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ASSESSING MENSTRUAL HYGIENE AWARENESS AND PRACTICES AMONG FEMALE TEACHER TRAINEES IN NORTH-EAST NIGERIA

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Abstract
This paper assessed knowledge and practice of menstrual hygiene among female students of federal college of education in North East, Nigeria. The population of the study comprised of female students of Federal College of Education in North-East Nigeria. Simple percentage was used to select seven hundred and sixty-eight (768) female students of Federal College of Education in North-East Nigeria. The instrument that was employed in this study is questionnaire. After administration and collection of the questionnaire, the questionnaire was sorted and collated for data analysis. Simple percentage was used to answer the demographic data of the respondents, descriptive statistics of mean and standard deviation was used to test the research question while one sample t test analysis, PPMC and ANOVA was used to analyzed the stated hypotheses at 0.05 level of significance. It is expected that the results of this study should indicated whether there is knowledge and practice of menstrual hygiene among female students of Federal College of Education in North-East Nigeria.

Keywords: Menstrual Hygiene, Female Students, Knowledge and Practice, Reproductive Health, North-East Nigeria

Introduction

The natural occurrence of menstruation is exclusive to female students. The shedding of uterine mucosa is the cause of the recurring vaginal bleeding. Although the duration of the cycle varies among female students, the average is 28 days between the onset of one menstrual period and the next. The number that begins on the first day of menstruation is commonly used to identify the days of the cycle. The regular loss of the uterine lining in response to hormones regulated by the hypothalamo-pituitary axis is usually referred to as menstruation. A woman's adolescence is a crucial time in her life. Social and cultural barriers may be the cause of teenage girls' frequent ignorance about menstruation and reproductive health. The physiology of menstruation and the anatomy of the female genital tract are taught in Nigerian schools, but the actual management of menstruation has frequently been deemed unsuitable for public discourse (Oyebola, 2012).

The capacity to remember or reorganise information, such as facts, concepts, principles, or customs, is known as knowledge (Kalua, 2017). The theoretical or practical comprehension of a subject is another name for it. Like the theoretical competence or expertise, it might be implicit, or it can be explicit, like the theoretical comprehension of the subject. According to Plato, knowledge is "justice true belief." Acquiring knowledge entails a variety of intricate cognitive processes, including perception, communication,

association, and reasoning. Knowledge is also seen to be connected to a person's ability to acknowledge things (Kalua, 2008). Kumar and
Srivastava (2011) informed that adequate knowledge on menstruation before menarche could make young females view menstruation as an important milestone in their lives and just a natural phenomenon. Parents and close relations are expected to be the foremost source of information on menstruation to young females but unfortunately in Africa, parent-child communication about sexually related matters is poor; hence most adolescents acquire sometimes incorrect information on the reproductive system from their friends. Low knowledge on menstruation increases the risk of contracting reproductive tract infections as well as pelvic inflammatory diseases and urinary tract diseases among millions of women across the world, because they are unable to manage their menstrual periods well enough Juyal, Kandpal, Semwal and Negi (2012) good menstrual hygiene management involves women or adolescent females using clean blood-absorbing materials which can be changed often in a secure place in privacy after which soap and water are available to wash hand and body as well as having access to secured used sanitary material disposal facility.
The practice of menstrual hygiene among female students of the Federal College of Education in North-East Nigeria is a multifaceted issue influenced by a range of factors, including socioeconomic status, access to resources, cultural beliefs, and educational attainment (Ajayi & Oluigbo, 2024). Studies across Nigeria reveal that many adolescent girls and young women face significant challenges in managing their menstruation hygienically due to limited access to affordable sanitary products, inadequate water, sanitation, and hygiene (WASH) facilities, and a lack of comprehensive menstrual health education (UNICEF, 2018; Nigeria Health Watch, 2024). In North-East Nigeria, these challenges may be exacerbated by the region's socio-economic conditions and cultural norms. Poverty can restrict access to commercial sanitary pads, leading students to use less hygienic alternatives like old cloths, tissue paper, or cotton wool, which increases the risk of infections (Ajayi & Oluigbo, 2024; Obohwemu & Mowah, 2024). The reuse of materials without proper washing and drying, as observed in some studies, further compounds these risks (Fajola et al., 2024). The availability and quality of WASH facilities in educational institutions play a crucial role in menstrual hygiene management. Inadequate or отсутствующие gender-separated toilets, lack of water for washing, and отсутствующие proper disposal mechanisms for used menstrual products create significant barriers for female students to manage their menstruation with dignity and hygiene (UNICEF, 2018). The ratio of latrine compartments to students in many Nigerian schools is often far below the recommended standards, further highlighting the inadequacy of these facilities (UNICEF, 2018).
Sarka & Dasgupta (2008) underlined that a girl experiences more pleasant emotions and less anxiety and discomfort when she is better prepared and informed for menarche. He went on to state unequivocally that parents, educators, and medical practitioners needed to provide young female pupils with information about the positive and bad elements of menstruation in order to prepare them biologically, cognitively, and socially. It was necessary to reassure young female students that menstruation is a natural occurrence that only occurs in women.

According to Ogbazi and Okpala (2014), taboos and socio-cultural constraints continue to taint menstruation and menstrual practices, leaving teenage girls unaware of scientific facts and sanitary health practices that can occasionally have negative health effects. A number of studies served as a reference for choosing reliable sources of information about health-related topics (Maswanya, Moji, Aoyagi, Yahata, Kusano, Nagata, Izumi and Takemoto, 2010). These informational resources were deemed essential for this study's inclusion. Research has indicated that young adults and secondary school students have limited awareness of the majority of healthrelated topics. Teachers and medical professionals rarely provide them with health-related information, so they rely on friends, peers, TV/video, magazines, and other print media (William and Ganong, 2013). This can lead to unsanitary menstrual hygiene practices and other unfavourable health outcomes.

Due to taboos and socio-cultural constraints, menstruation and related management practices are still muddled, leaving teenage girls unaware of the scientific facts and sanitary health practices that might occasionally lead to negative health results. Our conventional society inhibits candid conversation on these matters. Therefore, it is crucial to remember that healthy menstruation habits will improve these students' health and lower their school absenteeism rates. This study thrives to assess the knowledge and practices of menstruation hygiene among female students.

Statement of the Problem

The flow of menstruation is a normal part of the female body. The management of menstrual waste management, however, has grown to be a significant issue for female undergraduate students at the University of Maiduguri. The majority of female students are unaware of the proper way to dispose of the items they use during their periods, and some are also unaware of the proper hygiene management practices to follow during this time. Menstruation causes the female vaginal area to become moister, which promotes bacterial growth, makes damage and discomfort easier, and raises the possibility of bacterial contamination.

The problem of menstrual hygiene knowledge and practice has not gotten enough attention, according to researcher interactions with female students. Using sanitary pads and cleaning the genital areas thoroughly are two common activities that are thought to be crucial during menstruation. The prevalence of Reproductive Tract Infection (RTI) may rise as a result of these female junior secondary school students' lack of understanding about how to maintain proper menstrual hygiene. This leads to serious health problems for female students, such as persistent pelvic pain. Dysmenorrhea is a painful period, and infertility may result in extreme circumstances. The majority of the female students I spoke with in person said that, in comparison to the male body, their bodies are basically dirtier throughout the menstrual cycle. Because they are perceived by the majority of society as unpredictable, emotional, and untrustworthy, their menstrual cycle has been linked to shame and degrading treatment. Female students have no choice but to handle their future reproductive bodies in ashamed silence. According to my interactions with the majority of female students, many female junior secondary students do not have adequate knowledge on menstrual

hygiene. This has caused them to act in an unhealthy and inappropriate manner during their menstrual cycle.

The researcher observed that most female students has bad body odours, genital infections such as gonorrhea, candidacies (gynecological problems), which could truncate the female student's possibility of bearing children in due course.

Objectives of the Study

The main objectives is to assess the knowledge and practice of menstrual hygiene among female students of Federal College of Education in North-East Nigeria. While the specific objectives were to assess the;

1. knowledge of menstrual hygiene among female students of Federal College of Education in North-East Nigeria.
2. practice of menstrual hygiene among female students of Federal College of Education in North-East, Nigeria.
3. influence of knowledge on practice of menstrual hygiene among female students of Federal College of Education in North-East Nigeria

Hypotheses

1. knowledge of menstrual hygiene among female students of Federal College of Education in North-East Nigeria is not significant.
2. practice of menstrual hygiene among female students of Federal College of Education in North-East, Nigeria is not significant.
3. There is no significant influence of knowledge on practice of menstrual hygiene among female students of Federal College of Education in North-East Nigeria

Methodology

This study adopts a descriptive survey research design combined with a mixed-method approach to allow for comprehensive data collection.

The population of this study comprised of thirty-eight thousand, four hundred and fiftythree female student in federal college of education in northeast, Nigeria.

Simple percentage was used to select four (4) institution out of six (6) institution by writing the name of institution in a piece of paper, fold it and put it in a container, whereby the researcher picks 4 institutions at random. Purposive sampling was used to select on female students in each institution. Convenient sampling was used to select seven hundred and sixty-eight (768) female students of Federal College of Education in North-East Nigeria.

Table 1: Population and Sample

S/N	Institutions	Population	Sample Size
1	Federal College of Education Jama'are, Bauch State	9061	181
2	Federal College of Education, Gombe, Gombe State	10554	211
3	Federal College of Education Potiskum, Yobe State	7867	157
4	Federal College of Eduation Yola, Adamawa State	10971	219

Total	**38453**	**768**

This study used a self developed questionnaire as its instrument. The study's goals guided the development of the questionnaire's items. The self developed questionnaire was divided into three (3) sections. Section A comprised the respondents' demographic information, including name of institutions age and level; Section B comprised of ten (10) statement on their knowledge of menstrual hygiene; and Section C focused on ten (10) statement on practice of menstrual hygiene. Information were gathered from the respondents using a four-point modified Likert scale: Strongly Agreed (4), Agreed (3), Disagreed (2), and Strongly Disagreed (1).Simple percentage was used to answer the demographic data of the respondents, descriptive statistics of mean and standard deviation was used to test the research question while one sample t test analysis, PPMC and ANOVA will be used to analyzed the stated hypotheses at 0.05 level of significance.

Results Table 2: Demographic Information of the Respondents

	Responses	**Percentage**	
Institutions			
Federal College of Education Jama'are, Bauch State	181	23.6	27.5
Federal College of Education, Gombe, Gombe State	211	20.4	
Federal College of Education Potiskum, Yobe State	157	28.5	
Federal College of Eduation Yola, Adamawa State Total	219	**100.0**	
	768		
Level			
NCE I	301	39.2	31.4
NCE II	241	29.4	
NCE III	226	**100.0**	
Total	**768**		
Age			
Below 18 years	378	49.1	31.8
19 – 25 years	244	19.1	
25 years and above	147	**100.0**	
Total	**768**		

Table 2 above shows the demographic information of the respondents, 181 (23.6%) of the respondents were students of federal college of education Jama'are, Bauchi State, 211 (27.5%) of the respondents were students of federal college of education Gombe, Gombe State, 157 (20.4%) of the respondents were students of federal college of education potiskum, Yobe State and 219 (28.5%) of the respondents were students of federal college of education Yola, Adamawa state.

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Table 2 also shows the level of the respondents, 301 (39.2%) of the respondents were NCE I students, 241 (31.4%) of the respondents were NCE II students while 226 (29.4%) of the respondents were NCE III students.

Table 2 also shows the age of the respondents, 378 (49.1%) of the respondents fell b elow 18 years, 244 (31.8%) of the respondents fell between age range of 19 – 25 years while 147 (19.1%) of the respondents fell above 25 years.

Research Questions Table 3: Mean and standard deviation of knowledge of menstrual hygiene among female students

S/N	Statement	Mean	Standard Deviation
1	I have received formal education or information on menstrual hygiene through school, health workers, or media	3.5112	1.0700
2	I know that menstruation is a natural biological process and not a disease or taboo	3.2933	1.1316
3	I understand the importance of washing hands before and after changing menstrual products	3.0951	.9211
4	I know of the different menstrual hygiene products available, such as sanitary pads, tampons, and menstrual cups.	3.6204	1.0201
5	I am knowledgeable about how to properly dispose of used menstrual products.	2.9713	1.1053
6	I that the role of personal hygiene, such as bathing and cleaning the genital area, during menstruation.	3.2413	1.1480
7	I know that using clean and dry underwear is important during menstruation.	3.0441	1.0182
8	I am aware of the signs of reproductive or urinary tract infections that may result from poor menstrual hygiene	3.2061	1.0570
9	I understand the importance of washing hands before and after changing menstrual products	2.8185	1.5390
10	I know that access to clean water and private sanitation facilities is important for effective menstrual hygiene management.	3.1174	1.0150

Table 3 above shows the mean and standard deviation of knowledge of menstrual hygiene among female students, I have received formal education or information on menstrual hygiene through school, health workers, or media has a mean of 3.5112 and standard deviation of 1.0700, I know that menstruation is a natural biological process and not a disease or taboo has a mean of 3.2933 and standard deviation of 1.1316, I understand the importance of washing hands before and after changing menstrual products has a mean of 3.0951 and standard deviation of 0.9211, I know of the different menstrual hygiene products available, such as sanitary pads, tampons, and menstrual cups has a mean of 3.6204 and standard deviation of 1.0201, I am knowledgeable about how to properly dispose of used menstrual products has a mean of 2.9713 and standard deviation of 1.1053. I that the role of personal hygiene, such as bathing and cleaning the genital area, during menstruation has a mean of 3.2413 and standard deviation of 1.1480. I know that using clean and dry underwear is important during menstruation has a mean of 3.0441 and standard deviation of 1.1480. I know that using clean and dry underwear is important during menstruation has mean of 3.0441 and standard deviation of 1.0182, I am aware of the signs of reproductive or urinary tract infections that may result from poor menstrual hygiene has a mean of 3.2061 and standard deviation of 1.0570. I understand the importance of washing hands before and after changing menstrual products has a mean of 2.8185 and standard deviation of 1.5390. I know that access to clean water and private sanitation facilities is important for effective menstrual hygiene management has a mean of 3.1174 and standard deviation of 1.0150.

Table 4: Mean and standard deviation of practice of menstrual hygiene among female students

S/N	Statement	Mean	Standard Deviation
1	I use sanitary pads or appropriate menstrual products during my menstruation.	3.4125	1.0312
2	I change my menstrual products at regular intervals (every 4–6 hours).	3.2075	.8227
3	I wash my hands before and after changing menstrual products.	3.3106	1.0339
4	I properly dispose of used menstrual products in a hygienic and environmentally friendly manner.	3.4017	1.0745
5	I take my bath at least twice daily during menstruation to maintain personal hygiene.	3.0512	1.2167
6	I avoid using unsafe or improvised materials (e.g., cloth, tissue paper) during menstruation	3.1401	1.0630
7	I face challenges in accessing menstrual hygiene products due to		

2.9150 1.0108 cost or availability
8 I wash my hands before and after changing menstrual products 3.4207 1.0711 9 I properly dispose of used menstrual products in a hygienic and
2.8131 1.2021 environmentally friendly manner
10 I feel confident and emotionally comfortable attending classes
2.8071 1.3410 while menstruating.

Table 4 above shows the mean and standard deviation of practice of menstrual hygiene among female students, I use sanitary pads or appropriate menstrual products during my menstruation has a mean of 3.4125 and standard deviation of 1.0312. I change my menstrual products at regular intervals (every 4–6 hours) has a mean of 3.2075 and standard deviation of 0.8227. I wash my hands before and after changing menstrual products has a mean of 3.3106 and standard deviation of 1.0339. I properly dispose of used menstrual products in a hygienic and environmentally friendly manner has a mean of 3.4017 and standard deviation of 1.0745. I take my bath at least twice daily during menstruation to maintain personal hygiene has a mean of 3.0512 and standard deviation of 1.2167. I avoid using unsafe or improvised materials (e.g., cloth, tissue paper) during menstruation have a mean of 3.1401 and standard deviation of 1.630. I face challenges in accessing menstrual hygiene products due to cost or availability has a mean of 2.9150 and standard deviation of 1.0108. I wash my hands before and after changing menstrual products has a mean of 3.4207 and standard deviation of 1.0711. I properly dispose of used menstrual products in a hygienic and environmentally friendly manner has a mean of 2.8131 and standard deviation of 1.2021. I feel confident and emotionally comfortable attending classes while menstruating has a mean of 2.8071 and standard deviation of 1.3410.

Hypotheses Testing

Hypothesis one: Knowledge of menstrual hygiene among female students of Federal College of Education in North-East Nigeria is not significant.

Table 15: One sample t test on Knowledge of menstrual hygiene among female students

	Mean	Std. Deviation	t-value	Df	P-value
Aggregate mean	3.3313	0.8431	8.207	767	0.00
Constant mean	2.50	0.00			

t (767) = 1.972, P < 0.05

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A careful observation of Table 1 reveals that the respondents were knowledgeable about menstrual hygiene among female students. This is because the one-sample t-test calculated value is 8.207 greater than the t-critical is 1.972 at degree of freedom 767 with probability value 0.00 is less than 0.05 level of significance. Thus, this result did not support the null hypothesis which states that "Knowledge of menstrual hygiene among female students of Federal College of Education in North-East Nigeria is not significant". The hypothesis is therefore rejected.

Hypothesis Two: Practice of menstrual hygiene among female students of Federal College of Education in North-East, Nigeria is not significant.

Table 15: **One sample t test on knowledge of cervical cancer screening among women of child bearing age**

Mean	Std. Deviation	t-value	Df	P-value
Aggregate mean				
2.8715	0.7086	3.207	767	0.00
Constant mean 2.50	0.00			

t (767) = 1.972, P < 0.05

A careful observation of Table 15 reveals that the respondents were Practice of menstrual hygiene among female students of Federal College of Education. This is because the one-sample t-test calculated value is 4.207 greater than the t-critical is 1.972 at degree of freedom 767 with probability value 0.00 is less than 0.05 level of significance. Thus, this result did not support the null hypothesis which states that "Practice of menstrual hygiene among female students of Federal College of Education in North-East, Nigeria is not significant". The hypothesis is therefore rejected.

Hypothesis three: There is no significant influence of knowledge on practice of menstrual hygiene among female students of Federal College of Education in North-East Nigeria

Table 3: Pearson Product Moment Correlation coefficient on the influence of knowledge on practice of menstrual hygiene among female students

Variables	M	SD	r	df	p
Knowledge	33.3130	8.4311			
			0.718	766	0.001
Attitude	28.7150	7.0861			

Correlation is significant at the 0.05 level (2-tailed) r = 0.718 p=0.001

A critical look into Table 3 shows Pearson product moment correlation analysis aimed at finding influence of knowledge on practice of menstrual hygiene among female students. The results revealed that significant influence of knowledge on practice of menstrual hygiene among female students. This is because the calculated p value of 0.001 was found to be lower than the 0.05 alpha level of significance at a correlation

index value of 0.718. Therefore, the null hypothesis which stated that there is no significant influence of knowledge on practice of menstrual hygiene among female students of Federal College of Education in North-East Nigeria, is hereby rejected.

Summary of Major Findings

1. knowledge of menstrual hygiene among female students of Federal College of Education in North-East Nigeria is significant.
2. practice of menstrual hygiene among female students of Federal College of Education in North -East, Nigeria is significant.
3. There is significant influence of knowledge on practice of menstrual hygiene among female students of Federal College of Education in North-East Nigeria

Conclusion

The study concludes that although female students possess a moderate level of knowledge about menstruation, this does not always translate into optimal hygienic practices. Socio-economic factors, cultural beliefs, and limited access to menstrual hygiene materials and facilities contribute to poor practices among students. This situation poses potential health risks and affects the comfort, dignity, and academic performance of affected students.

Recommendations

1. Schools should integrate menstrual health education into the curriculum and organize regular health talks through the school clinic or guidance unit to address myths and promote factual knowledge.
2. The college, in partnership with NGOs and government agencies, should provide subsidized or free sanitary pads to students, especially those from low-income backgrounds.
3. There is a need for improved water supply, private toilets, and disposal bins within school premises to enable girls to manage menstruation hygienically and privately.
4. Teachers, particularly female staff, should be trained to support menstrual hygiene education, and parents should be encouraged to discuss menstruation openly with their daughters.
5. Efforts should be made to eliminate stigma and shame associated with menstruation through awareness campaigns, peer support groups, and the promotion of a positive menstrual culture.
6. Future studies should examine the long-term effects of poor menstrual hygiene on academic outcomes and health, and assess the effectiveness of interventions aimed at improving menstrual health management.

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