Original Article

RELATIONSHIP BETWEEN PRE-MENARCHE MENSTRUAL EDUCATION AND OTHER DETERMINANTS WITH MENSTRUAL HYGIENE MANAGEMENT (MHM) AMONG ADOLESCENT GIRLS IN UNITY COLLEGES IN SOUTH-SOUTH, NIGERIA

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Abstract

Background: Menstruation is a normal physiological process which healthy adolescent girls experience monthly. This study ascertains the pattern and frequency of genital washing and effect of pre-menarche awareness of menstruation on Menstrual Hygiene Management (MHM) among girls who have attained menarche in unity colleges in Bayelsa State.

Methodology: A cross sectional study was conducted among 174 girls who had attained menarche. A structured, pre-tested, self-administered questionnaire was used to obtain data. Data analysis was done using Statistical Product for Service Solutions (SPSS).

Results: One hundred and seventy-four girls participated in the study with a mean age of 15.1 years (s.d 1.3). Four-fifth (84.5%) of the girls had pre-menarche exposure to menstrual education, majority using disposable sanitary pads. Only 32.8% always washed their hands before changing soiled pads and 48.9% disposed their soiled pads properly in covered bins. All girls admitted to genital washing during menstruation and majority (80.4%) had the good MHM practice of washing their genitals two or more times daily during menstruation. There was a statistically significant difference ($p< 0.05$) between the use of sanitary pads when at home and when in school. Pre-menarche menstrual education was statistically significantly associated with the increased frequency of genital washing during menstruation ($p< 0.05$).

Conclusion: Diverse MHM practices exist among adolescent girls, influenced by the pre-menarche exposure to menstrual education. MHM practices are not as optimum. More sensitization to pre-pubertal females should be embarked upon.

Key words: Genital washing, MHM, Adolescent girls, Nigerian Unity Colleges, Pre-menarche awareness.

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INTRODUCTION

Menstruation, which is the monthly cyclical bleeding in women characterized by the discharge of uterine blood through the vagina, is a normal physiological process in females, that healthy adolescent girls and premenopausal adult women experience monthly.[1] The onset of menstruation also referred to as menarche is one of the most important changes in girls during puberty.[2] The first menstruation (menarche) usually occurs between 11 and 15 years and by 15 years old, most girls would have attained menarche.[3] The reaction of pubertal girls to the event of menarche depends upon awareness and prior knowledge about the subject matter.[4] Although menstruation is a natural process, it is linked to several unhygienic practices, which sometimes result into adverse health outcomes.[2] The United Nations

Children's Fund (UNICEF) and World Health Organization (WHO) defines Menstrual Hygiene Management (MHM) practice as "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 used menstrual management materials."[5]

A study reporting women and girls' experiences of menstruation in low- and middle- income countries among other findings noted that menstrual blood sticks to pubic hair when sanitary materials are not frequently changed, letting out a foul odour that leaves adolescent girls uncomfortable in public.[6] Additionally, adolescent girls were noted to have genital infections from inadequate hygienic sanitary facilities in secondary schools.[7] The practice of hygienic storage and disposal of menstrual materials, hand hygiene using soap and water, and genital washing during menstruation has been widely published and recommended.[5,8] Moreso, the pattern of and frequency of genital washing reflects the quality of menstrual hygiene information which pubertal females have received. A systematic review of studies published in Ethiopia between 2004 and 2021 revealed that about 88.14% of adolescent girls wash their genitalia during menstruation, out of which half of the studied population engage in a poor practice of washing with soap.[9] Actually, it is an acceptable practice for girls to frequently wash around their genitals during menstruation but it is not best practice to douche or use soap to wash inside their vagina as this may lead to vaginal thrush and upset the normal vaginal flora leading to some common genital tract infections.[10] More often, adolescent girls in boarding schools including those who are not sexually active visit school clinics on account of vaginal yeast and bacterial infections .[11] These infections have been linked to disruptions in the normal vaginal flora.[11] In West Africa, adolescent girls are noted to use a variety of materials to contain menstrual blood such as re-usable clothes, toilet paper, tampons, and disposable sanitary pads obviously determined by factors like level of education, availability and affordability.[12]

A study done in south-south Nigeria revealed disposable sanitary pads as the type of menstrual material commonly used among adolescent school girls in Bayelsa state,[13] Many of these were donated by philanthropic organizations to these girls in boarding schools during health campaigns or as a reward token for good behaviour or academic performance.[14] Some students also enjoy a steady and adequate supply of sanitary disposable pads from their homes, thus menstrual hygiene management may be possible and feasible when the adolescent girl is at home. The contrary is the case when the students are in schools, including boarding schools, because hygienic practice may be quite challenging since facilities for genital washing, sanitary pad change and frequent bathing of young girls during menses sometimes might be unavailable. [15,22]

Similarly, with the siting of unity colleges mostly in rural areas, the peculiarities of host communities may impact on availability of facilities to address menstrual hygiene management among girls who have attained menarche even where awareness and attitudes are optimal.

Thus, the WHO and UNICEF recommends the establishment of water, sanitation, and hygiene (WASH) facilities in schools to enhance personal hygiene including menstrual hygiene.[16]

The timing and content of information about menstruation and its hygienic management which an adolescent girl is exposed to may have an impact on her menstrual practices after menarche.[17] Some studies have noted that more girls received their sensitization and information about menstruation from their mothers, and fewer received theirs from their school teachers, older sisters or peers.[5,6,13,14]

Menstruating school girls in Nigeria faced many challenges which affected their ability to manage their menstruation in a dignified and hygienic way.[18] Furthermore, menstruation is said to lead to school absences among adolescent girls who attend day schools. [19, 20, 21] Boarding students may not be easily given exeats simply because of menstruation, more so, Federal Unity Colleges have students from diverse parts of the country whose homes are not easily accessible. How they fare during menstruation and their practice of menstrual hygiene management is therefore of particular interest. Also, studies on proper methods of genital washing are scarce in south-south Nigeria.

The aim of this study is to assess menstrual hygiene management practices and the influence of pre-menarche menstrual education and other determinants in adolescent girls in unity colleges in Bayelsa State, South-South Nigeria.

METHODOLOGY

Study Area

The study and data analysis were carried out in unity colleges in Bayelsa State, South-South Nigeria between July 2021 and September 2022 Bayelsa State has three Senatorial districts. Each of the three senatorial districts has one Federal unity college. They are all boarding schools. Two of the colleges are mixed while the third one is a girls-only college.

Study Population

Study population was girls aged between 10 and 19 years who had attained menarche in the three unity colleges in Bayelsa State. In each school, inclusion criterion was girls who had attained menarche for at least 6 months before the study.

Study Design

This is a cross-sectional study. Minimum Sample size was determined using Cochran's formula: $n=z^2pq/d^2$; where n is desired sample size; Z is standard deviation at 95% confidence interval which is taken as 1.96; p is prevalence of genital washing during menstruation from a previous study, 88.14% (0.88);[10] q is 1-p which is 0.12; d is acceptable margin of error or degree of precision = 0.05. Minimum sample size was therefore calculated to be 162. Allowing for 10% non-response rate gives 180.

Sampling Technique

One of the mixed schools was selected using simple random sampling by balloting from the two mixed schools while the only-girls school was also selected. Study participants were selected randomly from the various classes within each college having met the inclusion criteria. A structured, self-administered questionnaire adapted from reviewed literature was used to obtain data. It has [11,20] four sections: socio-demographics and family structure; pre- menarche education; type of menstrual material used; menstrual hygiene practices.

Data Analysis

Data analysis was done using IBM SPSS (Statistical Product and Service Solutions SPSS) version 25. Description of the sampled population was done using summary statistics (mean and standard deviation for quantitative variables) and frequencies/proportions for various categorical variables. Changing menstrual materials three or more times daily, handwashing every time before and after changing menstrual materials, genital washing two or more times daily, non-use of soap in genital washing and disposal of used pads into bin were all assessed as good practice. Changing menstrual materials less than three times daily, never or sometimes handwashing after changing pads, less than two times daily genital washing and non-use of soap in genital washing were all assessed as poor practice. Disposing used pads into bush, toilet or dumpsite was also denoted as poor practice. Chi-square test of Independence was used to test for significance in difference between the use of disposable sanitary pad at home and in school. Bivariate analysis was used to test association between dependent and independent variables.

Ethical Considerations

Assent was obtained by ticking a consent box on the questionnaire following an explanation of the study aim. Written permission was obtained from the school authorities and the State Ministry of Health. Ethical clearance was obtained from Health Research Ethics Committee of the Federal Medical Centre, Yenagoa (FMCY/REC/EAF/AUG/2022/614-1203).

RESULTS

Socio-demographics and family structure

A total of 180 adolescent girls who had attained menarche participated in the study, 174 girls reasonably completed the questionnaire with a response rate of 96.7%. The mean age of respondents was 15.1 years (s.d 1.3.) The modal age group of respondents was 14-16 years with majority (97.6%) of the respondents as Christians. Only 20 (11.5%) out of the 174 girls were in junior secondary school while the highest proportion (43.7%) of senior secondary students were science students. The rest of them (29.9% and 14.9%) were senior secondary arts and commercial students respectively. Majority of the respondents (86.7%) come from families with

monogamous setting and only 6 (3.4%) do not live with their parents or family relatives as shown in Table 1.

Menarche and duration of flow

Mean age at menarche was 12.2 years (s.d 1.5). Majority of the girls attained menarche at age 13 years. The earliest reported age at menarche is age 8 years and the latest menarche was attained at age 15. More than half (55.7%) of the respondents had their menstrual flow within 3 to 5 days and slightly above a quarter of the girls (28.7%) had menstrual flow beyond five days. About one-quarter (26.6%) of the respondents attained menarche in school while the rest of them either had it at home or in a relative's house. Other places mentioned included church.

Pre-menarche awareness

The majority of the participants (84.5%) had exposure to information about menstruation prior to their menarche and most of them (48.8%) were exposed to the information by their mothers and sisters. Only about 9.7% got this awareness from school seminars, 6.3% from their teachers and the others from their friends and other sources as shown in Table 2.

Practice of Genital Washing and other menstrual Health management practices (MHM)

All the girls admitted to washing their genitals during menstruation. The majority (80.4%) of the girls washed their genitals two or more times daily while the rest of them did so less frequently**.** About half (52.6%) of the respondents were assessed as having a good and safe practice of never using soap to wash their genitals including their vagina during menstruation. Just about a quarter (24.9%) of the respondents were assessed as observing a poor and unsafe practice of sometimes using soap to wash their genitals including their vagina during their menses, and the rest of them used soap every time.

Most of the girls, (94.8%) reported a good practice of changing their soiled pads two or more times a day on the heaviest day of their last menses; the rest of them changed their pads only once a day. In school, 80% of them (81.1%) changed their pads in the toilet or bathroom, while 2.3% of respondents did that outside or around a bush. The remaining 16.7% did so in their hostels or bedrooms. About one third (32.8%) reported a good practice of always washing their hands before changing their pads, and slightly above half of the girls (55.7%) did that sometimes. One-tenth (10.9%) of the girls had a poor practice of never washing their hands before changing their pads but the rest did so always or sometimes. Similarly, only about 2.9% of the girls did not wash their hands at all after changing their pads but the rest of them did so either always or sometimes. A little less than half (48.9%) of the respondents observed the good practice of disposing used sanitary menstrual materials into covered bins around the toilets, and one-third of them (32.2%) disposed of them at the school refuse dump as shown in Table 3.

Type of menstrual material used

A high proportion, (91.8%) of participants contained their menses using disposable sanitary pads when they are at home, compared to when they are at school, (88.9%); this difference was found to be statistically significant (p 0.000) as captured in Table 4. Among those who used toilet paper, more girls 8(4.6%) used it in school compared to 5(2.9%) who used it when they were at home. The majority of the girls, (90.8%) sourced these sanitary pads from home while the rest borrowed pads while in school.

Relationship between pre-menarche education on menstruation and MHM practices

From the results, education on menstruation prior to menarche was significantly statistically associated with increased frequency of genital washing (p=0.000) but not statistically significantly associated with practice of the use of soap in genital washing (p=0.093), the frequency of change of menstrual materials (p=0.944) and handwashing practice before change of menstrual materials (p=0.357) as shown on Table 5.

Table 1: Socio-demographics and family structure

	Frequency (n=174)	Percent
Age in groups		
10-13	16	9.2
14-16	136	78.2
17-19	22	12.6
Mean age of respondents 15.1 years (+/-1.30)		
Religion		
Christianity	164	97.6
Islam	1	0.6
others	9	1.8
Class		
Junior secondary	20	11.5
Senior Secondary(science)	76	43.7
Senior Secondary(arts)	52	29.9
Senior Secondary(commercial)	26	14.9
Family structure (n 173)		
Monogamous setting	152	86.7
Polygamous setting	21	12.1
Who do you live with at home?		
With parents/relatives	168	96.6
With guardians/not relatives	6	3.4

Table 2: Menarche, duration of flow and pre menarche menstrual education

	Frequency (n=174)	Percent
Mean age at menarche 12.2 years (+/-1.537)		
Place of Menarche		
School	46	26.6
Home	117	67.6
Others	9	5.2
Regularity of Menses		
No	44	25.7
Yes	125	73.1
Duration of Menstrual flow		
<3 days	27	15.5
3-5 days	97	55.7
>5 days	50	28.7
Pre-Menarche menstrual education		
No	23	13.2
Yes	147	84.5
Source of Pre-menarche menstrual education		
Home (Mothers and sisters)	85	48.8
Teachers	11	6.3
School seminars	17	9.7
Friends and others	6	3.4
Missing	28	16.3

Table 3: Menstrual Hygiene Practices

	Frequency (n)	Percentage
Re-use of menstrual materials		
Yes	27	15.7
No	145	84.3
Frequency of change of menstrual materials on heaviest day of period		
Poor practice (<3 times)	64	37
Good practice (3 or more times)	109	63
Handwashing before changing menstrual materials		
Poor practice (never, sometimes)	116	66.6
Good practice (every time)	58	33.4
Frequency of practice of genital washing		
Poor practice (<2 times daily)	34	19.7
Good practice (2 or more times daily)	140	80.3
Use of soap in genital wash		
Poor practice (use soap)	91	52.6
Good practice (never)	82	47.5
Disposal of menstrual materials		
Into the toilet	19	10.9
Buried	8	4.6
Household/school dump	56	32.2
Bush/waterway	3	1.7
Waste bin (good practice)	85	48.9
Source of Menstrual materials		
Brought from home	158	90.8
Borrowed from peers in school	9	4.2

Table 4: Comparing the difference in use of disposable pads at home with that in school

	At home; N=172 (%)	At school; N=171 (%)	X^2	P-value
Disposable sanitary pad	158(91.8)	152(88.8)	175.4	0.000

p <0.05 significant

Table 5: Association between prior education on menstruation and MHM practice

Variable	Practice			
	Good; (n=) %	**Poor (n=) %**	**OR**	**P-value**
Knowledge of menses prior to menstruation	Frequency of change of menstrual materials			
	109 (63.0)	64 (37.0)	3.446	0.944
	Handwashing before change of menstrual materials			0.357
	58 (33.4)	116 (66.6)		
	Frequency of genital washing			0.000*
	140 (80.3)	34 (19.7)		
	Use of soap in genital washing			
	82(47.5)	91 (52.6)		0.093

p <0.05 significant

DISCUSSION

In this study, there was a high exposure to pre-menarche menstrual education amongst the study participants and this information was provided at home by their mothers and sisters in about half of the participants, other sources were from school seminars, teachers, friends etc. This agrees with findings from other studies where mothers were noted to be the major source of pre-menarche menstrual education.[13,15] Revealing that the home environment may still be banked on to provide early education on pubertal changes especially among girls. However, as noticed, most girls still douche, using soap to wash their vulva and vagina, which could be a result of misinformation transferred from the older women to the younger.

The WHO recommends the use of clean menstrual management material to absorb or collect blood during menstruation. This practice was found to be high amongst the study participants as a vast majority (94.2%) of them contained their menstrual blood using disposable sanitary pads. This is similar to findings from another study in Bayelsa state that showed that the type of menstrual material commonly used among adolescent girls are disposable sanitary pads.[16] A significant difference was reported between the use of pads when at home than when in school amongst participants, this difference could have been attributable to the ease of access and availability as parents will be willing to support the procurement when at home.

The MHM practices were classed as either good or poor practice in this study; all the adolescent girls admitted to washing their genitals during menstruation. These findings were not very different from studies done in Ethiopia between 2004 and 2021 which revealed that about 88.14% of adolescent girls wash their genitalia during menstruation, out of which about half of them used soap and water and the study noted that less than half of the girls reported washing their vagina two times daily or at least once a day.[10] The reasons could be attributed to similar settings in African societies. Thus, douching may still be commonly practiced in African societies which may not be unconnected to rise in genital infections as the normal flora of the vagina might have been severely tampered with as noted in a study in Ghana.[11]

A WASH assessment carried out in three geopolitical zones of the country including South East, South West and North West zones revealed that schools did not have adequate latrines for sanitary purposes and waste bins to dispose used pads after menstruation. The study also revealed insufficient hand hygiene facilities like soap and water.[20] These findings seem to be reflected in our study where a few girls still reported having to change their pads in nearby bushes and dispose their used pads at dumpsites thus revealing that facilities to encourage MHM practices are not as optimum in the south-south geopolitical zone like other zones of the country. Observations about the majority of participants that still maintained good practices can be attributed to the influence of pre-menarche menstrual education for the girls, for whom if also provided with adequate WASH facilities, will further improve sanitary practices. A vast majority of our respondents reported good practices of changing their soiled pads two or more times a day on the heaviest day of their last menstrual period. These findings are better than findings from a similar study in Osun state, South west Nigeria where frequency of change of menstrual materials was not as that found in our study and about half of the respondents still disposed used pads in improper ways.[21]

A study conducted in Enugu, South East Nigeria,[14] noted that pre-menarche menstrual education has an impact on proper menstrual practices, which was also noted in this study that pre-menarche education was significantly associated with increased frequency of genital washing. However, the pre-menarche education did not significantly alter the frequency of changing menstrual materials and hand washing which may be due to the influence of other unassessed variables like affordability and availability of sanitary pads and access to hand wash facilities. There is therefore the need for a comprehensive approach to guaranteeing good MHM practices beyond pre-menarche sensitization. Facilities for MHM must be adequate for adolescent girls to fare better.

CONCLUSION

Diverse menstrual health management practices including genital washing exist among adolescent girls and is influenced by the pre-menarche exposure to menstrual knowledge, the source of which is largely from the home environment, many however still engage in douching with soap. MHM practices are not as optimum in the studied population.

RECOMMENDATIONS

There is need for the provision of WASH facilities in secondary schools to encourage the practice of proper menstrual hygiene, and more sensitization to pre-pubertal females should be embarked upon by experts to give quality information on menstrual hygiene to optimize good MHM practices. Concerted efforts must be invested to ensure that the quality of the information received from home agrees with what is appropriate practice. Superstitions and myths may be hard to change in the older generation, therefore to stem the tide of misinformation, sensitization programs can be created by professional associations like the Medical Women Association and Adolescent and public health practitioners targeted at communities and schools where both pre-pubertal girls and adolescents who have attained menarche can be easily reached. Mothers and older female relatives should also be targeted through the Parents-Teachers Associations (PTA) since more girls get information from family members.

LIMITATIONS

Our study did not explore the content of the pre-menarche menstrual education received as it was an entirely quantitative study. The problem of self-reporting is also a limitation in this study. There would be need for further research on the content and quality of pre-menarche menstrual education received by adolescent girls.

Conflict of interest: None

Authors' contributions

DKI conceived, designed and made the first draft and manuscript, data analysis. DKI, EOF, NR, and OG contributed to the design, collection of data. DKI, OO, RS, OA, EOF, OG, NR participated in writing the manuscript at draft and revision stages, and contributed significantly to data analysis and interpretation and have read and approved the final version.

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