FRONTLINE MEDICAL SCIENCES AND PHARMACEUTICAL JOURNAL
(ISSN – 2752-6712)
VOLUME 04 ISSUE 12 Pages: 67-94
OCLC – 1272874727

Publisher: Frontline Journals

Journal Website: https://frontlinejournals.org/journals/index.php/fmspj

Research Article

UNDERSTANDING MENSTRUAL HYGIENE HABITS OF FEMALE STUDENTS IN NNEWI, NIGERIA

Submission Date: October 30, 2024, **Accepted Date:** December 10, 2024,
Published Date: December 26, 2024
Crossref doi: https://doi.org/10.37547/medical-fmspj-04-12-05

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ABSTRACT

BACKGROUND: Menstrual hygiene management involves using clean materials to absorb menstrual blood during menstruation. Proper management is crucial to reduce the risk of reproductive tract infections, particularly in women and girls who are more vulnerable during their menstrual periods. This study aims to explore the attitudes and practices related to menstrual hygiene among high school girls in Nnewi, South-Eastern Nigeria.

METHODOLOGY: A descriptive cross-sectional study was conducted with 320 female high school students in Nnewi, South-Eastern Nigeria. Participants were selected using a multistage sampling technique. Data was collected through self-administered questionnaires and analyzed using SPSS V.22. Statistical associations between variables were tested using Chi-square at a p-value < 0.05.

RESULTS: The study included 320 respondents, with 65.6% aged between 14-17 years. A significant 91.3% had heard about menstruation before menarche. The primary sources of information on menstrual hygiene were mothers (63.4%), schools (27.1%), friends/peers (7.5%), and media sources (1.4%). Notably, 88.8%

FRONTLINE MEDICAL SCIENCES AND PHARMACEUTICAL JOURNAL
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VOLUME 04 ISSUE 12 Pages: 67-94
OCLC – 1272874727
Crossref doi Google Scholar WorldCat MENDELEY
FRONTLINE JOURNALS
Publisher: Frontline Journals

of the respondents demonstrated good knowledge of menstrual hygiene, and 92.5% practiced good menstrual hygiene. There were statistically significant associations between the level of knowledge and the practice of menstrual hygiene ($p < 0.01$). Additionally, age and year of study were significantly associated with menstrual hygiene practices ($p < 0.01$).

CONCLUSION: This study highlights that mothers are the predominant source of menstrual hygiene information, reflecting the strong influence of familial attitudes on menstrual practices. The high levels of knowledge and good practices observed among the girls indicate a positive attitude towards menstrual hygiene. These findings underscore the importance of maternal guidance and school-based education in fostering healthy menstrual hygiene attitudes and practices among adolescents in Nnewi, South-Eastern Nigeria.

KEYWORDS

Menstrual hygiene, attitudes, practices, high school girls, Nnewi, South-Eastern Nigeria.

INTRODUCTION

Overview of Menstruation

Menstruation, known by many names such as "period," "flow," or "menses," is a biological process marking the natural progression of female reproductive health. It involves the shedding of the uterine lining, resulting in periodic vaginal bleeding in women of reproductive age. This normal physiological phenomenon, essential for reproduction, is a universal experience for billions of women worldwide. Yet, despite its universality, menstruation remains cloaked in stigma, taboo, and misinformation, particularly in low- and middle-income countries (LMICs), including Nigeria1,2. These social constructs shape not only the perception of menstruation but also the practices associated with managing menstrual hygiene3.

The lack of access to accurate information, hygienic menstrual materials, and sanitary facilities disproportionately affects adolescent girls, leading to emotional distress, social

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exclusion, and increased vulnerability to infections such as urinary tract infections (UTIs) and reproductive tract infections (RTIs)4,5. Addressing menstrual hygiene management (MHM) practices in culturally and economically diverse settings like Nnewi requires a nuanced understanding of the barriers and facilitators that influence these practices6.

Historical and Cultural Context of Menstrual Hygiene Practices

Historically, the management of menstruation has evolved significantly, yet the cultural and societal attitudes surrounding it have remained restrictive in many parts of the world7. In primitive societies, women often lacked any form of menstrual absorbents, leading to free bleeding or the use of natural materials like leaves or moss8. Over time, crude absorbents such as cloth rags became common. However, these practices varied across cultures and were often shrouded in rituals or taboos that limited women's participation in daily life during menstruation9.

In many African cultures, including traditional Igbo society, menstruating women were often segregated, prohibited from cooking, entering sacred spaces, or participating in community activities10. These cultural norms often persist to varying degrees in modern-day Nnewi, influencing how adolescent girls perceive and manage their menstruation11.

Physiology of Menstruation and its Relevance to Hygiene Practices

The menstrual cycle, regulated by hormonal fluctuations, prepares the female body for potential pregnancy through a series of phases: the proliferative, secretory, and menstrual phases12. The average woman spends about seven years of her life menstruating, emphasizing the critical need for sustainable and hygienic practices to manage this recurring phenomenon7. Inadequate menstrual hygiene practices, such as infrequent changing of menstrual materials or the use of unhygienic alternatives like rags or toilet paper, increase the risk of infections and other health complications13.

Menstrual Hygiene Management Definition and Significance

Menstrual hygiene management (MHM) encompasses the use of safe, clean, and accessible materials to manage menstrual bleeding, along with the availability of supportive facilities such

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as private washing areas, soap, and disposal mechanisms for used materials14. For high school girls in Southeastern Nigeria, the practice of MHM is often constrained by several factors15. Economic barriers prevent many girls from affording commercial sanitary products due to widespread poverty16. Cultural taboos stigmatize menstruation, leading to secrecy and shame, which deters open discussion about best practices7. Additionally, infrastructural limitations in schools, such as the lack of private toilets, running water, or proper waste disposal facilities, make hygienic management difficult17.

Traditional Practices and Use of Materials

In Nnewi, like many parts of Nigeria, cultural beliefs and socioeconomic status heavily influence menstrual hygiene practices18. A significant number of girls rely on homemade solutions, such as cutting and folding pieces of cloth, due to the unaffordability of commercial sanitary pads7. These cloths are often reused, sometimes without proper washing and drying, increasing the risk of infections19. Comparatively, wealthier families or those with greater exposure to urban influences may provide their daughters with disposable pads, though these remain a luxury for many7.

Frequency of Changing Menstrual Materials

The frequency with which menstrual materials are changed plays a pivotal role in maintaining hygiene20. Studies in similar settings show that girls often change their materials fewer than the recommended 2–4 times per day, primarily due to limited access to absorbents or the inconvenience of changing while in school21. Girls could skip classes to avoid the embarrassment of leaks or odours.

Disposal of Used Materials

Proper disposal of menstrual waste is a persistent challenge19. In the absence of waste bins or incinerators, many girls resort to burying used cloths, flushing pads down toilets (which can cause plumbing issues), or simply discarding them in open spaces7. Such practices not only harm the environment but also perpetuate the stigma surrounding menstruation by associating it with "dirty" or "shameful" behaviour.

Personal Hygiene Practices

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Hygienic practices such as bathing during menstruation and cleaning the genital area with soap and water are essential for preventing infections22. However, these practices are often neglected due to water scarcity, lack of privacy, or ingrained cultural myths—for example, the belief that bathing during menstruation can cause illness. In Nnewi, where access to clean water may be inconsistent, these challenges are particularly pronounced.

Impact of Inadequate MHM Practices

Poor menstrual hygiene practices have far-reaching implications for the health, education, and social well-being of adolescent girls23. Inadequate management can lead to RTIs, skin irritation, and other health issues. Additionally, many girls report skipping school during their periods due to fear of embarrassment or a lack of facilities. This absenteeism contributes to gender disparities in education and reinforces systemic inequalities.

Problem Statement

Adolescent girls in Nnewi face significant challenges in managing their menstruation hygienically due to cultural stigmas, economic constraints, and infrastructural inadequacies. Poor practices, such as infrequent changing of menstrual materials, improper disposal, and reliance on unhygienic alternatives, increase the risk of infections and compromise girls' education and social participation. Understanding the determinants of these practices is crucial for designing targeted interventions.

METHODOLOGY

Study Area

The study was conducted in Nnewi, Anambra State, Nigeria. Nnewi is a commercial and industrial city known for its vibrant auto industry. It is the second largest and second most populated city in Anambra State, with a population of 391,227 as of the 2002 Nigerian Census, and over 900,000 according to a 2019 population estimate.24 Incorporated as a city on 27th August 1991, Nnewi as a metropolis has one local government area, Nnewi North. Nnewi North comprises four quarters: Otolo, Uruagu, Umudim and Nnewichi.

Study Design

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The study was a descriptive cross-sectional survey conducted among female high school students in Nnewi, South-Eastern Nigeria.

Study Population

The study population comprised adolescent schoolgirls between the ages of 10-19 in selected secondary schools in Nnewi.

Inclusion Criteria

Female adolescent high school students in Nnewi who had attained menarche.

Exclusion Criteria

Female adolescent high school students in Nnewi who were not willing to participate in the study, as well as those who were absent from school at the time of study were excluded.

Sample Size Determination

The sample size for this study was determined using the formula:[25]

$$N = \frac{Z^2 PQ}{D^2}$$

Where:

N = Sample size if population is >10,000

Z^2 = Standard normal deviation usually 1.96

P = Prevalence of 0.25 [26]

Q = 1 - P = 0.75

D = Level of precision required = 0.05

Thus,

$N = 1.96^2 * 0.25 * 0.75 / 0.05^2$

N= 288

Therefore, assuming a non-response rate (f) of 10%, the adjusted sample size (Ns)

$$Ns = N/1\text{-}f = \frac{288}{1-0.1} = \frac{288}{0.9} = 320$$

Sampling Technique

The intended participants were selected using a multi-stage sampling technique.

Stage One: Simple random sampling was used to select two communities (Nnewichi and Uruagu) from the list of four communities within Nnewi North Local Government Area. A comprehensive list of the secondary schools within Nnewi North LGA was obtained from the Local Government Office (unpublished).

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Stage Two: Selection of Schools. A stratified sampling technique was used to group the secondary schools within Nnewi into public and private. The ratio of public to private schools in Nnewi was then calculated based on this stratification thus:

Total Number of Secondary Schools: 55

Total Number of Public Schools: 8

Total Number of Private Schools: 47

The ratio of public to private schools was therefore 1:6.

Stage Three: Selection of Schools. Simple random sampling was used to select two public schools and twelve private schools respectively out of the secondary schools within the two communities. Each of the schools was stratified by class into six groups: JSS1- SSS3.

Stage Four: Selection of Participants. Proportional allocation was used to determine the total number of participants to be interviewed per class. Systematic random sampling was then used to select the students to participate in the study.

Sampling Instrument

All participants fitting into the eligibility criteria were given a self-administered structured questionnaire with relevant questions adapted from previous studies. 27, 28, 29 Respondents who had trouble with the questionnaire were duly assisted by the researcher. The questionnaire was divided into 3 sections: A, B and C. Section A assessed the socio-demographic profile of the respondents. Section B assessed the knowledge of menstrual hygiene, and Section C assessed the practice of menstrual hygiene, as well as factors affecting these practices.

Students' menstrual knowledge score was calculated out of the 10 knowledge specific questions. Each correct response earned one point, whereas wrong responses attracted no point. Students who scored greater than or equal to the mean value were considered as having good knowledge of menstrual hygiene. Those respondents whose computed scores were less than the mean value were considered as having poor knowledge.

The practice of menstrual hygiene was assessed through the practice specific questions. Each correct response earned one point, whereas wrong responses attracted no point. Students

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who scored greater than or equal to the mean value were considered as having good practice of menstrual hygiene. Those respondents whose computed scores were less than the mean value were considered as having poor practice of menstrual hygiene.

Data Collection Methods

The questionnaire instrument was distributed and collected with the help of four trained research assistants who are fluent in both English and Igbo languages to enable proper interpretation of the questionnaire where necessary.

Data Analysis

The Statistical Package for the Social Sciences (SPSS) v.22.0 was used for analysis of the data. The findings were presented in frequency tables and charts where necessary. The level of significance was set at 5%.

Duration Of Study

The research was carried out over a period of four weeks (November – December 2022) from the date of ethical.

Ethical Consideration

Ethical approval to carry out this study was obtained from the Ethical Committee of Nnamdi Azikiwe University Teaching Hospital, (NAUTHEC) Nnewi. Approval of the study was also obtained from the principals of the respective schools. Informed verbal consent was sought from each student, and only those who consented were interviewed. Respondents were assured of anonymity and confidentiality of their responses.

Study Limitations

The study relied on a cross-sectional study design. Therefore, it was difficult to establish causal inferences about relationships between the outcome and the variables assessed in the study. Also, owing to the sensitive nature of the study, there was the potential for social desirability bias amongst participants, particularly amongst the practice specific questions. Participants were, however, reassured that their responses were confidential, and would not be traceable to them.

RESULTS

Table 1 shows that an overwhelming percentage of respondents' parents (mothers: 88.4%;

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fathers: 81.0%) were educated up to at least SSCE level.

TABLE 1: SOCIODEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Characteristics		*Frequency*	*Percentage (%)*
Age	<10 years	8	2.5
	11-13 years	100	31.3
	14-17 years	210	65.6
	18-20 years	2	0.6
	Total	**320**	**100.0**
Year of study	JSS 1	39	12.2
	JSS 2	44	13.8
	JSS 3	80	25
	SS 1	26	8.1
	SS 2	59	18.4
	SS 3	72	22.5
	Total	**320**	**100.0**
Tribe	Igbo	313	97.8
	Hausa	5	1.6
	Yoruba	1	0.3
	Idoma	1	0.3
	Total	**320**	**100.0**
Religion	Christianity	319	99.7
	Islam	1	0.3
	Total	**320**	**100.0**
Father/Guardian's HLE	No formal education	58	18.1
	SSCE	153	47.8
	OND/HND	27	8.4
	Bachelor's Degree	38	11.9
	Master's Degree	28	8.8

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	PhD	16	5
	Total	**320**	**100.0**
Mother/Caregiver's HLE	No formal education	37	11.6
	SSCE	135	42.2
	OND/HND	47	14.7
	Bachelor's Degree	44	13.8
	Master's Degree	42	13.1
	PhD	15	4.7
	Total	**320**	**100.0**
Father's Occupation	Trader	174	54.4
	Commercial driver	33	10.3
	Banker	12	3.8
	Lawyer	7	2.2
	Doctor	19	5.9
	Engineer	23	7.2
	Civil servant	36	11.3
	Other	16	5
	Total	**320**	**100.0**
Mother's Occupation	Housewife	16	5
	Trader	193	60.3
	Healthcare worker	30	9.4
	Banker	15	4.7
	Lawyer	5	1.6
	Engineer	2	0.6
	Civil servant	47	14.7
	Other	12	3.8
	Total	**320**	**100.0**
Current Place of Residence	With parents	278	86.9
	Other relatives	35	10.9
	No relatives	7	2.2
	Total	**320**	**100.0**

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Table 2 shows that the mean age at menarche was 12.3 years.

TABLE 2: DISTRIBUTION OF AGE OF MENARCHE

Age at Menarche (years)	*Frequency*	*Percentage (%)*
9	2	0.6
10	10	3.1
11	69	21.6
12	101	31.6
13	91	28.4
14	40	12.5
15	7	2.2
Mean	**12.3**	
StD	**1.13**	

Table 3 shows the responses of respondents to questions on the practice of menstrual hygiene.

TABLE 3: PRACTICE OF MENSTRUAL HYGIENE

Menstrual Hygiene Practices		*Frequency*	*Percentage*
Type of sanitary product used	Piece of cloth	5	1.6
	Toilet roll	7	2.2
	Sanitary pads	317	99.1
	Tampons	1	0.3
How often pads are changed	Once daily	5	1.6
	Twice daily	132	41.3
	Thrice or more daily	183	57.2
How pads are disposed	Toilet	34	10.6
	In open field	3	0.9
	In waste bin	74	23.1
	By burning	209	65.3
Washes hands with soap	Yes	270	84.4
	No	47	14.7
	No answer	3	0.9

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			0.0
Frequency of baths during menstruation	Once daily	12	3.8
	Twice daily	175	54.7
	Thrice or more daily	133	41.6
Care of underwear during menstruation	Wash and expose to sun	302	94.4
	Wash and hide	16	5.0
	Hide and discard	2	0.6
School abstinence during menstruation	**Yes**	60	18.8
School days missed per year (n=60)	*Once*	*9*	*15.0*
	Twice	*15*	*25.0*
	More than twice	*32*	*53.3*
	No answer	*4*	*6.7*
	No	260	81.3

Table 4 shows that as many as 96 respondents (30%) had suffered from period povery within the past three months.

TABLE 4: FACTORS INFLUENCING PRACTICE OF MENSTRUAL HYGIENE

Factors Influencing Practice of Menstrual Hygiene		*Frequency*	*Percentage (%)*
School provides toilet facilities	Yes	226	70.6
	No	94	29.4
	Total	**320**	**100.0**
Has access to clean water	Yes	262	81.9
	No	58	18.1
	Total	**320**	**100.0**
Refuse bins are provided by school	Yes	151	47.2
	No	169	52.8
	Total	**320**	**100.0**
Influencers of choice of sanitary material	Cost	80	25.0
	Ease of access	104	32.5

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	Materials provided by family	93	29.1
	Others	10	3.1
	No answer	33	10.3
	Total	**320**	**100.0**
Have ever been unable to afford product in 6months	Yes	96	30.0
How often? (n=96)	*1*	*24*	*25.0*
	2	*19*	*19.8*
	3	*45*	*46.9*
	No	172	53.8
	Can't remember	52	16.3
	Total	**320**	**100.0**
Source of sanitary pads during menstruation	Family buys	240	75.0
	I buy	74	23.1
	Borrow from friends	3	0.9
	Others	3	0.9
	Total	**320**	**100.0**
Receives pocket money for pads	**Yes**	153	47.8
Amount	*Mean±STD*	*1694.86±2546.7*	
	No	150	46.9
	No answer	17	5.3
	Total	**320**	**100.0**

Table 5 and Figure 1 below shows that an overwhelming percentage of respondents had good practice of menstrual hygiene (92.5%).

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TABLE 5: PRACTICE LEVEL OF MENSTRUAL HYGIENE

Level		*Frequency*	*Percentage (%)*
Practice Level	Poor Practice	24	7.5
	Good Practice	296	92.5
	Total	**320**	**100**

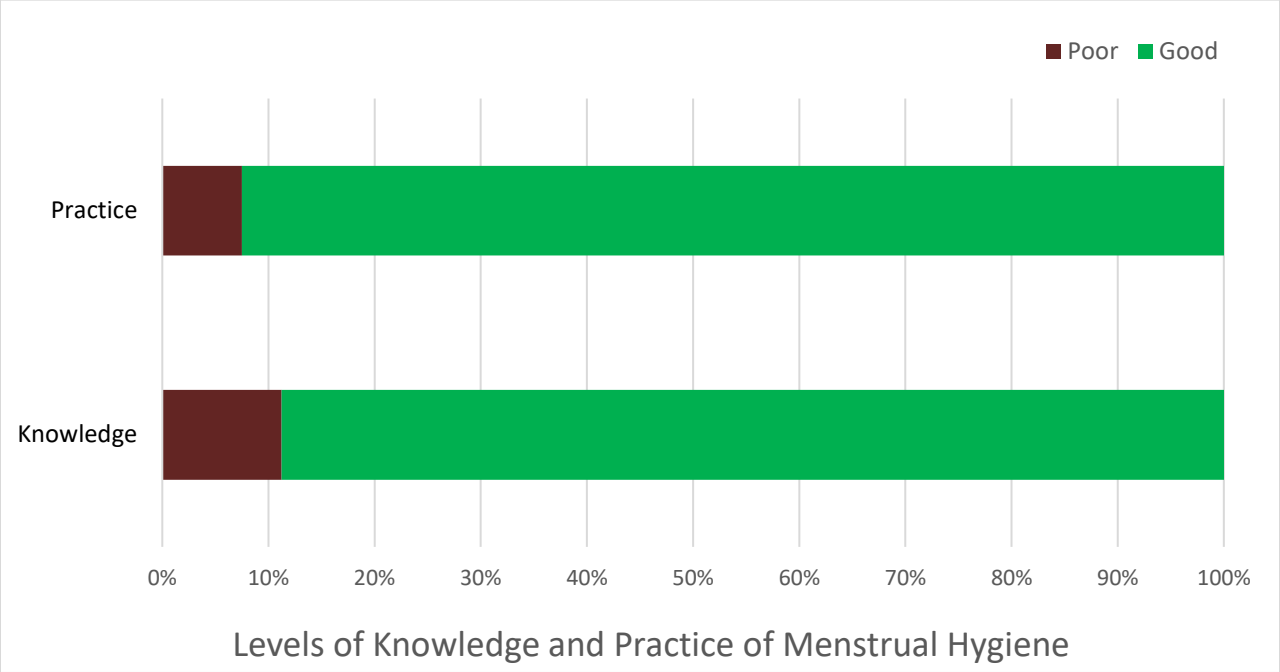

FIGURE 1: PRACTICE LEVEL COMPARED TO KNOWLEDGE OF MENSTRUAL HYGIENE

Table 6 shows a statistically significant relationship between Knowledge and Practice of Menstrual Hygiene ($X2 = 47.86$, $p = <0.01$).

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TABLE 6: RELATIONSHIP BETWEEN KNOWLEDGE AND PRACTICE OF MENSTRUAL HYGIENE

Variable		Practice				
		Poor	Good	Total	X^2	p-value
Knowledge Level	Poor	13(36.1)	23(63.9)	36(100)	47.86	<0.01
	Good	11(3.9)	273(96.1) *	284(100)		
	Total	**24(7.5)**	**296(92.5)**	**320(100)**		

*** = statistically significant (p< 0.05 is significant)**

Table 7 shows that there is a statistically significant relationship between personal demographics of respondents and the practice of menstrual hygiene.

TABLE 7: RELATIONSHIP BETWEEN PERSONAL DEMOGRAPHICS OF RESPONDENTS AND PRACTICE OF MENSTRUAL HYGIENE

		Practice Level				
		Poor	Good	Total	X^2	p-value
Age	<10	3(37.5) *	5(62.5)	8(100)	21.89	<0.01
	44878	14(14)	86(86)	100(100)		
	14-17	7(3.3)	203(96.7)	210(100)		
	18-20	0(0)	2(100) *	2(100)		
Year of study	JSS 1	11(28.2) *	28(71.8)	39(100)	31.60	<0.01
	JSS 2	4(9.1)	40(90.9)	44(100)		
	JSS 3	2(2.5)	78(97.5)	80(100)		
	SS 1	1(3.8)	25(96.2)	26(100)		
	SS 2	5(8.5)	54(91.5)	59(100)		
	SS 3	1(1.4)	71(98.6) *	72(100)		
Tribe	Igbo	23(7.3)	290(92.7)	313(100)	1.30	0.73
	Hausa	1(20)	4(80)	5(100)		
	Yoruba	0(0)	1(100)	1(100)		
	Idoma	0(0)	1(100)	1(100)		
Religion	Christianity	24(7.5)	295(92.5)	319(100)	0.81	0.78
	Islam	0(0)	1(100)	1(100)		

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*** = Statistically significant p< 0.05 is significant**

Table 8 shows that there is no statistically significant relationship between parents' demographics and the practice of menstrual hygiene.

TABLE 8: RELATIONSHIP BETWEEN PARENTS' DEMOGRAPHICS AND PRACTICE OF MENSTRUATION HYGIENE

		Practice level				
		Poor	Good	Total	X^2	p-value
Father/guardian's HLE	No formal	6(10.3)	52(89.7)	58(100)	12.57	0.28
	SSCE	8(5.2)	145(94.8)	153(100)		
	OND/HND	6(22.2)	21(77.8)	27(100)		
	Bachelor's degree	3(7.9)	35(92.1)	38(100)		
	Masters	0(0)	28(100)	28(100)		
	PhD	1(6.3)	15(93.8)	16(100)		
Mother/caregiver HLE	No formal education	3(8.1)	34(91.9)	37(100)	4.18	0.52
	SSCE	8(5.9)	127(94.1)	135(100)		
	OND/HND	4(8.5)	43(91.5)	47(100)		
	Bachelor's degree	6(13.6)	38(86.4)	44(100)		
	Masters	3(7.1)	39(92.9)	42(100)		
	PhD					
Father's occupation	Trader	13(7.5)	161(92.5)	174(100)	8.24	0.31
	Commercial driver	6(18.2)	27(81.8)	33(100)		
	Banker	1(8.3)	11(91.7)	12(100)		
	Lawyer	0(0)	7(100)	7(100)		
	Doctor	1(5.3)	18(94.7)	19(100)		
	Engineer	0(0)	23(100)	23(100)		
	Civil servant	2(5.6)	34(94.4)	36(100)		
	Other	1(6.3)	15(93.8)	16(100)		
Mother's occupation	Housewife	0(0)	16(100)	16(100)	8.66	0.28
	Trader	15(7.8)	178(92.2)	193(100)		
	Healthcare worker	2(6.7)	28(93.3)	30(100)		

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	Banker	2(13.3)	13(86.7)	15(100)		
	Lawyer	0(0)	5(100)	5(100)		
	Engineer	0(0)	2(100)	2(100)		
	Civil servant	2(4.3)	45(95.7)	47(100)		
	Other					
Current place of residence	With parents	19(6.8)	259(93.2)	278(100)	1.42	0.49
	Other relatives	4(11.4)	31(88.6)	35(100)		
	No related	1(14.3)	6(85.7)	7(100)		

*** = Statistically significant p< 0.05 is significant**

DISCUSSION

The practice of menstrual hygiene encompasses the management of menstruation with proper hygiene and materials in a safe, private, and dignified manner. This study explored the practice of menstrual hygiene among high school girls in Nnewi, South-Eastern Nigeria, emphasizing factors that influence these practices. While the study found a generally good level of knowledge, the focus here is on the translation of this knowledge into practice, highlighting patterns, determinants, and challenges associated with menstrual hygiene management (MHM).

Materials Used for Menstrual Hygiene

The study revealed that a majority of the respondents preferred the use of sanitary pads for menstrual hygiene management. This preference aligns with findings from similar studies in India, Ethiopia, and Osogbo, Nigeria.30,31,32 The wide use of sanitary pads in Nnewi could be attributed to increased awareness campaigns, which emphasize their effectiveness, comfort, and hygiene benefits. Additionally, the presence of parents or guardians with at least an SSCE-level education might contribute to better practices, as educated guardians are more likely to prioritize and provide access to hygienic menstrual products for their children.

In contrast, only a few respondents reported using toilet rolls or pieces of cloth. This contrasts sharply with findings from studies in Ogbomosho, Nigeria,26 and other areas where the use of alternative materials such as rags or ash remains prevalent. The economic and sociocultural context in Nnewi, characterized by higher

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OCLC – 1272874727
Publisher: Frontline Journals

socioeconomic levels and better literacy rates, might explain the lower reliance on these less hygienic options.

Frequency of Changing Sanitary Pads

A significant proportion of respondents reported changing their sanitary pads three or more times daily, which is a recommended best practice for maintaining hygiene and preventing infections. This finding aligns with studies conducted in Ethiopia and Osogbo, Nigeria, where frequent changing of menstrual pads was similarly observed.31,32

However, the practice of changing pads only once daily, though reported by a minority, raises concerns. Studies have demonstrated that infrequent changing of pads can lead to serious health risks, including urinary tract infections (UTIs) and reproductive tract infections (RTIs). The correlation between socioeconomic status and frequency of pad changes is noteworthy, as affordability plays a pivotal role. For families in lower socioeconomic brackets, the cost of sanitary pads may compel some girls to use each pad for an extended duration, which compromises hygiene and safety.

Disposal of Menstrual Waste

Proper disposal of used menstrual products is critical for both personal hygiene and environmental health. The study found that respondents predominantly used hygienic disposal methods, such as wrapping used pads and disposing of them in designated bins. This aligns with findings from Ethiopia31 and other urbanized settings where education and advocacy for proper menstrual waste management are relatively high.

Improper disposal methods, such as flushing pads down the toilet or discarding them in open spaces, were less common but still present. These practices could lead to environmental pollution, plumbing issues, and public health concerns. Educational campaigns in schools and communities emphasizing safe disposal practices are essential to mitigate these issues.

Washing and Hygiene Practices

Good menstrual hygiene extends beyond the use of menstrual products to include personal cleanliness, such as washing the genital area regularly with clean water and soap7. The study observed that most respondents adhered to

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(ISSN – 2752-6712)
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proper washing practices, which reduces the risk of infections and promotes comfort during menstruation.

However, challenges such as limited access to private, functional washing facilities in schools may hinder adherence to best practices. A lack of adequate water supply and gender-sensitive sanitation facilities in schools has been a common barrier in many regions. Addressing infrastructural gaps is critical to fostering good hygiene practices among adolescent girls.

Sociodemographic Factors and Menstrual Hygiene Practices

The study identified a statistically significant relationship between the age and year of study of respondents and their practice of menstrual hygiene. This finding suggests that older students and those in higher classes were more likely to practice good menstrual hygiene, a trend that mirrors findings from Southern Ethiopia.31 This may be attributed to greater exposure to menstrual health information through peer interactions, educational curricula, and social media as girls advance in age and education.

Younger girls and those in lower classes may lack comprehensive knowledge or face greater embarrassment and stigma surrounding menstruation, which could negatively influence their practices21. Schools and health education programs should target these younger cohorts to bridge the knowledge and practice gap early.

Interestingly, no significant relationship was observed between other sociodemographic variables, such as parental occupation or religion, and menstrual hygiene practices. This finding underscores the complexity of factors influencing menstrual hygiene, suggesting that while education and socioeconomic status play roles, other elements such as cultural attitudes, school environments, and access to menstrual products are equally important.

Cultural and Social Influences

In traditional African societies, mothers often play a pivotal role in educating their daughters about menstruation, as corroborated by this study and similar findings in rural Pakistan, Southern Ethiopia, and Ogbomosho, Nigeria.26,31,33 This maternal influence ensures that girls are equipped with practical guidance on managing menstruation. However, cultural

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taboos and stigma surrounding menstruation may still limit open discussions, leading to gaps in knowledge transfer. Moreover, information about menstruation and menstrual hygiene practices is often limited or inaccurate, reflecting generational gaps in education. Mothers who lack formal education may pass down traditional practices without incorporating evidence-based guidance.

Peer influence also plays a significant role, particularly for older adolescents22,23. Adolescent girls in high schools are highly susceptible to peer influence. As girls interact with peers, they exchange information about menstrual hygiene products, practices, and coping strategies. Practices such as using cloths instead of pads, avoiding school during menstruation, or following superstitions about menstrual blood are often reinforced within peer groups. While this peer exchange can foster solidarity and reinforce positive practices, it may also perpetuate misconceptions and perpetuate harmful practices if not guided by accurate information.

Economic Constraints and Period Poverty

Economic barriers remain a critical determinant of menstrual hygiene practices22. Period poverty—the inability to afford menstrual products—affects a significant proportion of girls in Nnewi. This financial barrier forces many to resort to unhygienic alternatives such as toilet paper, foam, or rags. Efforts to reduce period poverty through subsidies or local production of low-cost pads could significantly improve MHM practices in the region.

While most respondents in this study could afford sanitary pads, this is not the case in many parts of Nigeria and other low-resource settings. The high cost of menstrual products forces some girls to rely on less hygienic alternatives, such as cloth or rags, which are not only uncomfortable but also increase the risk of infections.

Programs providing free or subsidized menstrual products can significantly enhance menstrual hygiene practices23. Advocacy for policies that eliminate taxes on sanitary products and promote local production can also make these products more accessible.

School Environment and Menstrual Hygiene Management

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The school environment plays a crucial role in shaping menstrual hygiene practices. Girls who attend schools with clean, private toilets equipped with disposal bins and running water are more likely to practice good menstrual hygiene. Conversely, schools lacking these facilities force girls to compromise their hygiene, sometimes leading to absenteeism during menstruation.

In many schools in Southeastern Nigeria, toilets are inadequate, lack doors for privacy, or are shared with boys, making it difficult for girls to manage their menstruation comfortably34. The absence of soap, water, and disposal facilities exacerbates the problem.

The findings of this study suggest that most respondents had access to supportive school environments. However, continuous efforts to improve school sanitation facilities and ensure their maintenance are essential. Gender-sensitive interventions, such as providing menstrual hygiene kits and incorporating menstrual health education into the curriculum, can further improve practices.

Health Implications of Poor Menstrual Hygiene Practices

Poor menstrual hygiene practices have serious health implications, including increased susceptibility to infections, reproductive health issues, and psychological distress35. The minority of respondents who reported using unhygienic materials or changing pads infrequently are at risk of such complications.

Educational programs should emphasize the link between proper menstrual hygiene and overall health, equipping girls with the knowledge and resources to prioritize their wellbeing36. Health services in schools can also provide a platform for addressing menstrual health concerns, ensuring timely intervention when issues arise.

Recommendations for Improved Practices

To build on the good practices observed in this study and address existing gaps, the following recommendations are proposed:

1. Promotion of Female Literacy and Education: Schools and community organizations should intensify efforts to educate girls about the importance of menstrual hygiene. These campaigns should target both students and their families to create a supportive

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Publisher: Frontline Journals

environment for menstrual hygiene management (MHM). Policies promoting female literacy and education should be entrenched to enhance maternal literacy levels. Schools should incorporate comprehensive menstrual health education into their curricula from the primary school level, emphasizing practical skills and destigmatizing menstruation.

2. Subsidized Menstrual Products: Government and non-governmental organizations should collaborate to provide free or subsidized sanitary products to girls from low-income families. Also, promoting reusable alternatives, such as cloth pads or menstrual cups, can address period poverty sustainably. This initiative would significantly reduce the economic barriers to good menstrual hygiene practices.
3. Improved School Infrastructure: Schools should prioritize the provision of clean, private toilets with functional disposal bins and running water. Menstrual hygiene kits and gender-segregated facilities such as private toilets, running water, and disposal mechanisms, can further enhance the school environment for girls.
4. Cultural Sensitization Programs: Addressing cultural taboos and stigma surrounding menstruation through community engagement can foster open discussions and reduce misconceptions. Empowering mothers to be effective sources of guidance for their daughters is also crucial.
5. Policy Interventions: Policymakers should consider removing taxes on sanitary products, promoting local manufacturing, and integrating menstrual health into national health and education policies. The advocacy for tax exemption on menstrual products and greater governmental support for MHM initiatives is critical to addressing systemic barriers.

Based on the findings of this study, the following additional recommendations are made:

1. Peer Education Programs: Peer education programs should be instituted among female high school students to further

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educate younger students on proper practices of menstrual hygiene.

2. Community Engagement: Mobilizing community leaders and mothers to challenge harmful cultural beliefs and support positive practices can create an enabling environment.

CONCLUSION

The study revealed good menstrual hygiene practices among high school girls in Nnewi, but it also underscores the need for continued efforts to address gaps and challenges. Significant correlations exist between certain sociodemographic variables and these practices. Factors such as age, education, socioeconomic status, and school environments play significant roles in shaping these practices. Mothers are the primary source of information regarding menstrual hygiene for most high school girls in the study. Therefore, it is important to emphasize female empowerment and education, as maternal literacy levels can significantly affect menstrual hygiene management among high school girls. By implementing targeted interventions and fostering supportive environments, stakeholders can ensure that all girls have the resources and infrastructure necessary for safe and dignified menstrual hygiene management. The collective impact of these efforts will not only improve health outcomes but also empower girls to achieve their full potential in education and beyond.

CONFLICTS OF INTEREST

The publication of this article was supported by PENKUP Foundation, a non-profit organisation founded by the author. The other author has no conflict of interest to declare.

FUNDING

This work was supported by the PENKUP Foundation, a division of PENKUP International, which provided funding for the publication of this article.

ACKNOWLEDGMENT

The authors would like to acknowledge the management and technical staff of PENKUP Research Institute, Birmingham, UK, for their excellent assistance and for providing medical writing and editorial support in accordance with Good Publication Practice (GPP3) guidelines.

FRONTLINE MEDICAL SCIENCES AND PHARMACEUTICAL JOURNAL
(ISSN – 2752-6712)
VOLUME 04 ISSUE 12 Pages: 67-94
OCLC – 1272874727
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VOLUME 04 ISSUE 12 Pages: 67-94
OCLC – 1272874727
Crossref doi Google Scholar WorldCat MENDELEY
FRONTLINE JOURNALS
Publisher: Frontline Journals

Journal of Medical Science and Public Health Research. 5(12): 16-36. DOI: https://ijmsphr.com/index.php/ijmsphr/article/view/160/144.