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Physical intervention to relieve pain in women with primary dysmenorrhoea- A new perspective

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ABSTRACT

Dysmenorrhoea is menstruation with pain involving abdominal cramps. It can affect females daily life activities and productivity. Aim of the study is to find the effectiveness of exercise and various stretching techniques used as a treatment protocol for primary dysmenorrhoea. Forty-five students were selected based on a questionnaire. Out of this, 38 subjects were selected and divided into two groups as the control group (n=19) and the experimental group (n=19). Each group were given separate exercise protocol. The post-test value will be taken after eight weeks (2 menstrual cycles). The exercises were performed from the sixth day of the menstrual cycle. The results were determined from the statistical analysis. It has been revealed that there is a significant improvement in the experimental group than the control group. In the control group, the pre-test mean is 7.84, with the standard deviation being 1.30 and the post-test mean 5.10 with a standard deviation of 1.96. P-value in the control group was less than 0.0001. In the experimental group, the pre-test mean is 7.52, with the standard deviation being 1.54 and the post-test mean being 4.57 and a standard deviation of 2.19. P-value in the experimental group was less than 0.0001. The overall results show that there is a significant improvement in pain (VAS) in both treatment groups. The results obtained suggested that both strengthening and stretching techniques have a positive effect on the treatment of primary dysmenorrhoea. The improvement is more significant in the experimental group.



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INTRODUCTION

Primary dysmenorrhea is commonly described as recurring pelvic pain, and it is also known as painful menstruation. It usually begins around the time

of menstruation; approximately 20-70% of women suffer from this problem during their reproductive age (Devikabhide *et al.*, 2017). Primary dysmenorrhoea has no underlying pelvic pathology. Pain is caused due to an overproduction of prostaglandins in the uterine wall, which induces hypercontractility of myometrium and arterial vasoconstriction (Saleh and Mowafy, 2016). Pain may radiate to thighs, legs and low back. Symptoms such as headache, fatigue, nausea, vomiting, diarrhoea and mild fever are common. The risk factors for dysmenorrhoea are: heavy menstrual flow, age <20 years, smoking, nulliparity, attempts to lose weight, depression, anxiety. Dysmenorrhea is found to be prevalent among school and college going girls. Using a visual analogue scale, 34.2% of girls experienced severe pain, 36.6% moderate and 29.2% of them had mild pain

Table 1: Exercise protocol

	Group-A Controlled group	Group-B Experimental group
N	19	19
Age	17-21 years	17-21 years
Treatment session starts from	Sixth day of menstrual cycle	Sixth day of menstrual cycle
Treatment session ends on	Onset of second menstrual cycle	Onset of second menstrual cycle
Treatment plan	Core strengthening and relaxation techniques	Stretching techniques and isometrics exercises
Duration of exercise	Four times a week	Four times a week
Repetition	10 repetition each week	10 repetition each week
Total time of exercise	30 minutes per session	30 minutes per session

Table 2: Results

VAS	Group-A	
Sample	19	
	Pre	Post
Mean	7.84	5.10
Standard deviation	±1.3022	±1.9690
Mean difference	2.74	
P-value	<0.0001	
Result	Significant	

Table 3: Results

VAS	Group-B	
Sample	19	
	Pre	Post
Mean	7.52	4.57
Standard deviation	±1.5407	±2.1938
Mean difference	2.95	
P-Value	<0.0001	
Result	Significant	

(Joshi *et al.*, 2015). Dysmenorrhoea harms the concentration of learning due to the pain and headaches experienced, and decreases the academic performance of adolescents, among others due to increased absenteeism (Daley, 2009). Pharmacological management for dysmenorrhoea primarily focuses only on alleviating menstrual pain and relaxing the uterine muscles by using non-steroidal anti-inflammatory drugs (NSAIDs) or oral contraceptive pills (Usha and Madhavi, 2013). But NSAIDs and oral contraceptive may be associated with side effects such as nausea, breast tenderness, hearing and visual disturbances (Berek, 2012). Non-pharmacological interventions such as exercise, yoga, heat therapies, TENS and relaxation techniques have been used to reduce dysmenorrhoeal

symptoms Nadjibbustian (2018) During the recent years, regular exercise and physical activities have been introduced as effective methods for prevention and treatment of dysmenorrhoea (Mirbagher-Ajorpaz *et al.*, 2011). Females also suffer from anxiety. It seems that exercise acts as an analgesic for short-term relief of pain (Ganon, 1986). According to Saleh, active stretching and strengthening exercises seem to be the best non-pharmacological method for decreasing the pain intensity and duration of primary dysmenorrhoea (Golub *et al.*, 1998).

Subjects and methods

Based on a pain scale questionnaire, 45 subjects of age group 17-21 years were diagnosed with primary dysmenorrhoea, of which 38 subjects were found

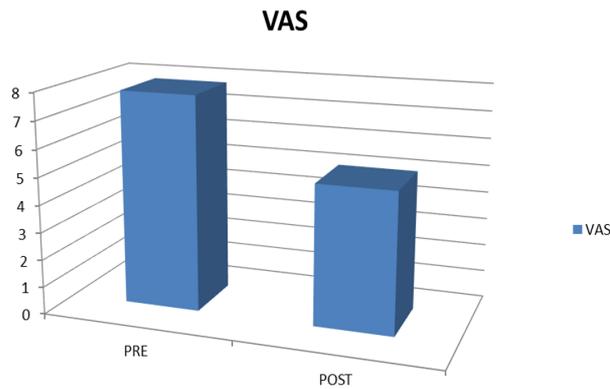


Figure 1: Mean values of VAS score for control group

to be eligible to participate in the study based on the inclusion and exclusion criteria. These subjects were divided randomly into two groups as group A- a control group and group B- experimental group. The exercise protocol is given in Table 1.

Isometric exercise

The experimental group students were asked to perform isometric exercises since the 6th day of their menstrual cycle four days a week, a daily average of 25-30 min, and 10times per session for three weeks.

The procedure for isometric exercises are as follows

1. Lie in a supine position, put one foot crossed over another and press them on each other, holding for 5s, and relaxing.
2. In a supine position, bend both knees and thighs, putting a pillow in between two knees and pressing them to each other for 5s, and relaxing.
3. In a supine position, bend both the knees and thighs and try to raise the head and neck above the ground level, holding for 5s, and then relax.

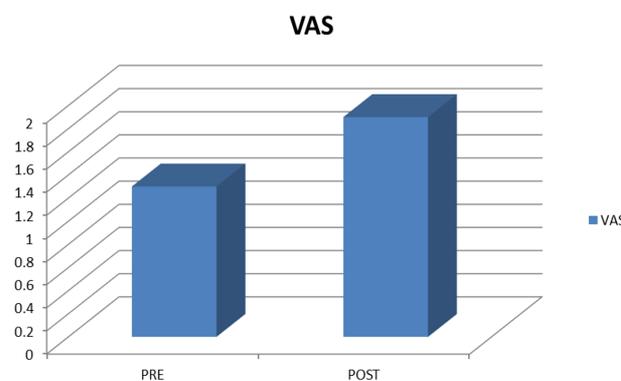


Figure 2: Standard deviation of VAS score for control group

Stretching techniques

1. Ask the subject to stand behind a chair with arms raised at the level of shoulders and bend forward.

The shoulders and back are positioned on a straight line, and the entire trunk is placed parallel to the floor. The subject is asked to hold the position for 5 seconds and repeat it ten times.

2. The subjects were asked to stand straight and raise one heel off the floor and hold for 5 seconds, then repeat the exercise with the other heel alternatively. The exercise was performed ten times.

3. The subjects were asked to spread her feet wide apart and raise the arms laterally at the shoulder level. Then the subject is asked to bend and touch the right ankle with the left hand.

Meanwhile putting her right hand in a stretched position above the head, so that subject's head is turned to look at her right hand and hold it for 5seconds and repeat it for ten times.

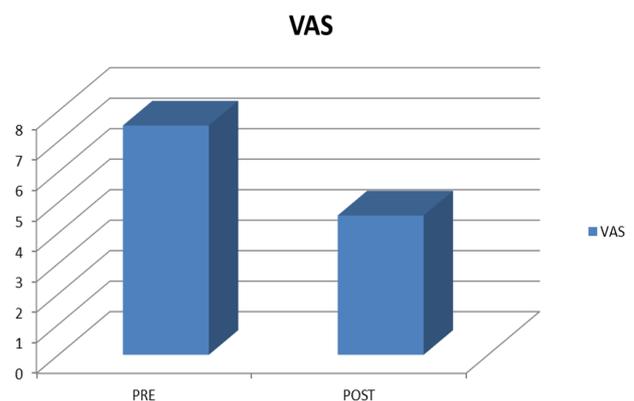


Figure 3: Mean values of VAS score for experimental group

Relaxation techniques

The control group subjects were asked to perform relaxation techniques from the 6th day of menstrual cycle four times a week and a daily average of 25-30 minutes and a repetition of 10 times. The protocol of relaxation techniques was as follows:

1. The subject is asked to lie in a supine position, and pillows are placed under the head, one under the knees and two for each arm.
2. The subject is asked to lie in half lying, and pillows are placed under and head, back and one under the knees.
3. The subject is asked to start with normal breathing, then take slow, gentle and deep breaths through the nose, followed by slow and deep exhale through the nose. Then continued by normal breathing for a few cycles. Again deep inhaling and exhaling are repeated. Complete a total of 10 cycles.

Core strengthening exercises

Pelvic bridging

The subject is asked to flex the knee in supine lying and raise the pelvis upwards, holding that position for 5 sec and repeat for ten times.

Cat and camel

The subject is asked to take a deep breath from the nose while making hump in the back (cat) in a prone kneeling position and exhale from mouth while curving the spine (camel) for 5 seconds with ten times repetitions.

Curl up

The subject is asked to lie in a supine position with mild knee flexion, and both hands are clasped behind the head, and the body is moved towards the knee. Hold this position for 5 seconds with ten repetitions.

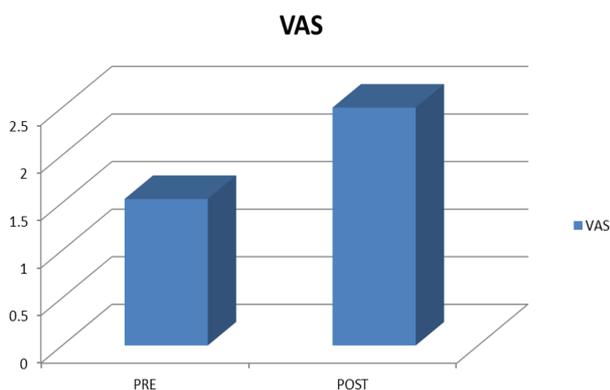


Figure 4: Standard deviation of VAS score for experimental group

RESULTS AND DISCUSSION

From the statistical analysis, it has been revealed that there is a significant improvement in the intensity and duration of pain in the experimental group than compared to the control group. In the control group, the pre-test mean is 7.84 given in Figure 1, with the standard deviation being 1.30 given in Figure 2 and the post-test mean being 5.10 given in Figure 3, with a standard deviation of 1.96 given in Figure 4. P-value in the control group was less than 0.0001. In the experimental group, the pre-test mean is 7.52, with the standard deviation being 1.54 and the post-test mean being 4.57 and a standard deviation of 2.19. P-value in the experimental group was less than 0.0001. The overall result shows that there is a significant improvement in pain (VAS) in both the treatment groups given in Tables 2 and 3.

Primary dysmenorrhoea is most commonly faced problem in adolescent girls. Physical exercises are known to be one of the best non-pharmacological approaches to the management of these symp-

toms (Rasoolzadeh *et al.*, 2007). Exercise also stimulates the production of endorphins, which eventually reduces dysmenorrhoea pain. In the present study, the age of girls was 17 to 21 years is very similar to other studies like (Divyakhare, 2016). According to the findings, students in the experimental group were found to have reduced pain levels after the exercise training than the control group who did not receive any exercise. The students were found to have reduced mean score from 7.60 to 7.13. A p-value of pain intensity before the treatment was <0.001 and P-value after treatment was <0.0135. Therefore, reduction in the pain intensity was found more significant in the experimental group than the control group.

Results of reduction in the intensity of pain by stretching and isometric exercises were more similar to other studies as (Saleh *et al.*, 2017) which shows that performing various forms physical activities such as stretching and strengthening exercises reduces pain intensity and duration of primary dysmenorrhoea. There is an improvement in the study, as exercise increases metabolism rates and blood flow which helps in lowering dysmenorrhoeal symptoms. In this study, both groups A and B showed reduced pain intensity and duration as compared to group C. Before the intervention, the P-value was 0.876, and after the treatment, it was reduced to <0.001.

The objective of the present study is to estimate the mean score of pain intensity between the experimental group and the control group. Results indicated a notable difference between the two groups concerning pain intensity after treatment. In this study, pain intensity was measured by VAS. There is also a decrease in the VAS score between group A and group B.

(Rostami *et al.*, 2006) showed that with a regular exercise routine, there is a decrease in the intensity of pain during menstruation. The results showed that the mean severity of pain in the first group has reduced up to 4.63 from 8.59.

Limitations

1. The samples size were taken on a smaller scale.
2. Samples are collected from one college only.
3. Only a few exercises were given.

Future recommendations: In future studies, it is recommended that different exercises will be included and duration also be increased. Future studies are recommended with larger sample sizes.

Analysis of VAS at Pre and Post treatment stage in both groups

The mean before and after the treatment in control group was 7.84 and 5.10 and the standard deviation ± 1.3022 and 1.9690 respectively. The mean of experimental group in pre and post treatment was 7.52 and 4.57 and standard deviation ± 1.5408 and ± 2.1938 respectively.

CONCLUSIONS

From the results, it has been proved statistically that although improvements have been observed in both groups, there is a notable decrease in the mean difference of pain value between the experimental and control group. Therefore performing various forms of exercises like isometrics and strengthening exercises reduces pain, dysmenorrhoeal symptoms and other complaints that are often associated with primary dysmenorrhoea than in women those who did not practice any exercise.

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Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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