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Case Report

Prevalence, impact and management of dysmenorrhea among female students in a Nigerian University

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Abstract

Background and Objective : The exact prevalence of dysmenorrhea and it's severity is difficult to determine because sociodemographic characteristics disperities and genetic variations. The study assessed the prevalence, impact and management of dysmenorrhea among female undergraduateNigerian students.

Methods : The study was a descriptive cross-sectional study carried out in Madonna University, Elele campus, Rivers state between February to April 2023.

Results: Three hundred and ninety (390) questionnaires were valid and included in the final analysis, giving a response rate of (97.5%). The average age of study respondents was 22.81±33 years and majority (221, 56.7%) were between 21-25 years.The minimum and maximum menarche age was nine (9) and 15 years respectively with ameanmenarcheageof12.23±14.Predictors of presence of dysmenorrhea, use of non-pharmacological and pharmacological management Inferential statistics revealed that level of study (OR 1.003, {P= 0.021, CI 1.000-1.006}), family history of dysmenorrhea (OR = 4.817, {P <0.001, CI 2.998-7.739}) and longer flow duration (OR = 21.931, {P =0.004, CI = 2.717-176.99}) significantly predicted the presence of dysmenorrhea.

Conclusion: A half of the studentsexperience dysmenorrhea. Majority of the students resorted to social withdrawal, and experiences altered sleep pattern and changes in their appetite.Hot water therapy was applied as a non-pharmacological method for managing pain and most student use a combination of pharmacological and non-pharmacological methods to manage their pain. NSAID is the most used pharmacological approach

Key words: dysmenorrloea,menarche; university students; menstruation; nigeria

Introduction

Menstruation is a natural discharge of blood, secretions and tissue debris from the womb at approximately monthly intervals throughout the reproductive years of females [1]. Some females experience abnormal flow termed dysmenorrhea which is a painful sensation that occurs at lower abdominal region and pubic bone before and/or during menstruation [2]. The pain is usually accompanied by physical and biological symptoms that includes nausea, vomiting, fatigue, serious headache [3]. Dysmenorrhea is one of the most frequent gynecological diseases reported among women of reproductive age [4,5]. A number of studies have estimated the prevalence of dysmenorrhea in Nigeria and globally [1,6–9]. The prevalence of dysmenorrhea in Nigeria ranges from 51.1% [6]- 76.3% [8]. Around the world, Romania, reported a prevalence of 78.4%[10] while a Malaysia study documented 87.3% [4]. The exact prevalence of dysmenorrhea and it's severity is difficult to determine because sociodemographic characteristics, family financial condition and genetic factors may affect presence of dysmenorrhea [1,2]. In Nigeria, age, duration of menstrual flow, body mass index, use of oral contraceptives, good dietary pattern showed association with presence of dysmenorrhea [7,9,11]. Long menstrual cycle interval, long menses flows, positive family history, lower chronical/gynecological age and alcohol use increased the presence and severity of dysmenorrhea [1,2]. In a Jordan study, severe dysmenorrhea was significantly associated with women who never eat meat, those who consume cereals and fish and those who eat less than three servings of fruit per week [12]. Less than 20 years of age, early menarche,lack of physical activity, depression, smoking, anxiety,

nulliparity, higher socioeconomicstatus,heavymenses and familyhistoryof dysmenorrhea were also reported as risk factors to dysmenorrhea [13]. Presence of dysmenorrhea comes with discomforts which may impact negatively on health, social life and occupational roles of affected women. Academic work may come with additional stress and a study documented increase in severity of menstrual pain with strenuous activities [10]. In Greece, the pain experienced during menstruation amplifies feeling of nervousness and weakness, decreases energy levels, concentration in course work and the extent of volume of information that can be acquired among students [14]. Dysmenorrhea also affected outdoor activities, clothing choice of students social life, couples relationship and interaction with family members[10]. Dysmenorrhea caused mobility problems, decreased personal care, depression and anxiety. Women with dysmenorrhea had a significantly lower perception of their quality of life compared to other group[15]. However, impact of dysmenorrhea on students of Madonna University has never be put in context.

Students in higher institution leaving away from home may experience a greater burden of the symptoms of dysmenorrhea. Consequently, different treatments including pharmacological and non-pharmacological approaches have been applied to manage dysmenorrhea. Since, pain is mediated by prostaglandin, nonsteroidal anti-inflammatory drugs (NSAIDS), which inhibits the synthesis of prostaglandin is considered an effective pharmacological treatment [16]. Oral contraceptive pills are also recommended for management of dysmenorrhea when NSAIDS have failed after three episodes of dysmenorrhea [3]. Non pharmacological therapy like yoga, meditation, acupuncture have been used to lessen the effects of dysmenorrhea [1]. Some home therapies like hot water massage, drinking fluids like water, tea, coca cola have also been used to alleviate pain of dysmenorrhea [1,3]. In Nigeria, 31% of students that experience dysmenorrhea took drugs while 24.9% did nothing [6]. A study done in Northern Ethiopia revealed that 48% of the participants took ibuprofen [3]. Paracetamol, an antipyretic agent was the most consumed (41.3%) drug for managing dysmenorrhea pain in Northern Ghana not minding the severity of pain [2]. However, the prevalence, impact and management of dysmenorrhea has not been described in Madonna University Nigeria. The students spend most of their time inside the school as it is compulsory to live and attend classes within the school environment. Some female students may suffer from dysmenorrhea which will reduce their participation in school activities and may lead to extension of the number of academic years they stay in the school. This has a consequence not only on the student but on the family due to the financial burden of continuous stay in the university. The study assessed the prevalence, impact and management of dysmenorrhea among female undergraduate students of Madonna University Elele, Nigeria.

Methods

Study design: The study was a descriptive cross-sectional study carried out in Madonna University, Elele campus, Rivers state between February to April 2023.

Study population and sample size: The population was 6195 female undergraduate students admitted in the school in the 2021/2022 academic session. A sample size of 361 female students was calculated at precision level of 5% and 95% confidence interval. To account for non-response, 10% [17] of the sample size was added yielding 398.

Study criteria: We sampled the female undergraduate and registered studens who gave their informed consent to participate in the study and available at the time of the study. We excluded those who were qualified but absent at the time of data collection.

Sampling method: The students were sampled from the eight female hostels using systematic random sampling. The hostels differ in terms of capacity, therefore the number of students sampled from the hostels was a ratio of number of students in the hostel multiplied by the required sample size. The number of girls in a room determined the number of rooms that was sampled from the hostel. All the girls living in the sampled room were invited to participate in the study.

Study instrument handling: A self-administered questionnaire prepared in English Language as that is the language of instruction in Madonna University was used for data collection. The questionnaire was developed after review of previous works on dysmenorrhea [2,4,18]. It was read and corrected by experts in questionnaire design and pretested among thirty-pre-degree students not included in the final analysis. The questionnaire was again reviewed by experts and necessary corrections were made before it was administered to respondents. Four parts was recognized in the questionnaire, the sociodemographic characteristics, menstruation details, impact and management of dysmenorrhea. Oral consent was sought and obtained from the students before handing out the questionnaire.

Data analysis: The data was analysed with descriptive and inferential statistics using SPSS version 25. All collected data were described and binary logistic regression was used to predict presence of dysmenorrhea, use of pharmacological treatment and use of non pharmacological treatment.

Results

Sociodemographic and menstrual characteristics

Most of the respondents were single (n=360, 92.3%) and a higher proportion (98, 25.1) had spent a minimum of five years in school. Lowerthanhalfoftherespondents42.3%reportedhaving a family history of dysmenorrhea. Table 1 shows the detailsof demographic variables

Age (years)	Frequency	Percent (%)
16-20	121	31.8
21-25	221	56.7
26-30	45	11.5
Menarche age (years)		
9-12	238	61
13-15	152	39
Marital Status		
Single	360	92.3
Married	30	7.7
Level of study		
100	35	9
200	57	14.6
300	41	10.5
400	70	17.9
500	98	25.1
600	89	22.8
Family history of dysmenorrhea		
No	225	57.7
Yes	165	42.3

Table 1: Sociodemographic characteristics of the respondents

Prevalence of dysmenorrhea and menstrual characteristics

Approximately half (n =191, 49%) reported having menstrual pain, with pain occurring atonsetofmenstruationfor72.8% (139) oftherespondents. Ninetyone(n=91,47.6%) of respondents with dysmenorrhea described the pain as severe while a higher proportion (n =134, 70.2%) recognized the pain as continuous in nature andmore than half (n= 202, 51.8%) have menstrual flow duration of ≥5 days. Table 2 presents the details ofprevalenceandcharacteristics ofdysmenorrheaamongthe respondents.

Menstrual Pain present	n	(%)
Yes	191	49
No	199	51
Onset of pain		
Before menstruation	32	16.8
Onset of menstruation	139	72.8
A day after onset of menstruation	20	10.5
Description of Pain		
Mild	36	18.8
Moderate	64	33.5
Severe	91	47.6
Pain type		
Intermittent	57	29.8
Continuous	134	70.2
Flow duration		
1-2 days	23	5.9
3-4 days	165	42.3
5 and more days	202	51.8

Table 2: Prevalence of dysmenorrhea and menstrual characteristics

Table 3 shows the impact of dysmenorrhea. Out of the respondents, 79.6% reported theyexperienced social withdrawal and lack of concentration in their academic work (56.5%). In association with this,51% reported being absent from classes. Also, 62.3% reported decreased appetite and 60.7%reportedachangein sleep pattern dueto dysmenorrhea. For most of the respondents, the pain starts at the onset of menstruration

Experience social withdrawal	(n)	(%)
Yes	152	79.6
No	39	20.4
Lack concentration		
Yes	108	56.5
No	83	43.5
Altered Sleep pattern		
Yes	116	60.7
No	75	39.3
Change in appetite		
Yes	119	62.3
No	72	37.7
Absenteeism		
Yes	98	51
No	94	49

Table 3: Impact of dysmenorrhea on daily activities

Table4showsthe respondents managementpatternofdysmenorrhea and their knowledge of the medications they use. Most (91, 47.6%) of them managed dysmenorrhea with a combination of pharmacological and non pharmacological therapy. Considering the non-pharmacological therapies, n = 67, 35.1% used hot water alone to easetheirpain, otherscombinemorethanonemethodofnon pharmacologicaltherapieswhilen=77, 40.3%did not applyanynon pharmacological therapy. Mostrespondentswithdysmenorrhea (85.8%) utilizedmedicationstomanagetheirpain. More than a quarter of the respondents (27.7%), used (NSAIDs) as a single agent in managingtheir pain. Antipyretics alone were utilized by 19.4% of the respondents. Almost half of the respondents 49.2% took their medications two times a day. A high proportion (151, 92.1%) has knowledge on the harmful effects of the drug used.Considering the management pattern and pain severity, almost half of the respondents that reported severe pain used one form of pharmacological therapy compared to 44% of students with mild pain that used non pharmacological therapy. Table 5 details the relationship between treatment and severity of pain.

Variables	Frequency (n)	Percentage (%)
No form of treatment	4	2.1
Non pharmacological treatment	23	12
Pharmacological treatment	73	38.2
Both treatment	91	47.6
Non-Pharmacological therapy		
Hot water	67	35.1

Aroma therapy	8	4.2
Aroma therapy and hot water	17	8.9
Exercise	10	5.2
Hot water and exercise	12	6.3
No non pharmacological therapy	77	40.3
Pharmacological therapy		
(Non-steroidal anti-inflammatory drugs (NSAIDS)	57	27.7
Antipyretic	37	19.4
Hormonal contraceptive	26	13.6
NSAIDS and hormonal contraceptives	19	9.9
NSAIDS and supplements	12	6.3
Antipyretic and supplements	6	3.1
Antipyretic and NSAIDS	11	5.8
No treatment	27	14.1
Frequency of drug use		
1-2 times daily	94	49.2
3-4 times daily	35	18.3
When necessary	35	18.3
No drug therapy	27	14.1
Knowledge on harmful effects of the drug		
Yes	151	92.1
No	13	7.9
Knowledge on contraindication		
Yes	143	87.2
No **Knowledge on maximum dose of the drug**	21	12.8
Yes	156	95.1
No	8	4.9
Knowledge on the adverse effects of the drug		
Yes	145	88.4
No	19	11.6

Table 4: Management of dysmenorrhea and knowledge on drug therapy by the respondents

Type of treatment	Mild n (%)	Moderate n (%)	Severe N (%)	P-Value (X^2)
No treatment	1 (2.8)	1 (1.6)	2 (2.2)	<0.001 (51.68)
Pharmacological treatment	9 (25)	19 (29.7)	45 (49.5)	
Non pharmacological treatment	16 (44.4)	6 (9.4)	19 (1.1)	
Pharmacological and non-pharmacological	10 (27.8)	38 (59.4)	43 (47.3)	
Total	36(100)	64(100)	91(100)	

Table 5: Relationship between type of treatment and pain severity

Respondents with severe pain (OR = 0.379, {P =0.038, 0.152-0.947}) had increased odds of using non pharmacological therapy. Having a severe (OR= 37.340, P = < 0.001, CI 8.019-173.86}) and continuous (OR=0.092, {P=0.009, CI=0.16-0.54) pain significantly predicted use of a pharmacological agent in managing dysmenorrhea.

Presence of dysmenorrhea			
Predicting variables	OR	P- value	95% CI
Demographic Variables			
Age (years)			
16-24 (Ref)			
21-25	0.729	0.494	0.295-1.801
26-30	0.325	0.074	0.095-1.116
Level of study	1.003	0.021*	1.000-1.006
Menarche age (years)			
9-12 (Ref)			
13-15	0.857	0.464	0.520-1.348
Family history of dysmenorrhea			
No (Reference category)			
Yes	4.817	<0.001*	2.998-7.739
Flow duration			

1-2 days (Ref)			
3-4 days	10.619	0.026*	1.330-84.754
5 and more days	21.931	0.004*	2.717-176.995
Use of non-pharmacological agent			
Description of pain			
Mild	-		
Moderate	0.878	0.791	0.334-2.306
Severe	0.379	0.038*	0.152-0.947
Onset of pain			
Before menstruation			
Onset of menstruation	0.449	0.104	0.171-1.178
A day after onset of menstruation	0.291	0.057	0.082-1.035
Type of pain			
Intermittent			
Continuous	0.707	0.336	0.349-1.434
Level of study	1.000	0.906	0.998-1.002
Use of pharmacological agent			
Description of pain			
Mild			
Moderate	8.691	0.01*	2.510-30.090
Severe	37.340	<0.001*	8.019-173.863
Onset of pain			
Before menstruation			
Onset of menstruation	1.308	0.718	0.304-5.627
A day after onset of menstruation	1.217	0.846	0.167-8.851
Type of pain			
Intermittent	Reference		
Continuous	0.092	0.009*	0.16-0.548
Level of study	0.999	0.728	0.996-1.003

Table 6: Predictors of presence of dysmenorrhea, andthe use of non-pharmacological and pharmacological agent

Discussion

The study investigated prevalence, impact and management of dysmenorrhea in Madonna University Elele, Nigeria. The prevalence of dysmenorrhea in the present study was 49%, which is similar to 51.1% [6] and 53.3% [7], reported in previous Nigeria studies. Although, higher prevalence 76.3% [8], 73% [9] and 68.8% [11] has been reported in other Nigerian studies. Published work around the world, reported prevalence of dysmenorrhea to be 89.2% in Greece, 71.8% in Ethiopia and 63.5% in Jordan [3,12,14]. The differences in the prevalence might be related to the pain perception and interpretation by the females as no scale was used to ascertain the presence of pain. For most of the students in this study, the onset of the pain was at the beginning of the menstrual cycle which contradicts report of pain starting before blood flow in Northern Ghana [2]. Respondents experiencing severe pain were higher than moderate and mild pain. This is in line with reports byVlachou*et al.,* in Greece [14]. However, a Ghana [2] study reported moderate pain as the major pain type experienced by the respondents. variability in individual pain threshold influenced by genetics, psychology, social and cultural beliefs might affect the interpretation of pain[2]. Therefore, the different pain types expressed by the respondents in these studies is based on their interpretation of pain.

Our study indicated that dysmenorrhea impacted negatively on the activities of most of the students, which has been documented by several reports[1–3] around the globe. Notably, social withdrawal affected a greater proportion of the students while 56% lacked concentration. In a study conducted among university students in Northern Ghana, dysmenorrhea impacted on attendance of lectures (70.7%) of the respondents and 44.2% of them lacked concentration. However, a study among nursing students in Spain indicated that dysmenorrhea affected the daily activities of a few proportion 5.6% of the participants [15]. The differences might lie on individual capability of the respondents to carry on with activities while in pain. Absenteeism affected only 51% of the students in this present study, which is lower than other Nigerian reports of 79.3% among secondary school girls and 66% in private universities [5,11]. The report in our study may be expected as hostels are locked after students leave for lectures Madonna University. It might suggest that most of them may not want to be locked inside the hostel.

Only a few persons (2.1%) did not take any form of therapy to alleviate their menstruation pain which is lower than another report from Nigeria (24.9%). Use of warm water was the most non pharmacological treatment applied to manage dysmenorrhea in this study similar to a Romanian study[10]. The present study recorded a lower proportion (5.2%) using exercise as a means to reduce pain compared to a 25.3% recorded in a previous Nigeria study[9]. Although there are records [19,4], that exercise may relieve dysmenorrhea pain, other studies still question the authenticity of the claim [20]. More than two third of girls with dysmenorrhea utilized one form of pharmacology therapy.

The most utilized medication for managing dysmenorrhea pain in this study was NSAIDs. This was reported in other studies across the globe [1,3,14,18]. This is expected for the fact that NSAIDs reduce pain that results from prostaglandin activity and there is increased prostaglandin synthesis in the endometrium during menstrual period [21]. Also, there is support of NSAIDs as a first line in the management of primary dysmenorrhea [22]. The prostaglandin is said to mediate uterine contraction which increases pain sensation during menstrual period [1]. Most of the students had knowledge on the side effects, maximum dose, contraindications and harmful effects of the drug compared to an Ethiopian study [1]. The result is expected as most of the students are in pharmacy, medical and nursing department. Notwithstanding, every use of NSAIDs and contraceptive should be aware of harms associated with the use.

The present study did not find a significant association between age, menarche age and the presence of dysmenorrhea. However, having a family history of dysmenorrhea and longer days of menstrual flow duration predicted presence of dysmenorrhea in these students which is similar to other studies [1,13]. How the respondents interpreted their severity and type

of pain affected the use of pharmacological and non pharmacological agent. People that reported moderate to severe pain and continuous pain type used non pharmacological and pharmacological therapy similar to reports from other African countries [1,3]. The result is expected as intense feeling of pain will propel one to seek solution as compared to people with mild and intermittent pain.

Conclusion

Half of the population of female students experience dysmenorrhea, which impacts negatively on their academic and social engagements. Hot water therapy was applied as a non-pharmacological method for managing pain and most student use a combination of pharmacological and non-pharmacological methods to manage their pain. NSAID is the most used pharmacological approach for managing dysmenorrhea pain among them. We recommend school management include this question on presence of painful menstruation on school admission form to identify students that might need some consideration if they miss school activities during menstrual periods.

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