



# **Knowledge and Menstrual Hygiene Practices among Adolescent Female Apprentices in Lagelu Local Government Area, Ibadan, Nigeria**

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. Author FZB conceived the study and participated in research design and data collection. Authors TMA and AOS were involved in data analysis and interpretation of the results. Author FZB wrote the draft manuscript with substantial input from authors TMA and AOS. All authors read and approved the final manuscript.*

## **Article Information**

DOI: 10.9734/JESBS/2021/v34i530325

### Editor(s):

(1) Dr. Shao-I Chiu, Da-Yeh University, Taiwan.

### Reviewers:

(1) Masresha Leta, Harar Health Science College, Ethiopia.

(2) K. E. Karunakaran, Eastern University, Sri Lanka.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/70267>

**Original Research Article**

**Received 22 April 2021**

**Accepted 27 June 2021**

**Published 05 July 2021**

## **ABSTRACT**

Poor menstrual hygiene practices continue to exist in Nigeria like most developing countries due to persistent problems of lack of sanitary pad for adolescent by their parents, menstrual hygiene education by mothers and time for observing good menstrual hygiene. Hence this study assessed knowledge and practices of menstrual hygiene among adolescent female apprentices in Lagelu Local Government area of Oyo state. A multi-stage sampling technique was used to select 421 female apprentices between the ages of 10-19years. A semi-structured pre-tested interviewer administered questionnaire that contained 15-point knowledge and 12-point practice scales was used to collect data from respondents. Knowledge score of 0-5 was rated poor, 6-10 as fair and 11-15 as good. Practice score of <7 was rated poor while score  $\geq 7$  was rated good. Data were analyzed using inferential and descriptive statistics with aid of Statistical Packages for Social Sciences version 21 at  $p \leq 0.05$ . Mean age at menarche was found to be  $13.4 \pm 1.4$ . Majority (96.2%) were single and 50.3% being Muslims. Although 77.4% were aware of menstruation before

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menarche, only 50.8% possessed good knowledge of menstruation. Hygiene knowledge was found to be very poor as only 22.6% correctly knew that menstrual blood comes from the uterus and 55.5% did not know the normal length of menstrual cycle. Factors significantly associated with knowledge of respondents included fathers' and mothers' level of education while those associated with practice included lack of private washing facilities for cloth and napkin, private disposal facilities for disposable absorbent materials and lack of menstrual hygiene education session. Provision of menstrual hygiene education by mothers and other relevant stakeholders as well as provision of cleaning facilities are key to improve menstrual hygiene practice of respondents.

*Keywords: Menarche; menstruation; adolescent female apprentices; menstrual hygiene; Nigeria.*

## 1. INTRODUCTION

Menstruation, despite being a normal phenomenon is given little attention. In most cultures, Nigeria inclusive, the subject of menstruation and puberty hygiene are not adequately discussed at home or in the community at large. This problem is more observed in rural areas due to poorly educated nature of the environment as well as cultural issues ascribing lots of myths and misconceptions to menstruation. There is a lot of silence regarding menstruation in most developing countries as young girls often grow up with little knowledge of menstruation because their mothers and other women shy away from discussing it with them [1].

Menstrual education is an important aspect of health education. However, many girls receive little to no information concerning puberty, the biology of menstruation or hygiene methods to manage menstruation and as a result, many are uncomfortable, insecure and ashamed to manage their menstruation [2]. Several studies, particularly from low-income countries show that a very high number of girls start menstruating without having any idea of what is happening to them and why [3,4,5]. Lack of knowledge can lead to many practices which can be harmful especially among out-of-school adolescents whose population in the sub-Saharan region according to UNESCO and UNICEF [6] has grown from 21 million in year 2000 to 23 million in year 2013. As this cohort are not enrolled in school, they are mostly found learning one vocation or the other in places without adequate facilities or roaming about the street without having access to cleaning and toilet facilities at the right time. Research conducted in India showed that use of cloth during menstruation was higher among rural and out-of-school girls [7]. If this is so, staying out of the house in places without adequate cleaning and toilet facilities

during menstruation alongside lack of time and knowledge of good hygiene for almost the whole day will predispose these adolescents to health risks such as urogenital and other infections. After adjusting for other contributing factors, a study also confirmed that wealth and place where a woman changes her pads during menstruation were factors associated with bacteria vaginosis [8].

Furthermore, the challenge of poor facilities and waste disposal required for effective menstrual hygiene exist in most parts of Nigeria as inappropriate disposal of absorbents used during menstruation contribute to the growing urban waste [9]. Indiscriminate and unsafe disposal of menstrual absorbents can lead to environmental pollution. It can also lead to an increased risk of infecting others with diseases like Hepatitis B especially when there is direct contact with the blood by others [1]. This study therefore investigated the level of knowledge and menstrual hygiene practices among out-of-school adolescent girls who are apprentices with the goal of providing evidence for intervention to improve knowledge and hygiene practices.

## 2. MATERIAL AND METHODS

### 2.1 Study Design

A descriptive cross-sectional study design involving the use of semi-structured interviewer-administered questionnaire adopting inferential statistics was used for this study.

### 2.2 Study Setting

This study was conducted in Lagelu Local Government Area (LGA) of Ibadan in Oyo state. It has a land area of 338 square kilometers and a projected estimated population of 208, 100 (NPC, 2016). It shares boundaries with Egbeda Local Government to the East and Iwo Local

Government in Osun state to the West, Ibadan North Local Government to the North and Akinyele Local Government, Ibadan North East Local Government to the South. The Local Government Area is a semi-urban settlement which consists of over 1076 towns and villages including the principal towns of Lalupon, Lagun, Monatan, Ofa, Ejioku, Oyedeji, Kelebe, Sagbe, Elegbaada, Olowode, Wofun, Ogburo, Kutayi, Apatere, Olorunda, Ogunjawa, Ile-Igbon, Iyana Church, Odo Oba, Sukuru and Akinsawe. Lagelu local government is subdivided into 14 wards.

### 2.3 Study Population

The study population was adolescent girls who are apprentices in Lagelu LGA. Adolescent girls here referred to girls within the age of 10-19 years [10]. While apprentices are girls learning vocations such as tailoring, hairdressing, catering, trading as well as other vocations where females can be found.

### 2.4 Sampling Procedure

A three-stage sampling technique was used to select 421 adolescent female apprentices in the study site. In the first stage, 7 wards out of the 14 wards in the local government area that comprised high population of adolescent female apprentices were purposively selected. The second stage was selection of one community each from the seven wards by simple random sampling and the third stage was recruitment of adolescents who met the inclusion criteria from identified shops by convenience sampling. The research assistants were trained to include only adolescent girls who are apprentices and had attained menarche. This was done to guide against any possible bias.

### 2.5 Data Collection Method and Procedure

Quantitative data collection method was employed for this study. The semi-structured interviewer administered questionnaire comprised of sections on socio-demographic characteristics of respondents, knowledge of menstruation, menstrual hygiene practice as well as factors influencing menstrual hygiene practices among respondents. Copies of the research tool were administered by four trained female research assistants to participants who met the inclusion criteria, after providing

adequate information about the research to them and their verbal informed consent obtained.

### 2.6 Validity and Reliability of Instrument

Validity of the study instrument was ensured through extensive review of literature and critical review by experts in the field of adolescent health. The instrument was pre-tested among 42 female adolescent apprentices (10% of calculated sample size) in Ido Local Government area, which has the same socio-demographic characteristics with the study site. A reliability coefficient of 0.73 was obtained.

### 2.7 Data Management and Analysis

Copies of administered questionnaire were checked for completeness and accuracy. They were coded through serial numbering. Data was processed and analyzed using descriptive and inferential statistics with the aid of Statistical Packages for Social Science version 21. Chi-square statistic was used to test for differences between the categorical variables such as knowledge of menstruation and menstrual hygiene practices at  $p \leq 0.05$ .

Ethical approval was obtained from Oyo State Ethical Review Board prior to the commencement of the study with ethical approval number AD13/479/1125. The respondents were assured of the confidentiality of information and volunteerism of participation. Verbal informed consent was also obtained from participants after providing them with information and benefits of the research. They were assured that information provided by them will be kept confidential and that they were free to withdraw from the research if need arises. Only female apprentice adolescents who gave their voluntary consent were recruited into the study. Permission of the heads of artisan associations were also obtained to facilitate easy conduct of the research among the target group. For respondents under the age of 16 years, because they cannot legally give consent to participate in the research, a brief consent form was signed by their instructors who directly supervised them for authorization and their verbal assent was documented which served as an agreement to participate in the research. The Instructor's consent form was also approved by the Oyo State Ministry of Health Ethical Review Board. Parents of the participants aged below 16 were not contacted for consent because the out-of-

school participants were hard to reach group and geographically dispersed.

### 3. RESULTS

#### 3.1 Socio-demographic Characteristics

Respondents' ages ranged from 10-19 years with a mean age of  $16.7 \pm 1.9$  years. Most respondents (87.9%) fall within 15-19 years, 59.3% have their highest level of educational attainment to be secondary school, 96.2% were single, 91.2% were Yorubas and 50.3% were Muslims. Majority of respondents (79.9%) started menstruating between the ages of 10-14 years with mean age at menarche being  $13.4 \pm 1.4$  (Table 1). Tailoring is the major source of apprenticeship being learnt by respondents. Most fathers and mothers of respondents have secondary school as their highest level of educational attainment (Table 2).

#### 3.2 Awareness and Knowledge of Menstruation among Respondents

Three hundred and eight (77.4%) respondents were aware of menstruation before menarche and mothers were the main (68.5%) source of information. Table 3 shows knowledge of menstruation among respondents in which 93.5% of respondents knew that menstruation is a normal monthly bleeding, 22.6% of respondents correctly knew that menstrual blood comes from the uterus and 55.5% do not know the normal length of menstrual cycle. Majority (86.9%) believed that sanitary pad is the ideal absorbent for menstrual bleeding. Overall, half of respondents (50.8%) had good knowledge about menstruation while others have either fair or poor knowledge with mean knowledge score of  $10.37 \pm 2.14$ .

#### 3.3 Menstrual Hygiene Practices of Respondents

Assessment of menstrual hygiene practice showed that 42.2% of respondents use washable and re-usable materials out of which 73.8% dry the material inside the house while 22.6% dry them outside the house in the sunlight and 3.6% dry them outside the house but without sunlight. Important hygiene practices of respondents documented include change of absorbent once daily (64.1%), only few (30.7%) change their menstrual absorbent twice or more daily during menstrual bleeding. Only 29.6% wash their genitalia with water only during menstruation, 61.8% take their bath twice daily during menstruation while 93.7% reportedly wash their

hands with soap and water after changing their absorbent material. Overall most of the respondents were found to possess poor menstrual hygiene practices with mean practice score of 4.95. This is presented in Table 4. Flushing in water closet (30.9%) is the common method of menstrual waste disposal among respondents, followed by burning (22.6%). Restrictions practiced during menstruation include avoidance of prayers (50.5%) and certain food (35.4%).

Various factors such as intrapersonal, interpersonal, community and organizational were checked to see if they have influence on either the practice or knowledge of respondents. None of the socio-demographic characteristics of respondents were found to be statistically significant in relation to respondents' practice of menstrual hygiene. However, improved menstrual hygiene was observed with higher level of education.

There was a statistically significant difference between fathers' level of education ( $p=0.001$ ) and mothers' level of education ( $p=0.001$ ) in relation to knowledge of menstruation among respondents (Table 5). Although the relationship between respondents' knowledge and practice was found not to be statistically significant, percentage of poor practice was found to decrease with improved knowledge of menstruation.

Regression analysis result indicates that factors which had more influence on the practice of the respondents (participants with poor practice) included access to pre-menarche training ( $p=0.025$ ), access to menstrual hygiene education session programmes in the community ( $p=0.001$ ), lack of facilities for promoting safe and private menstrual hygiene for girls ( $p=0.026$ ) and lack of knowledge of presence of facilities for this purpose in the community at all ( $p=0.008$ ). This is presented in Table 6.

### 4. DISCUSSION

The age of apprentices was from 10 to 19 years. This is similar to ages of respondents used in previous study [11] and varies from those of other study [12]. The mean age at menarche was found to be  $13.4 \pm 1.4$  which was similar to a study carried out in Benin City where the mean age at menarche was found to be  $13.4 \pm 1.3$  and the one carried out in Sokoto [13,12].

**Table 1. Socio-demographic characteristics of respondents (n=398)**

<b>Socio-demographic characteristics</b>	<b>Freq.</b>	<b>Percent (%)</b>
<b>Age</b>		
10-14 years	48	12.1
15-19 years	350	87.9
<b>Mean age=16.7±1.9</b>		
<b>Highest level of educational attainment</b>		
No formal education	5	1.3
Primary school	14	3.5
Some secondary school	106	26.6
Secondary school	236	59.3
Tertiary education	37	9.3
<b>Marital status</b>		
Single	383	96.2
Married	14	3.6
Cohabiting	1	0.3
<b>Tribe</b>		
Yoruba	363	91.2
Igbo	12	3.0
Hausa	10	2.5
Others*	13	3.6
<b>Religion</b>		
Islam	200	50.3
Christianity	197	49.5
Traditional	1	0.3
<b>Age at menarche</b>		
10-14 years	318	79.9
15-19 years	80	20.1

\*Others: Fulani, Igede, Igbira, Cotonou and Togolese; Mean age at menarche=13.4± 1.4

**Table 2. Nature of apprenticeship of respondents and Parents' highest level of education**

<b>Nature of apprenticeship (n=398)</b>	<b>Freq.</b>	<b>Percent (%)</b>
Tailoring	149	37.4
Trading	82	20.6
Hairdressing	72	18.1
Catering	42	10.6
Patent medicine	42	10.6
Make up	5	1.3
Shoe and bag making	2	0.5
Computer training	2	0.5
Decoration	1	0.3
Wristwatch repairing	1	0.3
<b>Fathers' level of education (n=397)</b>		
No formal education	39	9.8
Primary education	24	6.0
Some secondary school	23	5.8
Secondary school	204	51.4
Tertiary education	107	27.0
<b>Mothers' level of education (n=398)</b>		
No formal education	49	12.3
Primary education	49	12.3
Some secondary school	15	3.8
Secondary school	203	51.0
Tertiary education	82	20.6

**Table 3. Knowledge of menstruation among respondents (n=398)**

<b>Knowledge of menstruation</b>	<b>Freq.</b>	<b>Percent (%)</b>
<b>What menstruation is</b>		
Normal monthly bleeding from the uterus*	372	93.5
Blood loss due to child birth	3	0.8
I don't know	23	5.8
<b>Where menstrual blood comes from</b>		
Vagina	245	61.6
Uterus*	90	22.6
Stomach	2	0.5
Bladder	2	0.5
I don't know	59	14.8
<b>Causes of menstruation</b>		
Curse of God	25	6.3
Disease	1	0.3
Hormones*	233	58.5
I don't know	139	34.9
<b>Length of normal menstrual cycle</b>		
21-35 days*	174	43.7
>35 days	3	0.8
I don't know	221	55.5
<b>Ideal absorbent for menstrual bleeding</b>		
Sanitary pad*	346	86.9
Others*	52	1.1
<b>Menstrual Knowledge score</b>		
0-5 (Poor)	26	6.5
6-10 (Fair)	170	42.7
11-15 (Good)	202	50.8
<b>Mean Knowledge= 10.4</b>		

\*Correct responses

\*Others: Cloth, Tampon, tissue

Table 4. Hygiene practices during menstruation among respondents (n=398)

Hygiene practices during menstruation	Freq.	Percent (%)
<b>Use of washable/re-usable material</b>		
Yes	168	42.2
No	230	57.8
<b>Number of absorbent materials used daily during menses</b>		
1	21	5.3
2	255	64.1
3	106	26.6
≥4*	16	4.1
<b>Material for cleaning external genitalia</b>		
Soap and water	197	49.5
Only water*	156	39.2
Water and antiseptic	45	11.3
<b>Frequency of bath during menstruation</b>		
Once	118	29.6
Twice	246	61.8
Thrice or more*	34	8.5
<b>Hand washing after changing absorbent material</b>		
Wash my hands with soap and water*	373	93.7
Wash my hands with water only	22	5.5
I don't wash my hands at all	2	0.5
Clean my hands with rag	1	0.3
<b>Menstrual hygiene practice score</b>		
Poor (1-6)	341	85.7
Good (7-12)	14.3	14.3
<b>Mean practice score=4.95</b>		

\*Correct responses



**Table 5. Relationship between respondents' Parents' level of education and knowledge Scores**

<b>Fathers' level of education</b>	<b>Knowledge score of respondents</b>				<b>X<sup>2</sup></b>	<b>df</b>	<b>P-value</b>
	<b>Poor (%)</b>	<b>Fair (%)</b>	<b>Good (%)</b>	<b>Total (%)</b>			
No formal education	5 (12.8)	21 (53.8)	13 (33.3)	39	23.438	6	0.001*
Primary school	5 (20.8)	5 (20.8)	14 (58.3)	24			
Secondary school	11 (4.8)	106 (46.7)	110 (48.5)	227			
Tertiary education	4 (3.7)	38 (35.5)	65 (60.7)	107			
<b>Mothers' level of education</b>							
No formal education	3 (6.1)	28 (57.1)	18 (36.7)	49	17.525	6	0.001*
Primary school	7 (14.3)	19 (38.8)	23 (46.9)	49			
Secondary school	14(6.4)	97 (44.5)	107 (49.1)	218			
Tertiary education	2 (2.4)	26 (31.7)	54 (65.9)	82			

\*Significant

**Table 6. Logistic regression analysis of factors influencing menstrual hygiene practices of respondents**

<b>Factors influencing menstrual hygiene practices</b>	<b>Sign.</b>	<b>Exp (<math>\beta</math>)</b>	<b>Lower</b>	<b>Upper</b>
<b>Enabling factors</b>				
Aware of potential health risks related to poor hygiene	0.401	0.688	0.287	1.646
Have access to cleaning facilities throughout the days	0.200	1.650	0.767	3.550
Was given pre-menarche training	0.025*	0.444	0.218	0.904
<b>Reinforcing factors</b>				
Have access to media advert on menstruation and menstrual hygiene	0.167	0.650	0.354	1.197
Encouraged by friends to change my menstrual absorbent often	0.757	1.099	0.604	2.000
Encouraged by boss to have good hygiene especially during menstruation	0.558	1.203	0.649	2.227
Father gives me extra money to purchase sanitary material for my menstruation	0.616	0.850	0.451	1.602
<b>Intrapersonal factors</b>				
Pain during menstruation means one is sick	0.275	1.619	0.682	3.846
Menstrual blood contains dangerous substances	0.532	1.244	0.627	2.469
Happy with myself during my period	0.495	0.780	0.382	1.592
I am as good as other people during my period	0.576	1.212	0.618	2.379
I am more confident during my menstruation than when I am not menstruating	0.135	1.569	0.870	2.830
<b>Community/organization factors</b>				
Private disposal facilities for disposable absorbent materials	0.941	1.047	0.316	3.469
Menstrual hygiene education session	0.001*	8.260	5.655	12.065
No facilities for promoting safe and private menstrual hygiene for girls at all	0.026*	6.402	1.402	9.184
I do not know if there are facilities for this purpose at all	0.008*	2.773	2.408	4.378

\*Significant at 5%; Reference category is Good practice

Similar to most other studies, mothers were the major source of information on menstruation even though the information provided might not be detailed. In respect to respondents' knowledge of menstruation, respondents understood well some aspect of menstruation such as menstruation being a monthly bleeding, however a lot were unknown one of which included only 22.6% correctly knew that menstrual blood comes from the uterus. This is because in this study, it was observed from respondents' response that they feel the channel through which menstrual blood comes out of the body which is the vagina is the origin of menstrual blood.

Study by [14] also indicated that only 22.37% of respondents in the study correctly know the origin of menstrual blood. Likewise, over half of respondents in this study did not know the normal length of menstrual cycle and this may likely affect their preparedness negatively for the process. In contrast to a study carried out in Kano which reported that majority of the respondents have a fair knowledge [11], only half of respondents in this study have good knowledge of menstruation. This difference observed might be due to the difference in the region in which the study is conducted.

Considering menstrual hygiene practices, though some respondents reported use of combination of two or more materials, many of the respondents said they use washable and re-usable material. This result is similar to findings from other studies [15,14] and it differs from studies in northern part Nigeria which reported high percentage of use of sanitary pad among their respondents [11,12]. The difference observed in this study and other ones within the country might be due to the fact that this variable was considered a multiple response in this study. Drying of washable material inside the house, which may predispose respondents to reproductive tract infection, was found to be high in this study. This may be due to shyness of being known with these materials by others.

Over all, majority of respondents used purchase materials which is consistent with findings conducted in Sokoto [12] while studies conducted in Saonar, Uttarakh and India and Ogbomosho reported low use of sanitary pad [15; 16; 14]. The high rate of use of purchased sanitary pad in this study can be ascribed to the recent popular sales of pads that contain 2 pieces and sold at a cheaper price. Only few of

respondents in this study change their menstrual absorbents twice or more during menstruation. The probable reason for this may be because of lack of facilities to change absorbent as expected at work. This is similar to the study carried out in Ogbomosho where most of the respondents also changed their absorbent material once daily [14] and varies from that carried out in Sokoto where most of the respondents change menstrual absorbent thrice or more times [12]. Similar to other studies which indicated that most of their respondents use soap and water to clean their genitalia [17; 15; 12; 16], most respondents in this study also use soap and water to wash their genitalia. Proper and safe disposal of menstrual absorbent is part of good menstrual hygiene. In this study, most of the respondents dispose absorbent by flushing in water closet, a method which should be discouraged since it can contribute to the global problem of blockage of sewage system.

In the study area, a lot of restrictions are either imposed on menstruating girls as stated by culture or self-imposed. In this study, most of respondents avoid prayers. This is a common practice among Muslims all over the world. This finding is in accordance with similar study in Sokoto [12]. Over all, majority of respondents in this study had poor practices of hygiene when it comes to menstruation. This finding agrees with study conducted in Ogbomoso [14] and similar study carried out in India in which rate of reproductive tract infection was also found to be higher among out-of-school adolescents [7].

There was a tremendous improvement in the knowledge of respondents as the educational level of their father and mother increased. Similar study conducted in Ogbomosho [14] also reported a statistical significance between respondents' knowledge and the level of their parents' education. Although not statistically significant (Fisher's exact  $P=0.499$ ) menstrual hygiene practice of respondents was found to improve with increased level of education of parents This is same with menstrual hygiene practice of respondents which was also found to improve with improved level of menstrual knowledge, although not statistically significant (Fisher's exact  $P=0.223$ ), we cannot categorically say that a relationship did not exist between level of menstrual knowledge and practice of menstrual hygiene among respondents. Result of regression analysis in this study indicated that respondents categorized into two groups were the ones whose practices were poorer. First were

those who said they were given pre-menarcheal training and those who have access to menstrual hygiene education session in their community. This result varies from previous study [18] and also surprising but might be an indication that appropriate and/or inadequate information were not given by those who provided it as thought by respondents. The second category were those who said there were no facilities at all in their community to promote safe and private menstrual hygiene and those who did not know whether there are facilities for this purpose. This is as expected as majority of informal settings in this country such as markets and places where most handiwork are being learnt lack facilities for proper menstrual hygiene.

## 5. CONCLUSION

Despite the good knowledge possessed by half of the participants, majority of them showed poor menstrual hygiene practices. This can be attributed to the fact that mothers who form the highest source of information on pre-menarcheal training provide inadequate and at times inappropriate information. More so, most community settings lack facilities required for safe and private menstrual hygiene and if they are present they are underequipped or mismanaged. Since it was observed from this study that the role of education in the possession of good menstrual hygiene cannot be totally erased, there is need to provide educational intervention on menstrual hygiene practices among apprentices in the study setting.

## CONSENT AND ETHICAL APPROVAL

Ethical approval was obtained from Oyo State Ethical Review Board prior to the commencement of the study with ethical approval number AD13/479/1125. The respondents were assured of the confidentiality of information and volunteerism of participation. Verbal informed consent was also obtained from participants after providing them with information and benefits of the research.

## ACKNOWLEDGEMENTS

The authors wish to acknowledge the study participants for participating in the study and Network on Behavioural Research on Child Survival in Nigeria (NETBRECSIN) and UNICEF for the technical support.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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