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ORIGINAL ARTICLE

Influence of Stretching Exercises on Primary Dysmenorrhea in Adolescent Girls: A Clinical Intervention Study

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ABSTRACT

Study aim: To assess the effect to fone term of stretching exercise on primary dysmenorrheal in high school students.

Material and methods: 60 single girls aged 18-22 years with moderate-to-severe primary dysmenorrhea are select from school of physiotherapy, R.K. University. The students are non-athletes and volunteered for the study. The participants are randomly divided into 2 groups: an experimental group (n = 30) and a control group (n = 30). In the intervention group, the subjects are requested to complete an active stretching exercise for 8 weeks (3 days per week, 2 times per day, 10 minutes each time) at home. In the pre-test, all of subjects were examined for pain intensity (10-point scale), pain duration, and the use of sedative tablets in 2 continuous menstruation cycles. The post test was examined 8 weeks later.

Results: After 8 weeks, pain intensity is reduced from 7.65 to 4.88, pain duration is decreased from 7.48 to 3.86 hours, and use of sedative tablets is decreased from 1.65 to 0.79 tablets in the experimental group ($p<0.05$). In the control group, a significant decline is only noted for pain duration($p<0.001$).

Conclusions: Stretching exercises are effective in reducing pain intensity, pain duration, and the amount of painkillers used by girls with primary dysmenorrhea.

KEYWORDS

• Primary Dysmenorrhea • Stretching Exercise • Adolescent girl.

INTRODUCTION

Primary dysmenorrhea refers to painful menstrual cramps that occur without any underlying pelvic disorder. It is the most prevalent gynecological issue among adolescent girls.[1-5] The incidence of primary dysmenorrhea has been reported to range between 50% and 90% in different populations[6-8,] with an estimated

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prevalence in Iran between 74% and 84.1%[4,9,10]. This condition is mainly characterized by lower abdominal pain, which can radiate to the back and thighs. Other associated symptoms may include headaches, fatigue, nervousness, nausea, vomiting, mood swings, and, in severe cases, fainting episodes[5]. While primary dysmenorrhea often resolves spontaneously within one to three years, in some instances, it can persist until childbirth[11,6,12].

The idea that various forms of physical activity whether active or passive may help alleviate primary dysmenorrhea pain has been explored for years. It is widely believed that exercise can reduce the frequency and/or severity of dysmenorrhea symptoms. Among the recommended approaches for managing this condition are stretching exercises[1], regular physical activity, and participation in sports, all of which are considered effective for both prevention and treatment. Overall, exercise therapy appears to help relieve the discomfort associated with dysmenorrhea; however, scientific findings on this topic remain inconsistent[13]. Research indicates that engaging in sports activities can lead to a reduction in the intensity of symptoms and menstrual pain[14]. Additionally, the prevalence of dysmenorrhea was found to be significantly lower among high school girls actively involved in sports compared to their less active counterparts[15]. Women who participated in intense physical activities experienced fewer symptoms of dysmenorrhea than those who engaged in sports occasionally[16].

However, some studies have found no significant correlation between the level of physical activity and dysmenorrhea.[17,18,19] Furthermore, after accounting for depression and mood fluctuations, some findings suggest that exercise may exacerbate symptoms in certain women during menstruation.[20] Several studies propose that the reduction of dysmenorrhea in women who engage in regular exercise may be linked to hormonal changes affecting the uterine lining or an increase in endorphin levels. Exercise is believed to have analgesic effects that function in a non-specific manner[21,22]. Research conducted in the general population suggests that regular exercise can help alleviate certain symptoms, including mood swings, fatigue, and abdominal bloating, in individuals experiencing primary dysmenorrhea. However, much of the available data is anecdotal rather than strongly evidence-based. Findings indicate that women who engage in consistent, moderate aerobic exercise report fewer negative effect such as pain, concentration difficulties, and behavioral changes compared to those who do not exercise regularly.

NEED OF THE STUDY

Primary dysmenorrhea is recognized as a major reason for absenteeism from work among young girls. This condition appears to be a widespread issue in this age group, making it essential to develop non-invasive methods to manage its effects. Given that studies have produced conflicting findings regarding the effectiveness of exercise therapy in treating primary dysmenorrhea, further research is required to explore this relationship.

It was previously thought that tight ligamentous bands in the abdominal area were responsible for exerting pressure on nerve pathways, leading to irritation. As a result, a series of stretching exercises was suggested as a highly effective intervention. This study aims to assess the effectiveness of stretching exercises in alleviating the symptoms of dysmenorrhea among female students.

Aim: To study various type of stretching exercise might help in alleviating pain in primary dysmenorrhea.

OBJECTIVE

To compare the intensity of pain and discomfort between experimental group and control group.

To check the effectiveness of stretching exercise for alleviating pain score and quality of life score in both groups after intervention.

METHODOLOGY

The study involved 60 female participants from R K University who met the inclusion criteria. Written informed consent was obtained from all participants prior to participation. On the day of enrollment, participants were given basic information about the study's purpose and were randomly assigned to one of two groups: Group 1 (n = 30), the Experimental Group, and Group 2 (n = 30), the Control Group.

Initially, pain intensity was measured using the Numerical Pain Rating Scale (NPRS) during the participants' menstrual periods, alongside the Premenstrual Distress Scale (PMDS). Participants in the Experimental Group performed six specific stretching exercises targeting the abdominal, pelvic, and groin areas. These exercises were to be performed at home for eight weeks, three times a week, with each session lasting 10 minutes twice daily. In contrast, the Control Group was given hot packs and general pain management advice.

After the intervention, a post-assessment was conducted for both groups using the NPRS and PMDS to assess changes in pain intensity and premenstrual distress. The results were then analyzed to determine the effectiveness of the intervention.

Prescribed Exercises:

First Exercise: The participant stands behind a chair and bends forward at the hip joint so that the shoulders and back form a straight line, with the upper body parallel to the floor. The position is held for 5 seconds, and the movement is repeated 10 times.

Second Exercise: The participant stands 10-20 cm behind a chair, then raises one heel off the floor and repeats with the other heel alternately. This exercise is performed 20 times.

Third Exercise: The participant spreads their feet shoulder-width apart, bends forward to stretch their hands, then bends the knees to squat. The squatting position is held for 5 seconds before returning to the standing position, and the exercise is repeated 10 times.

Fourth Exercise: The participant spreads their feet wider than shoulder-width apart. They bend to touch the left ankle with their right hand while extending the left hand above the head, turning the head to look toward the left hand. The same exercise is performed for the opposite side. This movement is repeated alternately 10 times for each side.

Fifth Exercise: The participant lies on their back, ensuring the shoulders, back, and feet remain on the floor. The knees are bent using the hands and brought toward the chin. The exercise is repeated 10 times.

Sixth Exercise: The participant stands against a wall with hands behind the head and elbows pointed forward. Without bending the spine, the abdominal muscles are contracted for 10 seconds. This exercise is repeated 10 times.

RESULTS

Data was recorded on a data sheet and then entered for computerized analysis. Among participants from both the experimental and control groups, 49.2% reported experiencing pain in the abdomen and lower back. Around 30.2% of students, regardless of group, reported pain in the suprapubic region, lower back, and buttocks, while 14.5% experienced pain solely in the suprapubic area, and 6.1% had lower back pain. These symptoms were not assessed following any intervention. The average menstrual cycle length during the study was six days for both groups.

Regarding menstrual regularity, 59% of participants had consistent cycles, with no significant differences between the groups. In terms of exercise habits, 38% engaged in occasional regular exercise, defined as exercising three times per week for 30–45 minutes. A significant portion 61.3% from the experimental group and 30.1% from the control group ($p<0.001$) reported never engaging in regular exercise. Meanwhile, 3.2% of the experimental group and 25.5% of the control group ($p<0.001$) indicated that they regularly exercised.

Table 1: Intra Group Analyses of Experi mental group

Outcomes	PRE	POST	t- Value	Sig 2 tailed (p value)
	±SD	±SD		
NPRS	6.49	10.93	-11.22	0
PMS	3.28	3.8	-21.76	0

Table 2: Intra Group Analyses of Control group

Outcomes	PRE	POST	t-Value	Sig 2 tailed (p value)
	±SD	±SD		
NPRS	4.25	9.99	-9.002	0.001
PMS	3.22	3.99	-18.91	0

Table 3: Intergroup Analysis by Unpairedt-test

Outcomes	Position-A	Position-B	't' Value	'p'Value
	SD	SD		
NPRS	7.67	8.52	0.817	0.003
PMS	2.14	1.88	3.352	0.001

Table 1 presents the descriptive statistics for pain intensity and pain duration recorded in

both groups before and after the experiment. The findings indicate that after the intervention, there was a significant reduction in both pain intensity and pain duration ($p<0.001$) in the experimental group. However, in the control group, a significant decrease was observed only in pain duration ($p<0.001$). Consequently, post-intervention, the average pain intensity in the control group was 2.3 points higher ($p<0.001$), and the duration of experienced pain was over an hour longer compared to the experimental group. Additionally, the level of discomfort caused by dysmenorrhea was linked to the intensity of physical activity.

DISCUSSION

Findings from various studies suggest that therapeutic exercise and physical activity are associated with a lower incidence of dysmenorrhea. Women who regularly engage in intense sports activities tend to experience fewer symptoms of dysmenorrhea compared to those who participate in sports occasionally. However, some studies have reported no significant correlation between physical activity levels and dysmenorrhea symptoms.[17,18,19]. Perceived stress is recognized as a key factor in the connection between exercise and dysmenorrhea management. Multiple studies have demonstrated a significant correlation between life stress and premenstrual symptom [20] It has been suggested that increased blood flow and enhanced uterine metabolism during exercise may help alleviate dysmenorrhea symptoms. In other words, improved metabolism plays a role in symptom reduction. Additionally, menstrual pain caused by uterine muscle contractions is believed to be linked to the sympathetic nervous system. Excessive sympathetic activity may contribute to menstrual symptoms by increasing uterine muscle contractility due to stress. Therefore, reducing sympathetic overactivity through exercise could potentially help relieve dysmenorrhea. Another hypothesis proposes that therapeutic exercise stimulates the release of endorphins from the brain, which, in turn, elevate the body's pain threshold.[24]

Therapeutic exercise has been suggested as a beneficial approach for managing primary dysmenorrhea through various mechanisms, including stress reduction, alleviation of menstrual symptoms by enhancing local metabolism, improved blood circulation in the pelvic region, and increased endorphin production. Dysmenorrhea is a complex condition influenced by a combination of organic, psychological, and sociocultural factors. However, recent research indicates that exercise may play a significant role in mitigating these symptoms. Additionally, age appears to be a key factor in the perception of menstrual changes, with older individuals reporting lower pain levels, reduced negative emotional states, improved concentration, and fewer behavioral fluctuations[23].

CONCLUSION

There is significant difference in pain experience by girls between experimental group and control group.

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