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PRIMARY DYSMENORRHEA AMONG STUDENTS AT LIRA UNIVERSITY IN NORTHERN UGANDA: SYMPTOMS PRESENTATION AND MANAGEMENT - A QUANTITATIVE STUDY.

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ABSTRACT.

Background:
Primary dysmenorrhea (PD) is menstrual pain not associated with any pelvic pathology. It is one of the most common gynecologic complaints in young women. In Uganda, literature is scarce on the PD-associated symptoms and management strategies used by women of reproductive age. This study aimed to describe primary dysmenorrhea-associated symptoms and management strategies used by undergraduate students in northern Uganda.

Methods:
A non-experimental cross-sectional study design was used using descriptive methods of data analysis. The study was conducted among female undergraduate students of a University in Lira, northern Uganda. Systematic sampling was used to select study participants who met the inclusion criteria until 232 study participants were recruited. The data was collected using a self-administered questionnaire. Data analysis was aided by Statistical Package for Social Sciences (SPSS) (version 23) and descriptive statistics were used.

Results:
The prevalence of PD was 90.9%. The most commonly experienced dysmenorrhea-associated symptoms were change in appetite (36.0%), breast engorgement (39.8%), and depressed mood (51.4%). Pain relievers were the most commonly used management strategy (77%) with Paracetamol being the most commonly used pain reliever (29.8%). The most commonly used non-pharmacological management strategies were; exercise (47.6%), resting (44.5 %), and relaxation (44.1%).

Conclusion:
The prevalence of PD was high among the study participants. The most common symptoms experienced by those with PD were; depressed mood, breast engorgement, and change in appetite. The most commonly used management strategies for PD were pain relievers, exercise, rest, and relaxation. University management should prioritize menstrual health and design programs to educate female students on the management of dysmenorrhea-associated symptoms using both pharmacological and non-pharmacological strategies.

Recommendation:
We recommend the university prioritize education, conduct awareness campaigns, ensure access to resources and counseling, collaborate with healthcare, develop policies, and continue research.

Keywords: *Primary dysmenorrhea, Menstrual Cramps, Symptoms, Management strategies, Female Students*
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INTRODUCTION.

Dysmenorrhea is a prevalent gynecological issue commonly affecting young women worldwide [1]. Its impact is significant, with approximately 71.1% of women experiencing it [2]. In Africa, particularly among female students, the burden of dysmenorrhea is notably high, estimated at 71.8% [3]. Specifically, in Uganda, the prevalence of dysmenorrhea stands at a striking 75.8% [4]. This condition continues to be a significant health concern for young females, negatively affecting various aspects of their lives, including academic performance, quality of life, relationships, and social interactions.

Dysmenorrhea is characterized by painful menstrual cramps originating in the uterus [5]. An imbalance in prostaglandins (PGs), vasopressin, and other chemical substances is often suggested as the cause. During dysmenorrhea, intrauterine pressure exceeds arterial pressure for an extended period, resulting in ischemia and the production of anaerobic metabolites that stimulate pain neurons[5]. Dysmenorrhea is broadly categorized into primary and secondary types [6]. Primary

dysmenorrhea (PD) refers to menstrual pain not linked to pelvic pathology, while secondary dysmenorrhea is associated with pelvic issues, with endometriosis being a common cause in adolescents[1].

Common symptoms of PD include onset shortly after menarche, lasting 48-72 hours, starting before or just after menstrual flow, labor-like cramps, lower back or abdominal pain radiating to the back or thigh, and normal pelvic examination findings. Longer menstrual periods and heavy bleeding are associated with primary dysmenorrhea [7].

Various management strategies are employed by girls and women to alleviate dysmenorrhea symptoms, including bed rest, analgesics, heat application, abdominal massage, herbal remedies, seeking advice from peers and family, and engaging in physical activity or exercise[7].

Despite the high prevalence of dysmenorrhea in Uganda and Sub-Saharan Africa, there is a lack of literature specifically addressing symptoms and management strategies among undergraduate students in northern Uganda. Understanding these aspects is crucial for designing effective interventions to assist these young women in managing dysmenorrhea [8].

Objective.

To assess the symptoms associated with primary dysmenorrhea and the diverse management strategies that undergraduate students in northern Uganda utilize.

METHODS.

Study design

This study utilized a non-experimental cross-sectional research design, employing descriptive statistics. The investigation spanned from January 2022 to August 2022. The selection of this research design aimed to precisely and systematically delineate Parkinson's disease (PD)-related symptoms and management strategies among undergraduate university students.

Study setting.

This study occurred at Lira University, in Ayere cell, Barapwo ward, Lira City West, Lira City. Lira University was selected as it is the sole public university in Lango Sub-region, and no prior research on dysmenorrhea had been conducted in the area. Covering a total area of 621 acres (251.3 hectares), the university was established in 2012, initially enrolling over 1,000 students, including 560 female students at the time of the study. The university campus is located approximately 11 kilometers northwest of Lira city by road. Lira City is positioned roughly 337 kilometers north of Kampala City, the capital and largest city in the country.

Study participants.

The study participants comprised exclusively female undergraduate students who were admitted to and actively pursuing their studies at Lira University during the period of data collection.

Study Size.

The sample size was calculated using Yamane's (1967) finite population formula for sample size determination. The formula is expressed as follows: n = N / (1+Ne^2), where n represents the sample size, N denotes the population size (560), and e signifies the margin of error (5%). We estimated our study population to consist of 257 participants, with an additional 10% allocated for potential non-response.

Sampling Criteria and Eligibility.

Systematic sampling was employed to choose study participants who met the specified inclusion criteria until the desired sample size was reached. The sampling interval was determined by dividing the total number of female students (560) by our calculated sample size (257), resulting in a sampling interval of two. To initiate the selection process, we randomly generated a number between one and the sampling interval (two) from a table of random numbers, identifying the first participant. Subsequently, every second student was included in the study. Eligible participants were required to be female enrolled students at Lira University, willing to provide informed consent, and affiliated with the faculty under investigation while exclusion criteria encompassed individuals with physiological conditions, such as critical illness, that hindered meaningful participation.

Study Bias.

The accuracy of data collected via self-administered questionnaires may have been compromised as participants could potentially misinterpret questions or offer inconsistent responses.

Data collection method, tool, and procedures.

We employed a self-administered semi-structured questionnaire to gather data, which was adapted from previous studies investigating symptoms and management strategies related to dysmenorrhea in various global regions. The questionnaire encompassed four sections: demographic characteristics of the participants, menstruation-related details, information regarding menstrual pain and associated symptoms, and the treatment strategies utilized for managing dysmenorrhea. On average, each interview session lasted approximately 10 minutes.

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Data management and analysis.

Data was entered and analyzed using Statistical Package for Social Sciences (SPSS) version 23. Descriptive statistics were used, and frequencies for the different variables were run and reported accordingly using percentages.

Ethics approval and consent to participate.

This study was reviewed and approved by the Gulu University Research and Ethics Committee (GUREC-2022-246). Written informed consent was obtained from the study participants before data collection, the participants who could not sign the informed consent form were made to put a thumbprint. All methods in this study were performed by the declaration of Helsinki.

RESULTS.

Socio-demographic characteristics of study participants.

The age of the study participants varied between 18 and 39 years old with a mean age of 22.54 ± 2.67 years. The majority of the participants were from the Faculty of Health Sciences (50%) and single (64.2%) (Table 1).

Table: 1 Socio-demographic characteristics of study participants (N=232)

Characteristics	Frequencies (n)	Percentages (%)
Age (Years)		
18-19	22	9
20-24	180	78
25-39	30	13.0
Faculty		
Medicine	33	14
Health Sciences	115	50
Education	38	16
Management sciences	46	70
Year of Study		
First-year	99	42.7
Second year	58	25.0
Third year	50	21.5
Fourth-year	25	10.8
Religion		
Catholics	85	36.6
Muslims	15	6.5
Anglican (Protestants)	77	33.2
P.A.G	39	16.6
Seventh-day Adventists	6	2.6
Others	10	4.3
Marital status		
Unmarried/ Single	149	64.2
Married	25	10.8
Cohabiting with a partner	17	7.3
Not willing to say	41	17.7

Menstruation-related characteristics of study participants.

The mean age at menarche was found to be 13.93 ± 1.72 years. More than three-quarters (77.1%) of the participants had regular menstrual flow. More than two-thirds (67.2%) of the participants had a longer bleeding length (8-10 days). (Table 2)

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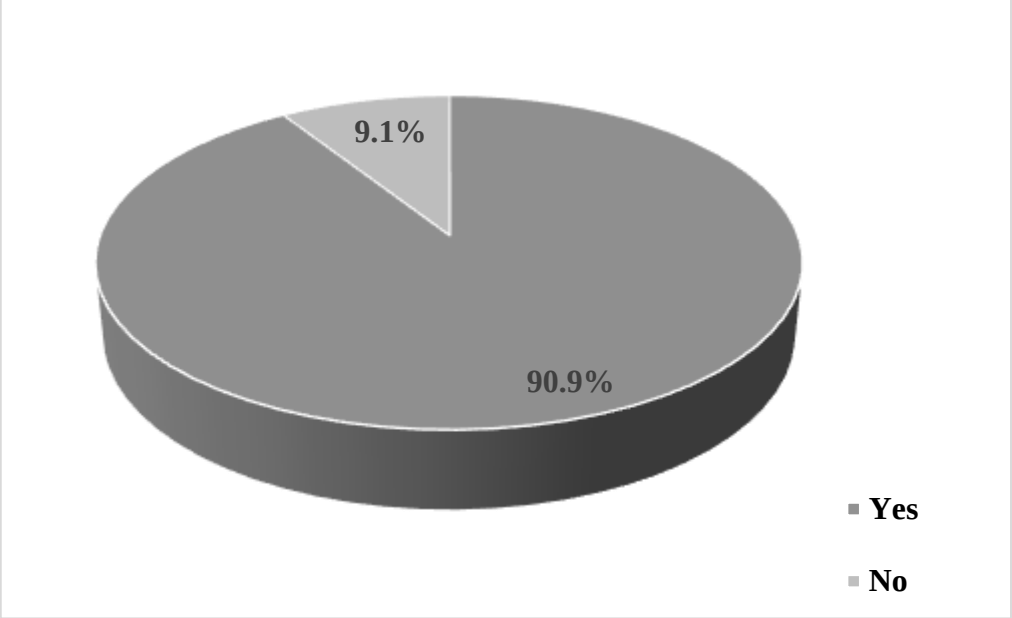
Table 2: Menstruation-related characteristics of the study participants (N=232)

Characteristics	Frequency (n)	Percentage (%)
Age at menarche (Years)		
9-12	40	17.2
13-16	175	75
17-22	17	7.3
Menstrual pattern		
Regular	179	77.1
Irregular	53	22.8
Cycle length (days)		
15-20	15	6.5
21-35	202	87.0
36-60	13	5.6
Length of bleeding (Days)		
1-7	76	32.7
8-10	156	67.2

Prevalence of primary dysmenorrhea among study participants.

We evaluated the prevalence of primary dysmenorrhea among undergraduate students at Lira University and discovered that it was 90.9%. (Figure 1)

Figure 1: Prevalence of primary dysmenorrhea among the study participants (N=232)



Primary dysmenorrhea-associated symptoms among study participants (N=211)

The most commonly reported symptoms of PD among the study participants were: depressed mood (52.2%), breast engorgement (39.8%), and change in appetite (36%). (Table 3)

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Table 3: Primary dysmenorrhea-associated symptoms of the study participants (N=211)

Characteristics	Frequency (n)	Percentage (%)
Pain characteristics		
Mild	40	19.0
Moderate	116	55.0
Severe	55	26.1
Abdominal pain		
Yes	45	19.4
No	187	80.6
Back pain		
Yes	58	27.5
No	153	72.5
Thigh pain		
Yes	28	12.1
No	204	87.9
Inguinal region pain		
Yes	65	28
No	167	72
Dizziness		
Yes	46	19.8
No	186	80.2
Fainting		
Yes	60	28.4
No	151	71.6
Change/Loss in appetite		
Yes	76	36.0
No	135	64.0
Bloating		
Yes	58	27.5
No	153	72.5
Edema		
Yes	32	13.8
No	200	86.2
Breast engorgement		
Yes	84	39.8
No	127	60.2
Decreased concentration		
Yes	73	31.5
No	159	68.5
Indigestion and heartburn		
Yes	13	6.2
No	198	93.8
Normal mood		
Yes	80	34.4
No	152	66.5
Anger		
Yes	68	29.3
No	164	70.7
Depressed mood		
Yes	121	52.2
No	111	47.8

Drug/Medical management strategies for primary dysmenorrhea-associated symptoms.

The prevalence of drug use in the management of dysmenorrhea was high (71.8%), where more than three-quarters (74.6%) of the respondents had used pain relievers, and most (90.5%) of participants used (1-3) pain relievers. Paracetamol was the most (31.8%) commonly used analgesic. Herbal medication was used by 21.1% of the respondents. (Table 4)

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Table 4: Medical management strategies for primary dysmenorrhea-associated symptoms among the study participants. (N=232)

Categories	Frequency (n)	Percentage (%)
Drug use		
Ever use	154	66.4
Used in the last six months	28	12.0
Never used	50	21.6
Use of pain relievers		
Yes	173	74.6
No	59	25.4
Number of pain relievers used		
1-3	210	90.5
4-6	22	9.5
Herbal medication use		
Yes	49	21.1
No	184	79.3
Opioids		
Yes	21	9
No	211	86.6
Acetaminophen		
Yes	17	7.3
No	215	97.2
Caffeine		
Yes	51	22
No	181	78
Ibuprofen		
Yes	55	23.7
No	177	76.3
Paracetamol		
Yes	74	31.8
No	158	68.1
Diclofenac		
Yes	49	21.1
No	183	78.9
Piroxicam		
Yes	33	14.2
No	199	85.8
Mefenamic acid		
Yes	49	21.1
No	183	78.9
Drug name not known		
Yes	33	24.5
No	199	85.8

The Complementary/non-drug management strategies for primary dysmenorrhea.

More than one-third (44.1%) of the respondents used relaxation methods to manage their dysmenorrhea-associated symptoms. Close to half (47.8%) of the respondents used exercise, more than one-third (47.8%) used resting and drank water and tea (39.8%). (Table 5)

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Table 5: Complementary management strategies for primary dysmenorrhea among the study participants. (N=232)

Categories	Frequency (n)	Percentage (%)
Relaxation use		
Yes	93	44.1
No	118	55.9
Use of natural products/dietary supplements		
Yes	27	12.8
No	184	87,2
Addition/avoidance of certain foods		
Yes	67	28.9
No	165	71.1
Exercises use		
Yes	111	47.8
No	121	52.2
Get a massage from a therapist		
Yes	13	6.2
No	198	93.8
Resting		
Yes	94	44.5
No	117	55.5
Heat Use		
Yes	55	23.7
No	166	76.3
Distraction		
Yes	45	19.4
No	187	80.6
Massage		
Yes	69	32.7
No	142	67.3
Application of Sanitary pad		
Yes	32	15.2
No	179	84.8
Bed rest		
Yes	80	34.5
No	152	65.5
Drinking more water and tea		
Yes	84	39.8
No	127	60.2
Massaging the site of pain		
Yes	30	14.2
No	181	85.8
Soft drinks like Coca-Cola		
Yes	32	15.2
No	179	84.8
Isolation		
Yes	22	9.5
No	210	90.5

DISCUSSION.

The study aimed to explore primary dysmenorrhea among Lira University students in Northern Uganda. Results indicated a high prevalence (90.9%), with most experiencing moderate to severe pain and accompanying symptoms like depressed mood and breast engorgement. Pain relievers were commonly used (71.8%), notably Paracetamol, alongside non-drug methods like relaxation and exercise. These findings highlight the substantial impact of dysmenorrhea on students' well-being and academic performance, emphasizing the importance of tailored interventions and support services. The study contributes to understanding dysmenorrhea's prevalence and management strategies within the context of young women in Uganda, providing valuable insights for healthcare practitioners and policymakers aiming to address reproductive health issues among university students.

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Prevalence of primary dysmenorrhea.

The study found a prevalence rate of 90.9% for primary dysmenorrhea (PD), emphasizing the crucial importance of addressing PD with the same level of attention given to menstrual hygiene. This underscores the necessity of integrating PD management as a vital component of menstrual health initiatives among university students [9]. The results align with a study in Ireland, which similarly reported a high prevalence of primary dysmenorrhea at 91.5%[10]. However, our findings differ from some other studies in various contexts that reported lower prevalence rates of PD. For instance, a study in China reported a prevalence of PD at 41.7%[11]. This variance could be attributed to the random sampling method utilized in their study, potentially including individuals who had given birth, as childbirth has been noted to alleviate symptoms of primary dysmenorrhea in some women.

Primary dysmenorrhea-associated symptoms among study participants

The study discovered that depressed mood was among the most frequently reported symptoms associated with dysmenorrhea among the participants. This underscores the importance of addressing mental health components when addressing menstrual health issues among female university students. Our findings align with other studies indicating a relationship between dysmenorrhea and depression [12].

Additionally, we identified breast engorgement as another commonly reported symptom associated with primary dysmenorrhea among our participants [13]. This suggests the importance of health workers considering breast examination for females experiencing breast engorgement during menstruation to rule out other potential causes. Moreover, girls experiencing dysmenorrhea should be equipped with strategies to manage breast engorgement. Our results are consistent with other studies that also identified breast engorgement as a prevalent symptom associated with dysmenorrhea.

Furthermore, our study revealed that a change in appetite was frequently reported as a symptom associated with primary dysmenorrhea among the respondents (36.0%). This highlights the significance of addressing nutrition components when addressing menstrual health. Our findings are in line with other studies on primary dysmenorrhea, which found gastrointestinal symptoms to be among the most reported symptoms associated with dysmenorrhea[14].

Management of primary dysmenorrhea-associated symptoms among study participants

This study revealed that the utilization of pain relievers was the most common management strategy for primary dysmenorrhea (PD). Among these, paracetamol was the most frequently used (29.8%). University female students must receive comprehensive education regarding the medical management of PD and the most effective pain relievers, enabling them to employ recommended drugs for dysmenorrhea management. Our findings align with other studies on similar topics, which also identified pain relievers as a prevalent medical management strategy for PD, with paracetamol being the most commonly utilized pain reliever (60.5%).

Furthermore, we found that resting and relaxation were the most commonly employed non-drug management strategies for PD among our participants. There should be a greater emphasis on educating females about the most effective non-drug management strategies for PD and how to balance productivity with PD management. Our results correspond with other studies that also identified resting as one of the most commonly used non-drug strategies in PD management.

Additionally, our study indicated that exercise was one of the primary non-medical management strategies for PD. Efforts should be directed towards motivating female undergraduate students to engage in regular exercise as it contributes to their overall health. Our findings are consistent with other studies that also identified exercise as a commonly used management strategy for primary dysmenorrhea [15].

Study strengths and limitations of the study

During data collection, there was no screening conducted for underlying pelvic pathology, potentially resulting in the inclusion of participants with secondary dysmenorrhea who reported dysmenorrhea.

There might have been a recall bias among the study participants; however, we specifically requested information about primary dysmenorrhea experienced within the past three months to facilitate easier recall. Despite the research assistants being from the respective faculties, social desirability bias could have been present. Nonetheless, we ensured a properly conducted informed consent process, providing participants with assurance of confidentiality. Additionally, to maintain confidentiality, a self-administered questionnaire was utilized, with informed consent forms separated from the questionnaire. The pain characteristics were verbally reported by the participants, potentially introducing bias or subjectivity in responses. However, clear definitions were provided for the terms used, facilitating participants' ability to provide an accurate estimate of the severity of menstrual pain.

CONCLUSION.

The prevalence of PD was high among the study participants. The most common symptoms experienced by those with PD were; depressed mood, breast engorgement, and change in appetite. The most commonly used management strategies for PD were pain relievers, exercise, rest, and relaxation. University management should prioritize menstrual health and design programs to educate female students on the management of dysmenorrhea-associated symptoms using both pharmacological and non-pharmacological strategies and make the drugs available and accessible.

RECOMMENDATION.

The recommendations for addressing primary dysmenorrhea (PD) among female students at Lira University in Northern Uganda include prioritizing menstrual health education, conducting awareness campaigns to reduce stigma, ensuring access to resources and counseling services, collaborating with healthcare providers, developing or revising university policies, and conducting further research and monitoring.

LIST OF ABBREVIATIONS.

DEO District Education Officer
DOL Daily activity of living
FNM Faculty of Nursing and Midwifery
LU: Lira University
MOH: Ministry of Health
NGOs: None Governmental Organizations
NSAIDs: None Steroidal Anti-inflammatory Drugs
OCs: Oral Contraceptives
PD: Primary dysmenorrhea
POP: Progesterone-only contraceptives
SPSS: Statistical Package for Social Sciences
UN: United Nations
USA: United States of America

CONSENT FOR PUBLICATION.

Not applicable

AVAILABILITY OF DATA AND MATERIALS.

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

COMPETING INTERESTS.

The authors declare no conflict of interest arising from this study.

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This study did not receive any funding.

AUTHORS' CONTRIBUTIONS.

HB: Concept development, proposal development, data collection, data analysis, manuscript writing, logistical support.
EAI: Drafting of the manuscript, and Scientific review of the manuscript
DJO: Data analysis, manuscript writing
SU: Concept development, proposal development, data collection, data analysis, and manuscript writing
FA: Scientific review of the manuscript
EAI: Scientific review of the manuscript
All authors read and approved the manuscript for publication.

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