

UNIVERSITY FOR DEVELOPMENT STUDIES, TAMALE

**DETERMINANTS OF MENSTRUAL HYGIENE MANAGEMENT
PRACTICES AMONG ADOLESCENT GIRLS IN BASIC SCHOOLS IN THE
WEST GONJA MUNICIPALITY OF THE SAVANNAH REGION OF
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ASUMAH MUBARICK NUNGBASO (UDS/CHD/0024/18)

2020



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BY

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UDS/CHD/0024/18

**THESIS SUBMITTED TO THE DEPARTMENT OF PUBLIC HEALTH,
SCHOOL OF ALLIED HEALTH SCIENCES, UNIVERSITY FOR
DEVELOPMENT STUDIES IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF
MASTER OF PHILOSOPHY DEGREE IN COMMUNITY HEALTH AND
DEVELOPMENT**

JUNE 2020



Acknowledgements

I express my profound gratitude to the Almighty Allah for His blessings, favour and good health throughout the programme.

My sincere appreciation goes to Dr. Abubakari Abdullai, my supervisor for his guidance, constructive suggestions and encouragement. Thank you very much. I am also grateful to all the lecturers in the Department of Public Health for their irreplaceable contributions in my academic development.

I also wish to express a heartfelt gratitude to Mr. Gilbert Nachinab, Dr. Nashirudeen Mumuni, Mr. Siibu Abdul Karim and Madam Florence Ziba for all their support, encouragement, advice and above all, care and love given to me before and during the study and beyond. I say: may Allah preserve you and bless your lives. Aameen.

I am also most grateful to Mr. Adam Salifu (Director of Education, West Gonja Municipal), Mr. Osman Noah Abdul Razak (School Health Education Programme Coordinator, Damongo) and all the teachers in the municipality, for supporting and facilitating my data collection processes. In addition, I am indebted to the participants who voluntarily decided to share their experiences to enrich this research.

Special thanks go to all authors and publishers of the literature used for their contribution towards the success of this study.

Lastly, I wish to honestly acknowledge my family, my colleagues, those that supported me in my data collection, especially, Mr. Amin Hudu, and friends whose names are not mentioned here but contributed immensely toward the production of this document. MAY ALLAH BLESS YOU ALL!



Declarations

Student's Declaration

I hereby declare that, except for references to other people's work which have been duly acknowledged, this thesis is the result of my original work. It contains no materials previously presented by another person which has been accepted for the award of any degree elsewhere.

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Supervisor's Declaration

I declare that the preparation and presentation of the dissertation was supervised in accordance with the guidelines on supervision of dissertation laid down by the University for Development Studies.

NAME OF SUPERVISOR: Abdullai Abubakari (PhD)

SIGNATURE:

DATE:



Dedication

I dedicate this thesis to my mother Mrs. Asumah Kusonu, my father Mr. Seidu Asumah P. M, Mrs. Florence Assibi Ziba, Dr. Mumuni Nashirudeen, my lovely wife Issah Ubaida and my sister Asumah Hikmatu Nyefianto for their support, sacrifice and encouragements throughout the two years of my studies.



Abstract

Menstruation plays a crucial role in the reproductive lives of all women. This presents as one of the marked changes that appears with puberty. The advent of menses in most settings is accompanied by physical and psychological health, religious, social and cultural implications. The aim of the study was to assess determinants of menstrual hygiene practices among adolescent girls in Basic Schools in the West Gonja Municipality of the Savannah Region of Ghana. The study employed analytical cross-sectional design and a mixed method approach. A total of 430 female students were randomly sampled. Data was analyzed using Stata version 14 and thematic content analysis (TCA). The study revealed that about 65% of the girls had sufficient knowledge on menstrual hygiene. Almost all girls (97%) used some form of absorbent materials during menses, with 56% using sanitary pad, while 28.8% used cloth. The majority of the respondents (60.7%) used soap and water for cleaning used material with majority (53.5%) drying their washed absorbents the sun. Overall, 84.9% practiced good menstrual hygiene management. Majority (68.2%) of the schools did not have supportive hygiene infrastructure for the practice of menstrual hygiene management. Category of school, pocket money and residence were the most significant determinants of menstrual hygiene management practice. A major drawback to good menstrual hygiene practices in the West Gonja Municipality is the inadequate Menstrual Hygiene Management/Water, Sanitation and Hygiene facilities in basic schools. The Ministry for Sanitation and Water Resources should fit in menstrual hygiene and its management into the National Sanitation and Hygiene Strategy.



Table of Contents

Acknowledgements.....	1
Declarations	2
Dedications	3
Abstract.....	4
List of figures.....	8
List of Tables	9
Acronyms / Abbreviations	10
Operational Definition.....	11
CHAPTER ONE	12
1.0 Introduction	12
1.1 Background of this study.....	12
1.2 Problem statement.....	21
1.3 Research questions	22
1.4 Research objectives	23
1.4.1 Broad objective.....	23
1.4.2 Specific objectives	23
1.5 Significance of this study	24
1.6 Organization of this study	29
1.7 Conceptual Framework	Error! Bookmark not defined.
CHAPTER TWO	30
LITERATURE REVIEW	30
2.0 Introduction	30
2.1 Menstruation.....	30
2.2 Problems associated with menstruation	34
2.3 MHM products (absorbent materials) used during menstruation.....	37
2.4 Knowledge of adolescent girls on menstruation and menstrual hygiene	42
2.4.1 Source of information.....	46
2.5 Menstrual hygiene management practices among adolescent school girls	48
2.6 Determinants of menstrual hygiene practice	55
2.6.1 Knowledge and information	56
2.6.2 Psychological factors	58
2.6.3 Cultural and religious factors	59
2.6.5 Gender issues	64
2.6.5 Socio-economic factors	64
2.7 Hygiene facilities in basic schools	67



2.7.1 Water, sanitation and hygiene (wash) and menstrual hygiene management	70
2.7.2 Initiatives to improve MHM facilities and supplies	78
CHAPTER THREE	81
METHODOLOGY	81
3.0 Introduction.....	81
3.1 Study setting.....	81
3.2 Study design	82
3.3 Study population	82
3.4 Inclusion criteria.....	82
3.5 Sample size determination	83
3.6 Sampling and sampling techniques	84
3.7 Study variables	84
3.8 Data collection techniques and tools.....	84
3.9 Data entry and cleaning.....	88
3.10 Data analysis and presentation of results	88
3.11 Quality Control Measures	92
3.12 Ethical considerations	93
3.13 Limitations of the study.....	94
CHAPTER FOUR.....	96
RESULTS	96
4.0 Introduction	96
4.1 Quantitative Results	96
4.1.1 Socio demographic characteristics	96
4.1.2 Menstruation characteristics of girls	100
4.1.3 Knowledge of adolescent girls on menstruation and menstrual hygiene	102
4.1.3.1 Association between socio demographic characteristics and knowledge of menstruation and menstrual hygiene	107
4.1.4 Menstrual hygiene management practices among adolescent school girls... 113	
4.1.4.1 Association between socio demographic characteristics and menstrual hygiene managements practices	119
4.1.5 Hygiene facilities in schools	124
4.1.6 Factors influencing the existing practices of menstrual hygiene	128
4.2 Qualitative Results	131
4.2.1 Socio-demographic characteristics of pupils and mothers.....	131
4.2.2 Knowledge on menstruation and menstrual hygiene.	132
4.2.2.1 Information prior to menarche.....	133
4.2.2.2 Mode of communication on menstruation.....	133



4.2.2.3 Source of information and challenges	135
4.2.3 Practices of managing menstrual hygiene among adolescent school girls....	136
4.2.3.1 Use of absorbent materials and preference.....	137
4.2.3.2 Management of menstruation	138
4.2.3.3 Hygiene practices during menses	138
4.2.3.4 Cleaning and drying of reusable absorbent material	140
4.2.3.5 Disposal of used absorbent materials	141
4.2.4 Hygiene facilities in the basic school.....	142
4.2.4.1 Availability of hygiene facilities in basic school.....	142
4.2.4.2 Absence from school activities.....	143
4.2.4.3 Involvement in class activities.....	144
4.2.5 Factors affecting menstrual hygiene management practice	145
4.2.5.1 Religious and Cultural Influence On Hygiene Practice.....	145
4.2.5.2 Social support	146
4.2.5.3 Availability of materials	147
4.2.5.4 Cost and reusability of absorbent materials.....	147
CHAPTER FIVE	148
DISCUSSION.....	148
5.0 Introduction	148
5.1 Knowledge of adolescent girls on menstruation and menstrual hygiene	148
5.2 Practices of managing menstrual hygiene among adolescent school girls.....	151
5.3 Factors influencing the existing practices of menstrual hygiene	159
5.4 Hygiene Facilities in Schools	166
CHAPTER SIX.....	171
SUMMARY OF RESULTS, CONCLUSION AND RECOMMENDATION.....	171
6.0 Introduction	171
6.1 Summary of findings.....	171
6.2 Conclusion.....	172
6.3 Recommendations	173
REFERENCES	175
Appendix I: Participant Information Leaflet and Consent Form	190
Appendix II: Structured questionnaire for girls	194
Appendix III: Interview guide for mothers	198
Appendix IV: Interview guide for girls.....	199
Appendix V: Checklist.....	200
Appendix VI: Ethical clearance	202



List of figures

Figure 1.1; Conceptual framework for studying determinants of menstrual hygiene management28

Figure 4.1; Overall knowledge on menstruation and menstrual hygiene 106

Figure 4.2; Overall MHM practices 118

Figure 4.3; Hygiene infrastructure in school127



List of Tables

Table 3.1 Main themes and sub-themes	91
Table 4. 2; Socio-demographics characteristics of the respondents	98
Table 4.2; Age, Menstrual Flow, and Basic Menstrual Hygiene among Girls in West Gonja Municipality.	100
Table 4.3 ; Menstruation characteristics of girls.....	101
Table 4.4; knowledge of adolescent girls on menstruation and menstrual hygiene ..	104
Table 4.5; Association between socio demographic characteristics and knowledge of menstruation and menstrual hygiene	110
Table 4.6 Menstrual hygiene management practices among adolescent school girls	115
Table 4.7; Association between socio demographic characteristics and menstrual hygiene managements Practices	121
Table 4.8; Menstrual hygiene facilities in basic schools of west Gonja Municipality	125
Table 4.9 Determinants of menstrual hygiene management.....	129
Table 4.10; Socio-demographic characteristics of mothers.....	131
Table 4.11; Socio-demographic characteristics of girls.....	132



Acronyms / Abbreviations

FSH	_____	Follicle Stimulating Hormones
GDHS	_____	Ghana Demographic and Health Survey
GnRH	_____	Gonadotropins Releasing Hormones
GSS	_____	Ghana Statistical Service
JHS	_____	Junior High School
JMP	_____	Joint Monitoring Program
LH	_____	Luteinizing Hormones
LMIC	_____	Lower-and-Middle-Income Countries
MH	_____	Menstrual Hygiene
MHM		Menstrual Hygiene Management
MMDAs	_____	Metropolitan, Municipal and District Assemblies
PMA	_____	Performance Monitoring and Accountability
PTA	_____	Parent and Teachers Association
SDGs	_____	Sustainable Development Goals
SEIP	_____	Secondary Education Improvement Project
TSS	_____	Toxic Shock Syndrome
UNESCO	_____	United Nations Educational, Scientific and Cultural Organization
UNICEF	_____	United Nations International Children's Education Fund
WASH	_____	Water, Sanitation and Hygiene
WHO	_____	World Health Organization



Operational Definitions

Menstruation; also known as the monthly blood flow is a genetic development in which a woman discharges blood and other material from the uterus passing through the vagina each month beginning at puberty except when one gets pregnant, until menopause.

Menstrual Hygiene Management (MHM) has been defined as: “women and adolescent girls using a clean menstrual management material to absorb and collect blood, that can be changed in privacy as often as necessary for the duration of the period, using soap and water for washing the body as required and having access to facilities to dispose of used menstrual management materials”.

Determinants; these are factors which authoritatively distort the nature or outcome of something.

Health; refers to a state of complete emotional and physical well-being.

Adolescents; these are girls within the ages of 10 to 19, “Adolescence describes the transitional period between childhood and adulthood”.

Menarche; the first time of seeing one’s menses.



CHAPTER ONE

1.0 Introduction

This chapter introduces the study from a broad outlook of the subject matter and narrows it to specific issues of concern. Thus, it begins with the scope, content, objectives and significance of the study by highlighting topical issues critical to the subject matter. The chapter is divided into subheading which includes the background of the study, stating the problems, stating the specific objectives and main objectives, research questions, justification as well as organization of the work and conceptual framework.

1.1 Background of this study

Menstruation is a natural process which gives rise to several fluctuations in a female life that causes emotional and psychological instability, mutually taking place within the same timeframe, which progressively leads to womanhood (Mahon & Fernandes, 2010). Menarche is viewed as a special indicator to mark that girls have reached adolescence (Jogdand & Yerpude, 2011). World Health Organization (WHO) explains adolescence as, “the progression from the appearance of secondary sex characteristics (puberty) to sexual and reproductive maturity, development of adult mental processes and adult identity, transition from total socioeconomic dependence to relative independence” (WHO, 2018). Chronological age definition of adolescence according to WHO, are the ages between 10-19 years, WHO is conscious that adolescence is a chapter in an individual's life, and cannot therefore be regarded as an immovable period. “This is a transition period from childhood to adult life during which pubertal development and sexual maturation take place” (Sapkota et al., 2013).



Globally, females who are in their reproductive age are over 50% of the population of the sex group (Mutunda, 2013). Presently, it is estimated that, more than a billion adolescents are positioned at the confluence of childhood and the adult world (Blessing, 2016). The Joint Monitoring Program (JMP) of WHO and UNICEF defined menstrual hygiene management as *“Women and adolescent girls using a clean menstrual management material to absorb or collect blood that can be changed in privacy as often as necessary for the duration of the menstrual period, using soap and water for washing the body as required, and having access to facilities to dispose of used menstrual management materials”* (Budhathoki et al., 2018; Ramaiya, 2018).

When this natural phenomenon occurs, the women are required to clean themselves to be considered pure. Some years back, women used pieces of clothes and other things to grip or collect the blood during menses. Progress has been made along this line with the initiation of sanitary pads. Menstrual management materials can be changed in concealment as many times as it’s practical to absorb the blood during the period of menstruation. Efforts to cleanse one’s self of the dirt associated with menses and its effects is termed menstrual hygiene (Sudeshna & Aparajita, 2012). Hygiene correlates the activities of women during menstruation. This is very necessary because menses affect health by making one susceptible or predisposes one to infection, especially the infections related to the reproductive tract and urinary tract infections (Omidvar & Begum, 2010). Therefore, it necessary for schools and homes to have adequate facilities that support hygiene practices for these adolescent girls. However, a study in Delhi in India reported that over 50% of the schools in low-income countries either have inadequate toilets for girls or they are frequently not very clean (Oster & Thornton, (2011) as cited in Vashisht et al. 2018).



May 28 is Menstrual Hygiene Day (MH Day); a day set aside to convey information to increase consciousness and awareness around the world on significance of practicing good menstrual hygiene management (MHM) and further highlights the roles good hygiene practices plays in vesting adequate power in women and adolescent girls worldwide to become all that they wish to be. May 28 was chosen for the MH day because, “May is the fifth month of the year, and women's menstruation period lasts an average of five days. The 28th was chosen because the average menstrual cycle is 28 days” (World Vision 2019; Goddard and Pritzkat 2019).

Poor menstrual hygiene management influences girls negatively globally, and especially those in the developing world (Sommer et al., 2016; Sommer & Sahin, 2013). It usually leads to ailments, including reproductive tract infection, menstrual disorders and urinary tract infections (Torondel et al., 2018) and may have a negative impact on the environment as it creates a waste problem if there are no proper management strategies at hand (Kaur et al., 2018). World Health Organization suggested that, the availability of adequate clean water and hygiene in schools is essential to the attainment of the sustainable development goals (SDGs) 3, 4 and 5, especially in the achievement of education for all , reduction of child mortality and to achieve gender equality and empower all women and girls(Sommer et al., 2016). Poor sanitation at school significantly disturbs girls in so many ways, especially menstruating girls, and creates an unfavorable school environment for them (Agarwal & Agarwal, 2010). These setbacks attributed to poor hygiene management have a tendency of jeopardizing the future of girls and the realization of many sustainable development goals (SDG) if they are not properly addressed. It also has an impact on the environment as it creates a waste problem if there are no proper management strategies at hand (Ten, 2007).



On the other hand, the importance of good menstrual hygiene management cannot be underestimated because it increases confidence and helps to improve their physical, mental health, education and dignity of school girls (Mahon & Fernandes, 2010).

Despite the recent advances in knowledge on menstruation, in terms of hygiene and good health care for menstruating girls, religion still has a major influence on the lives of these girls. This might have some negative influence on girls' future as they may feel the need not to do anything during those periods to better their future. Most societies and religions still believe that girls during their menses are impure and unhealthy, for that reason, they are banned from participating in societal activities. Though there is no evidence to indicate that menstruating ladies should not go to school but these reasons above are enough to reduce girls' confidence and could create a mindset of girls not worth at those periods. According to the Bible, in the book of Leviticus, there is an unambiguous reference made to women as impure during their menses. The scriptures further states that a person who touches such ladies is also impure until evening of that day. It's common among the Jewish that when a menstruating woman touches anything it is considered impure. Punishment is meted out to those who sleep with their menstruating wives (Bible, 2000). Also, among Muslims, women who are menstruating are forbidden from touching the holy Qur'an and performing 'salat' (prayers) during the period of monthly blood flow for at least 3 days and not more than 7 days (Ali, 2001). "In many low-income countries, women and girls are restricted in mobility and behavior during menstruation" (Ali, 2001; Chanda, 2015). These taboos and socio-cultural boundaries result in adolescent girls lingering in ignorance of the scientific facts and hygienic health practices, which has a tendency of bringing about adverse health outcomes (Shanbhag et al., 2012).



There are variances between countries, cultures, religions and ethnics groups concerning how menstruating women are viewed in society. For instance, in Nepal, women who have had their menarche are thought to lose their divine strengths and by that lose the status of living goddess immediately (House et al., 2013).

In African customs, a girl is viewed as a woman only when she sees her first menstrual blood (menarche). This represents a significant milestone in every woman's life as it symbolizes the start of reproductive capacity as in the ability to give birth, which is a desire of most women since they would marry, and an important indicator of women's health (Chanda , 2015).

The Government of Uganda is making enhancement and improvement of MHM among girls and women a topmost priority, for instance, in 2015 they launched a Menstrual Hygiene Charter, where government in collaboration with civil society organizations and groups within and outside the country came together to make commitment towards working together to promote MHM in the country (Government of Uganda. Menstrual Hygiene Management Charter, 2015). This innovation has since seen significant improvement on MHM in Uganda.

The level of knowledge on issues bordering on menstruation and puberty is very low especially in Sub-Saharan Africa. In poorly resourced countries, access to sanitary materials and suitable sanitary facilities are very few thereby posturing a massive challenge to the luxury of menstruating girls (Kirk & Sommer, 2006). In Kenya, girls are met with various problems in attempts to care for themselves during their menstrual periods at school due to absence of privacy and sanitary facilities. In schools where these essential environments including waste disposal facilities were



not available, girls were obliged to carry soiled absorbents back home (McMahon et al., 2011).

A study carried out among tribal adolescents in Ethiopia revealed that almost all adolescents (96.9%) practiced very poor menstrual management. Menstruating girls used dirty clothes or used clothes for absorption of menstrual blood. Also, improper washing of used clothes and improper disposal of used clothes may serve as a breeding ground for infection to these adolescents (Dhingra et al., 2009).

Most women and girls cannot afford the cost of sanitary pad in Zambia and uses rags to absorb menstrual flow due to poverty. These rags are often torn out old blankets, clothes and tissue of any kind and used repeatedly after washing them with soap (Mutunda, 2013).

Over 260 schools in Ghana are benefiting from the World Bank initiative to provide sanitation infrastructure and hygiene education. The initiative was necessitated following a qualitative data collection from more than 160 girls using focus Group Discussions, which revealed that inadequate water sanitation and hygiene (WASH) facilities, lack of sanitary products, and negative cultural norms were the contributing factor to reducing girls' attendance of school (*World Bank, 2018*).

Despite the abundant knowledge on menstruation, females are still seen as impure and this prevents them from carrying out normal duties as far as women are concerned, there are still a lot of misconceptions in societies about menstruating women. Among the Anlos of Ghana, a rite of passage is performed once the girl menstruates and within the northern tribes menstruating women generally are viewed as being not pure (Yagnik, 2015). They are often unable to cook; they do not sleep with their husbands. It is believed that menstruating women do not go to farm or sow seed in the farm for



fear that the crop may not germinate. They are not expected to fetch fire from some herbal medications. All these misconceptions seem to relegate the girl child and women to the background of many prospects including gender equality, access to education and others.

In spite of the above misconceptions, in most customary (traditional) settings in Africa including Ghana, some societies largely treat the issue of menstruation as a unmentionable and considered a taboo in many typical traditional homes, and by extension rarely discuss menstruation publicly (House et al., 2013). This is because menstruation is viewed as an embarrassing topic to be discussed (Suhasini & Chandra, 2017).

Blessing, (2016) made references to the (UNESCO, 2014) report which revealed that, during menses (Menarche) majority of adolescents tend to be naïve and worried due to unpreparedness. In spite of the above, cultural misconceptions further injures the girl child more making them unable to mingle effectively with their friends. These put the girl child especially the schoolgirl in limbo. To provide some relieve therefore, there's the need for rife revision of the health education curricula with schemes centered on comprehension of health and development as well as focusing on the impact on societies, educational facilities targeting the basic schools in particular, health service sectors, family and religious based organization (Kågesten et al., 2014).

According to the World Health Organization, the availability of adequate clean water and hygiene in schools is essential for SDG goal 3, 4 and 5, especially in the achievement of inclusive and equitable quality education and promote lifelong learning opportunities for all, reduction of child mortality and to achieve gender equality and empower all women and girls (Mahon & Fernandes, 2010).



Moreover, girls within the ages of 10 to 19 lose their self-worth as a result of humiliation due to menstruation, this turns to restrict these age cohort girls from making much enquiries on menstrual hygiene management. The overall effect is that, the adolescent girl child is exposed to health, social and cultural factors including infection and unnecessary victimization as a result of poor hygiene practices during menstruation (Yoo et al., 2011).

Menstrual hygiene management practice is prejudiced by a lot of indicators including adolescents understanding of menstruation, availability of suitable facilities and environment (be it social and cultural) to accomplish menstruation hygienically and with pride (Karout, 2015; Mahon & Fernandes, 2010; Yusuf et al., 2010)

Several factors affect the hygiene being practiced by adolescent girls during menses. Menstrual Hygiene practice is predisposed by various factors including “knowledge, presence of necessary facilities and the proper social and cultural environment to manage menstruation hygienically and with dignity” (Karout, 2015; Mahon & Fernandes, 2010). A study carried out in Chitwan, Nepal on menstrual knowledge and practice among some selected school girls showed that, regarding practices, almost all respondents (about 96%) discard their used pads in dustbin after wrapping it, with 95.9% of girls washing their hand with soap and water after changing their pad and as well cleaned genitalia properly (94.8%). The study further revealed sanitary pads were widely used during menses (93.8%). However, just more than half (64.2%) respondents took bath daily during period (Neupane et al., 2020). Worldwide 10 % of women are exposed to Urinary Tract Infections, due to lack of menstrual hygiene practice (Upashe et al., 2015).



In Accra, Ghana, Sommer et al (2015) reported insufficient toilets and inadequate privacy measures in toilets in public schools. Up north in Zabzugu, primary schools in the Zabzugu district did not have adequate WASH facilities while existing facilities are under-utilized (Tiswin, 2016). These inadequate facility result in poor practice of menstrual hygiene as shown in a study carried out in Kenya where absence of privacy and sanitary facilities (including toilets, urinal, designated room for changing etc.) has made girls faced troubles in managing their menstrual periods at school (McMahon et al., 2011). Poverty in all forms is a very vital socio-economic barrier which affects the adaptation of good menstrual hygiene by girls in general. Aside poverty, other factors including gender discrimination, inadequate water supply, very little gender-friendly sanitation facilities in the schools or unfavorable environment to support good menstrual hygiene management. Majority of public schools' attention on hygiene needs of menstruating girls with regards to adequate health education and type of sanitary facilities available for students usually are not the best. Most schools do not have secluded restrooms to provide a sense of privacy for students. Availability of water is also another factor which is missing in our public schools (Blessing, 2016).

Although, literature as demonstrated above identified a lot of factors associated with practices of menstrual hygiene management, there exist no study as per my search in West Gonja Municipality on the determinants of menstrual hygiene practices among adolescent girls. The study therefore was designed to fill this gap.



1.2 Problem statement

Problems associated with poor menstruation management could include poor school attendance, poor academic performance as well as school dropout which may seriously hamper the realization of the Sustainable Development Goals 4 (SDG) on “ensuring inclusive and equitable quality education for all”, SDG 5 on “gender equality and empowering all women and girls” and SDG3 on “ensuring healthy lives and promoting well-being for all ages”(Mahon & Fernandes, 2010).

Studies showed that in most developing countries more than 50% of girls practice poor menstrual hygiene management, with majority of them coming from the rural areas (Kuhlmann et al., 2017). Poor menstrual hygiene has tremendous effect on health, education, gender empowerment and among many others (Kaur et al., 2018; Kuhlmann et al., 2017; Sumpter & Torondel, 2013).

At the moment, up to 20% tax tariff is placed on imported sanitary towels because sanitary pads are considered as extravagant or luxury goods per the Ghana Revenue Authority’s manuals (Boakye-Yiadom et al., 2018). Some civil society organizations have resorted to giving out sanitary pad for free to girls who have reached their menarche; particularly those in the rural areas of low-income countries as a motivation to boost girls’ presence and involvement in school activities during their menses (Montgomery et al., 2012). From the foregoing, it suggests that pad donation alone is not enough to meet the required sanitary need of the women. It is just temporal solution.

Presently, there are tremendous efforts from academia, development sectors and all stakeholders to appreciate the difficulties the adolescent girl (especially the schoolgirl) faces and ways to curb them in low- and middle-income countries (LMIC)



(Sommer et al., 2015, 2016). Despite the apparent dearth of literature on MHM among adolescent female students in Ghana, various studies have reported that the girls in their menses faces various challenges, including “the experiences of shame, fear, and confusion, management of menstruation with insufficient information, lack of social support, ongoing social and hygiene taboos, and a shortage of suitable water, sanitation and waste disposal facilities in school environments”(Mahon & Fernandes, 2010; Mason et al., 2013; McMahan et al., 2011; Montgomery et al., 2012; Renne & Van de Walle, 2001; Sommer & Sahin, 2013).

The adolescent’s population with reference to the Ghana Demographic and Health Survey (GDHS, 2014), is about 22% of Ghana’s population, of which girls are the majority. The West Gonja Municipality has at least 10, 518 adolescents representing 25.5% of the area population (GSS, 2014). In spite of these huge numbers, there exist no study on MHM among adolescent females in the newly created savannah region.

This study was therefore designed to assess the determinant of menstrual hygiene management practices among adolescent girls in the West Gonja Municipality of the Savannah Region of Ghana.

1.3 Research questions

1. What is the adolescent girls’ knowledge on menstruation and menstrual hygiene management in West Gonja Municipality?
2. What are the practices on managing menstrual hygiene among adolescent girls in West Gonja Municipality?
3. Do basic schools in West Gonja Municipality have hygiene facilities in the Municipality?



4. Which factors affect the existing practices of menstrual hygiene in West Gonja Municipality?

1.4 Research objectives

1.4.1 Broad objective

The main objective of this study is to assess determinants of menstrual hygiene practices among adolescent girls in Basic Schools in the West Gonja Municipality of the Savannah Region of Ghana.

1.4.2 Specific objectives

1. To assess the knowledge of adolescent girls on menstruation and menstrual hygiene management in the West Gonja Municipality.
2. To examine menstrual hygiene management practices among adolescent school girls in the West Gonja Municipality.
3. To assess hygiene facilities in schools within the West Gonja Municipality.
4. To determine the factors affecting the existing practices of menstrual hygiene in the West Gonja Municipality.



1.5 Significance of this study

The findings of this study would contribute to the attainment of SDGs 3 by reducing the incidence of menstrual disorders, urinary and reproductive tract infection through the advocacy of good menstrual hygiene management.

The findings of the study would inform the Ministry of Sanitation and Water Resource or Ministry of Health in strategies that would improve the hygiene situations in all schools.

This may lead to the design of appropriate interventions and strategies at local and national levels to provide the necessary facilities, education and utilities for the good practices of menstrual hygiene among these adolescents.

In addition, the issue of Menstrual Hygiene Management is multi-dimensional, and a similar multi-dimensional approach is needed to combat it. Thus, the research will provide data for planning and policy formulation for the Ministry of Health and Education in that regard. The findings would inform where the GHS and GES can collaborate to address the needs of the adolescent girls during their menses.

In all, it is hoped that in the near future, problems associated with poor menstrual management may be diminished by the implementation of the recommendations that may arise from this study and thereby making the life of adolescent schoolgirls easy and confident in handling menstrual hygiene management issues.

It is also hoped that the findings from this study will be added to the body of research and scholarly works and generate further interest in the research field to improve the situation of menstrual hygiene management in West Gonja Municipality, Northern Ghana and beyond.



1.6 Conceptual Framework

The conceptual framework used in this study showed that the practice of good menstrual hygiene is not just a product of availability of absorbent material and its usage but considers the individuals' characteristics and environment as key contributors to effective menstrual hygiene management.

Socio-cultural factors (age, class, residence, ethnicity, income status of the family, educational status of parents.) and resource limitation (inadequate structural infrastructure) are the immediate cause of the determinant of menstrual hygiene management.

Girls' perceptions and beliefs

Variables included in this includes the culture, religion and traditions championed by the community in which the girls reside; main channels in which information regarding menstruation and hygiene are acquired, menarche reaction and succeeding experience therein; and happenings that delimited the girls' menarche. Ten (2007) highlighted the impact of cultural beliefs associated with menstruation and menstrual hygiene on girls' access to quality education. This is either due to the shame and discomfort associated with menstruation or the fact that it is regarded as a sign of readiness for marriage in many societies, or a combination of both. Cultural prejudices, misconceptions and traditions associated with menstruation have been widely reported in Asia and Africa (Ten, 2007; Sommer, 2008; Pillitteri, 2011). Pillitteri (2011) also described coming-of-age related cultural and ritual practices concluding that most rituals signify that a girl who reaches menarche is ready for marriage.



Girls' knowledge

Issues examined in this variable were the girls' knowledge of menstruation and menstrual hygiene, causes of menstruation, the menstrual cycle, signs and symptoms of menstruation, information prior to menarche and knowledge of menstrual hygiene. Information usually is the bedrock to knowledge acquisition. Inadequate, misinformation or incomplete knowledge forms a higher difficulty in the way of personal and menstrual hygiene management (Kaur et al, 2018). Unfortunately, the absence of knowledge on menstruation management and other factors have made the situation worse for girls in some settings (Nagar & Aimol, 2010). Socio demographic and cultural issues feature prominently on girl's knowledge. Also, ability to understand the menstrual cycle would enable girls' practice good menstrual hygiene.

Girls' practices

This variable reflected on influences like using of menstrual products, frequency in disposing the product, drying of used absorbent materials, cleaning of absorbent materials, washing and storage of the product. Practicing these measures is good menstrual hygiene.

School and household environment

The hygiene facilities in schools and households are related to good hygiene. Availability of designated facilities helps students to practice good hygiene. "Menstrual hygiene management requires availability of and access to clean and absorbent menstrual material, privacy, water and soap, and disposal facilities for used menstrual materials" (Biran et al., 2012). In spite of the above, majority of schools in under developed countries, especially in deprived communities have very limited facilities including water supply (Adams et al., 2009) for girls to wash hands, external genitalia and soiled clothes. Nor do they have establishment for secrecy, soap,



absorbent materials and disposal of soiled sanitary pads (Sommer et al., 2016). Structures including urinal, toilets etc. all influence good hygiene management.

Economic status

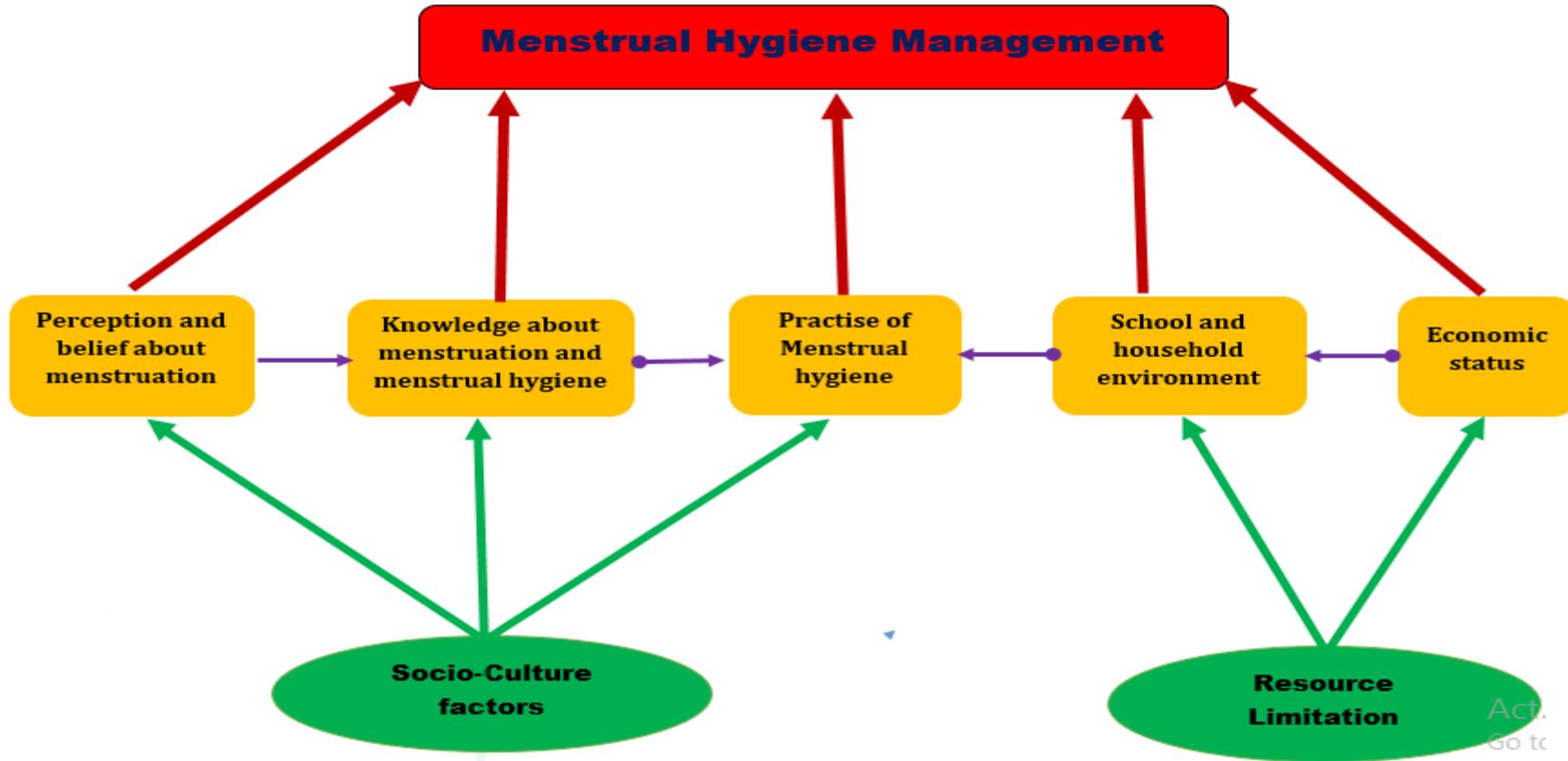
The economic status of the parents is crucial to the practice of good menstrual hygiene. Most studies have demonstrated that socio-economic status of a girl or her family can affect behaviour related to menstrual hygiene (Kumar & Srivastava, 2011; Omidvar & Begum, 2010; Shanbhag et al., 2012; Ten, 2007; Thakre et al., 2011). Ribeiro et al. (2007) asserts that socio-economic factors are the most influential in determining MHM. The use of unsanitary or low standard menstrual absorbent materials are synonymous with adolescent girls from poor or low-income background, they tend to be at higher risk of infection exposure compared to girls from a middle class or high socio-economic status (Ribeiro et al., 2007).

Menstrual hygiene practice (dependent variables)

This refers to the actual management of menstrual bleeding. Elements under this variable included; awareness and access to the right information, adequacy of available services and facilities, disposal with dignity, socio economic factors and access to health services.

In conclusion, individual factors such as household income, education, age, ethnicity among others influence access to which in turn information, structure and hygiene facilities in household and school behaviors of the adolescent girls regarding reproductive and sexual health. This also subsequently has impact on menstrual hygiene management. This could negatively (poor hygiene practice) lead to infection, shame etc. The positive effect would result in improved menstrual hygiene management among girls. See figure 1.1.





Author construct, 2020

Figure 1.1; Conceptual framework for studying determinants of menstrual hygiene management

1.7 Organization of this study

This thesis is presented in six (6) chapters.

Chapter one provides a general introduction to the research. The chapter discussed the extent of the problem and addressed the significance of the research in the study area.

In the opening chapter, research questions and objectives are discussed.

In chapter two however, relevant literature is presented in relation to the objectives of this study. It encompasses the definition of terms related to menstrual hygiene management, historical perspectives, and other empirical published studies on menstrual hygiene managements and its determinants in the world, Africa and Ghana. The chapter concluded with summary of key lessons obtained from the literature gathered.

In chapter three, the methods and materials are described vividly. It covers description of the study area and explains the research philosophical underpinnings, research design, data sources, techniques and data collection tools as well as data analysis and quality control measures. It also demonstrates that, ethical considerations are adhered to, in order to safeguard the study participants.

Chapter four presents the results and analysis of the findings of the research.

In Chapter five, the results of the study are discussed. The findings of this study are compared with other studies and relevant insights extrapolated.

Finally, in chapter six, a summary of the findings of the research, conclusions, recommendations and a direction for future research are presented.



CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter is focused on reviewing relevant literature on menstruation, its physiology, disorders and problems associated with menstruation. The review would also look to provide literary support for assessing the knowledge of menstruating girls on menstruation and menstrual hygiene as well as the practice of menstrual hygiene among these girls.

2.1 Menstruation

Menstruation presents a monumental significance in the procreative lives of all women after the age of ten (10). It is one of the milestones of puberty and an indication of reproductive maturity (Ameade & Garti, 2016; Eswi et al., 2012). In the period leading up to puberty, nature gives rise to varied changes which presents enormous physical and emotional changes which all occur within the same specific time and progressively leading into a state of womanhood (Mahon & Fernandes, 2010). One of such changes is the emergence of menses. Menstruation refers to the “recurring shedding of the uterine lining on a regular basis in the reproductive-aged females during monthly menstrual cycles” (Aniebue et al., 2010). The onset of menses typically occurs usually within the age brackets of 8 and 16, runs on monthly and ends in menopause resulting in about three thousand (3,000) days of menstruation in a normal woman’s whole time of living (Patkar, 2001). Normal menstrual bleeding usually lasts from 4 to 6 days and average blood loss is estimated as 3.5 tablespoons or 30-80 milliliters (mls) (De Sanctis et al., 2015; Karout et al., 2012; Stenchever et al., 2001). Dewhurst, Cowell, & Barrie, (1971) analyzed 368 menstrual periods and



revealed that the flow of blood during menstruation spans from three but not more than seven (thus between 3 and 7 days) in 88% of the cycles under the study, with 5 days being the mean length of menstrual blood flows. In another study carried out by Gumanga & Kwame-Aryee, (2012), the mean duration of menstrual flow among 465 girls studied was 4.9 days with most of the girls having 5 days of menstrual flow with a median being 5 days. The very first menstruation referred to as menarche is one of the noticeable events of puberty (Gumanga & Kwame-Aryee, 2012).

Various studies conducted to determine the age of menarche have revealed a mean menarche age of 12.5 ± 1.28 years in Accra, Ghana (Gumanga & Kwame-Aryee, 2012), 13.66 ± 1.87 years in Tamale, Ghana (Ameade & Garti, 2016), 11.9 ± 1.2 years, Legon, Ghana (Emmanuel & Yawson, 2019), 12.8 ± 1.31 years in Kano, Nigeria (Garba et al., 2018), 12.1 ± 1.6 years in Egypt (Nooh, 2015), 13.52 ± 1.33 years in India (Pradeepkumar et al., 2019), 12.27 ± 1.08 years in Indonesia (Aryani et al., 2018) and 12.4 ± 1.31 years in Italy (Rigon et al., 2012). It can be inferred from the aforementioned that, the age at menarche varies from person to person. Regular ovulatory menstrual cycles in a normal woman occurs mostly by 21 days and not more than 35 days, which may last between 2 and 7 days with a blood loss of not less than 25 milliliter (mL) and not more than 69 milliliter (mL) on the average (Lee , 1996). A multicenter study conducted among high schools with a huge sample size of three thousand, seven hundred and eighty three ($n = 3,783$) with diverse culture in Italy revealed that about 114 people representing 3% of the respondents had menstrual cycles quicker than 21 days and 129 respondents representing 3.4% had menstrual cycles longer than 35 days (Rigon et al., 2012). Similarly, another multicenter, cross sectional study among Pakistan girls on menstrual knowledge and



practices revealed that, some 39.5% of respondent knew that the menstrual cycle length is between 21 and 35, majority (76.1%) could tell the duration of menstrual bleeding (i.e. between 2 and 7) and nearly 30% of the participants knew that the menstrual blood was sourced to the uterus. “Around 27% understood it as monthly bleeding happening with every woman, whereas 18% stated that it was a sign of adulthood” (Mansoor et al., 2020). The menstrual cycle begins from the day of the first menstrual bleeding to the day prior the next menstrual bleeding. In pre-pubescent times (between the ages of 8 and 9 years), “the anterior pituitary gland begins secreting gonadotropin hormones i.e. follicle stimulating hormone (FSH) and luteinizing hormone (LH) under the pulsatile secretion of gonadotropins-releasing hormone (GnRH) from the hypothalamus” (Kaplowitz, 2006). These hormones are the main cast of the menstrual cycle. The cycle has three (3) stages which are the follicular phase (menstrual bleeding phase), ovulatory phase (the estrogen phase) and luteal phase (the progesterone phase) (Mtawali et al., 1997). The duration of menstrual cycles in women is different. This is due to the variation of follicular phase from one individual to another. However, the luteal phase which last usually 13 to 14 days is fairly constant in all women (Sperroff, Glass, & Kase, 1999).

The Follicular Phase (Days 1-14): This phase typically lasts for 1 to 14 days. It starts on the foremost day of menses characterized by the flow of blood and manifest by ovulation at the end. The pituitary gland which forms part of the endocrine system releases a hormone called follicle stimulating hormone (FSH) which excites numerous follicles containing ova on the exterior part of the ovary. One of the follicles eventually becomes dominant while the others recede. Within it; a single matured egg develops. The maturing follicle releases estrogen which increase gradually and reach a highest point within one or two day(s) preceding to ovulation. High levels of



estrogen results in the thickening of the lining of the uterus and making it more echogenic (De Sanctis et al., 2015) in preparation for implantation and the stimulation of the gonadotropin-releasing hormone (GnRH), which in turn stimulates the pituitary gland to secrete luteinizing hormone (LH). The high surge in L.H. and F.S.H. results in the bringing out of the egg from the follicle (Society of Obstetricians and Gynaecologist, 2019).

Ovulatory Phase (Day 14): The ovulation process is central to the entire menstrual cycle process (Crosta, 2015). The release of the matured egg ensues mostly on the 14th day of the cycle and makes its way towards the uterus through the fallopian tube. Fertilization could occur in the tubes or uterus if a viable sperm is available. If the egg does not get a viable sperm to fertilize, it breaks within a day (24 hours). The ruptured follicles from egg stays on the exterior of the ovary for about two weeks before transforming into a structure called the corpus luteum (Society of Obstetricians and Gynaecologists, 2019).

Luteal Phase (Days 14-28): FSH and LH levels decrease significantly after the release of the egg in the ovulatory phase. The corpus luteum produces progesterone. It is worthy of mention that, if pregnancy does not occur the corpus luteal withers and dies (Jabbour et al., 2006). This progesterone is responsible for preventing the lining of the uterus from shedding. Generally, it is accepted that the fall in progesterone levels due to corpus luteum death causes the lining of uterus to fall away and thus triggers menstruation in women (Critchley et al., 1999). The shedding presents as menses which lasts for 5 days on the average and is usually heaviest (the blood flow) on the first two days.



2.2 Problems associated with menstruation

Menstrual problems or disorders are often associated with teenagers and young adult women. Menstrual cycle irregularities may arise due to pregnancy, infection, malignancy, trauma, hormonal disturbance, emotional stress, vigorous physical activity, or dietary problems (Adams et al., 2009; Diaz et al., 2006). The disorders include heavy periods, absent periods and painful periods.

Heavy menstrual periods, also known as Menorrhagia involves more bleeding than normal with periods lasting for 5 to 7 days. This usually is caused by imbalances in hormones which arise from infections, puberty, thyroid issues and as well as changes in diet (Brawner et al., 2016).

Absent periods simply mean no menses or amenorrhea. Primary amenorrhea occurs when a girl on hitting puberty age does not see her first period by the age of 16. This is partly attributed to disorders of the thyroid gland, eating disorders, and lots of exercise resulting to low amount of fats in the body, a birth defect of the female reproductive system, pituitary adenoma or a postponement in puberty. Secondary amenorrhea on the other hand occurs when one's normal menses or period is interrupted for six months or more.

Oligomenorrhea is defined as a condition associated with infrequent menstrual periods and is mostly operationalized as menstrual cycles that span from 35 to 90 days. It is very often termed as 'long cycle' (Ross, 2014). In a study conducted in Indonesia, 30.6% of the study participants were said to have developed abnormal menstrual cycle which consisted the following; 24.5% developed Oligomenorrhea, 5.9% had polymenorrhea, and about 0.2% complained of amenorrhea (Aryani et al., 2018).



Hypomenorrhea is actually rare. It is often defined as menstrual flow for less than 2 days in duration. The menstrual blood flow is very scanty in volume and is not known to be associated with serious disease (hypomenorrhea) (De Sanctis et al., 2015).

Painful period also referred to as dysmenorrhea occurs when cramps arise as the uterus contracts to expel shed lining and remnants of the egg. This typically presents as painful menstruation. Globally, dysmenorrhea is said to be among the principal causes of gynecological hospital visits, with consequential physical, mental, spiritual, academic, and societal consequences (Osonuga & Ekor, 2018). In Ethiopia, a study has demonstrated that, adolescent girls with premenstrual symptoms are more likely to experience dysmenorrhea than those without any form of premenstrual symptoms (Zegeye et al., 2009). In Egypt, almost all (representing 94.4%) of school-going girls testified experiencing dysmenorrhea (El-Hameed, Mohamed, Ahmed, & Ahmed 2011).

The phenomenon of painful menses is so prevalent and tends to be taken as normal as evidenced by a majority of adolescent girls in rural areas of Malaysia seeing dysmenorrhea a normal aspect of menstruation in a survey conducted (Wong, 2011). A comparative study involving 200 female undergraduate students with 100 offering courses relating to health and the other 100 offering humanities courses or courses seen as non-medical in the University of Cape Coast, Ghana was conducted to analyze the impact of dysmenorrhea. It was noted that, dysmenorrhea caused substantial troubles in the involvement of academic and non-academic activities of the respondents. It gave rise to mood disturbances, distraction in social dealings (thus, disassociation with contemporaries and university staff), restriction in sleep, and time lost due hospital admission (Osonuga & Ekor, 2018).



In a study conducted in Zagazig, Egypt, to “determine the nature and prevalence of menstrual disorders among the young female students”. It was observed that about 17 representing 6.0% of the respondents had a history of Oligomenorrhea whereas 6 others (representing 2.1%) stated having polymenorrhoea. Hypomenorrhea was further noticed in 20 students (representing 7.1%), while 15 students (5.3%) experienced hypermenorrhea. Irregular periods were mentioned by 22 students (representing 7.8% of the respondents). Majority of the students 185 (thus 65.4% of the respondents) reported having dysmenorrhea (Nooh, 2015). Menstruation is allied with spiritual (religious) and cultural (traditional) connotations that have the tendency of influencing the sensitivities of the subject among young girls. In communities and households, there is a mindset that a menstruating adolescent girl is filthy or impure and as such is treated differently by way of restricting movements and contacts (National Level Learning Alliance Platform, 2016).

Strangely in some cultures in the African continent, the subject of menstruation is chiefly seen as a taboo (House et al., 2012) and traditional houses are reserved for use by menstruating women so as to keep them from coming into contact with other people until night fall. In other settings, she is not allowed to approach holy grounds, touch holy books and other holy objects (Juayire, 2016). Domestic work for example cooking was frequently referred to as ‘not allowed’ for girls during their menses in India (Thakre et al., 2011), and in some parts of Africa; Kenya (McMahon et al., 2011), and Nepal (Adhikari et al., 2007). A study done by UNICEF in Kenya demonstrated that one in ten school-age girls will not be present at school during the period of their menses. Another case study in Uganda showed that ninety-four percent (94%) of 300 primary school girls recruited in the study had some problems at school



during menstruation: three out of five girls (60%) reported staying away from school (Rockhold, 2008).

2.3 MHM products (absorbent materials) used during menstruation

Female hygiene materials during menstruation are significant part of life for millions of women. Approximately, a woman experiences 13 cycles each year for about 37 years (Wiesemann & Adam, 2011). These hygiene materials are used to catch menstrual flow and include cloths, reusable and disposable pads, panty liners, tampons and menstrual cups (UNICEF, 2019). Users have a primary need to feel clean and dry, to be protected and in control, and for comfort and convenience (Wiesemann & Adam, 2011). “The preference of sanitary protection material is based on personal choice, cultural acceptability, economic status, and availability in local market” (Kaur et al., 2018). According to UNICEF (2019), there is no one menstrual product that suits every girl and woman in all settings. These differences arise as girls and women have different needs and preferences of MHM materials and these further depends on whether they are at home, at work, or in other public settings (UNICEF, 2019). In India, some studies revealed that girls preferred to use sanitary pads at school and cloths at home (Nair et al., 2012; Thakur et al., 2014). Still on preferences, Allah and Elsabagh (2011) reported that among secondary school girls in Zagazig City, Egypt, many of the girls disclosed that they used sanitary pads for the first 2 days of their cycle when the menses are heavier and switched to cloths for the last few days (Allah & Elsabagh, 2011). The preferred usage of MHM material could also be determined by location as reported by Kaur et al (2018) that in most deprived areas, the absorbent materials mostly used are reusable cloth pads whereas women in urban areas prefer to use commercial sanitary pads (Kaur et al., 2018).



With regards to the commonly used menstrual products, several studies conducted in developing countries reported that sanitary pads, cloths and tissue paper as the most commonly used menstrual hygiene products (Chandra-Mouli & Patel, 2017; Sumpter & Torondel, 2013). In Ghana, Asimah, Diabene, and Wellington (2017) and Nigeria (Aluko et al., 2014; Oche et al., 2012), Zambia (Lahme et al., 2018) showed that girls in secondary school mainly used sanitary pads. In Uganda, reusable pads were the most commonly used followed by cloths, disposable sanitary pads, toilet paper, underwear alone and sponge (Hennegan et al., 2016).

Sanitary pads are made to absorb menstrual blood. The speed of uptake and amount of liquid that a material can hold characterizes its absorption capacity (Gupta, 2014). The key performance requirement of such materials is to handle different density of menses under variety of conditions and activities, easy to use, comfortable and easy to dispose of (Wiesemann & Adam, 2011). Most sanitary pads consist of a top sheet, the absorbent core and the back sheet. The top sheet funnels fluid into the core. The absorbent core typically presents as the difference in the brands of sanitary pad. Absorbent core materials include polyacrylate, chlorine-bleached Kraft or sulphate pulp, cotton, wood pulp, bamboo pulp, banana fiber, bamboo fiber, sea sponges and water hyacinth (Kaur et al., 2018). The absorbent core is sometimes liaised with odor absorbent materials such as zeolites and cyclodextrines and sometimes with inhibiting bacteria growth chemicals (Wiesemann & Adam, 2011). The back sheets then prevent moisture in the core from seepage. The sheets may be impermeable, semi-permeable (breathable; allows water vapor to pass through) (Schäfer et al., 2002 as cited in Wiesemann and Adam 2011)

Menstrual hygiene products can be broadly classified into disposable (single use) and re-usable products. Disposable products: single use products (disposable sanitary pad



and Tampons) and while the reusable products (reusable sanitary pad, cotton and menstrual cup) (WaterAid, 2019).

Disposable Sanitary pads; These types of sanitary pads have an absorbent core made of wood pulp and super absorbent polymers such as sodium polyacrylate gel. The top-sheet is typically made of polypropylene based non-woven fabric and the back sheet made of polyethylene (WaterAid, 2019). They are easily accessible in many stores and pharmacies albeit a bit expensive compared to cloth pads (Kaur et al., 2018). The pads must be worn external to the body with underwear as support and must be disposed of after a maximum of 8 hours (UNICEF, 2019). Pads may disintegrate on extended use; users may be prone to leakage and staining (WaterAid, 2019). They come with different characteristics including scented, ultra slim, superabsorbent, with added medicinal properties (Elledge et al., 2018).

Disposable Tampons; these are the type of absorbent that provides internal protection. They are made of cotton and/or rayon and inserted into the vagina to absorb menstrual flow. They can be worn for up to 8 hours and removed using a removal string and disposed of (UNICEF, 2019). Tampons have to be inserted into the vagina, which presents a barrier for uptake in many cultures as it is inaccurately associated with tearing the hymen and loss of virginity. This coupled with lack of awareness of tampons had accounted for its low patronage (1% to 4%) in low-income countries (UNICEF, 2019). Tampons made of natural material such as bamboo and hemp can be knitted with cotton or wool and used as washable tampons (Kaur et al., 2018).

Advantages of disposable pads and tampons include; pads are available in many parts of the country. Tampons however remain scarce in Ghana, low cost product variants available. These pads are the most used among students and the educated and hence



subject to free distribution or sale at highly subsidized rates making sanitary pads more affordable (WaterAid, 2019). Tampons can be used with an intrauterine device (UNICEF, 2019).

Also, the disadvantages of disposable pad and tampons are as follows; “Limited disposal and waste management solutions for one-time use pads, may be expensive in some circles compared with cloths, use of a single pad may be extended beyond a reasonable time, placing users at risk of leakage, irritation and even infections. Toxic shock syndrome (TSS) is a severe complication of certain bacterial infection, often associated with tampons because the blood that accumulates in a tampon can serve as a culture medium for the bacteria. Using a tampon for longer than recommended time can increase the risk of TSS” (WaterAid 2019; UNICEF, 2019).

Another type of disposable sanitary pads is the compostable sanitary pads. These types have a more natural absorbent core made of wood pulp, banana fiber and pine and decompose easily compared to regular disposable sanitary pads. The back sheet unlike regular pad is made of bio-plastics and glue. They are more expensive than regular disposable pads (WaterAid, 2019).

Reusable Sanitary Pads; These products differ from the disposable sanitary pads in the component of the absorbent core. The top sheet and absorbent core are made of cotton, microfiber, polyester and other absorbent fabrics. The back sheet is typically made of polyurethane laminate. The pad is worn outside the body and requires underwear to keep it in place. Reusable pads can be used for approximately one year (UNICEF, 2019). Some are designed to be worn without underwear (have waste straps to secure product). Products need to be soaked and washed thoroughly in water at room temperature, using mild soap (not anti-septic solutions), dried well, and stored in a clean, dry space (WaterAid, 2019).



Cloths and cloth pads; Cloths are reusable pieces of fabric worn externally to the body, in underwear or tied to the waist to absorb menstrual flow. The fabric either new or old (repurposed from old clothing) are usually made of cotton (UNICEF, 2019). Cotton cloth may make the best surface material, as it absorbs fluid at by far the most rapid rate, dries quickly, and is resistant to deformation (Gupta, 2014). The user must change the pad every 4-6 hours and the pad has a life span of up to 100 washes which calculates as use for 2-5 years (WaterAid, 2019). Cloths are cheap and readily available in most contexts (UNICEF, 2019). This is the most sustainable sanitary option but must be hygienically washed with soap and water and dried in the sunlight (Kaur et al., 2018). Where and when adequate sunlight is limited, it may be more practical to dry them with an iron (Sommer et al., 2016).

Advantages of reusable pads and cloths includes; these cloth pads are reusable so they are cost-effective, easily available, and eco-friendly (Kaur et al., 2018), reduces waste load, some product variants are easy to wash, dry and store, many reusable products have desirable qualities such as leak-proof layer and wings that protect against leakage and staining (WaterAid, 2019).

On the other hand, disadvantages of reusable pads and cloths are; Reusable pads have limited availability, reusable pads are more expensive than disposable sanitary pads, use of a single pad may be extended beyond a reasonable time, placing users at risk of leakage, irritation and even infections (WaterAid, 2019), cotton used in making certain pads may contain pesticides (Kaur et al., 2018), there might be an association with urinary tract infections and bacterial vaginosis, and the use of damp cloths and pads can lead to skin irritations (UNICEF, 2019).



Menstrual Cups; The menstrual cup is a non-absorbent bell-shaped device that is inserted into the vagina to collect menstrual blood. It is held in place by the walls of the vagina (UNICEF, 2019). The product is made of molded medical grade silicon which makes the cup easy to fold and get inserted (Kaur et al., 2018; WaterAid, 2019). Menstrual cups are supposed to be boiled for at least five (5) minutes after each menstrual period. It is three (3) times more than pads or tampons in the collection of menstrual blood and must be emptied every 6-12 hours (depending on the menstrual flow), after which it is rinsed and re-inserted. After each menstrual cycle the cup must be boiled for 5-10 minutes (UNICEF, 2019).

Advantages of the menstrual cup includes; it generates minimal waste, it offers sustainable, practical, and cost-effective alternative where sanitation conditions are not good (Kaur et al., 2018). Disadvantages of menstrual cup include; “limited availability and higher cost, need to be inserted vaginally – may not be acceptable to many users, unclean cups or cups worn for over 12 hours are harmful and may be associated with infections. In extreme cases, toxic shock syndrome may occur” (Water Aid, 2019).

2.4 Knowledge of adolescent girls on menstruation and menstrual hygiene

Many adolescents encounter and go through the menstruation process with a degree of embarrassment and inconvenience. A study in India discovered that most females in their school going age reported as being shocked or surprised when they saw their first menses (menarche) and many wept when they saw their menstrual blood on menarche (Narayan et al., 2001). For some school-going girls, the blood during menses is considered as being dirty and so labeled the feeling as disgusting (Santina, Wehbe, & Ziade 2012). Cardinal to debunking this notion of menstruation being a



nuisance is adequate knowledge and information to make females more aware of their bodily changes. These undesirable implications of menstruation have been connected to the lower social status of girls (Maybin & Critchley, 2015). Mayben & Critchley (2015) asserts that as a girl obtain higher quality of education and better access to emergency health care, the “taboo” of menstruation weakens or decreases (Maybin & Critchley, 2015). The complete absence of knowledge on menstruation management and other factors have made the circumstances dicey for girls in some settings (Nagar & Aimol, 2010). Prior to menarche, there is the need to educate these growing girls on what menses signifies and its management. In South Asia, a WaterAid study showed that one out of three (about 33.3%) girls before menarche did not have any information about menstruation (WaterAid, 2013). In Iran and India, it has been reported that some girls believed menstruation is a disease (Pandey, 2014). Similarly, in Bangladesh most madrasa girls (about 37%) considered menstruation as a disease with about 33% considering it as a natural phenomenon (Anee et al., 2020). In Nepal, a study showed that more than half of adolescents did not know the source of menstrual bleeding (Mahon & Fernandes, 2010).

There is an important connection between knowledge of period in women and menstrual hygiene, good performance in school and the overall progress of the society (Vivas et al., 2010). Unfortunately, the lack of knowledge on menstruation management has made issues worse in some settings (Nooh, 2015). Arora et al., (2013) revealed a non-existence of awareness among girls with respect to where menstrual blood came from (Arora et al., 2013). Also, a study conducted in India revealed that, majority (60.3%) of girls did not have prior information on menstruation before their menarche and hence testified a weak appreciation of the source and path of menstrual bleeding (Shah et al., 2013). On the contrary, a study



conducted with a similar study population in Nigeria revealed majority of the respondents' ability to acknowledged that the uterus is the source of menstrual blood (Oche et al., 2012). It is therefore suggested that menarche was seen as the starting point for girls learning about menstruation (Iliyasu et al., 2012).

In southern Ethiopia, a total of about 540 out of 791 respondents (68.3%) had demonstrated poor understanding of menstruation in a cross-sectional study carried out at Gedeo zone high schools to evaluate the knowledge and menstrual hygiene practice among adolescent school girls (Belayneh & Mekuriaw, 2019). However, a study conducted among high schools in Harar, in eastern Ethiopia on menstrual hygiene and associated factors revealed that, 184 (61.1%) high school girls demonstrated appreciable knowledge on menstrual hygiene. About 88% of girls pointed truly that physiological process was the cause of menstruation with 2% of the girls trusting that it was a "curse from God". Nearly 60% could identify the source of menstrual blood as uterus. About 234 (77.7%) recognized that 2 to 7 days was duration of normal menses whilst 200(66.4%) recognized the interval between 20 and 35 days as normal menstrual cycles (Felleke & Gerada, 2020). According to Neupane et al., (2020), most of the respondents identified menses as a physiological process (94.8%), normal age of menstruation (94.8), and linked the cause of menses to hormonal change (91.2%). But very few respondents (4.7%) could tell a normal blood flow as 5-7 days with nearly 18% of the girl's believing cervix as the source of menstrual blood (Neupane et al., 2020).

Also, in a study to examine the impact of pharmacist mediated educational courses on menstrual hygiene practice, awareness about menstruation before the first menses (menarche) was reported to be low. Similarly, in Quetta, Pakistan, a study conducted among adolescent girls about menstruation and menstruation hygiene visiting a public



healthcare institute revealed that nearly 44% of the study participants knew that menstruation was a natural process or a normal physiological process. Also, 60.2% of the study participants did not know that menstrual blood comes from the uterus, they rather believed it was from the vagina (Michael et al., 2020). In Plateau State, Nigeria, majority (77.05%) of adolescent knew that menstruation was a natural process. however, 75.4% of the girls opined that, menarche comes with fear and embarrassment (Gorah et al., 2020).

In spite of above, in India, the majority of the participants had exhibited appreciable knowledge about menstruation hygiene. Most of the students recognized that the process of menstruation was physiological, whereas minority of the participants saw the menstrual process as a curse of God (Pradeepkumar et al., 2019). Still in India, 500 adolescent girls of ages between 10 and 17 years were included in a research to assess menstrual practices (expressed) and knowledge of adolescent girls in rural area of Haryana. The study concluded that adolescent girls in deprived communities do not have good expressed practice and knowledge regarding menstruation (Rani et al., 2019). In relation to above, 1179 out of 1,573 Chinese girls surveyed scaled their knowledge about menstruation as “inadequate or very inadequate” in China (Tang et al., 2003). A systematic scoping review of forty-four researches on menstruation from 12 countries revealed a majority (40 out of 44) of studies used school-based samples, and fifteen (15) studies reported on interventions. The review showed majority of the surveys reflected that the girls had “inadequate knowledge about menstruation and menarche was a trigger for girls learning about menstruation was common” (Coast et al., 2019).

A study conducted to assess knowledge and practice concerning menstrual hygiene among physically disabled women in India revealed a good and appreciable



knowledge about menstrual hygiene within the age group of 15-24 years (Pokhrel et al., 2020).

2.4.1 Source of information

Reviews of studies have shown a varied range of source of information for menstruating girls. According to (DeMaria et al., 2020), women could recall vividly their menarche (first menses) memories; however, most women had not received proper education or preparation for what to expect prior to onset (DeMaria et al., 2020).

The foremost medium of information about ovulation and menstruation for girls are mostly parents (mothers) and peers (friends), followed by the mass media (Eswi et al., 2012). In a systematic meta-analysis of more than 80 journal articles from countries within low- and middle-income, it emerged that starting of menses among adolescent girls were met with misinformation and unpreparedness (Chandra-Mouli and Patel 2017). However, another systematic review and meta-analysis of system-and policy-level actions among schools in India on Menstrual Hygiene preparedness revealed that more than 50% of the girls had information on menstruation before their first period (Sharma et al., 2020). The difference in both system analysis stems from the fact that, unlike the latter, the former reviewed studies from many countries and all adolescent girls including those out of school. Teachers were a less common source of information about menstruation to girls (Sharma et al., 2020).

Mothers are the prime source of information on the subject of menstruation (Ajah et al., 2015; Oche et al., 2012), but their information to the girls is too-little (scanty) and usually very-late as well as features their own misconceptions (Chandra-Mouli & Patel, 2017). Liberal and often times educated mothers have been known to openly



discuss issues that relate to the menstrual cycle with their female offspring (Zalcborg, 2009). Sudeshna & Aparajita, (2012) revealed that, good menstrual hygiene was seen to be practiced among children whose mothers had higher level of education and acquaintance to media advertisements (Televisions, Newspapers, Social Media etc.) encouraging the usage of sanitary towels in a descriptive cross sectional study conducted among some adolescent girls in rural secondary schools of West Bengal, India (Sudeshna & Aparajita, 2012). Conservatives mothers on the other hand deliberately avoid such discourse for the fear of it extending to sexual related matters (Zalcborg, 2009).

In another study, friends were viewed as one of the most crucial channels of information for adolescents on sexual reproductive matters (Roudi-Fahimi & El-Feki, 2011). Juayire, (2016), found otherwise as he recognized schools instead as being a more important source for building knowledge on sexual reproduction and fertility related matters (Juayire, 2016).

In Nigeria, the most significant channel on the spread of information concerning premenarcheal counseling is provided by parents/guardians and followed by the school teachers. Other sources of information on premenarcheal counseling were books/magazines/newspapers and TV/radio. This was revealed in a study conducted among adolescent girls in some high school adolescent girls in Kano (Garba et al., 2018). Similarly, a study in Bokkos Local Government Area of Plateau State; Nigeria revealed that, the respondents (85.24%) had excellent information regarding menstruation and its management. Information on Menstruation is passed on from grandmothers to mothers and to girls (Gorah et al., 2020). In Ethiopia, a total of 276 (91.7%) high school girls had heard about menses prior to menarche with the source of information about menstruation from their mothers, 163 (54.2%), teachers 70



(23.3%), health personnel 13(4.3%), media and others 29(10%) (Felleke & Gerada, 2020).

In India, it emerged that most participants in a study acquired information about menstruation from friends followed by their mothers (Pradeepkumar et al., 2019). Most of the mothers in this survey turned out to be housewives and a good number had basic education. This perhaps influenced their ability to impart menstrual knowledge on their daughters hence the baton fell to the peers of these girls.

A Knowledge Attitude and Practice study conducted on menstrual hygiene among Madrasa girl in Dhaka, Bangladesh showed that the mother was seen to be the main source of information regarding menstruation and menstrual hygiene (Anee et al., 2020). In Pakistan, a study revealed that about 78% of respondents had no form of education be it class or other sessions regarding menstruation in school. Thus, about 67% of adolescent girls have had to rely on their mothers as the main source of menstruation-related information (Michael et al., 2020). In the same country, majority of girls received information on menstruation prior to menarche (Mansoor et al., 2020).

2.5 Menstrual hygiene management practices among adolescent school girls

UNICEF and World Health Organization, (WHO) in 2004 gave a broad definition of Menstrual Management as “Women and adolescent girls using a clean menstrual management material to absorb or collect blood that can be changed in privacy as often as necessary for the duration of the menstruation period, using soap and water for washing the body as required, and having access to facilities to dispose of used menstrual management materials” (Sommer et al., 2016). Menstrual Hygiene Management (MHM), is an everyday encounter to the adolescent girl child worldwide, including under developed countries like Ghana. Effective menstrual



hygiene management practices are crucial as it aids in avoiding the numerous health problems which are usually connected with weak menstrual hygiene practices; a consequence of which is infection and other reproductive system complications (Emmanuel & Yawson, 2019). Adolescents therefore require access to MHM facilities among others both at home and in school for effective practice of MHM. It is largely known that girls often have to stay indoors for the period of their menses if they are incapable of managing menstruation securely or with dignity (Appollis, 2014). Worldwide 10% of women are exposed to Urinary Tract Infections, due to lack of menstrual hygiene practice (Upashe et al., 2015). Good hygiene practices during menses should be followed during menstruation. It involves the use of sterile pads, daily baths, keeping intimate area clean, use cotton under garments, etc. (Arya & Ambily, 2017).

A descriptive cross-sectional study conducted in Kathmandu, Nepal showed that, overwhelming respondents (about 83%) of physically impaired persons used sanitary pad during their menses. About 106 of the respondents change their pad twice a day and more than 90% disposed used pad in dustbin (Pokhrel et al., 2020).

Several factors affect the hygiene being practiced by adolescent girls during menses. Menstrual Hygiene practice is predisposed by various factors including “knowledge, presence of necessary facilities and the proper social and cultural environment to manage menstruation hygienically and with dignity” (Karout, 2015; Mahon & Fernandes, 2010). A study carried out in Chitwan, Nepal on menstrual knowledge and practice among some selected school girls showed that, regarding practices, almost all respondents (about 96%) discard their used pads in dustbin after wrapping it, with 95.9% of girls washing their hand with soap and water after changing their pads and as well cleaned genitalia properly (94.8%). The study further revealed



sanitary pads were widely used during menses (93.8%). However, just more than half (64.2%) of the respondents took a bath daily during periods/menses (Neupane et al., 2020).

Poverty is a vital socio-economic blockade and effects negatively on the menstrual hygiene practices among girls (Chin, 2014). A study conducted in Ashoknagar, Belagavi, India hygiene among late adolescent girls on the factors affecting menstrual hygiene showed that factors like “age, religion, socio-economic status and mothers’ literacy were significantly associated with” menstrual hygiene management (MHM) (Suhasini & Chandra, 2017). Within the same geographical area, it was revealed that menstrual hygiene practices were affected by “cultural norms, parental influence, personal preferences, economic status, and socio-economic pressures” (Kaur et al., 2018).

The availability of adequate WASH facilities has enormous impact on MHM. In most public schools, the hygiene needs of menstruation girls with respects to satisfactory health education and information as well as the type of sanitary facilities available are not a priority. Some schools may not have separate washrooms for both sexes, properly lit and secluded washrooms and most importantly availability of water (Blessing, 2016). In Accra, Ghana, Sommer et al., (2015) reported insufficient toilets and inadequate privacy measures in toilets in public schools. Up north in Zabzugu, primary schools in the Zabzugu district did not have adequate WASH facilities while existing facilities were under-utilized (Tiswin, 2016). These inadequate facilities result in poor practice of menstrual hygiene as shown in a study carried out in Kenya where absence of privacy and sanitary facilities (including toilets, urinal, designated room for changing) have made some girls faced troubles in managing their menstrual periods at school (McMahon et al., 2011). Water, sanitation and hygiene (WASH)



conditions in such schools, are essential for the comfort, equity, and dignity of menstruating girls (Alexander et al., 2018).

In a study conducted in Dakar to assess the knowledge, attitude and practice of menstrual hygiene among Madrasa women observed that, about 67% of the study respondents used cloth or rag to manage their menses and considered themselves impure (Anee et al., 2020). In the flip side, a study in Pakistan revealed that almost all participants (90%) used absorbent materials during menses with majority (68.7%) using commercially available sanitary napkins/pads (Michael et al., 2020).

It has come up that most of the adolescents in Quetta, Pakistan (58.2%) were not taking their baths during menstruation, however, close to 81% of these adolescents cleaned their genitalia with water during menstruation (Michael et al., 2020). Another study conducted among Female Students in Bokkos Local Government Area of Plateau State; Nigeria on Knowledge, Attitudes and Practices of Menstrual Hygiene Management revealed that, 67% used sanitary pad during menstruation. Most (61%) of the respondents changed their absorbent material twice in a day and disposed used materials in Dustbins, 170(56%), toilet 120(40%), abandoned well 85(28%) with about 39% burning used materials. Nearly 6.0% took analgesics to ease menstrual pain (Gorah et al., 2020).

In Egypt, a study conducted among 704 secondary school females on menstrual hygiene revealed that majority of the selected girls (98.6%) used disposable pads. Regarding storage of these materials, it was established that about 65% girls stored the clean (unused) materials in the (dress) cabinet whilst 18.8% girls used bathroom. Majority (67.3%) of the participants changed napkins 1–6 times a day and nearly 30%



do not remember. Overall, the study revealed that 90% of students had acceptable menstrual hygiene (El Meselhy et al., 2020).

In Kenya, a study showed that good hygiene was practiced among 64.3% of the participants. About 66.9% of the study participants used sanitary pad, 12.5% disposed their used materials in open field, majority (56.8%) discarded them in waste bins and about 31% disposed of their used pads in latrines. A total of 322/384 cleaned their external genitalia less than twice a day during their periods (Mathenge & Midigo, 2020). Similarly, in Ethiopia, more than half, 55.8% of the high school girls in Ethiopia were seen to practice good menstrual hygiene. Majority of the study participants used sanitary pads amongst them 219(72.8%) use one-time sanitary materials, 35(11.6%) use reusable sanitary pads. Washing of genitalia during their menstruation was practiced among 277(92%) girls with 126(41.9%) using both soap and water and 149(49.5%) girls use only water and 2(0.7%) use other methods to clean the genitalia (Felleke & Gerada, 2020).

Menstrual hygiene practices are generally relatively poor in Africa and usually the real issues are under estimated. According to Mohammed et al., (2020) in a school based in rural Ghana, about 118(47.2%) and 85(34.0%) of the girls used commercial sanitary pad and reusable cloth/ rag respectively, about 45.2% of the study participants changed their absorbent material three or more times in a day, 70.9% of the 94.80% girls who washed their hands always do so before changing their used absorbent materials. Most 113(45.2%) of the girls disposed their used pad in the toilets. Almost all (about 94%) bathed during their menses with 64.8% using soap and water to clean the genitalia. These revelations culminated to a fairly (about 50.8%) good practice on menstrual hygiene (Mohammed et al., 2020).



A study was conducted among two basic schools in the University of Ghana, Legon of which 209 respondents were recruited randomly. The outcome of the study was that, there was a significant difference in menstrual hygiene practice by hygiene knowledge level on how one need to bath during menses on daily basis and their experience of pain during menstruation. In the same study, there were no significant differences in the total number of sanitary products used in a day by knowledge level, ways of disposal of used sanitary products and what was used to wash the genitalia during menstruation (Blessing, 2016). Another quantitative cross-sectional study was conducted to assess the sanitary supplies in the two Basic Schools in Legon, Accra, Ghana. Findings revealed that, majority (68% of the respondents) bathed twice during menses whereas 21% of the adolescent girls routinely bathed three times on daily basis during menstruation; half (50%) of the respondents changed sanitary products three times daily when menstruating, while a little below half representing 47% of the respondents changed their pad twice daily. More than 50% of the study participants discard their used sanitary products in a dustbin after wrapping it. Importantly, menstrual hygiene practices among the Basic School girls was considered as good, with socio-economic factors (such as employment status, income status, education etc.) contributing to the adaptation of decent disposable menstrual materials during menstruation. Sanitary facilities (including toilets and urinals) were available at the time of the study and in use though resources such as running water in the form taps or veronica bucket, soap for hand washing after use, and sanitary materials in the incident of an emergency were unreachable (Emmanuel & Yawson, 2019).

A cross-sectional study among 219 adolescent girls in three (3) senior high schools at Kano in Nigeria showed that, a total of 202 (92.2% of the study respondents) used



sanitary pads as menstrual absorbent. Aside above, other menstrual absorbent used by the adolescents were in the study included toilet roll (tissue paper) 11 (5.0%) and cloth (rag) 5 (2.3%). The average number of baths taking by the adolescent during the menstrual period was 1.0 ± 1.12 . All the adolescents changed their menstrual absorbent used in the toilets within the school premises and washed their body with soap and water (Garba et al., 2018).

In a study to assess the practice of menstrual hygiene and its associated factors among Mehalmeda high school female students in Amhara regional state, Ethiopia revealed that, there is a direct proportionality between those who practiced good menstrual hygiene and those participants who had high level of knowledge about menstrual hygiene and access to water (Gultie, 2014). Thus, those with good knowledge on menses and access to water had good practice of menstrual hygiene than their counterparts. Still in Ethiopia, about 48.1% of 791 school girls interviewed in a survey used absorbent (sanitary) materials during menses, and 69.5% of the respondents washed their peripheral aspect of the genitalia during their periods. Generally, the study revealed that, majority (60.3%) of girls had poor menstrual hygienic practice (Belayneh & Mekuriaw, 2019).

In a study conducted in India among 423 adolescent girls, it emerged that 44.7% used old cloths while 40.3% were using sanitary pads during menstruation. The study showed that most of the study participants were unaware about menstrual hygiene and practices, due to social restrictions and lack of knowledge on the physiology of the reproductive system (Pradeepkumar et al., 2019).



A study conducted among some 1, 359 adolescent schoolgirls to investigate girls' confidence to undertake menstrual management tasks at home and in school environments in Bangladesh revealed that; about 57% of girls were 'very confident' at managing their menstrual bleeding at home. Use of sanitary pads was positively with confidence to manage menstruation at home; other menstrual hygiene practices on the other hand were unrelated. In multivariable models, the nature of hygiene facilities including cleanliness and waste bins availability were associated with increased confidence at home. On the other hand, in the school, supportive policies such access to hygiene facilities were associated with greater confidence. For most participants, talking to a peer about menstruation was positively associated with confidence at school, while at home having to talk about menstruation with parents predicted lower confidence (Hennegan & Sol, 2020).

2.6 Determinants of menstrual hygiene practice

Menstrual hygiene practice is influenced by many factors including knowledge, availability of essential facilities and the appropriate social and cultural environment to achieve menstruation hygienically and with respect and secrecy (Mahon and Fernandes, 2010; Karout, 2015). Young females especially in developing countries usually lack information about good MHM practices (Aniebue et al., 2010). Poverty, both personal and structural, is an essential socio-economic barrier and negatively influences the menstrual hygiene activities adopted by the adolescent girls. It is worthy of mention that the educational and psychological needs of girls must be taken care of when they are undergoing the monthly process of menstruation (Chin, 2014). Other factors include gender discrimination, insufficient water supply, and gender-unfriendly sanitation amenities in the schools. A study conducted to assess the factors



prompting menstrual hygiene practices among late adolescent girls in Ashoknagar, Belagavi, India showed that factors including age, religion or spirituality, socio-economic status and mothers' education status were significantly connected with practice of good menstrual hygiene (Suhasini & Chandra, 2017). Elsewhere, menstrual hygiene practices are influenced by cultural and religious norms, parental influence (especially the mothers), personal preferences, economic status, and socioeconomic pressures (Kaur et al., 2018).

2.6.1 Knowledge and information

Information usually is the bedrock to knowledge acquisition. Inadequate, misinformation or incomplete knowledge forms a higher difficulty in the way of personal and menstrual hygiene management (Kaur et al, 2018). Unfortunately, the absence of knowledge on menstruation management and other factors have made the situation worse for girls in some settings (Nagar & Aimol, 2010). Health education and information about MHM is required to make adolescent girls realize the necessity to washing their hands and perineal regions after menstruation. This means that the education on hand washing and the cleansing after a menstrual period should be considered. "This is important as there is a connection between the girl child with her clean hands, knowledge of MHM, good grades in school and the development of the society" (Vivas et al., 2010). A study showed that about 33.3% of girls in South Asia had no information prior to menarche (WaterAid, 2013). This breeds misperceptions among such girls. In Iran and India, it has been reported that some girls believed menstruation is a disease (Pandey, 2014). In Nepal, a study showed that majority did not know where the menstrual bleeding was coming from (Mahon & Fernandes, 2010). The lack of or inappropriate sexual health information could lead to different



health risks and social difficulties including poor MHM (Al-Quaiz et al., 2013). In Chitwan, Nepal, a study showed a significant positive relationship between respondents knowledge on menstruation and menstrual hygiene practice ($p < 0.05$) (Neupane et al., 2020). Furthermore, girls at adolescence tend to lose self-esteem as a result of social stigma associated with menstruation which in turn prevents them from socializing and asking questions on menstrual hygiene management (Yoo et al., 2011).

In a study to assess the practice of menstrual hygiene and its associated factors among female Mehalmeda high school students in Amhara regional state, Ethiopia, it was reported that girls with appreciable knowledge in menstrual hygiene and had access to water were said to have practiced good menstrual hygiene (Gultie, 2014).

In a study conducted in Cambodia, most girls had knowledge of MHM practices, such as showering and cleaning the vagina with soap; using sanitary pads to prevent staining; and changing sanitary pads multiple times per day. However, there was a meaningful gap in knowledge for some girls on how to properly wear sanitary pads (Daniels, 2016). The sources of information for these school children obviously must be at school. However, different sources of information exist including parents, media, and friends among others. Sudeshna & Aparajita, (2012) reported in a descriptive, cross-sectional study conducted among 190 adolescent girls of a rural secondary school in West Bengal, India that good menstrual hygiene was practiced among those who had educated parents and exposure to mass media (TV, Radio etc.) adverts that promote the use of sanitary towels (Sudeshna & Aparajita, 2012). In the same vein and country, a cross-sectional study conducted on 350 students from educational institutions from a major city in South India showed that majority of the



sampled population desired for more information regarding menstruation and hygienic practices (Omidvar & Begum, 2010).

According to Lestari, Armini, Mariyanti, & Yunitasari (2020), in a study found that there is a strong positive correlation between knowledge on menstruation and the practice of menstrual hygiene ($p = 0.01$, $r = 0.716$). They further posited that girls with early menarche have high knowledge of menstruation, and by extension the practice of menstrual hygiene will likely be good as well (Lestari et al., 2020). It can be inferred from above that, the higher the knowledge, the better the menstrual hygiene practice in children with early menarche.

2.6.2 Psychological factors

According to a UNESCO report, 2014, it has been realized that during menstruation, most girls tend to be naïve and as such anxious due to unpreparedness. This situation is further worsened by the shyness and embarrassment with which deliberations surrounding menstruation are handled (Sudeshna & Aparajita 2012; Ramachandra et al., 2016). Most girls become disillusioned and saddled with a sensation of guilt, dishonor and “unworthiness” (Blessing, 2016). This riddles their ability to optimally maintain hygiene required at such times. Many adolescents, particularly girls, will be met with a severe drop in self-confidence during puberty. All of these factors together with others, relate to the increased rates of hazardous social and health-related behaviors that most adolescents practice (Haver & Long, 2015).

This was evidenced in a study conducted in rural schools in Zambia to discover the experiences of MHM from the school-girls point of view, school-boys, community and school-based adults key to MHM for school girls. The attendances of school girls



and their contribution in physical activities were seen to be declining during menstruation due to fear of mocking or teasing (especially by boys) and humiliation from menstrual leakage. Boys could identify a menstruating girl by the odor and the way the ladies behave including restricted movement as well as isolating themselves from their colleagues (Chinyama et al., 2019). The fact that the adolescent boys perceive a certain form of sign (odor) to detect a menstruating girl is enough to put the ladies in distress at the period of menstruation. Similarly, in Cambodia, despite adolescent girls' confidence in their MHM practices, they described feelings of fear, shyness, or being burdened in multiple aspects of their menstrual and MHM experiences. When asked how girls felt during menstruation, 65.3% (n=75) of all the girls indicated feeling scared and/or shy. Another 17.3% (n=75) indicated feeling burdened, uncomfortable, or generally unhappy during menstruation (Daniels, 2016). Support from parents, teachers and friends during this time of menses is essential. Maternal support has been reported to often alleviate fear and stigma. Mothers were viewed as a key support by girls, both in terms of access to knowledge and resources during menstruation (Daniels, 2016).

2.6.3 Cultural and religious factors

Culture refers to the way of life of a group of people. This way of life includes a set of “basic assumptions and values, orientations to life, beliefs, policies and behavioral conventions” (Spencer-Oatey, 2008). Culture therefore influences many aspects of the lives of people. In this study, attention is paid to the impact of culture and religion to menstrual hygiene management. Aniebue, Aniebue, & Nwankwo (2010), defines menstrual beliefs as the misapprehensions and attitudes towards menstruation within a given culture or religion (Aniebue et al., 2010). During menses some adolescents



within Bokokos in the plateau state, Nigeria are restricted to doing some activities including washing and drying of used absorbent materials which is required to be done in secrecy, do not engage in religious activities, some foods are not eaten and they are not allowed to cook (Gorah et al., 2020).

In Ghana MHM is a verbal taboo – based on cultural and religious beliefs, norms and myths (Mohammed et al., 2020). Thus, menstrual practices wear a veil of taboos and socio-cultural boundaries. Thus, adolescent girls continue to be unaware of the scientific evidences and hygiene practices which sometimes result into adverse health consequences (Suhasini & Chandra, 2017). In Chitwan, Nepal, (92.7%) girls did not partake in religious activities or visit temples and 74.6% of the girls did not visit kitchen and hence cannot cook during menses whereas some 16.1% respondents avoids certain food such as banana. Regarding impact of menstruation, 50.8% and 58.5% of the respondents respectively reported that they are unable to continue daily activities and play sports due to pain during menstruation (Neupane et al., 2020).

“Due to cultural expectations and restrictions, many girls were not adequately informed about the realities of menstruation” (Kaur et al, 2018). These expectations and restrictions act as road blocks in the way of decent menstrual hygiene practices due to myths, misconceptions, superstitions and (cultural and/or religious) taboos (Kumar & Srivastava, 2011; Ten, 2007). Menses is considered dirty and polluting hence most girls experience restrictions on cooking, work activities, sexual intercourse, bathing, worshipping and eating certain foods (Kaur et al, 2018). Another study in India revealed that majority (about 92% and 94%) of physically disabled participants during menstruation were forbidden to go to a holy place and disallowed from cooking food respectively (Pokhrel et al., 2020). All of these restrictions are as a result of one’s cultural and religious belief. These restrictions are



mostly seen in the deprived communities than in the big areas like the cities (Ten, 2007).

In most traditional settings including most African settings of which Ghana is not an exception, discussing menstruation publicly is shunned upon and considered a taboo (House et al., 2012). This is due to the misconceptions that come with menses. As stated earlier, many societies consider menstruating women as impure (Yagnik, 2015). The process is often associated with uncleanness, filthiness and dirt. In some traditional settings, menstruating women and girls are exempted from some social activities such as cooking, bathing and sleeping at home until they are done menstruating (Chin, 2016; Blessing, 2016). Cultural taboos add difficulties that the girls face which prevent them from seeking help (Chothe et al., 2014).

Various studies reviewed showed the immense influence culture and religion had on menstrual practices (Agyekum, 2002; Arousell & Carlbom, 2016; Farage, Miller, & Davis, 2011; Garg & Anand, 2015; Mason et al., 2013; Murray & Agyare, 2018). Apart from the restrictions already mentioned, Ten (2007) reported in a study that menstruating women were prohibited from moving around at will and from working in rice fields. In Surinam, menstruating women are either secluded in detached huts at the far end of the village, or they are kept in a room in the house. To re-join their families, these women are required to wash the clothes they were wearing during the menstruation period and as well clean their vaginal region with steam bath (Ten, 2007).

In Zambia, a research conducted revealed that, the respondents' perceptions, practices and experiences were relative to menstrual hygiene among adolescent girls in secondary schools in Mongu District. The study further established that inadequate knowledge by the girls prior to their first menses was due to insufficient information.



The researcher asserted that the inadequacy of information and lack of knowledge and awareness was induced by cultural beliefs and taboos associated with menstruation (Mutunda, 2013). Similar findings were reported in Egypt where cultural and religious beliefs make menstruation an inappropriate topic for discussion leading to the lack of accurate information for girls to manage menstruation hygienically (El-Gilany et al., 2005). A cross-sectional study among adolescent girls in four public secondary schools in Nepal about girls' level of knowledge of the physiological and psychological processes of menstruation revealed that insufficient knowledge of the process of menstruation among the respondents and the girls' perception were mainly influenced by cultural beliefs (Nepal, 2009).

Another study was conducted to study the factors influencing menstrual hygiene practices among late adolescent girls in Ashoknagar, Belagavi, India. A sample size of 625 girls who were in their late adolescents thus in the ranges of 16 - 19 years were studied. Results indicated that the Muslims were least likely to use sanitary pads during menstruation as compared to girls belonging to other religions. Hindus showed significant association between religion and use of sanitary pads. Both religions (Hindus and Muslims) also showed significant association ($p < 0.001$) between religion and practice of perineal hygiene during menstruation (Suhasini & Chandra, 2016).

On some of the misconceptions, El-Gilanya, Badawib & AL-Fedawyb (2005) conveyed in their study in Egypt that girls believed bathing during menstruation must always be avoided. Some of the reasons were that a cold bath retained blood and taking a hot bath would give rise to blood flow. In Saudi Arabia, similar results were revealed with the widespread superstition that bathing during menstruation is painful,



or it stops blood from flowing (El-Gilany et al., 2005). Santina et al., (2013) reported that majority of adolescent girls accepted cultural myths of not washing down for the first three days of menstruation or even for the entire days of the menses instead of adhering to prescribed menstrual hygiene practices (Santina et al., 2013). Furthermore, another paper reported that many Muslim girls abstain from bathing regularly due to the faith that washing down increases blood flow of one's menses and causes problems during pregnancy (Kumar & Srivastava, 2011). As already reviewed, countless examples of myths exist encouraging the belief that women who are menstruating and their blood cause pollution. A gender-based survey done in West Bengal/India among Gujjar communities, reported that menstruating females were forbidden from using water sources because it is believed they are impure and would pollute the water source. This implies majority of these girls would abstain from bathing (Fernandes & Mahon, 2008).

After menses, solid wastes (such as sanitary pads, towels, tampons and rags) and liquid waste (washed off blood) are created hence the need for proper disposal. In some settings, due to myths and misconceptions, the burning of used products is thought to cause cancer and infertility (Umeora & Egwuatu, 2008). Ten (2007) observed in a study in Surinam that there are thoughts that menstrual blood can be hazardous as it can be used for "juju" or black magic; it is said to be used for producing love concoctions (Ten, 2007). Similar findings were reported by Oche, Umar, Gana, & Ango, (2012) in a cross-sectional study conducted in Sokoto, Nigeria. This revealed that there is a belief that menstrual blood can appeal to witches who use it in black magic rituals, if not disposed of properly. Hence, women are admonished to burn their used pads (Oche et al., 2012). This is contrary to findings of Umeora & Egwuatu, (2008) conducted in South Eastern Nigeria as reviewed above.



2.6.5 Gender issues

Gender inequality is among the many factors that support the belief that, menstruation is a taboo and menstrual hygiene is abandoned. In most societies, men are breadwinners and run the households and by extension the community. The unequal rights imply that women's voices are usually ignored (Kaur et al., 2018). They are therefore continually marginalized. It is with this gender inequality that school boys feel the sense of superiority over their colleague girls and hence tease them when menses occur. Stichting Nederlandse Vrijwilligers (SNV) & International Rescue Committee (IRC) reported the need to sensitize boys (pupils) on menstruation (SNV & IRC, 2013). In the same vein, gender- unfriendly general infrastructure is built in most educational establishments. The absence of appropriate menstrual hygiene substitutes in terms of clean, safe and private sanitation facilities for girls in schools undermine girls' right privacy, which is consequential to the basic and vital breach of their human rights (Bharadwaj & Patkar, 2004).

2.6.5 Socio-economic factors

Most studies have demonstrated that socio-economic status of a girl or her family can affect behaviour related to menstrual hygiene (Kumar & Srivastava, 2011; Omidvar & Begum, 2010; Shanbhag et al., 2012; Ten, 2007; Thakre et al., 2011). Ribeiro et al., (2007) asserts that socio-economic factors are the most influential in determining MHM. The use of unsanitary or low standard menstrual absorbent materials are synonymous with adolescent girls from poor or low-income background, they tend to be at higher risk of infection exposure compared to girls from a middle class or high socio-economic status (Ribeiro et al., 2007). Poverty and poor financial status perform a crucial role in determining the type of sanitary products a girl child uses. Wearing of



torn or blood-stained clothes during menses increases vulnerability and insecurity of the girl child. It is well-known fact that affordability helps to acquire healthful behaviors (Bourne & Rhule, 2009). The socio-economic status of a girl child is reflected in her hygiene behaviour especially seen in their good hand washing practice and prevention of dirt and smell from excretion or menstrual blood (Assefa & Kumie, 2014).

A study conducted in deprived portions of Kenya has shown that most girls are unable to adopt or afford the appropriate ways to maintain menstrual hygiene due to economic challenges (Mason et. al., 2013). “Women and girls in villages and from poor families cannot get hold of and/or afford sanitary pads which would normally be changed around two to four times a day during menstruation. Instead, most women and girls use rags or cloth, usually torn from old blankets, or chitinges (traditional cotton shawls which African women wrap around their waists) and tissue of any kind. These rags or cloth are usually washed without following the right procedures thus often with insufficient and unsafe water and lacking soap, and used repeatedly without drying under the sun” (Mutunda, 2013).

In Ethiopia, students who live in the deprived communities (Adjusted Odd Ratios 0.269:95% CI, 0.125, 0.577) were 74% less likely to practice proper menstrual hygiene than counterparts in the big cities and towns. Students with no social support (no pocket money) (Adjusted Odd Ratios 0.36:95% CI, 0.309, 0.989) were 64% less likely to practice proper menstrual hygiene than their counterparts who had permanent pocket money, girls with no educated father (Adjusted Odd Ratios 0.39:95% CI, 0.180,0.872) was 61% were less likely to practice proper menstrual hygiene than their counterparts whose fathers were educated (Felleke & Gerada, 2020).



A study was conducted to study the factors influencing menstrual hygiene practices among late adolescent girls in Ashoknagar which is an urban field practice area of J. N. Medical College, Belagavi. A total of 625 late adolescent girls between 16 - 19 years were studied. Results showed that with the increase in socio-economic status there was increase in use of sanitary pads ($p < 0.001$) (Suhasini & Chandra, 2016). Still in India, a cross-sectional study was conducted on 350 students from educational institutions from a major city in South India. A variety of factors are known to affect menstrual behaviors most influential being age and Socioeconomic Status. The researchers reported that the use of unsanitary and sub-standard menstrual absorbents was common among girls from low socio-economic status. The study concluded that undoubtedly poverty and low social class play a major role on the choices of absorbents leading to the use of unsanitary materials (Omidvar & Begum, 2010). "Similar findings were reported in West Bengal where few of the responding girls (11% out of 160 participants) could afford disposable sanitary pads due to their families' low socio-economic status, hence they used rags torn from old clothes (Dasgupta & Sarkar, 2008). Kumar & Srivastava's (2011) cross-sectional study of 117 adolescent girls and 41 mothers in Ranchi, India, also showed similar findings indicating that the socio-economic status has direct influence on the menstrual practices of girls. The study made it clear that girls from rich families could afford sanitary pads easier than girls from poor families" (Kumar & Srivastava, 2011).



2.7 Hygiene facilities in basic schools

Menstrual hygiene management (MHM) presents numerous challenges and prospects to girl child education. There is a global increase in girls' education in the community with enhanced holding and grade advancement for girls in many countries (Haver & Long, 2015). In these schools, MHM demands the presence of adequate infrastructure and facilities. Over 500 million women experience lack or woefully inadequate facilities for menstrual hygiene management in the whole world wide (Miirro et al., 2018). Inadequate W.A.S.H. (water, sanitation and hygiene) facilities in learning centers or schools, workplaces or health centers, can predispose the women and girls to greater struggles (UNICEF., 2013). Various studies provide evidence that the school going girls are usually absent during their menstrual period due to inadequate facilities in the schools, this poses some economic costs on their lives in the future as well as the country (Miirro et al., 2018; Sivakami et al., 2019; UNICEF., 2013; Vashisht et al., 2018). A study showed that sanitary facilities, information and/ or absorbent material when absent or limited in a school, the menstruating girls find it very difficult to manage themselves and hence they may become distracted and unable to focus in class (Haver & Long, 2015). The net effect is that, the girls may cease to contribute in class, detach themselves or become socially left out by peers. The discomfort may compel some to even skip school altogether (Haver & Long, 2015). Girls may miss between 2 to 7 days (depending on the duration of the menstrual flow) every month of school days due to absence of sanitation facilities, sanitary products at school and feeling of discomfort, e.g. severe abdominal pains (cramps) (Montgomery et al., 2012). Arya & Ambily, (2017), reported that an increased rate of dropout in school is a result of unhygienic toilets and lack of private space for girls in Kannur District, India (Arya & Ambily, 2017). UNICEF reports that



about one out of ten school aged girls in Africa did not go to school at the time of menstruation as a result of adequate facilities which included a designated place for changing during menses and an isolated and clean toilet facilities for female students at schools (UNICEF, 2015). This lack of facilities expands into poor management of waste which has a significant impact on the environment (Ten, 2007).

As stated MHM presents daily difficulties to the adolescent girl child globally and in under developed countries like Ghana. Basic School girls need to practice good hygiene practices for the reason that; attitudes relating to menstrual hygiene acquired from menarche has a long-lasting impact on womanhood (Blessing, 2016). Good hygiene practices do not only hinge on proper education; it also depends on the availability of adequate facilities. Poor MHM can seriously disturb the adolescent girl child and cause “shame, stigmatization, low self-esteem and fear” (Blessing, 2016). Worthy menstrual hygiene management depends on adequate and clean water supply for cleaning and washing as well as suitable sanitary materials and facilities for changing during menstruation especially during school sessions (Parker et al., 2014). Good hygiene practices during menses should be followed during menstruation. It involves the use of sterile pads, daily baths, keeping intimate area clean, use cotton under garments. (Arya & Ambily, 2017).

Globally, there is a marked difference in development between the Western world and Africa. This extends to infrastructural development for menstrual hygiene management. A widespread variation in facilities between these continents exists. The mere absence of access to washrooms (toilets or latrines) have made over half a billion women and girls unable to effectively manage their menstruation in privacy (Loughan et al., 2016). Efforts are being made to remedy the situation in many



countries. A study by WaterAid conducted in Bangladesh reflected the need to scale up the existing water and sanitation facilities to meet menstrual management needs of girls and enhance their school attendance (Kabir et al., 2012).

“The WHO Joint Monitoring Programmes (JMP) definition of menstrual hygiene management (MHM) points to the need for women and girls to have access to water and soap for body and hand washing, sanitation options that are clean and private, with disposal amenities, and access to clean menstrual hygiene materials, both at home and away from home” (Biran et al., 2012). Performance Monitoring and Accountability (2020) conducted a survey involving 3,663 study participants within the age brackets of 15 to 49 years in Ghana to provide data on MHM pointers on a large scale. Results have shown that majority (65%) of the study participants in Ghana reported having everything they need to manage their menstruation. Sleeping area (rooms) were the most used environment by 61% of the participants. A total of 1,209 representing 33% of the study participants used other sanitary facilities in their houses, learning areas e.g. school, work places or other public facilities and 6% used their backyard or no facility at all. In schools, 46% of water coverage and 61% of proper sanitation was reported in basic schools in Ghana (Performance Monitoring and Accountability, 2016).

In most public schools, the hygiene needs of menstruating girls with respect to adequate health education and type of sanitary facilities accessibility and availability are not made a priority. Some schools may not have separate washrooms for girls and boys, properly lit and secluded washrooms and most importantly availability of water. Most day students when they get stains as a result of menstrual flow are compelled to leave to their homes. The management of menstrual waste which included sanitary



pads, towels and tampons must be done with proper disposal facilities (Blessing, 2016). Many females who lack access to water, privacy and basic sanitation feels distress during menstruation. Water, sanitation and hygiene (WASH) conditions in schools, such as access to latrines, water, and soap, are essential for the comfort, equity, and dignity of menstruating girls (Hennegan et al., 2018).

2.7.1 Water, sanitation and hygiene (wash) and menstrual hygiene management

The three elements of WASH; Water, Sanitation and Hygiene are interdependent and represent a growing sector. Each element presents a separate field of work and depends on the presence of one another. Without toilets and proper refuse dump sites (Sanitation), water sources (Water) become contaminated and without clean water, it is impossible to practice proper personal hygiene (WHO & UNICEF, 2017). Access to WASH facilities is essential for females in the management of menstruation and hence serves as a barrier to MHM in its absence. Women need private spaces to change sanitary wear; clean water for personal hygiene and waste management facilities for safe disposal of used sanitary pads, towels and tampons.

WHO considers a school to be child-friendly if the WASH hardware and software are present and accessible to school children of all ages and to those with disabilities. The WASH hardware includes: sanitation facilities (toilets and urinals), water infrastructure (water source and storage containers), hygiene facilities (hand washing and menstrual hygiene management facility) and solid waste disposal containers. The WASH software component on the other hand is mainly hygiene education (Tiswin, 2016). Proper WASH in schools encourages hygiene practices and thereby giving rise to access to quality education (Temu,2015). A specific portion of these requirements specify and capture the WASH components. A study in India found that, there is



separate toilets for girls and boys in about half of the schools (PP 0.56, 0.42 to 0.75, I² 100.0%, n = 11) (Chothe et al., 2014). In Malawi, about 30% of girls dry their reusable sanitary material in boarding schools, 38% of the girls carry their soiled materials home for washing and drying, 6% of the girls dispose the used material in the school latrine. About 77% of the girls do not have designated and isolated place for changing during menses (Mchenga et al., 2020).

Water is an essential component of WASH. Water is needed for hand washing and cleansing after a menstrual period. In schools, children need to be provided with water and soap for hand washing when they close from school, before handling food and during MHM. Water infrastructure refers to water sources and water storage containers to ensure sufficient access to water by school children during school hours. Water is usually provided in veronica buckets, basins or any covered container that can provide a running stream of water. The availability of a water source on school premises is important in ensuring that school children are able to have easy access to water for hand washing as well as for drinking (Molloy et al., 2008). Where adequate water supply is limited, the storage of water in huge underground tanks and other rubber tanks is crucial in schools. Schools that depend on rain harvested water or even schools with piped connections can benefit from the importance of these huge water storage facilities (Tiswin, 2016). UNICEF in 2012 reported that 50% of the schools in developing countries do not have access to safe water (UNICEF, 2012a).

Primarily, hygiene promotion deals with educating school children on hygiene concepts and practices. It is commonly known that education plays a pivotal role in changing behaviour and attitude (Tiswin, 2016). The concept of MHM needs to be taught to school children prior to menarche. This imbibes a sense of confidence and experience in handling menses in order to avoid the unwanted effects of poor MHM.



The availability of sanitation facilities in schools provides the perfect solution to open defecation and contamination of the environment and water sources. UNICEF estimates suggest that only 45 percent of schools in low income countries have adequate sanitation facilities (UNICEF, 2012b). In developing countries, 75 percent of schools do not have adequate sanitation facilities. There is no data on menstrual hygiene management facilities in many countries such as Ghana (UNICEF, 2012a). A study done in primary schools in Niger and Burkina Faso showed that there were no menstrual hygiene management facilities in schools in those countries (Millington & Bolton, 2015).

Menstrual Hygiene Management facilities and Hand Washing facilities are the two kinds of hygiene facilities mentioned in the Ghana WASH implementation guidelines. The United Nations and UNICEF reported that one major factor accounting for low enrolment of girls (1:5) in schools compared to boys (1:6) is the non-availability of hygiene amenities for girls attaining puberty (Tiswin, 2016). For every ten school-aged girls, one fails to go to school during menstruation or leaves school at puberty due to the non-availability of menstrual hygiene management (MHM) services (WHO, 2013). The setting up of suitable sanitary facilities including toilets and latrines among other factors, may contribute immensely to the school children, especially menstruating girls, to advance their education without having to drop out of school (UNICEF, 2015). In Ghana, menstrual hygiene facility is commonly called the changing room which is built as part of the female toilet (Moojiman, 2009). The presence of this facility coupled with the presence of menstrual hygiene consumables such as sanitary napkins, pads, soap., and water encourages girls to use the facility which in turn could help keep them in school.



A good menstrual hygiene management facility in school must have the following items as a package:

- “Informational program for school, Parent Teacher Association, and community
- Menstrual Hygiene Management-themed community events (theatre, radio)
- Washrooms for girls
- Water and soap in girls' washrooms, disposal place for used pads and emergency pads in a place where girls can find them, comfort kits (bag with pads, panties, soap, and booklet on puberty).
- Guidance teacher or counselor designated for MHM,
- MHM training for all teachers and WASH Club with MHM activities”
(Zambia Menstrual Hygiene Management mini toolkit, 2014).

“Menstrual hygiene management requires availability of and access to clean and absorbent menstrual material, privacy, water and soap, and disposal facilities for used menstrual materials” (Biran et al., 2012). In spite of the above, majority of schools in under-developed countries, especially in deprived communities have very limited facilities including water supply (Adams et al., 2009) for girls to wash hands, external genitalia and soiled clothes. Nor do they have establishment for secrecy, soap, absorbent materials and disposal of soiled sanitary pads (Sommer et al., 2016).

Toilets, latrines and other constructions specifically built for MHM are essential in the management of menstruation. In general, girls report having better access to these resources at home compared to being at school (Daniels, 2016). Most government or public schools do not pay keen interest to the hygiene desires and needs of the menstruating girls with respects to provision of satisfactory health education and



access to hygienic facilities. Some do not have properly secluded lavatories to provide a sense of privacy for students. Availability of water is also another important factor (Blessing, 2016). Wendland (2017) asserted that in schools, there are often no enough toilets or urinals for all pupils and no isolated toilets or urinal for girls and boys. Where separate facilities exist in schools, they are mostly untidy or spasmodically provided with water and can lack decent doors to ensure confidentiality (McMichael, 2019; Appiah-Brempong et al., 2018; Uijtewaal & Malva, 2019). In Accra, Ghana, Sommer et al., in (2015) reported insufficient toilets and inadequate privacy measures in toilets in public schools.

Another study conducted in Kenya disclosed that lack of adequate privacy and sanitary facilities were factors that hindered the girls in their attempt to manage their menstrual periods at school. It is worth noting that, the study further revealed that school girls were obliged to carry used absorbent material back home due to non-availability of waste disposal facilities (McMahon et al., 2011).

Elsewhere in Africa, a study was carried out in 140 schools in seven districts in Uganda. The main objective of this study was to focus on the impact of menstrual management on girls in school and on possible ways forward around menstrual management that could be implemented from national to primary school levels. Results indicated that a total of 70% of the head teachers and 80% of the senior head teachers stated that they were not satisfied with menstrual facilities at their schools. Over 60% of the girls (pupils) stated that they need better facilities (hardware aspects) (SNV & IRC, 2013). Furthermore, similar findings on lack of or inadequate facilities were also reported in an assessment done by WaterAid in schools in Uganda. The assessment revealed that only 7.1 % of primary schools had access to menstrual hygiene management facility (WaterAid, 2013).



In poor areas of Egypt, overcrowding and poor infrastructure both in schools and homes were reported. Toilets were seen to be totally absent or few in number, with broken doors or defective water supply and sewerage (El-Gilany et al., 2005).

In Kenya, a study was conducted in rural Western Kenya to evaluate WASH facility conditions. The study included 409 in total being student sanitation facilities which consist of a total of 374 latrines and 35 urinals as well as engaging a total of 12,947 students (thus 6248 females, 6699 males) across the 30 studied schools. The mean student to latrine ratio rates for girls was calculated at 37:1, with only one school labeling a urinal for girls used only. Majority representing 63% of schools had a larger number of girls per latrine than was considered acceptable by Government of Kenya (GoK), an average of 25 girls or less per latrine (Hennegan et al., 2018). In Uganda, girls testified about a lack of access to adequate resources, facilities and accurate information to manage their menstrual hygiene effectively at school (Boosey et al., 2014). Interestingly, in a study from Mzuzu City, Malawi showed that 92% of girls had reliable water source of water in their school (Mchenga et al., 2020).

The essential nature of clean latrines and toilets cannot be understated. Cleanliness of a facility promotes usage. Daniels, (2016) reported that during latrine observations in schools, it was common to observe cobwebs on the walls, no soap, and mud tracked on the floors in a research carried out among eight deprived secondary schools in eight deprived communities from two Cambodian provinces. Across environments, girls noted their dissatisfaction with using dirty latrines. Girls' dissatisfaction with school latrines contributed to some girls wearing sanitary pads throughout the school day without changing (Daniels, 2016).

“Water is an essential component of WASH. Having access to clean water is of utmost importance for MHM, as it is clearly implicated in girls' desires to shower,



clean themselves, and wash stains as regular MHM practices. Supplies of menstrual sanitary materials and access to soap and water gives better hygienic and healthy well-being, while absence or insufficient access to menstrual resources are part of the reasons why adolescent girls do not wash their hands or adequately manage menstrual hygiene at government owned basic schools (Ribeiro et al., 2007; Vivas et al., 2010). A paper by Garn et al., (2014) found that girls were probably more likely to use latrines that were clean and in good condition—validating the idea of “acceptable” latrines for girls as key. The accessibility to private places to change their sanitary cloths or pads, clean water for washing hands and used cloths, and facilities for safely disposing of used materials affects the practice of menstrual hygiene” (House et al., 2012).

A study in four provinces of Southern Ethiopia also disclosed that the school setting was not favourable particularly for menstrual hygiene management. This study further disclosed that most of the schools were deficient in water supply, no distinct toilet for boys and girls and the remaining toilets lacked privacy. Amazedly, some girls were using unsanitary or unclean rags during menstrual flow and had poor knowledge on how to maintain personal hygiene during menstruation (Montgomery et al., 2012). To add to this, similar findings were reported by Gultie, (2014) with school girls reporting feeling uncomfortable in school due to no confidential space for changing their absorbent material and non-availability water for washing (Gultie, 2014).

Chinyama et al. (2019) conducted a study to discover girls’ practices of MHM in deprived schools of Zambia from the viewpoints of schoolgirls, schoolboys and community and school-based adults key to MHM for school girls. Outcomes disclosed that majority of the girls testified MHM-related problems, including: use of non-absorbent and uncomfortable menstrual cloth and insufficient provision of



sanitary products, water, and hygiene and sanitation facilities (WASH) in schools. Even so, toilets did not have appropriate or improvised hand washing facilities (soap and water) or entrances and locks for privacy and had a bad smell (Chinyama et al., 2019).

In Cambodia, when girls were asked what they would do to improve current latrines at school, they consistently recommended having supplies available to help keep the latrines clean. As described, having access to new skirts and other changes of clothes were also important for MHM. The implication of the lack of emergency supplies available at school limited girls to seeking assistance primarily from other female friends, or occasionally, female teachers (Daniels, 2016).

MHM creates wastes in the form of solid wastes (sanitary pads, towels, tampons). These wastes need to be dealt with promptly and expertly. However, review of studies showed that most schools were unequipped with disposal facilities to deal with MHM wastes.

In Kenya, girls whose schools lacked waste disposal facilities were compelled to carry their soiled absorbent materials back home (McMahon et al., 2011). In the Philippines, a UNICEF study stated that toilet stalls had no litterbins. This obliged the girls to carry their trash back home (Haver et al., 2013). More than 28.0% of girls noted the lack of disposal facilities in schools as a factor for being absent in school, especially on days that the menstrual flow is heavy compelling the girls to change more frequently (Nepal, 2009). In Accra, Ghana, Sommer et al. (2015) noted that schools had inadequate disposal facilities for used absorbents (Sommer et al., 2015).



2.7.2 Initiatives to improve Menstrual Hygiene Management facilities and supplies

Globally, there are continuing efforts and initiatives to advance water, sanitation and hygiene (WASH) facilities and services in educational institution. These address adolescent girls' menstrual hygiene management (MHM) needs (Columbia University, 2013). "The relationship between resources and MHM appears to have been understood by the government of Ghana. This assertion is noticeable in the recent Secondary Education Improvement Project (SEIP) of the Ministry of Education. Pillar 1 of Component 1 of the SEIP targets improving access and equity in 15 senior secondary schools by the provision of scholarship to girls which also cover the provision of sanitary materials to the beneficiaries" (World Bank, 2020). Also, recent campaigns have been organized by the government of Ghana and other Non-Governmental Organizations (NGOs) where sanitary pads are shared to basic school girls (Blessing, 2016). In Bangladesh, a WASH programme was implemented and its impact studied. The study stated that all schools in the programme were motivated to form a school fund (internal generated funds) to keep the WASH facilities functioning and tidy. The staff were encouraged to liaise with local health volunteers who sell sanitary napkins to ensure a smooth supply of sanitary napkins to schools (Kabir et al., 2012).



2.8 Summary/Conclusion

The information gathered implored appropriate study protocols to arrive at their conclusion. On the knowledge of menstruation and menstrual hygiene, the literature presented extensive scholarly work with relevant citation. There were however, some discrepancies in the level of knowledge reported in the various studies cited in this study. With same study protocol and study design, the study findings were opposite within similar geographical location. The interest of this study to bring proper understanding to the issues raised. This was done by using a mixed method approach to gather appropriate data for analysis.

On the menstrual hygiene management practices, the literature showed that, sanitary pad was used often among the urban residence whilst cotton and cloth was often used among adolescent in the rural areas with very limited rationale for the differences. The study area is predominately rural, and so the study participants were carefully selected from both rural and urban areas within the study settings to bring to light reasons causing huge difference in the practice of MHM among urban and rural adolescent girls.

The literature presented demonstrated the importance of hygiene facilities in school to the practice of good menstrual hygiene management. This study therefore focusses on assessing the hygiene facilities so as to recommend the way forward depending on the outcome of the study.

Various factors were said to be associated with the practices of good menstrual hygiene. These factors include the following; culture, religion, socio economic status, residence. Most of these studies used either quantitative or qualitative approaches to assess the factors affecting the practice of good menstrual hygiene. This study used



the mixed methods and also widen the participation to include some mothers to assist the study with relevant response to be used for triangulation.



CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter covers the design of the research and the methodology that was used in conducting the study. The sub-sections in this chapter are; study area, study type, study population, sampling techniques and size, study variables, inclusive and exclusive criteria, data collection methods and instruments, data processing, handling and analyses and quality control measures of the study are all captured in this chapter.

3.1 Study setting

The study was carried out in the West Gonja Municipality. The Municipal is one of the 260 Metropolitan, District and Municipal Assemblies (MMDAs) in Ghana, and forms part of the seven (7) MMDAs in the Savannah Region. With its administrative capital at Damongo, it was established in 2004 by a new legislative instrument (L.I.1775) (GSS, 2010). It also shares boundaries to the south with Central Gonja District, Bole and Sawla-Tuna-Kalba Districts to the west, Wa East District to the north-west and North Gonja District to the east. The capital of the Municipal has nonetheless remained at Damongo which is also the seat of the Overlord of the Gonjaland. The Municipal has eighty-five (85) basic and second cycle institutions: Thirty-four (34) are kindergarten and nursery, 33 primary schools, 17 Junior High Schools and only three (3) Senior High Schools (GSS, 2010). The Municipal is also blessed with an Agricultural Training College and a Nursing Training School. The total population of the Municipal is 41,180, comprising 50.2 percent of males and 49.8 percent of females (thus, 20,681 males and 20,499 females) (GSS, 2010). Along the urban-rural divide, the populations are 21,188 persons and 19,992 persons



respectively. The West Gonja Municipal Hospital is the highest level of health care facility in the Municipal. This is supported by Health Centers at Langbonto, Laribanga, Achubunyo, Mole and Busunu. The Tamale Teaching Hospital serves as a referral center for medical conditions which these facilities are unable to contain. Other people also assist to provide health services to the population, namely, Trained Traditional Birth Attendants (TBAs), Village health workers and Guinea-worm volunteers (GSS, 2010).

3.2 Study design

An analytical cross-sectional study design was employed with a mixed method approach. An analytical cross-sectional design was chosen because it allowed the researcher to investigate both the exposure and outcome of the study at the same time (Polit & Beck, 2008). This study is purely observational, inferences was drawn from the study participants.

3.3 Study population

The study population consisted of adolescent schoolgirls who have had their menses and lived with their parents within the West Gonja Municipality.

3.4 Inclusion criteria

In this study, those who were considered to be participants consisted of the following: All JHS schoolgirls in the west Gonja Municipality who were within the ages of 10 to 19 and are of sound mind, and consented to participate voluntarily in this study.



3.5 Sample size determination

The sample size was computed using the Snedecor and Cochran (1989) formula for a point estimate sample;

$$N = \frac{Z^2 P(1-p)}{m^2};$$

N= sample size,

z = z- score of a 95% confidence level (5% significance level) of the study equivalent to 1.96,

p= proportion of menstrual hygiene management practice among adolescent school girls was estimated to be 50%. This is because 50% coverage gives the maximum sample. So that, whether the actual prevalence was less than or more than 50% the needed sample size would have been covered nevertheless.

q = estimated proportion of adolescent girls who do not practice good menstrual hygiene management (1-p= 0.5), and

m = margin of error of the study thus 100%- 95%= 5% = 0.05 in this study.

$$N = \frac{(1.96)^2 \times 0.50 \times 0.50}{0.05^2}$$

$$N = \frac{0.9604}{0.025}$$

$$0.025$$

$$N = 384.16$$

Thus, the calculated sample size is approximately 385.

Using 10% as non-response rate, the total number of study participants recruited for the study was 430 adolescent girls.



3.6 Sampling and sampling techniques

The study used the multistage sampling. Firstly, the West Gonja Education directorate provided the circuits within the Municipality and the number of schools under each of them. These circuits were put in six (6) clusters. Using a simple random sampling, four (4) circuits were chosen for this study (each circuit represented a cluster). For each cluster, three (3) schools were further selected using simple random sampling. For each school, the list of students who fall within the inclusion criteria was obtained (i.e. sample frame), so using systematic sampling, a total of 36 students were selected from each circuit (cluster) thus making the sample unit.

3.7 Study variables

Menstrual Hygiene Practice was considered dependent variable or the main outcome variable in the present study. The independent variables included socio-cultural and socio-economic factors such as Age, School type (be it private or public school), Religion, Parent's education, Parent's occupation and Culture (Ethnicity). Other independent variables included knowledge on MHM practices and discussion of menstrual experience with parents. School level variables included the availability of toilet/urinary and designated placed for changing used sanitary products.

3.8 Data collection techniques and tools

Self-administered questionnaire was used to collect data from the adolescent girls. This process permitted anonymity and also eliminated bias as it helped to avoid phrasing questions differently with different respondents. Though self-administered, for those who cannot read and write well enough, the questionnaire was appropriately translated into the local dialect for easy assimilation to solicit the appropriate response from the chosen respondents.



A questionnaire was used as the data collection tools. The questionnaire was constructed by reviewing relevant literature, including existing questionnaire that have been used in previous researches with both open and closed ended questions (Ameade & Garti, 2016; Blessing, 2016; Boakye-Yiadom et al., 2018; Budhathoki et al., 2018; Gultie, 2014; House et al., 2013; Upashe et al., 2015).

The questionnaire was structured in three sections in accordance with the objectives of this study.

Section A was soliciting information on socio demographic characteristics of the study participants. This included age, sex, name of school, occupation and educational levels of parents etc.

Section B was on Knowledge on menstruation and menstrual hygiene. Some of the variables included the following: nature and causes of menstruation, source of information on menstruation and menstrual hygiene etc.

Section C was on the practices of menstrual hygiene among the adolescent girls. This section focused on asking hygiene related questions during menses which included but not limited to the following; type of absorbent materials used, how it is washed and cleaned, how it is dried and stored, bathing during menses, medication use during menses etc.

Also, qualitative research techniques such as face-to-face in-depth interviews were held with the parents. Also, some mothers were also interviewed to provide in-depth insights on how their children manage menses. This was necessary since most of these adolescent girls stay with their parents more than they stay at the school. An interview guide was used to conduct the in-depth interviews. Focus group discussions were held with some students using a check list/guide. An observational tool (checklist) was



also designed to assess the hygiene facilities in each school. These tools were structured to bring relevant response to answer the objectives of this study.

3.9 Data Collection Procedures

The quantitative data was collected using the Questionnaire on the Checklist.

Questionnaire

The questionnaire was structured in accordance with the specific objectives of the study as described above. The questionnaire was administered using self-administered data collection techniques. This was necessary because majority of the respondents could read and write in English language and face to face data collection techniques for those respondents who needed supported with the understanding of the questionnaire. A total of four hundred and thirty (430) were interviewed using the closed-ended questionnaire from some selected schools in the four clusters (four circuit) of the West Gonja Municipality. The questionnaire was adopted for this study because it is capable of gathering data from larger population from disperse communities within a limited period of time. A total of six girls were trained on the data collection tool. Data collectors were also trained on the sample procedure used in selecting study participants. At all time, I was always with the field enumerators, so that if they needed some assistance, they could call on me to assist.

Checklist

Checklist were also used to assess the hygiene facilities in the school. Using Observations, the items of the checklist were looked out for in each school. We also contacted the SHEP coordinator of each school to take us to specific hygiene facilities to make observations for ourselves. In situations were the hygiene facilities were not observed, the SHEP coordinator was contacted to confirm otherwise.



The qualitative data was collected using focus group discussion and in-depth interviews.

Focus Grouped Discussion (FGD)

Focus grouped discussion guide was used to further gather in-depth information from the participants. The data collected from the focus grouped discussion was used to complement those collected using the other data collection tools. The researcher and one trained lady conducted the Focus grouped discussion. The researcher moderated all discussions whilst the lady served as a recorder. The instrument was designed in line with the research objectives. In all, four (4) focus grouped discussions were organized. In all 13 adolescent girls participated in the study.). The data were collected mainly in Gonja, which is the two main local languages in the municipality. All discussion section was recorded with permission sought from the participants and they were later transcribed into English Language.

In-Depth Interview (IDI).

In-depth interview is a of type qualitative investigative method that involves carrying out exhaustive face to face interviews using a small number of respondents to unravel their insights or views on a particular issue (Jacobvitz et al., 2002). This is useful when you want to explore into details the persons understanding or knowledge on the phenomenon.

Four in-depth interviews were conducted using an in-depth interview guide among four mothers within the municipality. The interviews lasted between 20 minutes to about 30 minutes. The mothers were made to choose a place and time comfortable to them. This was to ensure that, the mothers were focused and to allow flow with distraction in the course of the interview. The in-depth interviews were conducted



along the study objectives which provided more detailed information to support the quantitative data collected.

3.10 Data entry and cleaning

The data collected was manually entered and stored on a computer, Google drive and clouds. The data was then duplicated on some external storage devices. A password was created to ensure a proper security and protection on a computer.

Regarding the data cleaning, there was re-reading in all the interviews that were conducted. Also, questionnaires were examined at the end of each day's work to ensure consistency. Adequate plans were put in place to ensure that data collected were entered into the data analysis software to ensure higher accuracy.

3.11 Data analysis and presentation of results

In this study, calculation of knowledge score on menstruation was done out of 14 specific questions (what is menstruation, cause of menstruation, source of menstrual bleeding, information on menstruation before menarche, age most girls see their first menses, interval between two menstrual cycle, average days of menstrual flow, foul smell in menses, knowledge on menstrual hygiene, menstruation a sign of puberty, contractions cause menstrual pain, menses unhygienic, unprotected sex upon seeing menses could translate to pregnancy and is menstruation is a lifelong process). For each of the aforementioned questions, a correct response scored one (1) point whereas wrong and don't know responses scored no (0) point. From the above, the sum of the score was computed (14). Thereafter, 50% was selected as cut off point so that those who are said to have had sufficient knowledge on menstruation and menstrual hygiene scored 50% and above (thus 7-14 points) and insufficient knowledge on menstruation and menstrual hygiene scored below 50% (0-6 points).



Similarly on the practice, the calculation was calculated out of 10 specific questions (use of absorbent material during menses, cleaning, drying and storing of reusable absorbent materials, number of materials used in a day, where to dispose it, do you wrap used materials before disposing, do you bath, cleaning of genitalia and what is being used to clean the genitalia). A correct response attracted a point and wrong and don't know response attracted no point. A summation of the scores resulted to 10 point, 5 points (thus 50%) was selected as a cut-off point. Thus, those who are said to have good menstrual hygiene management had obtained a total score of 5 or more (thus above 50%) and poor menstrual hygiene management had obtained a score less than 5 (less than 50%).

On the school hygiene facilities, 10 observations were used to compute the broad categories (thus, supportive and non-supportive hygiene infrastructure). The specific observations include; availability of water, at the point of survey was there water, soap regularly used for washing hand, boys share same latrines with girls, MHM material available in school, designated place for changing during menses, designated place clean, is it accessible to all girls, waste bins available for collection of refuse and dust bins and are they emptied regularly. Correct observation was awarded a point and no observation was awarded no point. A total of 10 points was realised, thus 5 and above points (thus 50% and above) would be said to have supportive menstrual hygiene facilities (infrastructure), while less than 5 (thus <50%) is tagged as having non supportive menstrual hygiene facilities (infrastructure).

Quantitative data was coded and analyzed using Stata version 14. Analysis was conducted using descriptive and inferential statistics and results displayed using graphs and tables. Chi square analysis was used to establish association between dependent and independent variables and a p-value < 0.05 was considered statistically



significant. A logistic regression model was estimated to determine the determinants of menstrual hygiene practices.

On the determinants of menstrual hygiene management, chi square analysis was carried out between socio demographic and menstrual hygiene management practice. Thereafter, all variables with P values of 0.3 were included in the logistic regression model. The benchmark P value of 0.3 was selected because of its closeness to zero (0) thus would reveal the most desire effect and improved multivariable model (binary logistic model).

To assess the influencing factors of menstrual hygiene practice, the study used a binary dependent model called the Logistic Regression Model. This model uses the Odds Ratio estimator to predict the outcome of each independent variable on the dependent variable. The use of the model is also justified based on the fact that Menstrual Hygiene Practice can be modeled as a dichotomous decision, thus; to practice 'Good' or 'Poor' Menstrual Hygiene. Hence, this model denotes that a Good Menstrual Hygiene Management Practice is given a value of 1 and 0, if otherwise (Poor Menstrual Hygiene Management Practice).

Furthermore, this study used a binary logistic model (Odds Ratio) to determine factors influencing menstrual hygiene practice among adolescent girls. The independent variables used in the model included some of the demographic and socioeconomic characteristics of adolescent girls discussed earlier in the study. These include; age of girls, living place (residence), girls with pocket money, residential status, mother's job, ethnicity and categories of school. Almost all the variables showed variant degree of influence on menstrual hygiene management.



The qualitative data was analyzed using content thematic analysis. The audio or recordings were transcribed verbatim. The transcriptions were printed out and read over and over again to identify similar wordings, phrases, concept and meaning. Heading of each theme was created and then extracts and excerpts were quoted.

Four (4) main themes with its corresponding sub-themes were identified from the data. These four (4) main themes were identified based on the objectives of this study. The themes included; (1) knowledge on menstruation and menstrual hygiene; (2) Practices of menstrual hygiene; (3) Hygiene facilities in basic schools and (4) factors affecting the practice of hygiene. Details of the themes and sub-themes are presented in the table 3.1 below.

Table 3.1 Main themes and sub-themes

Main Themes	Sub themes
Knowledge on Menstruation and Menstrual hygiene	Information prior to menses Mode of communication Source of information
Managing Menstrual Hygiene	Use of absorbent material and preference Management of menstruation Hygiene Practice during menses Cleaning of reusable materials Disposal of used absorbent materials
Hygiene facilities in School	Availability of hygiene material Absence from school involvement in class
Factors affecting MH practice	Religion and Culture Social Support Availability of materials Cost and reusability of material

Field Survey, 2020



3.12 Quality Control Measures

Sufficient training of the six (6) data enumerators (young ladies who had completed SHS) was the foremost measure that was taken to safeguard the quality of data. They were trained on how to effectively take data using questionnaire. To further ensure that the data collected was reliable and valid, the data collection was done in one of the circuits not selected for the study. This was necessary because the study participants were similar. Twenty (20) adolescent schoolgirls from Jafo JHS, Damongo were used for the pre-testing. The essence of pre-testing was to aid in restructuring the questionnaire for consistency and to solicit the right information. Double entry of data was done in two data sets which were compared at the analysis stage. This was useful in identifying some omissions during the data entry.

As a result of extensive spread of the data collection points across the municipality, filled questionnaire were gathered at the close of each day for safe keeping. This ensured that the data gathered are checked for possible corrections that is if any before the subsequent week. This also ensured that information obtained from respondents was kept confidential from any third parties.



3.13 Ethical considerations

An introduction letter was sought from the Department of Public Health, School of Allied Health Sciences, University for Development Studies. This letter was presented to the Savannah Regional Education Directorate to seek permission to undertake the study. Then, there was ethical clearance granted from the Committee on Human Research, Publications & Ethics, and Kwame Nkrumah University of Science and Technology (KNUST)- Komfo Anokye Teaching Hospital (KATH), Ghana with reference CHRPE/AP/199/20 (Appendix VI). There was permission sought once again through a consent form of which participants were asked to consent to if they were willing to participate in the research after they had read the information sheet. They were then assured of confidentiality of the information they were going to provide. This then meant that only respondents who gave consent were considered study participants. The study participants were encouraged to participate in the study as much as they could but were also made aware that the study was voluntary and they could therefore withdraw at any point in time during the process if the need arise.

There were no compensations attach to any part of the study for participants. Finally, all participants were made aware that, the findings of this study will be published to the general public.



3.14 Limitations of the study

The main challenge encountered during the field work of the study was the reluctance of some of the girls to participate in the current study even though they met the inclusive criteria. The researcher had to train six female students for the data collection so as to make these girls comfortable in responding to the questions. For those I had to interact with, they revealed that, they had their first menses (menarche) at an early age, and such they may not be conversant with menstruation and its attendant issues. Therefore, they felt they could not understand most of the questions that would be asked regarding their Menstrual Hygiene practices, and as such refused to be respondents. Some of the girls after explaining the essence of the research agreed to participate in the study.

The current study focused on only girls who were in basic schools. Thus, its results cannot be generalized to the whole population.

Another challenge that came up in the field was that, the study relied mostly on self-reporting. The data that have been self-reported by these participants may not be same as the real behavioral practice. The study participants were encouraged to feel free to say the truth as much as possible and they were assured of confidentiality. Adolescent girls may have misrepresented their practice of menstrual hygiene to gratify the interviewer and in the case of the interviews her colleagues. As much as possible anonymity was maintained to prevent the views of a respondent(s) from influencing other respondents.

Moreover, there were no existing data collected by the school either by the counselor or the Sexual Health Education Program teacher. As such, the staff of the schools could not realize upon for additional information on menstruation and its attendant



issues in the school. The SHEP coordinators were encouraged to get an incidence book to record any issues concerning the schoolgirl and menstrual hygiene so as to support studies of this kind.



CHAPTER FOUR

RESULTS

4.0 Introduction

This chapter presents the findings from this study. The data was collected among 430 adolescent girls within the West Gonja Municipality. The presentation of the data was done in two ways. Firstly, descriptive statistics of the socio-demographic characteristics of the participants and the study variables were presented in charts and tables. The second part of the study focused on data obtained qualitatively. The qualitative results have been presented in the form of themes and sub-themes and supported with verbatim quotations from participants.

4.1 Quantitative Results

4.1.1 Socio demographic characteristics

The study in totality employed 430 adolescent girls across the municipality. This sample size was drawn from four (4) circuits as follows; Busunu circuit (106), Canteen Circuit (116), Damongo North (105) and Mole East (103). The Municipality is mainly rural, thus 247(57.4%) of the study participants were rural residents and 42.60% being urban residents. The minimum age of the girls was 10 and the oldest girl being 19. The mean age of the girls was 15.5 ± 1.93 years (Table 4.1). Within the age groups, majority (57.70%) of the adolescent girls were within the ages of 16 to 19 years while 43.3% were below 16 years. Majority of the girls (41%) were in second year of Junior High School (JHS), 33% were in JHS 1 and 26% in JHS 3. The Gonja ethnic group (52.3%) was the majority group in the study. This was followed by Kamara (19.8%) and 'others' (thus, the sum of all other minor ethnic group who participated in the study) were 27.9%.



On religion, majority (76%) of the girls interviewed in this study were Muslims while 24% were Christians. Almost all respondents (91.6%) were in public schools whereas 8.4% were in private schools.

Most girls (56.7%) were staying with both parents, 20.5% were staying with either their mother or father, 20.7% were staying with relatives and 2.1% were staying with friends and boarding houses. Majority of girls (64.4%) had their father not having any form of education with 44.60% having some level of education. Majority (67.7%) of mothers had no formal education whereas 43.30% had some formal education.

The majority of the girls' fathers (83.5%) and mothers (70.7%) were self-employed. The study found that about 62% of the girls received pocket money from their parents/guardians compared to 38% who did not receive any pocket money from parents. About 30.2% of the girls also earned income by engaging in some economic activities whereas 69.8% of the girls did not earn income. The majority of the adolescent girls (68.8%) had a television (TV) or radio set in their house, the remaining 31.2% did not have a TV or Radio set in their house (Table 4. 2).

The study revealed the mean age at menarche as 13.6 ± 1.3 , the highest number of times a girl changed her panties was 5 and the least being 1 with a mean of 2.3 ± 0.724 (Table 4.3).



Table4.1; Socio-demographics characteristics of the respondents

Variables	Categories	Frequency	Percentages
Age	10-15 years	182	42.30%
	16-19 years	248	57.70%
	Total	430	100%
Class	JHS 1	142	33.00%
	JHS 2	176	40.90%
	JHS 3	112	26.00%
	Total	430	100%
Ethnicity	Gonja	225	52.30%
	Kamara	85	19.80%
	Others	120	27.90%
	Total	430	100%
Religion	Islam	327	76%
	Christianity	103	24.00%
	Total	430	100%
Category of School	Public	394	91.60%
	Private	36	8.40%
	Total	430	100%
Residence	Rural	247	57.40%
	Urban	183	42.60%
	Total	430	100%
Living with	Mother/Father only	88	20.50%
	with both parent	244	56.70%
	Relatives	89	20.70%
	Boarding	5	1.20%
	Friends	4	0.90%
	Total	430	100%



Education of father	No Education	277	64.40%
	Basic Education	59	13.70%
	Secondary Education	45	10.50%
	Tertiary	49	11.40%
	Total	430	100%
Education of mother	No Education	291	67.70%
	Basic Education	74	17.20%
	Secondary Education	46	10.70%
	Tertiary	19	4.40%
	Total	430	100%
Father's Job	Formal Job	45	10.50%
	Informal Job	26	4.00%
	Self employed	359	83.50%
	Total	430	100%
Mother's Job	Formal Job	25	5.80%
	Informal Job	101	23.50%
	Self employed	304	70.70%
	Total	430	100%
Pocket money	Yes	265	61.60%
	No	165	38.40%
	Total	430	100%
Own TV/Radio	Yes	296	68.80%
	No	134	31.20%
	Total	430	100%
Earn money	Yes	130	30.20%
	No	300	69.80%
	Total	430	100%

Field Survey, 2020



Table 4.2; Age, Menstrual Flow, and Basic Menstrual Hygiene among Girls in West Gonja Municipality.

Variables	Freq.	Minimum	Maximum	Mean	Std. Deviation
Age of Girls	430	10	19	15.53	1.932
Age started Menses	430	10	18	13.59	1.290
Menstrual flow	430	1	19	4.50	1.602
Number of times changing panties	430	1	5	2.29	.724

Field Survey, 2020

4.1.2 Menstruation characteristics of girls

The majority of the adolescents in this study (53.7%) said they were afraid when they had their first menses. Also, nearly 60% of the sample experienced abdominal and back pains with their first menstruation.

About 46% of the respondents experienced heavy blood flow during menses. The survey also revealed several health problems associated with menstruation among the sampled population. In order of prevalence, these included abdominal pains (54.4%), body weakness (20.5%), headache (14.7%), vomiting (3.7%), back pains (3.7%) and intermittent anorexia (3.0%); (Table 4.3).



Table 4.3; Menstruation characteristics of girls

Variables	Variables	Frequency	Percentage
Reaction on First Menstruation			
	Discomfort	73	17.0
	Emotional Disturbance	61	14.2
	Happy	65	15.1
	Scared	231	53.7
	Total	430	100%
Physical Symptoms of First Menstruation			
	Abdominal and Back Pain	251	58.4
	Heavy Bleeding	84	19.5
	Sleeplessness	95	22.1
	Total	430	100%
Class Session in Relation to Menstruation			
	No	87	20.2
	Yes	343	79.8
	Total	430	100%
Blood Flow During Menstruation			
	Heavy	198	46.0
	Moderate	108	25.1
	Scanty	124	28.8
	Total	430	100%
Health Problems Associated with Menstruation			
	Abdominal Pain	234	54.4
	Anorexia	13	3.0
	Back Pain	16	3.7
	Headache	63	14.7
	Vomiting	16	3.7
	Weakness	88	20.5
	Total	430	100%

Field Survey, 2020



4.1.3 Knowledge of adolescent girls on menstruation and menstrual hygiene

A greater majority of the girls (77.20%) knew that menstruation was a natural process whereas the remaining 22.80% did not know that menstruation was a natural process. On the cause of menstruation, exactly 50% of girls rightly attributed the phenomenon to natural processes facilitated by hormones.

The majority (83%) of the respondents reported that vagina was the organ through which menstruation occurred. Other study participants mentioned organs like the uterus (9.5%), bladder (1.9%), and abdomen (1.4%).

The majority of the girls (78.1%) believed that the first menses occurred within the ages of 10 and 15 years while 3.5%, 13.3% and 5.1% believed it occur between 7 and 12 years, after 15 years and before 11 years of age respectively. Most of the girls (42.1%) stated that a normal person has a menstrual flow between 2 to 7 days while 6.3%, 40.2% and 11.4% believed it occurred for about 2 weeks, less than 5 days and three to nine days respectively. The majority (68.8%) of respondents thought that the interval between two menses was 20 to 30 days while 10.0%, 14.9% and 6.3% thought the interval between two menses was 21 to 35 days, 30 to 35 days and 30 to 37 days respectively.

Almost all the study participants 86.5% received menstrual information before their first period while 13.5% did not receive any information on menses prior menarche. The sources of this information were mostly via parents/guardians (61.6%), as well as teachers (53.0%), friends (35.8%), books (14.7%), and mass media (6.5%).

Majority of the study participants (61.60%) were aware of menstrual hygiene relative to 37.4% being unaware. The enquiries on girls' perceptions of menstruation-related



issues revealed that, almost (82.6%) of adolescent girls believed that foul body odor accompanied menstruation relative to 17.40% who did not believe.

The majority (64.4%) of the adolescent girls perceived menstrual blood as unhygienic while 35.6% sees the blood as hygienic.

Most (48.8%) of the sampled girls perceived menstruation as a lifelong process relative to 51.2% who did not believe that menses was lifelong.

About 29.5% of the study participants attributed menstrual pain to contractions of the uterus while 70.5% of the girls did not attribute it to anything. Further, it was observed that the majority (84.90%) of the adolescent girls were of the view that unprotected sex after menses could result in pregnancy while 15.10% did not have such a view. However, 53.5% of the respondents did not see the onset of menstruation as a sign of puberty while 46.5% disagreed (Table 4.4).

The majority of the respondents (63.7%) had sufficient knowledge on menstruation and menstrual hygiene whereas the remaining respondents (36.4%) did not have sufficient knowledge on menstrual hygiene management practices (figure 4.1).



Table 4.4; knowledge of adolescent girls on menstruation and menstrual hygiene

Variables	Categories	Frequency	Percentages
What is Menstruation	Natural Process	332	77.20%
	Disease	22	5.10%
	Curse	4	0.90%
	Don't Know	72	16.70%
	Total	430	100%
Cause of menstruation	Natural (Hormones)	215	50.00%
	caused by disease	26	6.00%
	cursed by God	77	17.90%
	Don't Know	112	26.00%
	Total	430	100%
Source of menstrual blood	Uterus	41	9.50%
	Vagina	356	82.80%
	Abdomen	6	1.40%
	Bladder	8	1.90%
	Don't know	19	4.40%
	Total	430	100%
Most girls see their menses	between 10 to 15	336	78.10%
	between 7 to 12	15	3.50%
	after 15 years	57	13.30%
	before age 11	22	5.10%
	Total	430	100%
Duration of menstrual flow	between 2 to 7	181	42.10%
	about 2 weeks	27	6.30%
	less than 5 days	173	40.20%
	three to nine	49	11.40%



	Total	430	100%
<hr/>			
Intervals between menses			
	21 to 35 days	43	10.00%
	30 to 35 days	64	14.90%
	30 to 37 days	27	6.30%
	20 to 30 days	296	68.80%
	Total	430	100%
<hr/>			
heard about menstruation before menarche			
	Yes	372	86.50%
	No	58	13.50%
	Total	430	100%
<hr/>			
Source of information			
	Parent	265	61.60%
	Teacher	228	53.00%
	Friends	154	35.80%
	Books	63	14.70%
	Media	28	6.50%
	Total	430	100%
<hr/>			
Knew about menstrual hygiene			
	Yes	269	62.60%
	No	161	37.40%
	Total	430	100%
<hr/>			
Knew that there is foul smelling during menstruation			
	Yes	355	82.60%
	No	75	17.40%
	Total	430	100%
<hr/>			
Knew that menstrual blood was unhygienic			
	Yes	277	64.40%
	No	153	35.60%
	Total	430	100%
<hr/>			
Menstruation a lifelong process			



Yes	210	48.80%
No	220	51.20%
Total	430	100%
Pains in cause by contraction of uterus		
Yes	127	29.50%
No	303	70.50%
Total	430	100%
unprotected sex after menses can result to pregnancy		
Yes	365	84.90%
No	65	15.10%
Total	430	100%
Menses is NOT a sign of puberty		
Yes	230	53.50%
No	200	46.50%
Total	430	100%

Field Survey, 2020

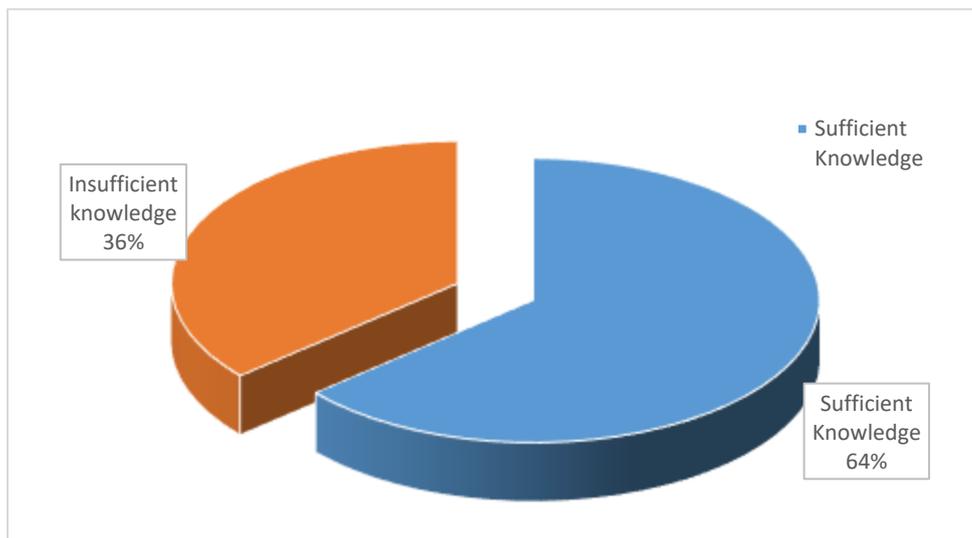


Figure 4.1; Overall knowledge on menstruation and menstrual hygiene

Field Survey, 2020



4.1.3.1 Association between socio demographic characteristics and knowledge of menstruation and menstrual hygiene

Within the age groups, 65.4% of girls within the ages of 10 to 15 years had sufficient knowledge in menstrual hygiene management practices compared to 34.6% who did not have sufficient knowledge on menstruation and menstrual hygiene, whereas 62.5% of girls within the ages of 16 to 19 years had sufficient knowledge compared to 37.5% who had insufficient knowledge on menstruation and menstrual hygiene.

The majority (75.0%, 58.5% and 61.3%) of the girls in Junior High School 3, 2, and 1 respectively had sufficient knowledge in menstruation and menstrual hygiene compared to 25.0%, 41.5%, and 38.7% in Junior High School 3, 2, and 1 respectively. There was statistically significant association between knowledge on menstruation and menstrual hygiene and the grade of the respondents (P; 0.014). The majority (72.0%, 56.5%, and 53.3%) of the Gonja, Kamara and other tribes were knowledgeable on menstruation and menstrual hygiene respectively compared to 28.0%, 43.5% and 46.7% of Gonja, Kamara and other tribes who had insufficient knowledge. There was a statistically significant association between ethnicity and knowledge on menstruation and menstrual hygiene (P; 0.001).

Majority (65.4%, 58.3%) of Muslims and Christians were knowledgeable on menstruation and menstrual hygiene respectively compared to 34.6% and 41.7% of Muslims and Christians respectively not knowledgeable on the subject matter.

Majority (64.7%) and 52.8% of sampled girls who were in public and private school demonstrated sufficient knowledge in menstruation and menstrual hygiene compared to 35.3% and 47.2% of girls in public and private school who had insufficient knowledge on menstruation and menstrual hygiene. Most of the girls, 56.7% and



73.2% who reside in rural and urban areas respectively had sufficient knowledge while 43.3% and 26.8% of girls in rural and urban areas had insufficient knowledge on menstruation and menstrual hygiene. There was a statistically significant association between ethnicity and knowledge on menstruation and menstrual hygiene ($P < 0.001$).

Majority (59.1%, 61.1%, 76.4%, 60.0% and 50.0%) of girls who stayed with their mothers or fathers, both parent, relatives, boarding and friends respectively had sufficient knowledge compared to (40.9%, 38.9%, 23.6%, 40.0% and 50.0%) of girls who stayed with their mothers or fathers both parent, relatives, boarding and friends respectively had insufficient knowledge on menstruation and menstrual hygiene.

Furthermore, majority of the girls (62.2%, 76.0% and 63.2%) whose fathers' jobs were formal, informal and self-employment respectively had sufficient knowledge compared to 28.0%, 38.6% and 36.2% the girls whose fathers' jobs were formal, informal and self-employment respectively had insufficient knowledge on menstruation and menstrual hygiene. Also, majority (72.0%, 61.4% and 63.8%) of girls whose mothers' jobs were formal, informal and self-employment respectively had sufficient knowledge compared to 28.0%, 38.6% and 36.2% of girls whose mothers' jobs were formal, informal and self-employment respectively had insufficient knowledge on menstruation and, menstrual hygiene.

Majority of the girls (61.5%) who had pocket money had sufficient knowledge compared to 38.5% who had insufficient whereas 67.2% of those who had no pocket money had sufficient knowledge compared to 32.7% who had insufficient knowledge on menstruation and menstrual hygiene. Majority of the girls (63.3%) who had TV or radio in their house were knowledgeable compared to 36.7% of girls who had



insufficient knowledge on menstruation and menstrual hygiene whereas 64.6% of the girls who do not TV or radio in their house had sufficient knowledge compared to 35.4% of girls having insufficient knowledge on menstruation and menstrual hygiene. Also, most respondents (57.7%) of the girls who earned money had sufficient knowledge compared to 42.3% who had insufficient knowledge on menstruation and menstrual hygiene whereas 66.3% of the girls who did not earn money had sufficient knowledge compared to 33.7% who had insufficient knowledge on menstruation and menstrual hygiene (Table 4.5).



Table 4.5; Association between socio demographic characteristics and knowledge of menstruation and menstrual hygiene

Variables	Category	Overall knowledge on menstruation and menstrual hygiene		P-value
		Insufficient Knowledge	Sufficient Knowledge	
Age	10 to 15 years	63(34.6%)	119(65.4%)	0.539
	16-19	93(37.5%)	155(62.5%)	
Class	JHS 1	55(38.7%)	87(61.3%)	0.014
	JHS 2	73(41.5%)	103(58.5%)	
	JHS 3	28(25.0%)	84(75.0%)	
Ethnicity	Gonja	63(28.0%)	162(72.0%)	0.001
	Kamara	37(43.5%)	48(56.5%)	
	Others	56(46.7%)	64(53.3%)	
Religion	Islam	113(34.6%)	214(65.4%)	0.186
	Christianity	43(41.7%)	60(58.3%)	
Category of School	Public	139(35.3%)	255(64.7%)	0.154





	Private	17(47.2%)	19(52.8%)	
Residence	Rural	107(43.3%)	140(56.7%)	
	Urban	49(26.8%)	134(73.2%)	<0.001
Living with	Mother/father only	36(40.9%)	52(59.1%)	
	Both parent	95(38.9%)	149(61.1%)	
	Relatives	21(23.6%)	68(76.4%)	
	Boarding	2(40.0%)	3(60.0%)	
	Friends	2(50.0%)	2(50.0%)	0.088
Education of father	No education	100(36.1%)	177(63.9%)	
	Basic education	24(40.7%)	35(59.3%)	
	SHS	13(28.9%)	32(71.1%)	
	Tertiary	19(38.8%)	30(61.2%)	0.639
Education of mother	No education	111(38.1%)	180(61.9%)	
	Basic education	26(35.1%)	48(64.9%)	
	SHS	16(34.8%)	30(65.2%)	
	Tertiary	3(15.8%)	16(84.2%)	0.264



Father's Job	Formal employment	17(37.8%)	28(62.2%)	0.325
	Informal employment	6(24.0%)	19(76.0%)	
	Self-employment	132(36.8%)	227(63.2%)	
Mother's Job	Formal employment	7(28.0%)	18(72.0%)	0.612
	Informal employment	39(38.6%)	62(61.4%)	
	Self-employment	110(36.2%)	194(63.8%)	
Pocket money	Yes	102(38.5%)	163(61.5%)	0.227
	No	54(32.7%)	111(67.2%)	
Own TV/Radio	Yes	104(36.7%)	179(63.3%)	0.778
	No	52(35.4%)	95(64.6%)	
Earn money	Yes	55(42.3%)	75(57.7%)	0.087
	No	101(33.7%)	199(66.3%)	

Field Survey, 2020

4.1.4 Menstrual hygiene management practices among adolescent school girls

The study found that all but 3% of girls in the sample used some sort of absorbent material during their period. More than half of these girls (56.0%) used commercial sanitary pads, 28.8% used cloth, 4.2% used homemade pads and 7.9% used tissue paper. However, only 44.4% reported reusing their absorbent materials.

Most of the girls (47.2%) stored their absorbent material separately from other clothes when they were not in use while 28.4% stored them in the room, 21.4% stored with other clothes and 3.0% did not use any absorbent materials. Majority (60.7%) of the girls cleaned their reusable absorbent material using soap and water whereas 22.8% used only water and 3.0% reported to not use any absorbent materials. About 53.4% dried their absorbent materials in the sun after washing them whereas 28.8% dries them in the room, 14.8% do not dry and 3.0% do not use any absorbent materials. During menses, most of the girls (49.8%) changed their absorbent materials twice in a day.

The results indicate that a very small percentage (9.1%) of girls do not wrap their sanitary materials before disposing them off while the remaining either wrapped in paper (7.7%) or in plastic bags (80.2%) before disposing. Most of the respondents (65.30%) choose toilets as the most preferred dumping sites for sanitary materials followed by drains (19.3%) and lastly open field (12.3%) as well as 3.0% of girls who do not use any form of absorbent materials

Moreover about 96.5% said they cleaned their genitals during menses. Out of those who cleaned their genitals, 71.6% used soap and water, 26.7% used only water and 1.6% used towels. A greater portion of the girls (81.4%) washed their genitalia three times a day during the period of menstruation while 4.7% cleaned 2 times ,0.5% cleaned once a day, 0.7% do wash during menses and 12.8% cleaned four or more times.



All but 1.4% of the adolescent girls bathed during their periods. About 43.7% of the girls bathed thrice daily while 46.0% bathed twice daily during menstruation. Also, 25.8% of the girls used medications to manage menstrual pain whereas 74.2% do not use any medication during menses (Table 4.6).

Overall, Majority (84.9%) of the girls observed good menstrual hygiene management practices while 15.1% did not observe good menstrual hygiene management practices (figure 4.2).



Table 4.6; Menstrual hygiene management practices among adolescent school girls

Variables	Categories	Frequency	Percentages
Do you use absorbent materials			
	Yes	417	97.00%
	No	13	3.00%
	Total	430	100.0%
Which absorbent materials do you use?			
	Disposable sanitary pad	241	56.00%
	Cloth	124	28.80%
	Homemade pads	18	4.20%
	Tissue paper	34	7.90%
	absorbent not used	13	3.00%
	Total	430	100.0%
Do you reuse materials?			
	Yes	191	44.40%
	No	239	52.60%
	absorbent not used	13	3.00%
	Total	430	100.0%
Where do you store absorbent material?			
	In the room	122	28.40%
	Separately	203	47.20%
	with other cloth	92	21.40%
	absorbent not used	13	3.00%
	Total	430	100.0%
How to Clean Absorbent Material?			
	No washing	58	13.50%
	Only water	98	22.80%
	soap and water	261	60.70%
	absorbent not used	13	3.00%
	Total	430	100.0%
Where do you dry it?			
	Inside the room	124	28.80%



No drying	64	14.80%
Sunlight	230	53.40%
absorbent not used	13	3.00%
Total	430	100.0%
How often do you change your absorbent material		
Absorbent not used	13	30%
Once	57	13.30%
Twice	214	49.80%
Three and more	146	34.00%
Total	430	100.0%
Where do you dispose absorbent material		
Drains	82	19.30%
Open field	53	12.30%
Toilet	281	65.30%
Absorbent not used	13	3.00%
Total	430	100.0%
Types of Pads Wrap Used for Disposing		
Absorbent not used	13	3.00%
Not Wrap	39	9.10%
Paper	33	7.70%
Plastic bad	345	80.20%
Total	430	100.0%
Do you bath during menses		
Yes	424	98.60%
No	6	1.40%
Total	430	100.0%
Frequency of bathing		
Daily	19	4.40%
Twice daily	198	46.00%
Thrice daily	188	43.70%
more than 3 times	19	4.40%
Until the end of the menses	6	1.40%
Total	430	100.0%



genitalia cleaning during menses

No	15	3.50%
Yes	415	96.50%
Total	430	100.0%

Material used in cleaning genitalia

Only water	115	26.70%
Towel	7	1.60%
Soap and Water	308	71.60%
Total	430	100.0%

Frequency of genitalia cleaning

Four and above	55	12.80%
Three times	350	81.40%
Twice	20	4.70%
Once	2	0.50%
No wash during menses	3	0.70%
Total	430	100.0%

Use of medication for menstrual pain

Yes	111	25.80%
No	319	74.20%
Total	430	100.0%

Field Survey, 2020



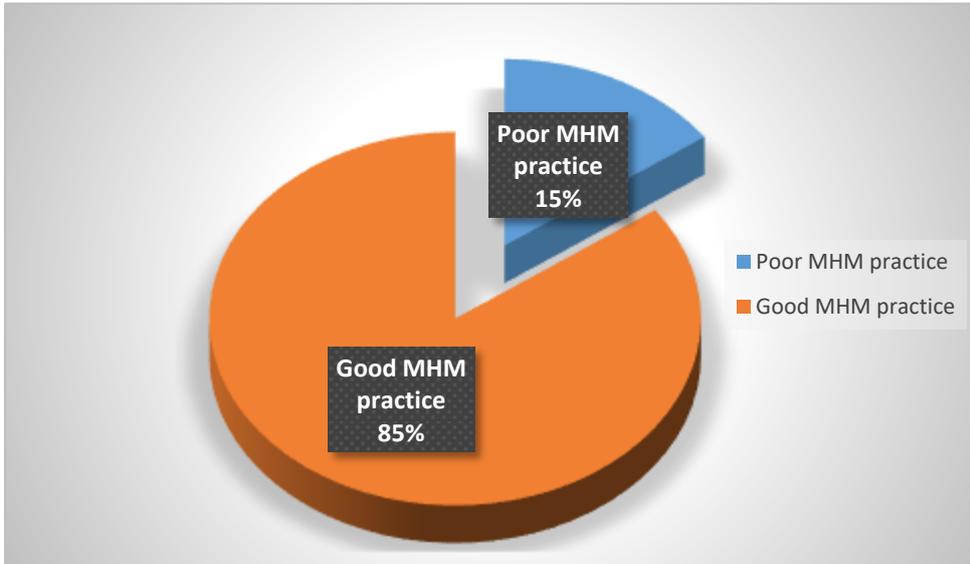


Figure 4.2; Overall MHM practices

Field Survey, 2020



4.1.4.1 Association between socio demographic characteristics and menstrual hygiene managements practices

From the cross tabulation, it was observed that the majority of the girls (88.5%) within the ages of 10 to 15 years practice good menstrual hygiene management whereas 11.5% do not. On the other hand, 82.3% of adolescent girls who were above 15 years of age practised good menstrual hygiene management whereas 17.7% did not.

More girls (86.4%, 84.5% and 83.0%) in JHS 2, JHS 1 and JHS3 respectively practiced good menstrual compared to 13.6%, 15.5% and 17.0% JHS 2, JHS 1 and JHS3 respectively practiced poor hygiene management. On ethnicity, this study revealed that majority (87.6%, 82.5% and 81.6%) of the Gonja, other (minority) and Kamara ethnic group respectively practiced good menstrual hygiene management compared to 12.5%, 17.5% and 18.8% of Gonja, others and Kamara tribe practiced poor hygiene management. The majority of Muslims and Christians (85.6% vs 82.5%) were observed to have good menstrual hygiene management practices compared to 14.4% versus 17.5% Muslims and Christians who had poor menstrual hygiene management practice. About 87% of the girls who resides in rural communities in the study area had good menstrual hygiene management practice compared to 13.4% who had poor practice whereas 82.5% of those who resided in urban areas had good menstrual hygiene practice compare to 17.5% who had poor practice.

On education of fathers; 85.9%, 84.7%, 79.6% of girls whose fathers had no formal education, attained SHS, and tertiary level respectively had good menstrual hygiene management practice compared to 14.1%, 15.3%, 15.6 and 20.4% of girls whose fathers had no formal education, basic education, SHS and tertiary level had poor hygiene management practice. However, on the education of mothers; 84.2%, 86.5%, 84.8% and 89.5% of the girls whose mothers had no formal education, attained SHS, and tertiary level respectively had



good menstrual hygiene management practice compared to 15.8%, 13.5%, 15.2% and 20.4% of girls whose fathers had no formal education, basic education, SHS and tertiary level had poor hygiene management practice. About 83.8% of the girls who engaged in some economic activities to earn money practiced good menstrual hygiene management compared to 85.3% of those who did not earn money. Girls whose houses had no television or radio (85.1%) had good menstrual hygiene management practice compared to 84.8% of those who had TV/radio.

Majority (92.1%) of girls who had pocket money practiced good hygiene compared with 84.8% of those without pocket money. There was a statistical significance between pocket money and practice of good hygiene (P; 0.001).

Majority (87.5%, 83.6%, 86.5%, 100% and 50%) of girls who stayed with only their fathers or mothers only, both parents, relatives, boarding and friends respectively practiced good menstrual hygiene management whereas 12.5%, 16.4%, 13.5% and 50.0% of girls who stayed with only their fathers or mothers, both parents, relatives, and friends respectively practiced poor menstrual hygiene management. The association between where the girls lived and their practice was statistically significant (P; 0.007).

On the category of school, 87.6% of girls in public were observed to practice good menstrual hygiene management practice than 55.6% in private school whereas 12.4% practice poor hygiene in public school compare to 44.5% of girls in private school. The association between the category of schools and menstrual hygiene management practice was statistically significant (P<0.001) (Table 4.7).



Table 4.7; Association between socio demographic characteristics and menstrual hygiene managements Practices

Variables	Category	Overall Menstrual Hygiene Management Practice		P-value
		Poor MHM practice	Good MHM practice	
Age	10 to 15 years	21(11.5%)	161(88.5%)	0.076
	16-19 years	44(17.7%)	204(82.3%)	
Class	JHS 1	22(15.5%)	120(84.5%)	0.736
	JHS 2	24(13.6%)	152(86.4%)	
	JHS 3	19(17.0%)	93(83.0%)	
Ethnicity	Gonja	28(12.4%)	197(87.6%)	0.26
	Kamara	16(18.8%)	69(81.2%)	
	Others	21(17.5%)	99(82.5%)	
Religion	Islam	47(14.4%)	280(85.6%)	0.442
	Christianity	18(17.5%)	85(82.5%)	
Category of School	Public	49(12.4%)	345(87.6%)	<0.001
	Private	16(44.4%)	20(55.6%)	





Residence	Rural	33(13.4%)	214(86.6%)	0.238
	Urban	32(17.5%)	151(82.5%)	
Living with	Mother/father only	11(12.5%)	77(87.5%)	0.007
	Both parent	40(16.4%)	204(83.6%)	
	Relatives	12(13.5%)	77(86.5%)	
	Boarding	0(0.0%)	5(100.0%)	
	Friends	2(50.0%)	2(50.0%)	
Education of father	No education	39(14.1%)	238(85.9%)	0.727
	Basic education	9(15.3%)	50(84.7%)	
	SHS	7(15.6%)	38(79.6%)	
	Tertiary	10(20.4%)	39(79.5%)	
Education of mother	No education	46(15.8%)	243(84.2%)	0.904
	Basic education	10(13.5%)	64(86.5%)	
	SHS	7(15.2%)	39(84.8%)	
	Tertiary	2(10.5%)	17(89.5%)	



Father's Job	formal employment	10(22.2%)	35(77.8%)	0.422
	informal employment	5(20.0%)	20(80.0%)	
	self-employment	50(13.9%)	309(86.1%)	
Mother's Job	formal employment	5(20.0%)	20(80.0%)	0.22
	informal employment	10(9.9%)	91(90.1%)	
	self-employment	50(16.4%)	254(83.6%)	
Pocket money	No	52(19.6%)	213(80.4%)	0.001
	Yes	13(7.9%)	152(92.1%)	
Own TV/Radio	Yes	43(15.2%)	239(84.8%)	0.916
	No	22(14.9%)	126(85.1%)	
Earn money	Yes	21(16.2%)	109(83.8%)	0.693
	No	44(14.7%)	256(85.3%)	
Overall knowledge on menstruation and menstrual hygiene				
	Insufficient Knowledge	28(17.9%)	128(82.1%)	0.127
	Sufficient Knowledge	37(13.5%)	237(86.5%)	

Field Survey, 2020

4.1.5 Hygiene facilities in schools

Out of the 13 schools investigated, 5 schools representing 38.5% have available source of water. Majority of the schools (61.5%) had no available source of water. Some schools had boreholes as their available source of water representing about 30.8%. Majority of the schools (61.5%) had no designed hygiene facilities. The study found that most schools are not under/on the WASH program and it was observed that 92.3% of the schools had no soap for regular hand washing.

Furthermore, all schools teach menstrual hygiene as a subject. It was observed that in 92.3% of the school's males do not share same latrines/urinals with the females. It was also observed that no school had menstrual hygiene management materials in stock at the time of this study. About 69.2% of the schools have no designated place(s) for changing for girls during menses compared to 30.8% who have designated place(s) which for changing during menses.

This study revealed that 38.5% have waste bins available in these schools for disposal of used sanitary products. Majority of the schools (61.5%) do not have these waste bins available. All schools with waste bins do empty them regularly with schools not having care takers for the sanitary facilities. Schools or government do not pay for the cleaning and repairs and there are no incinerators located at the premises of any of the schools under study (Table 4.8).



Table 4.8; Menstrual hygiene facilities in basic schools of west Gonja Municipality

Variables	Categories	Frequency	Percentage
Is there water source available in school	Yes	5	38.50%
	No	8	61.50%
	Total	13	100.0%
Type of water point	Borehole	4	30.8
	Well	1	7.7
	No Source of Water	8	61.5
	Total	13	100.0%
Is the water point functional	No Source of water	5	39.50%
	Yes	8	61.50%
	Total	13	100.0%
Are there designed hygiene facilities (water point) clean	No	8	61.5
	Yes	5	38.5
	Total	13	100.0%
Is your school under the WASH program	No	10	76.9
	Yes	3	23.1
	Total	13	100.0%
Is the soap regularly used for hand washing	No	12	92.3
	Yes	1	7.7
	Total	13	100.0%
Is menstrual hygiene taught in any of the school's subjects	Yes	13	100
Do the boys share same latrines/urinals as the females?			



	No	12	92.3
	Yes	1	7.7
	Total	13	100.0%
Are all school teachers oriented on MHH education			
	No	13	100
Is there any designated place for changing for girls during menses			
	No	9	69.2
	Yes	4	30.8
	Total	13	100.0%
Is the designated place accessible to all girls during their menses			
	No	12	92.3
	Yes	1	7.7
	Total	13	100.0%
Are there waste bins available in the school for disposal of used sanitary products			
	No	8	61.5
	Yes	5	38.5
	Total	13	100.0%
Does the waste bin get emptied regularly by a waste collector or into the incinerator			
	No waste bins	8	61.5
	Yes	5	38.5
	Total	13	100.0%
Are there care takers for the sanitary facilities			
	No	13	100
Does the school or government pay for the cleaning			
	No	13	100
Does the school or government pay for repairs or cleaning			
	No	13	100
Is there any incinerator located in school premises			
	No	13	100

Field Survey, 2020



It was observed that the majority (69.2%) of basic schools in the west Gonja Municipality did not have supportive hygiene facilities (infrastructure) whereas 30.8% of school had supportive hygiene facilities (infrastructure) [figure 4.3].

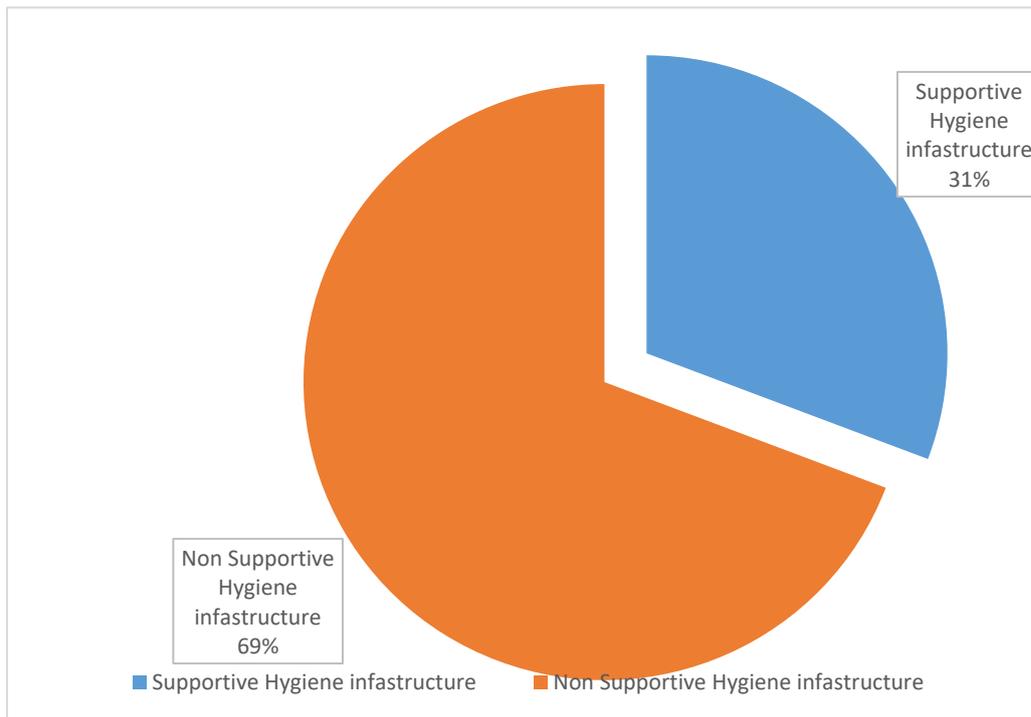


Figure 4.3; Hygiene infrastructure in school

Field Survey, 2020



4.1.6 Factors influencing the existing practices of menstrual hygiene

Out of the 8 independent variables included in the model, 4 variables were statistically significant at 95% confidence level. The model diagnostics (reported in the last row and below the table) demonstrate good model fitness to the data as exemplified by the highly significant Prob>chi² value and the high explanatory power exhibited by the pseudo-R² (53.2%).

The study revealed that, girls in public schools were 4.6 times more likely to practice good menstrual hygiene management compared to their counterparts in private schools (AOR;4.6, 95% CI; 1.76 -12.2, P; 0.002).

Girls who reside in the urban areas were 1.3 times more likely to practice good menstrual hygiene management compared with their colleagues in the rural setting ((AOR; 1.3, 95% CI; 0.52-1.61, P; 0.034)).

Girls with friends were 92.6% less likely to practice good menstrual hygiene management as compared with their counterparts who reside with both parents. Staying with friends and menstrual hygiene management practice were statistically significant (AOR; 0.074, 95% CI; 0.0081-0.68, P; 0.021)

More so, girls with pocket money were 2.9 more likely to practice good hygiene as compared with adolescent girls who had no pocket money (AOR; 2.9; 95% CI; 1.43-5.7, P; 0.002).

Finally, this study revealed that, girls who had insufficient knowledge on menstruation and menstrual hygiene were 15% times less likely to practice good menstrual hygiene than their counterparts who had insufficient knowledge on menstrual issues (AOR; 0.85, 95%CI; 0.48-1.54; P;0.601) [Table 4.9].



Table 4.9 Determinants of menstrual hygiene management

SN	Determinants	Measures	AOR	95% confidence interval		P-Value
				Lower	Upper	
1	Age	10 to 15 years	Ref			
		16-19	1.3	0.69	2.55	0.389
2	Ethnicity	Gonja	Ref			
		Kamara	0.54	0.25	1.2	0.127
		Others	0.69	0.34	1.4	0.296
3	Category of School	Private	Ref			
		Public	4.6	1.76	12.2	0.002
4	Residence	Rural	Ref			
		Urban	1.3	0.52	1.61	0.034
5	Living with	Both parent	Ref			
		Mother/father only	1.6	0.72	3.44	0.25
		Relatives	1.1	0.49	2.27	0.903
		Boarding	1	–	–	–
		Friends	0.074	0.0081	0.68	0.021



6	Mother's Job	Self-employment	Ref				
		Formal employment	1.1	0.31	3.35	0.981	
		Informal employment	1.6	0.75	3.54	0.215	
7	Pocket money	No	Ref				
		Yes	2.9	1.43	5.77	0.003	
8	Overall knowledge on Menstrual hygiene	Sufficient Knowledge	Ref				
		Insufficient Knowledge	0.85	0.48	1.54	0.601	
		_Cons	4.5	2.08	9.86	<0.001	



Pseudo $R^2=0.5322$, Prob>Chi $^2=0.0000$, LR chi $^2=194.39$, Number of Observation (N) =430, Log likelihood =-85.43, AOR= adjusted odds ratio, CI= Confidence Interval, Ref= Reference.

Field Survey, 2020

4.2 Qualitative Results

4.2.1 Socio-demographic characteristics of pupils/girls and mothers.

This study employed the mixed method approach, where both quantitative and qualitative data analysis methods are used. A total of four mothers with a minimum age of 28 and maximum age of 47 were interviewed. Two of the mothers were traders, another; a teacher and the fourth: a housewife (Table 4.10). All mothers had at least a girl child or dependent who have reached menarche. Also, the study conducted two (2) focus group discussions among adolescent girls who were in school. All the participants were within the ages of 10 and 19. All participants were in Junior High School derived from two clusters (circuits) that were excluded in the quantitative data collection namely; Damongo South circuit and Mole West circuit. Majority of the respondents were in their final year (JHS_3); (Table 4.11).

Table 4.10; Socio-demographic characteristics of mothers

Pseudo Name	Age	Occupation	Number of children/dependences	Residence	Ethnicity	Religion
Mother_1	30	Teacher	2	Urban	Gonja	Muslim
Mother_2	40	Trader	7	Rural	Dagarti	Christian
Mother_3	47	Housewife	5	Rural	Gonja	Muslim
Mother_4	28	Trader	1	Urban	Kamara	Muslim

Field Survey, 2020



Table 4.11; Socio-demographic characteristics of girls

Pseudo Name	Age	Class (JHS)	Residence	Tribe	Religion
Student_1	15	1	Rural	Kamara	Muslim
Student_2	18	2	Urban	Dagarti	Christian
Student_3	17	2	Rural	Gonja	Muslim
Student_4	16	3	Urban	Gonja	Muslim
Student_5	14	3	Urban	Gonja	Muslim
Student_6	15	1	Rural	Gonja	Muslim
Student_7	14	1	Urban	Dagarti	Christian
Student_8	18	3	Urban	Hanga	Christian
Student_9	19	3	Rural	Frafra	Christian
Student_10	17	2	Rural	Dagarti	Christian
Student_11	13	3	Rural	Gonja	Muslim
Student_12	15	2	Urban	Kamara	Muslim
Student_13	15	1	Rural	Gonja	Christian

Field Survey, 2020

4.2.2 Knowledge on menstruation and menstrual hygiene.

The first research question was aimed at assessing the knowledge levels of these girls on menstruation and menstrual hygiene. Source of information were crucial to providing relevant information on menstruation. Mothers, teachers and friends were the main sources identified by participants. Most of the participants had knowledge prior to menarche. In answering the first research question, four (4) sub themes emerged. The sub themes included the following (1) Information prior to menses; (2) Mode of communication; (3) Sources of information and



4.2.2.1 Information prior to menarche

Five (5) participants were informed about menstruation prior to their menarche. However, the information given was scanty and so these girls are required to see elderly women in the family when they start to experience their menses.

“...Yes! I was told that at certain point in my life I would start to see some blood from my vagina. I was informed to report to any elderly woman in the house when I see this sign. The elderly women in the house would assist me with the necessary preparations to allow me be comfortable...” (Student_3, 17 years)

Three (3) participants see not praying as a sign for menstruation which initiates the acquisition of information prior to menarche.

“...my elder sister was not praying, so I rushed to inform my mother that, my elder sister was not praying. My mother said she was menstruating. So, I did not understand, she then told me when I get to that stage, I would start to see some blood oozing from my vagina on monthly basis... she also said, anytime I see such blood, I should come and tell her...thereafter... She sent me and told she would continue later...” (Student_1, 15 years)

4.2.2.2 Mode of communication on menstruation

According to the four (4) participants, fear and calmness is used to communicate about their menstruation.

“Laughing As for me ... she (my mother) told me that now that I have experienced my menses, I have become a woman like that. Therefore, she cautioned me to be very careful around boys. She said if I just sleep with any man, I would get pregnant. She



told me that, if I get pregnant, I cannot attend school anymore. Then I would come and join them in the farm work. She asked if I would like to do farm work. I said no oohh...then she said I must keep away from boys now and focus on my education. She added that, my friends would make fun of me and I may even die in attempting to give birth or aborting a pregnancy if I should end up becoming pregnant...” (Student_6, 15 years)

“... My mother said if I get pregnant, she would allow me to give birth and see how it is. She also said I would die if I get pregnant.” (Student_9, 19 years)

Two (2) mothers’ resort to calming down the nerves of their girls before taking them through menstruation and its associated management. They held the view that; menstruation comes with many frustrations. Hence, the need to address the emotional needs first.

“Laughing...eerie I usually tell them to use pad, not to mix with boys and to have enough rest and as well give them some comfort. For those who have not reached their menarche, what I told them was that, anytime they experience abdominal pain or when they see blood upon urination, they should come and tell me” (Mother_1, 30 years)

“...I told them not to be worried anytime they realized their dresses are soiled with blood, it does not mean anything to them I always advise my younger sibling and children to inform any elderly woman in the house when they encounter any of these experiences” (Mother_3, 47 years)



4.2.2.3 Source of information and challenges

The sources of information on menstruation and hygiene related issues vary. The sources of information according to the participants include but not limited to the following; mothers, teachers and friends (peers) etc. Most girls who do not have access to formal education resort to trusted friends for information. Trust was seen as a way to open up discussions on menstruation with most girls. Some mothers opined that, some of this information acquired from peers are born out of uninformed talks and full of myths and hear say. These informants as much as possible do not open up on the subject matter. This is what some mothers had to say:

“...Sometimes, it is difficult because they do not open up on such issues unless they trust you. Usually they inform and consult their trusted friends for assistance; information sometimes offered by these friends however is not always accurate. (Mother_4, 28 years)

Most girls resort to their mothers for information on menstruation before menarche.

“...When I saw mine, I was scared but I heard some people talking about it so I also believed it was the menses... I quickly rushed to my mother to ask if I was okay. She smiled and said I was fine and confirmed that I was menstruating. I asked what I needed to do and then she took me through” (Student_2, 18 years)

The responses given by three (3) participants also suggest that teachers were not playing the pivotal role of disseminating information on the subject matter. The behaviour of some teachers in responding to menstrual issues further scares the girls from participating in class for fear of being exposed and being laughed at.



“... for my class, we were taught menstruation in social studies, however, our teacher is shy, so anytime he is teaching menstruation he does not mention some words to us. He would just say ‘the thing’ ...” (Student_4, 16 years)

The behaviour of some teachers compels some girls to neither ask nor answer questions in class for the fear of being vilified by colleagues and teachers.

“.... For our teacher, when you ask questions and even mention vagina or penis, he would just be laughing at you. Then everybody would be looking at you.... Because of that, sometimes if you have a question to ask, you cannot do so. You have to go home and ask your mother, and/ or resort to friends...” (Student_3, 17 years)

The attitudes of male counterparts towards the girls also scare them from asking questions on menstruation in class but rather resort to other friends.

“...Hmmm, master it is true oooh. Even the boys in the class would be calling you names if you dare ask questions about menstruation. So, for me just my friends...” (Student_7, 14 years)

4.2.3 Practices of managing menstrual hygiene among adolescent school girls

All participants used some form of absorbent materials during menses. Personal preferences, experiences, merits and demerits are factors that influence the choice of absorbent materials. With hygiene practices; most of the girls bath twice in the day during menses which is influenced by the flow of menstrual flow and odor during menses. In addressing these issues, five (5) sub themes were identified. They include: (1) Use of absorbent material and preferences, (2) Management of menstruation, (3) Hygiene practices during menses, (4) Cleaning and reusing of absorbent materials (5) Disposal of used materials.



4.2.3.1 Use of absorbent materials and preference

All participants use absorbent material during menses. The material of choice is dependent on personal preference, experience, merits and demerits of the absorbable materials. The absorbent materials being used are usually sanitary pad, cloth, tissue paper and cotton.

“... Sir, for me I use sanitary pad because it makes me feel comfortable and most of the times nobody would even know that I am menstruating...” (Student_2, 18 years)

Two (2) participants also use more than one absorbent material during menses. Student_9 had this to say:

“...sir, sanitary pad is good. I use it often but sometimes when I use some of them, I develop sores under my legs (groin areas). That makes me unable to walk well. Because of that, for me I used both cloth and sanitary pad to lessen the sores...” (Student_9, 19 years)

The advantages and disadvantages of these absorbent materials differ from person to person, which leads to influence on the choice of the material. It was revealed that, three (3) participants preferred sanitary pads in spite of the challenges.

“... For me I prefer to use sanitary pad, but when the flow becomes scanty or little, I now resort to the use of tissue paper or cotton. Hmmm, the problem with the tissue paper is that, it does not absorb enough blood and start to tear up and even gets stuck in one’s vagina. Hahahaha...” (Student_8, 18 years)

“...I prefer using the sanitary pad because with the cloth, you need to be extra careful if not you can be exposed. Also, depending on where the cloth is dried it can have some odor which can be disturbing and shameful...” (Student_4, 16 years)



Two mothers believe that both cloth and sanitary pads which were commonly used among girls have some disadvantages which put them in a dilemma.

“...Sometimes, some of the sanitary pads are impregnated with some medications but I do not know if it has effect on me, it makes you feel very uneasy whilst wearing it. With the cloth, when you wash it and it is not clean enough, it can also harm you.... I therefore do not even know which one to use. But for my children they mostly use the sanitary pad and sometimes, the cloth...” (Mother_3, 47 years)

4.2.3.2 Management of menstruation

Some girls are told how to manage their menstrual flow by their mothers with the use of sanitary pad, cloth or cotton. Two (2) mothers indicated how their daughters manage menstrual flow as found in the following extract:

“...Okay, when they begin menstruating, before they bath, they would inform you that they are bleeding. Anytime they say that, I would just give them pad and aid them in wearing it. Until now, we were using cotton and cloth (old) teaching them on its usage was difficult for the first time, but now, they are fine and able to use it with ease.” (Mother_2, 40 years).

4.2.3.3 Hygiene practices during menses

All study participants bathe during menses. The foul odor and sticky thighs as a result of menstrual blood was mainly the reason for bathing among menstruating girls. Nine (9) participants used water only to wash the vagina, three (3) use water and antiseptic to bath and wash the vagina to drive away the odor.



“... Yes, it sometimes smells badly during my menses. Not everybody gets the smell and the smell does not come every month. For me, I bath with antiseptic and sweet-scented soap to take away the smell...” (Student_6, 15 years).

Five (5) of the participants disagree strongly with the use of antiseptic and soap to wash the vagina as it is associated with some discomfort and can make the girls ill.

“... you cannot do that. When it enters the vagina, you would feel an unusual pain. Likewise, I learnt that it could make one sick. Our science teacher told us washing the vagina with soap was a bad practice since it would kill the germs within the vagina. For me I just use water and my hand to wash my vagina. I am always careful not to dip my hands inside too deep as that also could harm me...” (Student_3, 17 years)

“... for me when I use the soap to wash my vagina, I feel like there is dirt coming out from there (vagina). So, I think it's better to wash with water only since it takes away the smell as well...” (Student_9, 19 years)

During menses, sometimes the menstrual blood may stick on the thighs. For four (4) participants that makes them uncomfortable and to relieve themselves, they are requires to bath as much as possible. Most (seven) participants bath twice daily.

“. I usually bath twice. Sometimes, when the menstrual flow is heavy or the absorbent material is not absorbing enough blood, some of the blood can leak to the thighs. When the blood dries up, the thighs become sticky. So, when you walk around, you feel some starchy between your thighs. This can be very discomforting unless you bath...” (Student_5, 14 years)



Some participants are of the view that, the number of times they bath during menses is dependent on the flow of menstrual blood, i.e. when the flow is heavy, you are require to bath often times.

“.. For me I bath twice or thrice and often times I bath more than three times. When my flows come as heavy, the absorbent material tends to get soaked easily. If am going to change my material, I have to bath if not I would not be comfortable...”

(Student_6, 15 years)

4.2.3.4 Cleaning and drying of reusable absorbent material

Five (5) participants held the view that; the cloth needs to be wash with soap and water and dried up on the sunlight after use. For four (4) of the participants, shyness happens to compel some participants to do contrary to the above.

“...I usually wash my used cloth after bathing. I wash it with soap and water, rinse and dry it in the sun. We are told by the Integrated Science and Social Studies teachers that; the sunlight kills any germs that could make us fall sick. Also, when you dry it in the sun, it takes away the smell...” (Student_2, 18 years)

Shyness compels some four (4) participant to inappropriately wash the cloth and as well dry them inside the room. This attitude causes the smell of the cloth.

“....sometime when you are washing the cloth and people come in. you become shy, and so to avoid the shyness, you would just rinse it and quickly dry it in the room. Usually they are those who tend to make the cloth have a certain smell ...” (Student_4, 16 years).



4.2.3.5 Disposal of used absorbent materials

There are varied ways in which used sanitary pads and other absorbent materials are disposed of. These include; refuse dump/bush, gutter, drains and toilets. The disposal mode is influenced by some cultural believes of the participants. Before disposal of their used absorbent material, six (6) participants reported that, they usually would wrap it with a plastic bag.

“...For me I wrap it with a rubber and throw it into the bush or put it in dust bin so that you dispose it with other refuse into the bush. In the bush, nobody would see it...”

(Student_4, 16 years)

“...For me, I just wrap it with rubber, and then dig a hole and cover it with the earth or dispose it in the toilet...” (Student_7, 14 years)

The reason for the choice of a disposal site has some culture influence. This is what some two (2) mothers have to say:

“...We were told not to dispose them in the dust bin or refuse dump, because it has a traditional ramification. You may never give birth, if it is seen by a wicked man...”

(Mother_2, 40 years)

“...Is not good to dispose it in the gutter or refuse dump because. A pig or dog can pick it and send it back to the community. So, in this era of ritual money, someone can use the blood for rituals to become rich...” (Mother_4, 28 years)



4.2.4 Hygiene facilities in the basic school

All participants acknowledged inadequate hygiene facilities in schools including urinals, toilets and designated rooms for changing. The absence of facilities makes the menstruating girl uneasy with managing menstrual flow whilst at school. Privacy is not assured these girls, which tends to make the stay home during their menstrual flow, until in stops. By this, the contact hours and involvement of class activities are also affected greatly. In the quest to answer the question, three (3) sub themes emerged. They are (1) Availability of hygiene facilities, (2) Absence from school activities and (3) Involvement in class.

4.2.4.1 Availability of hygiene facilities in basic school

All participants are of the view that, there are inadequate urinals and toilets, absorbent materials for emergency use and designated place for changing of pad in schools. These impede on the privacy and confidentiality of some participants. Student_9 has this to say:

“ Our school has a urinal and toilet. They are separate facilities for each sex. Usually, during break time, some of us have had to use the bush or else we would not get space and it would be time for break over...” (Student_9, 19 years)

There are no designated places for girls who are experiencing their menstrual flow to change and the school do not have any absorbent materials for the girls when if any happens to experience menstrual blood flow whilst in school. The existing facilities such as urinals and toilets also lack gates with locks to ensure privacy. Most (8) participants resort to the bushes if they have reserved absorbent material to change.



“...Hmmm, there is no space for us to change during menses. If you are aware of the menses, you have to prepare from home, so that when you see it, you would just go to the bush and change. ...the urinals and toilets do not have locks and so you can be there and someone would just come and enter. To avoid this embarrassment, you just go to the bush. For those of us who come unprepared, we take permission, and then go home and change and come back...” (Student_5, 14 years)

4.2.4.2 Absence from school activities.

Due to inadequate hygiene facilities, some participants miss out on some lessons when they are menstruating. For those whose homes are far from the school and those who have one uniform, they usually miss the activities of school during menses for up to three day each month.

“.... For those whose home are far from school, they would have to absent themselves for the rest of the school work since they cannot go and come back again.....” (Student_12, 15 years)

The disciplinary measure in the school does not favor girls with one uniform. Some girls fear to be meted out with actions such as caning or any other punishment for contravening the rules (thus wearing “improper” to school).

“.... Sir...hmm, it is not only those whose houses are far oooh... I am in this community and have only one uniform. Therefore, if my uniform is soiled, I cannot go, change, and come back immediately. I have to wash and dry it. ...I cannot use improper to school; the teachers would cane me... sometimes depending on the flow I can even absent myself from school for more than 3 days to avoid any embarrassment...” (Student_13, 15 years)



4.2.4.3 Involvement in class activities

Five (5) participants are unable to participate in class activities when they are experiencing their menstrual flow for fear that their male counterparts may make fun of them.

“...I feel very uncomfortable when am menstruating whilst in class. If by mistake, the boys in my class see the flow (the menstrual blood) they would make fun of you, until you just leave the class. They would block their noses, while passing unpalatable comments like the class is smelly as a result of the menstrual flow, while laughing at you. ...” (Student_8, 18 years)

Four (4) of the participants are not able to associate themselves and so isolate from the rest of their peers.

“...For me, when it happens that way, I cannot even talk in class. I do not also want to involve in any form of activity and playing with my peers for fear that, I may be exposed. Hmmm, I just sit like am sick whilst praying that, I would get the least chance to go to the bush, urinal or toilet and change or to seek for permission to go and change at home....” (Student_10, 17 years)

Some of the teachers would require that, you stand when you need to answer or ask a question. This lowers the self-confidence among the menstruating girls and prevents contributions in class.

“...our teachers do not like you sitting whilst answering questions in class. This may further expose you if your uniform is soiled. To prevent this, you may just choose to take permission and go home to avoid your teacher saying you do not respect. In



addition, for me I do not want to even contribute or ask questions since that would further expose you... “(Student_9, 19 years)

4.2.5 Factors affecting menstrual hygiene management practice

In this section, the study explored factors affecting the practice of good menstrual hygiene. It was revealed that, socio cultural factors, socio economic factors, social support, availability of and ability to reuse the absorbent material were factors that influenced immensely the practice of menstrual hygiene. Four (4) sub themes emerged in the process of exploration. They are as follows; (1) Religion and Culture, (2) Social support, (3) Availability of materials and (4) cost and reusability of absorbent materials.

4.2.5.1 Religious and Cultural Influence on Hygiene Practice

Religious and cultural practices influence greatly the practice of hygiene. The participants opined that during menstruation, there are some restrictions with respect to worship as well as the inability to participate in social activities such as cooking, fetching water and among others.

“...our ‘Ustaz’ (Islamic teacher) told us that it is forbidden to pray as a Muslim, he added that we cannot touch the Qur’an until after the menstrual flow ends. During menstruation, we are considered impure until the menstrual blood stops and a special bath ‘Ghusl’ is performed to make you pure and thereafter you can participate in religious activities...” (Student_11, 13 years)

There are some restrictions that are influenced by the culture of the person(s) including cooking, fetching water and among others. All mothers have this to say:



“...In some houses with elders, menstruating women do not fetch fire from that house. It is because the elders may be tabooing that. Growing up, we were told that, you can ‘spoil’ someone’s ‘medicine’ by fetching the fire. We are not allowed to cook for those people whilst in our menses. If you are selling food, you are advised to let someone help you during these times. In some homes too, the menstruating woman is not allowed to sow seeds and even fetch water for domestic use of the family...”

(Mother_1, 30 years)

4.2.5.2 Social support

Parents especially the mother provides the needed support to the girl child during menstruation to enable their wards effectively manage their experiences.

“...For me my mother supports me with sanitary pad anytime I experience my menstrual flow. My father too is very helpful, he sometimes gives me money to buy my basic needs of which I use a part of it to purchase pad for my usage...” (Student_7, 14 years)

“... sometimes, my father gives me money to go and buy. Also, my mother always buys for all of us to use. So anytime any of gets money we either give to our mother to buy or we just buy and come and leave it in the room for everybody to use...”
(student_13, 15 years)



4.2.5.3 Availability of materials

Non-availability of absorbent materials and distance to getting them also hinders on the use. Three of the participants made this observation;

“...In our village, no body sells sanitary pad. So over here when you start to menstruate, you are left with no option than to explore for other materials including cloth, cotton or tissue paper. The distance is not also short...” (Student_12, 15 years)

4.2.5.4 Cost and reusability of absorbent materials

Two (2) mothers held the view that, the *cost* and reusability of the absorbent material influence the choice of absorbent material used during menses. This is what a mother had to say:

“...My son, I am a widow. The other children who would have helped have all travelled to the southern part of Ghana in search for white-collar jobs. We struggle to get our daily bread. I have heard about the sanitary pads, but because of the cost, my children use the cloth anytime they experience their menstrual flow..... Sometimes when someone gives me some money, I try to buy food with it and reserve some to buy sanitary pads for their use...” (Mother_3, 47 years)

The ability to reuse the material has a greater influence on the type of material to use. This to them, would save cost.

“...sir...the fact is that cotton and cloth are cheap in this area. In addition, the cloth can be used for a longer time. Therefore, because of the cost of sanitary pad, I have had to use sanitary pad when I have heavy bleeding and have to go to school. When I come back from school then I use the cloth. Also, after the first two days of bleeding the menstrual flow becomes scanty and you can use cloth with ease....” (Student_7).



CHAPTER FIVE

DISCUSSION

5.0 Introduction

This chapter draws a relation between the existing literature and the findings of this study.

5.1 Knowledge of adolescent girls on menstruation and menstrual hygiene

The study revealed that 63.7% of the girls had sufficient knowledge of menstruation and menstrual hygiene. This is closer to what was found in Chitwan, Nepal (66.8%) (Neupane et al., 2020), and in western Ethiopia (60.9%) (Upashe et al., 2015). These findings are much lower than the 90.7% found in Amhara Province of Ethiopia (Gultie, 2014) but higher than the 52.5% found in India (Pradeepkumar et al., 2019) and 51.6% found in Kenya (Korir et al., 2018). It's worth mentioning that, this result as reported by the current study may underestimate the actual knowledge on menstruation and menstrual hygiene because the study participants included only students in selected basic schools in the municipality. These categories of adolescents are exposed to a lot of information. Hence, the current findings on the overall knowledge of menstruation and menstrual hygiene do not reflect the real situation on the grounds. The qualitative data collaborated with the finding of the quantitative study.

On the causes of menstruation, exactly 50 percent of girls rightly attributed the phenomenon to natural processes facilitated by hormones. This is much lower than the 87.7% found in eastern Ethiopia (Felleke & Gerada, 2020) and 94.8% reported found in Chitwan, Nepal (Neupane et al., 2020). In Ethiopia the study was conducted among adolescent girls who have had a higher level of education than the girls in the



current study. This could be the reason for the discrepancies identified above coupled with differences in geographical locations. Conversely, 18 percent of the girls considered menstruation as a curse from God while the remaining 6 percent blamed diseases for causing menstruation. The fact that as high as 24% of the respondents attributed menstruation to causes such as diseases and a curse from God is a cause for concern. This finding was consistent with studies which revealed that some girls believed menstruation is a disease (Anee et al., 2020; Pandey, 2014).

Regarding the origins of menstrual blood, majority (83%) of girls reported the vagina as the organ responsible. This is further supported by the qualitative data. In the first place, the right response in the case is the uterus. That being said, it can be inferred that almost all respondents (about 90%) do not seem to have an idea as to where menstrual blood comes from. The high error rate could be attributed to the fact that most young adolescents have poor knowledge of the physiology of menstruation. They see blood coming out of the vagina and misconstrue this as the origin. This is supported by a study in Nepal that showed the majority did not know where the menstrual bleeding comes from (Mahon & Fernandes, 2010). Similar to this finding, a study conducted by Michael et al., (2020) in Pakistan showed that 60.2% of girls believed the menstrual blood was from the vagina. On the other hand, in urban slum areas in India, 16% of adolescent girls knew that menstrual blood was from the uterus, this finding is about twice higher than the 9.5% reported by this study. In Southern Ethiopia, 32.6% of girls mentioned uterus as the source of menstrual blood (Belayneh & Mekuriaw, 2019) and 29.30% of girls in Pakistan knew the correct source of blood being uterus (Mansoor et al., 2020).

On the adolescents' access to menstrual information and the sources of this information before menarche, more than 86% of the respondents received menstrual



information before their first period. This finding corroborated with Sharma & Gupta, (2020) in India and Mansoor et al., (2020) in Pakistan and 91.7% as reported in Ethiopia to have had information prior to menses (Felleke & Gerada, 2020). Shah et al., (2013) in a study conducted in rural India revealed the majority of the study participants did not have information on menses prior to menses. The difference could be attributed to the culture and religious dynamism of the study participants. The sources of this information were parents/guardians, teachers, friends, books, and mass media in that order. The study revealed that the majority of girls received information from their parents (mothers). This is consistent with (Ajah et al., 2015; Eswi et al., 2012; Garba et al., 2018; Gorah et al., 2020; Oche et al., 2012) who reported that the mother champions in the spread of information regarding menstruation and menstrual hygiene. These similarities could be explained by the fact that mothers are usually close to the female child and are able to detect the signs of menstruation early to implement interventions that include education on menses, its significance, and how it should be managed. In some cultures, as demonstrated by Gorah et al., (2020), it is the responsibility of the grandmother or the mother to transfer information on menses to their girls. Contrary to the above, in India (Pradeepkumar et al., 2019) and in the Middle and East Africa (Roudi-Fahimi & El-Feki, 2011) held a divergent view regarding the source of information. In this study, it was revealed that most adolescent girls received information on menstruation through their friends. However, mothers in the current study were of the view that, information obtained from friends is usually born out of hearsay and usually unscientific. The view of these mothers was supported by (Chandra-Mouli & Patel, 2017; Juayire, 2016; Suhasini & Chandra, 2017). This assertion by the mothers could be the reason the current study participants did not take information from friends on this subject matter.



The study further revealed that 83% of adolescents believed that foul body odor accompanied menstruation; 64% also perceived menstrual blood as unhygienic. These findings are supported by the argument of Santina et al., (2012) that for some school-going girls, the blood during menses is considered as being dirty and so labeled the feeling as disgusting. The perception of these girls of menstruation being unhygienic or causes foul odor calls into question how they manage their menses.

5.2 Practices of managing menstrual hygiene among adolescent school girls

This study found that 97% of girls in the sample used some sort of absorbent material during their period. This finding was noted to be higher than that of a study done in Ethiopia by (Belayneh & Mekuriaw, 2019) which revealed that 66.1% of study participants used some form of absorbent materials and slightly higher than 82.2% reported in western Ethiopia (Upashe, Tekelab, & Mekonnen, 2015). The level of knowledge of the girls was found to be low in Belayneh & Mekuriaw (2019). It was found to be very low compared with this current study. This could account for the wide range in discrepancy. Menstruating girls have a primary need to feel clean and dry. Absorbent materials are important in providing cleanliness and comfort.

These materials used include commercial sanitary pads (56%), cloth (28.8%), and the remaining being homemade sanitary towels and tissue paper. Specifically, the study found that most of the girls used commercial sanitary pads. The findings of the current study on the usage of sanitary pads was lower than that of the 98.6% in Egypt (El Meselhy, Salama, & El Mawardy, 2020), 93.8% and 83% in Nepal (Neupane, Sharma, Bista, Subedi, & Lamichhane, 2020) and (Pokhrel, Mahat, & Parajuli, 2020) respectively, 67.2% and 64.3% in Nigeria (Gorah, Haruna, & Ufwil, 2020) and (Adika, Yabga, Apiyanteide, Ologidi, & Ekpo, 2011), 66.9% in Kenya (Mathenge &



Midigo, 2020), 86.1% in north India (Sharma et al., 2013). This finding of the current study is however higher than that of 47.2% in rural Ghana (Mohammed, Larsen-Reindorf, & Awal, 2020) and that of 21.2% in the Yendi Municipality in northern Ghana (Boakye-Yiadom et al., 2018). In the present study, the study participants were only schoolgirls unlike those conducted in Ghana earlier who recruited all categories of the adolescent girls in school and out of school. Also, the belief of these girls may differ and hence could be the reason for differences in the data presented above. In another vein, the second most absorbent material used was cloth (28.8%). These findings are lower than 57% in Northern Ghana (Ayi et al., 2010) and similar to 26.9% in Nigeria (Okafor-Terver & Chuemchit, 2017). Contrary to above, (Chandra-Mouli & Patel, 2017) and (Kuhlmann, Henry, & Wall, 2017) in a systematic research showed a majority of girls in lower and middle-income countries (LMIC) tend to use a cloth to absorb menstrual blood during menstruation. Also, studies conducted in Bangladesh by Anee et al., (2020) and in India by Pradeepkumar et al., (2019) presented findings which were directly opposite to the finding of this study. These studies revealed that the majority of the respondents used a cloth to absorb menstrual blood during their menses. Some girls believed that sanitary pads were easy to use and as such make them comfortable. This was supported by Wiesemann & Adam, (2011) who opined that sanitary pads handle different densities of menses under a variety of conditions and activities, easy to use, comfortable, and easy to dispose off. The socio-economic status and socio-cultural factors (myths, taboos, parent's occupation, and educational level, etc.) could be linked to the differences in the findings. Some mothers in this study stated that sanitary pads are impregnated with some chemicals which cause some irritation on the groins. This is supported by a



study conducted by (Rademaker, 2004; Wiwanitkit, 2009) who reported that sanitary pad could cause some skin infection and irritations.

We further inquired how adolescents dispose off their used absorbent sanitary materials. The results indicated that a very small percentage (about 9 percent) of girls do not wrap their sanitary materials before disposing them off while the remaining either wrapped in paper (7.7 percent) or in plastic bags (80.2 percent) before disposing them. According to Emmanuel & Yawson, (2019) and Neupane et al., (2020) the majority of the girls wrapped their used absorbent materials before disposing them. This is in line with the findings found in this study.

Toilets were the most preferred dumping sites for sanitary materials followed by drains (19 percent) and open field (12 percent). A study conducted in rural Ghana by Mohammed et al., (2020) supported the findings of the current study that 45.2% of the study participants used toilet as the preferred dumping site for their used absorbent materials. This similarity is due to the fact that the study subjects had very similar characteristics (i.e. in the same country, Ghana, among rural communities). Also, some mothers further support these findings. According to these mothers, disposing of a used sanitary pad in the open has some spiritual consequences. Thus, a wicked man could take your used pad and make you barren or fraudsters “akawa” boys could also use the blood for rituals which can make you poor for the rest of your life. Interestingly, Emmanuel & Yawson, (2019) in a study conducted on menstrual hygiene management and resources for adolescent girls in an urban setting in Accra, Ghana, revealed that most girls disposed their used sanitary pad in the dustbin. Though, the same geographical location, the clear cause of this difference may be attributed to disparities in resource distribution between the urban and rural communities in Ghana as well as the cultural differences. In rural Ghana, dustbins are



not widely used as compared with urban areas. All these could account for the differences. Again, these studies (Mathenge & Midigo, 2020; Neupane et al., 2020; Pokhrel et al., 2020) revealed that used sanitary pads were disposed of in dustbins by the study participants.

Cleaning of reusable absorbent materials is crucial to the effective practice of hygiene management (Kaur, Kaur, & Kaur, 2018). This study revealed that most respondents (60.7%) who used cloth washed it with water and soap. This is lower in a study conducted in rural Uganda (Hennegan, Dolan, Wu, Scott, & Montgomery, 2016) which showed that 73.4% of the girls washed their cloth with water and soap but higher than 52.9% in Ethiopia, (Upashe et al., 2015). Contrarily, in Mumbai India, most respondents washed their reusable absorbent materials with only water (Nemade, Anjenaya, & Gujar, 2009). This discrepancy could be explained using the economic status of the parent. The availability of soap for washing absorbent materials may be absent hence compelling them to wash it using only water.

A little over half (53.5%) of the girls sampled for this study dry their reusable absorbent materials in the sun. This is higher than similar studies in western (Upashe et al., 2015) and southern Ethiopia (Belayneh & Mekuriaw, 2019) which reports 45.2% and 47.4% of the girls dried their reusable material in the sun respectively. The drying of these materials in the sun is considered the best practice since the sunlight serves as a natural sterilizer to cleanse the material of any bacteria that could harm the health of the user (Kaur et al., 2018). In areas where adequate sunlight isn't available, ironing of the material after they are dried serves the same purpose as mentioned in above (Sommer et al., 2016). Though drying the absorbent material in the sun is crucial, some mothers and girls in this study opined that shyness and lack of private places for drying compel them to dry their absorbent materials in the room. This is



supported by (UNICEF, 2019) which showed that the lack of privacy and stigma and the availability of private places for washing and drying as reasons for people who do not dry their used absorbent materials outside. In relation to the above, Hennegan et al (2016) reported that some girls in a boarding school in Uganda were shy to wash their used cloth in public, they washed in the night and dried them in the dormitory (Hennegan et al., 2016). These revelations further confirm that girls and women, in general, have not been able to accept their own physiology. Culture in Africa in particular has been used as a tool to relegate the girl/woman from rising. It is therefore very necessary to empower women to take up certain roles for themselves.

Almost all respondents reported taking regular baths during their menstrual periods. This is similar to Mohammed et al., (2020) who reported a 94% bath in rural Ghana during menses. This similarity could be attributed to the characteristics of respondents (age, tribes, etc.) and the use of similar study protocols. Though there are no clear-cut references on the frequency of bath during menses, it is very essential to have suitable hygiene, wash the bodies and hair each day, especially during the menstrual period because it makes girls feel more confident. About 94% of girls bathe more than once daily during menstruation with more than half bathing more than 3 times a day during this period. Findings of the current study showed that more persons bathed more than once during menstruation than similar studies in Chitwan, Nepal which revealed 64.2% of study participants bathed more than once (Neupane et al., 2020), in northwestern Nigeria which revealed 85.6% of the girls bathe more than once during their menses (Rabiu, Sani, & Daneji, 2020) and in western Ethiopia which revealed 67.8% of the girls were bathing more than once (Upashe et al., 2015). Contrary to the above, Michael et al., (2020) in a study conducted in Quetta, Pakistan on knowledge and practice of adolescent females about menstruation and menstrual hygiene



revealed that more than half (58.2%) of the study participants did not bath at all during their menses. This discrepancy could be cultural dynamism. Moreover, the finding of the study in Quetta exposed a huge gap in knowledge and so recommended the incorporation of menstrual hygiene campaigns and/ or advertisements in diverse health care systems and female clubs in schools to uplift the appreciation on menstrual hygiene and its related hygiene issues.

The majority (96.5%) of the girls purposely clean their genitalia during their period using water only (27 percent), towel (1.6 percent), or soap and water (72 percent). These purposeful genitalia cleansing was undertaken on multiple occasions with some girls washing at least three times daily during their period. The current finding is seen to be higher in other studies in other locations. For instance, in Kenya, Mathenge & Midigo, (2020) reported about 84% of study participants washed their genitalia during menses. In southern Ethiopia, Belayneh & Mekuriaw, (2019) showed that 69.5% of the study participants cleaned their genitalia during menses and 83.5% was reported in Western Ethiopia (Upashe et al., 2015). As revealed in this study, the majority of girls (72%) used soap and water in washing their genitalia. This is similar to the study undertaken by Belayneh & Mekuriaw, (2019) which reported that about 70% of participants used soap and water to clean their genitalia during menstruation. In the course of this study, most girls (82.6%) held the view that menstrual blood had a foul smell, and so for some of these girls washing the genitalia with strong scented soaps and water takes off the smell. The same could be said for a study conducted in southern Ethiopia since the study subjects have similar characteristics.

A stronger opposition was raised by some students that, using soap and water to clean the genitalia have nothing to do with the foul smell. They opined that; the foul smell comes about when girls did not treat their reusable absorbent materials well. For some



of these girls who disagreed with the earlier assertion, they based their argument on the fact that using soap and water causes irritation of their genitals. Some recalled that they learned in school that washing the genitalia with soap and water could amount to douching. This assertion is supported by a study in Nigeria that showed that showed that some adolescents did not wash their genitalia with soap and water as a result of irritation (Ekpenyong & Davies, 2013; UM, Yusuf, & Musa, 2010). Also, these students revealed they were taught that cleaning the genitalia with soap and water could introduce germs into the system which could cause some illnesses. This was further supported by studies in India that suggest that poor menstrual hygiene management could lead to urogenital infections (Das et al., 2015). Upashe et al., (2015) in a study also revealed that 10% of women are exposed to Urinary Tract Infections, due to lack of menstrual hygiene practice. Consequently, cleaning genitalia with soap and water amounts to douching which can cause overgrowth on harmful bacteria in vulva thereby causing illness. This, therefore, needs to be discouraged (Chen, Bruning, Rubino, & Eder, 2017; Ekpenyong & Davies, 2013; Hamoonga, Olowski, & Musonda, 2019; Sunay, Kaya, & Ergun, 2011). Per the aforementioned reasons given by these girls, it is obvious that a lesser number of participants (26.7%) would opt for water only in washing their menses which is the best way of cleaning the genital provided the hands are clean to prevent further introduction of harmful bacterial into the vulva. The finding of the current study is lower in that of similar studies in Ethiopia by Felleke & Gerada, (2020) who revealed that most girls (49.5%) use water only to wash their genitalia during menses. The finding however is higher in a similar study in Makurdi, Benue state, east-central Nigeria, which revealed that only 4.6% of girls used water only for cleaning their genitalia (Akpenpuun & Azende, 2014)



With the identified health challenges associated with menstruation, this study found that about 26% of girls took some form of medication mainly to relieve menstruation-related pains. This is more than 4 times higher than Gorah and colleagues who revealed that, 6% of the girls take medications to ease menstrual pains (Gorah et al., 2020). On the contrary, in Italy the majority of the participants; 65.6% used some medication to manage pain during menses (Grandi et al., 2012). Non-Steroids Anti-Inflammatory Drugs are widely used all over for the management of menstrual pain (Harel, 2012; Marjoribanks, Proctor, Farquhar, Sangkomkamhang, & Derks, 2003; Zahradnik, Hanjalic-Beck, & Groth, 2010). It is suggested for menstruating girls/women who experience some pain in their menses, to taking NSAIDs (Nonsteroidal anti-inflammatory drugs) or hormonal contraceptives (Oral Contraceptives); if the pain persists for few days after the medication, , patients (girls) are required to rule out other possible causes of dysmenorrhea other than menses (Carlson, Eisenstat, & Ziporyn, 2004). Availability of drugs, knowledge about drug use as well as the ability to purchase could explain the differences in the study findings relating to the use of medications in the management of menstrual pain.

Finally, the study revealed that the majority (84%) of the girls sampled practiced good menstrual hygiene management. This finding is higher than studies carried out elsewhere in Ghana in particularly, (Mohammed et al., 2020) a little over half (50.8%) of sampled girls had good menstrual hygiene management in rural communities, in Kenya, 64.3% of study participants had demonstrated good menstrual hygiene management practices (Mathenge & Midigo, 2020), in Nepal 72.5% of the respondents practiced good MHM (Neupane et al., 2020), in western Ethiopia, 33.9% practiced good MHM (Upashe et al., 2015), 38.9% in eastern Ethiopia practiced good MHM (Felleke & Gerada, 2020) and 39.7% in Southern Ethiopia practiced good



MHM (Belayneh & Mekuriaw, 2019). The finding of this study is closely similar in Persia, where 78.7% of respondents had good menstrual practice (Fakhri et al., 2012) and in Egypt (El Meselhy et al., 2020) which showed about 90.0% hygienic practices of adolescent school girls towards menstruation. This vast discrepancy can probably be explained by the fact that girls in Ghana are ascribed to supernatural, religious, and cultural perceptions and beliefs regarding menstruation that has the tendency of limiting deliberations on the subject concerning menses and hinder their safe hygienic management. Also, economical constraints of rural Ghanaian parents and their ability to buy reusable sanitary pads needed for menstrual hygiene practice may account for the discrepancy.

5.3 Factors influencing the existing practices of menstrual hygiene

This study revealed that the most significant determinants of menstrual hygiene management were the residence of the adolescent girl (urban/rural), pocket money, and category of school (public or private). In the qualitative data, it emerged that culture and religion also influenced the practice of menstrual hygiene management.

The participants opined that during menstruation, there are some restrictions with respect to worship as well as the inability to participate in social activities such as cooking, fetching water, and among others. Religion and cultural practice influence greatly the practice of menstrual hygiene. Culture refers to the way of life of a group of people. This way of life includes a set of basic assumptions and values, orientations to life, beliefs, policies and behavioral conventions (Spencer-Oatey, 2008). Culture, therefore, influences many aspects of the lives of people. There is a vast literature available to demonstrate that culture and religion have an influence on menstrual



hygiene management practices (Garg & Anand 2015; Mason et al., 2013; Arousell and Carlbom 2016; Agyekum 2002; Murray & Agyare 2018; Farage, Miller, & Davis 2011). Various studies have shown similar findings to the current findings that religion and culture pose some restrictions on the activities of menstruating girls. In Nigeria, some adolescents within Bokokos in the plateau state must wash and dry used absorbent materials in secrecy, these girls or women are not allowed to engage in religious activities, some foods are not eaten and they are not allowed to cook (Gorah, Haruna, & Ufwil, 2020). Also, in Chitwan, Nepal, (92.7%) girls did not partake in religious activities or visit temple and 74.6% of the girls did not visit the kitchen talk less of cooking whereas some 16.1% of respondents avoided certain food such as banana. Regarding the impact of menstruation, 50.8% and 58.5% of the respondents respectively reported that they unable to continue daily activities and play sports due to pain during menstruation (Neupane et al., 2020). In India, menses are considered dirty and polluting, hence most girls experience restrictions on cooking, work activities, sexual intercourse, bathing, worshipping and eating certain foods (Kaur, Kaur, & Kaur, 2018). In another Indian study, the majority (about 92% and 94%) of physically disabled participants (girls) during menstruation mentioned that they were forbidden to go to a holy place and could not cook food respectively (Pokhrel, Mahat, & Parajuli, 2020). Basically, the similarities in all these studies mainly can be attributed to the cultural and religious positions on menstruation. This further shows that issues of menstruation are not peculiar to a specific continent or country. Menstrual practices wear a veil of taboos and socio-cultural boundaries. Somehow, every country and continent have some specific way of life which does not allow the menstruating women to live a normal life during her period. In most traditional settings including most African settings and the world at large, discussing



menstruation publicly is shunned upon and considered a taboo (House et al., 2012) and many societies consider menstruating women as impure (Yagnik, 2015). These cultural taboos add to the woes that the girls face which prevent them from seeking help (Chothe et al., 2014). For instance, in Ghana menstruation is a verbal taboo – based on cultural and religious beliefs, norms, and myths (Nepal, 2009). Consequently, adolescent girls continue to be unaware of the scientific evidence and hygiene practices which sometimes result in adverse health problems (Suhasini & Chandra, 2017). If appropriate steps are not taken to remedy these concepts, they impede the practice of good menstrual hygiene management due to these myths, misconceptions, superstitions, and (cultural and/or religious) taboos.

In relation to the above, in Islam, menstruating women are considered impure and cannot partake in some religious activities. They are permitted to cook and perform non-religious activities. Touching of the holy book, praying salat, and engaging in sexual intercourse is strictly prohibited. However, on the completion of menses, Islam institutes a mandatory bath to usher the girl/woman into a state of purity. These women are encouraged to clean themselves regularly during the menses period and must undergo the mandatory bath to be able to perform the religious activities previously prohibited. Also, the majority of the respondents are Muslims and this influences the result obtained.

The study discovered that adolescent girls with pocket money were 2.9 more likely to practice good menstrual hygiene management as compared with adolescent girls who had no pocket money. This was revealed as one of the key determinants of MHM practices (AOR; 2.9; 95% CI; 1.43-5.7, P; 0.002). The current study further revealed that some girls and their parents especially the mothers provide the needed support including monetary support during menstruation to enable them effectively manage



their experiences. The magnitude of this findings is similar to a study in Ethiopia where students with no social support (no pocket money) were 64% less likely to practice proper menstrual hygiene as compared with their counterparts who had permanent pocket money (AOR 0.36:95% CI, 0.309, 0.989 (Felleke & Gerada, 2020). Some participants held the view that the cost of the absorbent material influences the choice. These aforementioned findings are related to previous studies that revealed that socio-economic status of a girl or her family can affect behavior related to menstrual hygiene (Kumar & Srivastava, 2011; Omidvar & Begum, 2010; Shanbhag et al., 2012; Ten, 2007; Thakre et al., 2011; Kumar & Srivastava, 2011). In relation to these findings, the use of unsanitary or low standard menstrual absorbent materials are synonymous with adolescent girls from a poor or low-income background, they tend to be at higher risk of infection exposure compared to girls from a middle class or high socio-economic status (Ribeiro et al., 2007). In deprived portions of Kenya, it was reported that most girls are unable to adopt or afford the appropriate ways of managing their menses due to economic challenges (Mason et al., 2013). On the type of absorbent materials used, this study showed that mothers opted for cloth because it was considered cheap and can be reused many times. This reasoning of some mothers could account for the similarities aforementioned that poverty and poor financial status play a crucial role in determining the type of sanitary products a girl child uses. In line with these findings, Assefa & Kumie, (2014) stated that the socio-economic status of a girl child is reflected in her hygiene behavior especially seen in their good hand washing practice and prevention of dirt and smell from menstrual blood. In another vein, some of the girls opined that, in their communities, they are no sanitary pads available for sale. One can make the inference that some of the girls in rural Ghana could afford for the sanitary to add to their cloth usage, but they are not readily



available in their communities. This is further supported by some mothers that; the first two days of menstruation are usually associated with heavy bleeding hence the need to use sanitary pad since it absorbs blood much better than the cloths.

Adolescent girls in this study who reside in the urban areas were 1.5 times more likely to practice good menstrual hygiene than those in rural areas. The findings of the current study are higher than in a similar study in Ethiopia in which students who live in the deprived communities were 74% less likely to practice proper menstrual hygiene than counterparts in the big cities and towns (AOR 0.269:95% CI, 0.125, 0.577) (Felleke & Gerada, 2020). In relation to this finding, Mutunda, (2013) stated that women and girls in villages and poor families cannot get hold of and/or afford sanitary pads which would normally be changed around two to four times a day during menstruation. Instead, most women and girls use rags or cloth, usually torn from old blankets and tissue of any kind (Mutunda, 2013). These rags or cloths are usually washed without following the right procedures thus often with insufficient and unsafe water and lacking soap and used repeatedly without drying under the sun. These practices as demonstrated earlier in this chapter would lead to infection.

Even though, adolescent girls in public schools were 4.6 times more likely to practice good menstrual hygiene management as compared with their counterparts in private schools, the magnitude of these finding is contrary to a study in Pakistan. The researchers showed that good menstrual hygiene management practices were reported among 48.1% of schools in the private centers which was higher than the 33.7% of schools in the government-owned schools (Manzoor, Azam, & Pervaiz, 2019). In Ghana in particular, Acheampong, Akodwaa-Boadi, Appiah-Effah, & Nyarko, (2018) in a study revealed that 34% of girls in the private schools washed their hands with soap and water at least thrice (3) during school hours with only 16% of girls doing



same in the public schools. The authors added that, due to non-availability of changing rooms or designated room for changing during menses, only 33% of girls in the public schools change their absorbent material (sanitary pad) while at school whereas most girls (60%) in the private school change their absorbent material while at school. Available literature at the time of the study was contrary to this finding of the study. The current study result was not evenly distributed among categories of schools (8.4% for private as against 91.6% for public school). The difference as identified in this study could be attributed to the skewness of the current study's results.

This study revealed that girls who had insufficient knowledge on menstruation and menstrual hygiene were 15% times less likely to practice good menstrual hygiene than their counterparts who had sufficient knowledge on menstrual issues (AOR; 0.85, 95%CI; 0.48-1.54; P;0.601). Information usually is seen as the bedrock of knowledge acquisition. Health education and knowledge of MHM are needed to make adolescent girls see the need to wash their hands and perineal regions after menstruation. This means that the education on hand washing and the cleansing after a menstrual period should be considered. This is important as there is a connection between the girl child with her clean hands, knowledge of MHM, good grades in school, and the development of the society (Visas et al., 2010). In situations where proper education is not acquired, some of the girls may see their menses to be caused by other factors other than being natural processes occasioned by hormones. For instance, in Iran and India, it has been reported that some girls believed menstruation is a disease (Pandey, 2014). The consequences of this lack or inadequate information on menses could lead to poor menstrual practices which further expose the girls to disease or illness (AlQuaiz, Kazi, & Al Muneef, 2013). Contrary to the findings of the current study is



a study conducted in Chitwan, Nepal, which showed a significant positive relationship between respondents' knowledge of menstruation and menstrual hygiene practices ($p < 0.05$) (Neupane et al., 2020). In Cambodia, most girls had knowledge of MHM practices, such as; showering and cleaning the vagina with soap, using sanitary pads to prevent staining, and changing sanitary pads multiple times per day, translated to good menstrual hygiene (Daniels, 2016). In Ethiopia, it was reported that girls with appreciable knowledge in menstrual hygiene and had access to water were said to practice good menstrual hygiene (Gultie, 2014). According to (Lestari, Armini, Mariyanti, & Yunitasari, 2020), there is a strong positive correlation between knowledge in menstruation and the practice of menstrual hygiene ($p = 0.01$, $r = 0.716$). They further stressed that girls with early menarche have high knowledge in menstruation and thus practice good menstrual hygiene management than their counterparts who had late menarche (Lestari et al., 2020).

Also, this current study identified different sources of information with mothers being the main source of information. Some of the mothers in this study opined that some of the sources of information are inaccurate and usually influenced by hearsay. This finding is consistent with (Kaur et al., 2018) who reported that inadequate, misinformation or incomplete knowledge forms a block in the practice of personal and menstrual hygiene management. In relation to the above, Nagar & Aimol, (2010) argued that the absence of knowledge on menstrual management and other factors have made the situation worse for girls in some settings, especially in developing countries. A study is at a confluence as to the source of information which translates into desired results. Sudeshna & Aparajita, (2012) in a descriptive cross-sectional study conducted among 190 adolescent girls of a rural secondary school in West Bengal, India, reported that good menstrual hygiene was practiced among those who



had educated parents and exposure to mass media (TV, Radio etc.) adverts that promote the use of sanitary towels (Sudeshna & Aparajita, 2012). Regardless, in India, some girls still desired for more information regarding menstruation and hygienic practices (Omidvar & Begum, 2010). It can be inferred from above that, the higher the knowledge, the better the menstrual hygiene practice in children with early menarche. Hence, the directorate of education should look at their curriculum at the basic school to include issues of comprehensive sexual education (CSE) at an upper primary as well as deploying the right delivery methods to ensure greater understanding of girls on issues surrounding their reproductive and sexual life.

5.4 Hygiene Facilities in Schools

The study estimated an average of six (6) toilets per school with a standard deviation of four (4) toilets and a maximum number of fourteen (14) toilets in a school. Considering the enrolment in each of the schools and using a ratio of 25 (girls):1 (a toilet or urinal), the toilet facilities are considered to be woefully inadequate. This is in line with Arya & Ambily, (2017), who reported that an increased rate of dropout in school is as a result of unhygienic toilets and lack of private space for girls in Kannur District, India (Arya & Ambily, 2017). Consequently, the inadequate or absence of access to washrooms (toilets or latrines) has made over half a billion women and girls unable to effectively manage their menstruation in privacy (Loughan et al. 2016). This study also revealed that 38.4% of the toilets/ urinals were clean. This is contrary to a study by Daniels, (2016) in Cambodia that revealed that hygiene facilities are not clean during latrine observations in schools, it was common to observe cobwebs on the walls, no soap, and mud tracked on the floors (Daniels, 2016).



The current study also showed that in 12 schools (representing 92.3 percent), females and males do not share the same latrines/urinals. This is contrary to Montgomery et al., (2012) who reported that most girls share urinal/toilets with the boys. Wendland (2017) asserted that there is often not enough, toilets or urinals for all pupils and no isolated toilets or urinal for girls and boys in schools. Where separate facilities exist in schools, they are mostly untidy or spasmodically provided with water and can lack decent doors to ensure privacy (McMichael, 2019; Appiah-Brempong et al., 2018; Uijtewaal & Malva 2019).

It is obvious in the current study that, all the schools had inadequate toilets and urinals. Some students in FGDs revealed that due to the limited numbers of these facilities, they are sometimes forced to use the bush or the other facilities designated for males. This assertion confirms that though there are separate facilities, there are no strict regulations in the usage, so it is usually used based on convenience. On observations (38.5%) of the schools, these hygiene facilities are usually not clean. It was also revealed that, due to defective doors and inadequate toilets/ urinals, most of the girls had to ask permission to go home to change their used pad or to wash their soiled dresses. They feared that, whilst in the toilet/ urinals someone may enter without their permission. In Accra, Ghana, in particular, Sommer et al in (2015) reported insufficient toilets and inadequate privacy measures in toilets at public schools. Similarly, in a study conducted in Egypt by El-Gilany, Badawi, and El-Fedawy (2005), it was reported that toilets were seen to be totally absent or few in number, with broken doors or defective water supply and sewerage.

Availability of a water source on school premises is important in ensuring that school children are able to have easy access to water for hand washing as well as for drinking (Molloy et al., 2008) as well as make the practice of menstrual hygiene easier (House



et al., 2012). This study revealed that majority of schools (8/13) had no available source of water with 30.8% of schools having an available source of water. A cross-sectional study conducted in Accra, Ghana at some basic schools in the University of Ghana, revealed findings in line with the current study's findings that resources such as frequent water supply were lacking in basic schools. Furthermore, the majority of schools in underdeveloped countries, especially in deprived communities have very limited facilities including water supply (Adams et al., 2009). However, a study by UNICEF in 2012 reported that 50% of the schools in developing countries do not have access to safe water (UNICEF, 2012a). This is slightly lower than the 69.2% reported in this study. Also, another study in Mzuzu City, Malawi, showed that as high as 92% of girls had a reliable source of water in their schools (Mchenga et al., 2020), this is much higher than the 30.8% reported in this current study. Good menstrual hygiene management depends on adequate and clean water supply for cleaning and washing as well as suitable sanitary materials and facilities for changing during menstruation especially during school sessions (Parker et al., 2014). Where adequate water supply is limited, the storage of water in huge underground tanks and other rubber tanks is crucial in schools. Schools that depend on rain harvested water or even schools with piped connections can benefit from the importance of these huge water storage facilities (Tiswin, 2016).

The study further revealed that 30.8% (thus 4 out 13) schools had designated places for changing during menses. This finding is completely better off (more) than studies in primary schools in Niger and Burkina Faso which showed that there were no menstrual hygiene management facilities in schools in those countries (Millington & Bolton, 2015). However, the current finding is 2 times less than 77% of the girls who do not have designated and isolated places for changing during menses in Malawi



(Mchenga et al., 2020). Also, United Nations and UNICEF reports that one major factor accounting for low enrolment of girls (1:5) in schools compared with boys (1:6) is the non-availability of hygiene amenities for girls attaining puberty (Tiswin, 2016). In a study done by Laura for UNICEF, it was observed that the few schools that had these hygiene facilities did not utilize them effectively. In a study among Basic schoolgirls in Legon, Ghana, it was reported that government or public schools did not pay keen interest to the hygiene desires and needs of the menstruating girls with respect to the provision of satisfactory health education and the type of hygienic facilities access to students. Some do not have properly secluded lavatories to provide a sense of privacy the menstruating girls need (Blessing, 2016). The relationship could be attributed to similar geographical characteristics as well as education policies.

Almost all the schools (92.3%) did not have soap for regular washing of hands. This finding is in line with similar studies (Blessing, 2016; Sommer et al., 2016) which reported that there were no soaps in basic schools for hand washing in Ghana. The supply of menstrual sanitary materials and access to soap and water gives better hygienic and healthy well-being, while absence or insufficient access to menstrual resources are part of the reasons why adolescent girls do not wash their hands or adequately manage menstrual hygiene at government-owned basic schools (Ribeiro et al., 2007; Vivas et al., 2010). The practice of proper hand washing could go a long way to prevent other diarrheal infections as well (Ejemot-Nwadiaro et al., 2015; Gyi, 2019; Wolf et al., 2018).

Furthermore, it was revealed in this study that certain subjects taught in the schools include menstrual hygiene as part of the curriculum (i.e. Social studies, integrated science, etc.). This could also be the reason for the high level of knowledge recorded



in this study. It must be noted that pre-menstruation topics taught at the lower levels of education encompasses the much-needed advancement of girl education. There is a global increase in girl's education in the community with enhanced holding and grade advancement for girls in many countries (Haver & Long 2015). Despite the presence of MHM as part of the curriculum, it emerged that not all teachers are oriented to MH education and that there are no MHM (Menstrual Hygiene Management) teaching materials available in schools. Most girls mentioned that some teachers were not open in discussing issues of menstruation in class and boys exhibit apprehension when the topic is being discussed. The teacher's shyness in relation to the topic impacts the girl child as they are unable to ask questions for fear that, they may be ridiculed. This finding is in line with a similar study conducted in India which showed that boys' attitudes towards menstruating on girls scare them from participating in class (Mason et al., 2017).



CHAPTER SIX

SUMMARY OF RESULTS, CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction

The main aim of this study was to assess the factors that influence Menstrual Hygiene Management (MHM) in the West Gonja Municipality. A summary of findings and conclusions are presented below. Recommendations are also made to improve the practices of menstrual hygiene in the West Gonja Municipality and Ghana at large.

6.1 Summary of findings

The level of knowledge of the adolescent girls in this study was deemed sufficient with majority of the girls demonstrating sufficient knowledge on menstruation and menstrual hygiene by choosing the right response to the knowledge questions. Half of the respondents had knowledge on the cause of menses. However, most did not know where menstrual blood emanates. Majority had received information on menses prior to menarche. Mothers were the most frequent source of information for these girls. Most of the girls were scared upon seeing their first menses and perceived menses as unhygienic. In the management of menses, almost all of the girls used some sort of absorbent materials with the most used being commercial sanitary pads. Usually, these girls dispose of the pads by wrapping it in plastic bags to dump in toilets, drains and open fields. Majority of the girls took at least one bath daily during their period. Overall, the study found high levels of personal hygiene practices among the adolescents. Several factors were estimated by the logistic regression model to have significant influence on menstrual hygiene practice among adolescent girls. Some of the factors are: age of adolescent girls, the cost, reusability of the absorbent material and socio-economic status of adolescent girls.



The study went on further to examine the hygiene facilities in schools in the West Gonja Municipality. It emerged that the toilet facilities in the 13 schools assessed were woefully inadequate. Only 4 schools had designated place(s) which is very hygienic for changing during menses. Where washroom facilities existed, they were unclean, lacked water, soap and decent doors for privacy. Out of the 13 schools investigated, only 5 schools had available source of water. Also, 8 schools did not have waste bins for sanitation purposes. Overall, Menstrual Hygiene Management (MHM) facilities in the schools were considered inadequate.

6.2 Conclusion

The observations made in this study indicate that adolescent girls in the West Gonja municipality have sufficient knowledge of menstruation and menstrual hygiene management. This knowledge translated into high levels of personal hygiene practices among adolescents planning. Individual factors such as residence, age and culture, coupled with socio-economic factors were seen to have an effect on the menstrual hygiene management practices among adolescent girls. A major drawback to good menstrual hygiene practices in the West Gonja Municipality is the inadequate MHM/WASH facilities in basic schools. There is a growing need to improve the WASH/MHM facilities in these schools to help keep the girls in school.



6.3 Recommendations

- ✓ The Ghana Education Service (GES) should look at their curriculum at the basic school to include issues of comprehensive sexual education (CSE) at the upper primary; as well as deploying the right delivery methods to ensure greater understanding by girls on issues surrounding their reproductive and sexual life.
- ✓ The School Management Committee (SMC) together with the Parents and Teachers Association (PTA) as well as philanthropist should come to the aid of Basic school without water source to drill of Boreholes for the use of all students.
- ✓ All teachers must be trained adequately on MHM to be able to relate these skills and information to school girls and better understand the need of menstruating women.
- ✓ The SHEPs coordinators together with some selected adolescent girls should be trained adequately on menstrual hygiene management and encourage to do peer education.
- ✓ The Ministry for Sanitation and Water Resources should put issues of Menstrual Hygiene Management (MHM) into the National Sanitation and Hygiene Strategy such that all new school infrastructure should have designated places for girls to change their used pad whilst in school as well as providing the water sources in the school
- ✓ The Ministry of Health through the support of government and donors should allocate funds for extensive research into issues of Menstrual Hygiene Management (MHM) with higher study participant as well as including adolescent girls who are out of school.



- ✓ The NCCE and Assemblies should educate the public on the myths and misconception concerning the issues of menstruation.
- ✓ NCCE, civil society together with the religious and traditional authority should as a matter of urgency dialogue on the issues of menstruation holistically to arrive at suitable reforms to beliefs and norms concerning menstruation.

6.3 Dissemination of research findings

After the formulation of this research, the ensuing thesis has resulted in the generation of numerous scholarly works published across esteemed academic journals. Enclosed herewith are the titles and corresponding citations of the papers originating from this thesis:

The Increasing Cost of Sanitary Products and the Potential Impact on Menstrual Hygiene Management Practices in Ghana (Asumah, Iddrisu, et al., 2023).

Perceived factors influencing menstrual hygiene management among adolescent girls: a qualitative study in the West Gonja Municipality of the Savannah Region, Ghana (Asumah, Abubakari, Aninanya, et al., 2022).

Determinants of Menstrual Hygiene Management Practices among Schoolgirls: A Cross-Sectional Study in the Savannah Region of Ghana (Asumah, Abubakari, & Aninanya, 2022).

Schools preparedness for menstrual hygiene management: a descriptive cross-sectional study in the West Gonja Municipality, Savannah Region of Ghana (Asumah, Abubakari, & Gariba, 2022).

Menstruation-Related School Absenteeism: An Urban Centre Study in the Northern Region of Ghana (Asumah, Adnani, et al., 2023).



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APPENDICES

Appendix I: Participant Information Leaflet and Consent Form

Participant Information Leaflet

ASSENT FORM BY PARENT/GUARDIAN FOR ADOLESCENTS AGED 10-19 YEARS

Permission:

Your child has been selected to be part of this study but your permission is required before proceeding. She has the right not to answer questions to which she is embarrassed and her responses will be kept till the end of the study.

Title of Research:

Determinants of Menstrual Hygiene Practice among Adolescent girls in Basic Schools: A Cross sectional study in the West Gonja Municipal of savannah Region, Ghana.

Name and affiliation of researcher:

This study is being conducted by Asumah Mubarick Nungbaso (a final year Master of Philosophy Community Health and Development Student), of the Department of Public Health, School of Allied Health Sciences (SAHS), University for Development Studies (UDS), Tamale, Ghana.

Purpose of Study:



The purpose of the research is to assess determinants of menstrual hygiene practice among adolescent girls among Basic Schools in the West Gonja Municipal of Savannah Region of Ghana. The study will be useful to health organizations, stakeholders and also women in general to know the factors associated with menstrual hygiene management among adolescents. This may lead to the design of appropriate intervention and strategies at local and national levels to provide the necessary facilities, education and utilities for the good practices of menstrual hygiene among these adolescents.

Study Procedure:

A total of 424 adolescent school girls would participate in this study. The study will interview adolescents who have **at least** seen their first menses (Menarche) prior to the commencement of this study. You will be interviewed through the use of a questionnaire which will take about 40 minutes to answer all the questions. Additionally, key information concerning school hygiene facilities may be solicited from you using an observational checklist.

Risks:

There is a slight risk that you may share some personal or confidential information by chance, or that you may feel uncomfortable talking about some life styles especially your menstrual hygiene practices. However, I do not wish for this to happen, and you may refuse to answer any question or not take part in the interview if you feel uncomfortable.

Benefits:

There is **no** direct benefit in taking part in this study. A benefit means that something good happens to you. However, before the interview commence you shall be given a disposable face mask and we shall respect the social distancing protocols. Your participation is likely to help policy makers to strategies to improve on adolescents' menstrual hygiene practice in the municipality and Ghana as a whole.

Confidentiality:

A number will be assigned to you and so your name will not be recorded during the interview process. Your information will be collected and written down for our analysis. The information about you will be stored in a file that will not have your name written on it, but a number assigned to it instead. The information that we collect from you will be kept private. Your data will be secured from unauthorized



access. When we are finished with this study, we will write a report about what was learned. This report will not include your name or that you were in the study

Voluntarism:

Participation in this study is based on your own free will. You are not under any obligation to be a participant. The research is entirely voluntary.

Alternatives to participation:

If you choose not to participate, this will not affect you in anyway neither would it influence your access to any support that may arise from the study.

Withdrawal from the research:

Your child may choose to withdraw from the research at any time for personal reasons. She will not be under any obligation to explain her actions. She may also choose not to answer any question he or she find uncomfortable or private.

Consequence of withdrawal:

There will be no consequence, loss of benefit or care to him/her if he or she choose to withdraw. **Compensation:**

Should you agree to participate in the study, there will be no payment (either in cash or in kind) for your participation in the study. In the event of any injury resulting directly from your participation in the study, the principal investigator will assess the situation, and together with the respondent arrive at an agreed solution. There will be no anticipated expenses on the part of the respondent for participating in the study.

Questions/contacts:

Participants in the study have the full right to ask questions and also to receive satisfactory answers in line with the study. Participants with questions or concerns regarding the study and their rights in the event of study-related injury may contact the study team through the information provided below.

Contact for Additional Information

Please contact the principal Investigator or Local Investigator at the following addresses if you have any further questions, need clarifications about your rights or experience any problems in this study.

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CONSENT FORM

Statement of person obtaining informed consent:

I have fully explained this research to _____
and have given sufficient information about the study, including that on procedures,
risks and benefits, to enable the prospective participant make an informed decision to
or not to participate.

DATE: _____ NAME: _____

Statement of person giving consent:

I have read the information on this study/research or have had it translated into a
language I understand. I have also talked it over with the interviewer to my
satisfaction.

I understand that my participation is voluntary (not compulsory).

I know enough about the purpose, methods, risks and benefits of the research study to
decide that I want to take part in it.

I understand that I may freely stop being part of this study at any time without having
to explain myself.

I have received a copy of this information leaflet and consent form to keep for myself.

NAME: _____

DATE: _____ SIGNATURE/THUMB PRINT: _____

Statement of person witnessing consent (Process for Non-Literate Participants):

I _____ (Name of Witness) certify that information given to ----- (Name of Participant), in the local language, is a true reflection of what I have read from the study Participant Information Leaflet, attached.

WITNESS' SIGNATURE (maintain if participant is non-literate) _____

MOTHER'S SIGNATURE (maintain if participant is under 18 years): _____

MOTHER'S NAME: _____

FATHER'S SIGNATURE (maintain if participant is under 18 years): _____

FATHER'S NAME: _____

Appendix II: Structured questionnaire for girls

QUESTIONNAIRE DESIGN

DETERMINANTS OF MENSTRUAL HYGIENE PRACTICE AMONG ADOLESCENT GIRLS IN BASIC SCHOOLS: A CROSS SECTIONAL STUDY IN THE WEST GONJA DISTRICT OF SAVANNAH REGION, GHANA.

INFORMED CONSENT

Exchange greetings....., My name is Asumah Mubarick Nungbaso, a master's student of the Department of Public Health, School of Allied Health Sciences, and University for Development Studies. The research seeks to "Determinants of Menstrual Hygiene Practice among Adolescent girls in Basic Schools: A Cross sectional study in the West Gonja Municipal of Savannah Region, Ghana". I would very much appreciate your participation in this survey (Target Group: Adolescents who have had their first menses or period). The information you will provide will help to understand, inform and direct future plans and actions of stakeholders to help improve the overall menstrual hygiene management issues. All of the answers you will give will be confidential and will not be seen by anyone other than members of the research team. You can decline to answer any question you do not feel comfortable answering. However, I hope you will partake fully in the survey since your views are important.

May we begin the interview now? 1. Yes 2. No

SECTION A: SOCIO DEMOGRAPHIC CHARACTERISTICS

1. Age _____ (in years)
2. Which class are you? _____



3. What is your Ethnicity? _____
4. What is your religion? (a) Christianity (b) Islam (c) Traditionalist (d) Others please specify _____
5. Category of school? (a) Public (b) Private
6. Place of residences? (a) Urban (b) Rural
7. Whom do you live with at present? (More than one answer is possible)
(a) With my mother and father (b) With my mother only (c) With my father only
(d) With relatives (e) With friends (f) Other(specify) _____
8. What is your father's educational level?
(a) No formal Education (b) Basic education (c) Secondary school (d) College diploma and above
9. What is your mother's educational level?
(a) No formal Education (b) Basic education (c) Secondary school (d) College diploma and above
10. Occupation of father _____
11. Occupation of mother _____
12. Do you get permanent POCKET money from your parents?
(a) Yes (b) No
13. Does your family have a TV or/and radio?
(a) Yes (b) No
14. Do you earn money for yourself?
(a) Yes (b) No

ABOUT MENSTRUATION

15. When did you attain your first menses? _____ Years. (B) Don't Know
16. What was the reaction to your first menstruation?
(a) Happy (b) Scared (c) Discomfort (d) Emotional disturbance
(e) Other(specify): _____
17. What were your physical symptoms when you first had menstruation?
(a) Abdominal and back pain (b) Sleeplessness (c) Heavy bleeding (d) Other(specify) _____
18. What is the average duration of your menstruation flow?
_____ days
19. Before the onset of menstruation, have you had any class session related to it in your school? (a) Yes (b) No
20. If yes, for Q21 mention the subjects? _____ subject
21. How was the blood flow during menstruation?
(a) Scanty (b) Heavy (c) Moderate
22. Do you have any health problem associated with menstruation?
(a) Headache (b) Vomiting (c) Weakness (d) Anorexia (e) Abdominal pain (f) Back pain (g) Other (Specify) _____



SECTION B: KNOWLEDGE OF ADOLESCENT GIRLS ON MENSTRUATION AND MENSTRUAL HYGIENE

1. What is menstruation?
 - (a) Natural Process (physiological) (b) Disease (Pathological) (c) Curse (d) Other (Specify) _____ (e) Don't know
2. What is the cause of menstruation?
 - (a) Natural Process (Hormones) (b) Curse of god (c) Caused by disease (b)Others (Specify) _____
 - (e) Don't know
3. From which organ does menstrual blood comes?
 - (a) Uterus (b) Vagina (c) Bladder (d) Abdomen (e) Other (Specify) _____
 - (e) Don't know
4. At what age, do you think most girls usually get their first period (averagely)?
 - (a) Between the ages of 7 to 12 years (b) Between the ages of 10 to 15 years (c) After 15 years (d) Before age 11
5. What is the duration of normal menstruation, in normal person?
 - (a) about 2 weeks (b) 2 to 7 days (c) less than 5 days (d) 3 to 9 days
6. What is the interval between two menstrual cycles? (How long is it between one menstrual cycle to the next?).
 - (a) 20 to 30 days (b) 21 to 35 days (c) 30 to 35 days (d) 30 to 37 days
7. Did anyone tell you about menstruation before you started menstruating?
 - (a) Yes (b) No
8. From whom you got information regarding about menstruation? (More than one answer is possible)
 - (a) Parent (b) Teacher (c) Friends (d) Books (e) Media (TV, Radio)
 - (f) Others (Specify) _____
9. Do you know about menstrual hygiene? (a) Yes (b) No
10. Indicate **TRUE** or **FALSE** for the following statements regarding Menstrual hygiene.
 - A. Having clean water to bath and quality materials to manage the menstrual flow.
 - B. Adolescent girls having their teachers and colleagues giving them support to stay home and rest to ease menstrual pains.
 - C. The quality management care, information and disposal means available for young ladies and women during the period of menstruation and the ways to keep their body clean to prevent infections and odor.
 - D. Menstrual hygiene management is when adolescent girls and women learn to use less amount of menstrual management materials to absorb menstrual blood.



- E. Menstrual hygiene management is about only the absorbent material (pad) for the blood.
 - F. The process of dealing with menstrual hygiene with the help of menstrual management materials so that no one can see is menstrual hygiene management
 - G. Everything that goes into the maintenance of clean hygiene for a menstruating adolescent or woman is termed as menstrual hygiene management
11. Do you think there is foul odor during menstruation? (a) Yes (b) No
12. Do you think menstrual blood is unhygienic? (a) Yes (b) No
13. Menstruation is a lifelong process? (a) Yes (b) No
14. Pains during menstruation is as a result of contraction the uterus which is abnormal?
- (a) Yes (b) No
15. Onset of menstruation is a signal that a girl can become pregnant with unprotected sex?
- (a) Yes (b) No
16. Menstruation is a not sign of puberty? (a) Yes (b) No
17. Mention any two menstrual materials you know? _____,
- _____

SECTION C: PRACTICES OF MANAGING MENSTRUAL HYGIENE AMONG ADOLESCENT SCHOOL GIRLS

1. Do you use absorbent material during period or menses?
Yes (b) No
2. What absorbent material do you use mostly during menstruation?
(a) Commercially made sanitary pad (b) Tissue paper (c) Cloth (d) Handmade pads (e) Menstrual cups (f) Other(specify)_____
3. Do you reuse absorbent materials? (a) Yes (b) No
4. Place of pad store (absorbent materials) in between use?
(a) In the bath room (b) With other cloth (c) Separately
(d) Others specify_____
5. If you are using absorbent material, how do you clean it?
(a) Soap & water (b) Only water (c) Other (Specify): _____
6. Where do you dry the absorbent material?
(a) Sunlight (b) Inside the room (c) Other (Specify)_____
7. How many times do you change the cloth/pad in a day?
(a) Three and more (b) Once (c) Twice
8. Where do you dispose your pads?
(a) Dustbin (b) Drain (c) Toilet (d) Open field (e) Other (specify)_____
9. Types of pads wrap used for disposing it?
(a) Papers (b) Plastic bag (c) Not wrap (d) Other (Specify)_____
10. Do you bath during menses? (a) Yes (b) No (Skip next question if No)



11. How often do you bath during Menstruation/Period?
(a) Daily (b) Twice daily (c) Three times a day (d) More than three times a day (e) Until the end of my periods (f) Others (Specify)
12. Do you clean your genitalia during menstruation?
(a) Yes (b) No (Skip next question if No)
13. What do you use you to clean your genitalia (private part) during your menses?
(a) Water and soap (b) Only with water (c) Tissue paper (d) Towel
(e) Other (Specify) _____
14. Frequency of Washing genitalia per day
(a) Once (b) Two times (c) Three times (d) Four and above times (e) No wash during menstruation.
15. Number of changing panties per day _____
16. Do you use any medication for menstrual problems?
(a) Yes (b) No (Skip next question if No)
17. What is the medication you used? _____

Appendix III: In depth interview guide

IN DEPTH INTERVIEW WITH MOTHERS

1. Age of respondents
2. Resident
3. Marital status
4. Number of female children
5. Ethnicity
6. Religion
7. Have you ever spoken to your daughter about menstruation?
 - ✓ In what context?
 - ✓ What did you say? (probe for knowledge about why women menstruate).
 - ✓ How easy was it for you to talk to your daughter about menstruation?
 - ✓ How did she react?
 - ✓ How is the topic of menstruation in your house?
8. Where does your daughter get information and advice about menstruation?
Probe to see if it's appropriate?
9. How does your daughter manage her menses? (probe for her support, financially and social).
10. Are there restriction of activities during menses? What is the restriction of your daughter in the house, community and daily activities during menses?
11. Are there facilities available for proper menstrual hygiene management in the house?
12. What is your experience in using absorbent material?



13. How does your daughter keep the absorbent materials? Probe for how it is being washed, drying and storage between use.

Appendix IV: Focus Group Discussion guide for adolescent girls

1. Please introduce yourself?
2. What's your ethnicity?
3. Who do you want to be in future?
4. Which factors can help you achieve your dreams?
5. What can affect the realization of your dreams?
6. Can mensuration affect the realization of your dreams?
7. How was your experience on first menses like?
8. Did you have any knowledge on menstruation prior to your menarche? (Probe for the source of information, accurateness of the information)?
9. How did you react when your first saw your menses? (Probe for reasons for reactions)
10. What do you know about Menstrual hygiene? (Open up discussion)
11. What can you say about menstrual blood? Unhygienic? Hygienic? (Probe for reasons)
12. Is there a foul smell during menstruation? How do you feel?
13. How do you manage your menses? (What do they use to manage their menses).
14. What form of support do you get during menses? (Probe for financial support, family support and social support).
15. What preparation do you put up prior to your menses? (Probe for whether they know of their menstruation).
16. How to manage your menses when in school? (Probe for things in the school that makes management of menses difficult in the school setting, do they absent themselves from school).
17. How does your menses affect your religious activities?



18. How does your menses affect your social activities?
19. What culture practice are related to menstruation management? (What can you do and you cannot do).
20. What is your experience in using absorbent material? (what do you use, how buy for you).
21. How do you wash it?
22. Where do you dry?
23. How often do you bath during menses? Probe for reasons?

Thank you for your time.

Is there anything else you would like to tell us?

Do you have any questions?

Appendix V: Checklist

CHECKLIST FOR EVALUATING HYGIENE FACILITIES IN THE BASIC SCHOOL

RESOURCES AVAILABILITY

1. Is there water source available in school? (a) Yes (b) No
2. Type of water point: (a). Piped water, (b). Bore hole, (c) Other.....
3. Is the water point functional? (a) Yes (b) No
4. Is there water available at the time of survey? (a) Yes (b) No
5. Are the designed hygiene facilities clean and usable by the adolescent girls?
(a) Yes (b) No
6. How many toilets are there in use? _____
7. Is the soap regularly used for hand washing? (a) Yes (b) No
8. Is your school under the WASH program? (a) Yes (b) No

MENSTRUAL HYGIENE PRACTICES

1. Is menstrual hygiene taught in any of the school's subjects? (a) Yes (b) No
2. If yes, which subjects? _____
3. How many times a week are lessons on MHM taught? _____
4. Do the boys share same latrines/urinals as the females? (a) Yes (b) No
5. Are all school teachers oriented on MHH education? (a) Yes (b) No
6. Is there MHM material available in school? (a) Yes (b) No
7. If yes to Question 6, are they available for use by the female students when they need them? (a) Yes (b) No
8. If yes to Question 6, which of the materials are available?



9. Is there any designated place for changing for girls during menses? (a) Yes (b) No
10. If yes to above, is the designated place hygienic? (a) Yes (b) No
11. Is the designated place accessible to all girls during their menses? (a) Yes (b) No

WASTE SANITARY DISPOSAL & OPERATIONAL MAINTENANCE

1. Are there waste bins available in the school for disposal of used sanitary products?
(a) Yes (b) No
2. Does the waste bin get emptied regularly by a waste collector or into the incinerator? _____
3. Are there care takers for the sanitary facilities? (a) Yes (b) No
4. Does the school or government pay for the cleaning?

5. Does the school or government pay for repairs or cleaning?

6. Is there any incinerator located in school premises? (a) Yes (b) No
7. If yes to above, is the incinerator located in a good position? (a) Yes (b) No
8. If yes to Question 6, is the incinerator operational at all times? (a) Yes (b) No



Appendix VI: Ethical clearance Letter



KWAME NKURUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
COLLEGE OF HEALTH SCIENCES

SCHOOL OF MEDICAL SCIENCES / KOMFO ANOKYE TEACHING HOSPITAL
COMMITTEE ON HUMAN RESEARCH, PUBLICATION AND ETHICS



Our Ref: CHRPE/AP/188/20

22nd June, 2020.

Mr. Asumah Mubarick Nungbaso
Department of Public Health
University for Development Studies
TAMALE.

Dear Sir,

LETTER OF APPROVAL

Protocol Title: *“Determinants of Menstrual Hygiene Practice among Adolescent Girls in Basic Schools: A Cross Sectional Study in the West Gonja Municipal of Savannah Region, Ghana.”*

Proposed Site: *Basic Schools, West Gonja Municipality.*

Sponsor: *Principal Investigator.*

Your submission to the Committee on Human Research, Publications and Ethics on the above-named protocol refers.

The Committee reviewed the following documents:

- A notification letter of 20th January, 2020 from the West Gonja Municipal Education Directorate (study site) indicating approval for the conduct of the study at the Municipality.
- A Completed CHRPE Application Form.
- Participant Information Leaflet and Consent Form.
- Research Protocol.
- Questionnaire.

The Committee has considered the ethical merit of your submission and approved the protocol. The approval is for a fixed period of one year, beginning 22nd June, 2020 to 21st June, 2021 renewable thereafter. The Committee may however, suspend or withdraw ethical approval at any time if your study is found to contravene the approved protocol.

Data gathered for the study should be used for the approved purposes only. Permission should be sought from the Committee if any amendment to the protocol or use, other than submitted, is made of your research data.

The Committee should be notified of the actual start date of the project and would expect a report on your study, annually or at the close of the project, whichever one comes first. It should also be informed of any publication arising from the study.

Thank you, Sir, for your application.

Yours faithfully,

Rev. Prof. John Appiah Poku
Honorary Secretary
FOR: CHAIRMAN

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DETERMINANTS OF MENSTRUAL HYGIENE MANAGEMENT PRACTICES AMONG ADOLESCENT GIRLS IN BASIC SCHOOLS IN THE WEST GONJA MUNICIPALITY OF THE SAVANNAH REGION OF GHANA.

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