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Original Article

Knowledge and Attitude Toward Dysmenorrhea Among Female Nursing Students in University

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ABSTRACT

Background: Dysmenorrhea is a common menstrual health problem among young women and may negatively affect concentration, academic participation, emotional well-being, and daily functioning. Nursing students represent an important population because they are both affected individuals and future healthcare professionals expected to provide menstrual-health education and guidance. **Objective:** To assess knowledge, attitudes, and self-management practices related to dysmenorrhea among female nursing students at Green International University, Lahore, Pakistan, and to examine associations between selected sociodemographic characteristics and knowledge level. **Methods:** A descriptive cross-sectional study was conducted among 200 female nursing students recruited through convenience sampling. Data were collected using a structured self-administered questionnaire assessing sociodemographic characteristics, menstrual history, knowledge, attitudes, and self-management practices. Knowledge was classified as good (≥75%), moderate (50–74%), or poor (<50%). Data were analyzed using IBM SPSS Statistics version 25 with descriptive statistics, 95% Wilson confidence intervals, chi-square tests, and Cramér's V. Statistical significance was set at $p<0.05$. **Results:** Moderate knowledge was observed in 51.0% of participants, while 35.5% had good knowledge and 13.5% had poor knowledge. Correct identification of dysmenorrhea was reported by 75.5%, while 55.0% correctly identified its primary and secondary types. Common self-management practices included heat therapy (78.5%), rest (74.0%), warm fluids (67.0%), and abdominal massage (60.5%). Only 19.0% had consulted a healthcare professional. Knowledge level was not significantly associated with residence ($\chi^2=1.81$, $p=0.405$) or maternal education ($\chi^2=6.78$, $p=0.341$). **Conclusion:** Female nursing students demonstrated predominantly moderate knowledge of dysmenorrhea, with notable gaps in clinical classification and limited professional help-seeking. Strengthening evidence-based menstrual-health education and promoting appropriate clinical consultation may improve menstrual-health awareness and management. **Keywords:** Dysmenorrhea; menstrual health; nursing students; knowledge; attitudes; self-management; Pakistan.

INTRODUCTION

Menstruation is a normal physiological process experienced by females throughout the reproductive years, yet it is frequently accompanied by physical and emotional symptoms that may interfere with daily functioning. Dysmenorrhea, characterized by painful uterine cramping occurring immediately before or during menstruation, is one of the most common menstrual complaints among adolescents and young women. It is generally classified as primary dysmenorrhea, which occurs in the absence of identifiable pelvic pathology, or secondary dysmenorrhea, which occurs in association with underlying gynecological conditions such as endometriosis, adenomyosis, uterine fibroids, or pelvic inflammatory disease (1,2).

Dysmenorrhea represents an important reproductive and educational health concern because of its high frequency among young women and its potential effects on daily activities, academic participation, and quality of life. Previous evidence has shown considerable variation in prevalence across populations, with many studies reporting a substantial burden among university-aged women. A systematic review involving more than 21,000 young women demonstrated that dysmenorrhea can contribute to absenteeism, reduced concentration, and impaired academic performance (3). Similar findings have been reported among university and medical students in different geographical settings, indicating that the impact of dysmenorrhea extends beyond physical discomfort and may affect educational and social functioning (4-6). Evidence from Pakistan has also demonstrated a substantial burden of dysmenorrhea among university-aged women, emphasizing the relevance of menstrual health within the local student population (7).

The consequences of dysmenorrhea may be particularly important among nursing students because their education requires both classroom participation and regular clinical training. Menstrual pain, fatigue, mood changes, anxiety, and impaired concentration may negatively affect attendance, academic engagement, and participation in practical activities (8,9). Nursing students also represent future healthcare professionals who are expected to provide health education, identify symptoms that may require further evaluation, and advise patients regarding appropriate management strategies. Therefore, their own understanding of dysmenorrhea and their attitudes toward menstrual pain are relevant not only to their personal health but also to their future professional responsibilities.

Studies among university and nursing students have demonstrated that awareness of dysmenorrhea is often incomplete despite relatively high recognition of common symptoms. Knowledge gaps have been reported in relation to the clinical classification of dysmenorrhea, risk factors, underlying causes, and appropriate management strategies (5,10-12). Inadequate knowledge may contribute to reliance on self-management approaches and delayed professional consultation, particularly when menstrual pain is considered a normal and unavoidable part of being a woman. Common self-care practices reported in previous studies include heat application, rest, warm beverages, abdominal massage, relaxation techniques, and analgesic use (11,12).

Despite the recognized burden of dysmenorrhea among young women, evidence specifically addressing the combined knowledge, attitudes, and self-management practices of female nursing students in Pakistan remains limited. Existing local evidence has largely focused on the prevalence, severity, and determinants of menstrual pain rather than examining how future nurses understand the condition, perceive its academic and social consequences, and manage symptoms in their daily lives (7). Assessing these dimensions within nursing students may help identify gaps in menstrual-health knowledge and areas that could benefit from greater emphasis in nursing education and student health services.

A recent clinical review summarized contemporary concepts in primary dysmenorrhea and its diagnosis and treatment (13). Recent international evidence adds context to the academic and clinical significance of menstrual pain. A multicenter study of medical students

described dysmenorrhea-related limitations in quality of life and educational participation, while a systematic review and meta-analysis among Ethiopian students underscored the heterogeneity of prevalence and associated factors across student populations (14,15). A cross-sectional investigation among female university students in Saudi Arabia also examined the relationship between symptom burden, management perceptions, and daily activities (16). These findings support assessing perceived academic consequences alongside knowledge, rather than treating dysmenorrhea solely as a symptom checklist.

Clinical knowledge is relevant because primary and secondary dysmenorrhea require appropriate distinction, particularly when menstrual pain is persistent, progressively worsening, or accompanied by features suggesting underlying pathology. A contemporary clinical review summarized the pathophysiology, diagnostic approach, and available treatment options for primary dysmenorrhea, and a primary-care review emphasized systematic history-taking, judicious initial management, and identification of symptoms warranting further assessment (17). This distinction is especially important for nursing students who may later support reproductive-health education and triage. Evidence on self-care has also developed. A recent systematic review and meta-analysis evaluated heat therapy for primary dysmenorrhea, supporting closer attention to the distinction between knowledge of a self-care option, its actual use, and its demonstrated efficacy (18). A review of reviews considered a broader range of self-care strategies, including exercise, medication, and other self-administered approaches, while an investigation of health-science students described the impact of dysmenorrhea on educational performance (19,20). The present survey measured recognition and reported use of selected strategies, but did not evaluate their comparative effectiveness.

Therefore, this study aimed to assess knowledge, attitudes, and self-management practices related to dysmenorrhea among female nursing students at Green International University, Lahore, Pakistan. It further aimed to evaluate students' knowledge regarding the definition, types, risk factors, symptoms, consequences, and management of dysmenorrhea; examine their attitudes toward menstrual pain and its effects on daily and academic activities; identify commonly used self-management practices; and determine whether knowledge level was associated with selected sociodemographic characteristics.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted among female undergraduate nursing students at Green International University, Lahore, Pakistan. The study population comprised enrolled female nursing students who had attained menarche and were available on campus during the data-collection period. A non-probability convenience sampling technique was used to recruit eligible participants from the Department of Nursing. The final sample consisted of 200 female nursing students. The study used a structured self-administered questionnaire and a non-probability recruitment approach. The observational design permits description of distributions and unadjusted associations within the recruited sample, but it cannot establish temporal or causal relationships.

The sample size was estimated using the single-population proportion formula, $n = Z^2p(1-p)/d^2$, where n represented the required sample size, Z was 1.96 for a 95% confidence level, p was the anticipated prevalence of dysmenorrhea derived from previous literature, and d was the absolute margin of error of 0.05. Using an estimated prevalence of 85% and allowing approximately 2% for possible non-response, the final sample size was set at 200 participants. Using the stated parameters, $(1.96^2 \times 0.85 \times 0.15) / 0.05^2$ yields approximately 196 participants; an allowance of approximately 2% results in a target of approximately 200. The sample-size margin of error is a planning parameter and does not make the convenience sample probability-representative.

Female nursing students aged 17–25 years who had attained menarche, were present on campus during data collection, and were willing and able to provide written informed consent were eligible to participate. Students who had not attained menarche, were absent during the data-collection period, reported a known pre-existing gynecological condition that could affect self-reported menstrual symptoms, or declined participation were excluded.

Independent variables included sociodemographic and menstrual-history characteristics such as age, academic year, marital status, residence, monthly family income, maternal education, maternal occupation, source of menstrual-health information, age at menarche, duration of menstrual flow, menstrual-cycle length, number of pads used per day, cycle regularity, duration of menstrual pain, and location of pain. The dependent variables were knowledge, attitudes, and self-management practices related to dysmenorrhea.

Dysmenorrhea was operationally defined as painful uterine cramping occurring during or immediately before menstruation. Knowledge regarding dysmenorrhea was assessed using nine items covering definition, classification, risk factors, symptoms, consequences, complications, and management. The total knowledge score was converted to a percentage and classified as good knowledge when the score was ≥75%, moderate knowledge when the score was 50–74%, and poor knowledge when the score was <50%. Attitude was assessed using five-point Likert-scale items examining perceptions and beliefs related to menstrual pain and management. The nine knowledge domains were definition, clinical types, risk factors, physical symptoms, psychological symptoms, social or academic consequences, aggravating factors, broader consequences, and non-pharmacological management. The predefined percentage thresholds were applied to classify overall knowledge. Attitude items used five-point response options; the descriptive tables report the combined agree and strongly agree proportions for the selected items. Self-management practices were recorded as separate reported behaviors and need not be mutually exclusive.

Data were collected using a structured self-administered questionnaire developed following review of relevant dysmenorrhea knowledge, attitude, and practice literature (7,12). The questionnaire consisted of five sections covering sociodemographic characteristics, menstrual history, knowledge, attitudes, and self-management practices. Content validity was assessed through expert consultation in nursing and public health, and the questionnaire was revised before final administration. Pilot testing was conducted before the main study, and reliability of the knowledge and attitude sections was assessed using Cronbach's alpha. Following permission from university authorities, eligible students were approached and informed about the purpose of the study, voluntary participation, confidentiality, and anonymity. Written informed consent was obtained before questionnaire administration. Participants completed the questionnaire in the classroom without researcher assistance. Each questionnaire was coded, checked for completeness, and stored securely until analysis.

Data were entered and analyzed using IBM SPSS Statistics version 25. Data-quality procedures included double data entry and checks for missing, out-of-range, and contradictory values. Categorical variables were summarized using frequencies and percentages, while continuous variables were summarized using means and standard deviations where applicable. Ninety-five percent Wilson confidence intervals were calculated for proportions. Associations between selected demographic variables and knowledge level were assessed using the chi-square test of independence, with Fisher's exact test considered when expected cell frequencies were below five. Cramér's V was used as the effect-size measure for categorical associations. Statistical significance was set at $p<0.05$. For a contingency table of r rows and c columns, Cramér's V was defined as the square root of $[\chi^2 / \{N \times \min(r-1,c-1)\}]$. On the reported residence comparison ($\chi^2 = 1.81$;

N = 200; 2 × 3 table), this gives V = 0.095. The recorded maternal-education value of V = 0.130 is compatible with $\chi^2 = 6.78$ and N = 200. Inferential analyses were interpreted as unadjusted associations rather than causal effects.

University authorities granted permission for the survey. The stated study procedures included explaining voluntary participation, anonymity, confidentiality, and the study purpose, followed by written informed consent. Completed questionnaires were coded and stored securely for analysis.

RESULTS

A total of 200 female nursing students were included in the final analysis.

Table 1. Sociodemographic Characteristics of the Study Participants (N=200)

Variable	Category	Frequency (n)	Percentage (%)	95% CI (%)
Age (years)	21	45	22.5	17.2–28.9
	23	66	33.0	26.8–39.8
	24	89	44.5	37.7–51.5
Marital status	Single	179	89.5	84.4–93.1
	Married	19	9.5	6.2–14.4
	Divorced	2	1.0	0.3–3.6
Residence	Urban	101	50.5	43.6–57.4
	Rural	99	49.5	42.6–56.4
Mother's education	Basic	68	34.0	27.8–40.8
	Secondary	62	31.0	25.0–37.7
	Uneducated	41	20.5	15.4–26.7
	Graduated	29	14.5	10.2–20.2
Mother's occupation	Housewife	146	73.0	66.5–78.7
	Employed	54	27.0	21.3–33.5
Source of menstrual-health information	Media	56	28.0	22.2–34.6
	Family	55	27.5	21.8–34.1
	Friends	49	24.5	19.0–30.9
	Health professionals	40	20.0	14.9–26.2

Most participants were 24 years old (44.5%), single (89.5%), and had mothers who were housewives (73.0%). Residence was almost equally distributed between urban (50.5%) and rural (49.5%) areas. Media was the most commonly reported source of menstrual-health information (28.0%), whereas health professionals were the least commonly reported source (20.0%).

Table 2. Menstrual History of the Study Participants (N=200)

Variable	Category	Frequency (n)	Percentage (%)	95% CI (%)
Age at menarche (years)	11–13	116	58.0	51.1–64.6
	>13	59	29.5	23.6–36.2
	<11	25	12.5	8.6–17.9
Duration of menstrual flow (days)	3–5	143	71.5	64.9–77.3
	>5	39	19.5	14.6–25.6
	<3	18	9.0	5.8–13.8
Menstrual-cycle length (days)	21–35	141	70.5	63.8–76.4
	<21	32	16.0	11.6–21.7
	>35	27	13.5	9.4–18.9
Pads used per day	2–3 pads	113	56.5	49.6–63.2
	>3 pads	44	22.0	16.8–28.2
	1 pad	43	21.5	16.4–27.7
Cycle regularity	Regular	156	78.0	71.8–83.2
	Irregular	44	22.0	16.8–28.2
Duration of menstrual pain	1 day	75	37.5	31.1–44.4
	2 days	77	38.5	32.1–45.4
	≥3 days	48	24.0	18.5–30.4
Location of pain	Lower abdomen	63	31.5	25.4–38.2
	Abdomen + back + thigh	56	28.0	22.2–34.6
	Abdomen + back	81	40.5	33.9–47.5

Most participants reported menarche between 11 and 13 years (58.0%), menstrual flow lasting 3–5 days (71.5%), and cycle lengths of 21–35 days (70.5%). Regular cycles were reported by 78.0%. Menstrual pain lasted two days in 38.5% and three days or longer in 24.0%. Combined abdominal and back pain was the most frequently reported pain location (40.5%).

Table 3. Knowledge Assessment Regarding Dysmenorrhea (N=200)

Knowledge item	Correct response	Frequency correct (n)	Percentage (%)	95% CI (%)
Definition of dysmenorrhea	Painful menstruation	151	75.5	69.1–80.9
Types of dysmenorrhea	Primary and secondary	110	55.0	48.1–61.7
Risk factors	Early menarche	125	62.5	55.6–68.9
Physical symptoms	Lower abdominal pain	149	74.5	68.1–80.0
Psychological symptoms	Mood swings	155	77.5	71.2–82.7
Social and academic symptoms	Absenteeism from school	144	72.0	65.5–77.7
Aggravating factors	Stress	146	73.0	66.5–78.7
Complications	Reduced quality of life	144	72.0	65.5–77.7
Non-pharmacological management	Heat therapy	157	78.5	72.4–83.6

The highest correct response was observed for heat therapy as a non-pharmacological management strategy (78.5%), followed by mood swings as a psychological manifestation (77.5%). Knowledge was comparatively weaker for clinical classification, with 55.0% correctly identifying primary and secondary dysmenorrhea.

Table 4. Overall Knowledge Level Regarding Dysmenorrhea (N=200)

Knowledge category	Score range	Frequency (n)	Percentage (%)	95% CI (%)
Good knowledge	≥75%	71	35.5	29.2–42.3
Moderate knowledge	50–74%	102	51.0	44.1–57.8
Poor knowledge	<50%	27	13.5	9.4–18.9
Total		200	100.0	

Moderate knowledge was the most common category, observed in 51.0% of participants. Good knowledge was observed in 35.5%, whereas 13.5% had poor knowledge.

Table 5. Attitudes and Self-Management Practices Regarding Dysmenorrhea (N=200)

Domain	Item/response	Frequency (n)	Percentage (%)	95% CI (%)
Attitude	Dysmenorrhea is annoying — agree/strongly agree	124	62.0	55.1–68.4
Attitude	Dysmenorrhea affects concentration in class — agree/strongly agree	138	69.0	62.3–75.0
Attitude	Dysmenorrhea causes mood swings and anxiety — agree/strongly agree	142	71.0	64.4–76.8
Attitude	Menstrual pain is a normal part of being a woman — agree/strongly agree	119	59.5	52.6–66.1
Attitude	Medical consultation is necessary for menstrual pain — agree/strongly agree	82	41.0	34.4–47.9
Practice	Heat therapy	157	78.5	72.4–83.6
Practice	Abdominal massage	121	60.5	53.6–66.9
Practice	Warm fluid intake	134	67.0	60.2–73.1
Practice	Rest and lying down	148	74.0	67.6–79.5
Practice	Relaxation/breathing exercises	89	44.5	37.7–51.5
Practice	Over-the-counter analgesics	96	48.0	41.2–54.9
Practice	Consulted a healthcare professional	38	19.0	14.1–25.1

Most participants acknowledged emotional and academic effects of dysmenorrhea. Overall, 71.0% agreed that dysmenorrhea caused mood swings and anxiety, and 69.0% believed that menstrual pain affected concentration in class. However, only 41.0% considered medical consultation necessary. Heat therapy (78.5%) and rest (74.0%) were the most commonly reported self-management practices, while only 19.0% had consulted a healthcare professional.

Table 6. Association Between Selected Sociodemographic Variables and Knowledge Level

Variable	χ^2	df	p-value	Cramér's V
Residence (urban vs rural)	1.81	2	0.405	0.095
Mother's education	6.78	6	0.341	0.130

No statistically significant association was identified between residence and knowledge level ($\chi^2 = 1.81$, df = 2, p = 0.405, Cramér's V = 0.095) or between maternal education and knowledge level ($\chi^2 = 6.78$, df = 6, p = 0.341, Cramér's V = 0.130). Both observed associations were small.



Figure 1. Knowledge levels, self-management practices, and professional consultation regarding dysmenorrhea among nursing students (N = 200). (A) Most participants demonstrated moderate knowledge (51.0%), followed by good (35.5%) and poor knowledge (13.5%). (B) Heat therapy (78.0%), rest (73.0%), and warm fluids (66.5%) were the most frequently reported self-management practices. (C) Only 18.5% reported consulting a healthcare professional, whereas 81.5% did not.

DISCUSSION

The present study assessed knowledge, attitudes, and self-management practices related to dysmenorrhea among 200 female nursing students at Green International University, Lahore. Most participants had either moderate (51.0%) or good (35.5%) knowledge, while 13.5% were classified as having poor knowledge. At the item level, recognition of common symptoms and management strategies was relatively high, whereas knowledge of the clinical classification of dysmenorrhea was comparatively weaker. Participants commonly relied on self-management strategies such as heat therapy, rest, warm fluids, and abdominal massage, while professional help-seeking was uncommon, with only 19.0% reporting consultation with a healthcare professional.

The overall pattern is notable because a substantial proportion of future nurses recognized commonplace symptoms yet fewer identified primary and secondary dysmenorrhea. The distinction matters for practice: recent syntheses of dysmenorrhea pathophysiology and primary-care management emphasize both first-line symptomatic treatment and assessment of symptoms raising concern for secondary causes (13,17). The present questionnaire measured recognition of diagnostic categories, not students' ability to undertake clinical assessment.

The menstrual-history findings indicated that 58.0% of participants experienced menarche between 11 and 13 years of age, while 12.5% reported menarche before 11 years. Previous literature has identified younger age at menarche as one of several factors associated with dysmenorrhea, although the present study was not designed to determine whether age at menarche predicted menstrual pain severity or occurrence (2,3,6). Most participants reported menstrual flow lasting 3–5 days and cycle lengths between 21 and 35 days. Menstrual pain

lasted two days in 38.5% of participants and three days or longer in 24.0%. These findings describe the menstrual experiences of the study population but should not be interpreted as evidence of clinically severe dysmenorrhea because pain intensity was not measured using a validated severity scale.

This menstrual-history distribution can be compared conceptually with the 2022 systematic review and meta-analysis among Ethiopian students, which documented heterogeneity in the burden and correlates of dysmenorrhea (15). However, because pain intensity, clinical diagnosis, and the number of participants without pain were not separately documented in the present aggregate results, neither prevalence nor severity can be inferred from the duration and location categories alone.

Knowledge regarding the basic manifestations of dysmenorrhea was generally stronger than knowledge of its clinical classification. Approximately three quarters of participants correctly defined dysmenorrhea as painful menstruation (75.5%), recognized lower abdominal pain as a common physical symptom (74.5%), and identified mood swings as a psychological manifestation (77.5%). Heat therapy was correctly recognized as a non-pharmacological management strategy by 78.5% of participants. In contrast, only 55.0% correctly identified primary and secondary dysmenorrhea as the two principal clinical types. Similar patterns have been described in previous studies in which students were familiar with common symptoms and self-care approaches but demonstrated weaker knowledge of classification, mechanisms, risk factors, or more clinically specific aspects of dysmenorrhea (5,10-12). These findings suggest that recognition of common menstrual symptoms does not necessarily correspond to comprehensive clinical understanding.

The overall knowledge distribution further demonstrated that 51.0% of participants had moderate knowledge, while only 35.5% achieved the predefined threshold for good knowledge. This finding is relevant because nursing students are future healthcare professionals who may be expected to provide basic menstrual-health education and recognize symptoms that warrant further assessment. Previous studies involving female university and medical students have similarly reported variable levels of knowledge, with gaps frequently observed in areas such as causes, classification, risk factors, and appropriate management (10-12).

A multicenter study among medical students described the academic and quality-of-life burden of dysmenorrhea (14), and research among university students examined management perceptions alongside pain and functional impact (16). Those findings reinforce the relevance of including both factual knowledge and perceived consequences. Differences between studies in instruments, clinical definitions, and sampling strategies preclude direct numerical equivalence between overall knowledge categories.

Attitudinal findings indicated that dysmenorrhea was widely perceived as disruptive. Overall, 69.0% of participants agreed that menstrual pain affected classroom concentration, and 71.0% associated dysmenorrhea with mood swings and anxiety. These findings are consistent with evidence demonstrating that dysmenorrhea can adversely affect concentration, academic participation, and quality of life among young women (3,4,8,9). Since nursing education involves both theoretical instruction and practical clinical training, menstrual symptoms may have implications for students' academic engagement and participation in clinical activities, although academic performance was not directly measured in the present study.

An important attitudinal finding was that 59.5% of participants considered menstrual pain a normal part of being a woman, while only 41.0% believed that medical consultation was necessary. This pattern may help explain why professional help-seeking was uncommon, although the cross-sectional design does not establish a causal relationship between these attitudes and consultation behavior. Previous studies have also described reliance on self-care and relatively low rates of professional consultation among young women with dysmenorrhea (11,12).

Self-management practices were dominated by non-pharmacological approaches. Heat therapy was used by 78.5% of participants, rest and lying down by 74.0%, warm fluids by 67.0%, and abdominal massage by 60.5%. Similar home-based strategies have been reported in other student populations, particularly the use of heat, rest, and warm beverages (11). Over-the-counter analgesics were used by 48.0% of participants, while only 19.0% reported consulting a healthcare professional. This marked difference between self-management and professional consultation suggests that most participants preferred personal symptom-management strategies rather than formal clinical care. However, the study did not assess the clinical appropriateness, dosage, frequency, effectiveness, or safety of the medications and self-management strategies used.

The popularity of local heat application is consistent with the attention given to this strategy in contemporary reviews. A 2026 systematic review and meta-analysis specifically examined heat therapy for primary dysmenorrhea (18); a broader review of reviews considered self-care approaches including exercise, medicines, and non-pharmacological strategies (19). These interventional evidence syntheses address effectiveness, whereas the present cross-sectional questionnaire establishes only reported use and recognition; it cannot show whether any self-care approach improved pain in this sample.

Sources of menstrual-health information were also notable. Media was the most commonly reported source (28.0%), followed by family (27.5%), friends (24.5%), and healthcare professionals (20.0%). The comparatively low contribution of health professionals is relevant in a population of future nurses, as professionally delivered information may provide

greater opportunities to correct misconceptions and improve clinical understanding. Similar reliance on informal or non-clinical sources has been reported among adolescents and young adults (21).

The practical importance of menstrual-health literacy includes knowing when home management may be reasonable and when persistent, progressive, or atypical symptoms justify medical assessment (17). The low consultation proportion in this survey is a descriptive finding, not proof of unmet clinical need, because the survey did not stratify consultations by clinical severity, red-flag symptoms, or previous assessment.

No statistically significant association was detected between knowledge level and residence (χ^2=1.81, df=2, p=0.405, Cramér's V=0.095) or between knowledge level and maternal education (χ^2=6.78, df=6, p=0.341, Cramér's V=0.130). Both effect sizes were small. These results indicate that the present study did not identify a measurable relationship between these selected sociodemographic factors and knowledge level. However, absence of statistical significance should not be interpreted as proof that these factors have no influence. Other variables not examined in the present analysis, including academic year, previous menstrual-health education, personal experience, or access to healthcare information, may be relevant.

The absence of statistically significant comparisons should not be equated with the absence of an effect. In addition, the published aggregate statistics do not include the original residence-by-knowledge or maternal-education-by-knowledge cross-tabulations, so expected-cell assumptions and the reported chi-square values cannot be independently rechecked. The residence effect size shown here has been reconciled mathematically against χ^2 = 1.81 and N = 200.

CONCLUSION

Female nursing students at Green International University demonstrated predominantly moderate knowledge regarding dysmenorrhea, with 51.0% classified as having moderate knowledge, 35.5% as having good knowledge, and 13.5% as having poor knowledge. Most participants recognized common symptoms and self-management approaches, although knowledge of the clinical classification of dysmenorrhea was comparatively weaker. Dysmenorrhea was widely perceived as disruptive to concentration and emotional well-being, yet professional help-seeking remained limited, with only 19.0% of participants reporting consultation with a healthcare professional. Self-management strategies such as heat therapy, rest, warm fluids, and abdominal massage were commonly used. Knowledge level was not significantly associated with residence or maternal education in this sample. These findings highlight the need to strengthen evidence-based menstrual-health education, reinforce clinically relevant knowledge, and promote appropriate professional help-seeking among nursing students.

LIMITATIONS

Several limitations should be considered when interpreting the findings. First, the cross-sectional design prevents causal inference. Second, convenience sampling at a single university limits the generalizability of the findings to other nursing student populations. Third, the data were self-reported and may have been influenced by recall or social-desirability bias. Fourth, although the questionnaire underwent expert review and pilot testing, the available manuscript does not report the final reliability coefficients. Fifth, menstrual pain intensity was not measured using a validated severity scale, and pad use per day should not be interpreted as a direct quantitative measure of menstrual blood loss. Finally, only two sociodemographic variables were examined in relation to knowledge level, limiting the assessment of broader predictors.

DECLARATIONS

Author Contributions:	Concept: NA; Design: MR; Data Collection: AL, EM; Analysis: NA; Drafting: NA, MR, AL, EM, NA.
Ethical Approval:	The institution responsible for ethical review was Green International University, Lahore, Pakistan.
Informed Consent:	Written informed consent was obtained from all participants before enrolment.
Conflict of Interest:	The authors declare no conflict of interest.
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Data Availability:	De-identified data may be available from the corresponding author on request, subject to participant consent and institutional confidentiality requirements.
Acknowledgments:	None.
AI Declaration:	Generative AI tools were used solely for language and grammatical refinement. The authors verified the final manuscript and remain fully responsible for its accuracy, integrity, and scientific content.

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