



Research Paper

Assessment of Knowledge, Attitude, and Practice of Menstrual Hygiene Management among Adolescent Girls and Young Women in an Internally Displaced Personcamp Within The Federal Capital Territory, Nigeria

Nkemdilim Ene¹, Union Nwosu¹, Chris Gbade Adedigba^{1*}

¹. Preston Associates International Development Ltd., Nigeria

Abstract

Background: Menstruation is part of the female reproductive cycle, and it usually first occurs between the ages of 9 – 12. Adolescent girls and young women in Internally Displaced Persons (IDPs) camps face difficulties in managing their monthly menstruation, such as access to sanitary pads and water, sanitation, and hygiene (WASH) facilities. This paper assesses the knowledge, attitude, and practice of menstrual hygiene management among adolescent girls and young women in the Durumi IDP camp, Abuja, Nigeria.

Methods: This study adopted a cross-sectional research design, and a purposive sampling technique was used to select 102 participants comprising adolescent girls and young women residing in the IDP camp. A close-ended questionnaire was used to interview the respondents while descriptive statistics of frequency count and percentage were used to analyze data.

Results: A majority (90.7%) of the respondents had heard about menstruation and menstrual hygiene management before menarche while (92.8%) agreed that poor menstrual hygiene can result in infections. More than half (58.8%) of the respondents were happy during menarche while 73.2% usually experienced restrictions during their menses. Also, 84.4% bathe at least twice daily during their menstruation, 69% use sanitary pads and menstrual cups as an absorbent material, and more than 90% change their absorbents at least twice daily during menstruation.

Conclusion: Despite residing in an IDP camp, a majority of the study participants have a good knowledge and attitude toward menstruation and menstrual hygiene, as well as observe good hygienic practices during menstruation.

Key Words: Menstruation, Menstrual Hygiene Management, Internally Displaced Persons, Knowledge, Attitude, and Practice (KAP).

Received 07 May, 2023; Revised 16May, 2023; Accepted 19 May, 2023 © The author(s) 2023.

Published with open access at www.questjournals.org

I. Introduction

Menstruation is a physiological event that often marks the onset of puberty in females; it is part of the reproductive cycle, and usually first occurs in girls between the ages of 9-12 years (Marques, Madeira & Gama, 2022; Lacroix, Gondal, Shumway & Langaker, 2022). About half of the female population (approximately 26% of the global population) are of reproductive age, and most menstruate for about 2 – 7 days every month. Also, on average, 300 million women around the world menstruate daily (United Nations Children Fund, 2018, World Bank, 2020). Thus, menstruation is a normal and fundamental part of a woman's life. Despite this, many adolescent girls and women face significant barriers to managing their monthly menstruation in a safe, private, and dignified manner (World Bank, 2020). In many cultures and traditions, especially in Africa, menstruation as a topic remains problematic. Adolescent girls and women are often perceived as unclean, cursed or diseased, and are often shamed, marginalized, and exempted from religious or cultural duties during their menstrual periods (Boosey, Prestwich & Deave, 2014; Santra, 2017).

Menstruation in lay terms involves the expulsion of blood and tissue from a woman's reproductive organ due to the lack of conception; and since this occurs on a monthly basis (until conception happens), it

amplifies the need for ‘menstrual hygiene management’ – a global term used to address the major needs of menstruating girls and women. According to the WHO/UNICEF Joint Monitoring Programme (2012), menstrual hygiene management is defined as:

“Women and adolescent girls are using a clean menstrual management material to absorb or collect menstrual blood, that can be changed in privacy as often as necessary, using soap and water for washing the body as required and having access to safe and convenient facilities to dispose of used menstrual management materials. They understand the basic facts linked to the menstrual cycle and how to manage it with dignity and without discomfort or fear.”

The above definition was modified by Sommer, Chandraratna, Cavill, Mahon and Phillips-Howard in 2016 to include the last sentence because they wanted to highlight the importance of menstrual health education, as well as dispel any negative connotation associated with menstruation.

Studies in Nigeria (Schmitt *et al.*, 2022; Marlow, Kunnuji, Esiet, Bukoye & Izugbara, 2022) and other countries (Schmitt *et al.*, 2017; Kågesten *et al.*, 2017; Majed & Touma, 2020) reveal that humanitarian crises exacerbate menstrual hygiene management challenges. As of 2021, about 235 million people were in humanitarian emergencies. Similarly, the number of Internally Displaced Persons (IDPs) due to conflict and violence has dramatically increased in the last decade to over 50 million new and existing IDPs globally, and Africa is home to one-third of them (OCHA, 2021). This includes about 3 million IDPs living in Northern Nigeria (Africa Center for Strategic Studies, 2021).

Adolescent girls and women in IDP and refugee camps face many difficulties in managing their monthly menstruation comfortably, privately, and with dignity (Schmitt *et al.*, 2022; Marlow VanLeeuwen & Torondel, 2018). Some of the challenges include inadequate access to: menstrual materials such as sanitary pads and reusable sanitary cups; menstruation orientation and information; and gender-sensitive (female-friendly) toilets and other Water, Sanitation and Hygiene (WASH) facilities (Kågesten *et al.*, 2017; Parker *et al.*, 2014; Schmitt *et al.*, 2017). Limited access to menstrual hygiene management materials can pose daily challenges, including heightened risks of stained clothing, emanating odours, school absenteeism, or loss of interest in conducting other activities including domestic chores (Majed & Touma, 2020; Schmitt *et al.*, 2022). Moreover, menstrual stains on clothing heighten experiences of embarrassment and the likelihood of peer teasing (Benshaul-Tolonen *et al.*, 2020) while poor access to female-friendly WASH facilities heightens the risk of girls and women experiencing shame (Massey, 2011), anxiety (Bisung & Elliott, 2016), and gender-based violence (Corburn & Hildebrand, 2015).

More recently, the humanitarian sector has increased its commitment to improving reproductive health outcomes and specifically menstrual hygiene management needs of victims of humanitarian crises, especially those in IDP camps across Northern Nigeria. The effort includes providing menstrual hygiene management education, often combined with distributing menstrual hygiene materials to victims (Giles-Hansen *et al.*, 2019), as well as improving the guidelines, research, and programming related to reproductive health, menstrual hygiene management issues and WASH in emergency settings (VanLeeuwen & Torondel, 2018).

The increased awareness and distribution of menstrual hygiene management materials to victims of humanitarian crises by development partners (Giles-Hansen *et al.*, 2019, Van-Leeuwen & Torondel 2018), will make it easy for girls and young women in IDP camps to have adequate knowledge and good practice of menstrual hygiene management. This includes educating girls on menstrual hygiene management before menarche (first menstrual cycle), knowledge and practice of personal hygiene during menstruation including hand washing, regular bathing, timely changing of absorbents, and proper and timely management/disposal of used absorbents.

This paper shares learning outcomes from the baseline assessment of the “Pad A Girl Project” organized by Preston Development Foundation (PDF) for adolescent girls and young women in the Durumi IDP camp, Abuja, Federal Capital Territory (FCT), Nigeria in commemoration of the 2022 World Menstrual Hygiene Day. The project focused on creating awareness on menstrual hygiene management and the provision of sanitary products to adolescent girls and young women in the camp. The aim of this paper is to fill identified gaps in the literature on the knowledge, attitude, and practice of menstrual hygiene management among adolescent girls and young women in IDP camps.

II. Methodology

Study setting and period: The study was carried out at the IDP Camp, Durumi, Abuja, Nigeria; which houses an under-served population affected by the insurgency in Northern Nigeria. The camp was unofficially established in 2014 after several attacks on villages in the Northeastern part of Nigeria by the Boko Haram terrorist group. The study was conducted on May 26, 2022, during the “Pad A Girl Project” organized by the PDF.

Research design: A cross-sectional research design was employed to obtain information on knowledge, attitude, and practice of menstrual hygiene management.

Sample recruitment and selection: The target population for the study was a mix of adolescent girls and young women residing in the IDP camp in Durumi, Abuja. Based on this, a purposive sampling technique was used to select 102 beneficiaries of the project.

Instrument and data collection method: A close-ended questionnaire titled “Questionnaire on Knowledge, Attitude and Practice (KAP) of Menstrual Hygiene Management among Adolescent Girls and Young Women in IDP Camp” was developed in the English language. The tool was quality assured to ascertain the appropriateness of questions and/or response wording and sequencing, time allowed, comprehension, and potential recall bias of the tool. The PDF staff administered the questionnaire to the target participants, and in doing that they presented the guidelines and interpreted the questionnaire in local languages for easy understanding and to achieve accurate responses. The respondents were required to tick the appropriate responses that best represented their KAP of Menstrual Hygiene Management. All administered questionnaires were collected on the spot.

Data Analysis: Upon completion of data collection, data was collated, coded and analyzed using Microsoft Excel and SPSS® 24 version package. Descriptive statistics of frequency count and percentage were used to analyze the demographic information of the respondents as well as the variables under study. Data were summarized and presented in tables in relation to research objectives.

Ethical Consideration: Permission for the study was obtained from the House Coordinator of the IDP camp before the commencement of data collection. Informed consent was also given to the participants, which clearly explained the nature and purpose of the study, the procedure of the study, and confidentiality of the participant’s identity and responses, as well as the participant’s right to withdraw from the survey at any point. Also, anonymity and confidentiality of all information obtained from the respondents were assured and maintained.

III. Results

Table 1: Sociodemographic characteristics of respondents.

Variable	Frequency	Percentage (%)
1 Age Range		
i 9 - 11 years	3	3.1
ii 12 - 14 years	10	10.3
iii 15 - 17 years	18	18.6
iv 18 - 20 years	23	23.7
v 21 years and above	43	44.3
Total	97	100.0
3 Educational Level		
i No school	14	14.4
ii Primary Education	29	29.9
iii Secondary Education	47	48.5
iv Tertiary Education	2	2.1
v Others	5	5.2
Total	97	100.0
3 Religion		
i Christianity	36	37.1
ii Islam	56	57.7
iii Traditional	5	5.2
Total	97	100.0
4 Mother’s level of education		
i No school	37	38.1
ii Primary Education	33	34.0
iii Secondary Education	21	21.6
iv Tertiary Education	3	3.1
v Others	3	3.1
Total	97	100.0

As indicated in Table 1, a total of 97 questionnaires were retrieved out of 102, making a response rate of 95.1%. A great number of the respondents 43 (44.3%) are 21 years old and above while 13 (13.4%) of the respondents are below 15 years old. Almost half (48.5%) of the respondents have secondary education while 14.4% did not have formal education. Also, more than half of the respondents 57.7% were Muslims while 5.2% practised Traditional Religion. The majority of the respondents’ mothers (72.1%) had below secondary level of education.

Knowledge of respondents on menstruation and menstrual hygiene

Table 2: Knowledge of respondents on menstruation and menstrual hygiene management.

Variable	Frequency	Percentage (%)
1 Did you hear about menstruation before your first experience?		
i Yes	88	90.7
ii No	9	9.3
Total	97	100.0
1b Source of information*		
i Mother	38	39.2
ii Elder Sister	11	11.3
iii Friend	4	4.1
iv Teacher	12	12.4
v Relatives	2	2.1
vi Others (Media, Book)	5	5.2
2 Before your first menstruation, did you have any prior knowledge of menstrual hygiene management?		
i Yes	88	90.7
ii No	9	9.3
Total	97	100.0
2b Source of information*		
i Mother	43	44.3
ii Elder Sister	11	11.3
iii Friend	4	4.1
iv Teacher	12	12.4
v Relatives	4	4.1
vi Others (Media, Book)	1	1.0
3 Is menstruation a normal process in females?		
i Yes	90	92.8
ii No	7	7.2
Total	97	100
4 Do you think poor menstrual hygiene can result in infection?		
i Yes	90	92.8
ii No	7	7.2
Total	97	100
5 Which absorbent material is best used for menstruation?		
i Cotton Wool	4	4.1
ii Tissue/Toilet Paper	4	4.1
iii An old piece of cloth	14	14.4
iv A new piece of cloth	8	8.2
v Sanitary pad	63	64.9
vi Two or more options	4	4.1
Total	97	100.0
6 Changing absorbent at least 2 times a day is important to maintain good menstrual hygiene		
i Yes	93	95.9
ii No	4	4.1
Total	97	100
7 Washing of hands before and after changing absorbent is important to maintain good menstrual hygiene		
i Yes	94	96.9
ii No	3	3.1
Total	97	100.0
8 Having a bath at least twice a day would help maintain good menstrual hygiene		
i Yes	89	91.8
ii No	8	8.2
Total	97	100

Table 2 reveals that, the majority of the respondents (90.7%) had heard about menstruation before menarche and the main source of information was the respondents' mothers (39.2%) followed by school teachers (12.4%) and elder sisters (11.3%). Similarly, almost all the respondents (90.7%) knew about menstrual hygiene management before menarche and the main source of information was the respondents' mothers (44.3%). Most respondents (92.8%) admitted that menstruation is a normal process in females and the same proportion (92.8%) of respondents believed that poor menstrual hygiene can result in infections. More than half (64.9%) of the respondents affirmed that a sanitary pad is the best absorbent for menstruation. Similarly, almost all the respondents (95.9%) agreed that changing absorbents at least twice a day is important to maintain good menstrual hygiene, and 96.9% noted that washing hands before and after changing absorbents is essential to

maintain menstrual hygiene. Moreover, most of the respondents (91.8%) noted that bathing at least twice a day during menstruation would help to maintain good menstrual hygiene.

Attitude toward menstruation and menstrual hygiene

Table 3:Attitude of respondents on menstruation and menstrual hygiene.

Variable	Frequency	Percentage (%)
1 How did you feel during your first menstruation?		
i Happy	57	58.8
ii Sad	22	22.7
iii Scared	9	9.3
iv Emotionally disturbed	7	7.2
v Others	2	2.1
Total	97	100.0
2 Do you experience restrictions during menstruation?		
i Yes	71	73.2
ii No	26	26.8
Total	97	100.0
2b Types of restriction*		
i Avoid celebrations and festivals	6	6.2
ii Avoid going to school	6	6.2
iii Avoid prayer	16	16.5
iv Avoid housework	11	11.3
v Two or more restrictions	1	1.0
3 Does menstruation affect your association with people?		
i Yes	64	66.0
ii No	33	34.0
Total	97	100
3b Reasons*		
i Fear of unexpected bleeding/stain	13	13.4
ii Fear of odor	7	7.2
iii Presence of menstrual symptoms	2	2.1
5 Others	2	2.1

More than half (58.8%) of the respondents were happy during their first menstruation experience while about 15% described their response to their first menses as scary or emotionally disturbed. The majority of the respondents (73.2%) do experience restrictions during their menses and major types of restrictions experienced are avoiding prayers (41.2%), avoiding housework (11.3%), avoiding celebrations/festivals, and going to school (6.2%). Similarly, a majority (66.0) of the respondents noted that menstruation usually affects their association with people. The reasons for limiting association with people are fear of unexpected bleeding/stain and fear of odour with 13.4% and 7.2% response rates respectively.

Practice of menstrual hygiene management

Table 4:Practice of menstrual hygiene management.

Variable	Frequency	Percentage (%)
1 How many times do you bathe per day during menstruation?		
i Never	4	4.1
ii Once	11	11.3
iii Twice	30	30.9
iv More than twice	52	53.6
Total	97	100.0
2 What type of absorbent do you mostly use during your menstruation period?		
i Cotton Wool	4	4.1
ii Tissue/Toilet Paper	8	8.2
iii An old piece of cloth	11	11.3
iv A new piece of cloth	5	5.2
v Sanitary pad	66	68.0
vi Menstruation Cup	1	1.0
vii Others	2	2.1
Total	97	100.0
3 Would you like to continue using the current absorbent you are using for your menstruation?		
i Yes	87	89.7
ii No	10	10.3
Total	97	100.0
3b Reasons*		
i It is comfortable	35	36.1
ii It is cheap	7	7.2

iii	It is reusable	2	2.1
iv	It is easy to dispose	11	11.3
v	Others	3	3.1
vi	Two or more options	6	6.2
Total		97	100
4	How many times do you change your absorbent per day during menstruation?		
i	Never	4	4.1
ii	Once	2	2.1
iii	Twice	46	47.4
iv	Thrice	36	37.1
v	More than thrice	9	9.3
Total		97	100
5	Do you wash your hands before and after changing your absorbent?		
i	Yes	89	91.8
ii	No	8	8.2
Total		97	100.0
6	How do you dispose of used absorbents?		
i	Dustbin	20	20.6
	Open dumping	5	5.2
	Burning	24	24.7
	Latrine/Toilet	33	34.0
	Burying	5	5.2
	Others	5	5.2
ii	Two or more	5	5.2
Total		97	100
7	What do you do to prevent menstrual pain?		
i	Nothing	30	30.9
ii	Exercise	9	9.3
iii	Take pain relief medication	44	45.4
iv	Avoid eating sugary food	11	11.3
v	Take more fruits	1	1.0
vi	Others	1	1.0
vii	Two or more	1	1.0
Total		97	100.0

Regarding the practice of menstrual hygiene management, the majority (84.4%) of the respondents bathe at least twice daily during their menstruation. About seventy percent (69.0%) of respondents used sanitary pads and menstrual cups as absorbent material during menses while 11.3% and 8.2% use old pieces of cloth and tissue/toilet paper. In addition, most of the respondents (89.7%) would like to continue with the current absorbents they are using for their menses. The main reasons for continuation as indicated are comfort (36.1%), ease of disposal (11.3%), and cost of procurement (7.2%).

More than 90% of the respondents changed their absorbents at least twice during menstruation while 2.1% changed it once and 4.1% do not change it the whole day. The majority of the respondents (91.8%) practice hand washing before and after changing their absorbents during menstruation, and the major disposal methods of used absorbents are dumping into the latrine/toilet (34.0%), burning (24.7%), and dumping into a dustbin (20.6%). To prevent menstrual pain, 45.4% of the respondents usually take pain relief medications while 11.3% and 9.3% avoid eating sugary foods and exercise respectively, however, 30.9% of the respondents do not take/do anything to prevent menstrual pain.

IV. Discussion

Menstruation is an important part of female pubertal development, however, its hygiene management practice has been identified as a major sexual and reproductive health issue in post-conflict and humanitarian settings. Similarly, myths and misconceptions about menstruation and its hygiene management have resulted in poor knowledge and hygienic practices among adolescents and young women, especially those in refugee and IDP camps. This study revealed a high level of awareness of menstruation and menstrual hygiene management (even before menarche) among the respondents, and the main source of information was the respondents' mothers and school teachers. This is comparable to the findings of similar studies in Somalia (Somali Red Crescent Society, 2015) and Cameroon (UN Women and WSSCC, 2017), but contrary to the findings of a study done in the Geneva Camp, Bangladesh (Huda *et al* 2022). Similarly, studies in Nigeria (Buradum, Etor & Edison 2020; Ilusanmi & Aluko, 2021) have also corroborated the findings in this study about awareness of menstrual hygiene management. The reason for the high level of awareness might be due to increased advocacy, and intervention on menstrual hygiene among adolescents irrespective of socio-demographic backgrounds. Also in African cultures, female children are usually closer to their mothers, thus making it easier to receive relevant health education.

Almost all (98%) of the respondents were aware that menstruation is a normal developmental process in females, and that poor menstrual hygiene can result in infections. These findings are similar to studies conducted among young women in Jos, Plateau State, Nigeria (Idoko *et al*, 2022), and among secondary school girls in Ogbomoso, Oyo state, Nigeria (Fehintola *et al* 2017). It is paramount that adolescents and young women understand the normalcy of menstruation and the dangers of unhygienic management, as it will help shape their thoughts and actions toward acceptance and proper hygienic practices.

More than half (64.9%) of the respondents affirmed that a sanitary pad is the best absorbent for menstruation and almost all the respondents (95.9%) agreed that changing absorbents at least twice a day is a good menstrual hygiene practice. Also, 96.9% noted that washing hands before and after changing absorbents is essential to maintain menstrual hygiene. Moreover, most of the respondents (91.8%) noted that bathing at least twice a day during menstruation would help to maintain good menstrual hygiene. Overall, the findings revealed that the majority of respondents have good knowledge of menstrual hygiene management which was similar to the findings of Buradum, Etor, and Edison (2020) and Fehintola *et al* (2017) who reported good knowledge of menstrual hygiene management among their study participants. The findings however contradict the findings of Lawan (2010) in Kano State, Nigeria, and Huda *et al* (2022) in the Geneva Camp in Bangladesh. This might be due to variations in the locations of studies and periods.

In this study, more than half of the respondents were happy during their first menstruation while about 15% described the experience as scary or emotionally disturbing. This negates the findings of Aluko *et al* (2014) and Fehintola *et al* (2017) in similar studies in Nigeria where the majority of their respondents were either scared or emotionally disturbed during their first menses. This study's finding might be linked to the high level of knowledge of menstruation and menstrual hygiene exhibited by the respondents which prepared them for the process, thus highlighting the importance of reproductive health education for children, especially females, in order to prepare them for the psychological, cognitive, hormonal, and physical body changes brought on by menstruation.

Additionally, about three-quarters (73.2%) of the respondents reported restrictions in their daily life activities during their monthly menstruation, and major restrictions experienced are avoiding prayers, housework and celebrations/festivals, and missing school. This is similar to the findings of studies carried out in Nigeria by Aluko *et al* (2014) and Fehintola *et al* (2017) and in Somalia by the Somali Red Crescent Society (2015). Restrictions may be associated with several factors including sociocultural, religious, and environmental. For instance, in the Islamic religion, women are not allowed to participate in prayer rituals while on their periods because they're considered ritually "impure" while menstruating (Selby, 2018).

Good menstrual hygiene practices are of great importance as it has a health impact in terms of decreasing women's vulnerability to reproductive health challenges including infections. Poor menstrual hygiene, however, can result in serious health risks, like reproductive and urinary tract infections which can result in future infertility and birth complications (World Bank, 2022). Findings in this study also revealed that the majority of respondents use sanitary pads as absorbent material during menses however about 20% use reusable materials such as rags or a new piece of cloth. The finding of this study is consistent with the findings of the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women) and the Water Supply and Sanitation Collaborative Council (WSSCC) (2017) in a study of menstrual hygiene management among women in four refugee camps in Cameroon where about 75% of participants use disposable sanitary towels. The finding is however divergent from the findings of the Somali Red Crescent Society (2015) where only 19% used disposable pads and more than one-third (37%) of them bled into their clothes without any absorbent. Similarly, this study shows that most of the respondents would like to continue with their current absorbents; the reasons being that they are comfortable and easily disposable. This is also similar to the findings of UN Women and WSSCC (2017). This finding can be explained by the accessibility of sanitary pads, made available through the support of development partners, donors, NGOs, and individuals.

In addition to the mass usage of disposable sanitary pads by respondents, as revealed in this study, the majority of the respondents changed their absorbents at least twice a day during menstruation and practised hand washing before and after changing their absorbents. This is similar to the findings of Idoko *et al* (2022) in a study of Knowledge and Practice of Menstrual Health and Hygiene among Young People in Jos, Plateau State, Nigeria. These findings, however, negate the findings of Fehintola *et al* (2017); Ilusanmi and Aluko (2021); Red Crescent Society (2015) who reported poor practice of menstrual hygiene among their respondents.

This study's findings simply a positive association between knowledge and practice of menstrual hygiene management among girls and young women in the IDP camp, Durumi, Abuja. This is surprising considering the fact that people in IDP camps are faced with several challenges including malnutrition, shelter, water, sanitation, and hygiene problems among others. However, this may be attributed to the location of the IDP camp, it is located within the city and this makes it easy to receive support (e.g. health education) from individuals, religious organizations, local and international NGOs, and donors. It is worth noting that data collection for this study was part of the "Pad-A-Girl" Project by the PDF to commemorate the 2022 United Nations' Menstrual Hygiene Day. Preston Development Foundation provided health talks about menstrual hygiene and also donated

sanitary pads to girls and young women in the IDP camp. It is believed that the residents of the camp had benefited from similar activities in the past, hence the good knowledge, attitude, and practice of menstrual hygiene exhibited by the respondents.

This study has some limitations. First, it is a cross-sectional study that relied on self-reported information on knowledge and practice of menstrual hygiene, which is subject to bias and may limit causal conclusions. Also, data from the study was not subjected to inferential statistics to determine the association between the respondents' demographic variables and their knowledge, attitude, and practice of menstrual hygiene practices. This was due to the low number of participants. Lastly, the study was carried out in only one IDP camp situated in the centre of FCT, hence the findings from this study should not be generalized beyond the studied camp. However, the findings are useful to understand the level of knowledge, attitude and practice of menstrual hygiene among girls and young women in the camp.

V. Conclusion

Menstrual hygiene management practice is an important reproductive health issue among vulnerable women and girls. We conclude that the majority of the adolescents and young women in this study have a good knowledge and attitude toward menstruation and menstrual hygiene, as well as observe good hygienic practices during menstruation, despite residing in an IDP camp. The outcomes of this study are surprising, considering the fact that people in IDP camps are faced with several challenges including poverty, malnutrition, shelter, water, sanitation, and hygiene problems among others, thus we did not expect menstrual hygiene to be considered a priority. However, we attribute this positive finding to the location of the camp (within the city), which makes it easy to receive support from donors, NGOs, individuals, etc. Nevertheless, our study findings prove that good menstrual hygiene among vulnerable populations is possible through effective interventions.

References

- [1]. Aluko, O. O., Oluya, O. M., Olaleye, O. A., Olajuyin, A. A., Olabintan, T. F., & Oloruntoba-Oju, O. I. (2014). Knowledge and menstrual hygiene practices among adolescents in senior secondary schools in Ile Ife, south-western Nigeria. *Journal of water, sanitation and hygiene for development*, 4(2), 248-256.
- [2]. Amy, E. L., Hurria G., Karlie, R. S., Michelle, D., Marques, P., Madeira, T. & Gama, A. (2022). Menstrual cycle among adolescents: girls' awareness and influence of age at menarche and overweight. *Revista Paulista de Pediatria*, 40: doi: 10.1590/1984-0462/2022/40/2020494.
- [3]. Buradum, U. A., Etor, N. E. & Edison, O. S. (2020). Knowledge of menstrual hygiene among female secondary school students in Khana, Rivers State, Nigeria. *International Journal of Innovative Healthcare Research*, 8(2):1-6. <https://seahipaj.org/journals-ci/june-2020/IJIHCR/full/IJIHCR-J-1-2020.pdf>.
- [4]. Fehintola, F. O., Fehintola, A. O., Idowu, A., Aremu, A. O., Ogunlaja, O. A. & Ogunlaja, I. P. (2017). Assessment of knowledge, attitude and practice about menstruation and menstrual hygiene among secondary high school girls in Ogbomoso, Oyo state, Nigeria. *International Journal of Reproductive, Contraceptive Obstetrics and Gynecology*, 2017;6:1726-32. DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20171932>.
- [5]. Haque, S. E., Rahman, I. K., Mutahara, M. & Sakisaka, K. (2014). The effect of a school-based educational intervention on menstrual health: an intervention study among adolescent girls in Bangladesh. *BMJ* 2014:e004607.
- [6]. Huda, N., Hossain, S. Z., Mohsin, M., Azim, S., Rahman, M., Ferdous, A. & Hossain, M. A. (2022). Exploring knowledge and practices regarding menstrual hygiene management among Bihari women In the Geneva Camp in Bangladesh. *Women, Midwives and Midwifery*, 2(1). DOI: <https://doi.org/10.36749/wmm.2.1.84-97.2022>
- [7]. Idoko, L.O., Okafor, K.C., Ayegba, V.O., Bala, S. and Evuka, V.B. (2022) Knowledge and practice of menstrual health and hygiene among young people in Jos, Plateau State, Nigeria. *Open Journal of Obstetrics and Gynecology*, 12, 292-308. <https://doi.org/10.4236/ojog.2022.124028>.
- [8]. Ilusanmi, O. S. & Aluko, J. O. (2021). Knowledge and practice of menstrual hygiene among adolescent school girls in secondary schools, Ijebu -Ode Local Government, Ogun -State, Nigeria. *Journal of Research in Humanities and Social Science*, 9(7):67-73. www.questjournals.org.
- [9]. Kågesten, A. E., Zimmerman, L., Robinson, C., Lee, C., Bawoke, T., Osman, S. & Schlecht, J. (2017). Transitions into puberty and access to sexual and reproductive health information in two humanitarian settings: a cross-sectional survey of very young adolescents from Somalia and Myanmar. *Conflict and Health*, 11(1):24 <https://doi.org/10.1186/s13031-017-0127-8>.
- [10]. Lacroix, A. E., Gondal H., Shumway, K. R. & Langaker, M. D. (2022). Physiology, Menarche. In: *StatPearls [Internet]*. Treasure Island (FL): StatPearls Publishing. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK470216/>.
- [11]. Lawan, U.M., Yusuf, N. W., Musa, A.B. (2010). Menstruation and Menstrual Hygiene amongst Adolescent School Girls in Kano, Northwestern Nigeria. *African Journal of Reproductive Health*, 14(3):201-208.
- [12]. Majed, R. & Touma, H. (2020). Menstrual hygiene management among syrian refugee women in Bekaa (Issue June). Available from: www.oxfam.org.
- [13]. Marlow, H. M., Kunnuji, M., Esiet, A., Bukoye, F. & Izugbara, C. (2022). The sexual and reproductive health context of an Internally Displaced Persons' Camp in Northeastern Nigeria: Narratives of Girls and Young Women. *Frontier of Reproductive Health*, 3:779059. doi: 10.3389/frph.2021.779059.
- [14]. Marlow, H.M., Kunnuji, M., Esiet, A., Bukoye, F. & Izugbara, C. (2022). The Sexual and Reproductive Health Context of an Internally Displaced Persons' Camp in Northeastern Nigeria: Narratives of Girls and Young Women. *Frontier of Reproductive Health* 3:779059. doi:10.3389/frph.2021.779059
- [15]. United Nations Office for the Coordination of Humanitarian Affairs (OCHA). (2021). *Global Humanitarian Overview*. Available at: <https://gho.unocha.org/>.
- [16]. Olabanjo, O. O., Olorunfemi, A. O., Phillips, A. (2014). Temitope OO. Knowledge, practices and socio-cultural restrictions associated with menstruation and menstrual hygiene among in-school adolescents in Ile-Ife, Nigeria. *Ijprm*, 16. 24.

- [17]. Schmitt, M. L., Gruera, C., Clatworthy, D., Kimonye, C., Peter, D. E. & Sommera, M. (2022). Menstrual material maintenance, disposal, and laundering challenges among displaced girls and women in Northeast Nigeria. *Journal of Water, Sanitation and Hygiene for Development*, 12(7): 517 doi: 10.2166/washdev.2022.213.
- [18]. Schmitt, M., Clatworthy, D., Ratnayake, R., Klaesener-Metzner, N., Roesch, E., Wheeler, E. & Sommer, M. (2017) Understanding the menstrual hygiene management challenges facing displaced girls and women: findings from qualitative assessments in Myanmar and Lebanon. *Conflict and Health* 11 (19), 1–11. <https://doi.org/10.1186/s13031-017-0121-1>.
- [19]. Selby, D. (2018). *Muslim Women Are Over Period Shaming During Ramadan*: Menstruating girls and women are excluded from fasting and praying during Ramadan. *Global Citizen*. <https://www.globalcitizen.org/en/content/period-shame-ramadan-twitter-menstruation/#:~:text=Women%20and%20girls%20don't,they%20aren't%20simply%20ex%20cused.>
- [20]. Somali Red Crescent Society. (2015). Final report: Operational research on Menstrual Hygiene Management (MHM) Kit for Emergencies. Somali: Somali Red Crescent Society. <https://www.elrha.org/wp-content/uploads/2015/01/Final-Report-Operational-Research-on-MHM-Kit-Somalia.pdf>.
- [21]. Sommer, M., Chandraratna, S., Cavill, S., Mahon, T. & Phillips-Howard, P. (2016). Managing menstruation in the workplace: an overlooked issue in low and middle-income countries. *International Journal of Equity Health*, 15:86–90. doi: 10.1186/s12939-016-0379-8
- [22]. Sommer, M., Schmitt, M. L., Ogello, T., Mathenge, P., Mark, M., Clatworthy, D., Khandakji, S. & Ratnayake, R. (2018). Pilot testing and evaluation of a toolkit for menstrual hygiene management in emergencies in three refugee camps in Northwest Tanzania. *Journal of International Humanitarian Action*, 3:6 <https://doi.org/10.1186/s41018-018-0034-7>.
- [23]. Tellier M., Farley, A., Jahangir, A., Nakalema, S., Nalunga, D., & Tellier, S. (2020). Practice Note: Menstrual Health Management in Humanitarian Settings. 2020 Jul 25. In: Bobel C, Winkler IT, Fahs B, Hasson KA, Kissling EA, Roberts TA, editors. *The Palgrave Handbook of Critical Menstruation Studies* [Internet]. Singapore: Palgrave Macmillan; 2020. Chapter 45. PMID: 33347164.
- [24]. United Nations Children Fund (2018). Fast Facts: Nine things you didn't know about menstruation. Press Release: UNICEF. <https://www.unicef.org/press-releases/fast-facts-nine-things-you-didnt-know-about-menstruation>.
- [25]. United Nations Entity for Gender Equality and the Empowerment of Women (UN Women) and the Water Supply and Sanitation Collaborative Council (WSSCC) (2017). Menstrual hygiene management in humanitarian situations: the example of Cameroon. Cameroon: UN Women and WSSCC. [WSSCC_MHMHumanitarianien-Cameroon_EN-2017.pdf](https://www.unicef.org/press-releases/fast-facts-nine-things-you-didnt-know-about-menstruation).
- [26]. VanLeeuwen, C. & Torondel, B. (2018). Improving menstrual hygiene management in emergency contexts: literature review of current perspectives. *International Journal of Women's Health* 10, 169–186. <https://doi.org/10.2147/IJWH.S135587>.
- [27]. WHO/UNICEF Joint Monitoring Program for Water Supply and Sanitation. (2012). Consultation on draft long list of goal, target and indicator options for future monitoring of water, sanitation and hygiene. WHO/UNICEF. Available from: <http://www.rural-water-supply.net/en/resources/details/378>.
- [28]. World Bank. (2022). Menstrual Health and Hygiene. World Bank. <https://www.worldbank.org/en/topic/water/brief/menstrual-health-and-hygiene#:~:text=Poor%20menstrual%20hygiene%2C%20however%2C%20can,as%20hepatitis%20B%20and%20thrush.>
- [29]. World Bank. (2020). Periods don't stop for pandemics - neither will our efforts to bring safe menstrual hygiene to women and girls. [Online] Available at: <https://www.worldbank.org/en/news/feature/2020/05/28/menstrual-hygiene-day-2020>.
- [30]. Wynne, M. (2022). Menstrual Hygiene Management in the Refugee Context: Learning from Piloted Interventions in East Africa. RLI Working Paper No. 60. London: Refugee Law Initiative <https://sas-space.sas.ac.uk/9655/1/RLI%20WPS%20No.%2060.pdf>.