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Knowledge and Practice of Dysmenorrhea Self-Care Among Female Adolescents in Kathmandu

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Abstract

Background: Dysmenorrhea, characterized by painful menstrual cramps, represents a significant yet often overlooked public health issue affecting up to 90% of adolescent females globally. Its impact extends beyond physical discomfort to include academic absenteeism, diminished psychosocial well-being, and reduced quality of life. In resource-limited settings like Nepal, where menstrual health is shrouded in socio-cultural taboos, understanding adolescents' knowledge and self-care practices is crucial for developing effective interventions.

Objective: This study aimed to assess the level of knowledge and self-care practices regarding dysmenorrhea among female adolescent students in a non-medical college in Kathmandu, Nepal.

Methodology: A descriptive cross-sectional study was conducted among 106 female students (Grades XI and XII) at Triton International College, selected via total enumeration and non-probability purposive sampling. Data were collected using a pre-tested, structured, self-administered questionnaire with four sections: socio-demographics, menstrual history, knowledge assessment (16 items), and practice assessment (9 items). Knowledge scores were categorized as Satisfactory (≥50%) or Unsatisfactory (<50%). Data analysis employed SPSS version 22, using descriptive statistics (frequencies, percentages, mean, SD) and inferential statistics (Chi-square test) to examine associations.

Results: The mean age of participants was 16.2 years (±0.98). Dysmenorrhea prevalence was 85.8%. While 68.8% of students demonstrated a satisfactory level of knowledge, none achieved a "good" knowledge score. Primary information sources were mass media and relatives (100% each). Mefenamic acid was the most recognized (89.6%) and used (65.1%) pharmacological agent. The most common non-pharmacological practice was using a hot water bag (85.8%). A significant majority (85.8%) avoided physical activities during menstruation, and 84.9% reported a decrease in academic performance. No statistically significant associations were found between knowledge level and socio-demographic variables like age, ethnicity, or family type ($p > 0.05$).

Conclusion: Findings indicate a high burden of dysmenorrhea coupled with moderate knowledge and limited, often suboptimal, self-care practices among adolescent students. There is a critical need for structured, school-based educational programs to disseminate evidence-based information, promote a wider repertoire of effective non-pharmacological strategies, and destigmatize menstrual health discussions. Future research should employ longitudinal and mixed-method designs to explore causal relationships and contextual barriers.

Keywords: dysmenorrhea, menstrual pain, knowledge, self-care, self-management, adolescent health, Nepal, health education

Introduction

Background of the Study

Menstruation is a natural biological process marking a significant phase in female reproductive health. For a substantial proportion of adolescents and women, however, it is accompanied by dysmenorrhea—painful uterine cramps occurring just before or during menstruation (Iacovides et al., 2015). The World Health Organization (2023) defines dysmenorrhea broadly as "discomfort and pain during the menstrual period," a condition that transcends mere physical sensation to impact multiple dimensions of an individual's life. Clinically, dysmenorrhea is categorized into two types: primary dysmenorrhea, which is recurrent, crampy pain without identifiable pelvic pathology, typically beginning shortly after menarche; and secondary dysmenorrhea, which results from underlying reproductive organ disorders such as endometriosis or fibroids (Osayande & Mehulic, 2014). Primary dysmenorrhea is overwhelmingly more common among adolescents.

The global prevalence of dysmenorrhea is remarkably high, with estimates suggesting it affects between 45% to 95% of menstruating individuals, with the most severe forms impacting approximately 15-20% (Ju et al., 2014). The condition peaks during adolescence and young adulthood, making the student population particularly vulnerable. The etiology of primary dysmenorrhea is primarily attributed to the overproduction of uterine prostaglandins, particularly PGF2α, which induces exaggerated uterine contractions, ischemia, and heightened pain sensitivity (Dawood, 2006). This biochemical basis underpins the efficacy of prostaglandin-synthesis inhibitors, like non-steroidal anti-inflammatory drugs (NSAIDs), as a first-line treatment.

The implications of dysmenorrhea extend far beyond individual discomfort. It is a leading cause of recurrent, short-term absenteeism from school and work globally. Studies from various cultural contexts consistently report that between 14% to 51% of adolescent girls miss school monthly due to menstrual pain (Omidvar & Begum, 2012; Al-Kindi & Al-Bulushi, 2011). This absenteeism contributes to academic setbacks, widening educational gaps, and, ultimately, can limit future socioeconomic opportunities. Psychosocially, dysmenorrhea is associated with symptoms of anxiety, depression, social withdrawal, and a significantly diminished health-related quality of life (Parker et al., 2010). The cyclic nature of the pain can lead to anticipatory anxiety, creating a recurring monthly burden.

Management strategies for dysmenorrhea are diverse, ranging from pharmacological to non-pharmacological interventions. Pharmacological management primarily includes NSAIDs (e.g., Ibuprofen, Mefenamic acid, Naproxen) and hormonal contraceptives. Non-pharmacological approaches encompass a wide array of self-care practices: local heat application (proven to be as effective as ibuprofen for some; Akin et al., 2001), regular physical exercise, dietary modifications (increasing omega-3, reducing caffeine and salt), behavioral techniques (relaxation, yoga), and herbal remedies (Armour et al., 2019). The choice and effectiveness of these strategies are heavily influenced by an individual's knowledge, cultural beliefs, accessibility, and healthcare-seeking behavior.

In the Nepali context, menstruation is deeply embedded in a complex web of socio-cultural norms and religious taboos, collectively known as "Chhaupadi" in its most extreme form, though less severe restrictions are widespread (Adhikari, 2017). These practices often label menstruating individuals as "impure," restricting their participation in religious activities, kitchen work, and sometimes social interaction. This culture of silence and stigma acts as a formidable barrier to open discussion, access to accurate information, and appropriate healthcare-seeking for menstrual disorders. While research on dysmenorrhea in Nepal has been growing, it has predominantly focused on prevalence rates among nursing and medical students—populations with presumed higher health literacy (Karki et al., 2017). There remains a significant gap in understanding the knowledge and self-management practices of adolescent students in non-medical, general academic streams, who constitute the majority of the female student population and may have more limited access to formal health education.

Statement of the Problem

Dysmenorrhea is a highly prevalent gynecological condition that poses a substantial public health burden due to its impact on daily functioning, academic performance, and overall well-being of adolescent girls. Despite its high prevalence and associated negative sequelae, it is frequently normalized or trivialized, leading to under-reporting and inadequate management. In low-resource settings like Nepal, where healthcare access can be limited and menstrual health stigmatized, adolescents often resort to self-care practices based on informal knowledge. The efficacy and safety of these practices are variable and poorly understood. A critical gap exists in the literature regarding the specific knowledge base and the spectrum of self-care practices employed by non-medical adolescent students in Nepal. Without this understanding, designing effective, culturally sensitive, school-based health promotion interventions is challenging. This study, therefore, seeks to address this gap by systematically assessing the knowledge and self-care practices related to dysmenorrhea among female adolescent students in a selected college in Kathmandu.

Rationale of the Study

The rationale for this study is multifaceted. First, from a public health perspective, morbidity due to dysmenorrhea represents a significant yet preventable loss of human potential. Addressing it can directly contribute to Sustainable Development Goals related to health (SDG 3), quality education (SDG 4), and gender equality (SDG 5). Second, from an educational standpoint, understanding the knowledge-practice gap in this population can inform the curriculum development of school health programs, making them more relevant and impactful. Third, on a personal level for the adolescents, empowering them with evidence-based knowledge can improve self-efficacy in managing their health, reduce unnecessary suffering, and improve academic and social participation. Finally, from a research perspective, this study adds to the scarce body of literature on menstrual health management among general adolescent students in Nepal, providing a baseline for future intervention studies and policy advocacy.

Significance of the Study

Theoretical Significance: This study contributes to the body of knowledge on adolescent reproductive health in a low-resource, culturally specific setting. It applies and tests health behavior models, such as the Health Belief Model, by exploring how knowledge (perceived susceptibility and severity) influences the adoption of specific self-care practices (cues to action and perceived benefits/barriers).

Practical Significance:

- **For Students:** The findings can raise awareness and potentially motivate students to adopt more effective and safer self-management strategies.
- **For Educators and School Administrators:** The results provide empirical evidence to advocate for and design integrated menstrual health education programs within the school environment.
- **For Healthcare Providers:** Insights into common practices can guide patient counseling, making it more aligned with adolescents' existing beliefs and practices.
- **For Policymakers:** The study highlights a common adolescent health issue that affects educational outcomes, supporting the case for national school health policies that include comprehensive menstrual health education.

Objectives of the Study

General Objective: To assess the knowledge and practice regarding self-care management of dysmenorrhea among female adolescent students of a selected college in Kathmandu, Nepal.

Specific Objectives:

1. To identify the level of knowledge regarding self-care management of dysmenorrhea among the study population.
2. To describe the self-care practices employed for the management of dysmenorrhea among the study population.

3. To determine the association between the level of knowledge on self-care management of dysmenorrhea and selected socio-demographic variables (age, ethnicity, religion, type of family).

Research Questions

1. What is the level of knowledge regarding self-care management of dysmenorrhea among female adolescent students?
2. What are the common self-care practices used by these students to manage dysmenorrhea?
3. Is there a significant association between the level of knowledge and selected socio-demographic variables?

Study Variables

- **Independent Variables:** Socio-demographic characteristics (age, religion, ethnicity, type of family).
- **Dependent Variables:**
  - Level of knowledge regarding self-care management of dysmenorrhea.
  - Self-care practices for dysmenorrhea management.

Conceptual Framework

The study is guided by a modified framework based on the Health Belief Model (HBM) and Orem's Self-Care Deficit Theory. The HBM posits that health behavior is influenced by an individual's perceptions of: a) susceptibility to a condition, b) severity of the condition, c) benefits of and barriers to an action, and d) cues to action. In this context, an adolescent's knowledge about dysmenorrhea shapes her perceived susceptibility (likelihood of experiencing it) and severity (impact on life). This perception, along with modifying factors (socio-demographics, cultural beliefs), influences her self-care practices (the health behavior). Orem's theory complements this by focusing on the individual's ability (knowledge and skill) to perform self-care activities to maintain health. A deficit exists when self-care demands exceed self-care agency (ability). This study assesses that agency (knowledge and practice) in the context of dysmenorrhea (see Figure 1).

Conceptual Framework

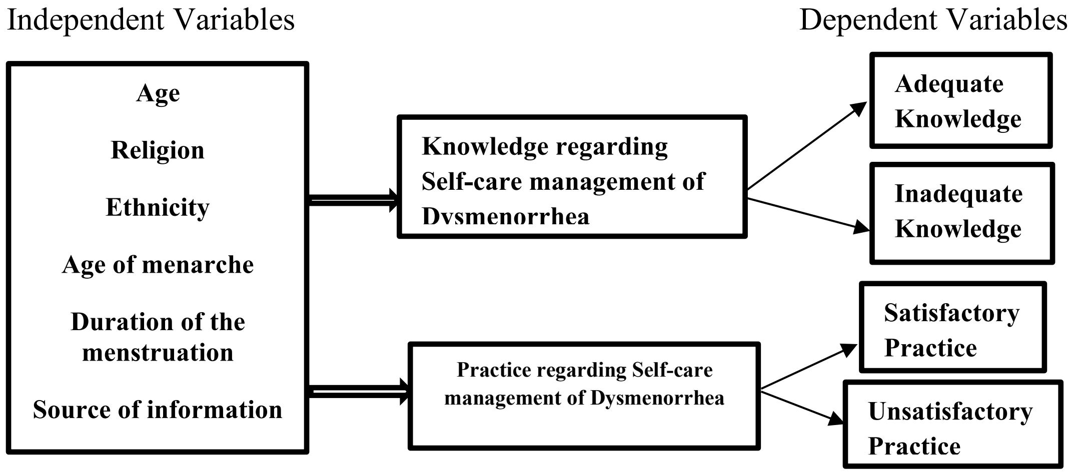

Fig1: Conceptual framework on knowledge on self-care management of dysmenorrhea

Operational Definitions

- **Knowledge:** Refers to the respondent's understanding of the causes, symptoms, aggravating factors, and management options for dysmenorrhea. It was measured using a 16-item questionnaire. The total score was calculated, and the mean score was used as a cut-off. **Adequate/Satisfactory Knowledge:** Total score ≥ 50% of the maximum possible score. **Inadequate/Unsatisfactory Knowledge:** Total score < 50% (adapted from Shrestha, 2019).
- **Self-Care Management:** Refers to the actions undertaken by the respondents independently to relieve the pain and discomfort of dysmenorrhea. This includes both pharmacological (e.g., use of over-the-counter analgesics) and non-pharmacological measures (e.g., use of heat, rest, dietary changes, exercise). It was measured using a 9-item practice questionnaire.
- **Dysmenorrhea:** For this study, dysmenorrhea is operationally defined as self-reported experience of pain or discomfort in the lower abdomen or back just before or during menstruation, which may interfere with daily activities.

Delimitations of the Study

This study was delimited to:

1. Female adolescent students currently enrolled in Grades XI and XII.
2. A single private college (Triton International College) in Tinkune, Kathmandu Metropolitan City.
3. Data collection within a specific timeframe (two weeks in June 2024).
4.

Literature Review

Introduction

A comprehensive review of literature is foundational for situating a study within the existing body of knowledge, identifying gaps, and refining methodological approaches. This section synthesizes relevant global, regional, and local studies on the knowledge and practice of dysmenorrhea management among adolescents, with a focus on student populations.

Global Perspective on Knowledge and Practice

Globally, studies consistently report high prevalence rates of dysmenorrhea among adolescents, but knowledge about its etiology and management remains moderate to poor. A comprehensive prospective study among young Australian women (Subasinghe et al., 2016) found that while 93% reported experiencing period pain, knowledge about management was largely limited to common remedies. Pharmacological use was reported by 58%, primarily NSAIDs, and hormonal contraception use for pain management was 36%. Non-pharmacological methods were popular, with heat packs (54%) and hot baths (37%) being most frequent; however, evidence-based practices like regular exercise were scarcely used (only 2%). This indicates a reliance on passive, palliative measures over proactive lifestyle modifications.

In Spain, a cross-sectional study among university nursing students (Martinez et al., 2018) revealed a 74.8% prevalence of dysmenorrhea. Despite their medical training, 91.2% took analgesics, and a concerning 77.7% primarily self-medicated. This highlights that even among those with presumed higher health literacy, self-management often bypasses formal consultation, potentially leading to inappropriate use of medications. The mean pain severity was high (6.88/10), underscoring the significant burden of the condition.

Regional Perspective (Africa and Asia)

Research from Africa and Asia provides insights into contexts with varying levels of healthcare access and cultural norms around menstruation. In South-West Nigeria, Esike et al. (2015) found that among university students, 77.2% avoided physical activities during menses, and 76.1% believed dysmenorrhea was a normal part of the cycle, leading to medical neglect—only 14.8% sought formal treatment. Knowledge was deemed adequate in only 40.6% of participants. A similar study in Ogun State, Nigeria (Farotimi et al., 2017), reported that 46.4% of participants usually ignored the pain, 29.4% practiced self-medication, and only 7.9% consulted a healthcare provider. The pattern of normalizing pain and relying on informal management is recurrent.

In Saudi Arabia, Almanasef and Alqarni (2023) reported that 82% of students experienced menstrual pain, and 62.1% were current users of analgesics for management. This high rate of analgesic use mirrors findings from Western studies but may occur in a context where access to other forms of healthcare or education might differ. In Ghana, a comparative study (Osonuga et al., 2018) between medical and non-medical students revealed that only 8.9% sought formal medical advice. Medical students used significantly more analgesics (76.1% vs. 41.4%), suggesting that knowledge increases the use of pharmacological interventions but not necessarily consultation.

Nepalese Context

In Nepal, research has begun to illuminate the issue. A study at Kathmandu Medical College (Karki et al., 2017) found a 53.8% prevalence of dysmenorrhea among medical, dental, and nursing students. It explored the association with stress, finding no statistical significance, thereby directing focus toward biological and management factors. Another study in a teaching hospital (Kushwaha & Raunjar, 2021) among medical and dental students found mild dysmenorrhea was most common (59.4%), and a vast majority (86.7%) used home remedies, often combined with analgesics (60.8%). This indicates a blended approach to management in the Nepali context.

However, a critical gap persists. The aforementioned Nepali studies focus predominantly on students in health-related fields. The knowledge, attitudes, and practices of adolescents in non-medical, general academic streams—who are less exposed to formal health curricula—remain largely unexplored. Their primary sources of information (likely family, peers, and media) and their consequent self-care strategies may differ significantly, making them a vulnerable group for misinformation and inadequate care.

Summary of Literature and Identification of Gap

The reviewed literature consistently affirms that dysmenorrhea is a global health concern with high prevalence among adolescents. Common themes include:

1. **High Prevalence & Significant Burden:** Pain is common and often severe enough to impact daily life.
2. **Moderate to Low Knowledge:** Understanding of pathophysiology and comprehensive management is generally insufficient, even among some health students.
3. **Practice Gaps:** There is over-reliance on a narrow range of interventions—primarily analgesics and heat application—with underutilization of other effective non-pharmacological methods (e.g., exercise, dietary changes). Self-medication is widespread, and formal healthcare seeking is low.
4. **Normalization of Pain:** In many cultures, pain is accepted as an inevitable part of menstruation, deterring help-seeking.
5. **Contextual Variation:** Sources of information and specific practices are shaped by cultural and educational factors.

The identified gap is the lack of focused research on the knowledge and self-care practices of non-medical adolescent students in Nepal. This study aims to fill this gap, providing data that is crucial for tailoring public health interventions to a broader adolescent population beyond the health sciences.

Methodology

Research Design

This study employed a descriptive cross-sectional design. This design is appropriate for assessing the knowledge and practices of a population at a single point in time, providing a "snapshot" of the situation. It is efficient for establishing prevalence, describing characteristics, and identifying associations that can be tested in future analytical or experimental studies (Setia, 2016).

Study Setting

The study was conducted at Triton International College, located in Tinkune, Kathmandu Metropolitan City, Nepal. This setting was selected as a representative private higher secondary institution with a co-educational environment. The choice of a non-medical, general academic college was deliberate to target the population of interest—adolescents without formal health education training.

Study Population and Sample

The target population was all female adolescent students in Grades XI and XII at the selected college. The accessible population was those present during the data collection period.

- **Sample Size:** The total enumeration method was used. All 106 female students from Grades XI and XII who were present, met the criteria, and provided consent were included in the study. This census approach was feasible due to the manageable total population size and enhanced the representativeness of the sample within the college.

- **Sampling Technique:** Non-probability purposive sampling was used to select the college. Subsequently, total enumerative sampling was applied for participant selection within the college.

Inclusion and Exclusion Criteria

- **Inclusion Criteria:**
    1. Female students regularly enrolled in Grades XI or XII.
    2. Present in the college on the day of data collection.
    3. Willing to provide informed consent (and assent if applicable).
- **Exclusion Criteria:**
    1. Male students.
    2. Female students who had not yet attained menarche.
    3. Unwillingness to participate.

Research Instrument and Data Collection Technique

Instrument: A structured, self-administered questionnaire was developed in English after an extensive review of literature and similar tools (e.g., Shrestha, 2019; Farotimi et al., 2017). The questionnaire comprised four sections:

1. **Socio-Demographic and Menstrual History (11 items):** Collected data on age, ethnicity, religion, family type, age at menarche, cycle regularity, and family history of dysmenorrhea.
2. **Knowledge Assessment (16 items):** Included multiple-choice and multiple-response questions on definition, causes, symptoms, aggravating/relieving factors, and management options for dysmenorrhea. Each correct response was assigned 1 point, and incorrect/unknown responses were assigned 0.
3. **Practice Assessment (9 items):** Included multiple-response questions on the experience of dysmenorrhea, use of pharmacological and non-pharmacological management strategies, healthcare-seeking behavior, and impact on activities.

Validity and Reliability:

- **Content Validity:** The initial draft was reviewed by a panel of three experts: a gynecologist, a public health researcher, and a nursing educator. The Content Validity Index (CVI) for item relevance was calculated at 0.89, exceeding the acceptable threshold of 0.78 (Polit et al., 2007). Revisions were made based on their feedback regarding clarity, comprehensiveness, and cultural appropriateness.
- **Reliability:** Internal consistency reliability of the knowledge scale was assessed during pretesting using Cronbach's alpha, which yielded a coefficient of 0.76, indicating acceptable reliability (Tavakol & Dennick, 2011).
- **Pretesting:** The questionnaire was pretested on 10 female students (approx. 10% of sample) from a similar college (Nexus College, Kandaghari). Pretesting confirmed clarity, average completion time (15-20 minutes), and identified no major logistical issues. Data from the pretest were not included in the final analysis.

Data Collection Procedure

Data collection occurred over two weeks in June 2024, following a standardized protocol:

1. **Permissions:** Ethical approval was obtained from the SANN Institute of Nursing. Written administrative permission was secured from the principal of Triton International College.
2. **Recruitment and Consent:** The researcher visited classrooms, explained the study's purpose, procedures, risks, benefits, and confidentiality measures. Written informed consent was obtained from each participant. For students under 18, a combined parent/guardian information sheet and student assent form were used.
3. **Administration:** The questionnaire was distributed in a quiet classroom setting to ensure privacy and minimize distractions. The researcher remained present to clarify any questions without influencing responses.
4. **Collection:** Completed questionnaires were collected immediately, checked for completeness, and assigned a unique identification code.

Data Analysis Plan

Data were processed and analyzed using IBM SPSS Statistics for Windows, Version 22.0 (Armonk, NY: IBM Corp).

1. **Data Management:** Responses were coded, entered into SPSS, and thoroughly cleaned. Consistency and range checks were performed.
2. **Descriptive Statistics:** Frequency distributions and percentages were used to describe socio-demographic characteristics, menstrual history, knowledge items, and practice items. Means and standard deviations were calculated for continuous variables (e.g., age).
3. **Knowledge Scoring and Categorization:** A total knowledge score was computed for each participant. The mean score of the sample was calculated (Mean = 9.8 out of 16, or 61.25%). Following the operational definition, scores $\geq 50\%$ (≥ 8) were categorized as "Satisfactory Knowledge" and scores $< 50\%$ as "Unsatisfactory Knowledge."
4. **Inferential Statistics:** The Chi-square test of independence was employed to test for associations between the dichotomous knowledge level (Satisfactory/Unsatisfactory) and categorical socio-demographic variables (age group, ethnicity, religion, family type). A p-value of less than 0.05 was considered statistically significant.

Ethical Considerations

This study adhered to the core ethical principles of biomedical research as outlined in the Declaration of Helsinki:

1. **Informed Consent and Assent:** Voluntary, written informed consent/assent was obtained after full disclosure.
2. **Beneficence and Non-maleficence:** The study aimed to benefit the field of adolescent health. Minimal risk was involved. Participants were assured they could skip any question or withdraw at any time without penalty.
3. **Confidentiality and Anonymity:** No personally identifiable information was collected on the questionnaire. Data were kept secure, accessible only to the research team, and will be destroyed after five years. Results are presented in aggregate form.

4. **Justice:** The benefits of the research (generating knowledge to inform future health programs) were fairly distributed, and the burden of participation was minimal.
5.

Results

Section 1: Socio-Demographic and Menstrual Characteristics of Respondents

The study included 106 female adolescent students. Their socio-demographic and menstrual characteristics are presented in Table 1.

Table 1

Socio-Demographic and Menstrual Characteristics of the Respondents (N=106)

Characteristic	Category	Frequency (n)	Percentage (%)
Age Group (Years)	15-16	80	75.5
	17-18	26	24.5
Mean Age (±SD)	16.2 (±0.98)		
Religion	Hindu	78	73.6
	Buddhist	13	12.3
	Christian	15	14.2
	Islam	0	0.0
Ethnicity	Brahmin	25	23.6
	Chhetri	41	38.7
	Janajati	32	30.2
	Dalit	8	7.5
Type of Family	Nuclear	97	91.5
	Joint	1	0.9
	Extended	8	7.5
Age at Menarche (Years)	10-12	41	38.7

Characteristic	Category	Frequency (n)	Percentage (%)
	13-15	60	56.6
	16-18	5	4.7
Mean Age at Menarche (±SD)	13.5 (±1.44)		
Family History of Dysmenorrhea	Yes	94	88.7
	No	12	11.3
Experience of Dysmenorrhea	Yes	91	85.8
	No	15	14.2

The majority of participants (75.5%) were aged 15-16 years. Hindus constituted the largest religious group (73.6%), and Chhetri was the most common ethnicity (38.7%). An overwhelming majority (91.5%) lived in nuclear families. The mean age at menarche was 13.5 years, with most (56.6%) attaining it between 13-15 years. A very high proportion (88.7%) reported a family history of dysmenorrhea, and 85.8% reported personally experiencing it.

Section 2: Knowledge Regarding Self-Care Management of Dysmenorrhea

Key findings from the knowledge assessment are summarized in Table 2.

Table 2

Knowledge of Respondents Regarding Dysmenorrhea (N=106)

Knowledge Item	Correct Response	Frequency (n)	Percentage (%)
Definition (Pain during menses)	94	88.7	
Considered a Normal Process	Yes (Correct: No)	99	93.4*
Identified Mefenamic Acid as Useful Medicine	95	89.6	
Recognized Restriction in Activity as Psychological Impact	102	96.2	

Knowledge Item	Correct Response	Frequency (n)	Percentage (%)
Recognized Absenteeism as Academic Impact	106	100.0	
Identified Heavy Lifting as Aggravating Factor	99	93.4	
Source of Information (Multiple Responses Allowed)			
- Mass Media (TV/Internet)	106	100.0	
- Relatives	106	100.0	
- Teachers	102	96.2	
- Friends	95	89.6	
- Personal Search	100	94.3	
- Family Members	96	90.6	
Overall, Knowledge Level			
- Satisfactory (Score ≥50%)	73	68.8	
- Unsatisfactory (Score <50%)	33	31.2	
- Mean Knowledge Score (±SD)	9.8/16 (±2.1)	61.25%	

Note: This indicates a high rate of perceiving dysmenorrhea as normal, which, while common, is not medically accurate for disabling pain.

A significant finding was the universal access to information, with mass media and relatives being the most cited sources (100% each). However, a critical knowledge gap was evident in the normalization of pain, with 93.4% incorrectly believing dysmenorrhea is always a normal part of menstruation. Knowledge about pharmacological management was high regarding Mefenamic acid (89.6%), but awareness of other options (e.g., Ibuprofen, hormonal methods) was low. Understanding of impacts was excellent, with 100% recognizing academic effects like absenteeism. Overall, 68.8% had satisfactory knowledge, but the mean score of 61.25%

indicates room for substantial improvement, and no participant scored in a "good" range (e.g., >80%).

Section 3: Self-Care Practices Regarding Dysmenorrhea

The self-care practices reported by the 91 students who experienced dysmenorrhea are detailed in Table 3.

Table 3

Self-Care Practices for Dysmenorrhea Among Respondents Who Experienced It (n=91)

Practice Item	Category	Frequency (n)	Percentage (%)*
Engaged in Any Self-Care	Yes	79	86.8
	No	12	13.2
Pharmacological Measures Used	Yes	58	63.7
	No	33	36.3
Type of Medicine Used (n=58)	Mefenamic Acid	38	65.5
	Paracetamol	1	1.7
	Ibuprofen	1	1.7
	Other/Combination	18	31.0
Non-Pharmacological Measures Used (Multiple Responses)			
- Hot Water Bag Application	78	85.7	
- Rest and Sleep	78	85.7	
- Consuming Chocolate	78	85.7	
- Drinking Warm Fluids	0	0.0	

Practice Item	Category	Frequency (n)	Percentage (%)*
- Massage	0	0.0	
- Exercise	0	0.0	
- Hot Baths	0	0.0	
Action During Pain (Multiple Responses)	Self-Care Management	78	85.7
	Ignore the Pain	62	68.1
	Stay at Home	4	4.4
	Consult a Doctor	2	2.2
Impact on Activity	Avoided Physical Activities	78	85.7
	Decreased Academic Performance	77	84.6
	Poor Concentration	0	0.0
	Social Withdrawal	0	0.0

*Percentages are calculated based on n=91 (those experiencing dysmenorrhea).

The data reveal a strong pattern of self-reliance. While 86.8% practiced self-care, formal healthcare seeking was minimal (2.2%). Pharmacological use was common (63.7%), dominated by Mefenamic acid. Non-pharmacological practices were highly concentrated: hot water bags, rest, and chocolate were each used by 85.7% of sufferers, while other evidence-based methods like exercise, massage, or warm fluids were not reported at all. A striking 68.1% reported *both* practicing self-care and ignoring the pain at times, suggesting pain is often endured despite management attempts. The functional impact was severe, with over 84% avoiding activities and reporting decreased academic performance.

Section 4: Association between Knowledge Level and Socio-Demographic Variables

The Chi-square test was used to examine associations. The results are presented in Table 4.

Table 4

Association Between Level of Knowledge and Selected Socio-Demographic Variables (N=106)

Variable	Category	Satisfactory Knowledge (n=73) n(%)	Unsatisfactory Knowledge (n=33) n(%)	χ^2 Value	df	p-value
Age Group	15-16 yrs	57 (78.1)	23 (69.7)	0.874	1	0.350
	17-18 yrs	16 (21.9)	10 (30.3)			
Ethnicity	Brahmin/Chhetri	48 (65.8)	18 (54.5)	1.214	1	0.270
	Janajati/Dalit	25 (34.2)	15 (45.5)			
Religion	Hindu	55 (75.3)	23 (69.7)	0.374	1	0.541
	Non-Hindu	18 (24.7)	10 (30.3)			
Family Type	Nuclear	68 (93.2)	29 (87.9)	0.846	1	0.358
	Joint/Extended	5 (6.8)	4 (12.1)			

As shown in Table 4, none of the tested associations were statistically significant (all p-values > 0.05). This suggests that within this sample, the level of knowledge about dysmenorrhea was not significantly influenced by age, ethnicity, religion, or family structure.

Discussion

This study provides a detailed snapshot of the knowledge and self-care practices related to dysmenorrhea among female adolescent students in a non-medical college in Kathmandu. The findings corroborate, contrast with, and extend the existing literature in important ways.

High Prevalence and Familial Pattern

The reported prevalence of dysmenorrhea (85.8%) is at the higher end of the global spectrum (45-95%) and aligns with recent studies from similar settings (Almanasef & Alqarni, 2023). The very high rate of familial history (88.7%) is a notable finding. It suggests a potential genetic predisposition to primary dysmenorrhea, as supported by some research (Matsuda et al., 2015), but it may also reflect learned behavior and normalization of pain within families. Daughters may learn from their mothers and sisters to expect and tolerate menstrual pain, which can influence both their perception of the condition and their help-seeking behavior.

Knowledge: Satisfactory but Superficial, with Critical Gaps

The finding that 68.8% of students had satisfactory knowledge appears positive at first glance. However, the mean score of 61.25% and the complete absence of "good" knowledge scores reveal a superficial understanding. This mirrors findings from Nigeria where adequate knowledge was around 40-50% (Farotimi et al., 2017; Esike et al., 2015). The near-universal belief (93.4%) that dysmenorrhea is "normal" is the most critical knowledge gap identified. While menstruation is normal, debilitating pain that restricts activity is not and often indicates primary dysmenorrhea requiring management. This normalization is a significant barrier to seeking effective treatment and is a culturally reinforced misconception found across many studies (Osonuga et al., 2018).

The sources of information—mass media (100%) and relatives (100%)—highlight an informal knowledge ecosystem. While accessible, these sources may not provide accurate, evidence-based information. The high reliance on personal search (94.3%) and friends (89.6%) further underscores the role of peer networks and individual initiative, which can be both empowering and risky if information is unverified.

Practices: Concentrated, Passive, and Medically Autonomous

The practice profile reveals a concerning pattern. There is a heavy reliance on a very narrow range of interventions. Pharmacologically, Mefenamic acid is the cornerstone, used by 65.5% of those who take medicine. This is consistent with its popularity in Nepal as an over-the-counter analgesic for menstrual pain. However, knowledge of other NSAIDs or hormonal options appears minimal.

Non-pharmacologically, the triad of hot water bag, rest/sleep, and chocolate accounts for almost all reported practices (each at 85.7%). The use of heat is evidence-based and positive (Akin et al., 2001). However, the complete absence of other effective strategies like regular exercise, yoga, dietary modifications (e.g., reducing caffeine, increasing omega-3), abdominal massage, or transcutaneous electrical nerve stimulation (TENS) points to a significant missed opportunity for holistic management. The choice of chocolate, while potentially offering psychological comfort and magnesium, is not a primary evidence-based therapy. This limited repertoire suggests that self-care is viewed more as passive comfort-seeking rather than active health management.

The extremely low rate of formal healthcare consultation (2.2%) is alarming but consistent with global trends of under-consultation for dysmenorrhea. This, coupled with the high rate of self-medication, poses risks of inappropriate dosage, prolonged use, masking of symptoms of secondary dysmenorrhea (e.g., endometriosis), and potential side effects. The fact that 68.1% "ignore the pain" even while practicing some self-care indicates a high pain tolerance or resignation, likely stemming from the belief that the pain is normal and untreatable.

Severe Functional Impact

The reported impact is substantial: 85.7% avoid physical activities and 84.6% report decreased academic performance. This quantifies the tangible cost of dysmenorrhea on educational engagement and physical well-being. It provides strong justification for schools and policymakers to treat dysmenorrhea not as a minor personal issue but as a genuine barrier to educational equity and adolescent health.

Lack of Association with Socio-Demographics

The finding that knowledge level was not associated with age, ethnicity, religion, or family type suggests that in this urban, educated sample, information about menstruation and dysmenorrhea may be diffusing through common channels (media, school, peers) that transcend traditional socio-demographic boundaries. This is a potentially positive sign, indicating that broad-based educational interventions could be effective across diverse groups within similar settings. However, it also implies that specific cultural or familial backgrounds within this context did not confer a particular knowledge advantage or deficit regarding this topic.

Integration with Conceptual Framework

The findings align with the adapted Health Belief Model. Perceived severity is high, as evidenced by the reported significant impact on academics and activities. Perceived susceptibility is also high (85.8% experience it). However, the perceived benefits of formal action (consulting a doctor) seem low, likely due to the perceived barrier of stigma, cost, or the belief that "nothing can be done" (normalization). The cue to action is the monthly pain itself, which triggers self-care (mainly analgesics and heat), but not formal care. The modifying factors (socio-demographics) showed no significant effect in this study. According to Orem's theory, there is a clear self-care deficit: the demand (managing painful dysmenorrhea) exceeds the agency (limited knowledge and a narrow range of practiced skills), leading to negative health outcomes (pain, absenteeism).

Conclusion

This study concludes that dysmenorrhea is a near-universal experience with serious functional consequences for female adolescent students in the studied college in Kathmandu. While a majority possess a satisfactory foundational knowledge, critical gaps persist—most notably, the widespread normalization of pain. Self-care practices are common but limited in scope, characterized by heavy reliance on one type of analgesic (Mefenamic acid) and a narrow set of non-pharmacological methods (primarily heat, rest, and chocolate). There is a stark absence of healthcare-seeking behavior and an underutilization of a broader spectrum of evidence-based management strategies. Socio-demographic factors did not influence knowledge levels in this setting.

The findings underscore an urgent need to move beyond accepting menstrual pain as an inevitable burden. Empowering adolescents with comprehensive, accurate, and destigmatized information is essential to bridge the knowledge-practice gap and improve health and educational outcomes.

Limitations

Several limitations must be acknowledged:

1. **Design:** The cross-sectional design captures associations but cannot establish causality between knowledge, practices, and outcomes.
2. **Sampling and Generalizability:** The use of purposive sampling for the college and a single-site study limits the generalizability of findings to other colleges or rural settings in Nepal.
3. **Self-Report Bias:** Data on practices and pain experience are subjective and prone to recall and social desirability bias.
4. **Measurement:** The knowledge assessment tool, while validated for content, may not have fully captured the depth of understanding. The 50% cut-off for "satisfactory" knowledge is arbitrary, though commonly used.
5. **Unmeasured Variables:** Factors like socioeconomic status, detailed dietary habits, stress levels, and access to healthcare services were not measured but could influence practices.

Implications

For Nursing Practice and Public Health:

- **School Health Nurses:** Should take a proactive role in conducting regular menstrual health workshops, screening for severe dysmenorrhea, and providing confidential counseling.
- **Health Promotion:** Campaigns should explicitly challenge the normalization of severe pain, using messages like "Periods are normal, debilitating pain is not."
- **Community Outreach:** Engage mothers and female relatives through community programs, as they are primary information sources, to break intergenerational cycles of misinformation.

For Education Policy:

- **Curriculum Integration:** The government and educational boards should mandate comprehensive, age-appropriate, and gender-sensitive reproductive health education that includes the pathophysiology and evidence-based management of dysmenorrhea, starting from early adolescence.
- **School Environment:** Policies should support a supportive environment for menstruating students, including access to rest areas, hot water, and pain relief if needed, to reduce absenteeism.

For Future Research:

1. Conduct **multi-center studies** across different types of schools (public/private, urban/rural) to enhance generalizability.
2. Employ **mixed-methods designs** (e.g., surveys followed by focus group discussions) to gain deeper qualitative insights into the beliefs, barriers, and decision-making processes behind self-care choices.

3. Undertake **intervention studies** to test the effectiveness of school-based educational programs on improving knowledge, changing practices, and reducing the impact of dysmenorrhea.
4. Explore the **role of digital health** (e.g., mobile apps, social media) as a tool for disseminating accurate information to adolescents.

Final Recommendation

Addressing dysmenorrhea effectively requires a multi-sectoral approach. Collaboration between the Ministry of Health and Population, the Ministry of Education, Science and Technology, non-governmental organizations, school administrations, and healthcare providers is essential to develop and implement a national adolescent menstrual health strategy. Empowering girls with knowledge and self-care skills is not just a health imperative but a critical step towards gender equality and educational achievement in Nepal.

Transparency Statement: The authors confirm that this study has been conducted with honesty and in full adherence to ethical guidelines.

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