

## Maternal and Adolescent Factors Associated with Menstrual Hygiene of Girls in Senior Secondary Schools in Lagos, Nigeria

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### ABSTRACT

**Background:** Menstrual hygiene has not received proper attention deserved among adolescent girls in Nigeria. Unhygienic practices during menstruation can increase the vulnerability to reproductive tract infections, pelvic inflammatory diseases, and associated complications. This study was conducted to assess maternal and female adolescent factors associated with the menstrual hygiene of the female adolescent surveyed.

**Subjects and Method:** A quantitative and cross-sectional study was collected in October 2018, using structured questionnaires with validity and reliability established through pilot study. The target population N= 300 is the female students (female adolescent) aged 10-19 years old attending the selected Senior Secondary School (SSS1- SSS3) classes in Lagos, Nigeria. The sample size was determined and a systematic random sampling technique was used to select the participants. Hypotheses were tested using Chi-square and a multiple logistic regression.

**Results:** The findings revealed that female adolescent who uses sanitary pad and not tissue paper or cotton cloth were 3.3 times more likely to practice good menstrual hygiene (OR= 3.31, 95% CI= 2.31 to 9.38, p= 0.010). Similarly, female adolescent who received information on menstrual hygiene from their mothers' prior

the onset of menstruation were 11.9 times more likely to practice good menstrual hygiene (OR= 11.93, 95% CI= 2.94 to 56.80, p= 0.002). The participants menstrual hygiene status shows that n=210, 70.0% indicated good menstrual hygiene practices, while n=90, 30.0% indicated poor menstrual hygiene practice.

**Conclusion:** The intrinsic factors of the female adolescent and support received from their mother prior the onset of menstruation have the potential to improve female adolescent reproductive health and wellbeing. Youth Hygiene Initiative is recommended to provide good milieu for the female adolescent to interact and learn more about their health in school and at home.

**Keywords:** maternal, female adolescent, menstrual hygiene, practices, secondary school, Nigeria

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### BACKGROUND

Worldwide, 52% of the female population is of reproductive age, and female adolescent of ages 10-19 years constitute one fifth of

the population (WHO and UNICEF, 2017). Menstruation is a physiological process that starts between the ages of 9–13 years in adolescent girls and is a monthly elimina-

tion of the lining of the womb with a flow of blood through vaginal for 3-5 days on the average (Hall, 2010). The normal menstrual cycle is 28 days, although it can vary between 22 and 36 days (Hall, 2010; Sikiru et al., 2013). Around 3000 days of menstruation occur in an average woman's lifetime once it commences in adolescent age (Hall, 2010; UNICEF, 2011; WHO, 1996). The special care practice during monthly menstruation period is collectively referred to as "Menstrual hygiene" (Neelima, 2015; Tharkre, 2011; UNICEF, 2013).

Menstrual hygiene in adolescent girls involve use of sanitary pad to absorb or collect blood flow from the vaginal and is replaced in privacy as often as necessary for the duration of the menstruation, maintaining cleanness and having access to convenient means of discarding the used sanitary pad safely (Su et al., 2012; Vidiya and Rekha, 2016; WHO/UNFPA, 2009;). Good menstrual hygiene involves taking actions that will result in maintenance and improvement of the physical, mental and emotional health during and following this period and it requires prior information and proper guidance to perform the activities satisfactorily (Sooki et al., 2016; Sommer et al., 2016; Valizade et al., 2017). When cleanliness is applied during menstruation, female adolescent body will be protected from diseases related to reproductive health problem (Oche et al., 2012; Das et al., 2015).

The way female adolescent respond to menstrual hygiene will depend on the details received before the onset of the menarche and the cultural perspective (Dhanage et al., 2015). There is likelihood that many mothers may lack the right information and the skills to communicate menstrual hygiene to their girl child, leading to erroneous beliefs and probably poor practices (Marvan and Molina-Abolnik,

2012). In some cases the information provided may not be adequate to prepare the female adolescent for menstrual hygiene (Sooki et al., 2013). Also, part of the problems associated with the menstrual hygiene includes taboo, as millions of the female adolescent may be denied the rights of receiving essential information about menstrual hygiene because it is considered a private affair that cannot be discussed freely, and this may probably result in unhealthy behavior during menstruation (George, 2012; Gultie, 2014; Ogunsola et al., 2014).

According to Bandi et al. (2016) and Das et al. (2015), adolescent girls' with poor menstrual hygiene are likely to develop gynecological or reproductive problems. Studies have shown that the prevalence of reproductive tract infections is three (3) times higher among girls who have poor menstrual hygiene (Bandi et al., 2016). Every year, approximately 10% of women worldwide are predisposed to genitourinary tract infections and bacterial vaginitis (Knol et al., 2013). The common risk factors of vaginal infections include pregnancy, poor perineal and menstrual hygiene (Karout, 2015; Pokhrel et al., 2014).

Poor Menstrual Hygiene Management (MHM) has been found to cause female adolescent distress and embarrassment; and in some cases, it contributed to absenteeism and poor performance in schools (Boosey et al., 2014). Therefore, menstrual hygiene is fundamental to the dignity and wellbeing of female adolescent (House et al., 2012). In developing countries like Nigeria, informal education about reproductive health may perhaps be limited and parents may find it difficult to speak about sexual issues with their children, even while admitting it is their responsibility (Ekpeonyong et al., 2014; Ogunsola et al., 2014). Understanding how to handle hygiene

during menstruation is essential for female adolescent (Pokhrel et al., 2014). The psychological preparedness includes the amount and quality of information received by female adolescent prior menarche (Marván and Molina-Abolnik, 2012).

There are different types of menstrual absorbent materials. While some are hygienic, a few other are not. Studies found that accessibility to menstrual hygiene products is low as only a small fraction of the women in developing countries uses sanitary products during menstruation due to high cost price (Sommer et al., 2016). Majority of the women make use of pieces of cloth and other materials which may predispose them to reproductive tract infections, fatal toxic shock syndrome and infertility (Boosey et al., 2014; Kariappa et al., 2016). Whatever a female adolescent uses (cloth, toilet tissue, or pads), she should change it frequently to avoid stains, bad odor and infections (Vidiya and Rekha, 2016). Poor confidence in menstrual materials can lead to fear of leakage (Sahin et al., 2015). According to UNICEF (2013), lack of safe waste disposal system for used menstrual sanitary pad is also another challenge in developing countries as menstrual wastes are supposed to be disposed properly to avoid interaction with the natural environment (soil, water, and air).

The theoretical framework applied to this study is the Health Promotion Model (HPM) designed by Nola J. Pender (1996). The HPM was applied because it focuses on health-promoting behaviors, using a wellness orientation (Polit and Beck, 2013). According to the revised model, health promotion entails activities directed towards developing resources that maintain or enhance a person's wellbeing (Polit and Beck, 2013). The health promotion model notes that each person has a unique personal characteristics and experiences that

affect subsequent actions (Polit and Beck, 2013). The model relates behavioral knowledge and significant motivational effect on the female adolescent. These variables can be modified through actions and the desired behavioral outcome is the positive health promoting behaviors that will improve female adolescent health, enhance functional ability and better quality of life at every stages of development (Polit and Beck, 2013).

Considering the problem associated with menstrual hygiene. This study was conducted with the purpose of filling the gap in knowledge on factors associated with menstrual hygiene of the adolescent girls in selected secondary schools in Lagos, Nigeria. The main objective of this study is that it assessed the female adolescent personal factors and maternal factors associated with the menstrual hygiene. The significance of this study is to bring about positive behavioral change among adolescent girls and prevent vulnerability to reproductive health problem and infertility. The study provides interventions to overcome poor menstrual hygiene practice.

## SUBJECTS AND METHOD

### 1. Study Design

A quantitative method and cross-sectional research design were used for this survey. Primary data were collected using a close-ended questionnaire that had its validity and reliability tested through pilot study before it was used for the final study. Out of the 16 secondary schools in Mushin Local Government areas of Lagos State, Nigeria, three (3) secondary schools were selected with random sampling, namely Idi-Araba Senior High School, Igbo Owu Senior Secondary School, Mushin and Itire Community Senior Secondary School, Itire-Lagos. The female adolescent who parti-

icipated in this study were selected using systematic random sampling technique.

## 2. Population and Sample

The participants n=300 is the female students (female adolescent) aged 10-19 years old attending Senior Secondary School (SSS1 - SSS3) classes of the selected schools. The selected schools are all located in Mushin Local Government areas of Lagos State, Nigeria.

## 3. Study Variables

Data were collected from the female adolescent daily between Monday and Friday in the months of October to November 2018 in the selected secondary schools in Lagos for 6 weeks, using questionnaires as the instrument for data collection. The nature of the information obtained in section A included the socio-demographic characteristics of the participants. In the subsequent sections, B, C, and D, the questions covered areas like female adolescent menstrual hygiene status, utilization of menstrual materials safely, maternal and female adolescent factors associated with menstrual hygiene.

## 4. Study Instruments

In the measurement of variables, responses to all questions were graded on the scale of 0, and 1. Wrong response was scored 0, while correct response was scored 1. Hypotheses generated were tested using inferential statistical model at p-value of 0.05 and 95% Confidence Interval.

## 5. Data Analysis

The SPSS statistical package software version 24 was used to analyze the data. All errors on the field were corrected, codebook prepared, data imported into the computer for analysis, and no missing N value. The descriptive analysis was done to examine the distribution of each variable, while association that exists between the dependent and independent variables established

(Field, 2013). To predict the menstrual hygiene of the female adolescent, multiple logistic regressions analysis was done with a backward stepwise method to identify all independent variables that were related to the outcome variable at a p-value of < 0.05 and 95% Confidence Interval after adjusting for covariate variables.

## 6. Research Ethic

The study was conducted using informed consent and research ethics. The research ethics was ascertained by the Ethics and Research Committee of the College of Medicine, University of Lagos, Nigeria and the approval number is 2018/2421/50503/N.

# RESULTS

## 1. Sample Characteristics

Table 1 shows that N=300 participants were surveyed, with n=168 (56.0%) between age range of 10-14years, while n=132 (44.0) were between age range of 15-19 years. The participants mean age=12.5 ± 6.6 years. Majority of the participants n=214 (71.3%) were in SS1 class, n=58 (19.3%) were in SS2, while n=28(9.3%) were in SS3. The parents of the participants n=188 (62.7%) earned monthly salary of less than N100,000 (One Hundred Thousand Naira), while n=48 (16.0) earned more than N200,000 (Two Hundred Thousand Naira) monthly. Two percent, n=6 of the participants mothers were illiterate, while n=150 (50%) had post-secondary education.

## 2. Bivariate analysis

Table 2 shows that age, religion, class and parent monthly income were not significantly associated with the menstrual hygiene of the adolescent girls with  $p > 0.05$ , but the mothers' level of education was significantly associated with the menstrual hygiene of the adolescent with OR= 12.98, 95% CI= 1.94 to 26.80,  $p=0.043$ ). Hence, mothers with high level of education

are likely to educate their adolescent girls about menstrual hygiene prior the onset of menstruation.

**3. The result of multilevel analysis**

Table 3 shows the multiple logistic regressions analysis of adolescent girls and mother factors associated with menstrual hygiene practices. The findings revealed that female adolescent who used sanitary pad and not tissue paper or cotton cloth were 3.3 times more likely to adhere to good menstrual hygiene practices compared to female adolescent who use tissue paper or cotton cloth to collect flow of blood during menstruation (OR= 3.31, 95% CI= 2.31 to 9.38, p=0.010). Similarly, female adolescent who wash their hands with soap and water before and after changing of sanitary pad were 8.4 times more likely to comply with menstrual

hygiene compared to female adolescent who did not wash their hands (OR= 8.43, 95% CI=2.07-42.95, p=0.010).

Conversely, the change of panties and soaked sanitary pad at the same time by the female adolescent is not significantly associated with the menstrual hygiene in this study. Furthermore, the results indicated that female adolescent who were taught menstrual hygiene by their mother’s before the onset of menstruation were 11.9 time more likely to adhere to good menstrual hygiene practices compared to female adolescent who did not receive information on menstrual hygiene prior the onset of menstruation (OR= 11.93, 95% CI= 2.94 to 56.80, p= 0.002). Overall, there is significant relationship between maternal factors and adolescent menstrual hygiene practices at p < 0.05.

**Table 1. Adolescent girls’ socio-demographic characteristics**

Variables (n=300)	n	Percent (%)
<b>Age (years)</b>		
10-14	168	56.0
15-19	132	44.0
<b>Religion</b>		
Christianity	144	48.0
Islam	156	52.0
<b>Tribe</b>		
Yoruba	238	79.3
Hausa	16	5.3
Igbo	42	14.0
Others	4	1.3
<b>Adolescent girl class</b>		
SS1	214	71.3
SS2	58	19.3
SS3	28	9.3
<b>Parental monthly income</b>		
Less than N100,000	188	62.7
N100,000 to N200,000	64	21.3
More than N200,000	48	16.0
<b>Mother education level</b>		
Illiterate	6	2.0
Primary School	16	5.3
Secondary School	128	42.7
Higher institution	150	50.0



**Table 2. Bivariate analysis of socio-demographic characteristics and menstrual hygiene of the female adolescent**

Variables	Menstrual Hygiene in High School Settings			Total n=300 (100%)	OR	p
	Idi-Araba SHS n=80	Igbo-Owu SSS n=89	Itire- Community SSS n=131			
	n (%)	n (%)	n (%)			
<b>Age (years)</b>						
≤14	66(82.5)	70(78.7)	100(76.3)	236(78.7)	1.12	0.569
≥15	14(17.5)	19(21.)	31(23.7)	64(21.3)		
<b>Religion</b>						
Islam	43(53.7)	48(53.9)	75(57.3)	156(52.0)	0.34	0.840
Christianity	37(46.3)	41(46.1)	56(42.7)	144(48.0)		
<b>Class</b>						
SSS1	53(66.3)	59(66.2)	92(70.2)	204(68.0)	4.47	0.345
SSS2	13(16.3)	17(19.1)	28(21.3)	58(19.3)		
SSS3	14(17.4)	13(14.7)	11(8.5)	38(12.7)		
<b>Parent monthly income</b>						
<N100,000	54(67.5)	57(64.0)	77(58.8)	188(62.7)	2.74	0.601
N100,000 - N200,000	15(18.7)	16(17.9)	33(37.1)	64(21.3)		
>N200,000	11(13.8)	16(18.1)	21(4.1)	48(16.0)		
<b>Mother education level</b>						
Illiterate	08(10.0)	06(6.74)	11(8.39)	25(8.34)	12.98	0.043
Primary school	15(18.75)	10(11.23)	13(9.92)	38(12.68)		
Secondary school	42(52.5)	53(59.55)	59(45.05)	154(51.3)		
Higher institution	15(18.75)	20(22.48)	48(36.64)	83(27.68)		

**Table 3. Multivariate analysis of the female adolescent and maternal factors associated with the menstrual hygiene practice**

Independent Variables	OR	Menstrual hygiene practices 95%CI		p
		Lower limit	Upper limit	
<b>Female Adolescent Factors</b>				
Use sanitary pad and not tissue paper or cotton cloth	3.31	2.31	9.38	<0.010
Properly disposed soaked sanitary pad	0.03	0.00	0.57	0.032
Wash hands with soap and water before and after changing the absorbent material	8.43	2.07	42.95	0.010
Maintain personal hygiene and clean genital part with soap and water	4.25	1.45	19.04	0.011
Change panties and soaked sanitary pad at the same time	0.25	0.67	1.81	0.072
<b>Maternal Factors</b>				
Provide sanitary pad for adolescent girl at every menstrual cycle	2.67	0.94	13.25	0.067
Taught menstrual hygiene to adolescent girl before the onset of menstruation	11.93	2.94	56.80	0.002
Monitor, guide and evaluate adolescent girl menstrual hygiene during menstruation	5.35	2.31	17.42	0.001
Provide emotional support for adolescent girl during menstruation	0.75	0.94	14.25	0.735
Encourage personal hygiene during menstruation	10.20	1.43	12.70	0.075

n observation = 300  
Log likelihood = 2387.91%



**Figure 1. Participants practices**

## DISCUSSION

### 1. Socio-demographic characteristics and menstrual hygiene

The results of this survey revealed that age, religion, class and parent monthly income were not significantly associated with the menstrual hygiene of the female adolescent, but the mother level of education was significant. The implication of this finding is that well-informed mothers are likely to educate their female adolescent about menstrual hygiene prior the onset of menstruation.

This finding is consistent with the finding of the study conducted by Anchebi et al. (2017) among 398 female high school students aged between 14-16 years in Ethiopia, the result indicated that majority of the female students who practice good menstrual hygiene have been informed by their mother prior the onset of menstruation, this might have influence their menstrual hygiene status.

### 2. Adolescent girls factor affecting menstrual hygiene

The female adolescent factors, like use of sanitary pad and not tissue paper or cotton cloth, washing hands with soap and water before and after changing of sanitary pad, maintaining personal hygiene and cleaning genital part with soap and water, and

properly disposed soaked sanitary pad were all significantly associated with the menstrual hygiene of the adolescent girls. The implication of this finding is that adolescent intrinsic factors could also enhance compliance with menstrual hygiene.

Female adolescent girls with strong inner will may abide by the rule of menstrual hygiene and prevent associated reproductive health problem and their complications (Belayhun, 2015). This finding from this study is consistent with the finding of the study conducted in India by Vidiya and Rekha (2016) on women in a rural setting aged 18 to 45 year. The study found that participants with good menstrual hygiene complied with the rules of personal hygiene.

### 3. Maternal factors affecting menstrual hygiene

The maternal factors like teaching of menstrual hygiene before the onset of menstruation and monitoring, guiding and evaluating female adolescent during menstruation were significant. Seventy percent (70%) of the adolescent girls who received information on menstrual hygiene from their mother prior the onset of their menstruation indicated good menstrual hygiene. The implication of this finding is that mother

factors could influence female adolescent menstrual hygiene.

This finding is consistent with the findings of the study conducted by Gultie (2014) among adolescent school-going female aged 14-19 years in Ethiopia; the finding of the study indicated that the participants who received information prior to the onset of menstruation reported good menstrual hygiene practice. Though the mother factors were revealed to influence female adolescent menstrual hygiene in this study, but, of importance is the adolescent girls' personal factors. The implication of this study finding is that prior information received by the female adolescent could influence their compliance with menstrual hygiene.

In contrary to the above findings, Ogunsola et al., (2014) conducted a study among 382 students in public schools in Southwest, Nigeria whose ages ranged from 14 to 16 years and found that the participants who lack prior knowledge before the onset of menstruation performed poorly in menstrual hygiene. This finding could be related to the study setting which was in the resource limited area. The implication of the study is that it provided an insight into the status of the female adolescent menstrual hygiene. Thus, there is a need to emphasize the mother teaching program.

So, the mothers should be involved actively in participating and enhancement of the female adolescent health. Also, there is need to sensitize adolescent girls about the issues related to menstrual hygiene through health education and program to be organized in several locations on a large scale (Anusree et al., 2014). Health educators need to play critical roles by designing a public education on personal hygiene and development focusing on how to maintain optimal menstrual hygiene and self-care practices among female adolescent in

junior and senior secondary schools (Das et al., 2015). Furthermore, health professionals in contact with female adolescent should educate them on menstrual hygiene to disseminate the information as well as encouraging them to become role models in the society (Bacha et al., 2016).

It is imperative to ensure a proper education and encouragement of personal hygiene and optimal self-care practices among female adolescent in our society. It is suggested that menstrual hygiene should be included in the junior and senior secondary school education curriculum to provide basic knowledge of the menstrual hygiene to the adolescent girls. The limitation of this study is that it covered one local government area in Nigeria out of the 774 local government council areas due to limited time and financial constraints. Hence, the findings from this study may not be generalized to the entire female adolescent in Nigeria.

Mother's ability and willingness to give adequate information about menstrual hygiene prior the onset of menstruation have the potential to improve the female adolescent reproductive health and well-being. Furthermore, with adequate emotional support, guidance and monitoring at the onset of menstruation, it is evident that reproductive health problem may be reduced to minimal level or averted. More efforts should be directed towards improving menstrual hygiene of the female adolescent to encourage good practice.

More programs highlighting the usefulness of good menstrual hygiene should be introduced; it may be through the social media and television programs to fill the gap in knowledge and improve practice among female adolescent. Youth Hygiene Initiative could be organized to provide good milieu for the female adolescent to interact and learn more about their health.



The government should facilitate access to these services in schools and at home.

#### **AUTHOR CONTRIBUTION**

Tajudeen Olusegun Rasheed conducted the study, designed the method, analyzed the data, and wrote the manuscript. Wasiu Adebawale Afolabi formulated the framework and discussion of the study results.

#### **CONFLICT OF INTEREST**

The authors have declared no conflict of interests with respect to the study.

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