

## The Effect Of Structured Exercise Protocol On Pain Intensity And Pain Coping Strategy For The Subjects With Dysmenorrhea

Mr K. ANAND BABU PT\*\*, Ms. M. MONICA PT\*,  
Mr. M. PAUL RAJ PT \*\*, Ms. SIMULIA DHINJU PT\*\*\*

\*\*Associate Professor, \* BPT Final year Student, \*\*\* Assistant Professor,  
Sri Venkateshwaraa College of Physiotherapy, Ariyur, Puducherry.

Corresponding Author: K. Anand babu MPT Asso. Prof  
Sri Venkateshwaraa College of Physiotherapy  
Ariyur, Puducherry.

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**BACKGROUND:** Dysmenorrhea, a common problem in women of reproductive age, it is a very serious problem that can often directly affect the quality of life. Menstrual pain is severe enough to impact on daily activities. The cause of pain is due to excessive level of prostaglandins hormones that leads to spasm of the uterus and cause ischemia during menstruation. Structured exercise protocol commonly cited as a probable remedy for menstrual symptoms with limited research available. Still aerobic exercise are having more beneficial in dysmenorrhea.

**OBJECTIVE:** The purpose of this study was to observe the effect of structured exercise protocol on pain intensity and pain coping strategy for the subjects with dysmenorrhea.

**METHODS:** The study design was a pilot study. 15 females at the age group of 17-23 years who fulfilled the selection criteria were selected and treated with structured exercise protocol (cognitive behavioural therapy, aerobic exercise, pelvic floor muscle strengthening exercise) for 10 weeks. The outcome measures i.e., pain intensity was assessed by Wong Baker Faces Pain Rating Scale, pain coping strategy was assessed by Pain Coping Strategy questionnaires and Quality of life for dysmenorrhea was assessed by Modified Moos Menstrual Distress Questionnaires.

**RESULT:** The result of the study was founded that structured exercise protocol significantly improved pain coping strategy and reduce pain intensity, statistical value shows that structured exercise protocol is significant with probability value  $<0.001$ . Hence, it is found that the structured exercise protocol is very significant in improving pain coping strategy and reduce pain intensity.

**CONCLUSION:** This study concluded that structured exercise protocol have got beneficial effect in reducing the pain intensity and improve the pain coping strategy in subjects with dysmenorrhea. Hence the alternated hypothesis proved.

**KEYWORDS:** Dysmenorrhea, pain coping strategy, cognitive behavioural therapy, aerobic exercise

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Date of Submission: 20-08-2020

Date of Acceptance: 06-09-2020

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### I. Introduction

Menstruation is a normal physiological phenomenon for a women indicating her capacity for procreation. The menstruation is a normal one but it have some degree of suffering and humiliate. The prevalence of menstrual disorder has been recorded as high as 89.5% (Susan Kennedy, 2014). The adolescent and young girl is commonly affected by painful menstruation which is termed as dysmenorrhea (Brown J Brown S, 2010) dysmenorrhea is the menstruation with severe pain.

Dysmenorrhea is divided into two broad classification of primary and secondary dysmenorrhea. Primary dysmenorrhea is defined as cramping pain in the lower abdomen occurring just before or during menstruation in the absence of other disease. Secondary dysmenorrhea is a menstrual pain associated with problem in the reproductive organ such as endometriosis (Neinstein LS, 1990). The prevalence of dysmenorrhea worldwide ranges 15.8-89.5% (K.S Sathish Kumar, 2016). The prevalence of dysmenorrhea among Indian adolescent girls is 70.2% (Shabnam Omidran, 2016). It is generally seen in age group of 17-23 years (Zahedan, Setareh Babajani, 2017). The cause of pain is due to excessive level of prostaglandins hormones that make the uterus and cause ischemia during menstruation, there is a rise in tension which produces ischemia (Julie A, Aganoff and Boyle J.G, 1992). Psychological problem associated with dysmenorrhea are depression and anxiety that have an impact on menstrual cycle function. Physical activity improve the health and reduce the risk of developing several disease.

Aerobic exercise helps to reduce cramp by increase blood circulation(Julie A,AganoffandBoyle J.G,1992).It release the endorphin hormones in brain that raise the pain threshold by activating the prostaglandins synthesis inhibitors and may acts as decreasing short term depression and increase concentration and improve mood and behaviour and distraction thoughts(Anuradha sutar ,2016 )Cognitive behavioural therapy which is a short term,psycho-social goal- oriented physicalintervention that aims to improve mental and physical health and change negative thoughts into positive thoughts(Susan Kennedy.,2014)

This study has been done to evaluate,to council and to modify the pain and cognitive behavioural problem for the subjects with dysmenorrhea. The cognitive behavioural therapy teaches the way to cope up the menstrual pain,by that the women life will start to change with positive thoughts and leads to powerful and healthy life.

## **II. Materials And Methodology**

A pilot study was conducted on the samples of 15subjects in age group of 17-23 years. Subjects were screened for Dysmenorrheato participating in the study. Participants were included in the present study, if they have score more than 100 in MMMDQ. Participant were excluded, if they had cognitive behavioural impairment due to any other cause other than dysmenorrhea,if they had undergoing medications by physician for dysmenorrhea,if they had pelvic pathology,if they had psychological problem due to mental retardation.Participants provided written consent before participation in the experiment. The study was conducted in Sri Venkateshwaraa College of Paramedical Sciences, Ariyur at Puducherry.

### **STRUCTURED EXERCISE PROTOCOL**

Structured exercise protocol is a set of protocol that consists of various therapy which includes cognitive behavioural therapy,Aerobic Exercise,Pelvic floor muscle strengthening.

### **COGNITIVE BEHAVIOURAL THERAPY**

Cognitive behavioural therapy, which is a short term,goal-oriented psycho-social physical intervention that aims to improve mental health and physical health. There are totally 10 session and each session have done for 1 week.I treated the subjects on a first day of the every week and ask the subjects to do the activity for a week and should come on scheduled day of next week for next session.

On the first week of session,introduction of therapist and group members, explain the subjects about the holding the sessions, regulation and training.Ask them to Fill out the forms.on the second week of session,explain about the Three system model of human being emotions with ABC training and ask the subject to do the work on training on the problem to solve out the problems.From the third week onwards,defining the automatic thoughts and their effect on the mood and feelings to the subjects and explain about the characteristics of the automatic thoughts, acquaintance with cognitive distortions or logical errors and the personal ability for their identify ones thoughts.on the fourth week of protocol,trained the given strategies for identifying the thoughts and the way to obtain them, acquaintance with the nature of schema and their relationship with automatic emotions.on the fifth week of session,provided a main list of the beliefs to the subjects and classifying them based on a scale of mental inconvenience and the rate of emotions and Make them to work on modifying their emotions on pain.From the sixth week of session,explain the subjects toaccept the changing nature of the beliefs, training the assessment methods and modifying the inefficient thoughts, helping the members in raising the questions in order to challenge the automatic thought.on the seventh week of session,trained the Jacobson's progressive muscle relaxation technique and used this technique for reducing the anxiety to the subject with dysmenorrhea.on the eighth week,trained the logical analysis about the beliefs and challenging them, Make them topractice the steps of logical analysis.on the ninth week, Explain the members associate a hierarchy of their emotional situations before menstruation and think of it, then, replace them with pleasant situations. Trained the problem-solving skill and makethem to use in daily life of subjects.From the tenth week of session,Summarizing the content of the sessions tothe subjects, explaining about the probability of the reappearance of the symptoms after the treatment period and proper re-action when reappearing the symptoms(Susan Kennedy,2014)

**Jacobson relaxation technique (Figure no:1)**



**Worksheet discussion (Figure no:2 )**



### **AEROBIC EXERCISE**

Aerobic exercise program which consists of 5minutes of warm up exercise which includes neck muscle stretching, free active movements of shoulder, elbow and wrist in all directions, triceps stretches, quadriceps, hamstring and calf muscle stretches followed by 10 minutes of bicycling, 10minutes of stair climbing. Along with bicycling and stair climbing a brisk walking should be followed for about 1-5minutes end up with 5minutes of cool down phase. is given. Same stretches should be Prescribed. These Exercise were performed 4 times per week for a period of 10 Weeks (Anuradha sutar,2016)



**Bicycling(Figure no:3)**



**Stair climbing(Figure no:4)**

### **PELVIC FLOOR MUSCLE STRENGTHENING EXERCISE**

#### **PELVIC BRIDGING:**

The subject were requested to do 10minutes of warm up and lie on supine with knee flexed and then raise the pelvic upward till the comfort level and then hold the position for 5seconds with repetitions of 10times.

#### **KEGEL 'S EXERCISE**

The subject were requested to lie on the back with knee flexed and place the ball in the medial aspect of the thigh and ask the subjects to squeeze the ball until you get the feel of contracting the pelvic floor muscles. Contract the pelvic floor muscles for 3 to 5 seconds and relax for 3 to 5seconds Repeat the contract and relax cycle for 10minutes(Palanichamy Velammal,2016)



Pelvic bridging (Figureno:5)



Kegel's exercise (Figureno:6)

**STATISTICAL ANALYSIS**

**PAIRED T-TEST VALUES**

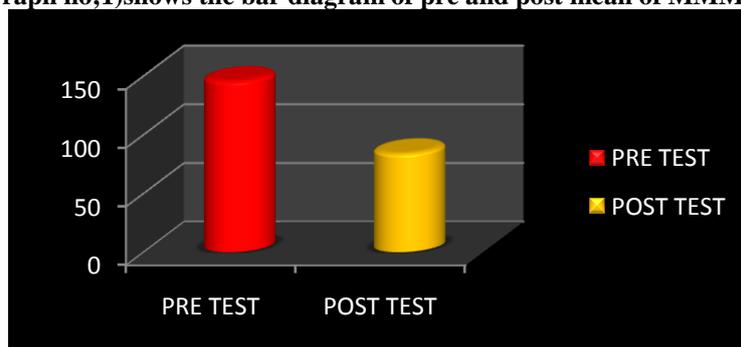
**Within Group Analysis**

**Modified Moos Menstrual questionna**

MMMDQ	MEAN	SD	t-value	p-value
PRE TEST	145.4	24.69	9.35	<0.001
POST TEST	83.93	6.14		

The T- test for modified moos menstrual distress questionnaire<0.001 considered very significant. The 't' value of T-test for modified moos menstrual distress questionnaires9.35with 14 freedom.

(Graph no;1)shows the bar diagram of pre and post mean of MMMDQ



**PAIRED T-TEST VALUES**

**Within Group Analysis**

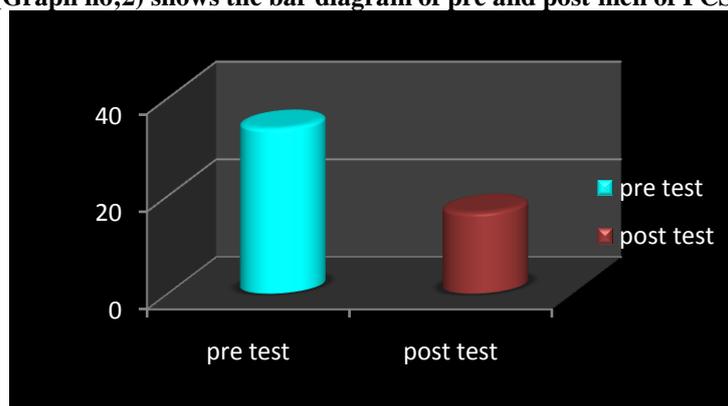
**Pain coping strategy questionnaire**

PCSQ	MEAN	SD	t-value	p-value
PRE TEST	33.8	14.65	5.37	<0.001
POST TEST	16.6	2.61		

The 'p' value of T- test for pain coping strategy questionnaire<0.001 considered very significant.

The 't' value of T-test for pain coping strategy questionnaire 5.37with 14 degree of freedom.

(Graph no;2) shows the bar diagram of pre and post men of PCSQ

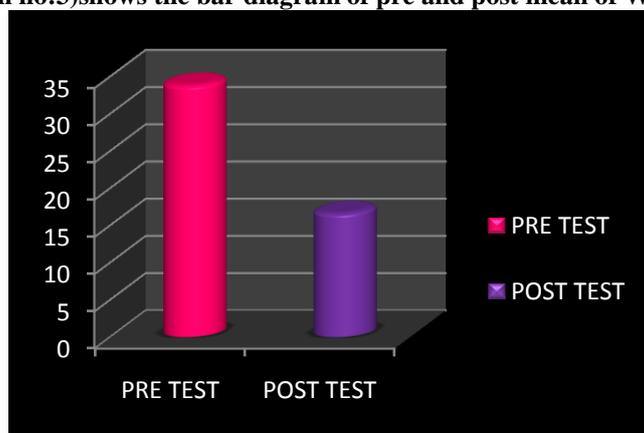


**PAIRED T-TEST VALUES**  
**Within Group Analysis**  
**Wong Baker faces pain rating scale**

WBFPRS	MEAN	SD	t-value	p-value
PRE TEST	8.66	1.63	10.03	<0.001
POST TEST	3.46	0.99		

The 'p' value of T- test for wong baker faces pain rating scale questionnaire<0.001 considered very significant. The 't' value of T-test wong baker faces pain rating scale questionnaire for 10.03with 14 degree of freedom.

(Graph no:3)shows the bar diagram of pre and post mean of WBFPRS



**III. Results**

the statistical data analysis shows that,there is extremely significant (t+9.35)in paired t-Test value of Modified Moos Menstrual Distress questionnaire(p=<0.001)and pain coping strategy questionnaire(t +5.373)(p = <0.001)and wong baker face pain rating scale(t +10.033)(p = <0.001).

**IV. Discussion**

This study was to find out the structured exercise protocol on pain and pain coping strategy for the subjects with dysmenorrhea. In reducing the pain intensity and improving the pain coping strategy was assessed by Pain coping strategy questionnaire and the screening was done by Modified Moos Menstrual Distress questionnaire. This study was detailed and to find the improvement in dysmenorhea.

Overall 15 subjects who met with the inclusion criteria were Randomly allocated. The subjects age group of 17-23 years of age were selected.15 subjects were treated with structured exercise protocol( cognitive behavioural therapy , aerobic exercise and pelvic floor muscle strengthening exercise) an it shows that there is a significant different in statistical analysis with p value (0.001) within the group analysis the outcome measures is the MMDQ and PCSQ for reducing pain intensity and improving pain coping strategy. The present data

indicates that the structured exercise protocol were included efficient to improve the pain coping strategy and reduce pain intensity.

**Susan Kennedy et al.,(2014)** Performed A Study On“Evaluation of a group based cognitive behavioural therapy programme for menstrual pain management in young women with intellectual disabilities” It is Randomized control clinical trial, They have taken 36 subjects the aim of this pilot study were to develop and evaluate a theory – based cognitive behavioural therapy program for menstrual pain management in young women and each subjects were undergone cognitive behavioral therapy for ten weeks. There are totally 10 session of treatment. From this study they suggest that training could be incorporated within social, personal and health education initiatives given to young women with intellectual disabilities to enhance their adaptive coping skill and quality of life and it shows that there is a significant different in statistical analysis. The outcome measures is the pain coping strategy for reducing pain intensity and improving pain coping strategy.

**Anuradha sutar et al.,(2016)** Performed a study on“effect of aerobic exercise on primary dysmenorrhea in college students “they Conducted among 100 females at the age group of 17-23. The individual grade of dysmenorrhea was assessed by the MSS system in which grades are decided as mild, moderate and severe based on pain and limited activities. Pain was assessed by a visual analogue scale (VAS) to determine the intensity of the pain at the beginning of the study and the subsequent three cycles.It a Purposive sampling with randomized allocation was used to divide the subjects equally into experimental and control group as per inclusion and exclusion criteria.Subjects were explained regarding the Questionnaire and asked to fill the same for pre and three consecutive menstrual cycles (24 – 36 hours before the start of menstruation) and were recorded pre intervention, in between (4th week) and post intervention (8th week).This was followed by documentation of the data and evaluation. A structured 8 weeks of aerobic training program (3days/week, 45 min/day) were given 7(Days of menstruation was excluded from the exercise programme)This exercise was performed between the three menstrual cycles. They concluded that pain (VAS scores) in the exercise group declined significantly. The VAS scores started to decrease just after the beginning of the exercise intervention and continued to decrease in the subsequent three visits and was statistically significant ( $p < 0.05$ ).The Physical Domain of Quality of life showed significant difference in the exercise group.

**Palanichamy velammal et al.,(2016)** Performed a study on“effect of pelvic bridging exercise on dysmenorrhea among adolescent subjects at selected government subjects higher secondary school. It is purposive sampling techniques. They have taken 60 subjects in the age group of 17-21 years. The subjects have taught pelvic bridge which consist of bridge, pelvic tilt, Bridge leg lift, Advanced bridging, back stretch, pelvic lift. Pelvic bridge exercise is given for 2 times per day, six days per week for 4 weeks. It refers to the exercise which helps to contract deep abdominal muscle and buttocks by taking deep breath. So that small movement takes place inside the uterus, which helps to relieve dysmenorrhea and they concluded that pelvic bridging exercise was effective in reduction of dysmenorrhea and it shows significant different in statistical Analysis with p value of (0.001).the outcome measures is the numerical pain rating scale to reduce pain in subject with dysmenorrhea.In this study was founded that structured exercise protocol significantly improved pain coping strategy and reduce pain intensity, statistical value shows that structured exercise protocol is significant with probability value  $< 0.001$ .Hence,it founds that the structured exercise protocol is very significant in improving pain coping strategy and reduce pain intensity.This study concluded that structured exercise protocol have got beneficial effect in reducing the pain intensity and improve the pain coping strategy in subjects with dysmenorrhea.

## LIMITATIONS & RECOMMENDATIONS

Limitation of this study is Small size sample was taken.there are Very few literature supports the treatment technique and the subjects felt embarrassed during treatment and Exercise were performed during menstruation cause discomfort. The recommendation of this study is Small size sample should be increased,Further study can add more outcome measure and Further study can compare the cognitive behavioural therapy with physical exercise.

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**AKNOWLEDED BY,**

Prof. Dr. A. PAHINIAN, MPT, PhD  
Principial, SVCOPT  
Puducherry.

Mr K. ANAND BABU PT, et. al. “The Effect Of Structured Exercise Protocol On Pain Intensity And Pain Copying Strategy For The Subjects With Dysmenorrhea.” *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 19(9), 2020, pp. 54-60.