

## EFFECT OF EXERCISES ON PRIMARY DYSMENORRHOEA IN YOUNG FEMALES

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### ABSTRACT

**Background:** Primary dysmenorrhoea is one of the most common gynaecological problems worldwide among young females. Findings claimed that exercise may positively affect this problem. Therefore, the main purpose of this study was to examine the effect of exercises on primary dysmenorrhoea of female students.

**Materials and Methods:** A convenient sample was taken consisting of 40 participants, randomly and equally divided into two groups. Group A: Stretching exercise group, Group B: Control group. Group A received Stretching Exercises. Participants in group A completed an active stretching exercise program for 6 active stretching exercises in the abdominal, pelvic, and groin regions for 8 weeks (4 days per week twice for 10 min.) Group B was control group. All Participants were examined for pain intensity VAS (10-point scale) and Verbal Multidimensional Scoring System for Assessment of Dysmenorrhoea Severity (VMSS). Level of significance was kept at 5%.

**Results:** The results of Groups A and B were analyzed by Wilcoxon Signed Rank Test. In group A, VAS and VMSS showed significant improvement in pain. VAS was reduced from 6.3 to 4.6 (difference in mean  $1.7 \pm 0.23$ ,  $W = 120$ ,  $p = 0.0002$ ) and VMSS was reduced from 2 to 1 (difference in median 1,  $W = 171$ ,  $p < 0.0001$ ). In group B, there was no significant improvement in pain. VAS score reduced from 6.5 to 6.4. Difference in mean VAS was ( $0.10 \pm 0.30$ ,  $W = 9$ ,  $p = 0.53$ ). There was no difference in mean VMSS at the end of 8 weeks. Comparison of Group A and Group B was done with Mann Whitney U Test. There was a significant difference in improvement in VAS ( $U = 51.50$ ,  $p < 0.01$ ) and VMSS ( $U = 30$ ,  $p < 0.01$ ) between Groups A and B. There was a significant difference in improvement in VMSS between Groups A and B.

**Conclusion:** Stretching exercises are effective in reducing pain in young females with primary dysmenorrhoea.

**KEY WORDS:** Stretching, Dysmenorrhoea, Young females.

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### INTRODUCTION

One of the most common medical complaints of women is the primary dysmenorrhoea or painful menstruation without any known

pathologic pelvic disease [1].

Primary dysmenorrhoea begins when young girls first experience the ovulatory cycles and its prevalence increases during adolescence

(15-17 years) and reaches to its highest in 20- 24 years and decreases progressively there after [2,3].

In primary dysmenorrhoea pain begins few hours before or after the onset of menstruation and lasts for 24-48 hours. The pain is more in the first day and rarely continues to next day [4].

Incidence of primary dysmenorrhoea was reported to be between 50% and 90% in different societies [5-8].

It is characterized by lower abdominal pain that potentially could radiate to the back and thigh regions. The pain may be associated with headache, fatigue, nervousness, nausea, vomiting, mood swings, and (rarely) in severe cases syncope [7].

Primary dysmenorrhoea reportedly stops spontaneously after 1-3 years; however, sometimes it is possible to continue until childbirth [5,9,10].

Primary dysmenorrhoea is considered the leading cause of absenteeism from work in young girls [8].

Dysmenorrhoea is most commonly relieved by medication ranging from commercially available formulas to oral contraceptives. The side effects from such medications are well known (nausea, breast tenderness, and intermenstrual bleeding, dizziness, drowsiness, hearing and visual disturbances). Nonpharmacological treatments for primary dysmenorrhoea include bed rest, exercise, application of heat packs, and alternative treatments like Yoga, Aerobics, TENS, MWD, SWD, Pilates, Connective tissue massage, Acupressure [11].

Despite the widespread belief that exercise can reduce dysmenorrhoea, evidence-based studies are limited. Several observational studies reported that physical exercise was associated with a reduced prevalence of dysmenorrhoea, although numerous other studies found no significant association between outcomes. Evidence from controlled trials suggests that exercise can reduce dysmenorrhoea and associated symptoms [7].

Hence this study was designed to determine the value of stretching exercises in reducing the signs and symptoms of dysmenorrhoea in young girls.

## MATERIALS AND METHODS

An experimental study was conducted at SPB Physiotherapy College, Surat and convenient sampling was used. The study consisted of 40 participants, 20 in each group. Study was conducted between Dec 2014 to April 2015 in the College after giving due consideration to inclusive & exclusive criteria. Outcome measures used were Visual analogue scale (VAS) and Verbal Multidimensional Scoring System for Assessment of Dysmenorrhoea Severity (VMSS) [12]. Verbal Multidimensional Scoring System (VMSS), grading system ranges from 0-3 grade for evaluating the working ability, the systemic symptoms and whether analgesia is required or not (Table 1) [13].

The data was collected by general assessment form, questionnaires regarding menstrual characteristics and dysmenorrhoea, Visual analogue scale (VAS) and verbal multidimensional scoring system (VMSS) for assessment of severity of dysmenorrhoea. The General assessment form and questionnaire were pre-tested on 10 students included in the study. Necessary modifications were made in the assessment form and questionnaires before the start of study. The General assessment form and questionnaires were distributed to the all students who agreed to participate in the study.

Participants were explained the procedure and purpose of the study & written informed consent was taken in an understandable language. After initial examination the participants were assigned randomly into two groups, Group A: Stretching exercise group, Group B: Control group. Severity of the condition was measured by Visual analogue scale (VAS) and Verbal Multidimensional Scoring System for (VMSS) pre-treatment and post treatment.

Group A participants were asked to perform 6 active stretching exercises in the abdominal, pelvic, and groin regions for 8 weeks (4 days per week.). Furthermore, they were asked to avoid performing stretching exercise during the menstrual cycle.

The prescribed exercises were as follows [11]:

1. In the first stretching exercise, the subjects

were asked to stand, and bend their trunk forward from the hip joint so that the shoulders and back were positioned on a straight line and the upper body was placed parallel to the floor, duration of holding time was 5 sec. with 10 repetitions.

2. In the second stretching exercise, the subjects were requested to stand and then raise 1 heel off the floor, then repeat the exercise with the other heel alternatively. The exercise was performed 20 times

3. In the third exercise, the subjects were asked to spread their feet shoulder width apart, place trunk and hands in forward stretching mode, then completely bend their knees and maintain a squatting position, duration of this position was 5 sec, the subjects then raised their body and repeated the same movement 10 times.

4. In the fourth exercise, the subjects were asked to spread their feet wider than shoulder width. Then the subjects were asked to bend and touch left ankle with their right hand while putting left hand in a stretched position above head so that the head was in the middle and head was turned and looked for their left hand, this exercise was repeated for the opposite foot with the same method. The exercises were repeated alternatively 10 times for each side of the body

5. In the fifth exercise, the subjects were asked to lie down in the supine position so that the shoulder, back and feet were kept on the floor. In this position the knees were bent with the help of their hands and reached to their chin, the repetition frequency was 10 times.

6. In the sixth and last exercise, the subjects were asked to stand against a wall and put their hands behind their head and elbows pointed forward in the direction of the eyes, then without bending the verbal column, the abdominal muscle wall was contracted for 10 sec. This exercise was repeated 10 times.

Group B was control group and were asked to be in waiting period for 8 weeks. Level of significance was kept at 5%.

The details were entered into Microsoft excel spread sheet (version 2007) and data was statistically analysed using SPSS software at 5% significance level.

## RESULTS

Total 40 subjects, were randomly divided into 2 groups: Group A: Stretching exercise group, Group B: Control group. 20 subjects were taken in each group. The average age of the participants was  $20.8 \pm 1.8$  years (range 17–23 years). Wilcoxon test was applied for group A and B. Comparison of Group A and Group B was done using Mann Whitney U Test. Table 2 shows difference in VAS score in group A&B. Table 3 shows difference in VMSS score in groups A&B. The difference in mean visual analogue scale score (VAS) and Verbal Multidimensional Scoring System for assessment of dysmenorrhoea severity (VMSS) between the groups was significant ( $U=31.0$ ,  $p<0.001$ ) and ( $U=12.0$ ,  $p<0.001$ ) respectively as shown in table 4

**Table 1:** Verbal multidimensional scoring system (VMSS) for assessment of dysmenorrhoea severity.

Severity grading	Working ability	Systemic symptoms	Analgesics
Grade 0: Menstruation is not painful and daily activity is unaffected.	Unaffected	None	None required
Mild (Grade 1): Menstruation is painful but seldom inhibits normal activity; analgesics are seldom required; mild pain.	Rarely affected	None	Rarely required
Moderate (Grade 2): Daily activity is affected; analgesics required and give sufficient relief so that absence from school is unusual; moderate pain.	Moderately affected	Few	Required
Severe (Grade 3): Activity clearly inhibited; poor effect of analgesics; vegetative symptoms (headache, fatigue, vomiting, and diarrhoea); severe pain.	Clearly inhibited	Apparent	Poor effect

**Table 2:** Comparison of VAS in Group A and Group B.

	Pre VAS (mean $\pm$ SD)	Post VAS (mean $\pm$ SD)	W value	P value
Group A	6.3 $\pm$ 1.22	4.6 $\pm$ 0.99	171	0.0002
Group B	6.5 $\pm$ 0.76	6.4 $\pm$ 0.75	9	0.53

**Table 3:** Comparison of VMSS in Group A and Group B.

	Pre VMSS Median	Post VMSS Median	W value	P value
Group A	2	1	171	<0.0001
Group B	2	2	0	1

**Table 4:** Comparison of difference in VAS between Group A and Group B.

	Mean±SD VAS	Median VMSS
Group A	1.7±1.03	1
Group B	0.35±0.45	0
U value	51.5	30
P value	<0.0001	<0.0001

## DISCUSSION

The present study was conducted to see the effect of stretching exercises on primary dysmenorrhoea. In present study, pain has reduced in primary dysmenorrhoea more in stretching exercise group than in control group. The findings are similar to those of various previous studies [14-20]. Even though, a number of studies have failed to find any relation between primary dysmenorrhoea pain and physical activity [7,21].

Various authors have showed a correlation between life stress and premenstrual syndrome [22]. Golomb et al [23] concluded that Exercise is widely accepted as a means of moderating stress and biochemical changes in the immune system. A mechanism by which exercise may improve the symptoms of dysmenorrhoea (reducing stress) has been articulated by Golomb et al. [23].

Izzo and Labriola [20] proposed that the increase in the blood flow and metabolism of the uterus during exercise may be effective in the reduction of dysmenorrhoeal symptoms. In another words, improved metabolism is a factor in the reduction of symptoms. It is also suggested that increased menstrual pain by uterine muscle contraction is derived from a nervous system that is innervated by the sympathetic nerve hence; stress through hyperactivity of sympathetic nerve system via the increase contractibility of uterine muscles may lead to menstruation symptoms. Consequently, it might be possible to reduce dysmenorrhoeal symptoms by decreased sympathetic over-activity through exercise. Another hypothesis suggests that therapeutic exercise can increase the secretion of endorphins from the brain, and these materials in turn raise the pain threshold of the body [14]. Daley AJ [8] believed that contracted ligamentous bands in the abdominal region were

the causative factor for physical compression of nerve pathways and their irritation, so the proposed series of stretching exercise was considered very effective.

Limitations of the study were small sample size and lack of follow up for longer period of time.

Further study can be done with more samples, different populations and with other menstrual disorders like secondary dysmenorrhoea & premenstrual disorder etc.

## CONCLUSION

It can be concluded that stretching exercises are non pharmacological measure for reliving dysmenorrhoea, which is simple, easy to practice and without any side effect.

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**Conflicts of interest: None**

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