ORIGINAL ARTICLE ASIAN JOURNAL OF MEDICAL SCIENCES

Evaluation of the severity and self-management practice in primary dysmenorrhea in medical and dental students: A cross-sectional study in a teaching hospital

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Submission: 03-11-2020 Revision: 08-01-2021 Publication: 01-03-2021

ABSTRACT

Background: Primary dysmenorrhea is the commonest gynecological problem in females of childbearing age. The severity of dysmenorrhea catalyzed females to use home remedies or self-medication to relieve pain. **Aims and Objectives:** The study aimed to find out the severity of primary dysmenorrhea and self-management practices in medical and dental students. **Materials and Methods:** Female students who had painful menstrual cycles were included. A self-responding semi-structured questionnaire was used to collect information related to demographic, menstrual characteristics and self-management practices. The severity of primary dysmenorrhea was estimated by using the Verbal Multidimensional Scoring System (VMSS). Descriptive statistics were used to present the study findings using SPSS version 11.5.**Results:** Out of 143 students, mild severity of primary dysmenorrhea was more common 85 (59.4%), followed by moderate 44 (30.8%) and severe 14 (9.8%) dysmenorrhea. Over two-thirds 124 (86.7%) of respondents used home remedies alone or in combination with analgesic drugs 87 (60.8%). Mefenamic acid 44 (50.6%) was the most common self-medicated drug. Among the respondents who practiced self-medication, the majority had used drugs once a day 68 (78.2%), and more than half of them 57 (65.5%) took medication for one day, and 59 (67.8%) had insufficient knowledge about drug dose. **Conclusion:** Most of the respondents experienced the mild severity of primary dysmenorrhea. Home remedies were the most commonly used methods of self-management. The majority of the respondents did not receive medical consultation, but they were preferred self-medication. Encouragement for medical consultation along with the implementation of educational awareness programs to control morbidity associated with primary dysmenorrhea is recommended.

Key words: Dicyclomine; Mefenamic Acid; Primary Dysmenorrhea; Self-medication

Access this article online

Website: http://nepjol.info/index.php/AJMS

DOI: 10.3126/ajms.v12i3.32687

E-ISSN: 2091-0576

P-ISSN: 2467-9100

INTRODUCTION

Dysmenorrhea, a painful menstrual cycle, is a common complaint of adolescent females. More than half of menstruating females have experienced dysmenorrheic cycles.[1] There are two types of dysmenorrhea, primary and secondary. Primary dysmenorrhea is more common in adolescent girls and usually appears 6 to 12 months after menarche.[2,3] It negatively affects the female's quality of life.

Most Nepalese females ignore menstrual pain and believe that it is normal and do not need medical consultation or

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treatment. Because of their cultural and religious attitudes, females may endure such pain or use home remedies, or when the pain gets worse, they buy medicine directly from the local pharmacy.[4,5] Unfortunately, neither the severity of primary dysmenorrhea nor the way females try to resolve menstrual pain has been documented in the Nepalese students.

Medical and dental students may have a high chance of self-medication.[6] These students stay away from their parents, they cannot get proper care, psychological support, and rest during menstruation. They have also continuously increased the burden of academic activities and hospital workloads. All these factors may motivate the students to get self-medication to resolve the menstrual pain. However, improper use of medications may lead to poor pain control and may cause adverse drug reactions. Therefore, the purpose of the present study was to evaluate the severity of primary dysmenorrhea and the self-management practice in medical and dental students.

MATERIALS AND METHODS

A cross-sectional study was carried out at the BP Koirala Institute of Health Sciences (BPKIHS), Dharan, Nepal from October 2019 to December 2019. The study population included all female medical and dental undergraduate students who had painful menstrual cycles and were available at the time of data collection. Exclusion criteria included all females with a history of gynecological diseases or pelvic pathology, itching or burns, or abnormal vaginal discharge, or females with a premenstrual syndrome.

The sample size was calculated based on the following formula-

$$n= Z^2 P (1-P)/e^2$$

Where,
n = sample size
P = Proportion of dysmenorrhea among medical students in Nepal, 67.0%.[7]
e = Margin of error, 10%
Z = 1.96 at 95% Confidence Interval

$n = (1.96)^2 \times 0.67 (1-0.67)/ (0.1)^2 = 84.93 \approx 85$. However, the study was carried out on 143 students. According to the register of BPKIHS, from the first academic year to the last academic year, 296 female students enrolled and studied medicine and dentistry. Among these students, 104 met the exclusion criteria, 39 had painless menstrual cycles, and 10 students participated in the pre-testing procedure of the questionnaire; those students were excluded from the study.

After reviewing published literatures[2,5,8] and obtaining expert opinions from pharmacology and gynecology, a self-reported questionnaire was prepared, which was pre-tested to correct ambiguities and inconsistencies. The questionnaire consisted of demographic characteristics, menstrual patterns, and self-management practices for primary dysmenorrhea.

The severity of primary dysmenorrhea was measured by using the verbal multidimensional scoring system (VMSS), which was further categorized into four grades such as Grade 0 (No pain, and daily activity not affected), Grade 1 (Mild pain, and rarely used analgesics or rarely affected daily activities), Grade 2 (Moderate painful menstruation and only analgesics give enough relief to do daily activities), and Grade 3 (Severe painful menstruation with a significant limit on daily activities, analgesics have a poor effect, and other systemic functions were affected).[9,10] All the questions were related to the respondent's experience in the past six months. Before starting the data collection procedure, the authors verbally explained all the information related to primary dysmenorrhea, the purpose of the study, the procedure and their role in this study, and asked them to sign an informed consent form. No incentive was given to the study participants. The personal identifying information was not collected to maintain the confidentiality of the participants. The study was approved by the Institutional Review Committee of BPKIHS (IRC no. 1581/2018).

Operational definitions

Premenstrual syndrome is defined as a series of physical, behavioral, and emotional symptoms that start in the week before menstruation and end with the onset of menstrual flow).[11]

Primary dysmenorrhea is defined as a painful menstrual cycle that begins at or around menstruation or during menstruation with the absence of any organic pelvic pathology.[1]

All data were entered in excel 2010 and analyzed by using SPSS 11.5 version (SPSS Inc., Chicago, USA). To simplify the analysis, variables were categories such as the age group (17 - 20 or 21 - 25 years), ethnic groups (hilly upper-caste included hilly Brahman and Chhetri; hilly lower-caste included hilly Dalit, Janjati, and Newar; Tarai Madhesi castes included all Madhesi respondents; Indian ethnic group included all Indian respondents), the regularity of menstrual cycles (regular = 21 - 35 days or irregular = < 21 days or > 35 days), duration of blood flow (3 - 4 days or ≥ 5 days) and others, as shown in Tables 1, 2 and 3 in the results section. Descriptive statistics such as frequency, percentage, mean and standard deviation were used to present the data.

Table 1: Demographic characteristics and the severity of primary dysmenorrhea

Characteristics	Severity of primary dysmenorrhea		Total (%) (n = 143)
	Mild (%) (n = 85)	Moderate/severe (%) (n = 58)	
Academic stream			
MBBS	42 (49.4)	33 (56.9)	75 (52.4)
BDS	43 (50.6)	25 (43.1)	68 (47.6)
Age groups			
17-20 years	27 (31.8)	13 (22.4)	40 (28.0)
21-25 years	58 (68.2)	45 (77.6)	103 (72.0)
Religion			
Hindu	81 (95.3)	57 (98.3)	138 (96.5)
Others*	04 (04.7)	01 (01.7)	05 (03.5)
Nationality			
Nepali	61 (71.8)	39 (67.2)	100 (69.9)
Indian	24 (28.2)	19 (32.8)	43 (30.1)
Ethnic group			
Hilly lower-caste	09 (10.6)	04 (06.9)	13 (09.1)
Hilly upper-caste	29 (34.1)	15 (25.9)	44 (30.8)
Tarai Madhesi caste	23 (27.1)	20 (34.5)	43 (30.1)
Indian ethnics	24 (28.2)	19 (32.8)	43 (30.1)
Daily exercise			
Often	16 (18.8)	11 (19.0)	27 (18.9)
Sometime	50 (58.8)	28 (48.3)	78 (54.5)
Never	19 (22.4)	19 (32.8)	38 (26.6)

*Others included Buddhist (3), Kirat (1), and Muslim (1)

Table 2: Menstrual characteristics and the severity of primary dysmenorrhea

Characteristics	Severity of primary dysmenorrhea		Total (%) (n = 143)
	Mild (%) (n = 85)	Moderate/severe (%) (n = 58)	
Age at menarche			
≤ 12 years	20 (23.5)	14 (24.1)	34 (23.8)
> 12 years	65 (76.5)	44 (75.9)	109 (76.2)
Regularity of menstrual cycles			
Regular (21 - 35 days)	75 (88.2)	52 (89.7)	127 (88.8)
Irregular (< 21 or > 35 days)	10 (11.8)	06 (10.3)	16 (11.2)
Duration of menstrual blood flow			
3 - 4 days	68 (80.0)	39 (67.2)	107 (74.8)
≥ 5 days	17 (20.0)	19 (32.8)	36 (25.2)
Family history of Dysmenorrhea cycles			
Yes	41 (48.2)	35 (60.4)	76 (53.1)
No	34 (40.0)	18 (31.0)	52 (36.4)
Unknown	10 (11.8)	05 (08.6)	15 (10.5)
Number of dysmenorrhea cycles in the past 6 months			
3 - 4 cycles	26 (30.6)	13 (22.4)	39 (27.3)
≥ 5 cycles	59 (69.4)	45 (77.6)	104 (72.7)
Onset of menstrual pain			
Prior to the onset of menstruation	19 (22.4)	25 (43.1)	44 (30.8)
On the same day of menstruation	58 (68.2)	22 (37.9)	80 (55.9)
In the middle of menstruation	08 (09.4)	11 (19.0)	19 (13.3)
Type of pain			
Intermittent	66 (77.6)	36 (62.1)	102 (71.3)
Continuous	19 (22.4)	22 (37.9)	41 (28.7)
Duration of pain			
2 – 3 days	66 (77.6)	24 (41.4)	90 (62.9)
4 – 5 days	19 (22.4)	34 (58.6)	53 (37.1)

RESULTS

The mean age of 143 respondents with standard deviation was 21.52 ± 1.56 years (range 17 to 25 years). There were 75 (52.4%) medical and 68 (47.6%) dental undergraduate students. Based on the VMSS scoring system, mild severity of primary dysmenorrhea was more common 85 (59.4%), followed by moderate 44 (30.8%) and severe 14 (9.8%). Moderate-to-severe primary dysmenorrhea was more common in medical students 33 (56.9%) and in Tarai-Madhesi ethnic groups 20 (34.5%). However, older-aged of students (21-25 years) and those who exercised sometimes in their leisuretime were more affected by primary dysmenorrhea cycles (Table 1).

Table 3: Self-medication practice and the severity of primary dysmenorrhea

Characteristics	Severity of primary dysmenorrhea		Total (%) (n = 87)
	Mild (%) (n = 31)	Moderate/severe (%) (n = 56)	
Types of drugs			
Mefenamic acid	19 (61.3)	25 (44.6)	44 (50.6)
Mefenamic acid plus Dicyclomine	05 (16.1)	14 (25.0)	19 (21.8)
Ibuprofen plus Paracetamol	04 (12.9)	10 (17.9)	14 (16.1)
Paracetamol	03 (09.7)	07 (12.5)	10 (11.5)
Intake of medications			
Before initiation of menstrual pain	06 (19.4)	11 (19.6)	17 (19.5)
After initiation of menstrual pain	25 (80.6)	45 (80.4)	70 (80.5)
Knowledge about the therapeutic dose of drugs			
Know	12 (38.7)	16 (28.6)	28 (32.2)
Do not know	19 (61.3)	40 (71.4)	59 (67.8)
Frequency of drug used per day			
One time	27 (87.1)	41 (73.2)	68 (78.2)
2 – 3 times	04 (12.9)	15 (26.8)	19 (21.8)
Duration of drug used			
One day	28 (90.3)	29 (51.8)	57 (65.5)
2 – 3 days	03 (09.7)	27 (48.2)	30 (34.5)
Effects on pain relief			
Complete pain relief	23 (74.2)	38 (67.9)	61 (70.1)
Incomplete pain relief	08 (25.8)	18 (32.1)	26 (29.9)

Menstrual characteristics of the respondents showed that the majority 109 (76.2%) had menarche over 12 years of age, their menstrual blood flow lasted for 3-4 days 107 (74.8%), and 127 (88.8%) of them had regular menstrual cycles. Most of the students 76 (53.1%) had a family history of dysmenorrhea in their mother or sister. In the mild severity of primary dysmenorrhea, most of the respondents experienced menstrual pain on the same day of menstruation 58 (68.2%), and 66 (77.6%) of them had intermittent pain and their pain lasted for 2-3 days 66 (77.6%).Whereas in moderate-to-severe primary dysmenorrheic pain was initiated before the initiation of menstruation 25 (43.1%) and lasted for 4-5 days 34 (58.6%), as shown in Table 2.

Furthermore, only 19 (13.3%) respondents took medical consultations, 124 (86.7%) used home remedies, and 87 (60.8%) used self-medication. Most of the respondents 70 (82.4%)with mild primary dysmenorrhea were commonly used home remedies,while the majority of respondents with moderate-to-severe primary dysmenorrhea were used both home remedies and self-medication 54 (93.1%) and 56 (96.6%)respectively. Their use was alone or in combination to get relief from their menstrual problems (Figure 1).

Moreover, the home remedies commonly used by the respondents included sleeping or resting or distracting from pain 117 (94.4%), applying hot compresses 98 (79.0%), drinking hot beverages or soups 72 (58.0%), and adjusting postures 35 (28.2%), as shown in Figure 2. In addition, Mefenamic acid 44 (50.6%) was the most commonly used self-medicated drug by the respondents to control their menstrual pain, followed by Mefenamic acid plus Dicyclomine, Ibuprofen plus Paracetamol, and Paracetamol 19 (21.8%), 14 (16.1%), and 10 (11.5%) respectively. Most of these respondents 70 (80.5%) took medication after the onset of menstrual pain, and most of them 68 (78.2%) consumed it once a day. More than half of students 57 (65.5%) took medication for one day. Two-thirds 61 (70.1%) of the respondents felt that their pain was relieved after taking the analgesic drugs (Table 3).

DISCUSSION

Only a few studies conducted in Nepal have explored the menstrual patterns and the prevalence of primary dysmenorrhea in students. At the same time, the present study assessed the severity of primary dysmenorrhea and self-management in medical and dental students. Majority of students in the present study expressed their severity of primary dysmenorrhea was mild 85 (59.4%) which was comparable to 47.6% - 65.2% reported in Indian health care students.[10,12] However, the severity was higher than in health care students in Pakistan (45.2% - 46%),[3,13] and Ethiopia (41.6%).[14] Another study had shown that moderate and severe primary dysmenorrhea was more common.[15]

The severity of primary dysmenorrhea depends on the individual's perception of menstrual pain and its associated signs and symptoms. Pain is a subjective feeling that varies from person to person. Factors such as pain tolerance capacity, psychological, familial, social-cultural, spiritual, behavioral, and hormonal changes are greatly affecting menstrual pain and related systemic signs and symptoms.[9] Furthermore, the severity of pain also depends on the

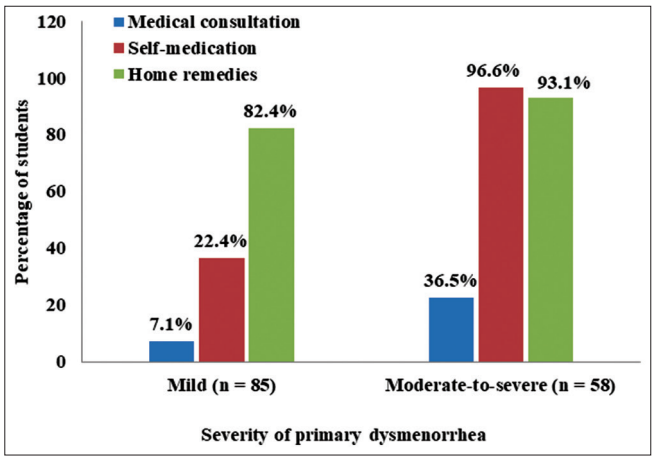

Figure 1: Self-management practice of primary dysmenorrhea

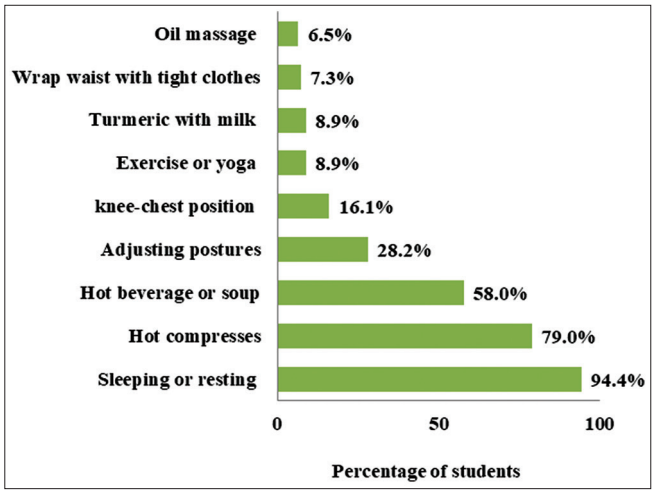

Figure 2: Home remedies used by the respondents (n = 124)

pain assessment tool. The Verbal Multidimensional Scoring System (VMDS) measures both pain and related systemic signs and symptoms, while the Visual Analogue Scale measures only pain. Hence, primary dysmenorrhea was measured in different degrees of severity in different studies.

Another finding of our study showed that despite the availability of medical facilities, one in five respondents received a medical consultation, which showed that medical students also ignore their menstrual problems. However, these respondents used home remedies 124 (86.7%) and self-medication 87 (60.8%) with different analgesics to relieve menstrual pain and systemic signs and symptoms. Because non-steroidal anti-inflammatory drugs (NSAIDs) inhibit the synthesis of prostaglandins in the uterus and produce relief from menstrual pain. Therefore, many students prefer to take NSAIDs drugs without going to the hospital or seeking medical consultation in the present study. A similar pattern of self-medication with NSAIDs or antispasmodic drugs was also reported in many countries like India (42%),[15] Pakistan (49.7% - 66.0%),[3,16] Ghana (45.8%),[9] Palestine (57.9%),[17] and Saudi Arabia (64.7%).[18] In the present study, it was found that the proportion of self-medication among respondents with moderate-to-severe primary dysmenorrhea was higher 56 (96.6%) than respondents with mild primary dysmenorrhea. Because mild primary dysmenorrhea was self-limiting while moderate-to-severe primary dysmenorrhea was increased morbidity in females.

Furthermore, different research reports pointed out that, as shown in the present study, it is more common to use Mefenamic acid or a fixed-dose combination of Mefenamic acid plus Dicyclomine to control the signs and symptoms of primary dysmenorrhea.[9,15,19] Because these drugs are better tolerated, and more efficacious, and Dicyclomine also has antispasmodic effects, it can relax the intestines and reduce abdominal cramps. Therefore, knowledge about when to start taking drugs, drug dose, frequency, and duration of intake is essential for effective control of the signs and symptoms of primary dysmenorrhea.

It is shown that NSAIDs may be most effective, when initiated use of drugs before the onset of menstrual pain and blood flow.[20] However, the present study showed that majority 45 (80.4%) of respondents with moderate-to-severe primary dysmenorrhea used analgesics after the onset of menstrual pain. This finding matched with another study conducted in Ethiopia where most of the respondents (82.3%) used analgesic at the time of menstruation.[2] In contrast, a contrary report was seen in Turkey, where 35.5% of respondents with moderate pain and 59.3% of respondents with severe pain used analgesics before the beginning of menstruation.[21] Other important issues pointed out in the present study were that 59 (67.8%) respondents were unsure of the correct drug dose, while among the respondents with moderate-to-severe primary dysmenorrhea only 41 (73.2%) respondents used the drug once a day and 29 (51.8%) respondents used for one day. These types of errors in the correct dose selection, dosing frequency, and duration of dosing were also reported in other previous studies too.[2,22] Therefore, these findings emphasize the need to develop educational awareness programs to educate about consultation with the health care professional, consumption of drugs only after a prescription, and education related to hazard associated with self-medication; these are inadequately addressed in developing countries like Nepal. Thus, information, education, and support along with clinical management of menstrual problems are the needs for today's reproductive health.

The present study has some limitations. It was a cross-sectional design with small sample size, so it did

not reproduce the cause of the severity of primary dysmenorrhea. The results of the study have not been extended to all-female populations, because this study was conducted on medical and dental students in a single medical institution. The study did not address other factors, such as BMI (body mass index), lifestyle, exercise type, smoking habits, drinking, and stress that might affect the severity of primary dysmenorrhea. The use of self-reported questionnaires to report their experiences in the past six months may lead to recall bias and over-reporting of the condition. This study also did not explore the barriers to medical consultation and the impact of primary dysmenorrhea on daily activities. Thus, a large sample with multicenter studies along with the above-mentioned factors, and an awareness-raising program is recommended to understand the problem and to change female's attitudes toward safe and effective medication.

CONCLUSION

Based on the findings of the present study, it was concluded that mild primary dysmenorrhea was more common. Respondents with older age and menarche over twelve years of age were more affected by primary dysmenorrhea. More than two-thirds of the respondents used home remedies alone or in a combination of analgesic drugs to get relief from the menstrual problems. However, most of the respondents did not receive medical consultation, but practiced self-medication. It highlights the need for the construction and implementation of educational awareness programs and policies for controlling the morbidity associated with primary dysmenorrhea and for improving the reproductive health of the students.

Questionnaire availability

The questionnaire used for data collection of this study is available from the corresponding author upon reasonable request.

ACKNOWLEDGEMENT

We would like to thank Ms. Manisha Shrestha, Ms. Anusha Rayamajhi, Ms. Ritika Tamrakar, Ms. Anu Shrestha, and all the students for their support and enthusiastic participation.

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RPK- Concept design of the study, review of literature, data collection, statistical analysis and interpretation of data, preparation of the first draft of the manuscript, critical review of the manuscript; **GPR-** concept design,review of literature, helped in preparing the first draft of the manuscript, critical revision of the manuscript; **DPS-** concept design,review of literature, data collection,helped in preparing the first draft of the manuscript, critical revision of the manuscript; **DSR-** concept design,review of literature, data collection,critical revision of the manuscript; **PS-** data collection, critical revision of the manuscript, helped in preparing the first draft of the manuscript; **SS-** concept design,critical revision of manuscript, helped and approved in preparing the manuscript to be published; **PV-** concept design,critical revision of manuscript, helped and approved in preparing the manuscript to be published, statistical analysis and interpretation of data; **BS-** helped and approved in preparing the manuscript to be published, statistical analysis and interpretation of data.

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Source of Funding: None, **Conflict of Interest:** None