiene (Kenya Environmental Sanitation and Hygiene Policy 2016-2030).

A study conducted in rural western Kenya showed that most households had soap in the home but almost none had a designated hand washing station at home (Kamm et. al., 2014). Insufficiency or unavailability of WASH facilities pose a major hindrance to school-aged girls during menstruation, compromising their ability to maintain proper hygiene and privacy (Sommer et. al., 2013).

Lack of facilities is however not the only problem in rural Kenya. A study conducted in rural Kenya has shown that due to economic challenges girls are not able to afford adequate methods of menstrual protection (Mason et. al., 2013). In some cases, due to this lack of resources to manage menstruation, girls are exposed to physical and sexual harm (Mason et. al., 2013; Phillips-Howard et. al., 2015).

Lack of proper guidance regarding menstruation is one big challenge for girls in Low and Middle-Income Countries (LMICs) (Sommer et. al., 2016) like Kenya. Menstruation is hardly discussed in rural Kenya. In some cases, mothers knew about 'their daughter's menstruation only from clues such as clothes going missing, more frequent, and private bathing, and noticing that she would distance herself from others (Mason et. al., 2013). This shows how some girls go through menarche without proper understanding what it is, lacking support and guidance on menstrual hygiene until they know from their own experience. In addition, adolescents were seen to be reluctant to share their concern about reproductive and sexual health with their parents due to fear of parents' suspicion (Kamau et. al., 2006). It is possible this contributes towards higher premarital sex and non-marital childbearing among Kenyan adolescents compared with other countries such as Nigeria as demonstrated by a longitudinal study conducted by Speizer et. al., 2017.

The government of Kenya takes education as a primary means of socioeconomic development, national cohesion, and upward social mobility (Second Medium Term Plan, 2013–2017, Kenya). However, like other LMIC, menstruation affects the academic engagement of school girls in Kenya as well (Mason et. al, 2013; Oruko et. al.,2015). UNICEF, 2012 data also shows that the enrollment of adolescents in upper secondary schools in Kenya is remarkably lower than in primary schools. A quantitative study conducted in Bwaliro village in rural western Kenya had its finding that menstruation was one of the determinants of non- enrollment and absenteeism at school for female students also in primary schools (King et. al., 2015).

It is recommended through researches that in order to promote health and academic continuity for girls in Kenya, menstrual hygiene management must be considered as a high priority (Secor-Turner et. al., 2016) and access to better, low cost, and sustainable sanitary protection would enhance girls' lives and reduce barriers to their engagement with schoolwork (Mason et. al., 2013). For this purpose, the Kenyan government has now set up a panel and is developing MHM guidelines for women and girls (Phillips-Howard PA, personal communication March 2017).

Studies that are focused on MHM would provide evidence-based information and data that can help Government of Kenya to help guide policies, strategies and different programs in health and development sectors. However, MHM studies in school environment alone without home assessment are not enough. Availability or unavailability of WASH facilities for MHM at home can affect many things, such as girl's health and schooling. For instance, poor WASH facilities at home may result in additional household responsibilities for management of menstruation, such as fetching water from a distant source which in turn can affect school attendance (Sommer, 2010; McMahon et al., 2011).

No studies have been published that have assessed the availability of WASH facilities for MHM at home, although there are comparatively significant number

of studies done at school environment. To holistically support school girls to manage their menstruation and to completely understand the influence of WASH facilities in girl's education, health and overall wellbeing, all components of WASH for MHM must be assessed also on home environment.

### 3 PURPOSE OF THIS STUDY

For my master's thesis project, I was personally very interested about menstruation issues, especially in rural settings. I came across various research articles related to the topic while searching with keywords, menstruation, menstrual hygiene, and menstrual hygiene management (MHM) in search engine EBSCO. Subsequently, I wanted to know about research topics that are of future use in field of menstruation and I found article by Phillips-Howard et. al., 2016, named 'Menstrual hygiene management among adolescent schoolgirls in low- and middle-income countries: research priorities'. The article was very interesting and I personally contacted researcher Penelope Phillips-Howard through email and expressed my desire to work with her for my master's thesis. Fortunately, she was also interested, and I was given data about WASH facilities for Kenyan school girl's in their home environment, the data was yet to be analyzed. I got instantly interested to work in the topic and I got further introduced to co-worker Kelly Alexander (lead researcher in WASH pilot) by Penelope. I maintained close communication (while working for my master's thesis) with these researchers working at Kenya Medical Research Institute (KEMRI), Kenya.

The researchers were mainly working in WASH at school environment. I personally asked Penelope Phillips-Howard regarding their purpose behind collecting data about 'Availability of WASH facilities for MHM at home for Kenyan school girls'. The researchers were interested to know,

- i. Whether homes had adequate facilities to allow girls and women to take care of their menstruation.
- ii. If girls in the study got sick for hygiene-related reasons, if it was poor school-related or home-related WASH.

While researchers were working in WASH pilot study, there were not any reports of serious illness of school girls, and thus home-based information regarding MHM was not immediately analyzed.

After deciding to work in the topic, 'Availability of WASH facilities for effective Menstrual Hygiene Management at Home for Kenyan School', I searched further in EBSCO search engine to find out what has been already written regarding the topic. I found out that the topic has received little attention. The majority of researchers studying MHM for adolescent girls have focused on qualitative assessment of their obstacles at school environment (Mason et. al., 2016; Sommer, 2010; Sommer et. al., 2013), however the, home environment is also a challenge for girls (Sommer et. al., 2013). Various studies have been conducted with the purpose of assessing WASH facilities for proper MHM for adolescents' girls at school without assessing their situation at home environment (Sommer et. al.,2016; McMahan et. al.,2011). Home assessment for MHM is essential in many regards (El-Gilany et. al., 2005), such as to gather information whether homes have adequate facilities to allow girls and women to manage their menstruation, to figure out whether the menstrual hygiene related problems in girls due to poor WASH facilities at school or at home, etc. Raising this issue requires quantitative evidence of assessment at home environment (Mason et. al., 2013; Sommer et. al., 2013).

This study aims to address this information gap by using quantitative data collected during a menstrual feasibility study to assess the availability of WASH facilities at home for school aged adolescents to manage their menstrual hygiene in rural Kenya. Also, researchers have highlighted a current gap in school aged girls' MHM evidence-based research in different settings with improved design and technology (Phillips-Howard et. al, 2016). This study also aims to contribute towards the evidence-base through this research, to support the development of Kenyan policy guidelines on provision of good MHM for women and girls.

### **Overall aim**

To assess the availability of WASH facilities for Kenyan school girls to manage their menstrual hygiene at home.

## **Objectives**

- To identify which WASH facilities for MHM in girls' homes are inadequate by analyzing the data collected by KEMRI/LSTM (Kenya Medical Research Institute) and make recommendations on the improvements needed.

## **Research Question**

What WASH facilities (Water, latrine and latrine cleaning materials, soap, private space, and sanitary products) are available for school aged adolescent girls to manage their menstruation at home?

## **Secondary Research Question**

What are the associations between distance to water source and presence of water in the home?

## 4 MATERIALS AND METHODS

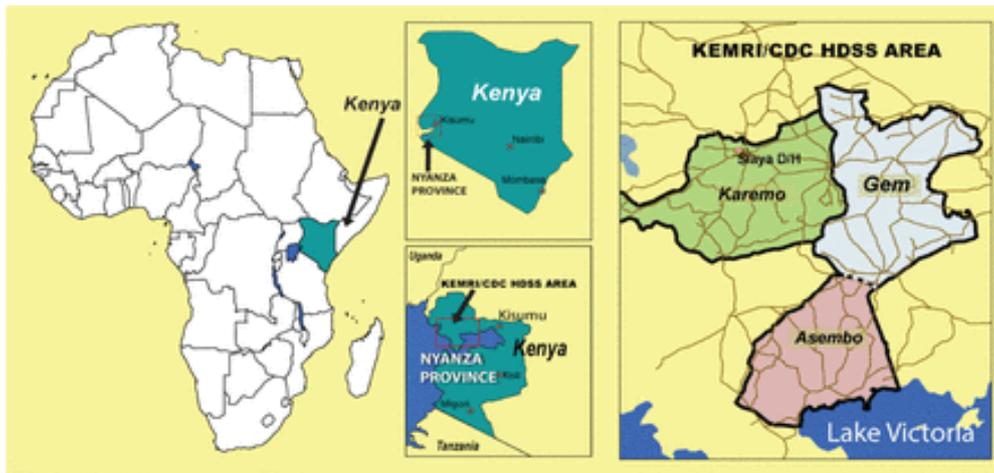
### 4.1 Study Area and Population

The study site is located in Gem sub-county, Siaya, in the former Nyanza Province of western Kenya, about 20 km from Lake Victoria. The population are commonly members of the Luo ethnic group, who are mainly subsistence farmers and fisherfolk. Four in ten child learners miss school daily in Nyanza, where literacy rate is 70%, while the national average is 62%. The population is included within a health and demographic surveillance system (HDSS) of the KEMRI/CDC <sup>1</sup>Research and Public Health Collaboration (Odhiambo et. al., 2012).

The KEMRI/CDC HDSS, with approximately 220 000 inhabitants, has been the foundation for a variety of studies. Triannual census surveys are conducted through the HDSS, which generates annual factsheets on demographic and health indicators. This multidisciplinary research data successfully feeds into policy, with implications at local, national and international levels. In 2010 in Gem, the midyear population was 82,798 people living in 25,641 households, which are grouped by extended families into 14,501 compounds. Around half (52.5%) the total population was female, of whom 22% were females of childbearing age (15–49 years), with a fertility rate of 4.2%. The life expectancy at birth for females was estimated to be 53 years. (Odhiambo et. al., 2012) The area is served by 1 district hospital providing tertiary care and 10 local health clinics within the HDSS area. A second district hospital is sited in Kisumu, 40 km from the study site. The KEMRI and CDC collaborative research station has on-site laboratories certified for clinical trials and quality control procedures.

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<sup>1</sup> Centers for Disease Control and Prevention (CDC) has partnered with the Kenya Medical Research Institute (KEMRI) to build a comprehensive research platform, which includes research on HIV, tuberculosis (TB), malaria, emerging infections, neglected tropical diseases, and other public health issues. The platform is well equipped to test new diagnostics, vaccine candidates, and new treatment regimens.



**Figure 1 Area of Study: Gem District of Siaya County (Alexander et. al., 2014)**

#### 4.2 Research Instrument and Data Collection

This is a descriptive cross-sectional study and studies of this type are based on representative sample or subsample of a population of interest who are questioned at one point of time Bowling, A. (2014). In the context of our study, it means that the availability of WASH facilities at home for MHM for Kenyan school girls was assessed between August 2012 to November 2013.

A cross-sectional home-based survey, nested within the Menstrual Solutions feasibility study was carried out. This study was set up in Gem, in June 2012, with data collection starting August 2012, and completed in November 2013. Among 71 primary schools, 62 agreed to participate in a school-based baseline WASH assessment. Of these, 30 reached the predefined WASH threshold (presence of water in school on the day of WASH visit, availability of separate latrine bank for girls, and a pupil-latrine ratio of 70:1 or less) described in detail elsewhere (Alexander et al 2014). All parents of girls aged 14-16 years, that consented for their daughters' to be in the menstrual solutions study, and for a WASH survey to be done in their home were documented. The HDSS locational dataset was used to identify where they lived, which parents had also consented to allow.

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The study was carried in quantitative manner. According to Bryman (1992), quantitative research incorporates causality, variables and a well-defined pre-structure. Data collection on the WASH in girls' homes was carried out using a pre-tested questionnaire (See Appendix A). The questions of the questionnaire were both in English and Swahili language. Field staffs, trained on WASH data collection, visited each parents' home, and conducted observations on presence of WASH, and asked the head of household specific WASH in the home questions. A copy of the questionnaire is presented in Annex.

The first part of questionnaire consists of background information (visit date, participant's full name and home environment where survey was done). The survey further proceeded if the participants agreed, otherwise the survey stopped there. The questionnaire included 22 questions in total. The table presented below shows which part of WASH component they represented. (TABLE 1)

**Table 1 Structure of the Questionnaire**

Question	Included in the section	WASH facility for MHM
1	Background	Demographic characteristics
2-5	Presence and cleaning of latrine	Sanitation component of WASH
6-12	Water Supply	Water component of WASH
13-14	Private Space	Hygiene component of WASH
15-18	Soap	Hygiene component of WASH
19	Menstrual absorbent	Hygiene component of WASH

20-22	Latrine, handwash & Water Source	Post interview Observation
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The first question of the survey asked the number of people in the household. Questions 2 to 5 aimed to answer the presence of latrine and its cleanliness. Latrine being an essential part of WASH facility, these questions have high relevance to this study and results obtained from these questions provide partial answer to our research question.

Water supply was the main theme of questions 6 to 12. Of these questions, 2 were observational questions and they have not been included in the results due to large part of the answers being missing. Results shows if the houses usually had water, was the water present in the day of survey and what the distance to the main source of water was. Relevance of these questions to our research question is high as water is an integral component of WASH and very essential for MHM.

Questions 13 and 14 'private space' questions and represent Hygiene aspect of WASH and the results have been interpreted from this part. Questions 15 to 18 were soap and handwashing related. They make one important part of our study. Question 19 was about menstrual products used by woman and girls, and it being one of the main aspect of this study, has been interpreted in results. Questions 20 to 22 were post-interview observation questions, and it has not been included in our study because large part of the information was missing.

#### 4.3 Data Management and Analysis

The researcher in this study acts as a secondary data analyst. The data was received from the original researcher Penelope Phillips-Howard through email in

SAV format. The data was analyzed using SPSS 24 for windows. The raw data was browsed thoroughly in order to find missing and invalid values. Descriptive statistics, that is frequencies, means and medians, as well as standard deviations (SD) were calculated when found necessary and tables and figures created when it was found to illustrate the results. Pearson correlation analysis test was run to identify any associations between distance to water source and presence of water in the home.

#### 4.4 Ethical Considerations

Bowling, A. (2014) states that, "All research potentially raises ethical issues, and consent to proceed is required from relevant ethical committees before a research study can commence". The consent to conduct this study was obtained from parents of the school girls. Participants were asked if they wanted to take part in WASH survey (on that particular day) and they further proceeded only after they agreed otherwise stopped there. Ethical approval was granted from the Scientific and Ethical Review Boards of the Kenya Medical Research Institute (SSC No 2198), and the Ethics Committee of the Liverpool School of Tropical Medicine.

Moreover, in the context of research activity, Curtis et. al., (2013), has stated the principle of respect for persons articulated in the terms of rights, and they are;

*The right not to be injured or mistreated, the right to give informed, un-coerced consent to participate in the particular piece of research, the right to privacy, confidentiality and/or anonymity.*

Field staffs, trained on WASH data collection, visited each parents' home, and conducted observations on presence of WASH, and asked the head of household specific WASH in the home questions. The topic being sensitive, the trained field staffs guaranteed privacy, confidentiality and anonymity, data protection and security. The participants were not harmed or treated wrongly.

Bowling, A. (2014) states that, " people who agree to take part in research studies need protection in relation to their privacy and protection from manipulation by the researcher also required is the protection of trust on which society and the research community depend; and the preservation of the good reputation of research." The researcher takes full responsibility of protecting rights and privacy of all participants. The data presentation is made in such a way that no participants can be recognized. The data analysis was carried out using best possible measure known to the researcher and it was made with complete honesty and accurately. The researcher spent few months getting familiarized with data analysis tool (SPSS 24) in order to learn, understand and obtain accuracy while analyzing data.

## 5 RESULTS

### 5.1 General Characteristics of the Study Population

902 participants agreed to participate in the questionnaire. The majority (96%) of the participants lived in rural area, very small percentage (3.4%) in peri-urban area and less than 1% of participants in urban area. In average, male persons living in household were 3 while female persons in the household were 4.

### 5.2 WASH Facilities for MHM

#### 5.2.1 Latrines

Eighty percent of the participants reported to have latrines in their house (Table 2). The mean value on the numbers of latrines per household in our study was 1.58. Most commonly used for latrine cleaning were broom, soap/detergent, and water. Ash, batteries, dry cells, cow dung, mud, etc., were among other items used for latrine cleaning. Eight percent of the participants reported to have no latrine cleaning materials present at home. Lacking cleaning materials indicates unhygienic and contaminated latrines.

**Table 2 Presence of Latrine at Homes**

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>No</b>	176	19.5	19.5	19.5
<b>Yes</b>	726	80.5	80.5	100.0
<b>Total</b>	902	100.0	100.0	

About half of the of the households (55%) had one or more of these latrine cleaning materials present always in the house while one fourth (25%) household had

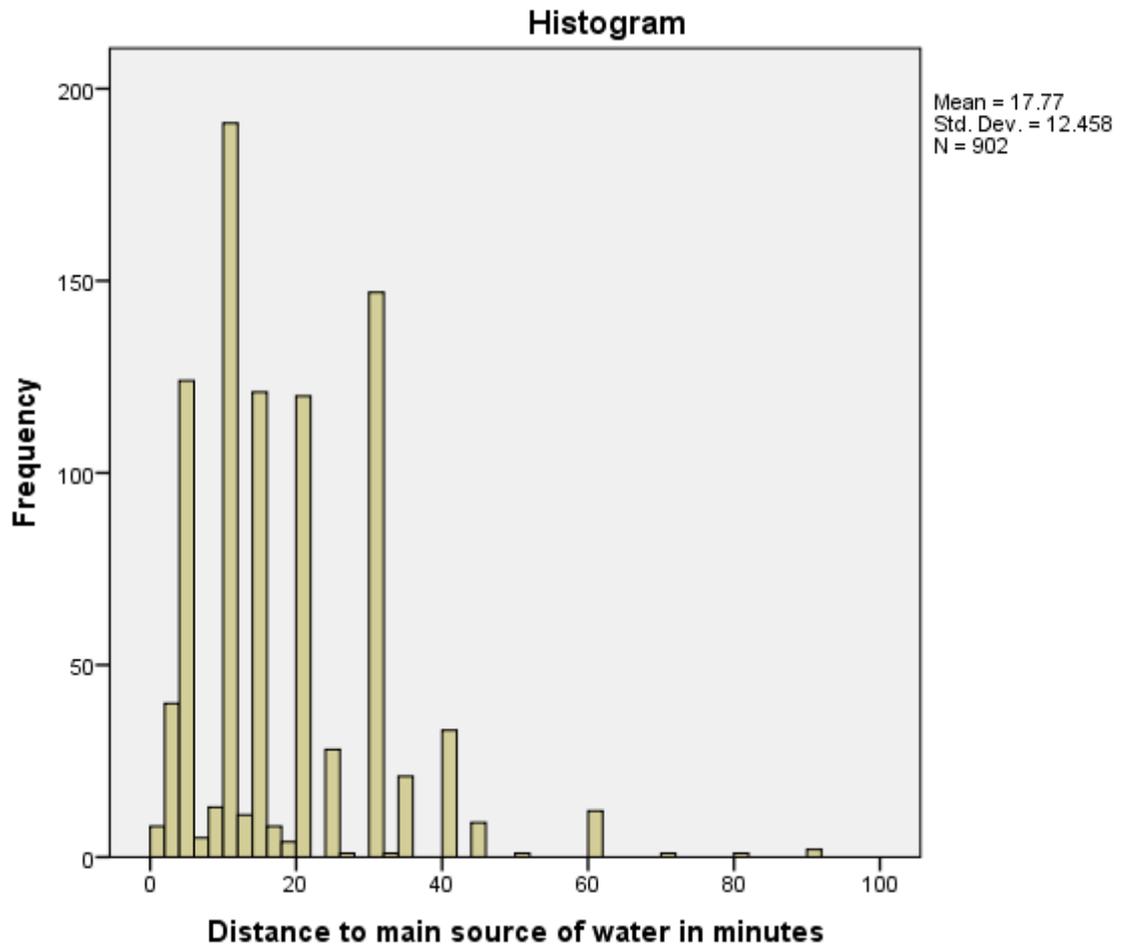
these cleaning materials present only sometimes and almost 20% of the response was NA. On the day of the survey, only less than half of the household (46%) had one or more of these cleaning materials present for latrine cleaning.

### 5.2.2 Water Supply

The results on water available for households was very satisfying. Almost 100% houses usually had water available. On the day of survey, 99% houses had water availability. Water was usually stored by more than half of the households in sitting room and kitchen. In some houses, water was stored in bedroom and store-room as well. Few houses only had one room, so water storage was done there. Water was mainly stored in clay pot, jerry cans, plastic containers, super drums, and buckets.

Borehole was the main source of water for one fourth of households. Almost one fourth of the households were dependent on either river or stream for water. Almost same percentage of household used only stream for fetching water and 5% used only river as water source. Unprotected and protected spring, pond and rainwater were among other minor sources of water.

The mean distance from participant's home to the main source of water was 17.7 minutes with standard deviation of 12.45. This means that the average time spent by the participants to fetch water was 17 minutes. This average time spent by the participants in our study is much less than that shown by a study conducted in Kianjai, north central Kenya (Joseph et. al., 2016) which was 43 minutes. The minimum distance to the source was 1 minute and maximum was 90 minutes. This result is below presented as histogram chart.



**Figure 2 Distance in Minutes to Main Source of Water**

### 5.2.3 Soap

The participants in this study were asked how often the family had soap in the house. 61.9% of them had soap always available for the family at home, in 36.5% families soap was only available sometimes, and almost 2% of families never had soap in their house. Soap availability at home for families to use after latrine use was almost fifty-fifty. (Table 3)

**Table 3 Availability of Soap after Latrine Use**

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>No</b>	488	54.1	54.1	54.1
<b>Yes</b>	414	45.9	45.9	100.0
<b>Total</b>	902	100.0	100.0	

On the day of survey, almost 60% participants had soap in their house for hand-washing and around 40% of them did not have. More than 3/4<sup>th</sup> participants did not have any designated place in house for handwashing. Only 14% of the families had a separate place for the purpose.

Evidence of handwashing (Observed by fieldworkers) was however much lesser than the availability of soap in the house as stated by the participants. Field workers observed that only 10% participants washed their hands. (Table 4)

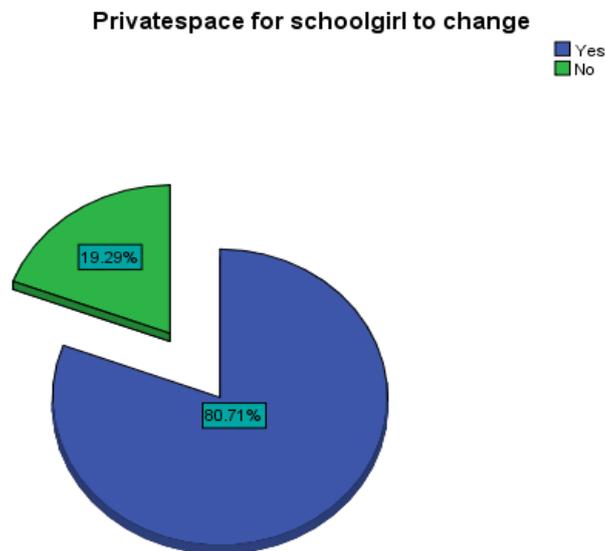
**Table 4 Evidence of Handwashing**

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>No</b>	806	89.4	89.4	89.4
<b>Yes</b>	96	10.6	10.6	100.0
<b>Total</b>	902	100.0	100.0	

#### 5.2.4 Private Space

80% girls in this study had private space at home to change while remaining 20% did not have. Some girls had their own bedroom where they had private space to change. However, many girls used room designated for other purposes like, guest room, other family member's room, kitchen, storeroom, bathroom, etc. 20%

of the participants, however, did not have any of these spaces available for them to change. (Figure 4)



**Figure 3 Availability of Private Space for Girls**

#### 5.2.5 Sanitary Products Used during Menstruation

For the assessment of adsorbents used by school girls and their mothers, participants were asked, "What is usually used by females in the household for their menstruation (list all)", and their free responses were recorded by field workers as pads, cloths, old cloths, tissue paper, sanitary towels, rags or others. Few girls/ mothers reported to use underwear alone, mattress or blankets, or toilet papers, and them items were listed in other category for analysis purpose.

For mothers, use of pads was dominant over other products. Of the 61.2% response received for this question (n=552), 35.7% of mothers used pads for maintaining menstrual hygiene. It was followed by use of clothes (24.6%), use of sanitary towels (9.4%), and other lesser used items like old clothes, tissue papers, rags, and etc. 7% of mothers of the participants had already reached menopause

age. A total of 1.9% of mothers had no sanitary product available for menstrual hygiene management.

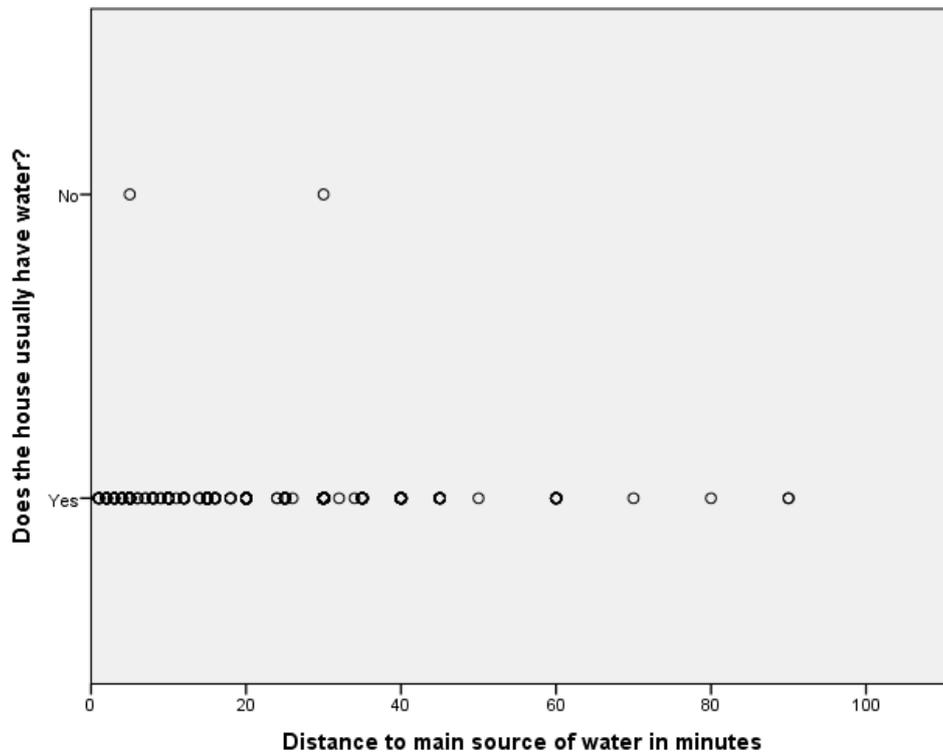
The results for sanitary products used by school girls was quite similar to that of mothers. The missing data was 39% with total response of 61% (n=552). Of these 552 girls, 11% were yet to menstruate. Remaining girls used pads (43.4%), Cloths (19.6%), Sanitary towels (10%) in majority, and other minorly used items were old cloths, moon cup, tissue paper, cotton wool, rags, etc., Only 0.5% of girls (n=3) that responded to this question had no sanitary product to use during their menstruation.

### 5.3 Result of Pearson Correlation Test

Using SPSS version 24, we carried out Pearson Correlation test to find a relation between distance to main source of water and availability of water at homes. From the test we got the value of correlation coefficient  $r = -0.01$ . This value indicates a very weak negative linear relationship or almost no linear relationship.

		<b>Correlations</b>	
		Does the house usually have water?	Distance to main source of water in minutes
Does the house usually have water?	Pearson Cor- relation	1	-.001
	Sig. (2-tailed)		.975
	N	902	902
Distance to main source of water in minutes	Pearson Cor- relation	-.001	1
	Sig. (2-tailed)	.975	
	N	902	902

**Figure 4 Correlation: Distance to Main Source of Water and Availability of Water at Homes**



**Figure 5 Correlation: Distance to Main Source of Water and Availability of Water**

The correlation value indicated that the distance to the main source of water did not really affect on the availability of water at homes. As mentioned above, the mean distance to source of water was 17.7 minutes and 99.8% homes usually had water available for them.

## 6 DISCUSSIONS

### 6.1 Discussion of the Results

This study demonstrates that the WASH facilities (water supply, sanitation and personal hygiene conditions) were inadequate for the rural Kenyan girls to effectively manage their menstruation. The table below (Table 5) shows the summary on availability of WASH facilities for Kenyan school girls in our study.

**Table 5 Summary on Availability of WASH Facilities**

Availability of WASH facilities	Frequency	Valid Percent
<b>Latrines</b>	726	80.5
<b>Soap Available</b>		
Always	558	61.9
Sometimes	329	36.5
Never	15	1.7
<b>Soap after Latrine Use</b>		
Yes	414	45.9
No	488	54
<b>Place for Handwashing</b>		
Yes	127	14.1
No	775	85.9

<b>Water</b>	900	99.8
<b>Private Space Available</b>	721	80

Findings of the present study showed that one fifth of the houses (20%) were lacking latrines. Many of the houses with latrines lacked proper doors or walls, were unhygienic and improper. This result differs vastly from 2 different studies conducted in different parts of Kenya. One longitudinal health surveillance conducted Asembo area in rural Kenya where results showed that nearly 80% of the households did not have any sanitation or latrine facility (Kamm et. al., 2014.). In contrast, latrine presence in our study is fifteen percent less than shown by a study carried out by Tumwine et. al., 2003 where 95% households had latrine.

The cleaning materials for the latrine cleaning were not available at all for 8% of the households. This data indicates that open defecation is prevalent in rural Kenya, despite of the efforts put by Kenyan Government's ambitious Open Defecation Free (ODF) Rural Kenya Campaign (Kenya Environmental Sanitation and Hygiene Policy 2016 – 2030).

According to UNICEF, only 54% of the rural population has access to improved drinking water sources in rural Kenya (UNICEF, 2012). Even though water availability was seen good (in 99.8% houses) in our study, there still were few houses that didn't have water supply and some people spent even 90 minutes to fetch water. This indicates that, not all participants had water in order to maintain their hygiene and few households needed to spend a big amount of time fetching water for household needs. However, no association was seen between distance to the main source of water and availability of water at homes.

Availability of soap is vital for the maintenance of personal hygiene during menstruation. Girls need soap to wash soiled hands and clothes to maintain hygiene

during menstruation. Not all the participants had soap available at home for hand-washing or to use after using latrine. Only about 62% of participants reported to have soap always available at home, and only 45% of the participants had soap available to use after latrine. Also, among those who had soap available at home, only 14% had a designated place for hand washing at home. In a study conducted in rural western Kenya, none of the households had a designated place for hand-washing (Kamm et. al., 2014). Lack of soap at home indicates the inadequacy of one of the WASH components needed to maintain personal hygiene for menstruating girls.

Private space is needed along with other personal hygiene products for girls in order to maintain their personal hygiene during menstruation. 20% of the girls in our study lacked private space for personal hygiene maintenance. Private space is very essential in order to change the pads, and in order to wash and dry the reusable towels or disposing of pads.

Although use of pads was dominant over other sanitary products during menstruation, (girls 43% and mothers 35.7%), however, remaining big percentage of girls and women used other items like cloths and old clothes, tissue papers, sanitary towels, cotton wool, etc. Few girls and woman even used rags, mattress, toilet papers etc. The level of cleanliness of these sanitary products and the methods used for cleaning remains unknown to the researcher. A total of 2% of mothers and 0.5% of girls reported to have no sanitary product available for them during menstruation. This data indicates the insufficiency of hygiene materials needed for proper MHM for girls and women.

## 6.2 Reliability and Validity of the Study

It is essential to set up validity and reliability of a research. Reliability is simply the extent to which something gives the same measurement each time it is used, and validity refers to the extent to which something measures what it is supposed to measure. (Curtis et. al., 2013)

Questionnaire was used as a data collection tool in this study. Questionnaires are accepted as having certain advantages over other data collection methods such as interviews (Bowling, 2014). They include, low cost of data collection and processing and can read much larger number of target population. This method of data collection seems most appropriate for the present descriptive cross-sectional study involving 902 participants. Moreover, the questionnaire was pre-tested by the field workers before using it as final version.

A weakness in quantitative research is the difficulty in collecting a sufficient range of recipients and have a sufficient response rate (Yin, 2011). Only a sufficient data can provide statistically significant results (Vilkka, 2007). As the purpose of this study was to assess the availability for WASH facilities for effective MHM, and the number of participants were nine hundred and two, the sample size seems good for this cross-sectional study.

Data analysis of this quantitative study was carried out using SPSS 24 for windows. This software was most suitable for the analysis of data sent by original researchers in SAV format. The researcher spent significant amount of time getting familiarized with the software and making best use of the available tools. The data was analyzed and displayed in the forms of tables and figures for the easy visualization. The researcher made sure that the analysis was done accurately by re-checking the analysis process.

### 6.3 Limitations of the study

This chapter focuses on the limitations and shortcomings of this study.

In this study, the data that was collected by field staffs trained in WASH data collection during the period of June 2012 to November 2013 was analyzed. It means that the researcher herself is a secondary data analyst. The researcher has not herself visited the field and does not have the real picture of the study

environment. According to Kumar, R (2014), the method of using data from secondary source possess risk of validity and reliability. Also, the secondary data analyst has no control over the quality of the data or the variables that are included in the dataset, the data-collection process, the population studied, sampling design, and the questionnaire used during data collection. (Curtis et. al., 2013)

One of the limitations of this study is that a part of the data collection comprises of observation by the field workers. According to Kumar, R (2014), when individuals or groups become aware that they are being observed, they may change their behaviors. Depending upon the situation, this change could be positive or negative – it may increase or decrease, for example, their productivity – and may occur for a number of reasons. Also, there is risk for incomplete observations, observer bias and the interpretations drawn from the observations may vary from observer to observer. Kumar, R (2014)

No information about disposal of the menstrual absorbent products or methods of cleaning reusable absorbents has been included in the data. Also, participants were not asked how often they changed their sanitary pads. Menstrual hygiene information remains incomplete without this information.

## 7 CONCLUSION AND RECOMMENDATIONS

This study brings evidence that WASH facilities for MHM for Kenyan school girls are inadequate for the MHM need of menstruating girls. Water was seen to be present in almost every household but presence of other WASH factors like soap, latrines, sanitary products or private space for changing was seen to be insufficient. Also, the time consumed for some households to fetch water was significantly big. This suggests that MHM activities are given less priority in rural Kenya. A qualitative study conducted in school setting in same area of Nyanza province also concluded that the girls struggled with accessing appropriate materials and private space for MHM (Alexander et. al., 2014).

Inadequate MHM symbolizes very important human right matters that have consequences on social and economic rights, including health, water, sanitation, education, and work (Sommer, 2010., Sommer et. al., 2016). Unhygienic behavior and poor sanitation facilities can be vital sources of morbidity and mortality, especially in rural areas. Such resource poor settings should be given especial importance while making or changing policies so that girls and woman in those areas can achieve improved health and quality of life. Also, the need of menstruating girls and woman should be put forward by organizations working in WASH sector.

This study suggests that more research is needed in WASH for MHM sector. In order to effectively present the actual intensity of the MHM problems of adolescent school girls and woman in Kenya, more high-quality studies that provide significant evidence, i.e. quantitative studies are needed. Various other researchers have highlighted this need as well (Ssewanyana et. al., 2017; Phillips-Howard et. al, 2016). These studies are needed to be conducted not only in school environment, but also in home environment which would then provide essential information on overall MHM situation of Kenyan school girls.

Study of this kind can practically be used to make policies in local and government level. The government of Kenya has now set up a panel and is developing MHM guidelines for women and girls (Phillips-Howard PA, Personal Communication, April 2017). This study would provide an evidence-based information and data to Government of Kenya to help guide policy.

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## APPENDIX 1: QUESTIONNAIRE

0069058671	<b>KEMRI/CDC DSS WASH-Home survey Form</b>	File number <input type="text"/>
Cl <input type="text"/>	Fill for all households of enrolled girls	<input type="radio"/> Gem
	Visit date <input type="text"/> / <input type="text"/> / <input type="text"/>	
Household id <input type="text"/> - <input type="text"/> - <input type="text"/>	Household admin PID <input type="text"/> - <input type="text"/> - <input type="text"/> - <input type="text"/>	
Household Administrator First name <input type="text"/>	Juok name <input type="text"/>	
Last name <input type="text"/>	Family clan name <input type="text"/>	
Environment: <input type="radio"/> home_env <input type="radio"/> Rural(countryside) <input type="radio"/> Urban(Houses all sides) <input type="radio"/> Periurban(some houses)		
<p><b>Nonro WASH kawuono?</b> wsh_today <input type="checkbox"/> Ee (Yes) <input type="checkbox"/> Ooyo (No) If No, why _____ wsh_why</p> <p style="text-align: center;">*If "NO", then the interviewer STOPS here. If "Yes" proceed to Q.1</p>		
<p>1. <b>Ji adi modak eot mantie nyako moruake e nonro )?</b>(How many persons live in the household of the enrolled school girl?)</p> <p style="text-align: center;">Male <input type="text"/> pmale Female <input type="text"/> pfemale</p>		
<b>CHOO(LATRINE):</b>		
<p>2. <b>Bende jo odni nitire gi choo?</b> (Does the house have a latrine?) hav_latrine <input type="radio"/> Ee (Yes) <input type="radio"/> Ooyo (No) Ka ee,gin adi:( If Yes, How many) <input type="text"/> hw_latrine</p>		
<b>KETO/LOSO CHOO MALER(CLEANING OF LATRINE:)</b>		
<p>3. <b>Utiyo gang'o mondo choo obed malar?</b>(What is used for cleaning the latrine?) used_clean</p> <p><input type="checkbox"/> Sabun(Soap/detergent)Mamoko(Others) _____ clean_other</p> <p><input type="checkbox"/> Ywech(Broom)</p> <p><input type="checkbox"/> Kedi(stick)</p> <p><input type="checkbox"/> Onge(Nothing)</p> <p><input type="checkbox"/> Pii(Water)</p> <p><input type="checkbox"/> Akia gi(Dont know)</p> <p><input type="checkbox"/> NA</p>		
<p>4. <b>Joot thoro bedo gi sabun kuom thuolo maromo nadi?</b>( How often does the family have cleaning materials for latrine cleaning?) soap_house</p> <p style="text-align: center;"><input type="radio"/> Pok obedo(Never) <input type="radio"/> Samoro(Sometimes) <input type="radio"/> Seche duto(Always) <input type="radio"/> NA</p>		
<p>5. <b>Bende nitie gik mitiyogo/miketogo cho obed malar?</b>(Are any cleaning materials for latrine cleaning present today?) material_present <input type="radio"/> Ee (Yes) <input type="radio"/> Ooyo (No) <input type="radio"/> NA</p>		
Verified <input type="checkbox"/>	MS Study: V7.0 MAY 02, 2012	WASH -Home survey form, Page 1 of 4 P.T.O

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WASH-home survey Form, Page 2 of 4

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**YUTO MAR PII: (WATER SUPPLY:)**


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6. Bende Odni niga gi pii?(Does the house usually have water?) usually\_water  Ee (Yes)  Ooyo (No)
7. Bende pii nitire eotka sani?(Is water present in the house now?)water\_present  Ee (Yes)  Ooyo (No)
8. Pii ikano gi karkanye eot ka?(Which room in the house is water stored in?) \_\_\_\_\_  
*Ka ikano pii ei agulu/kube penji(if stored in potfrican ask:)* room\_water
9. Observation questions(Fill the table below for containers with water inside)

Type:	1.Bucker	2.Jerican	3.clay pot	4.Oil drum	5.Bottle
	6.Basin	7.Other(specify)			
Turbidity:	1.clear	2.cloudy	3.muddy		

Cont	Type (enter code)	If other,specify	Does container have cover/lid/top (Y/N)	Observed Turbidity (Enter code)	Water guard/other chlorine product seen (Y/N)	Filter/filter cloth seen (Y/N)	Comment on container
1							
2							
3							
4							
5							

cont\_type1    cont\_other1    cont\_lid    water\_turb    water\_guard    water\_filter    cont\_comment

10. En kanye mauhinyo ga ome pii?(What is your main source of water?)main\_water

- Yawo(pond)                      Mamoko(Other)\_\_\_\_\_ other\_source
- Kisima(borehole)
- Nam(lake)
- Odundu manieot(Pipe in house)
- Pii koth(Rainwater)
- River
- Stream

11. Ikawo seche adii/kata dakika adii omo pii/umbo(dakika adii)?(What is the distance to your main source(in minutes?)

minutes?)    dista\_minutes

Verified 

MS Study: V7.0 MAY 02, 2012

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WASH-home survey Form, Page 3 of 4

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12. Chiw ler kaka chal:(Observational description:) minutes\_desc

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**KAMA OPONDO:Penje: (PRIVATE SPACE:Ask)**

13. Bende nitie kamoro amora mopondo eiot ka,manyako mapuonjore nyalo lokoe/rwako lepe?(Is there a private space in the house for the schoolgirl to change?) privspace\_girl  Ee (Yes)  Ooyo (No)  
if NO go to Q17

14. Chiw ler kaka chal:(Observational description:) private\_desc

.....

.....

**SABUN: (SOAP)**

15. Jo-odni thoroga bedo gi sabund logo kuom thuolo maromo nade?( How often does the family have soap in the house?)hw\_often\_soap  
 Pok obedo(Never)  Samoro(Sometimes)  Seche duto(Always)

16. Bende ot nitie kod sabun mar lwoko lwedo bang' aa e choo?(Does the house have any soap for washing hands after latrine use?) aterial\_use  Ee (Yes)  Ooyo (No)

17. Bende ot nitie kamoro moketi/molos mana ne lwoko lwedo?(Does the house have a designated place for handwashing?) desig\_place  Ee (Yes)  Ooyo (No)

18. Bende nitie sabun mar lwoko lwedo kawuono?(Is there soap available for handwashing today?) soap\_aval  Ee (Yes)  Ooyo (No)

19. What is usually used by females in the household for their menstruation(list all)

Mothers/adult women \_\_\_\_\_ list\_mothers

Girls/young females \_\_\_\_\_

Verified

MS Study: V7.0 MAY 02, 2012

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**OBSERVATIONS POST-INTERVIEW**

20. Observed condition of latrine:

Fill table below per every latrine door

Type of latrine: 1.Pit 2.VIP 3.Ecosan 4.Toilet 5.Urinal  
 Location: 1. Inside house 2. Outside house, in compound  
 3. Outside compound

Type (enter code)	Location (enter code)	In use (Y,N)	Stable (Y,N)	Holes in wall (Y,N)	Strong smell (Y,N)	Feces or urine(Y,N)	Door (Y,N)

url\_type url\_location url\_use url\_stable url\_wall url\_smell url\_feces url\_door

21. Evidence of hand washing. evidence\_hand  Ee (Yes)  Ooyo (No)

a) If yes, description: \_\_\_\_\_  
 evidence\_desc

b) Evidence of soap evidence\_soap  Ee (Yes)  Ooyo (No)

c) If yes, type \_\_\_\_\_  
 soap\_type

22. Is water source in or near compound? source\_water  Ee (Yes)  Ooyo (No)

a) If yes, type: \_\_\_\_\_  
 source\_type

b) Additional description of water source \_\_\_\_\_  
 additional\_desc

Other WASH observations (free field) Other\_wash

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