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Menstrual Hygiene Practices and Associated Factors Among Female Secondary School Students in An Urban Local Government Area of Nigeria's Niger Delta

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Abstract

Background: Regular maintenance of good menstrual hygiene practices remains a challenge for schoolgirls in most low- and middle- income countries including Nigeria. This study aimed to determine the menstrual hygiene practices among senior secondary school girls in southern Nigeria.

Method: A cross-sectional study involving a two-stage probability sampling method used to select 144 eligible and consenting girls. A structured self-administered questionnaire was used to obtain information. Data was analyzed using SPSS version 26 and statistical significance was set at p value < 0.05 .

Result: Mean age of the respondents was 15 ± 1 years. More than half (57.6%) of respondents washed and reused menstrual materials during their last menstrual flow. Handwashing before and after changing menstrual material was practiced by 60.4% of the respondents. 43% of those who used disposable pads disposed them into the toilet. Overall, 62.5% of the respondents engaged in good menstrual hygiene practices and students who used toilet paper to absorb menstruation were twice more likely to also change at least twice a day, wash hands before and after changing menstrual materials, wash genitals with soap at least once a day and appropriately dispose used menstrual materials, than those who used other materials (OR=2.19; 95%CI= 0.43 – 6.36).

Conclusion: Majority of the female students used disposable menstrual pads to collect menstruum but about half did not dispose them appropriately. This reveals the knowledge gap in menstrual hygiene practices among female students and the need for the next level of targeted interventions to enable adoption of right behaviours.

Keywords: menstruation, menstrual hygiene, menstrual absorbent materials, handwashing.

Introduction

Menstruation is a normal monthly physiological process for females with an onset known as menarche and its cessation known as menopause.¹ The onset and cessation periods vary across climes but among females

in low-income countries, the average age of onset of menstruation has been said to be 13 years with a range of 8 to 16 years.² Menstruation is a process characterized by monthly shedding of the lining of the uterus in the absence of pregnancy and it manifests physically as bleeding from the vagina and occurs every 21 to 35 days and lasts between 2 to 7 days.^{1,3} The hygiene practices during menstruation have direct effects on individuals' physical health, mental health and overall well-being and dignity.⁴

There are sociocultural and religious beliefs, myths, and misconceptions associated with menstruation, such as females being considered impure or having restricted access to certain places.⁴ This makes issues related to menstruation one that is not usually freely and openly discussed particularly for a young girl who is just attaining that stage. In the absence of an opportunity to discuss, young girls are often left to handle the challenges of menstruation all by themselves, including materials to use, ways of disposing of menstrual materials, and other hygiene practices related to the management of menstruation. Individual's level of knowledge, socioeconomic status, educational level, personal preferences and availability of resources and amenities are some of the factors that inform menstrual hygiene practices.⁴ As a result of this, poor menstrual hygiene practices have been recorded among females in low- and middle-income countries (LMICs) compared to their counterparts in high income countries. Between 31% and 56% of schoolgirls in the southeast zone of Nigeria reported the use of tissue paper or clothes to absorb their menstrual blood while about 82% of Tanzanian women reported using tissue paper or clothes for their period.⁵⁻⁷

The health risks associated with the use of unsanitary materials for menstruation are however higher among schoolgirls.⁵ The prevalence of bacterial vaginosis was found to be higher among women who reported the use of clothes or cotton wool as menstrual absorbent material than among those who use disposable sanitary pads⁸ While several ways of disposing of faecal and urinary wastes have been developed and are being developed, little or no attention is given to menstrual waste disposal techniques. Hence, the improper disposal of menstrual waste is another risk that is prevalent in most LMICs where waste disposal has always been sub-optimal. Water body contamination from indiscriminate dumping of menstrual materials and clogging of the sewage system from the flushing of menstrual materials are some of the environmental effects of improper disposal of menstrual materials.⁸ Adolescent girls in schools may however be prone to myriads of menstrual

hygiene practice related issues as they might not have a choice but to utilize the sanitary disposal facilities that are available in schools, and these may be sub-optimal.

The adolescent phase of life is an important one where many lifelong habits and practices are developed. Therefore, understanding their menstrual hygiene practices and their determinants would help in identifying how to appropriately intervene and ultimately raise a generation that would know how to go through the physiological process of menstruation safely. This study therefore aimed at assessing menstrual hygiene practices and associated factors among secondary school students.

Method

Study Area

This study was conducted within Obio Akpor Local Government Area (LGA) of Port Harcourt metropolis in August 2021. The city of Port Harcourt is made of two urban LGAs (Obio /Akpor and Port Harcourt City) and three sub-urban LGAs (Eleme, Oyibo and Ikwerre). The indigenous people of Obio/Akpor were traditionally farmers, traders and fishermen but with development, it has become a metropolis comprising people from all over Nigeria and beyond residing and doing business in sectors like oil and gas, banking, education etc. Data from the Rivers State Senior Secondary Schools Board records that there are 27 government-run secondary schools and 125 private secondary schools within the LGA. Out of the 27 public secondary schools, 18 are co-educational, that is; schools attended by both boys and girls.⁹

Study Design

This survey employed a descriptive cross-sectional study design.

Study Population

The study population included female students from co-educational public senior secondary schools in Obio/Akpor LGA. Those who were away from school due to ill health were excluded.

Sample Size

The sample size was determined using the formula for calculating sample size in cross sectional studies¹⁰ $n = Zpq/d^2$. A prevalence of good menstrual hygiene practice of 24% from a previous study was used¹¹, confidence interval of 95%, an acceptable difference of 0.01 and a design effect of 2 bringing the minimum sample size to 144.

Sampling technique

A two-stage probability sampling method was used to select 144 eligible and consenting girls from one of the randomly selected schools. Stage one involved simple random sampling of one school from the 18 co-educational public secondary schools in Obio-Akpor LGA. Stage two involved the selection of respondents from the three classes of the Senior Secondary School. SS1 had 320 students, SS2 had 224 students and SS3 had 268 students (total of 812 students). The minimum sample size of 144 students was prorated according to the size of each class (57 from SS1, 40 from SS2 and 47 from SS3) and the number of students selected from that class by systematic sampling with a sampling interval of 3 in SS1, 4 in SS2, and 3 in SS3. The first student was randomly selected while the other were then picked at the predetermined intervals.

Data collection method/ Analysis

The study instrument was adapted from a standard questionnaire designed by Hennegan et al,¹¹ for menstrual hygiene studies. It contained sections on the menstrual materials used, changing menstrual materials, hand washing, genital washing and disposal of menstrual materials. This self-administered questionnaire was pre tested among secondary school girls of similar class and age range in another school. Data collected using this structured self-administered questionnaire was entered into IBM Statistical Package for Social Sciences (SPSS) version 26. Data was analyzed and presented in tables and charts. Statistical significance was set at a p value of less than 0.05.

Good menstrual hygiene practice was analyzed by giving 1 point to each of the following: those that use disposable sanitary pads, those that change at least twice a day, those that wash their hands before and after changing their menstrual materials, those that wash their genitals at least once a day, those that washed genitals with soap, those that dispose of their used menstrual materials appropriately. A score of 5 and above out of the 6 possible points was considered good menstrual hygiene practice while less than 5 was considered poor menstrual hygiene practice.

Details of the study was communicated to the respondents who gave consent before participating in the study. Ethical approval was sought from the Rivers Students who use toilet paper to absorb menstruation are twice more likely to engage in good menstrual hygiene practices than those who use disposable sanitary pads (OR=2.19; 95%CI= 0.43 – 6.36) (Table 6).

Table 1: Age and class distribution of the respondents

| Characteristics | Freq | Percent (%) |
|-----------------|------|-------------|
|-----------------|------|-------------|

State University Ethical Committee. The result of the study was used in designing school health interventions in other secondary schools in Rivers State.

Results

A total of 160 questionnaires were administered in all and 144 had enough information to be used for the study, giving a response rate of 90%. Up to 144 students participated in the study, with 79.9% of them being between the ages of 15 and 17 years. The mean age is 15.0 years with a standard deviation of 1. They were all from SS1 to SS3 with 56.3% of them being in SS2 (Table 1). Up to 74.3% of the respondents used a disposable sanitary pad to absorb menstruation with about 26% of them still using cloth/towel or toilet paper for the same purpose when at home. When away from home, 53.5% of them used disposable sanitary pad to absorb menstruation, while 46.5% of them used cloth/towel or toilet paper for same purpose (Table 2). When it comes to changing menstrual materials, 57.6% of the respondents washed and reused menstrual materials during their last menstrual period. Another 54.2% of them changed twice on their heaviest days. When at home, 56.5% of them changed in the bathroom and 81.2% of them changed in the bathroom when they are away from home. Also, 44% of students who used disposable pad disposed their menstrual materials into the toilet (Table 3).

Concerning hand washing practices, 12.5% of the respondents never washed their hands before changing menstrual material. Another 8.9% of them never washed their hands after changing menstrual material. While 63.4% of them washed their hands every time after changing menstrual material, 40.3% of them washed their genitals twice per day. Also, 37.3% of them did not use soap when they washed their genitals (Table 4). When at home, 41.7% of them disposed of menstrual materials into the toilet system, 14.6% of them burnt the materials, while 13.9% took them to the community rubbish. When away from home, 27.8% transported the materials home for disposal or reused and 25% of them disposed them into the toilet (Table 5). Overall, up to 62.5% of the respondents had good menstrual hygiene practices while 37.5% had poor practices (Fig 1).

| Age group (years) | | |
|-------------------|-----|------|
| 11 - 13 | 9 | 6.3 |
| 14 - 16 | 115 | 79.9 |
| 17 and above | 20 | 13.8 |
| Class | | |
| SS1 | 47 | 32.6 |

| | | |
|-----|----|------|
| SS2 | 81 | 56.3 |
| SS3 | 16 | 11.1 |

Mean age = 15 years, Standard deviation = 1 year

Table 2: Material Used to Absorb Menstruation by the Respondents

| Characteristics | Freq. | Percent (%) |
|--|-------|-------------|
| Menstrual material use | | |
| Materials used to catch/absorb menstruation when at home | | |
| Cloth/Towel | 28 | 19.4 |
| Disposable sanitary pad | 107 | 74.3 |
| Toilet paper | 9 | 6.3 |
| Materials used to catch/absorb menstruation when away from home | | |
| Cloth/towel | 38 | 26.4 |
| Disposable sanitary pad | 77 | 53.5 |
| Toilet paper | 29 | 20.1 |

Table 3: Changing menstrual material

* Another room/classroom at the location/school

Table 4: Hand washing practices of respondents during menstruation

| Characteristics | Freq. | Percent (%) |
|---|-------|-------------|
| Handwashing | | |
| Hand washing before changing menstrual material | | |
| Never | 18 | 12.5 |
| Sometimes | 39 | 27.1 |
| Every time | 87 | 60.4 |
| Hand washing after changing menstrual material | | |
| Never | 13 | 8.9 |
| Sometimes | 40 | 27.7 |
| Every time | 91 | 63.4 |
| Number of times you wash your genitals during your last menstrual period | | |
| At end of my period only | 18 | 12.5 |
| Every 2-3 days | 11 | 7.6 |
| Once per day | 9 | 6.3 |
| Twice per day | 58 | 40.3 |
| Three or more times per day | 48 | 33.3 |
| Use of soap | | |
| Never | 54 | 37.3 |
| Sometimes | 54 | 37.3 |
| Every time | 36 | 25.4 |

Table 5: Methods of disposal of menstrual materials

| Characteristics | Freq. | Percent (%) |
|--|-------|-------------|
| Disposal of menstrual materials | | |

| Characteristics | Freq. | Percent (%) |
|---|-------|-------------|
| Method of disposal of used menstrual materials when at home | | |
| Into the toilet | 59 | 41.7 |
| Burned | 21 | 14.6 |
| Household rubbish (bin) | 26 | 18.1 |
| Taken to community rubbish | 20 | 13.9 |
| Buried/shrub area/waterway | 9 | 6.3 |
| Did not dispose of any materials (including reusables) | 9 | 6.3 |
| Method of disposal of used menstrual materials when away from home | | |
| Transported home to dispose or reuse | 40 | 27.8 |
| Into the latrine/toilet | 36 | 25.0 |
| Bin in the latrine/toilet | 20 | 13.9 |
| Bin onsite but outside of the latrine/toilet | 30 | 20.8 |
| Community rubbish (not onsite) | 9 | 6.3 |
| Shrub area/buried/waterway | 9 | 6.3 |

| Characteristics | Freq. | Percent (%) |
|---|-------|-------------|
| Changing menstrual materials | | |
| Washed and reused menstrual materials during your last menstrual period | | |
| Yes | 83 | 57.6 |
| No | 61 | 42.4 |
| Number of times menstrual materials was changed on the heaviest day of your period | | |
| 1 time | 19 | 13.2 |
| 2 times | 78 | 54.2 |
| 3 times | 36 | 25.0 |
| 4 times | 11 | 7.6 |
| Place where you most often change your menstrual materials when you were at home | | |
| Toilet | 12 | 8.6 |
| Bedroom | 50 | 34.9 |
| Bathroom | 83 | 56.5 |
| Place where you most often change your menstrual materials when you were away from your home | | |
| Toilet | 14 | 9.6 |
| Bathroom | 117 | 81.2 |
| Other* | 13 | 9.2 |

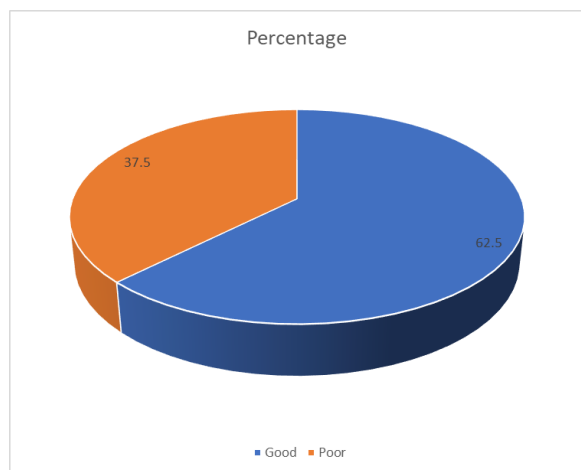


Figure 1: A pie chart showing their menstrual hygiene practice

Table 6: Bivariate and Multivariate Logistic Regression analysis of predictors of good menstrual hygiene practice.

| Predictors | Crude | | Adjusted | |
|--|--------------------|---------|-------------------|---------|
| | OR (95% C.I) | p-value | OR (95% C.I) | p-value |
| Age (years) | | | | |
| 11 - 13 | - | - | - | - |
| 14 - 16 | 0.85(0.38 – 4.23) | 0.36 | 1.4(0.55 – 3.49) | 0.17 |
| 17 and above | 0.07(0.41 – 2.84) | 0.89 | 0.46(0.53 – 4.8) | 0.41 |
| Class | | | | |
| SS1 | - | - | - | - |
| SS2 | 0.80(0.13 – 1.6) | 0.22 | 1.10(0.08 – 1.36) | 0.13 |
| SS3 | 0.57(0.17 – 1.92) | 0.36 | 1.02(0.09 – 1.4) | 0.14 |
| Materials used to absorb menstruation | | | | |
| Cloth/Towel | - | - | - | - |
| Disposable sanitary pad | 1.98(0.12 – 9.34) | 0.34 | 0.96(0.93 – 7.25) | 0.07 |
| Toilet paper | 2.19(0.43 – 12.36) | 0.28 | 1.9(2.56 – 7.39) | 0.01* |

*p-value < 0.05-variable is a significant predictor of good menstrual hygiene practice. OR= Odds ratio

Discussion

Majority of the students used disposable pads to collect menstruum, which is a desirable practice, but almost half of that number disposed of it wrongly by flushing it down the toilet. This finding disagrees with what was reported in south East Nigeria and in Tanzania where most of the respondents used tissue paper to absorb menstrual blood.⁵⁻⁷ One reason why the use of disposable pads was prevalent in this study could be because the school is in the city with the students coming from homes with comparatively better socio-economic status and mothers who have some level of enlightenment. The downside of the discovery in this study is the practice of flushing menstrual materials down the toilet. This practice should be discouraged because of the adverse effect it can have on the environment. Such materials could lead to the blockage of sewerage and overflow of septic tanks with the attendant effects on the environment. This is agreement with the study by Kaur R and Kaur K. which showed that disposing menstrual hygiene materials resulted in clogging of sewage lines.⁸ This practice also shows a wide knowledge gap. The students seem to know and can access the right material to collect menstruum but do not know how to dispose them appropriately. Properly targeted health education will go a long way to reverse this trend.

The appropriateness of the material used to absorb menstrual blood is as important as how it is disposed after use. This study found that a good proportion of those who used disposable pads disposed them into the toilet where they are flushed down. Perhaps, this could be because toilet facilities often lack waste bins where girls can discard their menstrual wastes, they end up flushing it down the toilet. This practice has been shown to constitute environmental hazards like the contamination of water bodies and clogging of sewage disposal systems.⁸ Menstrual materials are often disposed of according to the type of product used, cultural beliefs, and location of disposal. In slum areas, women dispose their menstrual waste into pit latrines as burning and burial were difficult due to limited privacy space.⁸ The reason behind this is that the disposed material could be seen by men or can be used for witchcraft. Besides disposing into the toilet, this study observed that girls either burn their wastes, discard them into household rubbish, take them to the community rubbish or bury them. Only about 20% of the responders discarded their menstrual absorbent material into a provided bin in the toilet.

The use of sanitary pads was higher when they are at home and less when outside of their homes. This finding is in agreement with that done by Narang and Tanya in India,

2022. They attributed the reason to the fact that students had better privacy at home than they did in school.¹³ This could also be because of access to these materials. Young girls could have access to disposable pads at home either from their older sisters or mothers but don't have access to them when away from home. Some have advocated that sanitary pads be supplied in female public toilets to improve utilization. While others have said that this may not help much as people who don't need them may collect all for use at home.

Most of the respondents admitted to washing their hands before and after changing their menstrual materials overall, a lot of the students did not practice good menstrual hygiene, meaning they did not use disposable sanitary pads, change at least twice a day, wash hands before and after changing menstrual materials, wash genitals with soap at least once a day and appropriately dispose used menstrual materials. There is therefore a need to systematically educate them on these practices.

Not many of the students used tissue paper to absorb menstruation while at home though the number doubled when they were outside of their homes. In the same vein, the use of cloth/towel also increased from 19.4% to 26.4% when at home and away from home. Similarly, the number of girls that used disposable pads reduced when they are outside of their homes. This finding throws up the discussion about menstrual hygiene practices in public places. Girls are required to carry extra menstrual materials when going out as the chances of finding appropriate menstrual materials when needed outside their homes are low. The use of tissue paper and cloth is a bit lower in this study compared to what was reported in southeastern zone of Nigeria where between 31% and 56% of schoolgirls reported the use of tissue paper or clothes to absorb their menstrual blood.^{5,6} The number is lot higher in Tanzanian where about 82% of women reported using tissue paper or clothes for their period.⁷

Frequent hand washing has been established as an effective method of infection prevention and control.¹⁴ This is even more indicated when changing menstrual absorbent materials at home and outside the house. Yet up to 40% of the girls reported not consistently washing their hands before and after changing their menstrual materials. Could this be due to lack of hand washing facilities where these girls change their menstrual materials or share lack of awareness of the importance of hand washing? A good number of the girls only wash their genitals with soap at the end of the day and not during changing the materials, though they may change two to three times a day. This could have dire health consequences ranging from reproductive and urinary tract

infections to future infertility and birth complications. Neglecting to wash hands after changing menstrual products can spread infections, such as hepatitis B and thrush. It can also affect the social wellbeing adversely and exacerbate the poor self-esteem associated with poor menstrual hygiene practices.

For menstrual hygiene to be considered good, a continuum of practices needs to be consistent and not practiced in isolation. For instance, a girl who uses toilet paper but washes her hands and genitals consistently every time she changes her menstrual absorbent material is likely going to enjoy better health outcomes than a girl who uses the commercially available disposable menstrual pads but does not wash her hands consistently before and after changing it nor dispose of it properly after use. This study discovered on the predictors of good menstrual hygiene practice that those girls who use toilet paper to absorb menstrual blood were twice more likely to engage in other required practices for good menstrual hygiene than those that used menstrual pads or towels. There could be a psychological component to this as the girl who uses toilet paper already feels compromised so is likely to make up for this deficiency by regular and consistent hand and genital washing, change at least twice a day depending on how heavy the flow is and dispose of the material appropriately. Hence, for menstrual hygiene to be good, a girl has to use disposable sanitary pads, change at least twice a day, wash hands before and after changing menstrual materials, wash genitals with soap at least once a day and appropriately dispose used menstrual materials.

The results of this study have revealed gaps in the menstrual hygiene practices of the secondary school girls that require targeted intervention. The study showed that schoolgirls used appropriate menstrual absorbent materials more while at home and a lot less while away from home. This could be because of availability. There is therefore a need to provide commercially available, disposable sanitary pads in girls' restrooms. The same way toilet papers are provided in restrooms, sanitary pads can as well be provided in the girls' toilet to encourage frequent and easy change of used sanitary pads. This will reduce the chances of using unwholesome materials like toilet paper or cloth/towel and ultimately reduce the reproductive health hazards that come with the use of such materials.

Another finding that calls for intervention is the way the girls dispose their used menstrual materials. The study showed that a lot of the girls flush used pads down the toilet. This could be as result of poor knowledge of the environmental hazards that result from such practices or the lack of waste bins in public toilets and restrooms. A

systematic health education approach using information, education and communication (IEC) materials as well as health talks will go a long way to debunk wrong notions that they hold and encourage adoption of healthy behaviours as regards menstrual hygiene practices like proper hand washing before/after changing used materials, washing of genitals with soap and water and appropriate disposal of menstrual waste.

Limitations of the study

This study was prone to social desirability bias as the students could respond based on what they assume is the socially desirable answers. This was mitigated by enhancing anonymity as the questionnaire didn't require names or any personal identification. It was also self-administered so privacy was ensured. Resource constraints affected the size of the study. This sample size may not be large enough to generalize the findings of this study. Cultural sensitivity could also affect the responses given in the study. This was mitigated by reassuring the respondents that there is neither right nor wrong answers as long as they responded factually.

Implications of the findings for further studies

The findings of this study could help strengthen advocacy and empowerment. Subsequent research can focus on the empowerment of adolescent girls in managing their menstrual health. This could involve exploring the impact of education programs, community support, and policy advocacy on the agency and well-being of girls. Future studies can assess the long-term impact of these changes. This can include evaluating the sustained effectiveness of policies and identifying areas for improvement.

Conclusion

The study discovered several gaps including the use of inappropriate materials to absorb menstrual blood, improper disposal of menstrual waste, poor hand, and genital washing among others. There is an obvious need to both provide menstrual commodities in schools and public places as well as educate young girls on good menstrual hygiene practices. More study is indicated to dive deeper into the factors responsible for the differences observed in the menstrual hygiene practices at home and when away from home.

Ethical consideration: Ethical approval was sought from the Rivers State University Ethical Committee.

Authors' contribution: Drs Fajola Akinwumi and Aloni Alali conceptualized the study, wrote, and reviewed the manuscript, Dr Olabumuyi Olayide wrote the background and reviewed other sections of the work. Dr Folusho

Alamina reviewed the adapted questionnaire and the methods. Rebecca Ogbimi reviewed every section of the manuscript. The final draft was approved by all authors before submission.

Conflict of interest: There is no known conflict of interest in the conceptualization, design and implementation of the study.

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