

Effect of Core Strengthening Exercises & Chair Aerobic Exercises in Primary Dysmenorrhoea

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ABSTRACT

Dysmenorrhoea means cramping pain accompanying menstruation. Prevalence of dysmenorrhoea in Indian female population is about 70.2%. Primary dysmenorrhoea is characterised by lower abdominal pain which may radiate to thighs and lower back. Associated complaints may be nausea, vomiting, mood swings, headache, fatigue and diarrhoea.

Objective: To compare effectiveness of core strengthening exercises and chair aerobic exercises in primary dysmenorrhoea.

Materials and Methods: The subjects in Krishna University campus were screened and 50 subjects were divided into 2 groups i.e. Group A subjects were given core strengthening exercises and Group B subjects were given chair aerobic exercises. The interpretation of the study was done on the basis of comparing pre-test and post-test assessment of VAS and VMSS.

Result: Intra group comparison results showed that VAS and VMSS scale were statistically significant in both the groups ($p < 0.0001$). Whereas inter group comparison results showed that core strengthening exercises was statistically significant in reducing VAS score ($p = 0.0004$) and VMSS score ($p = 0.031$) than chair aerobics in females having primary dysmenorrhoea.

Conclusion: The core strengthening exercises were significantly effective than chair aerobics in reducing the quality of pain and improving the quality of life in females suffering from primary dysmenorrhoea.

Key words: Primary dysmenorrhoea, Core strengthening exercises, Chair aerobic exercises, Pain, VAS, VMSS.

INTRODUCTION

Dysmenorrhoea means cramping pain accompanying menstruation. ⁽¹⁾ The word dysmenorrhoea is obtained from Greek word “Dys” (difficult, painful, abnormal), “meno” (month) and “rrhea” (flow). ⁽²⁾ Dysmenorrhoea not only affects the quality of life in females but also is responsible for highest number of absentees which results in loss of work hours and economic loss. ^(1,3)

Dysmenorrhoea is further divided into primary dysmenorrhoea and secondary dysmenorrhoea. Primary dysmenorrhoea is characterised by lower abdominal pain which may radiate to thighs and lower back. Associated complaints may be nausea, vomiting, mood swings, headache, fatigue and diarrhoea. Causes: Excessive myometrial contractions, ischemia excessive prostaglandin production. Secondary dysmenorrhoea is characterised by variable dull ache which is associated with

dyspareunia, infertility and menstrual disorder. Causes: Endometriosis, PID, adenomyosis, fibroids. ⁽²⁾

The main cause for menstrual pain is ischemia. Uterine contractions are caused due to release of prostaglandins during menstruation. Hence the blood supply to the uterine muscles gets constricted and muscles go into spasm. Due to this there is rise in tension. This in turn produces ischemia of muscles leading to cramps. ^(4,5)

Prevalence of dysmenorrhoea in Indian female population is about 70.2%. ⁽⁶⁾

Pelvic and extra pelvic organ functioning is improved by physical activities by adjusting metabolism and increasing the blood circulation is a proven fact. ⁽⁷⁾ It was believed that the purpose of core strengthening is to combine the concepts of lumbar stabilization and how instability causes pain and injury especially during primary dysmenorrhoea. ⁽⁸⁾ The lumbar portion of spine is designed in such a way that it can take the force of the body. ⁽⁹⁾

If at any instance a particular part of the lumbar spine is weak and is not at its best to handle functional stress then it may lead to pain throughout the abdomen, low backs and thighs. These are those main areas which are affected in females when they suffer from primary dysmenorrhoea. ⁽⁹⁾

Body is much more prepared to handle daily forces of normal biomechanics, in spite of stress of the menstrual cycle. ⁽¹⁰⁾ Therefore there is need to strengthen these muscles with the help of core strengthening exercises.

I. Core Strengthening Exercises

Core strengthening is the form of muscular control around the lumbar spine to maintain functional stability. Core strengthening strengthens the musculature around the lumbar spine to be conditioned for greater performance, this thus allows for separation and strengthening of core muscle groups. Therefore there is need to strengthen these muscles with the help of core strengthening exercises. ^(8,10)

The exercises given in core strengthening are as follows:

1. Pelvic Bridging
2. Plank
3. Cat and Camel
4. Curl Up
5. Superman
6. Bilateral Straight Leg Raise
7. Supine Twist
8. Prone Cobra's

Research has proven that the women who took part in regular, moderate aerobic exercise had less pain and behavioural changes than women who don't take part during menstruation. ⁽¹¹⁾ Aerobic exercises increase the release of endorphins by the brain which leads to rise in the pain threshold. ⁽¹²⁾ Thus the exercise has an analgesic effect against pain in primary dysmenorrhoea. ⁽¹¹⁾

II. Chair Aerobic Exercises.

Chair aerobic exercise is a physical activity of low to high intensity which is performed while sitting on a chair and it depends primarily on the aerobic energy generating process. ⁽¹³⁾ Aerobic exercises help to increase blood circulation which leads to decrease in cramps. ⁽¹²⁾ The chair aerobic exercises are as follows:

1. Knee Lift
2. Diagonal Toe Touch
3. Lunges
4. Punches
5. Flick Kicks
6. Half Jack
7. Criss-Cross (along with arm movement)

It is found in earlier studies that physical activities improve the metabolism and blood circulation. Exercises are found to be effective in improving quality of life during dysmenorrhoea. However there is limited research available to show any significant impact of core strengthening exercises and chair aerobic exercises in primary dysmenorrhoea.

MATERIALS AND METHODS

An approval for the study was obtained from the Protocol committee and institutional Ethical Committee of Krishna

Institute of Medical Sciences Deemed to be University. The subjects in Krishna Institute of Medical Sciences Deemed to be University campus were screened and those fulfilling the inclusion and exclusion criteria were involved. Participants were informed about the study and consent was taken. Pre-test assessment was taken by using VAS and VMSS to assess the patient. 50 subjects were divided into 2 groups, Group A and Group B based on the inclusion and exclusion criteria. The treatment was started after the end of menstrual cycle. Group A subjects were given core strengthening exercises and Group B subjects were given chair aerobic exercises. Post-test assessment was taken by using VAS and VMSS to assess the patient. The interpretation of the study was done on the basis of comparing pre-test and post-test assessment of VAS and VMSS. (14,15)

Group A

Core Strengthening Exercises

The subjects will be requested to perform all the following exercises for 4 days per week for about 8 weeks (excluding the time of menstrual cycle). (16)

1. Pelvic Bridging
2. Plank
3. Cat and Camel
4. Curl Up
5. Superman

6. Bilateral Straight Leg Raise

7. Supine Twist

8. Prone Cobra's

Group B

Chair Aerobic Exercises

The subjects will be requested to perform all the following exercises for 4 days per week for about 8 weeks (excluding the time of menstrual cycle). (13)

1. Knee Lift
2. Diagonal Toe Touch
3. Lunges
4. Punches
5. Flick Kicks
6. Half Jack
7. Criss-Cross (along with arm movement)

Statistical Analysis

Statistical analysis was done manually and by using the statistics software's INSTAT so as to verify the results derived. The statistical analysis of non-parametric data (DASHQ) was done by Wilcoxon matched pairs test and Man-Whitney test. Wilcoxon matched pairs test was used for statistical analysis of pre and post intervention within the group. Man-Whitney test will be used for between groups statistical analysis of Group A and Group B (pre-pre and post-post intervention).

RESULTS

	VAS				p value (Pre-Post)	Inference
	Pre-test		Post-test			
	Mean	SD	Mean	SD		
Group A	6.396	1.355	4.068	1.152	0.0001	Extremely significant
Group B	7.120	1.364	5.452	1.217	0.0001	Extremely significant
p value (Pre-Pre) and (Post-Post)	0.0926		0.0004			
Inference	Not Significant		Extremely Significant			

	VMSS				p value (Pre-Post)	Inference
	Pre-test		Post-test			
	Mean	SD	Mean	SD		
Group A	1.880	0.8813	0.9600	0.7348	0.001	Extremely significant
Group B	2.240	0.7789	1.440	0.6506	0.001	Extremely significant
p value (Pre-Pre) and (Post-Post)	0.1618		0.031			
Inference	Not Significant		Extremely Significant			

DISCUSSION

Pain in general has disabling nature and makes dysmenorrhoea stressful and it can become irritating factor in life of lots of females. Some are completely cramped to bed and some are able to functions daily activities but with support of analgesics. (18) Prevalence of dysmenorrhoea in Indian female population is about 70.2%. (6) Therefore many studies have been conducted to replace the medications with the exercises in primary dysmenorrhoea. The present study “Effect of core strengthening exercises and chair aerobic exercises in primary dysmenorrhoea” was conducted to see the effects of exercises on relieving the pain and to compare both the treatment protocols i.e. core strengthening and chair aerobics.

The objectives of this study were to find the effect of core strengthening exercises in primary dysmenorrhoea to reduce dysmenorrhoeal pain and improve daily activities. To find the effect of chair aerobic exercises in primary dysmenorrhoea to reduce dysmenorrhoeal pain and improve daily activities. To compare effectiveness of core strengthening exercises and chair aerobic exercises in primary dysmenorrhoea.

The study was conducted with 50 subjects. Subjects were divided into two groups. Core strengthening exercises (Group A) and Chair aerobic exercises (Group B). Prior consent was taken. The treatment protocol was carried out for 4 days per week for 8 weeks. The outcome measures for this study were Visual analogue scale and Verbal multidimensional scoring system. (15,17)

The results of this study showed that there was significant difference in reducing the intensity of pain and improving the quality of life after 8 weeks of intervention in both the group A (Core strengthening exercises) and group B (Chair aerobic exercises) in females with primary dysmenorrhoea.

Wilcoxon matched pairs test was used to analyse the effect of core

strengthening exercises in primary dysmenorrhoea and showed that there was extremely significant reduction in VAS score ($p < 0.0001$) and VMSS score ($p < 0.0001$) Researches have proved that exercises helps to relieve the pain in primary dysmenorrhoea in last 15 to 20 years. A study done by V. Rajalaxmi et al showed that core strengthening proves effective in relieving the pain during primary dysmenorrhoea. If at any time a certain part of the lumbar spine is weak, it is not at its optimal level to handle functional stress, which can result in pain throughout the abdomen, low back or thighs. These are the same areas that are to be affected in primary dysmenorrhoea. Core strengthening is the form of muscular control around the lumbar spine to maintain functional stability. Core strengthening strengthens the musculature around the lumbar spine to be conditioned for greater performance, this thus allows for separation and strengthening of core muscle groups. (8,9) Hence it strengthens the core muscles thus reducing pain throughout abdomen, low back and thighs and improving quality of life. (9)

Wilcoxon matched pairs test was used to analyse the effect of chair aerobics exercises in primary dysmenorrhoea and showed that there was extremely significant reduction in VAS score ($p < 0.0001$) and VMSS score ($p < 0.0001$). A study done by Gosavi Devangi R et al showed that the main cause for menstrual pain is ischemia. Uterine contractions are caused due to release of prostaglandins during menstruation. Hence the blood supply to the uterine muscles gets constricted and muscles go into spasm. Due to this there is rise in tension. This intern produces ischemia of muscles leading to cramps. Research has proven that the women who took part in regular, moderate aerobic exercise had less pain and behavioural changes than women who don't take part during menstruation. (11) Aerobic exercises increase the release of endorphins by the brain which leads to rise in the pain threshold. (12) Thus the exercise has an

analgesic effect against pain by increasing the blood circulation leading to pain reduction in primary dysmenorrhoea.

Comparison of Visual Analogue Scale and Verbal Multidimensional Scoring System between two groups was done by using Man-Whitney test to find out the effectiveness between two groups.

The statistical analysis revealed that there was a very significant difference found in pain intensity using VAS scores in both the groups post treatment ($p=0.0004$). The statistical analysis revealed that there was a very significant difference found in pain intensity using VMSS scores in both the groups post treatment ($p=0.031$). Thus this showed that the pain intensity has been decreased and there was an extremely significant improvement in the quality of life among females with primary dysmenorrhoea in both the groups. Primary focus of Chair Aerobic exercises is to improve the cardiovascular fitness. Along with it, performing chair aerobics also helps to reduce pain by release of endorphins by the brain which leads to rise in the pain threshold. ⁽¹²⁾ But in Core Strengthening exercises the focus is concentrated on the core muscles itself which thus helps to reduce pain more effectively. ⁽⁹⁾

CONCLUSION

The present study provided evidence to support the use of both core strengthening exercises and chair aerobic exercises in reducing VAS and VMSS scores in females with primary dysmenorrhoea. In addition, results supported that among core strengthening exercises and chair aerobic exercises the core strengthening exercises were significantly effective in reducing the quality of pain and improving the quality of life in females suffering from primary dysmenorrhoea.

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