DETERMINANTS AFFECTING MENSTRUAL HYGIENE MANAGEMENT AMONG ADOLESCENT SCHOOL GIRLS IN CHUKA SUB-COUNTY IN THARAKA NITHI COUNTY, KENYA

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DECLARATION

This thesis is my original work and has not been presented for a degree in any university.

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EG407/200681/19

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This thesis has been submitted with our approval as university supervisors.

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DEDICATION

This work is dedicated to my beloved mother, Monica Mutegi and my father, George Mutegi, their efforts and sacrifices is what moulded me to what I am today. To my dearest son Bahati, your patience and understanding kept me moving. The work is also dedicated to all adolescent school girls.

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May Almighty God bless you all.

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ABBREVIATIONS AND ACRONYMS

KDHS	Kenya Demographic Health Survey
KNBS	Kenya National Bureau of Statistics
MHM	Menstrual Hygiene Management
MIRERC	Meru University Institutional Research and Ethics Review Committee
RTI	Reproductive Tract Infections
SDG	Sustainable Development Goals
SPSS	Statistical Package for Social Sciences
UN	United Nations
UNICEF	United Nations International Children Education Fund
UTI	Urinary Tract Infection
WASH	Water Sanitation and Hygiene
WHO	World Health Organization

OPERATIONAL DEFINITION OF TERMS

Adolescence	A transition period between childhood and adulthood, that occur among girls aged from 10- 19 years.
Adolescent girls	Females aged 10- 19 years.
Menarche	Refers to the first menstrual period in females
Menstruation	It is also referred to as menses or periods. It is the shedding of blood and discharge from the vagina of females
Menstrual hygiene management	Use of clean menstrual management materials and practices by adolescent girls to absorb or collect blood and that can be changed privately as often as necessary for the duration of the menstruation period
Menstrual hygiene practices	These are methods/ ways used by girls to manage their hygiene during menstruation
Menstrual waste disposal methods and practices	It is the process of getting rid of used sanitary pads and other menstrual materials
Social Cultural Factors	Conditions that affect or influence behaviour, attitude and values in society
WASH facilities	Are infrastructure that facilitate water supply, sanitation and hygiene

ABSTRACT

Menstrual hygiene management remains a major challenge in developing countries and is sometimes unaddressed in public places such as schools. Although menstruation is an important part of adolescent girls' lives, if not managed in a dignified and healthy manner, it can result in adverse health effects. Understanding determinants affecting menstrual hygiene management in schools is essential in ensuring that the sanitation conditions do not present difficulty choices for menstruating girls. The objectives of the study were to assess the cultural factors, to examine available WASH facilities and to establish menstrual waste disposal methods and practices that affect menstrual hygiene management among adolescent girls. The study targeted 383 adolescent school girls from Chuka Sub-County. Data was collected using structured questionnaires and analysed using descriptive and inferential statistics. The study was based on voluntary participation. Inadequate knowledge on menstrual hygiene management prior to menstrual onset, behaviour restrictions and the perception of uncleanliness when menstruating affected menstrual hygiene management among the adolescent girls in schools. From this study findings, negative attitude towards menstrual materials (r=0.144, p-value=0.001) and lack of sanitary materials (r=0.752, p-value=0.000) constrained menstrual hygiene management. Findings showed that 49.9% of the adolescent girls accessed limited menstrual disposal facilities and 39.7% reported lack of hand washing facilities in schools. Presence of hygiene facilities in schools had a significant relationship with changing of sanitary towels (r=0.610, p-value=0.000), bathing (r=0.781, p-value=0.008) and washing of hands after menstruation (r=0.419, p-value=0.000). In addition, inadequate menstrual hygiene management facilities such as water, sanitary bins, sanitary towels, private toilets and changing rooms affected menstrual hygiene management in schools. Limited resources for purchasing menstrual hygiene management materials, the shame of being associated with menstruation, the perception of uncleanliness during menstruation and fear of being mocked by boys on staining of cloths and shared toilets constrained menstrual hygiene management in schools. Existence of interaction restrictions with boys during menstruation was a factor which qualified as a menstruation taboo and created a sense of stigma for the menstruating adolescent girls. Failure to make girls aware of menstrual hygiene prior to onset of menstruation reduced their probability of maintaining hygiene on their menarche (r=0.371, p-value=0.000). Availability of soap and water was likely to increase changing of menstrual materials while in school (r=0.313, p-value=0.001) and bathing during menstruation (r=0.507, p-value=0.008). Girls' comfortability with disposal places for menstrual materials affected changing of menstrual materials in schools (r=0.882, p-value=0.000). The study concluded that WASH facilities were not sufficient to meet the needs of menstruating adolescent girls which amplified sanitation and hygiene stresses in schools. It was also concluded that experiences of humiliation in schools during menstruation continue to be invisible which represented the menstruation stigma that girls so silently encountered in schools. A holistic menstrual hygiene response in schools that entails provision of girls friendly WASH facilities, menstrual supplies and appropriate information is needed. The study recommended government support and advocacy on provision of dignified menstrual hygiene management options in schools. As well, there is need for eradicating the stigma associated with menstruation through campaigning against restrictive social cultural values which seem so embedded in the society.

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Menstruation has been defined as the shedding or discharge of blood from vagina of females who are not pregnant on monthly basis for about 3-7 days (UNICEF, 2019). The estimated age for menarche basically ranges from 10-16years and its onset marks a significant and special stage of transition from childhood to womanhood reproductive stage and requires improved hygiene management (Joshi *et al.,* 2015). The importance of menstrual hygiene management and sanitation services has been underpinned in Kenya Vision 2030 which aims at creating a world whereby all girls and women of reproductive age are not held back by a virtue that they menstruate (United Nations, 2015). However, barriers to menstrual hygiene management (MHM) among adolescent girls could hamper progress towards Sustainable Development Goals agenda 4 that aims at ensuring equitable quality education and promoting lifelong learning opportunities for all, agenda 5 that targets promotion of gender equality and empowerment to girls, and 6 that advocates for availability and sustainable management of water and sanitation for all (United Nations, 2015). Although the Sustainable Development Goals act as a pathway to protect and promote the wellbeing of women and adolescent girls, achievement of the goals could be affected by poor management of menstruation and menstrual hygiene particularly in schools.

Menstrual hygiene management remains a major challenge in developing countries and is sometimes unaddressed in public places such as schools (Kaur *et al.,* 2018). Although menstruation is an important part of adolescent girls' lives, if not managed in a dignified and healthy manner, it could result in adverse health effects along with bad smelly odour which could lead to extreme shame thus infringement of girls' dignity (Joshi *et al.,* 2015). To ensure high menstrual hygiene in schools, it is important to maintain an environment which supports

dignified menstrual hygiene management. It is therefore necessary that schools ensure availability of quality sanitary products, regular supply of clean water for hygiene and provision facilities for menstrual hygiene management (Sommer *et al*., 2016). In addition, unless adolescent girls acquire the desired knowledge, menstruation to them could seem a burden especially when in a society that does not recognize menstruation as a natural and a normal phenomenon.

Globally, about 52% of the population is composed of females among which, 26% are women of reproductive age (House *et al*., 2013). Given that menstruation is a compulsory stage for adolescent girls, menstrual hygiene therefore becomes an essential part of basic hygiene practices (House *et al*., 2013). However, a report by UNICEF (2019) indicated that about 1.8 billion women and girls menstruate for about 3- 7 days in a monthly interval and millions of them lack the freedom to manage their menses and menstrual cycles in a stately, private and healthy manner. Inadequate menstrual hygiene management could potentially result in health consequences including increased Urinary Tract Infections. A study by Alam *et al.* (2017) that examined menstrual hygiene management in schools highlighted that adolescent girls in schools of developing countries encounter difficult choices in the management of menstrual hygiene due to limited resources and inadequate sanitation and hygiene options.

The Ministry of Public Health and Sanitation and the Ministry of Education recommends a ratio of 1:30 and 1:25 toilets for boys and for girls respectively (MoE.,2008). However, despite menstrual hygiene management (MHM) being acknowledged as a public health issue, some schools still lack adequate facilities for proper management of menstrual periods (Sommer & Sahin, 2013a). A global report by the World Bank (2018) showed that over 500 million females lack access to adequate menstrual hygiene management facilities. In India, a study by Sivakami *et al.* (2019) established that more than 50% of adolescent girls lacked adequate toilet facilities for menstrual management. The study reported that inadequate sanitation facilities to support

menstrual management facilitated increased absenteeism of menstruating girls. In Kenya, a study by Alexander *et al.* (2014) that explored WASH conditions in rural schools established that lack of enough sanitation facilities in schools made 10% of the school going girls to carry home used pads in their bags. As well, the study found out that although toilet facilities were provided in most schools, 77% had no locks and 84% of the toilets were unclean. Inadequate provision of sanitation facilities along with access to toilets which fail to address the special needs of adolescent girls in schools could position girls in difficult situations when menstruating.

Effective Menstrual Hygiene Management (MHM) is essential to meet the basic human rights of adolescent girls around the world irrespective of their economic status. Adolescent girls require adequate supply of sanitary towels each month to ensure comfortable management of menstruation. However, the monthly access and availability of sanitary towels could be costly hence a challenge especially among girls from impoverished backgrounds which could affect their learning in schools. In Ethiopia, a study by Tegegne and Sisay (2014) that analysed MHM in schools found out that due to lack of sanitary pads as a result of their high costs, more than 50% of girls missed school during menstruation. The study reported that girls were reluctant of going to school because they experienced humiliation and teasing from classmates when their uniforms were stained with blood. In Kenya, a study by McMahon *et al*. (2011) found out that girls folded sewed cloths or used old blankets as menstrual absorbent which made school attendance difficulty for the girls during menstruation. Irregular school attendance as a result of menstruation could facilitate increased poor performance among girls in schools (Yadav *et al.*, 2017). Unless adolescent girls are provided with materials for menstrual management, their monthly experience of menstrual flow could keep them vulnerable and at a state of embarrassment especially when they do not have the ability to purchase the menstrual materials. Although menstruation is a natural process, menstruating girls still encounter social cultural restrictions which could be barriers in the menstrual hygiene management path. These

limitations tied to subjective beliefs and taboos, awareness and attitudes could position girls at risk of encountering social stigma during menstruation. In Bangladesh, a study by Alam *et al*. (2017) established that menstruating girls were restricted from going out which contributed to 47% of school absenteeism among girls. The academic performance of girls could be affected by irregular attendance to school. Similar menstruation-related restrictions were identified in Nepal by Thapa and Aro (2021) who found out that menstruating girls were perceived as impure and were secluded from normal habitats to sheds which increased their vulnerability to health consequences. The study further established that failure to observe the taboo attracted curses from supernatural beings and could result in misfortunes. A similar study in Kenya by Mokaya *et al.* (2022) established that 20% of the participants considered menstruation culturally unacceptable. Unless interventions towards improving menstrual hygiene in schools appreciates and addresses the existence of deeply embedded social cultural issues surrounding menstruation, progress towards attainment of the expected high standards of menstrual hygiene in schools may not be realised.

To maintain improved standards of menstrual hygiene in schools, adolescent girls should adopt safe practices and dignified methods of disposing menstrual waste. The Government and non-governmental organizations' efforts have to a greater extent worked to reduce struggles in menstrual hygiene management. This was done through declaring May 28th of every year as a global menstrual hygiene day (World Bank, 2018) which publicly recognizes the right of women and girls to hygienic menstrual management with dignity and without shame or fear. However, menstrual hygiene management methods and practices still remain poor especially among schools in low- and middle-income countries. In Pakistan, a study by Mumtaz *et al*. (2019) found out that menstrual materials were disposed in rivers in fear that men would see them when disposed inside latrine or menstrual bins. Similarly, in India, a study by Eijk *et al*. (2016) that examined menstrual hygiene management among girls established that sanitary pads were

disposed in roadsides and lakes due to inadequate menstrual management facilities in schools. Disposal of menstrual materials in water bodies such as rivers and lakes could facilitate the spread of water-borne diseases.

Adolescent girls belong to a vulnerable group of population and if menstrual hygiene is not properly addressed, their dignity and health are compromised leading to adverse health issues. Hygiene for menstruating girls is often unaddressed in public places which presents a dilemma to the girls on ways of handling menstruation. Poor disposal solutions has continually led to negative health outcomes through delayed sanitary pad changing in schools (Singh, 2017) which could impose stigma, humiliation and shame to the menstruating girls. Failing to address the menstrual needs of adolescent girls is a form of ignorance to the needs of girls which keeps them at risk of vulnerability including absence from schools, poor performance and stress when menstruating (Korir *et al*., 2017). Insufficient facilities for disposing used menstrual materials along with poor knowledge and restrictive values held in different countries promote a sense of inferiority to menstruating adolescent girls. As well, existence of divergent cultural beliefs related to menstruation has a greater impact on menstrual hygiene management practices among girls. However, these cultural values could differ from community to community hence a need to explore cultural issues influencing menstrual hygiene management in African context.

1.2 Problem Statement

The importance of menstrual hygiene and sanitation services is a well-recognized agenda in the Kenya Vision 2030 SDGs (United Nations, 2015) in that it protects and promotes the wellbeing and dignity of women and girls. It is thus important that the affected individuals maintain personal hygiene while menstruating, access adequate menstrual hygiene management facilities and services and have the required knowledge on menstruation and menstrual management. However, a report by World Bank (2018) indicated that more than 500 million females globally lack access to adequate facilities for the management of menstrual hygiene. Adolescent girls in

schools of developing countries, Kenya included, have been reported to encounter difficult choices in the management of menstrual hygiene due to limited resources and inadequate sanitation and hygiene options (McMahon *et al.,* 2011). A study conducted in Kenyan counties, Tharaka Nithi included by Fialkov and Haddad (2017) found out that girls missed schools during menstruation due to difficult situations in schools which hindered safe MHM. The study showed the efficacy and need for programs which supports MHM in schools. Inadequacy of facilities particularly in public places like schools could be a major obstacle to the dignity of school going girls and could facilitate Urinary Tract Infections (UTI) along with school absenteeism.

Although menstruation is a natural process among females of reproductive age, disregard for adolescent girls' menstrual hygiene needs in schools serve to entrench the lower social status of girls (World Bank, 2018). Promotion of menstrual hygiene management in schools is not just a sanitation matter but also an important step in safeguarding dignity and wellbeing of adolescent girls. The topic of menstruation remains under-research particularly in African countries like Kenya due to the stigma and shame associated with unveiling facts about the phenomenon (Eijk *et al*., 2016). It was therefore necessary to examine the determinants affecting menstrual hygiene management among adolescent school girls to address this paucity in research.

1.3 Objectives of the Study

1.3.1 General Objective

To assess the determinants affecting menstrual hygiene management among adolescent school girls in Chuka Sub-County in Tharaka Nithi County.

1.3.2 Specific Objectives

1. To assess the influence of social cultural factors on menstrual hygiene management among adolescent school girls in Chuka Sub-County in Tharaka Nithi County.
2. To examine available WASH facilities affecting menstrual hygiene management among adolescent school girls in Chuka Sub-County in Tharaka Nithi County.

3. To establish menstrual waste disposal methods and practices that affect menstrual hygiene management among adolescent school girls in Chuka Sub-County in Tharaka Nithi County.

1.4 Research Questions

1. What is the influence of social cultural factors on menstrual hygiene management among adolescent school girls in Chuka Sub County in Tharaka Nithi County?
2. What are the available WASH facilities that affect menstrual hygiene management among adolescent school girls in Chuka Sub County in Tharaka Nithi County?
3. Which menstrual waste disposal methods and practices affect menstrual hygiene management among adolescent school girls in Chuka Sub County in Tharaka Nithi County?

1.5 Justification of the Study

Addressing menstrual hygiene management will greatly contribute to SDGs 3, 4, 5, 6, 12 for promotion and protection of adolescent girls. The study would provide insight to policy implementers on developing intervention programs or agendas to boost menstrual hygiene management in schools. The findings of the study may also contribute to formulation of code of ethics for adolescent school girls. The study will also serve as a baseline for further researchers undertaking a similar study in future.

1.6 Scope of the Study

The study was carried out in Chuka Sub-County in Tharaka Nithi County. It was limited to adolescent school girls aged between 10-19 years. The study basically concentrated with the secondary school girls and sought to assess determinants affecting menstrual hygiene management among adolescent school girls in Chuka Sub-County in Tharaka Nithi County. The study was carried out from December 2021 to March 2022.

1.7 Limitations of the Study

There was low transparency by the study respondents in answering the questions. Poor time management factor also limited the study where the respondents took a lot of time to fill in the questionnaires. Since the study was being carried out in schools and during end of exams period, the researcher had to revisit the schools on several occasions to at least fit on the study respondents' time schedule.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter comprises the previous reports by different authors and scholars on menstrual hygiene management among adolescent school girls under the following thematic areas; menstrual hygiene management, social cultural factors, availability of WASH facilities and menstrual waste disposal and practices. Consequently, it also covers theoretical framework for the study.

2.2 Adolescence and Menstrual Hygiene Management (MHM) Challenges of Kenyan Girl

Adolescents as defined by UNICEF (2019) are young people between the ages 10- 19 years who transition from childhood to adult life. Adolescents are the major developing building blocks of the world's population as 16% of the population, which represents 1.2 billion people comprise of adolescents (UNICEF. 2019). Despite adolescence being an important stage in girls' lives, it is greatly overlooked especially in public places including in schools (World Bank, 2018). Ignorance of the menstrual hygiene needs of adolescent girls in schools could have a negative implication on their health and the health of the public. In Kenya, a study by Alexander *et al*. (2014) found out increased prevalence of Reproductive Tract Infections (RTIs) among school girls as a result of poor menstrual hygiene management in schools. Inadequate or poor WASH facilities in schools have been a problem to Kenyan school girls as latrines provided in schools lack lockable doors, do not offer privacy and are not gender sensitive (Alexander *et al*., 2014).This represents an ignored form of inequity in schools and disregard to girls' needs which could lead to marginalization of the girls in schools.

Menstrual hygiene management (MHM) is a health concern that affect adolescent girls and women of reproductive age in the world. Adolescent girls comprise a great percentage of the population, and this transition period of menstruation is sometimes met with both fear, anxiety,

unpreparedness and is more often a period of shame (Sommer & Sahin, 2013a). The Sustainable Development Goals were adopted in 2015 to replace the eight millennium development goals (MDGs) that had not been achieved by many states or countries (UN, 2015). Although world leaders are committed to progressing towards the attainment of the goals, the world does not ensure justice and equality when proving sanitation options (Chothe *et al.*, 2014). Menstruation, which is a biological process and an important stage in girl's life should be well handled else hygiene of adolescent school girls be compromised.

2.3 Influence of Social Cultural Factors on Menstrual Hygiene Management

Menstrual hygiene management is faced with many restrictions which act as barriers in managing menstruation. A study by Kaur *et al*. (2018) reported that due to the perception that menstruation was polluting, girls were restricted from performing work activities, worshiping and bathing. Similarly, in Nepal, a study by Yadav *et al*. (2017) that explored attitude and practice on menstrual hygiene management reported that although menstruation was inevitable, more than 50% of female respondents were not allowed to participate in religious and cultural functions. The study indicated that menstruating girls had separate rooms where they stayed during menstruation. Restrictions on certain practices due to this natural process could lower dignity of menstruating girls and affect school attendance. In Bangladesh, a study by Alam *et al*. (2017) that examined risk factors for school absence found out that rules that restricted girls from going out during menstruation contributed to school absenteeism among 47% of girls. Missing schools could affect the academic performance of girls. This study sought to find out existence of restrictions on menstrual hygiene management in schools of the study area.

Existence of deep-rooted taboos in different countries related to menstruation has been related with constraining menstrual hygiene management. A study by Kaur *et al*. (2018) that reviewed challenges of menstrual hygiene management in developing countries reported that although menstrual cloths were supposed to be washed and dried in sunlight, it was a taboo to expose the

cloths as they could attract curses. It was also believed that menstrual blood could be used for black magic which created a dilemma on the best ways of managing menstruation. In Nepal, a study by Thapa and Aro (2021) that examined taboos related to menstruation found out that menstruation was considered a form of impurity and women were banished to reside in sheds which amplified their vulnerability to health consequences. The study showed that failure to observe these taboos attracted curses from gods and could cause misfortunes. The practices could however be challenging to fundamental human rights and basic ethical issues especially on adolescent school girls. Although culture should be respected, some taboos could pressurize girls to a point of straining in menstrual hygiene management. The fact that different cultures could have different taboos related to menstruation warranted this study.

Imparting knowledge to school girls on menstrual hygiene has been associated with boosting girls' understanding of the protocol for handling periods thus creating a positive attitude towards menstruation. A study by Hennegan *et al*. (2016) that explored the role of menstrual management interventions in low- and middle-income countries established that trials of education and awareness creation had a positive influence on menstrual knowledge and practices. From the study, increased knowledge on menstrual management facilitated improved hygiene, increased self-efficacy and reduced anxiety during menstruation. Improved hygiene during menstruation could lower girls' risks to infections.

Although menstruation is part of life for adolescent girls, encountering it unprepared could cause confusion, fear and embarrassment. In Zambia, a study by Chinyama *et al.* (2019) found out that girls did not understand why they received menstruation because they were not informed about its physiological basis prior to their first menstrual experience. As a result, girls reported teasing from boys due to menstrual leakage and staining of clothes. Had the girls been informed on the menstrual hygiene management, they would have understood the right interval and frequency for changing pads to avoid leakage. According to Alam *et al*. (2017) the school curriculum fails

to provide an opportunity for constructive activities and discussions on healthy menstrual practices. It is therefore uncertain whether there exist concerted efforts by teachers to ensure that girls in schools have the right information on menstruation which this study sought to find out.

In schools, it would be essential for adolescent girls to have supportive environment during menstruation to ensure comfortability in school. However, in many instances, school girls lack appropriate menstrual hygiene management materials. In Pakistan, a study by Wasan *et al*. (2022) that explored predictors and practices of menstrual material use among adolescent girls reported that despite menstrual hygiene management materials being a crucial aspect in prevention of reproductive tract infections, 75% of the respondents did not use the appropriate materials for menstrual hygiene management. The study indicated that 61.9% of the respondents used old cloths as a result of high cost to acquire the sanitary pads. Similarly, in Bangladesh, a study by Ha *et al.* (2022) that examined menstrual hygiene management practices among adolescent school girls found out that due to lack of sanitary towels, 66.2% of the girls used old clothes and 28.4% borrowed sanitary towels. Unless adolescent girls observe strict hygiene measures on materials used during menstruation, including proper washing and drying in the sun, they may end up acquiring urinary tract infections. Perhaps, the provision of menstrual materials in schools could facilitate good hygiene practices especially to the poor girls.

2.4 WASH Facilities Affecting Menstrual Hygiene Management in Schools

Provision of sanitation facilities that are safe, adequate and maintain privacy is essential to promote proper menstrual hygiene management in schools. However, despite efforts by government to address girls' challenges in schools, adolescent girls especially those in developing countries lack adequate and dignified facilities for menstrual hygiene management. In Zambia, a study by Chinyama *et al*. (2019) found out that although there were toilets provided, lack of privacy and maintenance in the toilets presented difficult choices for menstrual hygiene management by adolescent girls. The study showed that the available toilets lacked doors and

locks and had faeces and urine on the floor which made girls avoid changing menstrual materials while in school. Similarly, in Kenya, a study by Girod *et al*. (2019) that examined girls' inequities in schools established that due to the unavailability of privacy non-guaranteeing toilet superstructures, girls had security concerns of boys peeping through the door vents when changing pads. The same study found out that girls avoided such toilets in fear of sexual harassment from boys. Provision of toilets in schools that do not meet the safety concerns of girls represents an ignored form of discrimination which need to be addressed to alleviate girls suffering in schools.

Lack of adequate sanitary materials could leave adolescent school girls with limited options for personal hygiene during their menses. In India, a study by Eijk *et al*. (2016) that explored menstrual hygiene management among adolescent girls established that inadequate resources for purchasing menstrual hygiene management materials was the main reason for using clothes rather than the pads. Similarly, while exploring MHM among school girls in low- and middle-income countries, a study by Phillips-Howard *et al*. (2016) established that adolescent girls who could not afford quality menstrual hygiene materials engaged in transactional sex to obtain money for the purchase of sanitary towels. Interventions should focus on supply of adequate menstrual hygiene management materials in schools to promote hygiene of menstruating adolescent girls.

Problems experienced by girls in school could be exacerbated by insufficient access to water for both bathing and cleaning genitalia which could facilitate absenteeism. In Pakistan, a study by Micheal *et al*. (2020) that examined practices of adolescent females on menstruation and menstrual hygiene found out that 40% of school girls missed school as a result of water scarcity in schools, which constrained bathing and cleaning of genitalia and made girls to prefer staying at home to manage their menstruation. Besides, in Uganda, a study by Miiro *et al*. (2018) found out that among the challenges faced by menstruating girls in school was absence of water. A

similar study in India by Vashisht *et al*. (2018) established that inadequate water in schools was a major impediment to girls' hygiene especially during menstruation. Failure to provide water in schools could mean unsupportive environment for girls in school during menstruation.

Provision of handwashing facilities that are functional with running water and soap is important in the management of menstruation by school girls. Despite efforts to minimize adolescent infections in school, schools still lack functional hand washing facilities. In Pakistan, a study by Mumtaz *et al*. (2019) found out that although wash basins and taps were provided in schools, they lacked water for hand washing which promoted poor hygiene for menstruating girls. Failure to maintain hand hygiene while menstruating could facilitate sanitation related diseases. In India, a study by Eijk *et al*. (2016) established that girls were discouraged from bathing in schools as result of water scarcity. Failure to manage hygiene during menstruation could predispose girls to dangers of reproductive tract infections. Similarly, in Tanzania, a study by Guya *et al*. (2014) that examined menstrual hygiene management in schools found out that as result of non-functional handwashing facilities, adolescent girls in schools did not wash hands in school after menstruation. Failure to wash hands could facilitate spread of diseases among toilet users.

2.5 Menstrual Waste Disposal Methods and Practice.

Disposal of menstrual hygiene materials in appropriate and safe manner is not only of great importance in improving health and wellbeing of adolescent school girls but also promotes the health of the surrounding population. However, according to Kaur *et al.* (2018) many countries only embrace methods of urine and fecal waste disposal and neglects menstrual waste which leads to poor and inappropriate practices of menstrual waste disposal. In Pakistan, a study by Mumtaz *et al*. (2019) established that girls preferred disposing off their used menstrual materials inside water bodies, such as rivers so that men could not set eyes on them. Disposal of menstrual hygiene management materials in the water bodies could cause drinking water contamination which has an implication to the health of the public when consumed.

Improper disposal of sanitary materials was also noted by Eijk *et al*. (2016) in India who established that girls threw sanitary pads in the open spaces such as lakes, roadsides and rives. Among the reasons for girls' absence from school was lack of menstrual disposal facilities. In Ghana, a study by Rheinlander *et al*. (2018) that analysed school girls' sanitation experiences and menstrual hygiene management established that although toilets were provided, school girls disposed sanitary towels in bushes, under rocks, refuse piles or carried home for burning as a result of lack of sanitary bins in the toilets. The hygiene behaviour of girls during menstruation should therefore not just be perceived as a single behavioural problem but also a coping strategy to the extremely difficult conditions which could deprive them of hygiene.

Inadequate or lack of facilities for menstrual waste disposal in schools amplify girls' struggles in school and increase embarrassment which could contribute to absenteeism from school. In India, a study by Vashisht *et al.* (2018) found out that 40% of girls in secondary schools remained absent from schools when menstruating. The study showed that school absenteeism was significantly associated with lack of dignified facilities to support menstrual hygiene for the girls which increased their fear of menstrual blood leakage and staining of their uniform. Failure to provide options for menstrual hygiene management represents a silent form of discrimination to girls which could affect their academic performance. A study by Alam *et al.* (2017) in Bangladesh that examined the risk factors influencing school absenteeism among adolescent girls found out that 41% of the girls missed school on average 2.8 days per menstrual cycle. The study reported that adolescent school girls who felt uncomfortable with the menstrual hygiene management options in schools were likely to miss school which affected their academic performance. Provision of stately and acceptable menstrual management options in schools appears to be a more promising strategy of enhancing girls' school attendance as well as promoting their performance.

2.6 Theoretical Framework

Bronfenbrenner (1974) developed the ecological theory, which states that people encounter diverse environmental factors that influence their behavior at different degrees. The ecological theory offers a framework through which the community can explore the relationship between the individual and their environment. The theory has five stages which include individual, interpersonal, organizational, community, and public policy. The stages represent the factors that affect the school going girls in maintaining MHM. The concept of this theory urges that child development is affected by multiple or many layers of interacting influences, which are important for exploring the impact of environment on adolescents, their family or community. They are consistent with this study because both internal and external factors within an individual affect MHM and can put individuals at risk leading to poor hygiene during menstruation. The study focuses on assessing determinants affecting MHM. The determinants could be from the external or internal environment, which includes menstrual hygiene practices, availability of WASH facilities and menstrual waste disposal methods and practices. According to ecological theory, individuals encounter different environment in their lifestyle which affect the way they behave. The same case applies to factors affecting the management of hygiene when menstruating. The environment provides factors such as socio-demographic characteristics, menstrual hygiene practices, WASH facilities and menstrual waste disposal methods and practices which determine MHM.

2.7 Conceptual Framework

The dependent variable of this study was menstrual hygiene management among the adolescent school girls in Chuka Sub County in Tharaka Nithi County aged 10- 19 years. The independent variables were the determinants affecting menstrual hygiene management. The study was guided by the following independents variables: social cultural factors which included knowledge, attitudes, taboos and restrictions and availability and cost of sanitary materials and options for

MHM management. As well, other variables included availability of WASH facilities like clean adequate water, sanitation and hygiene. Menstrual waste disposal methods and practices was another variable which addressed menstrual waste disposal pathways, disposal behaviours and comfortability with disposal places.

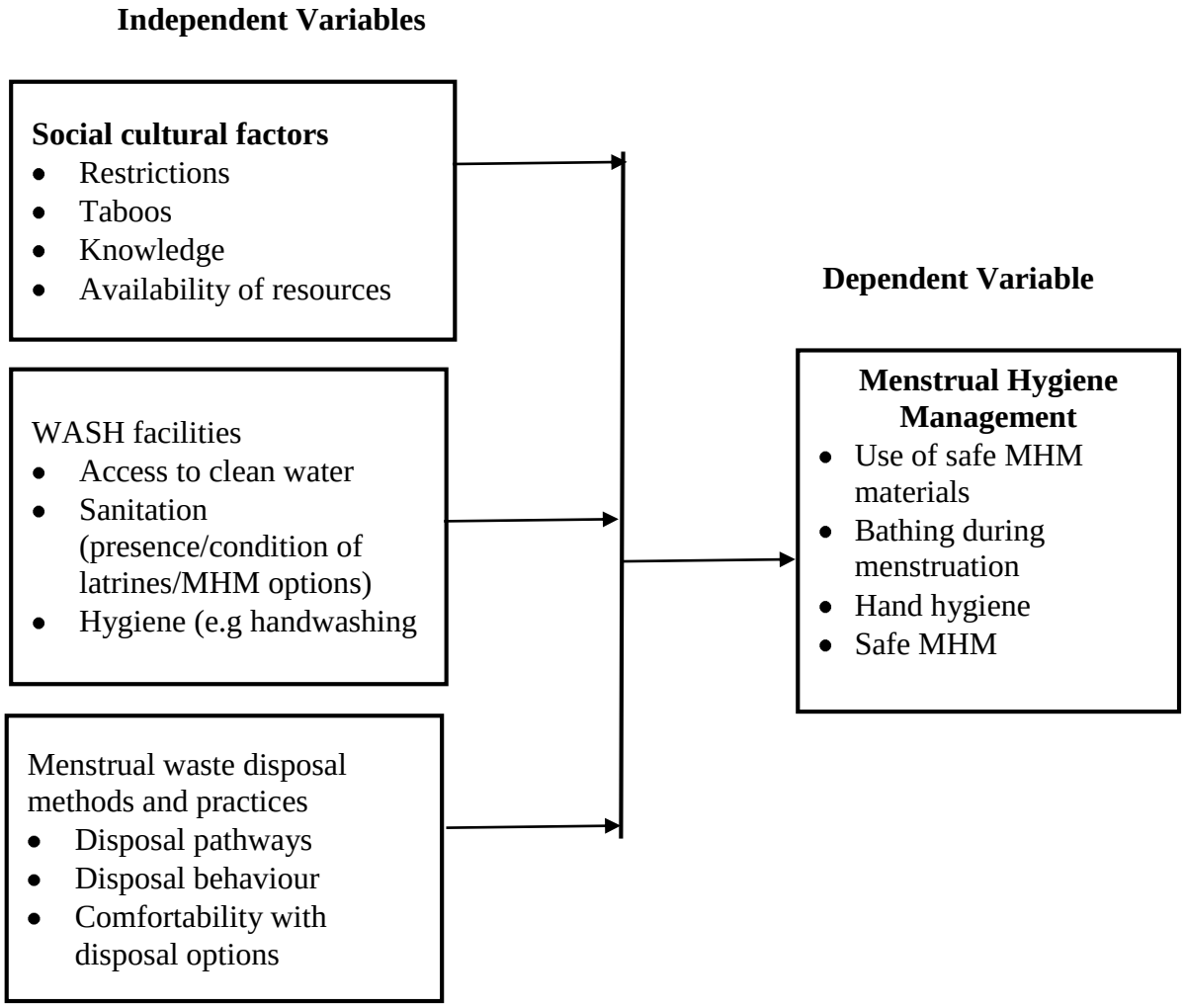

Figure 2. 1 Conceptual framework

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter focused on the procedures and methods that were applied in the study to satisfy the three objectives for the study. The chapter included study design and approach, the study area, study population, sample size determination, sampling techniques and sampling procedure, data collection tools and procedure, data analysis and management, eligibility criteria, pretesting and pre visit and ethical consideration.

3.2 Study Design

The study utilized a cross sectional descriptive design with quantitative approach to assess the determinants affecting menstrual hygiene management among adolescent school girls in Chuka Sub County in Tharaka Nithi County. This type of design entailed a study in which a particular condition and their potentially related factors are measured at a specific point in time for a defined population. The design was ideal for this study as data was only collected at one point in time and also allowed for descriptive analysis to ascertain the determinants that affected MHM in schools.

3.3 Study Area

The study was conducted in Chuka Sub-County in Tharaka Nithi County. Chuka Sub-County is one of the five Sub-Counties of Tharaka Nithi County. According to the national census, the county has a total population of 393,177 persons comprising of 199,406 females, 193,764 males and 7 are intersex persons (KNBS, 2019). Chuka Sub County has a total population of 91,080 people where 23,750 are women of reproductive age of which 9,210 are adolescent girls (KNBS 2019). The main economic activity in the area is agricultural farming and livestock keeping.

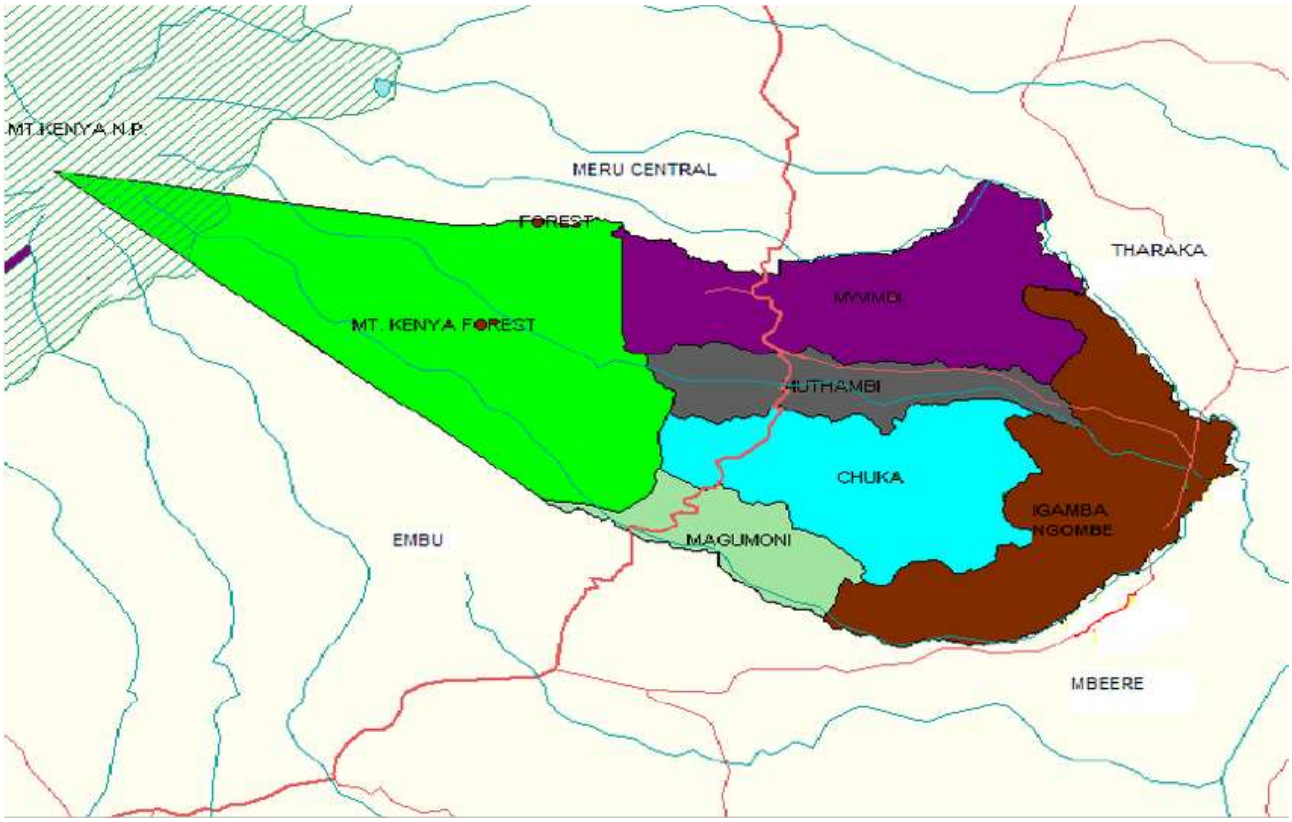

Figure 3. 1 Map of Chuka Sub-County

3.4 Study Population

The study population was adolescent school girls aged 10-19 years in Chuka Sub-County mainly in secondary schools. According to the national census data, the Sub-County has a total of 9,210 adolescent girls (KNBS, 2019).

3.5 Eligibility Criteria

3.5.1 Inclusion Criteria

The researcher included all the menstruating adolescent school going girls who were at school during the data collection period, girls whose parents or guardians consented for them to participate in the study and the adolescent girls who voluntarily agreed to participate in the study.

3.5.2 Exclusion Criteria

The researcher excluded from the study all the adolescent girls who had no yet started menarche, girls who were absent during the day of data collection, girls who did not have parental consent and the girls who declined to participate in the study.

3.6 Sample Size Determination

It was necessary for the researcher to establish a representative number from the whole population. The sample used for the study was calculated using Slovin's formula. (Slovin's, 1960)

The computation was as follows:

$n= N/ (1+Ne^2)$

Where

n= Sample size

N= total population

e= error margin/ margin of error (0.05)

$n= 9210(1+9210 \times 0.05 \times 0.05)$

$n= 9210 (1+ \{9210 \times 0.0025\})$

n= 9210(1+23.025)

9210(24.025) =383.35 adolescent girls.

Therefore, **383 adolescent girls** were sampled to participate in the study.

3.7 Sampling Techniques

Cluster sampling was used in sub-dividing Chuka Sub-County into its five wards namely Igamba Ng'ombe, Karingani, Magumoni, Mariani and Mugwe. Simple random sampling technique was

used to select schools from the Wards. Respondents who were adolescent school girls were selected from the schools in each Ward using proportionate simple random sampling technique. The number of girls to participate per ward depended on the number of schools per ward where the higher the number of schools in a ward the higher the sample targeted. This was obtained from the ratio of school per Ward to the total number of schools in the Sub-County multiplied by intended sample size as illustrated in Table 3.1.

Table 3. 1 Sampled girls per ward

Ward	Number of Schools	Number of Girls Targeted
Igamba Ng'ombe	7	47
Karingani	12	81
Magumoni	20	134
Mariani	8	54
Mugwe	10	67
Total	57	383

Source: KNBS (2019)

3.8 Source of Data

The major source of data collected was primary data obtained from questionnaires which were distributed to adolescent girls aged 10- 19 years from schools in Chuka Sub-County in Tharaka Nithi County. The other source of data was secondary data which was obtained from literature review from the previous studies, articles and journals.

3.9 Data Collection Instruments and Procedures

The study used structured questionnaires for data collection (*Appendix III: Questionnaire*). The instrument consisted of five components which included: demographic information, menstrual hygiene management, social cultural factors affecting MHM, WASH facilities and menstrual waste disposal methods and practices. The questionnaires were self-administered to adolescent girls in schools who were the study respondents. The researcher trained the research assistants to assist in administration of the questionnaires. The research assistants were either school nurses

or the counselling teacher from each school who had integrity and would keep respondent's information confidential.

Informed consent was obtained from parents or guardians of the sampled girls. For the adolescent girls in boarding secondary schools, consenting was done through a phone call to the parent or guardian of the sampled girls. The researcher got the phone numbers of parents and guardians from the school register through the assistance of the school principal. Telephone calls were made to the parent and guardian to seek informed consent in order for the adolescent girls to participate in the study. The researcher and research assistant read the content of the informed consent form (*Appendix I: Informed consent*) to the parent or guardian, after which they were asked whether they permitted participation of their girls in the study. For those parents or guardians who consented, the research assistant indicated so on the informed consent form. The principal or counselling teacher then signed the informed consent form on behalf of the parent or guardian.

For adolescent girls in day secondary schools, they were issued with the informed consent form to take to their parents or guardians who were to read and sign on consenting. Informed consent forms were then brought back to the researcher or research assistants the following day.

3.10 Pre-Visit

Prior to pretesting, a visit was done to the study area for the researcher to familiarize herself with the study area and to get a prior knowledge and insight of the area and also to acquire authorization for entry to the study area.

3.11 Pretesting of the Data Collection Instruments

It was important to pre-test the research instrument before the actual study to ensure that the instrument was valid and reliable. The research instrument (questionnaire) was pretested in Maara Sub County, by administering 10% of questionnaires to 38 students in 5 schools. This

was done in order to identify any problems with the process of data collection and to determine areas that required improvement and amendments. The selected schools had the same characteristics as those where the study was based. A reliability test using Cronbach's alpha yielded 0.78 which was higher than the threshold (0.7) for instrument reliability (Creswel, 2013), denoting that the instrument was reliable.

3.12 Data Analysis and Management

The questionnaires containing data from the schools were coded and cleaned to check for errors and any omissions to ensure that quality data was presented and analysed. Coding was done by assigning numerical numbers to a response on each question to facilitate data entry and analysis. Data was then entered into Statistical Package for Social Sciences (SPSS) version 26 software. Descriptive and inferential statistics were used for data analysis. The study findings were presented in tables.

The questionnaires were filed in a box file then locked in a cabinet for security purposes where only the principal investigator would be the custodian of the cabinet keys. Data stored in online platforms like computers and tablets, was password protected to ensure confidentiality and to ensure that the data was not tampered with. The raw data and coded data would be stored for a period of one year or the period of study. After completion of this period, the physical questionnaires and consent forms containing the raw data would be destroyed by burning them. The findings of the study were kept for future use and publication.

3.13 Ethical Consideration

Approval to conduct research was sought from Meru University of Science and Technology Institutional Research and Ethics Review Committee (MIRERC) (*Appendix IV*). In addition, permission to conduct research was sought from Chuka Sub-County Education office. (*Appendix II: Letter seeking permission*) because the study was conducted in the secondary schools in the

area. Permission to engage girls in the study was also sought from the school principals of the sampled schools.

The researcher obtained informed consent from the parents or guardian of the sampled adolescent girls (*Appendix I: Informed consent*). For the day secondary schools', the adolescent girls were given a consent form to go home with it, for the parent to read and sign. The principal investigator or research assistants made phone calls to the parents of the adolescent girls in boarding schools and read to them the content of the informed consent form (*Appendix I: Informed consent form*) for them to consent for their girls. Where consent was granted, the researcher or research assistant indicated so on the informed consent form after which the principal or counselling teacher signed the form on behalf of the parent or guardian.

Confidentiality and privacy were assured by ensuring that girls filled in the questionnaires in a private setting. Anonymity was also maintained by ensuring that no name, admission number or any other identifying data were solicited on the questionnaire. Questionnaires containing raw data were stored in a lockable cabinet while soft copy data was password protected to ensure that no unauthorized persons had access. Respondents had liberty to withdraw from the study at any time.

CHAPTER FOUR

RESULTS

4.0 Introduction

The chapter presents the findings of the study as per the data collected from the field. The findings are presented per the study objectives. The study was guided by the following objectives; To assess the influence of social cultural factors on menstrual hygiene management among adolescent school girls, to examine available WASH facilities affecting menstrual hygiene management among adolescent school girls and to establish the influence of menstrual waste disposal methods and practices on menstrual hygiene management among adolescent school girls. The results obtained are presented in below.

4.1 Response Rate

The researcher targeted to obtain data from 383 adolescent school girls in Chuka Sub-County. However, due to refusal of respondents to participate and questionnaire attrition, 310 questionnaires were fully filled which represented a response rate of 80.9% as shown in Table 4.1. According to Mugenda and Mugenda (2003), a response rate of 70% and above is considered adequate to generate reliable data for analysis and therefore the data obtained for this study was reliable.

Table 4. 1 Response rate

Response rate	Frequency	Percent	Valid Percent
Returned	310	80.9	80.9
Unreturned	30	7.8	7.8
Incomplete	43	11.3	11.3
Total	383	100.0	100.0

4.2 Demographic Information

The demographic profile provides information about the population characteristics and helps create a mental picture of the sub groups that exist in the overall population. This section presents respondents' characteristics in terms of age, age at first menarche, cohabitants and religion.

4.2.1 Age of the Respondents

The study sought to establish the age of the respondents. The study established that most of the adolescent girls (68.1%, n=211) were aged above 14 years and only 31.9% (n=99) of the respondents had 14 years and below as shown in Table 4.2.

Table 4. 2 Age of respondents

Age	Frequency	Percent	Valid Percent
14 years and below	99	31.9	31.9
>14 years (above 14 years)	211	68.1	68.1
Total	310	100.0	100.0

4.2.2 Level of Study of the Respondents

The study further sought to establish the classes that the respondents were in. As presented in Table 4.3, the study established that 24.5% (n= 76) of the girls were in form one, 19.4% (n= 60) of the respondents were in form two, 30.0% (n=93) of the respondents were in form three while 26.1% (n=81) of the respondents were in form four.

Table 4. 3 Class of the respondents

Class	Frequency	Percent	Valid Percent
Form 1	76	24.5	24.5
Form 2	60	19.4	19.4
Form 3	93	30.0	30.0
Form 4	81	26.1	26.1
Total	310	100.0	100.0

4.2.3 Age at First Menstruation (Menarche)

Adolescent girls were asked to indicate the specific age they had received their first periods. From the findings shown in Table 4.4, 13.2% (n=41) of the respondents had received their first periods at the age of less than 10 years and 50.3% (n=156) of the respondents had received their first periods between the age of 10-12 years. The study also established that 36.5% (n=113) of the adolescent girls had experienced their first menstruation at the age of 13 years and above.

Table 4. 4 Age at menarche

Age at Menarche	Frequency	Percent	Valid Percent
Less than 10 years	41	13.2	13.2
10-12 years	156	50.3	50.3
13 years and above	113	36.5	36.5
Total	310	100.0	100.0

4.2.4 Respondents' Cohabitants

Participants were requested to indicate the people they resided with at home. From Table 4.5, many (52.3%, n=162) adolescent girls lived with their parents, 21.0% (n=65) lived with guardians, 11.9% (n=37) resided with their siblings, 11.6% (n=36) lived with other relatives and only 3.2% (n=10) of the respondents lived alone.

Table 4. 5 Family cohabitants

Family Cohabitants	Frequency	Percent	Valid Percent
Parent/ parents	162	52.3	52.3
Guardian	65	21.0	21.0
Siblings	37	11.9	11.9
Other relatives	36	11.6	11.6
None	10	3.2	3.2
Total	310	100.0	100.0

4.2.5 Religion of the Respondents

The study further sought to establish the religion that the respondents belonged to and results were as shown in Table 4.6. It was established that 82.9% (n=257) of the respondents were Christians, 11.3% (n=35) were Muslims while 5.8% (n=18) did not belong to any religion.

Table 4. 6 Religion of respondents

Religion	Frequency	Percent	Valid Percent
Christianity	257	82.9	82.9
Muslim	35	11.3	11.3
Hindu	0	0	0
None	18	5.8	5.8
Total	310	100.0	100.0

4.3 Menstrual Hygiene Management

The study examined menstrual hygiene management among school girls in Chuka Sub- County in Tharaka Nithi County. It explored the materials used for menstrual hygiene management, hygiene during menstruation in terms of changing of pads, handwashing and bathing while in school.

4.3.1 Menstrual Hygiene Management Materials

The type of materials used by adolescent girls during menstruation were as illustrated in Table 4.7. When asked the type of materials they used during menstruation, 55.8% (n=173) of adolescent girls indicated sanitary towels (pads), 19.4% (n=60) used cloths, 13.2% (41) used both pads and cloths, while 8.7% (n=27) used cotton wool. It was difficult for 2.9% (n=9) of the girls to disclose the type of materials they used.

Table 4. 7 Materials used during menstruation

Menstrual Materials	Frequency	Percent	Valid Percent
Pad	173	55.8	55.8
Cloth	60	19.4	19.4
Cotton wool	27	8.7	8.7
Pad and cloth	41	13.2	13.2
Not disclosed	9	2.9	2.9
Total	310	100.0	100.0

4.3.2 Changing Menstrual Materials

The study also aimed at finding out whether girls changed menstrual materials and the frequency of changing menstrual materials. Respondents were asked to indicate the frequency of changing menstrual materials while at school. From the results in Table 4.8, 22.3% (n=69) of the adolescent girls changed the materials once per day, 27.4% (n=85) of the girls changed twice per day while 24.2% (n=75) of the girls changed severally. However, the findings also indicated that 26.1% (n=81) of the adolescent girls did not change menstrual materials while at school.

Table 4. 8 Frequency of Changing Menstrual Materials

Changing of Menstrual Materials	Frequency	Percent	Valid Percent
Once per day	69	22.3	22.3
Twice a day	85	27.4	27.4
Severally	75	24.2	24.2
I don't change at all	81	26.1	26.1
Total	310	100.0	100.0

4.3.3 Hand Hygiene

The researcher aimed at finding out whether adolescent girls washed hands after changing menstrual materials while at school. From the findings in Table 4.9, most of the girls (60.3%, n=187) practiced hand hygiene after handling menstrual materials while 39.7% (n=123) of the girls did not wash their hands after handling menstrual materials.

Table 4. 9 Hand washing

Hand Washing	Frequency	Percent	Valid Percent
Yes	187	60.3	60.3
No	123	39.7	39.7
Total	310	100.0	100.0

4.3.4 Bathing during menstruation

The researcher sought to find out whether the respondents bathed during menstruation, the frequency of bathing and what influenced bathing during menstruation. The findings in Table 4.10 show that 22.9% (n=71) of the adolescent girls bathed one time in a day, 26.5% (n=82) of the girls bathed two times a day, 10.6% (n=33) indicated that they bathed three times in a day. In addition, 40% (n=124) of the respondents reported that they did not bath at all during menstruation while in school. Respondents argued that they failed to bath after menstruation due to the absence of facilities (washrooms) to support bathing, tight schedules in schools, shame, lack of water and soap and also lack of disposal sites for pads near the bathing areas as illustrated in Table 4.10.

Table 4. 10 Frequency of bathing

a) Bathing during Menstruation	Frequency	Percent	Valid Percent
One time a day	71	22.9	22.9
Two times a day	82	26.5	26.5
Three times and above	33	10.6	10.6
I don't bath at all	124	40.0	40.0
Total	310	100.0	100.0
b)Factors affecting bathing during menstruation			
Absence of washrooms to support bathing	30	24.2	24.2
Tight schedules in schools	21	17.0	17.0
Shame	28	22.6	22.6
Lack of water and soap	22	17.7	17.7
Lack of disposal sites for pads near the bathing area	23	18.5	18.5
Total	124	100.0	100.0

4.4 Social Cultural Determinants of Menstrual Hygiene Management

This study aimed at examining the influence of social cultural factors such as knowledge, attitudes, restrictions and materials availability on menstrual hygiene management among adolescent girls in schools.

4.4.1 Influence of Knowledge on Menstrual Hygiene Management

4.4.2 Perception about Menstruation

Aiming at establishing girls' understanding and perception about menstruation, girls in schools were requested to describe menstruation. As indicated in Table 4.11, 45.8% (n=142) of the girls understood menstruation as a biological process, 14.2% (n=44) perceived menstruation as a curse to girls, 25.8% (n=80) thought that menstruation was a female illness and 11% (n=34) viewed menstruation as a sign of being impure. Only 3.2% (n=10) indicated a lack of idea on what menstruation was.

Table 4. 11 Perception about Menstruation

Menstruation Perception	Frequency	Percent	Valid Percent
A biological process	142	45.8	45.8
A curse to girls	44	14.2	14.2
Female illness	80	25.8	25.8
A sign of being impure	34	11	11
No idea	10	3.2	3.2
Total	310	100.0	100.0

4.4.3 Menstrual Hygiene Management Education Sessions in Schools

Adolescent girls were asked whether there were any education sessions conducted in schools about menstrual hygiene management as presented in Table 4.12. It was established that although majority of the schools (67.7%, n=210) enlightened girls on menstrual hygiene management, other schools (32.3%, n=100) did not conduct educational sessions on menstrual hygiene management.

Table 4. 12 Menstrual hygiene management education sessions in schools

MHM Education Sessions	Frequency	Percent	Valid Percent
Yes	210	67.7	67.7
No	100	32.3	32.3
Total	310	100.0	100.0

4.4.4 Informed about menstrual hygiene management Prior to Menarche and information source

To find out whether adolescent girls had prior knowledge of menstruation before onset, girls were asked to indicate whether they had received any information concerning menstruation before experiencing their first menstruation. From the findings in Table 4.13, 71.3% (n=221) of the girls indicated that they had prior understanding of menstrual hygiene management before its onset while 28.7% (n=89) highlighted a lack of prior knowledge on menstrual hygiene management. Most of the girls 40.3% (n=89) who had prior knowledge about menstruation had received information from teachers, other 32.1% (n=71) had received from parents, 18.1% (n=40) had been informed by friends and 9.5% (n=21) had received from other relatives. The findings showed that majority of the girls were aware of menstruation and hygiene before they received their first periods. Teachers and parents played a great role in enlightening the adolescent girls about MHM before menarche.

Table 4. 13 Girls informed about menstruation prior to menarche and information source

a)Information Prior to Menarche	Frequency	Percent	Valid Percent
Yes	221	71.3	71.3
No	89	28.7	28.7
Total	310	100.0	100.0
b)Source of the information about menstruation before onset			
Teachers	89	40.3	40.3
Parents	71	32.1	32.1
Friends	40	18.1	18.1
Other relatives	21	9.5	9.5
Total	221	100.0	100.0

4.4.5 Knowledge of Commercially Available Pads

Results of the girls' knowledge about the commercially available sanitary pads were as shown. From the findings in Table 4.14, majority (85.2%, n=264) of the girls were aware of the commercially available pads while only 14.8% (n=46) of the girls were unaware of the pads.

Table 4. 14 Knowledge of commercially available pads

Commercial Pads	Frequency	Percent	Valid Percent
Yes	264	85.2	85.2
No	46	14.8	14.8
Total	310	100.0	100.0

4.4.6 Knowledge on Menstrual Hygiene

Adolescent girls' knowledge about hygiene during menstruation was examined as shown in Table 4.15. It was confirmed that 41.9% (n=130) viewed menstrual hygiene as effective management of menstrual bleeding, 30.6% (n=95) of the adolescent girls believed that menstrual hygiene was treating of female disease, 20% (n=62) of the adolescent girls thought that it involved controlling blood during menstruation while 7.5% (n=23) did not have an idea on what menstrual hygiene was. The researcher further sought to confirm whether the school girls knew of the repercussions of poor menstrual hygiene. The findings presented in Table 4.15 show that although majority (76.5%, n=237) of the girls understood the effects of poor menstrual hygiene

on health, 23.8% (n=73) did not acknowledge that poor hygiene during menstruation would facilitate health issues.

Table 4. 15 Knowledge about menstrual hygiene

a)Knowledge on Menstrual Hygiene	Frequency	Percent	Valid Percent
Effective management of menstrual bleeding	130	41.9	41.9
Treating the female disease	95	30.6	30.6
Controlling blood during menstruation	62	20.0	20.0
I don't know	23	7.5	7.5
Total	310	100.0	100.0
b)Understanding of the effects of poor menstrual hygiene and health			
Yes	237	76.5	76.5
No	73	23.5	23.5
Total	310	100.0	100.0

4.4.7 Influence of Girls' Attitude on Menstrual Hygiene Management

This section shows the girls attitudes towards sanitary towels, encounter with stigma during menstruation, menstruation experience while in school and school absenteeism and reasons for missing school during menstruation.

4.4.8 Attitude Regarding Sanitary Towels

The researcher sought to find out the attitude of adolescent girls regarding sanitary towels or on menstrual hygiene management materials. Statements with 'true' and 'false' choices were presented to them to find out how they regarded sanitary towels and the results were as shown in Table 4.16. From the findings, 67.7% (n=210) of the girls felt that wearing sanitary towels was comfortable while 32.3% (n=100) considered sanitary towels uncomfortable to wear. As well, 64.8% (n=201) believed that sanitary towels ensured adequate absorption of blood and the rest (35.2%, n=109) were of the contrary opinion. Regarding staining or leaking, 51.9% (n=161) of the adolescents reported that sanitary towels did not leak blood on users while nearly half of the participants confirmed the ability of sanitary towels of leaking and staining clothes. Most of

the respondents (61%, n=189) indicated that wearing of pads did not cause itching and the rest believed that it did. The cost of purchasing sanitary towels was considered expensive by many girls (69.4%, n=215) and most of the adolescent girls (59.4%, n=184) reported that the materials were not readily available when needed.

Table 4. 16 Girls' Attitude regarding sanitary towels

Sanitary Towels Attitude		Frequency	Percent
Wearing them is comfortable	True	210	67.7
	False	100	32.3
	Total	310	100
Ensure adequate absorption of blood	True	201	64.8
	False	109	35.2
	Total	310	100
Do not stain/ do not leak	True	161	51.9
	False	149	48.1
	Total	310	100
No itching	True	189	61.0
	False	121	39.0
	Total	310	100
Are expensive	True	215	69.4
	False	95	30.6
		310	100
Not available everywhere	True	184	59.4
	False	126	40.6
Total		310	100

4.4.9 Encounter of Stigma during Menstruation

The researcher examined whether girls encountered stigma while at school during menstruation. The results as summarized in Table 4.17, shows that most of the girls (65.8%, n=204) reported having encountered stigma as a result of menstruation and only 34.2% (n=106) had never faced stigma on menstruation.

Table 4. 17 Encounter of stigma during menstruation

Encounter with Stigma	Frequency	Percent	Valid Percent
Yes	204	65.8	65.8
No	106	34.2	34.2
Total	310	100.0	100.0

4.4.10 Menstruation Experience in School

Girls' experiences in school during menstruation was sought and indicated in Table 4.18. Majority of adolescent girls who had ever encountered menstruation while in school described negative experiences such as fear and confusion (30.6%, n=95), others felt stress (43.9%, n=136) while others felt ashamed and embarrassed (11.3%, n=35).

Table 4. 18 Experience with menstruation while at school

Menstruation Experience	Frequency	Percent	Valid Percent
Excited	40	12.9	12.9
Fear and confusion	95	30.6	30.6
Stressed	136	43.9	43.9
Ashamed and embarrassed	35	11.3	11.3
Never menstruated while in school	4	1.3	1.3
Total	310	100.0	100.0

4.4.11 Missing School during Menstruation

The study sought to find out whether adolescent girls missed school and the reasons for missing school during their menstruation period. From the finding in Table 4.19, majority of the girls 82.6% (n=256) indicated that they missed school while menstruating while only 17.4% (n=54) of the adolescent girls cited they never missed school during menstruation. Among the adolescent girls who missed school, 22% argued that boys would laugh at them if they stained their cloth, 18% indicated that they felt uncomfortable sitting beside boys while menstruating, 17% of the adolescent girls felt embarrassed while menstruating at school, 14% of the girls cited lack of changing rooms for menstrual materials. As well 17% of the girls felt uncomfortable with the places for both changing and disposing menstrual materials while 12% argued that pain during menstruation made them miss school.

Table 4. 19 Missing school during menstruation

a)Missing School during Menstruation	Frequency	Percent	Valid Percent
Yes	256	82.6	82.6
No	54	17.4	17.4
Total	310	100.0	100.0
b)Reasons for missing school			
I feel uncomfortable sitting beside boys during menstruation	46	18	18
Boys would laugh at me when I stain my cloth	56	22	22
Feeling embarrassed at school during menstruation	44	17	17
No place to change menstrual materials	36	14	14
Uncomfortable with places for changing/ disposing menstrual materials (pads)	44	17	17
Pain during menstruation	30	12	12
Total	256	100	100

4.4.12 Influence of Restrictions on Menstrual Hygiene Management

The study further sough to establish the restrictions towards menstrual hygiene management in terms of presence of traditional beliefs, restrictions during menstruation and religious beliefs affecting menstruation.

4.4.13 Presence of Traditional Beliefs

The researcher sought to find out whether there were traditional beliefs that influenced menstrual hygiene management. From the results as presented in Table 4.20, majority (59.7%, n=185) of the adolescent girls acknowledged the presence of traditional beliefs that influenced menstruation management while 40.3% (n=125) of the girls indicated that there were no traditional beliefs attached to menstruation.

Table 4. 20 Presence of traditional beliefs influencing menstruation

Presence of Traditional Beliefs	Frequency	Percent	Valid Percent
Yes	185	59.7	59.7
No	125	40.3	40.3
Total	310	100.0	100.0

4.4.14 Restrictions during Menstruation

The researcher sought to know whether girls were restricted from doing certain activities during menstruation and the forms of restrictions. Adolescent girls were asked whether they were restricted or exempted from doing certain things during their menstruation. From the findings in Table 4.21, majority 65.2% (n=202) of the adolescent girls highlighted that they were restricted from doing certain things while menstruating and 34.8% (n=108) of the girls indicated that there were no restrictions placed on them during menstruation. It was established that 22.6% of the girls who indicated presence of restrictions, reported restrictions from performing religious activities, 25.8% of the girls indicated that they were restricted from interacting with boys while 16.8% were not allowed to go out to places.

Table 4. 21 Restrictions in participating in certain activities

Restrictions	Frequency	Percent	Valid Percent
Yes	202	65.2	65.2
No	108	34.8	34.8
Total	310	100.0	100.0
Restrictions			
Not allowed to perform religious activities	70	22.6	22.6
Not allowed to interact with boys	80	25.8	25.8
Not allowed to go out to places	52	16.8	16.8
No restrictions	108	34.8	34.8
Total	310	100.0	100.0

4.4.15 Religious Beliefs Affecting Menstruation

The study sought to establish whether they were religious beliefs that affects menstrual hygiene. Adolescent girls were requested to indicate whether there were religious beliefs that affected menstrual hygiene management. As presented in Table 4.22, most of the girls (51.9%, n=161) reported existence of religious beliefs attached to menstrual hygiene management while 48.1% (n=149) of the adolescent girls were of the contrary opinion.

Table 4. 22 Religious beliefs for menstruation that affects menstrual hygiene management

Religious Beliefs	Frequency	Percent	Valid Percent
Yes	161	51.9	51.9
No	149	48.1	48.1
Total	310	100.0	100.0

4.4.16 Influence of Availability and cost of menstrual Materials on Menstrual Hygiene Management

The researcher sought to find out the influence of availability of menstrual materials on menstrual hygiene management among adolescent school girls.

4.4.17 Source of Sanitary Materials

As presented in Table 4.23, it was confirmed that 54.5% (n=169) of the girls received the sanitary materials from parents, 11.3% (n=35) indicated that they received them from their teachers, 13.2% (n=41) cited well-wishers, 11.6% (n=36) indicated their friends while 9.4% (n=29) provided sanitary materials for themselves.

Table 4. 23 Source of sanitary material

Source of Sanitary Materials	Frequency	Percent	Valid Percent
Parents	169	54.5	54.5
Teachers	35	11.3	11.3
Well-wishers	41	13.2	13.2
Friends	36	11.6	11.6
Self-support	29	9.4	9.4
Total	310	100.0	100.0

4.4.18 Availability and Quality of Sanitary Towels

The study sought to find out the availability and the quality of sanitary pads used by adolescent girls. When asked to indicate whether menstrual management materials were readily available, from the findings in Table 4.24, 67.4% (n=209) of the adolescent girls confirmed that menstrual materials were readily available while 32.6% (n=101) indicated that the materials were not readily available. Among those who cited availability, 67.5% (n=141) indicated that they were of good quality, 17.7% (n=37) indicated poor quality.

Table 4. 24 Availability and quality of sanitary pads

a)Availability of Sanitary Pads	Frequency	Percent	Valid Percent
Yes	209	67.4	67.4
No	101	32.6	32.6
Total	310	100.0	100.0
b)Quality of sanitary materials			
Good	141	67.5	67.5
Bad	37	17.7	17.7
I don't know	31	14.8	14.8
Total	209	100.0	100.0

4.4.19 Usage and Handling of Reusable Absorbents

To test the usage of reusable sanitary pads, adolescent girls were asked to indicate whether they used menstrual materials which could be recycled after first use. From the findings shown in Table 4.25, majority (74.5%, n=231) of the girls reported using reusable sanitary materials while 25.5% (n=79) of the adolescent girls indicated that they did not use reusable sanitary materials. Among those who used reusable pads, 51.1% (n=113) reported washing them for reuse while 48.9% (n=118) indicated that they discarded them after using.

Table 4. 25 Use of reusable absorbent

a)Use of Reusable Absorbent	Frequency	Percent	Valid Percent
Yes	231	74.5	74.5
No	79	25.5	25.5
Total	310	100.0	100.0
b)Handling of reusable absorbents after use			
Wash	113	48.9	48.9
Discard	118	51.1	51.1
Total	231	100.0	100.0

4.4.20 Provision of Emergency Menstrual Management Materials

The researcher sought to find out whether adolescent girls were provided with menstrual hygiene materials for emergency. From the findings in Table 4.26, 51% (n=158) of the adolescent girls confirmed that their school provided them with menstrual management materials in case of an emergency while 49% (n=152) of the girls indicated that schools did not provide emergency menstrual materials to them.

Table 4. 26 Provision of menstrual management materials for emergency

Provision of Menstrual Materials for Emergency	Frequency	Percent	Valid Percent
Yes	158	51.0	51.0
No	152	49.0	49.0
Total	310	100.0	100.0

4.4.21 Affordability of Sanitary Pads

Adolescent girls' degree of agreement on comfortability to afford sanitary pads was examined and the results shown. From the findings indicated in Table 4.27, 20.3% (n=63) of the girls strongly disagreed that they were comfortable with their or their guardians' ability to afford sanitary pads, 21% (n=65) disagreed, 24.5% (n=76) agreed while 11.3% (n=35) strongly agreed with the statement. A mean of 2.9 showed a pooled disagreement to the statement indicating that the cost for sanitary towels was high for most girls and their guardians.

Table 4. 27 Comfortability to afford sanitary towels

Affordability of Sanitary Towels	Frequency	Percent	Valid Percent	Mean
Strongly disagree	63	20.3	20.3	-
Disagree	65	21.0	21.0	-
Neutral	71	22.9	22.9	-
Agree	76	24.5	24.5	-
Strongly agree	35	11.3	11.3	-
Total	310	100.0	100.0	2.9

4.5 Availability of WASH Facilities Affecting Menstrual Hygiene Management

The researcher sought to examine the influence of availability of WASH facilities on menstrual hygiene among adolescent school girls.

4.5.1 Places for Changing Menstrual Materials

The study aimed at establishing whether girls in schools had places for changing menstrual materials. The findings are as presented in Table 4.28. From the finding, 62.6% (n=194) of the

adolescent girls had changing places for menstrual materials while 37.4% (n=116) of the adolescent girls lacked places for changing menstrual materials.

Table 4. 28 Changing place for menstrual materials

Changing Place for Menstrual Materials	Frequency	Percent	Valid Percent
Yes	194	62.6	62.6
No	116	37.4	37.4
Total	310	100.0	100.0

4.5.2 Level of Satisfaction to the Friendliness of Toilets when Menstruating

The study sought to find out the level of satisfaction to the friendliness of the toilets for girls when menstruating as shown in Table 4.29. Adolescent girls were asked to rate their level of satisfaction to the toilets provided in schools in a five-point scale which ranged from very unsatisfied to very satisfied to find out whether they were friendly for them when menstruating. From the findings shown in Table 4.29, girls' level of satisfaction was as follows; 21.6% (n=67) very unsatisfied 25.8% (n=80) unsatisfied, 27.7% (n=86) neutral, 21.3% (n=66) satisfied, 3.5% (n=11) were very satisfied. A mean of 2.6 implied that majority of the girls were uncomfortable with the toilets provided in schools. The implications of the findings were that lack of comfortability with the available toilets affected menstrual hygiene management in schools.

Table 4. 29 Level of satisfaction to the friendliness of toilets when menstruating

Satisfaction Level	Frequency	Percent	Valid Percent	Mean
Very unsatisfied	67	21.6	21.6	-
Unsatisfied	80	25.8	25.8	-
Neutral	86	27.7	27.7	-
Satisfied	66	21.3	21.3	-
Very satisfied	11	3.5	3.5	-
Total	310	100.0	100.0	2.6

4.5.3 Separate Toilets for Girls and Boys

The researcher aimed at finding out whether the school toilets were separated by gender and why girls would avoid unseparated toilets by gender. From the findings in Table 4.30, 94.6% (n=293) of the adolescent girls confirmed that their school toilets were separated by gender while 5.4% (n=17) of the adolescent girls shared toilets with boys. Among the girls who shared toilets with

boys, 88.2% (n=15) revealed that they avoided using them when menstruating. The reasons for their avoidance included fear that boys could open toilets for them while inside (33.3%, n=5), 40% (n=6) indicated that they feared staining the shared toilet floors with blood and 26.7% (n=4) avoided unseparated toilets by gender because they lacked lockable doors and latches hence offered no privacy.

Table 4. 30 Separate toilets by gender

a)Separate Toilets by Gender	Frequency	Percent	Valid Percent
Yes	293	94.6	94.6
No	17	5.4	5.4
Total	310	100.0	100.0
b)Avoid Usage of non-gender separate toilets			
Yes	15	88.2	88.2
No	2	11.8	11.8
Total	17	100.0	100.0
c)Reasons for avoidance of gender non-separated toilets			
Boys can open the toilet when am inside	5	33.3	33.3
I fear staining the toilet with blood	6	40.0	40.0
Toilets do not have lockable doors/ latches	4	26.7	26.7
Total	15	100.0	100.0

4.5.4 Adequacy of School Toilets

The study sought to establish the level of girls' satisfaction to the adequacy of toilets in schools. As evident in Table 4.31, 14.5% (n=45) of the adolescent girls felt very unsatisfied with the number of the toilets provided to them by the school, 32.9% (n=102) were unsatisfied, 19.4% (n=60) satisfied, 6.5% (n=20) were very satisfied while 26.8% (n=83) had a neutral stand on the adequacy of toilets in schools.

Table 4. 31 Level of satisfaction to number of toilets in school

Satisfaction to Number of Toilets	Frequency	Percent	Valid Percent
Very unsatisfied	45	14.5	14.5
Unsatisfied	102	32.9	32.9
Neutral	83	26.8	26.8
Satisfied	60	19.4	19.4
Very satisfied	20	6.5	6.5
Total	310	100.0	100.0

4.5.5 Availability of Soap and Water for Handwashing

The study sought to establish whether the school always provided soap and water for handwashing during menstruation. From the findings in Table 4.32, it was established that majority 63.5%, n=197) o the adolescent girls were not provided with soap and water for handwashing while only 36.5% (n=113) reported access to soap and water for handwashing while in school.

Table 4. 32 Availability of soap and water for handwashing

Soap and water for Handwashing	Frequency	Percent	Valid Percent
Yes	113	36.5	36.5
No	197	63.5	63.5
Total	310	100.0	100.0

4.5.6 Condition of Toilets

The study sought to find out the condition of the school toilets and to assess whether those condition affected utilization by adolescent girls as presented in Table 4.33. Adolescent school girls were requested to appraise the conditions of the toilets in schools by indicating whether the toilets were good or poor in terms of privacy, maintenance and ability to support menstrual hygiene management. While 69.4% of the girls rated their school toilets privacy as good, 30.6% of the girls rated them as poor. In addition, 52.9% of the girls deemed the toilet maintenance status as good and 47.1% considered maintenance status to be poor. As well, the toilets' ability to support menstrual hygiene management was rated as good by 57.7% while 42.3% qualified the ability as poor.

Table 4. 33 Condition of Toilets

Conditions of Toilets		Frequency	Percent
Toilet privacy	Good	215	69.4
	Poor	95	30.6
	Total	310	100
Maintenance of latrine	Good	164	52.9
	Poor	146	47.1
	Total	310	100
Ability to support menstrual hygiene management	Good	179	57.7
	Poor	131	42.3
	Total	310	100

Whether toilet condition affected utilization		
Yes	220	71.0
No	90	29.0
Total	310	100

4.6 Menstrual Waste Disposal Methods and Practices

This study sought to examine the influence of menstrual waste disposal methods and practices on menstrual hygiene management. This section presents the results on practices for disposing menstrual materials by adolescent girls in schools.

4.6.1 Disposal Facilities for Menstrual Waste

To find out whether adolescent girls practiced safe menstrual waste disposal, adolescent girls were asked to indicate their usual disposal options for menstrual hygiene management materials while in school. From the results in Table 4.34, 43.9% (n=136) of the adolescent girls revealed that they disposed their used menstrual materials inside toilets, 25.8% (n=80) disposed them in sanitary bins provided by the school, 10.3% (n=32) of the girls highlighted burning, 7.4% (n=23) revealed that they kept the used menstrual waste materials inside their bags to dispose at home, 5.5% (n=17) indicated disposal in the open while 7.1% (n=22) of the adolescent girls hid the used menstrual materials inside classrooms and bathrooms.

Table 4. 34 Disposal facilities for menstrual materials

Disposal Facilities for Menstrual Materials	Frequency	Percent	Valid Percent
Inside toilets	136	43.9	43.9
In a sanitary bin provided by the school	80	25.8	25.8
Burning	32	10.3	10.3
Putting inside the bag to dispose at home	23	7.4	7.4
In the open	17	5.5	5.5
Hidden inside classroom/ bathroom	22	7.1	7.1
Total	310	100.0	100.0

4.6.2 Determinants of Menstrual Waste Disposal Options

The study further sought to establish what determinants of the choice of disposal site for the menstrual waste materials. From the findings in Table 4.35, 18.4% (n=57) of the adolescent girls

indicated unavailability of good toilets, 27.7% (n=86) of the girls indicated lack of sanitary bins, 16.1% (n=50) highlighted location of the toilet far from classrooms, 11.3% (n=35) argued of shame of being associated with menstrual materials, 18.7% (n=58) reported lack of a better option.

Table 4. 35 Determinants of menstrual material disposal sites

Determinants of Menstrual Material Disposal Sites	Frequency	Percent	Valid Percent
Unavailability of good toilets	57	18.4	18.4
Lack of sanitary bins	86	27.7	27.7
Location of toilets far from classrooms	50	16.1	16.1
Shame of being associated with pads/ Menstrual materials	35	11.3	11.3
It is the only available option	58	18.7	18.7
None of the above	24	7.7	7.7
Total	310	100.0	100.0

4.6.3 Comfortability with Disposal Options

The comfortability of adolescent girls with the menstrual materials disposal sites was examined. The results were as presented in Table 4.36. As evident in Table 4.36, although most (57.7%, n=179) of the adolescent girls showed comfortability with the available options, 42.3% (n=131) of the school girls expressed a lack of comfortability with the menstrual materials disposal options.

Table 4. 36 Comfortability with menstrual material disposal site

Comfortability with Menstrual Materials Disposal Site	Frequency	Percent	Valid Percent
Yes	179	57.7	57.7
No	131	42.3	42.3
Total	310	100.0	100.0

4.6.4 Adequacy of Disposal Options

The researcher aimed at finding out whether the menstrual disposal options were adequate to meet the needs of all the girls in schools. The results as shown in Table 4.37 indicates that half (50.1%, n=155) of the girls considered the menstrual disposal options adequate to meet their menstrual needs while 49.9% (n=155) of the adolescent girls felt that the options did not adequately meet their menstruation needs.

Table 4. 37 Adequacy of menstrual disposal options

Adequacy of Menstrual Disposal Options	Frequency	Percent	Valid Percent
Yes	155	50.1	50.1
No	155	49.9	49.9
Total	310	100.0	100.0

4.7 Inferential Statistics

Table 4. 38 Social Cultural Factors and Menstrual Hygiene Management

Social Cultural Factors		Changing menstrual material	Washing hands	Bathing during menstruation at school	Type of menstrual material used
Knowledge	Pearson Correlation	.371	.416	.441	.613
	Sig. (2-tailed)	.000	.000	.000	.000
	N	310	310	310	310
Restrictions	Pearson Correlation	.016	.058	.007	.003
	Sig. (2-tailed)	.079	.104	.021	.081
	N	310	310	310	310
Attitude	Pearson Correlation	.144	.181	.029	.082
	Sig. (2-tailed)	.001	.000	.000	.000
	N	310	310	310	310
Availability of Materials	Pearson Correlation	.752	.178	.492	.397
	Sig. (2-tailed)	.000	.000	.003	.000
	N	310	310	310	310

The findings in Table 4.38 show that there existed a significant positive association between knowledge and changing of menstrual material ($r = 0.371$, $0.000 < 0.05$). The association between knowledge and washing hands was significant and positive ($r = 0.416$, $0.000 < 0.05$). The association between knowledge and bathing during menstruation at school was significantly moderate positive ($r = 0.441$, $0.000 < 0.05$), and, the association between knowledge and type of menstrual material used was strong positive and significant ($r = 0.613$, $0.000 < 0.05$). In general, it can be concluded that knowledge had a positive association with menstrual hygiene management.

The second association to be established was that between restrictions and indicators of menstrual hygiene management. The results in Table 4.38 indicate that the association between restrictions and changing menstrual material was very weak positive and non-significant ($r = 0.016$, $0.079 > 0.05$). The association between restrictions and hand washing was weak positive

but not significant (r = 0.058, 0.104 > 0.05). The association between restrictions and bathing during menstruation while at school was very weak positive and significant (r = 0.007, 0.021 < 0.05) while the association between restrictions and type of menstrual material used was very weak, positive and non-significant (r = 0.003, 0.081 > 0.05). Generally, it can be concluded that restrictions did not have any significant association with menstrual hygiene management in schools.

The third item was on the association between attitudes and menstrual hygiene management. It was established that a weak positive significant correlation existed between attitude and changing menstrual material (r = 0.144, 0.001 < 0.05), attitude and washing hands (r = 0.181, 0.000 < 0.05), and attitude and bathing during menstruation at school (r = 0.029, 0.000 < 0.05). Findings also shared a very weak positive significant association between attitude and type of menstrual material used. In general, attitude had a weak positive significant relationship with indicators of menstrual hygiene management.

The association between availability of materials and changing of menstrual material was very strong positive and significant (r = 0.752, 0.000 < 0.05). Availability of materials and washing of hands was found to have a weak positive but significant association (r = 0.178, 0.000 < 0.05). The relationship between availability of materials and bathing during menstruation at school had a moderate significant positive association (r = 0.492, 0.003 < 0.05). Availability of materials and type of menstrual material used also showed a moderate positive association that was significant (r = 0.397, 0.000 < 0.05). Changing of menstrual material increased with availability of sanitary towels for girls. As well the results showed that bathing during menstruation and the type of material used by adolescent girls during menstruation was dependent on availability of menstrual hygiene management materials. In general, social cultural factors positively impacted menstrual hygiene although the impact is not strong.

Table 4. 39: WASH facilities and Menstrual Hygiene Management

WASH Facilities		Changing menstrual material	Washing hands	Bathing during menstruation at school	Type of menstrual material used
Clean Water	Pearson Correlation	.313	.848	.507	.017
	Sig. (2-tailed)	.001	.000	.008	.092
	N	310	310	310	310
Sanitation facilities	Pearson Correlation	.419	.392	.814	.009
	Sig. (2-tailed)	.000	.006	.000	.013
	N	310	310	310	310
Hygiene	Pearson Correlation	.610	.419	.781	.663
	Sig. (2-tailed)	.000	.000	.004	.000
	N	310	310	310	310

The results in Table 4.39 show that clean water had a significant positive association with changing menstrual materials ($r = 0.313$, $0.001 < 0.05$). The association between clean water and washing hands was found to be very strong, positive and significant ($r = 0.848$, $0.000 < 0.05$). It was also established that the relationship between clean water and bathing during menstruation while at school was moderate, positive and significant ($r = 0.507$, $0.008 < 0.05$). The association between clean water and types of menstrual materials used was positive but non-insignificant ($r = 0.017$, $0.092 > 0.05$). It can be concluded that availability of clean water in schools encouraged changing of menstrual as girls could bath and wash hands after menstruation. Thus, availability of clean water improved MHM.

The study sought to determine the association between sanitation facilities and the indicators of menstrual hygiene management. The association between sanitation facilities and changing menstrual materials was moderate, positive and significant ($r = 0.419$, $0.000 < 0.05$), and the association between sanitation facilities and washing hands was also found to be moderate positive and significant ($r = 0.392$, $0.006 < 0.05$). The relationship between sanitation facilities and bathing during menstruation while at school was very strong positive and significant ($r = 0.814$, $0.000 < 0.05$). The findings also showed a positive significant relationship between sanitation facilities and the type of menstrual material used ($r = 0.009$, $0.013 < 0.05$). In general, the relationship between sanitation facilities and the adapted indicators of menstrual hygiene

management can be described as being moderate. These findings suggested that MHM was dependent on the type of sanitation facilities available. Provision of sanitation and hygiene facilities that supported handwashing and bathing in schools increased improved MHM.

The last WASH indicator was hygiene. Based on the Pearson's correlation analysis it was established that hygiene and changing of menstrual material had a strong significant relationship ($r = 0.610$, $0.000 < 0.05$) and the association between hygiene and washing hands was found to be moderate positive and significant ($r = 0.419$, $0.000 < 0.05$), that for hygiene and bathing during menstruation while at school was found to be very strong positive and significant ($r = 0.781$, $0.004 < 0.05$). Besides, the relationship between hygiene and type of material used was found to be strong positive and significant ($r = 0.663$, $0.000 < 0.05$). The findings signified that hygiene during menstruation increased with changing of menstrual materials, washing hands and bathing. In general, hygiene positively and strongly influenced menstrual hygiene management.

Table 4. 40: Menstrual Waste Disposal and Menstrual Hygiene Management

Menstrual Waste Disposal Methods and Practices		Changing menstrual material	Washing hands	Bathing during menstruation at school	Type of menstrual material used
Disposal pathways	Pearson Correlation	.574	.004	.051	.003
	Sig. (2-tailed)	.003	.117	.014	.294
	N	310	310	310	310
Disposal behaviour	Pearson Correlation	.607	.089	.413	.822
	Sig. (2-tailed)	.000	.331	.000	.000
	N	310	310	310	310
Comfortability with disposal places	Pearson Correlation	.882	.113	.691	.817
	Sig. (2-tailed)	.000	.362	.004	.000
	N	310	310	310	310

The findings in Table 4.40 show that disposal pathways had a strong significant positive correlation with changing menstrual materials ($r = 0.574$, $0.003 < 0.05$). The association between disposal pathways and washing hands was non-significant ($r = 0.004$, $0.117 > 0.05$), while the association between disposal pathways and bathing during menstruation while at school was

positive and significant (r = 0.051, 0.014 < 0.05). Results also showed the association between disposal pathways and type of menstrual material used was non-significant (r = 0.003, 0.294 > 0.05). The findings insinuated that changing of menstrual materials was dependent on disposal pathways for menstrual materials. Adolescent girls in schools were likely to bath when they assessed proper or friendly disposal pathways for their sanitary towels. Thus, menstrual waste disposal pathways affected changing of menstrual materials and bathing while in school.

The second aspect considered in relation to menstrual hygiene management was disposal behaviour. It was established that a strong significant positive association existed between disposal behaviour and changing menstrual material (r = 0.607, 0.000 < 0.05). Regarding the association between disposal behaviour and washing hands, a non-significant relationship was established (r = 0.089, 0.331 > 0.05). On the relationship between disposal behaviour and bathing during menstruation while at school, a moderate positive significant association was established (r = 0.413, 0.000 < 0.05). Further, the association between disposal behaviour and type of menstrual material used was found to be very strong positive and significant (r = 0.822, 0.000 < 0.05). These findings showed that bathing during menstruation and the type of menstrual material used depended on menstrual waste disposal options available.

The association between comfortability with disposal places was also tested against the indicators of menstrual hygiene management. It was established that a very strong significant association existed between comfortability with disposal places and changing menstrual material (r = 0.882, 0.000 < 0.05). The association between comfortability with disposal places and washing hands was found to be non-significant (r = 0.113, 0.362 > 0.05) while the association between comfortability with menstrual material disposal places and bathing during menstruation while at school was strong positive and significant (r = 0.691, 0.000 < 0.05). The results also indicated a very strong positive significant association existed between comfortability with disposal places and the type of menstrual material used (r = 0.817, 0.000 < 0.05). These findings

signified that girls were likely to change menstrual materials when the available disposal options for menstrual waste were acceptable. In addition, bathing among adolescent girls increased with increased acceptability of menstrual waste disposal options. Thus, access to unfriendly disposal options for menstrual materials affected MHM changing of sanitary towels and bathing in school. In general, on average the menstrual waste disposal methods positively and strongly influenced menstrual hygiene management.

CHAPTER FIVE

DISCUSSION

5.1 Introduction

Despite adolescence being acknowledged as a critical stage in the life of girls due to changes in growth, many girls still encounter challenges in hygienically managing their menstruation. The section presents discussion on demographic information, social cultural factors, availability of WASH facilities and menstrual waste disposal methods and practices affecting menstrual hygiene management.

5.2 Demographic Information

The fact that most of the girls were aged above 14 years implied that many girls joined secondary schools at the age of 14 years while a few proceeded to secondary schools at an earlier age. The balanced distribution of the number of girls across the secondary school classes implied that the questionnaire was well distributed. Most of the girls experienced menarche at 10-12 years which is usually the normal age for adolescent girls to transition to young adults. However, other girls experienced earlier and late menstruation. According to Coast *et al.* (2019) most girls begin experiencing menstruation from the age of 12 years and only a few experienced earlier menarche. Girls had secure emotional base and an assurance of financial support from family or non-family members as they resided with them. However, the few girls who lived alone might have faced limited support which could have an influence on menstrual hygiene management as a result of inability to purchase menstrual hygiene management materials. Christianity was the predominant religion, attributable to the African religious way of mentorship where many schools mentor students to be Christians.

5.3 Menstrual Hygiene Management among Adolescent School Girls

Sanitary towels were the common materials used for menstrual management perhaps because they were acceptable and readily available. Inability to obtain the commercial sanitary towels

might have facilitated consideration of other options like cotton wool and cloth. A similar study by Chinyama *et al.* (2019) that examined challenges faced by school girls in Zambia also reported similar findings where adolescent girls in secondary schools used clothes and cotton wool for managing menstruation as a result of inability to afford the commercial sanitary materials.

Menstrual hygiene through changing of pads was observed in majority of the schools. However, some girls reported failing to change menstrual materials while in school. Failure to change menstrual materials could be related to the various challenges experienced in schools such as unfriendly MHM facilities, lack of MHM materials and lack of adequate knowledge.

Concerning hand hygiene, many adolescent girls understood the importance of maintaining hand hygiene after handling menstrual materials. However, some school girls failed to wash their hands during menstruation because of lack of handwashing facilities, soap and water.

5.4 Determinants affecting Menstrual Hygiene Management in Schools

The determinants that affected menstrual hygiene management in secondary schools were as discussed.

5.4.1 Influence of Social Cultural Factors on Menstrual Hygiene Management

Concerning girls' perception about menstruation, although most of the girls understood the physiological basis of menstruation, other girls had the wrong perception about menstruation. Girls believed that menstruation was not just a biological process but a curse from a supreme deity, a female illness and also a sign of impurity. Failure to understand menstruation could facilitate a negative attitude towards menstruation hence poor menstrual hygiene management. Similar conclusions were made in Zambia by Chinyama *et al*. (2019) where girls stained clothes on their first menstruation because they neither had idea about menstruation nor the right interval and frequency for changing pads.

On education sessions to girls, majority of the schools created awareness on menstruation to girls hence increasing their knowledge and preparedness for menarche, although, there were schools which hardly raised awareness about MHM, a factor which could have an influence on menstrual management in schools (Chinyama *et al.*, 2019). A similar study by Hennegan *et al.* (2016) in low-and middle-income countries reported that lack of education sessions to guide adolescent girls on menstruation in schools led to poor menstrual knowledge and practices.

Some girls did not understand the protocol for handling menstruation because nobody had prepared them about menstruation and MHM before onset. Encountering menstruation while unprepared could facilitate fear and confusion on its onset. A similar argument was made by Hennegan *et al*. (2016) who found out that trials of education and creation of awareness to adolescent girls prior to menstruation facilitated reduced anxiety, increased self-efficacy and improved hygiene during menstruation. Girls considered other poor menstrual materials such as cloths because of lack of awareness on the available pads which could have an effect on the hygiene of school going girls. Adolescent school girls demonstrated a lack of knowledge on menstrual hygiene management, which could facilitate poor hygiene practices during menstruation and affect the health of adolescent school girls (Eijk *et al*., 2016).

About girls' attitude towards sanitary towels, although most of the girls expressed a positive attitude towards wearing them, there were still others who had a negative attitude towards wearing pads which affected MHM. Menstrual hygiene management was difficult for girls who could not afford purchasing sanitary towels. Besides, girls were less likely to safely manage menstruation when they faced shortage or lack of menstrual hygiene management materials. In Bangladesh, a similar study by Ha *et al.* (2022) also noted that due to inability to afford sanitary towels, girls in schools used old clothes which had a negative implication on their health. The embarrassing encounters of adolescent girls during menstruation of being mocked when they stained shared toilets with menstrual blood amplified their stresses when at school during

menstruation which had an effect on their psychological wellbeing and affected menstrual hygiene management. Similarly, in Ethiopia, Tegegne and Sisay (2014) also established out that menstruating girls faced teasing from boys when menstruating which increased school absenteeism among the girls when in their monthly menstrual cycles.

Girls expressed negative experiences during their first encounter with menstruation while at school, which made them to manage menstruation with a lot of unease. This represented the menstruation stigma that girls in secondary schools faced in silence. The findings of the study concurred with the results obtained in Zambia by Chinyama *et al*. (2019) which reported teasing of girls by boys due to menstrual leakage and staining of clothes which affected their dignity and self-esteem. The reluctance of most girls to attend school when menstruation was because their experiences were stigmatizing. In Ethiopia, a study by Tegegne and Sisay (2014) found out increased chances of missing school during menstruation due to fear of humiliation.

Existence of traditional beliefs where menstruating girls were deemed as impure and which held that menstruation should remain hidden and that talking about menstruation was a taboo subject suggested that despite living in this modern age where people are not held back by traditional beliefs, adolescent girls were still incorporating cultural views on menstruation. Researchers like Kaur *et al*. (2018) also reported existence of menstruation-related beliefs where menstrual blood was associated with black magic which restricted girls from drying reusable sanitary towels in sunlight hence a dilemma on hygienic menstrual management.

The presence of restrictions and religious beliefs which promoted unequal chances of engagement of adolescent girls in activities due to the inevitable natural process of menstruation could negatively affect their self-esteem especially when menstruating. The results concurred with those obtained in Bangladesh by Alam *et a*l. (2017) who found out that girls were restricted from going out during menstruation which led to school absenteeism. A study by Kaur *et al*. (2018) also confirmed that girls were restricted from performing work activities, worshiping and

bathing because of the perception that menstruation was polluting. In Nepal, Yadav *et al*. (2017) also highlighted that females were not allowed to participate in religious functions when menstruating and had separate rooms where they stayed during menstruation. Restrictions on certain practices due to the natural process of menstruation could lower the self-esteem of school girls.

Concerning the source of the sanitary materials, it was established that adolescent girls' parents mostly played a key role in the provision of sanitary pads for girls and schools rarely provided pads for menstruating girls. However, adolescent girls who lived with siblings or lived alone struggled to acquire menstrual management materials due to limited support. Adolescent girls were uncomfortable with their or their guardians' ability to afford sanitary towels implying that usage of sanitary towels was constrained by cost. In Pakistan, Wasan *et al*. (2022) found out that girls used old cloths for menstrual management because they considered commercial sanitary towels costly. A similar study in Bangladesh by Ha *et al*. (2022) also indicated borrowing of sanitary towels for girls who could not meet their cost.

On the availability and quality of sanitary towels, sanitary towels which were considered of good quality were readily available for majority of the girls. However, unavailability and poor quality of sanitary materials affected menstrual hygiene management among some girls in the schools. Similar findings were reported in Kenya by McMahon *et al*. (2011) who highlighted that poor access to sanitary materials facilitated the use of old cloths which led to reproductive tract infection among adolescent girls.

Schools did not mostly offer support in provision of menstrual materials to girls which could be attributed to poverty which is a characteristic in most of developing countries where purchase of the materials could have been expensive to many schools. Inadequate provision of sanitary towels in schools could increase chances of staining cloths by girls especially on encounter of menstruation unaware which could further attract teasing or embarrassment. Lack of essential

menstrual management materials for girls while menstruating in schools could increase anxiety among girls on their monthly cycles. In Zambia, a study by Chinyama *et al*. (2019) also established that schools did not provide emergency pads which resulted to teasing from boys due to menstrual leakage and staining of school uniform when they menstruated unaware.

5.4.2 WASH Facilities Affecting Menstrual Hygiene Management

Although most girls had places for changing menstrual materials when menstruating, more than one third of the girls had no options for changing pads. In India, a study by Singh (2017) found out that lack of provisions for changing menstrual materials facilitated delayed changing of sanitary pads by the adolescent girls in schools which brought about shame and negative health outcomes to the menstruating girls.

The quality of latrines in terms of privacy, ability to support menstrual hygiene management and maintenance affected girls' satisfaction with the provided toilet facilities when menstruating. The findings concurred with those of Girod *et al*. (2019) in Kenya who also highlighted the negative influence of latrine quality on menstrual hygiene management in schools.

Concerning toilet adequacy, the number of toilets provided in most of the schools was insufficient to fully meet the needs of menstruating adolescent girls which constrained menstrual hygiene management in schools. These results were in line with the results obtained in Ghana by Rheinlander *et al*. (2018) who found out that insufficient toilets in schools made girls to carry used pads in their bags for disposal at home.

On the handwashing facilities, although handwashing facilities were provided in some of the schools, lack of soap and water in schools affected handwashing among menstruating girls which affected their hygiene. Provision of handwashing facilities without water or soap could deter hand hygiene among menstruating girls. In Pakistan, a study by Mumtaz *et al*. (2019) highlighted that absence of water and soap made it difficult for girls to maintain personal hygiene during menstruation. Due to lack of frequent maintenance and privacy in the available toilets, their condition as indicated by almost three quarters of the girls constrained dignified management of

menstrual hygiene. These results were consistent with the results obtained by Chinyama *et al*. (2019) in Zambia where access to unlockable and befouled toilets facilitated their avoidance by menstruating girls. A similar study in Kenya by Girod *et al*. (2019) found that access to toilets with privacy non-guaranteeing super structures presented security concerns to girls of boys peeping through door openings when girls were changing pads.

5.4.3 Menstrual Waste Disposal Methods and Practices Affecting Menstrual Hygiene Management

Concerning the disposal facilities for menstrual waste, the acceptable and dignified options for disposal of sanitary towels such as bins were only provided in few schools. Unavailability of adequate and acceptable disposal options for menstrual waste could have a negative influence on menstrual hygiene management in schools (Mumtaz *et al*., 2019). Menstrual waste disposal behaviors were greatly influenced by the menstrual disposal facilities available. In agreement with the findings, a similar study in Ghana by Rheinlander *et al*. (2018) established that although schools had toilets, none of them had bins and school girls resorted to disposal of sanitary towels in the bushes surrounding schools, under rocks, refuse piles or carried home for burning. Improper disposal of menstrual waste could facilitate environmental contamination which could expose the population to the risk of sanitation-related diseases.

Adolescent girls in some schools showed lack of comfortability while using the available menstrual disposal options in schools which could have affected menstrual hygiene management. This suggested that the available sanitation options did not fully meet their menstrual hygiene needs. In Pakistan, a study by Mumtaz *et al*. (2019) established non-acceptance of the provided menstrual disposal options such as toilets and girls disposed used menstrual materials inside rivers because they feared that men could set eyes on them while inside toilets. Failure to accept and use the available solutions for menstrual management could facilitate poor menstrual hygiene in schools which could have a negative implication on the health of girls and on the environment.

CHAPTER SIX

CONCLUSION, RECOMMENDATIONS AND PUBLICATION

6.1 Introduction

The chapter entails the conclusion, recommendations based on the study finding and the publication.

6.2 Conclusion

Objective one sought to examine the influence of social cultural factors on menstrual hygiene management. Inadequate knowledge on menstrual hygiene management, restrictive values, irregular availability of menstrual materials as well as individual and societal attitude towards menstruation contributed to constrained management of menstruation among adolescent school girls. The study concluded that experiences of humiliation in schools during menstruation continue to be invisible. This represented the menstruation stigma that girls so silently encountered in schools.

The second objective aimed at establishing available WASH facilities affecting MHM. Inadequate sanitation and hygiene facilities in schools as well as access to non-dignified sanitation options in schools deterred safe menstrual management among adolescent girls. The study concluded that girls encountered inequitable experiences when managing menstruation in schools which presented difficult choices of menstrual hygiene management among girls in schools.

The third objective sought to examine menstrual waste disposal methods and practices affecting MHM. The study concluded that the menstrual waste disposal methods in schools were inefficient and facilitated constrained disposal of menstrual waste. A holistic definition of menstrual hygiene response in schools, one that entails provision of menstrual supplies in schools is needed.

6.3 Recommendations

The study recommended the need for health practitioners and policy makers to create an extensive multi-sectoral approach oriented on human rights to address stigma and the deeply embedded social and cultural menstruation-related encounters in schools. There is need for popularization of education programs on pre-adolescent girls in secondary schools by the Ministry of Education to help them psychologically prepare for the natural process of menstruation. The County Government of Tharaka Nithi should therefore mandate teaching of reproductive health issues at earlier ages in schools to provide an opportunity for constructive discussion on healthy attitude and methods of proper menstrual hygiene management.

Development of WASH facilities and infrastructure such as operational toilets with menstrual waste disposal bins and locks for privacy is critical in schools for successful menstrual hygiene management implementation. This therefore calls for advocacy and collaboration between the ministry of education in Chuka County and the school management to ensure promotion of girls-friendly WASH facilities capable of supporting menstrual hygiene. This would go a long way into improving school attendance for girls which would boost their academic performance and create a fair environment for competition with boys.

Supporting adolescent girls in schools on managing menstrual hygiene and enhancing hygienic and safe environment in schools could end the apparently unending cycle of low status of adolescent girls. Schools should involve menstrual waste supplies agents to boost menstrual waste disposal methods and practices in schools.

6.4 Suggestion for Future Research

More research is needed in WASH for menstrual hygiene management sector to adequately present the actual intensity of the problems encountered by menstruating girls in schools which prevent them from attaining their full potential.

6.5 Publication

A journal article was prepared and submitted to the International Journal of Current Science. The article published was on the 'Influence of availability of WASH facilities on menstrual hygiene management among adolescent school girls: A case of Chuka Sub-County, Tharaka Nithi County, Kenya' referenced as "Mutegi, M. J. K., Kaimuri, M., & Kirimi, L. M. (2023). Influence of availability of WASH facilities on menstrual hygiene management among adolescent school girls: A case of Chuka Sub-County, Tharaka Nithi County, Kenya. *International Journal of Current Science. 13*(1) 108-115."

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APPENDICES

Appendix I: Informed Consent Form

Instruction: To be administered to selected adolescent girls in specific secondary schools at Chuka Sub County in Tharaka Nithi County.

Study tittle: Determinants affecting menstrual hygiene management among adolescent school girls in Chuka Sub County in Tharaka Nithi County.

Introduction

I want to thank you for finding your time to listen to me. My name is Mutegi Kagendo Mary Joy a student at Meru University of Science and Technology pursuing a Master's Degree of Science in Sanitation. I am conducting a study titled "determinants affecting menstrual hygiene management among adolescent school girls in Chuka Sub County in Tharaka Nithi County".

The purpose of the study is to assess the determinants affecting menstrual hygiene among adolescent school girls.

Procedure

Your daughter has been selected on merit of the eligibility to be part of my study respondents. This is the first step in this study and we request for your consent. It is your choice whether or not to consent for her to participate in the study. There will be no negative repercussion if you decline.

The study is in five parts. In the first part, she will be interviewed on general issues consisting questions on age, class, menarche and religion. The second part of the study will involve menstrual hygiene management which will include materials used during menstruation, cleaning and washing facilities. The third part will be on social cultural issues affecting menstrual hygiene management, the fourth section is on WASH facilities which includes access to clean water and

sanitation. The fifth and last part is about menstrual waste disposal methods and practices which will consist of disposal pathways, disposal behavior and effects of poor disposal.

We expect this will take 15-30 of her time. She doesn't have to answer a question that she feels uncomfortable with.

Benefit

The benefit of participating in the study is that your daughter will get a better understanding of proper menstrual hygiene management.

We hope the findings of the study will be useful to the health providers and policy makers in formulation of strategies and agendas on menstrual hygiene among adolescent school girls.

Risks or discomfort

Participating in this study can pose a minimal risk and distress to study respondent since menstrual matters are regarded with secrecy and adolescent girls sometimes feel stigmatized discussing this topic. This may lead to mild psychological and emotional distress. In case of any form of distress, counselling services will be provided through the school counselling department by the counselling teacher and principal researcher.

This research is only based on menstrual hygiene management and it will not uncover any other issue unrelated to the study. So, feel comfortable to be my respondent.

All the information obtained will be treated with confidentiality. No names or admission numbers will be required on the questionnaire.

Voluntary participation

Participation on this study is voluntary. You do not have to take part or answer questions that you are uncomfortable with. Additionally, you can end the interview at any time.

Confidentiality

All the information will be kept confidential and will be shared only by the research team members. Any information that will be included on our report will not identify any name on it.

Contact for the principal investigator

In case you need further clarification regarding your daughter's participation in this study, contact principal investigator **Mutegi Mary Joy** on **0727999225**

Contact for ethical review committee

In case you need to find out more about your daughter's rights to participate, contact Meru University Ethical Review Committee on email: research@must.ac.ke phone no: 0705790660

Permission to proceed

I have understood the purpose of the study, procedures, risks and benefits and I would like my daughter to take part in the study. **Yes** [ ] **No** [ ]

I the principal [ ] counselling teacher [ ] confirm that the parent/ guardian of…… has consented for the daughter to participate in the study. I therefore sign on her/ his behalf of the parent/ guardian.

Signature ……... date…….

School principal/ counselling teacher

Appendix II: Letter to Seek Permission to Conduct Research

Mutegi Kagendo Mary Joy

Meru University of Science and Technology

Po Box 972- 60200

Meru

Tel: 0727999225

To Sub County Education Officer

Education Office

Chuka Sub County

Dear Sir,

RE: PERMISSION TO CONDUCT RESEARCH IN SELECTED SCHOOLS IN CHUKA SUB-COUNTY.

My name is Mutegi Kagendo Mary Joy a final year student at Meru University of Science and Technology pursuing masters of Science in sanitation. To complete my masters, I am required to conduct my study to demonstrating the skills and knowledge I have acquired.

I am requesting for a permission to conduct my research in the secondary schools in Chuka Sub County.

The study is on "determinants affecting menstrual hygiene management among adolescent school girls".

I commit to adhere to all confidential protocols and regulations and avoid any harm to the study respondents. If you require any further information from me, please do not hesitate to contact me.

Any help grated is appreciate.

Yours sincerely

Mutegi Kagendo Mary Joy
Tel: 0727999225

Appendix III: Questionnaire

SECTION A : Demographic Information

Please select the appropriate answer

1. How old are you?

   a. ≤14 years (14 years and below) [ ]

   b. >14 years (above 14 years) [ ]

2. In which class are you?

   a. Form 1 [ ]

   b. Form 2 [ ]

   c. Form 3 [ ]

   d. Form 4 [ ]

3. How old were you when you first received your period?

   a. Less than 10 years [ ]

   b. 10 – 12 [ ]

   c. 13 years and above [ ]

4. Who do you live with?

   a. Parent/ parents [ ]

   b. Guardian [ ]

   c. Siblings [ ]

   d. Other relatives [ ]

   e. None [ ]

5. Which is your religion?

   a. Christianity [ ]

   b. Muslim [ ]

c.Hindu [ ]

d.None [ ]

SECTION B: MENSTRUAL HYGIENE MANAGEMENT

Please select by ticking (√) the appropriate choice for each question

6. What type of materials do you use during period?

a. Pad [ ]

b. Cloth [ ]

c. Cotton wool [ ]

d. Pad and cloth [ ]

e. Not disclosed [ ]

7. How many times do you change your used sanitary pad?

a. Once per day [ ]

b. Twice a day [ ]

c. Severally [ ]

d. I don't change at all [ ]

8. Do you wash your hands after changing the menstrual materials?

a. Yes

b. No

9. i) Do you bath during menstruation while at school?

a. Yes

b. No

ii) How often do you bath during menstruation while at school?

a. One time a day [ ]

b. Two times a day [ ]

c. Three times and above [ ]

d. I don't bath at all [ ]

iii) In your opinion, what affects bathing during menstruation (*Please select all appropriate answers*)

a. Absence of facilities (washrooms) to support bathing [ ]

b. Tight schedules in schools [ ]

c. Shame [ ]

d. Lack of water/soap

e. Lack of disposal sites for pads near the bathing areas [ ]

SECTION C: SOCIAL CULTURAL DETERMINANTS OF MHM

This section examines social cultural determinants of Menstrual Hygiene Management in schools. Please select the appropriate choices.

i. Knowledge

10. What is menstruation/ how can you describe menstruation? *(Pick all appropriate answers)*

a. A biological process [ ]

b. A curse to girls [ ]

c. Female illness [ ]

d. It is a sign of being impure [ ]

e. No idea [ ]

11. Has there been any education sessions conducted in schools about Menstrual Hygiene Management?

a. Yes [ ] b. No [ ]

12. i) Did you receive any information on about menstruation before you started menstruating?

a. Yes [ ] b. No [ ]

ii) Who informed you?

a. Teachers [ ]

b. Parents [ ]

c. Friends [ ]

d. Other relatives [ ]

13. Do you know the commercially available pads (pads bought from shops)?

a. Yes [ ]

b. No [ ]

14.i What is menstrual hygiene?

a. Effective management of menstrual bleeding [ ]

b. Treating the female disease [ ]

c. Controlling blood during menstruation [ ]

d. I don't know [ ]

ii. Do you think poor menstrual hygiene management can affect health?

a. Yes [ ]

b. No [ ]

ii. Attitude ***(Please select the appropriate answer for each question)***

15. Perception regarding sanitary towels/ pads. (please select by indicating a tick (√) the appropriate choice).

	True	False
Wearing them is comfortable		
They ensure adequate absorption of blood		
Do not stain clothes (do not leak)		
No itching		
They are expensive		
Not available everywhere		

16.Have you ever encountered stigma as a result of menstruation?

a. Yes [ ]

b. No [ ]

17. i) Have you ever had your period while at school?

a. Yes [ ]

b. No [ ]

ii) If yes, how did you feel, at your first encounter while at school?

a. Excited [ ]

b. Fear and confusion [ ]

c. Stressed [ ]

d. Ashamed and embarrassed [ ]

18. i) Are there instances you miss school because of menstruation?

a. Yes [ ]

b. No [ ]

ii. If yes, what are some of the reasons? *(Choose all possible answers)* Please skip this question if the answer in 21 (i) above is 'no'

a. I feel uncomfortable sitting beside boys during menstruation [ ]
b. Boys would laugh at me when I stain my cloth [ ]
c. Feeling embarrassed at school during menstruation [ ]
d. No place to change menstrual materials [ ]
e. Uncomfortable with places for changing/ disposing menstrual materials (pads) [ ]
f. Pain during menstruation [ ]

iii Restrictions *(Please select the most appropriate choice for the questions provided)*

19.Are there any traditional beliefs that influence your menstrual hygiene?

a. Yes [ ]
b. No [ ]

20.i) When menstruating, are you exempted from doing certain things/ are you restricted to do certain things during menstruations?

a. Yes [ ]
b. No [ ]

ii) Please select the possible restrictions

a. Not allowed to perform religious activities [ ]
b. Not allowed to interact with boys [ ]
c. Not allowed to go out to places [ ]
d. No restrictions [ ]

21.Are there religious beliefs tied to menstruation that affect menstrual hygiene management in schools?

a. Yes [ ]
b. No [ ]

iv. Availability and Cost of Materials *(Please select the appropriate answers)*

22. Where do you get sanitary pads/ menstrual management materials from?

a. Parents [ ]
b. Teachers [ ]
c. Well-wishers [ ]
d. Friends [ ]
e. Self-support [ ]

23. i) Are the sanitary pads/ menstrual management materials that you use readily available?

a. Yes [ ]
b. No [ ]

ii) If yes, in your opinion, how is the quality?

a. Good [ ]
b. Bad [ ]
c. I don't know [ ]

24. i) Do you use sanitary towels which require to be washed after using (reusable materials)?

a. Yes [ ]
b. No [ ]

ii) if yes, what do you do with them after using?

a. Wash [ ]

b. Discard [ ]

25. Does the school provide menstrual management materials for emergency?

a. Yes [ ]

b. No [ ]

26. Please indicate your level of agreement to the following statement:

I am comfortable with my (self) or my guardian's ability to afford sanitary towels

a. Strongly disagree [ ]

b. Disagree [ ]

c. Neutral [ ]

d. Agree [ ]

e. Strongly agree [ ]

SECTION D: WASH FACILITIES AFFECTING MHM

This section examines the Water, Sanitation and Hygiene Facilities affecting Menstrual Hygiene Management in schools. Please select the appropriate choices for each question provided.

27. Does your school have a place for changing menstrual materials?

a. Yes [ ]

b. No [ ]

28. Please rate your level of satisfaction to the quality of toilets/ facilities provided for menstrual hygiene management?

a. Very unsatisfied [ ]

b. Unsatisfied [ ]

c. Neutral [ ]

d. Satisfied [ ]

e. Very satisfied [ ]

29.i) Are the toilets provided in your school separated by gender (toilets for males and females)?

a. Yes [ ]
b. No [ ]

ii. If no, are there instances you avoid them during menstruation?

a. Yes [ ]
b. No [ ]

iii. If yes, to 33 (ii) above, please select appropriate reasons

a. Boys can open toilet when I am inside [ ]
b. I fear staining toilet with the blood [ ]
c. The toilets do not have lockable doors/ latches [ ]

30. How satisfied are you with the number of toilets provided in your school?

a. Very unsatisfied [ ]
b. Unsatisfied [ ]
c. Neutral [ ]
d. Satisfied [ ]
e. Very satisfied [ ]

31. Is there always soap and water provided in school for handwashing during menstruation?

Yes [ ]

No [ ]

32.i) Please rate the conditions of the school toilets/ latrine? (*Choose the appropriate answer)*

	Latrine condition	Good	Poor
1	Privacy		
2	Maintenance		
3	Ability to support menstrual hygiene management		

ii) Does the condition of the toilet affect your utilization during menstruation?

a. Yes [ ]
b. No [ ]

SECTION E: Menstrual waste disposal methods and practices

33. Where do you dispose used sanitary towels/ menstrual hygiene management materials?

a. Inside toilets
b. In a sanitary bin provided by the school
c. Burning
d. Putting inside the bag to dispose at home
e. In the open
f. Hidden inside classroom/ bathroom

34. What determines the place you choose to dispose menstrual material/ pads?

a. Unavailability of good toilets
b. Lack of sanitary bins
c. Location of toilets far from classrooms
d. Shame of being associated with pads/ Menstrual materials
e. It is the only available option
f. None of the above

35.Are you comfortable with where sanitary pads are disposed in school?

a. Yes
b. No

36. In your opinion, are the menstrual disposal options adequate to meet the need of all girls in your school?

a. Yes
b. No

THANK YOU FOR PARTICIPATING IN THIS SURVEY

Appendix IV: Research Permit

MERU UNIVERSITY INSTITUTIONAL RESEARCH & ETHICS REVIEW COMMITTEE
(MIRERC)

TO: Mutegi Kagendo Mary Joy
Through: Dean, School of Engineering and Architecture
FROM: Chairman MIRERC
REF: MU/1/39/28 Vol.2 (40)
SUBJECT: MIRERC clearance and approval of Research
DATE: 17th February 2022

I hereby forward Ethical clearance and approval of your research proposal; *Determinants Affecting Menstrual Hygiene Management Among Adolescents School Girls in Chuka Sub-County, Tharaka Nit hi County for* implementation: Note that the implementation of the project should strictly adhere to and follow expected attributes of Justice, Respect, Beneficence and Non-maleficence to the study subjects.
The committee expects to be informed on the progress of the project from time to time and any amendments that may be instituted or incorporated into the proposal during its implementation to be pointed out.

The committee also expects this research project implementer(s) will not at any time risk the study subjects/data in terms of unfair disclosure of information that may come to their knowledge by way of this project or subject the study subjects/data to any bias or consequences whatsoever if or not a study subject withdraws from the project or access to data is denied.

The committee and study subjects will expect to be considered favorably for any benefits that arise from this study. The university would be grateful to act as repository for the data that your project will generate.

The MIRERC committee therefore accords the clearance and approval for this project to be implemented by the investigator(s) during the period specified by the project.

Thank you.
Yours Sincerely,

Prof. Eric Muchiri Ph. D
Chairman, MIRERC
Cc: Director, RDE

M.U.S.T IS ISO 9001:2015 CERTIFIED

Appendix V: Journal Article Publication