

## Original Research Article

# Effectiveness of pelvic rocking exercise on dysmenorrhea among nursing students of Gangtok, Sikkim

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## ABSTRACT

**Background:** Dysmenorrhea is a public health issue that affects adolescent girls and women of childbearing. The main aim of the study was to evaluate the effectiveness of pelvic rocking exercise in reducing the level of dysmenorrhea and to determine the association between pre-test level of dysmenorrhea with their selected demographic variables among the nursing students.

**Methods:** A pre-experimental one group pre-test and post-test design which was conducted among 70 nursing students having dysmenorrhea studying in Gangtok, Sikkim. Purposive sampling technique was used for the study. Demographic proforma and menstrual profile were used to collect personal data and numerical pain rating scale used to assess the level of dysmenorrhea among nursing students. Samples were demonstrated pelvic rocking exercises and were instructed to perform the exercise once a day for 5 days per week. Statistical analysis was performed in SPSS.

**Results:** The result showed that the pre-test score of mean and standard deviation in pre-test was  $5.57 \pm 1.336$  and after intervention post-test score of mean and standard deviation was  $2.97 \pm 1.103$ . The mean difference was 2.60 and obtained t value ( $t=29.78$ ,  $df=69$ ,  $p=0.001$ ) was statistically significant at  $p<0.05$  level. Significant association was not found at  $p<0.05$  level with pre-test level of dysmenorrhea among nursing students with their selected demographic variables.

**Conclusions:** The study concludes that pelvic rocking exercise effectively reduces dysmenorrhea pain among nursing students. Healthcare professionals can play a key role in educating adolescent girls about this cost-effective and simple intervention.

**Keywords:** Pelvic rocking exercise, Dysmenorrhea, Nursing students

## INTRODUCTION

Menstruation is a cyclic physiological event that can cause a variety of issues, such as irregular periods, heavy bleeding, and dysmenorrhea. Dysmenorrhea is a painful cramping sensation in the lower abdomen that is frequently accompanied by additional symptoms such as perspiration, headaches, nausea, vomiting, and diarrhoea.<sup>1</sup> Several clinical signs might appear during or just before menstruation. Dysmenorrhea can be primary, which is

pain that has no evident gynaecological cause. During the menstrual cycle, the release of high and unbalanced amounts of prostanoids and perhaps eicosanoids induce the uterus to contract often and dysrhythmically, resulting in pain during menstruation.<sup>2</sup> Secondary dysmenorrhea, on the other hand, is caused by a clear underlying pelvic disease and can develop years after menarche. It's associated to endometriosis, pelvic inflammatory illness, ovarian cysts, adenomyosis, and uterine myomas, among other things.<sup>3</sup>

Cramping and intermittent discomfort are common symptoms of dysmenorrhea. Some women experience excruciating back and thigh pain. Nausea and vomiting are common side effects of abdominal discomfort, and headaches, as well as an unpleasant general feeling. On the first day of bleeding, pain is usually the most severe, then progressively fades. It is a common gynaecological condition that affects the functioning of adolescent females.<sup>4</sup> Primary dysmenorrhea is not a life-threatening disorder, but it can have a significant impact on a female or adolescent girl's quality of life.<sup>5</sup>

For many women today, exercise is an essential part of their daily routine. Women who exercise frequently and in moderation reap numerous health benefits. Exercise improves cardiovascular health and bone mineral content, as well as symptoms of dysmenorrhea and premenstrual syndrome.<sup>6</sup>

Exercise stimulates the release of various neurotransmitters, including natural endorphins (the brain's natural painkillers), catechol, oestrogen, dopamine, and endogenous opiate peptides, and also changing hormone secretion reproduction, inhibiting prostaglandin production, and elevating the estrone-estradiol ratio, which reduces endometrial proliferation and shunts blood flow away from the uterus.<sup>7</sup> Exercise is one of the most effective ways to alleviate pain. It aids in the stretching of the lower back muscles as well as the maintenance of optimum abdominal muscular tone. Dysmenorrhea causes ligamentous bands in the abdomen to contract, and a set of exercises could help approximately 41% of women alleviate their symptoms.<sup>8</sup>

Pelvic rocking exercises are a type of exercise that involves contracting the deep abdominal muscles and buttocks while taking a deep breath, causing little movement inside the uterus. Pelvic rocking helps to ease lower back stiffness. Its rhythmic movement might also aid in back pain relief.<sup>9</sup> Menstrual cramps can be relieved and accompanying symptoms can be improved by doing a pelvic rocking exercise. Pelvic rocking exercise is a non-pharmacological, effective, and simple way to decrease dysmenorrhoea in adolescent females.<sup>10</sup> There is no expense involved, and it is a completely natural type of pain relief.

As a result of the above mentioned, the researcher is driven to act on and implement non-pharmacological pain alleviation methods for nursing students, hence empowering them to manage dysmenorrhea. As a result, the goal of the study is to introduce the pelvic rocking exercise to nursing students.

## METHODS

The final data was collected in 2022 from February to March.

Ethical clearance has been obtained from Institution Ethics Committee, Sikkim Manipal Institute of Medical Sciences with reference no. SMIMS/IEC/2021-81.

The research design adopted for the present study was a pre-experimental one group pretest-post-test design. The study was conducted at Sikkim Manipal College of Nursing, Gangtok, East Sikkim. The sample size was 70 nursing students having dysmenorrhea studying Sikkim Manipal College of Nursing who fulfilled the inclusion criteria. The sample size was calculated using Cochran formula. A nonprobability Purposive sampling technique was used for the study.

## Tools

The tools were divided into two. Tool I: Section A- It comprises of demographic proforma of nursing students such as age, education, type of family, marital status, family history of dysmenorrhea. Tool I: Section B- It comprises of menstrual profile of nursing students such as age at menarche, duration of menstrual cycle, duration of menstrual flow, cycle pattern, onset of dysmenorrhea, presence of pain in every cycle, exercise during dysmenorrhea, doctor consultation, taken medicines without prescription, exercise during dysmenorrhea, home remedies measures taken to relieve pain. Tool II: Standardized McCaffery Numerical pain rating scale. It was used to assess the level of dysmenorrhea among nursing students.

## Methods of data collection

Data was collected from 07.2.2022 to 11.3.2022. Data collection procedure was divided into III phases.

*Phase-I:* Pre-test assessment of pain in dysmenorrhea of nursing students: A total of 136 nursing students from Sikkim Manipal College of Nursing were screened. From those who met the inclusion requirements, 70 nursing students were chosen. Demographic proforma and menstrual profile was administered as a pre-test and level of dysmenorrhea assessment was also done by using a Standardized Numerical Pain Rating Scale.

*Phase-II:* Intervention of pelvic rocking exercise: The 70 samples selected were divided into two groups. Under the supervision of Dr. Pratik Chettri, Associate Professor, Department of Physiotherapy, the researcher demonstrated pelvic rocking exercise to the samples for two days (one group on each day). Return demonstration for the samples was carried out on the following days for each group.

*Phase-III:* Post-test assessment of pain in dysmenorrhea of nursing students: Using the Standardized Numerical Pain Rating scale, the researcher conducted a post-test for nursing students to determine the effectiveness of pelvic rocking exercise on the next menstruation cycle.

The data was analyzed in terms of objectives of the study using both descriptive and inferential statistics. The data was entered into a master data sheet by the researcher using SPSS version 26 to organize and compute data. Inferential statistics such as student t test was used to find out the effectiveness of Pelvic Rocking Exercise and Chi-square was performed to find out the association between pre-test level of dysmenorrhea among nursing students with their selected demographic variables.

## RESULTS

Total of 70 students were enrolled in this study by purposive sampling technique. The frequency and

percentage distribution of demographic variables of nursing students that majority 37 (52.9%) of nursing students were in 21-23 years of age, 32 (45.7%) were in 18-20 years of age and 1 (1.4%) were in 24-26 years of age. 56 (80%) of nursing students were studying in 3rd year B.Sc. Nursing and 14 (20%) of nursing students were studying in 2nd year B.Sc. Nursing. 62 (88.6%) of nursing students were living in nuclear family and 8 (11.4%) were living in joint family. All the nursing students 70 (100%) were unmarried. 32 (45.7%) of nursing students had reported family history of dysmenorrhea. 27 (38.6%) had reported no family history of dysmenorrhea and 11 (15.7%) don't know about their family history of dysmenorrhea (Table 1).

**Table 1: Frequency and percentage distribution of demographic proforma (n=70).**

| S. no. | Demographic Variables          | Characteristics    | Frequency | Percentage |
|--------|--------------------------------|--------------------|-----------|------------|
| 1      | Age in years                   | 18-20              | 32        | 45.7       |
|        |                                | 21-23              | 37        | 52.9       |
|        |                                | 24-26              | 1         | 1.4        |
| 2      | Education                      | 2nd year B.Sc. (N) | 14        | 20         |
|        |                                | 3rd year B.Sc. (N) | 56        | 80         |
| 3      | Type of family                 | Nuclear            | 62        | 88.6       |
|        |                                | Joint              | 8         | 11.4       |
| 4      | Marital status                 | Married            | 0         | 0          |
|        |                                | Unmarried          | 70        | 100        |
| 5      | Family history of dysmenorrhea | Yes                | 32        | 45.7       |
|        |                                | No                 | 27        | 38.6       |
|        |                                | Not sure           | 11        | 15.7       |

**Table 2: Frequency and percentage distribution of menstrual profile of nursing students (n=70).**

| S. no. | Menstrual profile                    | Characteristics            | Frequency | Percentage |
|--------|--------------------------------------|----------------------------|-----------|------------|
| 1      | Age at menarche (years)              | 9-11                       | 12        | 17.1       |
|        |                                      | 12-15                      | 56        | 80         |
|        |                                      | >15                        | 2         | 2.9        |
| 2      | Duration of menstrual cycle (days)   | 15-20                      | 6         | 8.6        |
|        |                                      | 21-28                      | 53        | 75.7       |
|        |                                      | 29-35                      | 11        | 15.7       |
| 3      | Duration of menstrual flow           | 1-4                        | 19        | 27.1       |
|        |                                      | 5-7                        | 51        | 72.9       |
|        |                                      | >7                         | 0         | 0          |
| 4      | Cycle pattern                        | Regular                    | 70        | 100        |
|        |                                      | Irregular                  | 0         | 0          |
| 5      | Onset of dysmenorrhea                | 1st menarche onwards       | 40        | 57.1       |
|        |                                      | With a year after menarche | 5         | 7.1        |
|        |                                      | After 1 year               | 4         | 5.7        |
|        |                                      | After 2 or more years      | 21        | 30         |
| 6      | Presence of pain in every cycle      | Yes                        | 70        | 100        |
|        |                                      | No                         | 0         | 0          |
| 7      | Consulted doctor for dysmenorrhea    | Yes                        | 13        | 18.6       |
|        |                                      | No                         | 57        | 81.4       |
| 8      | Have you been prescribed medications | Yes                        | 1         | 1.4        |
|        |                                      | No                         | 69        | 98.6       |
| 9      | Taken medicines without prescription | Yes                        | 0         | 0          |
|        |                                      | No                         | 70        | 100        |

Continued.

| S. no. | Menstrual profile                        | Characteristics | Frequency | Percentage |
|--------|------------------------------------------|-----------------|-----------|------------|
| 10     | Perform any exercise during dysmenorrhea | Yes             | 0         | 0          |
|        |                                          | No              | 70        | 100        |
| 11     | Home remedies to manage pain             | Yes             | 34        | 48.6       |
|        |                                          | No              | 36        | 51.4       |

**Table 3: Effectiveness of pelvic rocking exercise on dysmenorrhea among nursing students (n=70).**

| Dysmenorrhea Pain | Mean | SD    | Mean D | t value | df | P value |
|-------------------|------|-------|--------|---------|----|---------|
| Pre-test          | 5.57 | 1.336 | 2.60   | 29.78   | 69 | 0.001*  |
| Post-test         | 2.97 | 1.103 |        |         |    |         |

\*p<0.05 level of significance

**Table 4: Association between pre-test level of dysmenorrhea among nursing students with their demographic variables (n=70).**

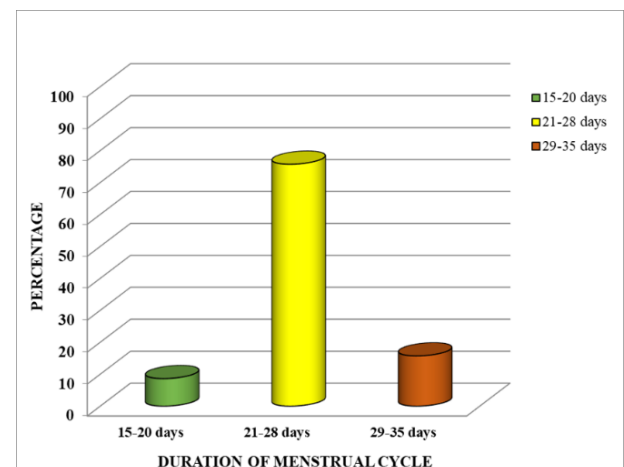
| Demographic Variables          | Characteristics    | Pre-test dysmenorrhea |     | $\chi^2$ value | df | P value |
|--------------------------------|--------------------|-----------------------|-----|----------------|----|---------|
|                                |                    | <6f                   | ≥6f |                |    |         |
| Age in years                   | 18-20              | 20                    | 12  | 3.374          | 2  | 0.185NS |
|                                | 21-23              | 30                    | 7   |                |    |         |
|                                | 24-26              | 1                     | 0   |                |    |         |
| Education                      | 2nd year B.Sc. (N) | 8                     | 6   | 2.185          | 1  | 0.139NS |
|                                | 3rd year B.Sc. (N) | 43                    | 13  |                |    |         |
| Type of family                 | Nuclear            | 44                    | 18  | 0.979          | 1  | 0.322NS |
|                                | Joint              | 7                     | 1   |                |    |         |
| Marital status                 | Married            | --                    | --  | NA             | NA | NA      |
|                                | Unmarried          | 51                    | 19  |                |    |         |
| Family history of dysmenorrhea | Yes                | 19                    | 13  | 5.463          | 2  | 0.065NS |
|                                | No                 | 23                    | 4   |                |    |         |
|                                | Don't know         | 9                     | 2   |                |    |         |

\*p value < 0.05 level of significance, NS-Non-Significant.

The frequency and percentage distribution of menstrual profile of nursing students that majority 56 (80%) of nursing students attained menarche at the age of 9-11 years, 12 (17.1%) attained menarche at the age of 12-15 years and 2 (2.9%) attained menarche at above 15 years of age (Figure 1).



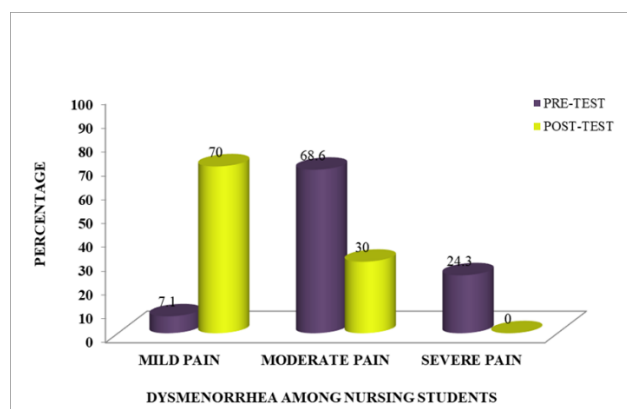
**Figure 1: Age at menarche of nursing students (n=70).**



**Figure 2: Menstrual cycle of nursing students (n=70).**

Most 53 (75.7%) of nursing students' duration of menstrual cycle was 21-28 days, 11 (15.7%) of nursing students' duration of menstrual cycle was 29-35 days and 6 (8.6%) of nursing students' duration of menstrual cycle was 15-20 days. Most of the nursing students' 51 (72.9%) duration of menstrual flow for 5-7 days and 19 (27.1%) of

nursing students' duration of menstrual flow for 1-4 days (Figure 2).



**Figure 3: Pre-test and post-test level of dysmenorrhea among nursing students (n=70).**

In cycle pattern, 70 (100%) of nursing students menstrual cycle pattern was regular. 40 (57.1%) of nursing students' onset of dysmenorrhea was from 1st menarche onwards, followed by 21 (30%) of nursing students' onset of dysmenorrhea was from after 2 or more years of menarche, and 5 (7.1%) of nursing students' onset of dysmenorrhea was from within a year after menarche and 4 (5.7%) of nursing students' onset of dysmenorrhea was from after 1 year after menarche. Majority 70 (100%) of nursing students had reported presence of pain in every cycle. 57 (81.4%) of nursing students had not consulted doctor for dysmenorrhea and 13 (18.6%) of nursing students had consulted doctor for dysmenorrhea. 69 (98.6%) of nursing students had been prescribed medications and 1 (1.4%) had prescribed medications for dysmenorrhea. 70 (100%) of nursing students reported that they do not take medicines without prescription. 70 (100%) of nursing students reported they do not perform any exercise during dysmenorrhea. 36 (51.4%) of nursing students do not take-home remedies to manage pain during dysmenorrhea and 34 (48.6%) take home remedies to manage pain during dysmenorrhea (Table 2).

Pre-test and post-test level of dysmenorrhea among nursing students' results showed that 48 (68.6%) of nursing students had moderate pain, 17 (24.3%) had severe pain, and 5 (7.1%) had mild pain before the intervention, while 49 (70%) of nursing students had mild pain and 21 (30%) had moderate pain after the intervention (Figure 3).

Effectiveness of pelvic rocking exercise on dysmenorrhea among nursing students showed that mean post-test pain score  $2.97 \pm 1.103$  was lesser than pre-test mean pain score  $5.57 \pm 1.336$  with mean difference of 2.60 with obtained calculated t value ( $t=29.78$ ,  $df=69$ ,  $p=0.001$ ) was found statistically highly significant at  $p<0.05$  (Table 3).

Association between pre-test level of dysmenorrhea among nursing students with their demographic variables

showed the relationship between pre-test levels of dysmenorrhea and demographic variables among nursing students, which was tested by using chi-square test. Result showed that age ( $\chi^2=3.374$   $df=2$ ), education ( $\chi^2=2.185$   $df=1$ ), type of family ( $\chi^2=0.979$   $df=1$ ) and family history of dysmenorrhea ( $\chi^2=5.463$   $df=2$ ) were statistically non-significant at  $p<0.05$  level with pre-test level of dysmenorrhea among nursing students (Table 4).

## DISCUSSION

### Discussion in relation to level of dysmenorrhea among nursing students

The present study findings revealed that 48 (68.6%) of nursing students had moderate pain, 17 (24.3%) had severe pain and 5 (7.1%) had mild pain while in post-test 49 (70%) of nursing students had mild pain and 21 (30%) had moderate pain and none of them had severe pain. These findings are consistent with the experimental study conducted by Jiji S.C. 60 adolescent girls with dysmenorrhea were selected for the study. 30 each in experimental and control group. Numerical Pain Rating scale was used to assess the pre-test level of dysmenorrhea in experimental group. Among those samples 8 (26.7%) adolescent girls had mild dysmenorrhea, 16 (53.3%) adolescent girls had moderate dysmenorrhea, and remaining 6 (20%) adolescent girls had severe dysmenorrhea. The post-test level of dysmenorrhea among adolescent girls in the experimental group among those samples 4 (13.3%) adolescent girls had no pain, 16 (53.4%) adolescent girls had mild pain, 10 (33.3%) adolescent girls had moderate pain, and none of them had severe dysmenorrhea.<sup>11</sup>

### Discussion in relation to effects of pelvic rocking exercise on dysmenorrhea among nursing students

The present study findings revealed that in pre-test the mean and standard deviation were  $5.57 \pm 1.336$  and after intervention post-test mean and standard deviation were  $2.97 \pm 1.103$  with mean difference of 2.60 and 't' value 29.78  $df=69$   $p=0.001$  at  $p<0.05$ . Findings indicates that pelvic rocking exercise had significant effect in reducing dysmenorrhea among nursing students. The findings of this study corroborated with John N. and Rajitha SR, who conducted a quasi-experimental study to determine the effectiveness of pelvic rocking exercise in adolescent girls. The research was carried out in Kanyakumari District's selected arts and scientific colleges. The study included 60 adolescent girls, with 30 in each of the experimental and control groups. The study result revealed that, the pre-test mean score of dysmenorrhea was lesser than post-test mean score. Pre-test mean score was  $75.67 \pm 13.085$  and the post-test mean score was  $45.33 \pm 27.17$ . The mean difference was 30.34 and the paired 't' value was 5.51. the obtained 't' value was higher than the table value in experimental group which was significant at 0.05 level of significance.<sup>12</sup>

## Limitations

The present study was limited to the nursing students from Sikkim Manipal College of Nursing in Gangtok, Sikkim.

## CONCLUSION

The study findings conclude that pelvic rocking exercise was effective in reducing the level of pain during dysmenorrhea among nursing students after the intervention. Thus, the health care professionals can play an important role for educating the adolescents girls regarding pelvic rocking exercise, which is cost-effective and easy to perform.

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