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Prevalence of primary dysmenorrhoea and pattern of self-medication practices among nursing students in a rural hilly area: A cross-sectional study

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ABSTRACT

Background: Primary dysmenorrhoea is a common gynaecological problem among young women, often affecting daily functioning and academic performance. Data on its prevalence and management practices in rural hilly settings remain limited.

Objectives: To determine the prevalence and severity of primary dysmenorrhoea among nursing students and to assess their self-medication practices.

Methods: A cross-sectional study was conducted among 224 nursing students in a rural hilly area. Data were collected using a pre-validated, self-administered questionnaire that captured sociodemographic details, severity of dysmenorrhoea using the WaLIDD scoring system, and self-medication or other management practices. Descriptive statistics including percentage, mean, standard deviation and Chi Square test were used for analysis.

Results: The prevalence of primary dysmenorrhoea was 83.9% (188), with a considerable proportion experiencing severe pain (WaLIDD score ≥8). The lower abdomen (80.4%) and lower back (78.6%) were the most common pain sites. Many students (128 or 68.1%) preferred non-pharmacological remedies such as rest, hot water application, and herbal drinks. However, 73.3% reported self-medicating, primarily with over-the-counter NSAIDs (mefenamic acid or others), often without professional consultation.

Conclusion: Primary dysmenorrhoea is highly prevalent among nursing students in rural hilly settings. The widespread use of self-medication and reliance on traditional remedies point to the need for menstrual health education and improved healthcare access. Implementing evidence-based management strategies and enhancing awareness could reduce the burden and promote safe practices, ultimately improving the well-being of young women in underserved regions.

Key-words: Primary dysmenorrhoea, WaLIDD score, nursing students, self-medication, rural health

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INTRODUCTION

Primary dysmenorrhoea, characterized by painful menstrual cramps in the absence of pelvic pathology, represents a prevalent gynaecological complaint among women of reproductive age.[1] This condition, often debilitating, affects a significant proportion of menstruating individuals, with reported incidences ranging from 45% to 95%.[2] The prevalence rates of primary dysmenorrhoea ranged from 50% to 87.8% in India.[3] This widespread occurrence of this condition shows its importance as a public health concern, frequently leading to absenteeism from school or work and a diminished quality of life.[4]

Many a times, the women seek relief with traditional methods such as hot-water bath or hot beverages like coffee or they resort to self-medication for relief from dysmenorrhoea. Physical activity and exercise have been also recognized as effective non pharmacological interventions for relieving menstrual pain. Regular aerobic exercise, yoga, and stretching are believed to reduce dysmenorrhoea severity by improving pelvic blood circulation, releasing endorphins, and reducing prostaglandin levels. Despite these established benefits, exercise is often underutilized among young women due to lack of time, cultural perceptions, or limited awareness. Many OTC (Over- the counter) drugs such as NSAIDs (non-steroidal anti-inflammatory drugs) are easily available. Most of them may not be aware of the adverse effects associated with injudicious use of these medicines. These self-management practices may not always be effective or safe and can sometimes lead to suboptimal outcomes or potential health risks.[5,6]

There is a significant increase in improper utilization of self-medication in India.[7] Although it seems difficult to abolish self-medication, intervention has to be made by educating both public and health professionals about various problems associated with self-medication to discourage this rampant practice.[8] This study aims to investigate the prevalence of primary dysmenorrhoea and the patterns of self-medication practices among nursing students in a rural hilly area, This focus on nursing students is particularly pertinent given their foundational knowledge in healthcare, which might influence their self-medication choices and perceptions of pain.

The nursing students in this study, despite their healthcare training, may still face barriers to incorporating exercise into their menstrual pain management routine, making it important to explore why pharmacological and passive non-pharmacological measures (like rest and hot water) are preferred over active interventions like exercise.

The unique environment of a rural hilly area further adds to the complexity, potentially influencing access to healthcare services and contributing to reliance on traditional or informal pain relief methods. This population is considered vulnerable due to geographical isolation, limited access to specialist care, a high burden of severe dysmenorrhoea, and widespread unsafe self-medication practices. Understanding these practices is crucial for developing targeted educational interventions and improving menstrual health literacy within this vulnerable population.

Methodology

A cross-sectional study was conducted over a period of 6 months from September 2024 to February 2025 to assess the prevalence of primary dysmenorrhoea and patterns of self-medication practices among nursing students in a rural hilly area. The study population comprised all nursing students enrolled at a private nursing college in Solan district, Himachal Pradesh. Students who provided written informed consent and were willing to participate were included, while those unwilling were excluded. Hence, a total of 224 nursing students were included in the study.

Prior to the commencement of the study, the

protocol was reviewed and approved by the Institutional Ethical Committee. Ethics considerations included obtaining informed consent, ensuring voluntary participation, maintaining confidentiality, and safeguarding anonymity. Participants were informed that they could withdraw from the study at any stage without providing reason for withdrawal or the need to provide a reason.

Data were collected using a pre-validated, semi-structured questionnaire containing sections on demographic details, prevalence and severity of dysmenorrhoea, and self-medication practices. The WaLIDD score was used to assess the severity of dysmenorrhoea among the participants. The WaLIDD score is a comprehensive tool that evaluates multiple parameters related to dysmenorrhoea, enabling a standardized classification of its severity.[9]

The WaLIDD (Working ability, Location, Intensity, Days of pain, Dysmenorrhoea) score is a composite tool designed to quantify the severity of primary dysmenorrhoea by integrating four key clinical parameters.Working Ability – Evaluates the extent to which dysmenorrhoea disrupts daily activities. Responses range from None to Always, reflecting increasing functional impairment. Days of Pain – Records the duration of pain episodes per menstrual cycle, categorised as 0–1 days, 2–3 days, or ≥5 days.
Location of Pain – Assesses the distribution of pain, distinguishing between involvement of a single site and multiple anatomical sites.
Intensity of Pain – Measured using the Wong–Baker Faces Pain Rating Scale, with categories including None, Hurts a little bit, Hurts a little more, and Hurts worse
Severity Classification
The cumulative WaLIDD score is obtained by summing the individual scores for each variable. The resulting total classifies dysmenorrhoea severity as follows:
0 – No dysmenorrhoea
1–4 – Mild dysmenorrhoea
5–7 – Moderate dysmenorrhoea
8–12 – Severe dysmenorrhoea
In addition, questionnaire included pharmacological and non-pharmacological measures used by nursing students for relief of mensural pain. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize findings. The Chi-square test was used to assess the association between categorical menstrual variables and dysmenorrhoea severity. The p value of <0.05 was considered as statistically significant.

Results

A total of 224 nursing students participated in the study. Their ages ranged from 18 to 23 years, with a mean age of 19.52 years (SD = 1.020). The mean age at menarche was 12.59 years (SD = 1.376), with a range of 9–16 years (Table 1).

Table 1: Age distribution of participants

	N	Minimum	Maximum	Mean	Std. Deviation
AGE	224	18	23	19.52	1.020
Menarche	224	9	16	12.59	1.376

WaLIDD Score Distribution: Out of 224 participants, 188 (83.9%) reported dysmenorrhoea. The severity of dysmenorrhoea was assessed using the WaLIDD scoring system in Table 2. More than half (51.1%) reported pain that "hurts even more," while 38.3% experienced pain that "hurts a whole lot," and only 10.6% described it as "hurts a little bit." The majority (68.1%) reported pain lasting for 1–2 days, followed by 19.1% who experienced pain for 3–4 days, while 10.1% reported no pain days and only 2.1% had pain for ≥5 days. Regarding pain location, 46.8% had pain in 2–3 sites, 38.3% in a single site, and a small proportion (4.3%) in ≥4 sites, while 10.6% reported no pain location. Functional limitation due to pain was evident, with 51.6% reporting "almost always" being affected, 37.8% reporting "always," and only 10.6% reporting "almost never." Based on dysmenorrhoea grading, many participants (59.6%) suffered from severe dysmenorrhoea, followed by 31.9% with moderate and only 8.5% with mild symptoms.

Table 3: Association of Dysmenorrhoea with Menstrual Characteristics:

In table 3, A significant association was observed between metrorrhagia and the severity of dysmenorrhoea ($p < 0.001$), with 82.3% of participants reporting metrorrhagia experiencing severe dysmenorrhoea compared to 54.5% among those without metrorrhagia. The presence of menorrhagia was associated with a higher proportion of severe dysmenorrhoea (68.3%) compared to those without menorrhagia (57.1%); however, this association was not statistically significant ($p = 0.217$). Similarly, menstrual irregularity was associated with a greater proportion of severe dysmenorrhoea (70.6%) than regular cycles (53.3%), though the difference did not reach statistical significance ($p = 0.068$). In contrast, the frequency of pain demonstrated a strong and highly significant relationship with dysmenorrhoea severity ($p < 0.001$). Participants who experienced pain "occasionally" reported the highest proportion of severe dysmenorrhoea (87.8%), while those with pain "always" had comparatively fewer severe cases (24.2%) and a greater proportion of mild symptoms (39.4%)

Table 3: Association of Dysmenorrhoea with Menstrual Characteristics

Variable		Dysmenorrhoea			
		Mild N=16	Moderate N=60	Severe N=112	P value
Metrorrhagia	Present N=34	4(11.8%)	2(5.9%)	28(82.3%)	< 0.001
	Absent N=154	12(7.8%)	58(37.7%)	84(54.5%)	
Menorrhagia	Present N=41	1(2.4%)	12 (29.3%)	28 (68.3%)	0.217
	Absent N=147	15 (10.2%)	48 (32.7%)	84 (57.1%)	
Mensural regularity	Irregular N=68	4 (5.9%)	16 (23.5%)	48 (70.6%)	0.068
	Regular N=120	12 (10.0%)	44 (36.7%)	64 (53.3%)	
Frequency of pain	Always N=33	13 (39.4%)	12 (36.4%)	8 (24.2%)	< 0.001
	Many time N=73	1(1.4%)	40 (54.8%)	32 (43.8%)	
	Occasionally N=82	2(2.4%)	8 (9.8%)	72 (87.8) %	

Percentages are calculated using the row total as the denominator, p value < 0.05 was considered statistically significant.

Prevalence and Management of Dysmenorrhoea (Table 4): Out of 224 participants, 188 (83.9%) reported dysmenorrhoea. Among these, 60 (31.9%) used pharmacological measures and 128 (68.1%) used non-pharmacological measures for relief. Most used drugs include Mefenamic Acid alone, or a combination of Mefenamic acid+ Dicyclomine. Of those using pharmacological measures, 44 (73.3%) practiced self-medication and 16 (26.7%) used prescription-based medications (Table 3). Among the non-pharmacological measures, most of the students adopted home remedies like rest, hot water, tea, coffee, or herbal drinks.

Table 4. Prevalence of Dysmenorrhoea and Management Strategies Among Study Participants

Variable	Frequency (n)	Percentage (%)
Dysmenorrhoea (N = 224)		
Yes	188	83.9
No	36	16.1
Management Measures Used (n = 188) *		
Pharmacological	60	31.9
Non-pharmacological	128	68.1
Type of Pharmacological Measures (n = 60) †		
Prescription-based	16	26.7
Self-medication	44	73.3

Denominator includes only participants who reported dysmenorrhoea (n = 188).
† Denominator includes only participants who used pharmacological measures (n = 60).

DISCUSSION

The prevalence of dysmenorrhea among these nursing students was found to be 83.9% (188 out of 224) The prevalence rate of dysmenorrhea in this study was found to be little higher as compare compared to other studies. In the study done in Raichur, 80.4% of medical students reported dysmenorrhea whereas in the study done in Mangalore city, prevalence of dysmenorrhoea was found to be 75%.[11,12]This prevalence rate of dysmenorrhoea was consistent with findings from other global studies among young women in academic settings, which often report high incidences of dysmenorrhea influencing educational performance and overall well-being.[13,14]The study's finding that 37.8% (71) of participants experienced always affected working ability further corroborates the debilitating nature of dysmenorrhea, indicating a substantial impediment to their professional development and practical training.[15] In this study, many participants (59.6%) suffered from severe dysmenorrhoea. There had been large variation in severity of dysmenorrhea in literature in India and globally. A study conducted among adolescent girls in Udupi, Karnataka, found a dysmenorrhoea prevalence of 62.70%. In terms of severity, 12% reported mild pain, 33% moderate, and 17.6% severe pain.[16]Another study reported wide variation in severity of pain ranging from as low as 0.9% in Korea to as high as 59.8% in Bangladesh.[17] In Dubai, a cross-sectional study found that 45% of female adolescents reported experiencing severe pain during menstruation.[18] A significant association was observed between dysmenorrhoea severity and the presence of metrorrhagia ($p < 0.001$). This finding may be explained by underlying hormonal imbalances or structural abnormalities such as endometrial dysfunction, which can lead to both intermenstrual bleeding and heightened uterine prostaglandin release, thereby intensifying uterine contractions and pain. Liu et al also observed the quantity or heaviness of menstrual flow is a factor associated with dysmenorrhoea severity.[19] Similar to findings of other studies, a significant association was observed between dysmenorrhoea severity and the frequency of pain ($p < 0.001$).[20,21] In this study, among 224 students, 60 (31.9%) used pharmacological measures and 128 (68.1%) used non-pharmacological measures for relief. Of those using pharmacological measures, 44 (73.3%) practiced self-medication and 16 (26.7%) used prescription-based medications (Table 2). A study conducted in a medical college in south India, found that 57.34% of the students indulged in the practice of self-medication and Non-steroidal anti-inflammatory drugs were the most common drugs used for relief from it.[11] A previous study in Saudi Arabia in 2018 by Al-Rashidi el al found a higher prevalence (73.8%) of self-medication in students.[22] Anand et.al, in their research in the year 2018 in the state of Karnataka found that about 40% of the students resorted to self-medication.[23]Similar pattern of self-medication for dysmenorrhoea was observed across various countries.[24]

Table 2: Distribution of WaLIDD score variables (n=188)

Variable	Category	n	%
Pain intensity	Hurts a little bit	20	10.6
	Hurts even more	96	51.1
	Hurts a whole lot	72	38.3
Days with pain	0 days	20	10.1

	1–2 days	128	68.1
	3–4 days	36	19.1
	≥5 days	4	2.1
Pain location	None	20	10.6
	1 site	72	38.3
	2–3 sites	88	46.8
	≥4 sites	8	4.3
Working ability	Almost never	20	10.6
	Almost always	97	51.6
	Always	71	37.8
Dysmenorrhoea grade	Mild	16	8.5
	Moderate	60	31.9
	Severe	112	59.6

This high prevalence of self-medication among nursing students is paradoxical, given their formal healthcare training. This paradox can be explained by several factors. First, the perception of dysmenorrhoea as a 'normal' physiological event may lead students to underestimate its severity and dismiss the need for medical consultation. Second, convenience and immediacy — over-the-counter NSAIDs are easily available, inexpensive, and provide rapid relief without the hassle of scheduling a clinical appointment or facing potential stigma associated with gynaecological complaints. Third, prior experience with successful self-medication may reinforce the behaviour, creating a cycle of reliance on familiar drugs without professional oversight. Fourth, despite their education, nursing students may have incomplete knowledge about the potential adverse effects of long-term or inappropriate NSAID use, such as gastrointestinal bleeding, renal impairment, or masking of underlying pathology. This disconnect between knowledge and practice underscores the need for active, experiential learning — not just theoretical knowledge — about safe medication use, adverse drug reactions, and the importance of shared decision-making with healthcare providers.[25] Feelings of embarrassment, time constraints, and the perception that their pain is not 'serious enough' for a doctor's visit may further drive self-medication behaviour, even among those who understand the risks. Addressing these emotional and practical barriers through targeted educational interventions, open dialogues about menstrual health, and easy access to counselling services could help bridge the gap between knowledge and practice.[25,26] In this study, 128 (68.1%) used non-pharmacological measures for relief. Applying heat or hot water bottle were the most common non pharmacological measures used by student in this study. Similarly, applying heat to the abdomen and lower back is a widely used and effective home remedy for alleviating menstrual pain.[27] Similar to findings of other studies, many students preferred herbal drinks for the pain relief.[28,29]However, there is well documented benefits of exercise in reducing menstrual pain severity,[30] only a minority of

students in this study reported using exercise as a relief measure. The preference for passive methods such as rest, hot water application, and herbal drinks over active interventions like aerobic exercise or yoga may be attributed to several factors: limited time due to academic schedules, lack of a designated space for physical activity in the hostel environment, or a perception that exercise may exacerbate pain rather than alleviate it. This finding is consistent with other studies where exercise was one of the least preferred options for dysmenorrhoea management.[27,31] The underutilization of exercise highlights an important gap in health education, as nursing students — who are future healthcare providers — should be equipped with evidence-based knowledge about the role of physical activity in menstrual health. Integrating exercise counselling into menstrual health education programs could empower students to adopt a more holistic and proactive approach to pain management. Hence a deeper understanding of potential synergistic effects of these methods with conventional treatments is warranted to offer holistic care.[3,32] The comprehensive approach to pain management, integrating both pharmacological and non-pharmacological methods, is crucial for effective symptom alleviation.[21] Future research should therefore focus on validating the efficacy of these traditional and complementary approaches within rigorous clinical frameworks to establish evidence-based guidelines for their integration into dysmenorrhea management protocols, particularly in underserved rural populations of hilly areas.

Limitations

The cross-sectional design of this study limits the ability to establish causal relationships between the variables examined. Furthermore, the reliance on self-reported data introduces the potential for recall bias and social desirability bias, which may influence the accuracy of responses. Participants may have underreported self-medication practices or overreported the severity of symptoms due to perceived expectations about health-seeking behavior, potentially skewing the prevalence estimates. Additionally, nursing students, owing to their healthcare training, might have felt compelled to report more "appropriate" management practices, thereby affecting the true representation of their actual behaviors. The study was conducted exclusively among nursing students in a specific rural hilly region, which may limit the generalizability of the findings to other populations or settings.

Conclusion

This study underscores the high prevalence of primary dysmenorrhoea among nursing students in a rural hilly area, affecting over 83.9% of participants, with a substantial proportion reporting severe pain that significantly impairs daily functioning and academic performance. The findings reveal a predominant reliance on non-pharmacological measures and self-medication—often without professional guidance—which raises concerns about the safety and appropriateness of these practices. Such patterns may reflect barriers to accessing formal healthcare, gaps in awareness regarding safe treatment options, or cultural preferences for traditional remedies.

These insights highlight the urgent need for targeted health education programs to enhance menstrual health literacy, promote evidence-based management strategies, and dispel misconceptions surrounding pain relief during menstruation. Improving awareness and access to timely consultation with doctors, if required, can improve quality of life of young women, particularly in rural settings. Integrating menstrual health education into student health programs and community initiatives is essential to foster better management practices and support the overall well-being of those affected.

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