ORIGINAL ARTICLE

Influence of menstrual waste management on the wellbeing of undergraduate female students in university of Maiduguri, Borno state, Nigeria

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ABSTRACT

This study assessed the influence of menstrual waste management on the wellbeing of undergraduate female students in University of Maiduguri. One hypothesis was formulated. Descriptive survey research design was used. 364 samples were selected from the population. The data were collected using primary source of data. Primary source of data was collected through structured questionnaire. Likert scale was used to gather aggregate information from the respondents. It was concluded that practice of menstrual waste management helps in the prevention of disease among female during menstruation, menstrual waste management practices is encouraged in tertiary institutions, throwing menstrual waste in the dustbins is the major methods used among female students. The study recommeded that lecturers should prepare to provide accurate and thorough instruction on menstruation, covering the process of menstruation as well as menstrual problems and management. The information should cover proper disposal of menstrual waste and good personal hygiene. Additionally, school administration should inform students about how to properly handle problems. Girls should also be screened for any major gynaecological issues so that they can be sent early for timely treatment.

Keywords: Influence, Menstrual waste management, hygiene, sanitary pads.

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INTRODUCTION

Menstruation is a natural physiological process involving the periodic discharge of blood, tissue debris, and secretions from the uterus in non-pregnant females of reproductive age. It occurs approximately every month and represents the body's adjustment to the non-pregnant state following the proliferative changes associated with ovulation [1]. As a normal biological function, menstruation can be effectively managed when adequate information is available regarding its onset, care, and associated health concerns. However, many adolescent girls and young women in developing countries continue to experience inadequate knowledge and limited access to accurate information on menstruation and menstrual hygiene management [2].

Although schools and peers may provide some information about menstruation, parents play a crucial role in preparing girls for puberty and addressing the practical challenges associated with menstrual management. These challenges include selecting appropriate menstrual absorbents, maintaining personal hygiene, and managing bodily changes such as menstrual bleeding and body odour. Effective menstrual management is essential for enabling girls and women to maintain healthy, productive, and dignified reproductive lives [3] [4]. Menstrual hygiene management encompasses several practices, including regular bathing, proper care of the vulva, washing of hands and undergarments, the selection and timely replacement of absorbent materials, and the safe disposal of menstrual waste. Failure to observe proper menstrual hygiene may result in discomfort, unpleasant odours, embarrassment, and an increased risk of reproductive tract infections [5].

Menstrual waste refers to the materials generated during menstruation, including used sanitary pads, tampons, cloths, and other absorbent products. Menstrual discharge, commonly referred to as menses or menstrual flow, is produced through a cyclical process regulated by hormones. The menstrual cycle consists of the follicular (proliferative), ovulatory, and luteal (secretory) phases. During this process, the endometrium, which is the lining of the uterus, thickens in preparation for possible pregnancy and is shed when fertilization does not occur, resulting in menstrual bleeding that typically lasts between three and five days, although it may extend to seven days in some women. Menstrual fluid comprises not only blood but also mucus and vaginal secretions [6]. The quantity, colour, consistency, and duration of menstrual flow vary among individuals and may be influenced by factors such as hormonal changes, reproductive health conditions, age, and proximity to menopause. Conditions such as fibroids, polyps, endometriosis, and hormonal imbalances can increase menstrual bleeding, potentially leading to anaemia due to excessive blood loss.

The management and disposal of menstrual waste have become significant public health and environmental concerns. Most commercially available sanitary pads contain non-biodegradable materials such as plastics, adhesives, and super-absorbent polymers. These materials can take between 500 and 800 years to decompose, contributing substantially to environmental pollution. When menstrual waste is improperly discarded into open fields, water bodies, or landfills, it may degrade soil and water quality over time [6] [7]. Furthermore, menstrual absorbents contaminated with blood can serve as breeding grounds for disease-causing microorganisms if not properly treated before disposal, thereby posing potential health risks to communities and the environment.

Given these concerns, menstrual waste disposal has emerged as an important issue requiring urgent attention from policymakers, manufacturers, educators, and health practitioners. There is a growing need for affordable, effective, and environmentally sustainable menstrual products. Manufacturers should provide clear information regarding the chemical composition of sanitary products and prioritize the use of biodegradable and eco-friendly materials to reduce environmental pollution and accelerate decomposition. Additionally, women and adolescent girls should receive adequate guidance on menstrual hygiene practices, while educational curricula should incorporate comprehensive menstrual health education. Proper systems for the separate collection and safe disposal of menstrual waste should also be established to safeguard women's privacy, dignity, and health.

Menstrual hygiene refers to the practices through which women access, use, and safely dispose of menstrual absorbents while maintaining cleanliness and good health during menstruation [8]. Effective menstrual hygiene management is a lifelong necessity for women, beginning at menarche and continuing until menopause [9] [10]. According to [11], women can only live healthy, productive, and dignified lives when they are able to manage menstrual bleeding effectively. This requires access to appropriate absorbent materials, clean water, sanitation facilities, private spaces for changing menstrual products, handwashing facilities, and accurate information about menstruation and menstrual hygiene. Girls are encouraged to change sanitary materials regularly, particularly during the first few days of menstruation when blood flow is typically heavier [12] [13].

Beyond personal health implications, menstrual hygiene

management has important environmental dimensions due to the increasing volume of menstrual waste generated globally. In many developing countries, inadequate waste management infrastructure complicates the safe handling and disposal of menstrual waste, creating environmental and public health challenges. Consequently, the promotion of menstrual hygiene must be accompanied by sustainable waste management strategies that address both health and environmental concerns. It is against this background that this study assesses the influence of menstrual waste management on the wellbeing of undergraduate female students at the University of Maiduguri.

Statement of Problem

Menstruation is a natural physiological process experienced by females during their reproductive years. Despite being a normal biological phenomenon, the management and disposal of menstrual waste remain significant public health and environmental concerns, particularly among female undergraduate students in higher institutions. At the University of Maiduguri, concerns have been raised regarding the level of awareness and practices associated with menstrual waste management among female students. Many students lack adequate knowledge of appropriate menstrual waste disposal methods and proper menstrual hygiene practices, which may expose them to various health risks.

During menstruation, the vaginal environment becomes more moist, creating favorable conditions for the growth of microorganisms. Inadequate menstrual hygiene management can therefore increase susceptibility to infections, discomfort, and other reproductive health complications. Poor menstrual hygiene practices have been associated with several health conditions, including abnormal vaginal discharge, irritation, unpleasant odour, bacterial vaginosis, urinary tract infections, cervical cancer, pruritus vulvae (itching around the vaginal opening), vaginitis, and vulvovaginitis. Furthermore, among pregnant women, poor genital hygiene may contribute to adverse pregnancy outcomes such as premature delivery and low birth weight.

Although menstrual hygiene management has received increasing attention globally, there is limited empirical evidence regarding the menstrual waste management practices of female undergraduate students in the University of Maiduguri and how such practices influence their overall wellbeing. Inadequate disposal of menstrual waste may not only affect personal health but also contribute to environmental sanitation challenges within the university community. Consequently, understanding the extent to which menstrual waste management practices affect the wellbeing of female students is essential for developing appropriate health education interventions and institutional policies.

It is against this background that this study seeks to examine the influence of menstrual waste management on the wellbeing of female undergraduate students at the University of Maiduguri, Borno State.

Research Questions

1. What is the Influence of menstrual waste management on the wellbeing of undergraduate female students in university of Maiduguri, Borno State?

Hypothesis

H_0: There is no significant Influence of menstrual waste management on the wellbeing of undergraduate female students in university of Maiduguri.

MATERIALS AND METHODS

This study employed a descriptive survey research design to investigate the influence of menstrual waste management on the wellbeing of female undergraduate students at the University of Maiduguri, Borno State. The study population comprised 3,640 female undergraduate students residing in the university hostels. A sample size of 364 respondents (10% of the population) was selected using a systematic sampling technique, whereby every third room in each female hostel was chosen.

Data were collected through a structured questionnaire using a Likert scale to obtain information from the respondents. Ethical approval was obtained from the appropriate institutional ethics committee before the commencement of the study. Informed consent was obtained from all participants, and participation was voluntary. The confidentiality and anonymity of respondents were ensured by not collecting identifying information, and all data were used strictly for research purposes. The data collected were analyzed using frequencies, percentages, and Chi-square statistical analysis at a 0.05 level of significance.

RESULTS

The results showed that out of the total number of 364 respondents, 90 respondents which represent 25 percent of the population are between 15-19years. 150 respondents which represent 41 percent of the population are between 20-24years. 99 respondents which represent 27 percent of the population are between 25-29 years**.** 25 respondents which represent

7 percent of the population are at the age of 30 and above

Table 3 shows the educational level of the respondents used for this study. The table reveal that, 99 respondents which represent 27 percent of the population are in 100 level, 105 respondents which represent 29 percent of the population are in 200 level, also 87 respondents which represent 24 percent of the population are in 300 level, while 52 respondents which represent 14 percent of the population are in 400 level lastly 21 respondents which represent the 6 percent of the study are in 500 level.

Table 4 shows the responses of respondents that practice of menstrual waste management help in the prevention of disease among female during menstruation.195 of the respondents representing 53 percent strongly agree that practice of menstrual waste management help in the prevention of disease among female during menstruation, 99 of the respondents representing 27percent agree that menstrual waste management help in the prevention of disease among female during menstruation, 28 of them representing 8 percent were undecided, 42 of the respondents representing 12 percent disagree that menstrual waste management help in the prevention of disease among female during menstruation, while none of the respondent strongly disagree that menstrual waste management help in the prevention of disease among female during menstruation. From table 4.1.3 above, we found out that most of the respondents were affirmative with the question being asked; we therefore conclude that practice of menstrual waste management help in the prevention of disease among female during menstruation.

Table 5 show the responses of respondents if menstrual waste management practices is encouraged in tertiary institutions in Nigeria. 82 of the respondents representing 22 percent strongly agree that menstrual waste management practices is encouraged in tertiary institutions in Nigeria, 57 of the respondents representing 16 percent disagree that menstrual waste management practices is encouraged in tertiary institutions in Nigeria, None of the respondents were undecided, 120 of the respondents representing 33 percent agree that menstrual waste management practices is encouraged in tertiary institutions in Nigeria, 105 of the respondents representing 29 percent strongly agree that menstrual waste management practices is encouraged in tertiary institutions in Nigeria. From table 4.1.8 above, we found out that most of the respondents were affirmative with the question being asked; we therefore conclude that menstrual waste management practices is not encouraged in tertiary institutions in Nigeria.

Table 6 reveal that 37 of the respondent representing 10 percent are using reusable cloth or pad in practicing the menstrual waste management. 147 respondent representing 40 percent are practicing their menstrual waste by throwing in dustbins, 63 of the respondent representing 17 percent of the respondent are managing their menstrual waste by flushing it on the toilet, and 117 of the respondent representing 33 percent of the respondent are managing their menstrual waste by throwing in the garbage or in the pit. From table 4.1.7 above, we found out that most of the respondents were affirmative with the question being asked; we therefore conclude that the student of university of Maiduguri are practicing their menstrual waste by throwing in the garbage/pit.

Menstrual waste management has an impact on the wellness of female undergraduate students at the University of Maiduguri, according to respondents' comments, as shown in Table 7. Thirty-two respondents, or thirty-two percent, agreed that there is an influence on the wellbeing of female undergraduate students and the practice of menstrual waste management, while 168 respondents, or forty-six percent, strongly agreed. Seven respondents, or six percent, disagreed that there is an influence on the practice of menstrual waste management and the wellbeing of female undergraduate students, while non-students strongly disagreed. Of the respondents, 57, or sixteen percent, were unsure. From table 4 above, we found out that most of the respondents were affirmative with the question being asked; we therefore conclude that there is influence on practicing menstrual waste management and the wellbeing of undergraduate female.

Test of Hypothesis

H_0: There is no significant influence of menstrual waste management on the wellbeing of undergraduate female students in university of Maiduguri.

The aforementioned data shows that menstrual waste management has an impact on female undergraduate students' wellbeing. Given that the p value of 0.001 is below the significance level of 0.05 and the computed Chi-square value of 304.329 is higher than the critical value of 9.481. Consequently, the alternative hypothesis that menstrual waste management has a major impact on the wellbeing of female undergraduate students at the University of Maiduguri was accepted and the

null hypothesis was rejected.

Conclusion

It was concluded that practice of menstrual waste management helps in the prevention of disease among female during menstruation, menstrual waste management practices is encouraged in tertiary institutions, throwing menstrual waste in the dustbins is the major methods used among female students and menstrual waste management has an impact on the wellbeing of female undergraduate students at the University of Maiduguri.

Recommendations

1) Lecturers should prepare to provide correct and thorough instruction on menstruation, covering the menstrual cycle as well as menstrual issues and how to handle them. The instruction ought to address appropriate menstrual waste disposal techniques and personal hygiene.
2) Health professionals should create sufficient school health programs that include topics such as female reproductive organs, the menstrual cycle, menstrual hygiene, common menstrual issues, and irregular menses.
3) Students should receive information from the school administration on how to handle challenges effectively. Additionally, females should be screened for any major gynaecological issues so that early referrals can be made for timely therapy.
4) Parents and educational administrators should try to make the environment friendly, for good menstrual hygiene, such as building girl friendly toilets that will ensure privacy. Provision of feminine hygiene products example pad and waste bin in the toilets for dropping menstrual wastes.

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TABLES AND FIGURE

Table 1: Population and Sample Size

Name of Hostel	Population	Sample
Aisha Hall	340	37
Aisha Buhari	900	89
Ali Monguno	350	35
Murtalah Muhammad	1150	114
Titanic	900	89
Total	3640	364

Source: field survey 2025

Table 2: Age ranges of the respondent

Variable	No. of respondent	Percentage %
15-20 years	90	25
20-25 years	150	41
25-30 years	99	27
30 and above	25	7
Total	364	100

Source: field survey 2025

Table 3: Levels of the respondent

Variable	No. of respondent	Percentage %
100 level	99	27
200 level	105	29
300 level	87	24
400 level	52	14
500 level	21	6
Total	364	100

Source: Field survey, 2025

Table 4: Practice of menstrual waste management helps in the prevention of disease among female during menstruation

Variable	No. of respondent	Percentage %
Strongly agreed	195	53
Agreed	99	27
Undecided	28	8
Disagreed	42	12
Strongly disagreed	0	0
Total	364	100

Source: Field survey, 2025

Table 5: Menstrual waste management practices is encouraged in tertiary institutions in Nigeria.

Variable	No. of respondent	Percentage %
Strongly agreed	120	33
Agreed	105	29
Undecided	0	0
Disagreed	82	22
Strongly disagreed	57	16
Total	364	100

Source: Field survey, 2025

Table 6: Methods used in practice of menstrual waste management

Variable	No. of respondent	Percentage %
Reusable cloth or pad	37	10
Throwing in dustbins	147	40
Burning	0	0
Flushing in toilets	63	17
Throwing in garbage/ pit	117	33
Burying	0	0
Total	364	100

Source: Field survey, 2025

Table 7: Influence of menstrual waste management on the wellbeing of student

Variable	No. of respondent	Percentage %
Strongly agreed	168	46
Agreed	132	32
Undecided	57	16
Disagreed	7	6
Strongly disagreed	0	0
Total	364	100

Source: Field survey, 2025

Table 8: Chi-square Summary on influence of menstrual waste management on the wellbeing of undergraduate female students

Responses	Observed	Expected	X^2 *Cal*	Df	$X^2_{critical}$	P value
Strongly agreed	168	72.8				
Agreed	132	72.8	304.329	4	9.481	0.001
Undecided	56	72.8				
Disagreed	7	72.8				
Strongly disagreed	1	72.8				

Level of significance= 0.05, df = 4, critical value (χ^2) = 9.48