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Original Investigation

Self-medication Practice in Primary Dysmenorrhea among Nursing Students: A Cross Sectional Study

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ABSTARCT

INTRODUCTION: Self-medication and home remedies are most commonly employed for relief from menstrual discomfort in female students. Self-medication practice varies among adolescent female students. Hence, this study aims to observe and analyze self-medication practice and drugs used for primary dysmenorrhea among nursing students. **MATERIALS AND METHODS:** This cross sectional study was conducted at Janaki Medical College and College of Nursing, Sinha Health Foundation, Dhanusha from October 2019 to December 2019, among nursing students of various academic years of intermediate level and bachelor level through structured questionnaire. Data analysis was carried out using SPSS version 21.0. **RESULTS:** Out of 156 female students, the mean age of menarche was 13.20±1.53, interval of menstrual cycle was 30.29±7.26. Majority (82.1%) of the female students reported lower abdominal pain during menstrual bleeding, of which 48.4% had pain for less than 1 day, 47.7% had pain for 1-3 days and 3.9% had pain for more than 3 days. Self-medication practice was observed in 35.20 % of students while 60.20% of them practiced resting in bed for pain relief during menstrual bleeding. The most commonly self-medicated drug was mefenamic acid (64.4%), followed by paracetamol (40%), ibuprofen (26.7%) and nimesulide (13.3%). **CONCLUSIONS:** Self–medication of drugs was found to be lower in primary dysmenorrhea among nursing students. Therefore, education programs on the drawbacks of self-medication of drugs needs to be implemented; properly and timely.

Key words: Self-medication, primary dysmenorrhea, nursing students.

INTRODUCTION

According to the WHO's definition, self-medication (SM) is the use of drugs to treat self-diagnosed disorders or symptom's or the intermittent or continued use of a prescribed drug for chronic or recurrent diseases or symptoms [1]. It involves the process of getting and consuming drugs without the advice of a physician either for diagnosis, treatment, prescription, surveillance or monitoring [2]. SM is a fairly common practice, for minor health problems, it often provides cheap, rapid, and convenient solutions, outside of the health care system of many countries. Potential risks include incorrect self-diagnosis, improper dosage, inappropriate choice of therapy, masking of severe disease and drug interactions. Little is known about the SM of dysmenorrhea by adolescent girls. Some girls discuss dysmenorrhea with family and friends and the majority may not seek medical advice. As dysmenorrhea is a common problem for adolescents, it is essential that these girls be aware of the normal and abnormal symptoms of menstruation [3]. Factors influencing frequency of SM in the previous studies are age, educational level, family attitudes, advertising of drug manufacturers, legislation regulating dispensing and sale of drugs, previous experiences with the symptoms or disease, significance attributed to the disease [4,5] home-kept prescription drugs [6] and

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economic situation of respondents [1,4]. Primary dysmenorrhea is defined as cramping pain in the lower abdomen occurring just before or during menstruation, in the absence of other diseases such as endometriosis. Increased production of endometrial prostaglandin, underlies the pathogenesis of PD leading to increased uterine tone and stronger, more frequent uterine contractions [7]. All these symptoms occur just before or during the menses in women with normal pelvic anatomy. The prevalence is particularly high among adolescents (50-70%) disrupting educational and social life, leading to school absenteeism and loss of labor [8]. The problem is often under diagnosed and under treated. Several studies have reported that SM starts with the onset of adolescence and increases with age [9,10,11]. Therefore, the issue of SM among adolescents represents an emerging topic in scientific research [9]. In developing countries, the easy availability of a wide range of drugs and inadequate health services increased the prevalence of SM [12]. Inappropriate self-medication practice (SMP) results in economic wastes, damage of vital organs, incorrect therapy selection, risk of adverse drug reactions and development of antimicrobial-resistant pathogens.therefore this study was conducted in nursing adolescent students to observe and analyse SMP and drugs used for primary dysmenorrhea among nursing students.

MATERIALS AND METHODS

Study design and setting

This cross sectional study was conducted at College of Nursing, Janaki Medical College and College of Nursing, Sinha Health Foundation, Dhanusha from October 2019 to December 2019. Students of various academic years of intermediate level and bachelor level nursing program were include in this study.

Participants and study procedures Female nursing students were briefed in detail about the objective and methods of the study and a structured questionnaire comprising of demographic details and self-medication practice for primary dysmenorrhea was provided to the students. The questionnaire for data collection was distributed to students in classrooms in the first period and was collected after the last period on the same day. It consisted of socio-demographic section followed by questions related to menarche, severity of lower abdominal pain during menstrual bleeding and the methods adapted for relief of pain during menstrual bleeding. The Institutional Review Committee (IRC) of Janaki Medical College, Tribhuvan University reviewed and approved the study.

Statistical consideration The data was entered into MS excel and transferred to SPSS version 21.0 for analysis. Descriptive statistics were employed to summarize the data. $p<0.05$ was considered statistically significant. Variables associated with SM, were entered into the multivariate logistic regression analysis, which was used to compute adjusted odds ratio (OR) and 95% confidence intervals (95% CI) to assess the independent associations of these variables with self-medication.

RESULTS

Sociodemographic characteristics

In the current study, out of 156 female students, the mean age of female students was 18.92 ± 2.52.Percentage of students unmarried was 82.7 while married was 17.3. Majority of the students belonged to intermediate level (65.4%) compared to bachelor level (34.6%). Also, majority students were residents of province 2 (Table 1). The mean age menarche was 13.20 ± 1.53 years, mean interval of menstrual cycle was 30.29 ± 7.26 and the duration of menstrual bleeding was 4.84 ± 1.15. Most of them had a regular pattern (77.6%) of menstrual bleeding while 82.1 % of the female students reported lower abdominal pain during menstrual bleeding, of which 48.4% had pain for less than 1 day, 47.7% had pain for 1-3 days and 3.9% had pain for more than 3 days. 28.1% of the respondents had severe, 33.6% had moderate and 38.3% had mild lower abdominal pain (Table 2 and 3).

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Table 1|Socio-demographic characteristics of study subjects (n=156)

Characteristics	Number	Percentage (%)
Age [Mean ± SD]	18.92±2.52	-
Caste/Ethnicity		
Upper Caste Group	123	78.9
Adibasi/Janajati	28	17.9
Dalit	5	3.2
Marital Status		
Married	27	17.3
Unmarried	129	82.7
Academic Level		
Intermediate	102	65.4
Bachelor	54	34.6
Academic year		
1st year	49	31.4
2nd year	48	30.8
3rd year	46	29.5
4th year	13	8.3
Province		
Province-1	26	16.7
Province-2	95	60.9
Province-3	17	10.9
Province-4	4	2.6
Province-5	3	1.9
Province-6	9	5.8
Province-7	2	1.3
Total	**156**	**100.0**

Table 2| History of menarche and presence of lower abdominal pain during menstrual bleeding among study subjects (n=156)

History of menarche	Number (n=156)	Percentage (%)
Age of menarche (years) [Mean ± SD]	13.20±1.53	-
Interval of menstrual cycle (days) [Mean ± SD]	30.29±7.26	
Duration of bleeding (days) [Mean ± SD]	4.84±1.15	
Pattern of menstrual cycle (n, %)		
Regular	121	77.6
Irregular	35	22.4
Lower abdominal pain during menstrual bleeding (n, %)		
Yes	128	82.1
No	28	17.9

Factor associated with self-medication practice during pain in menstrual bleeding among study subjects

SMP was found to be higher in students aged >20 years(45%), in upper caste group (39.2%), in married students(61.1%) and in bachelor level students (37.5%), as shown in Table 4.

Out of 45 students, practicing self-medication, it was found that those students with age at menarche ≤ 13years (37.9%), with 28 days menstrual cycle interval (39.6%), with more than 4 days of bleeding duration (36.8%) and with irregular menstrual bleeding (41.9%) were associated with higher pattern of SM. Similarly, SMP was associated with history of abdominal pain before or after start of menarche (36.9%), with abdominal pain starting before and after one day of start of menstrual bleeding (40%), with pain for ≥ 1 day (39.1%) and with severe pain during menstrual bleeding (61.1%), as shown in Table 5.

Based on multivariable analysis, self-medication practice was associated more with married students (3.51) and with severe lower abdominal pain during menstrual bleeding (4.82), as shown in Table 6.

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Table 3| History of lower abdominal pain during menstrual bleeding among study subjects (n=128)

History of lower abdominal pain	Number (n=128)	Percentage (%)
Abdominal pain started		
Before start of menarche	39	30.4
With start of menarche	63	49.2
After start of menarche	26	20.4
Pain started before menstrual bleeding		
Less than 1 year	24	18.8
1-3 years	29	22.7
More than 3 years	14	10.9
Don't remember	61	47.7
Pain started at the time of menstrual bleeding		
One or more day before start of menstrual bleeding	47	36.7
On the same day on start of menstrual bleeding	71	55.5
One or more days after start of menstrual bleeding	10	7.8
Duration of pain during menstrual bleeding		
Less than 1 days	62	48.4
1-3 days	61	47.7
More than 3 days	5	3.9
Family history of pain among during menstrual bleeding		
Mother	29	22.6
Sister	20	15.6
Mother & Sister	16	12.5
None	63	49.3
Severity of pain (Score)		
Mild	49	38.3
Moderate	43	33.6
Severe	36	28.1

Table 4| Association of self-medication practice during pain in menstrual bleeding and socio-demographic characteristics of study subjects (n=128)

	Self-medication practice		OR(95%CI)	p-value
	Yes, n=45, (%)	No, n=83, (%)		
Current Age				
More than 20 years	18(45.0)	22(55.0)	1.84(0.85-3.99)	0.116
20 years & less	27(30.7)	61(69.3)	1.00	
Caste/Ethnicity				
Upper Caste Group	40(39.2)	62(60.8)	2.71 (0.94-7.76)	0.057
Others	5(19.2)	21(80.8)		
Marital Status				
Married	11(61.1)	7(39.9)	3.51(1.25-9.84)	0.013
Unmarried	34(30.9)	76(69.1)	1.00	
Academic Level				
Intermediate	30(34.1)	58(65.9)	0.86(0.39-1.87)	0.708
Bachelor	15(37.5)	25(62.5)	1.00	
Academic year				
1st year	16(43.2)	21(56.8)	1.27(0.26-6.11)	
2nd year	11(25.6)	32(74.4)	0.57(0.11-2.80)	0.406
3rd year	15 (37.5)	25 (62.5)	1.01(0.20-4.79)	
4th year	3(37.5)	5(62.5)	1.00	

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Table 5| Association of self-medication practice during pain in menstrual bleeding and menstrual characteristics of study subjects (n=128)

	Self-medication practice			
	Yes, n=45, (%)	No, n=83, (%)	OR(95%CI)	p-value
Age at menarche				
13 years and less	33 (37.9)	54(62.1)	1.47(0.66-3.28)	0.338
More than 13 years	12 (29.3)	29 (70.7)	1.00	
Interval of menstrual cycle				
<28 days	6(27.3)	16(72.7)	0.71(0.24-2.10)	0.540
28 days	19(39.6)	29(60.4)	1.24(0.56-2.74)	0.588
>28 days	20(34.5)	38(65.5)	1.00	
Duration of bleeding				
More than 4 days	32(36.8)	55(63.2)	0.79(0.36-1.75)	0.575
4 days and less	13 (31.7)	28(68.3)	1.00	
Pattern of Menstrual cycle				
Irregular	13(41.9)	18(58.1)	1.46(0.64-3.36)	0.364
Regular	32(33.0)	65(67.0)	1.00	
Abdominal pain started at menarche (Year)				
With start of Menarche	21(33.3)	42(66.7)	0.85(0.41-1.76)	0.671
Before or after start of menarche	24(36.9)	41(63.1)	1.00	
Abdominal Pain Started at the time of menstrual bleeding (day)				
On the same day of start of menstrual bleeding	19(30.2)	44(69.8)	0.64(0.31-1.34)	0.244
Before and after one day of start of menstrual bleeding	26(40.0)	39(60.0)	1.00	
Duration of pain during menstrual bleeding				
Less than 1day	20 (31.3)	44(68.8)	0.70(0.34-1.47)	0.355
1 days and more	25(39.1)	39(60.9)	1.00	
Family history of pain during menstrual bleeding				
Yes	20 (30.8)	45 (69.2)	0.67(0.32-1.40)	0.291
No	25 (39.7)	38 (60.3)	1.00	
Severity of pain				
Severe	22(61.1)	14(38.9)	4.84(1.90-12.33)	0.001
Moderate	11(25.6)	32(74.4)	1.06(0.41-2.72)	0.904
Mild	12(24.5)	37(75.5)	1.00	

Table 6| Multivariable analysis of factors associated with self-medication practice during pain in menstrual bleeding among study subjects

Characteristics	aOR	(95%CI)	p-value
Marital Status			
Married	3.51	1.13-10.87	0.029
Unmarried	1.00	1.00	
Severity of pain			
Severe	4.82	1.77-13.10	0.002
Moderate	4.77	1.79-12.67	0.002
Mild	1.00	1.00	-

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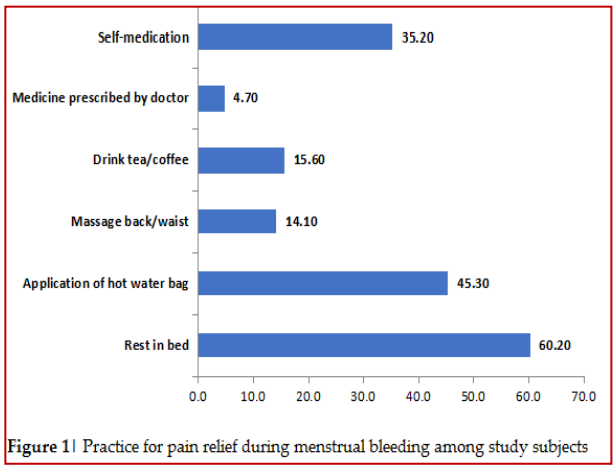

Figure 1| Practice for pain relief during menstrual bleeding among study subjects

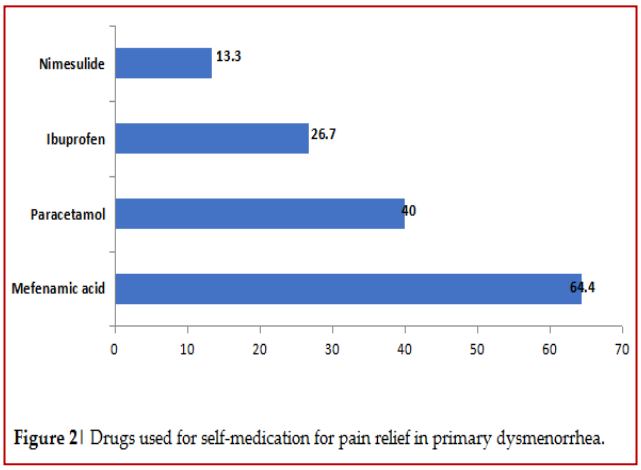

Figure 2| Drugs used for self-medication for pain relief in primary dysmenorrhea.

Self-medication practice for relief of pain during menstrual bleeding was observed in 35.20 % of students, and only 4.70% took medicines prescribed by doctor whereas the remaining students practiced non-pharmacological measures like, resting in bed (60.20%), application of hot water bag (45.30%), massaging back/waist (14.10%) and drinking tea/coffee (15.60%), as shown in Figure 1.

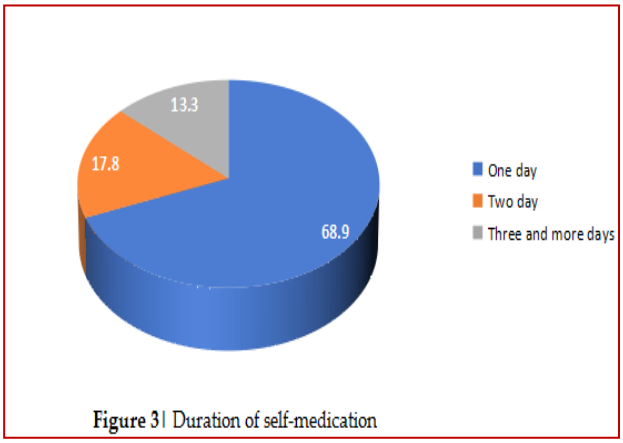

Figure 3| Duration of self-medication

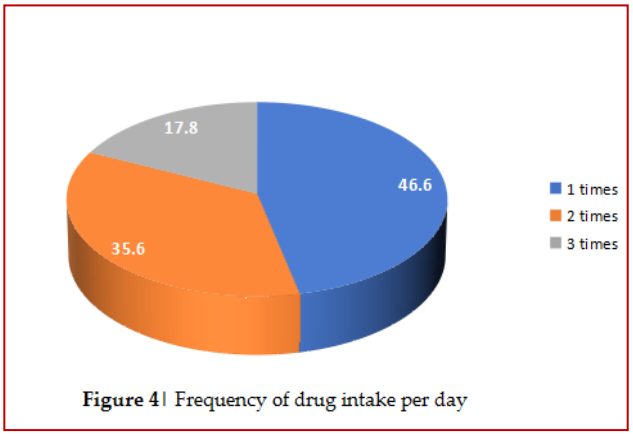

Figure 4| Frequency of drug intake per day

The most commonly self-medicated drug was mefenamic acid (64.4%), followed by paracetamol (40%), Ibuprofen (26.7%) and nimesulide (13.3%), (Figure 2).The duration of self-medication was 1 day for 68.9% of the students, 2 days for 17.8% of students and 3 days for 13.3% of students (Figure 3).The pain associated with menstrual bleeding was relieved by intake of a drug only once a day in 46.6% of students, while the pain was relieved by intake of a drug 3 times per day in 17.8% of students (Figure 4).

DISCUSSION

Self-medication practice has been practiced by literate as well as illiterate people due to easy availability of drugs and lack of strict regulatory authority, which has lead to issues like development of antimicrobial resistance, tolerance and/or dependence and many more undesired effects. In this study, nursing students were enrolled for determining the prevalence as well as pattern of SM in primary dysmenorrhea. In this study, the mean age of female students was 18.92 ± 2.52 which was consistent to the mean age of 19.12 ± 0.87 years and 16.7 years in study conducted by Jayanthi B. et al. [13] and Chiou M-H et al. [14] respectively. 82.7% of students were unmarried and 17.3% were married. The higher percentage of unmarried students suggests that, most of their

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families had sound knowledge about the consequences of childhood marriage. Majority of the students belonged to intermediate level (65.4%) compared to bachelor level (34.6%). Also, majority students were residents of province 2 as the study was carried out in province 2, Nepal.

The mean age of menarche was 13.20 ± 1.53 years, mean interval of menstrual cycle was 30.29 ± 7.26, the duration of menstrual bleeding was 4.84 ± 1.15 and regular menstrual bleeding pattern was seen in 77.6% of the females which were comparable with the findings of Parra-Fernández ML et al. [15], where the average age of menarche was 12.15 ± 1.52; the majority of the women reported having a regular menstrual cycle (72.8%), with average cycles of 29.05 ± 4.46 days, and a menstrual period lasting for 5.02 ± 1.26 days, and Chiou M-H et al. [14], where the average age of menarche was between the ages of 12 to 14, , 83.9% had menstruation periods that lasted between 4 to 6 days. However, 61.6% of them didn't have regular menstruation. Similarly, the mean age at menarche was 12.6 ± 1.6 years in study done by Sugumar R et al. [16], which is in consistence with our study.

This study showed that, most of the female students had a regular pattern (77.6%) of menstrual bleeding similar to study done by WO Adebimpe et al. [17]. 82.1 % of the female students reported lower abdominal pain during menstrual bleeding, of which 48.4% had pain pain for less than 1 day, 47.7% had pain for 1-3 days and 3.9% had pain for more than 3 days. 28.1% of the respondents had severe, 33.6% had moderate and 38.3% had mild lower abdominal pain, which is in contradiction with study done by Parra-Fernández ML et al. [15], where 6.3% perceived mild pain, 26.3% moderate pain and 67.4% perceived intense pain. Prevalence of SM practice was found to be higher in students aged >20 years (40%) which is comparable to the results of study conducted by Jayanthi B. et al. [13]. Also, SM practice in upper caste group was 39.2%, in married students 61.1% and in bachelor level students 37.5%.

In our study, SM practice, with age at menarche ≤ 13years (37.9%), with 28 days menstrual cycle interval (39.6%), with more than 4 days of bleeding duration (36.8%) and with irregular menstrual bleeding (41.9%) were associated with higher pattern of SM. Similarly, SMP practice was associated with history of abdominal pain before or after start of menarche (36.9%), with abdominal pain starting before and after one day of start of menstrual bleeding (40%), with pain for ≥ 1 day (39.1%) and with severe pain during menstrual bleeding (61.1%). These findings are similar to results obtained by Pavydė E. et al. [18], where the presence of dysmenorrhea was associated with younger age (90.4%), no previous pregnancy (91.7%), irregular menstrual cycle (OR=2.270), younger age at menarche(for ≤ 12 years, OR=2.361), longer menstrual bleeding duration (≥ 6 days, OR= 3.141) and presence of premenstrual syndrome (OR=3.189) were reported.

Based on multivariable analysis, SMP was associated more with married students and with severe lower abdominal pain during menstrual bleeding in this study. SMP for relief of pain during menstrual bleeding was observed in 35.20 % of female students, on the contrary it was 76% and 66.7% in study done by Gama ASM et al. [19], and Pavydė E. et al. [18] respectively.

Only 4.70% of the students took medicines prescribed by doctor similar to the findings of study done by Sugumar R et al. [16], whereas the remaining students practiced non-pharmacological measures like, resting in bed (60.20%), application of hot water bag (45.30%), massaging back/waist (14.10%) and drinking tea/coffee (15.60%) which are lower than the findings of Parra-Fernández ML et al. [15],where 43.8% of women with primary dysmenorrhea claimed to use non-pharmaceutical methods to alleviate pain, the most common being: antalgic position (23.2%), massages (21.9%), local heat (17.9%) and relaxation (16.1%). Also, the results of our study on the effectiveness of non-pharmaceutical methods was similar to the findings of a systematic review published in 2019 by Armour et al. [20]. However, due to the lack of proper education on self-care methods in dysmenorrhea, there is no coherence between self-care methods with proven effectiveness and the frequency of their use by the majority of the participants in this study.

Dysmenorrhea being present early on and particularly in the initial days is due to the increased release of prostaglandins (PGs) causing intense uterine contractions, decrease uterine blood flow causing ischemic necrosis of endometrial lining and nerve hypersensitivity, ultimately causing expulsion of the endometrial lining. Non-steroidal anti-inflammatory drugs (NSAID's) which act by inhibiting PGs synthesis reduces menstrual

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blood flow hence reducing the dysmenorrhea associated pain and discomfort. Pharmacological agents used commonly were analgesics such as paracetamol, ibuprofen, mefenamic acid, dicyclomine, nimesulide and diclofenac. Use of NSAIDs for SM in our study is comparable with study done by Fatima A et al. [21] and Parra-Fernández ML et al. [15]. The most commonly self medicated drugs were NSAID group of drugs, namely Mefenamic acid (64.4%), followed by paracetamol (40%), Ibuprofen (26.7%) and Nimesulide (13.3%), these findings were in accordance with the study done by Jayanthi B. et al. [13], and Gama ASM et al. [19]. However, in a study done by Rashidi et al. [22], ibuprofen (37.1%) was the most frequently self- prescribed medications for dysmenorrhea, whereas mefenamic acid plus dicyclomine combination was effective and most commonly used self-medication in study done by Mahadevan S et al. [23]. In the present study, the duration of SM was 1 day for 68.9% of the students, 2 days for 17.8% of students and 3 days for 13.3% of students. The pain associated with menstrual bleeding was relieved by intake of a drug only once a day in 46.6% of students, while the pain was relieved by intake of a drug 3 times per day in 17.8% of students, similar results were also reported in study done by Pavydė E et al. [18], and Parra-Fernández ML et al. [5]. The average consumption was 3.62 ± 2.74 pills per menstruation. [15]. The consumption of NSAIDs was most frequent among students experiencing severe pain, compared to those experiencing moderate or mild pain.

CONCLUSION

The present study demonstrates that, self-medication of drugs is lower in primary dysmenorrhea, probably due to lack of knowledge of drugs among nursing students for pain relief in primary dysmenorrhea. NSAID's namely, mefenamic acid and paracetamol followed by ibuprofen are the most self medicated drugs for pain control in dysmenorrhea. However, self-medication is an important issue which needs to be properly and timely addressed through education programs on the drawbacks of self-medication of drugs and counselling them for consumption of only prescribed drugs for pain relief in primary dysmenorrhea along with other home remedies.

Self–medication of drugs was found to be lower in primary dysmenorrhea, probably due to lack of knowledge of drugs among nursing students.

ADDITIONAL INFORMATION AND DECLARATIONS

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Competing Interests: The authors declare no competing interests.

Author Contributions: LC contributes to the design of the study, analysis and write up of the manuscript. GP, DPS and JKS contributed to the design, drafting and edition of the manuscripts. All authors contributed to data analysis, drafting or revising the article, gave final approval of the version to be published, and agree to be accountable for all aspects of the work.

Data Availability: Data will be available upon request to corresponding authors after valid reason.

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