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Original Article

Effects of High Intensity Aerobics and Pelvic Clock Exercises in Primary Dysmenorrhea

Asma Qamar[1], Sara Aabroo[2], Sidra Afzal[1], Nadia Azhar[2], Sania Aziz[2], Nadia Ishtiaq[2] and Muhammad Faizan Hamid[3*]

[1] Riphah International University, Lahore, Pakistan
[2]Riphah International University, Islamabad, Pakistan
[3]Department of Allied Health Sciences, University of South Asia Cantt Campus Lahore, Pakistan.

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***Corresponding Author:**
Muhammad Faizan Hamid
Department of Allied Health Sciences, University of South Asia Cantt Campus Lahore, Pakistan.
biostats1000@gmail.com

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ABSTRACT

Dysmenorrhea is very unpleasant sensation with the presence of painful cramps of uterine origin that occur during menstruation. Prevalence rate of dysmenorrhea is 50% in females' population. Evidence tells that inactive lifestyle as well as poor diet is main reason of primary dysmenorrheal as well as women who exercise have a reduced incidence of dysmenorrhea. **Objectives**: To find the effectiveness of high intensity aerobics and pelvic clock exercises in primary dysmenorrhea. **Methods**: The study design was randomized control trials. Purposive sampling technique was used. Girls aged 17–24 years with regular menstrual cycle and unmarried girls were included. Athletes, married women with gynecological abnormalities were excluded. A structured 8 weeks' program (3 days in a week, 1hour per day) was given to Group A including set of London bridges (8 mins), Jumping lunges (8 mins), Mountain climbers (8 mins), Quadruped bent knee hip extension (8 mins), Warm up 10 minutes, 25 minutes for high intensity aerobics. Group B were assigned 25 minutes for Pelvic clock exercises (gradually increased during with weeks) performed from 12 to 6 o'clock, as instructed to move from 3 o clock to 9 o clock. Then movement in a clockwise manner from 12 to 3 to 6 to 9 and then back to 12 o' clock. Outcome measures were calculated by visual analog scale VAS, DASS 21 and self-administered questionnaire for dysmenorrhea symptoms. **Results**: Both techniques were effective for managing the patients of pain during menstruation, but patients who were treated with high intensity aerobics exercise showed more significant result as compared to another group with p-value < 0.05. **Conclusions:** High intensity aerobics and Pelvic clock exercises in primary dysmenorrhea, both are effective but high intensity aerobics had given more efficient results.

INTRODUCTION

Painful menstrual cramps of uterine origin in females are defined as Dysmenorrhea, it is the everyday common gynecological condition among girls of the fertile age it is considers as to painful periods [1]. The common occurrence of painful menstruation is as high as 90% and as low as 43% in worldwide. In Pakistan, it is noted and seen that females at their maximum fertile age unable to perform their ADLS constructively during their menstruation period and because of their ethic reasoning they avoid for medical attentiveness as well [2]. The intensity of pain is piercing, and spasmodic, location of pain is in the suprapubic region it starts in the beginning of menses so maximally increases with blood flow. By examining physically it is normal absolutely but dysmenorrhea can also be associated with other symptoms, such as nausea, vomiting, diarrhea, fatigue, fever, headache, and insomnia. Ultrasound is beneficial in eliminating secondary causes of painful menstruation, for example endometriosis and adenomyosis [3]. There are wide variety of symptoms during periods, inclusive of lower abdominal pain, abdominal cramps, mild to moderate nausea, may or may not vomiting, very commonly seen headache, often diarrhea , fatigue is also has been observed, irritability or feeling of agitation, frustration and depressive mood and unhappiness is also found in females with painful menstruation [4]. Physical therapy is known as

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cost effective and noninvasive alternative treatment specially designated to treat girls with primary dysmenorrhea [5]. In spite of fact that primary dysmenorrhea with unpleasant painful menstruation is not a real danger to life yet can affect the standard of female life. It is the nearly common case of severeness [6]. The stress reduction techniques, physical activities like aerobics, walking, jogging, and exercise give outstanding results in treating painful menstruation. They are greatly believing as a source of lessening stress as well as stress-related symptoms. High intensity aerobics and Pelvic Clock Exercises in dysmenorrhea is well studied in help release in endorphins hormones from human brain that increase suffering from pain threshold, they cause to enhance good frame of mind in workout practicing females [7]. Primary dysmenorrhea is also associated with an overproduction of uterine prostaglandins that can results into myometrium hyper contractility as well as arteriolar vasoconstriction so that they both leads to the unpleasant and painful menstrual cramps [8]. Proper and Healthy lifestyle are very helpfully in overcoming and minimizing the seriousness of painful menstruation, so as a result, with a satisfactory and acceptable food ways and eating behavior, structured and well-ordered recreational physical activities, self-maintenance as well as self-care of the females, excellent social relationships, and lessening the stress levels in females of fertile age and the happening of the dysmenorrhea can bring to the point of the reduction [9]. Some researches on students showed that effects of the aerobics in girls having dysmenorrhea in non-athlete girls with the continuous and regular aerobic exercises, premenstrual syndrome as well as heavy bleeding during menstrual phase also manage and lessens the pain [10]. Physical activity not only reduces and minimizes as well as it improves HRQOL, muscular weakness, increases resting time, global progression with therapy, and treatment compliance. Another benefit of physical activity is that it improves dynamic flexibility movement efficiency so intramuscular coordination increases when exercises are performed [11]. Exercises are perfect method to minimize painful menstruation without any reaction. Their mode of action is that by reducing cyclooxygenase pathway activity, inhibiting prostaglandin synthesis [12]. High intensity aerobics and Pelvic Clock Exercises in dysmenorrhea Page 4 High intensity Aerobics increase metabolic activities and increase blood flow which in turn, improves the functions of pelvic organs. It helps in release of endorphin hormones in the brain that raises the pain threshold. Previous researches about high intensity aerobics in dysmenorrhea are very less in literature but only on aerobics and there is no still research on pelvic clock exercises in dysmenorrhea. In this research for the first time, high intensity aerobics and pelvic clock exercises has been used to treat primary dysmenorrhea. The main purpose of this study was to manage the unpleasant pain suffered by females during menstruation. The aim of this study was to guide physiotherapist that how to apply these exercises to manage dysmenorrhea.

METHODS

The study design was Randomized control trials conducted at Raheeda Gynea hospital Hafizabad Duration of Study. The duration of the study was 6 months. Purposive sampling technique was employed, sample Size 28 patients were divided in group A and B (calculated by Epitool). Sample size to detect a significant difference between two means with a variable of VAS and DASS 21. Mean 1" "18" "Variance 1" "4.88" "Mean 2" "15.73" "Variance 2" "3.99" "Confidence level" "0.95" "Power" "0.8" "Ratio of sample sizes (n2/n1)" "1" "Tails" "2"Results "" "Sample size" "Sample size 1 (n1):" 14 "Sample size 2 (n2):" 14 "Total sample size (both groups):" 28 With addition of 10% Attrition rate total sample size was 31 [13]. High intensity aerobics and Pelvic Clock Exercises in dysmenorrhea. Girls aged 17-23 years with regular menstrual cycle, Unmarried girls were added in this study while Athletes, Married women, Girls who were regularly exercising Having any pelvic pathology, abnormal menstrual cycle were excluded Before Randomization, demographic data, name, age, marital status, exercise habit was collected through form. Visual Analogue scale and DASS 21 was used for evaluation. The visual analog scale (VAS) is a validated, subjective measure for acute and chronic pain. Scores were recorded by making a mark on a 10-cm line that represents a continuum between "no pain" and "worst pain" [14]. The Depression, Anxiety and Stress Scale - 21 Items (DASS-21) is a set of three self-report scales designed to measure the emotional states of depression, anxiety, and stress. Each of the three DASS-21 scales contains 7 items, divided into subscales with similar content [15]. Self-Administered Questionnaire for Dysmenorrhea symptoms were made to assess the associated symptoms Nausea, LBP, Menstrual cramps and radiating pain towards legs. High intensity aerobics and Pelvic Clock Exercises in dysmenorrhea Interventions High Intensity Aerobics. A structured 8 weeks program (3days/1week,1hour/day) Warm up 10 minutes, 25 minutes for high intensity aerobics (gradually increased with weeks) "London bridges (8mins), "Jumping lunges (8mins)", "Mountain climbers (8mins)","Quadruped bent knee hip extension (8mins)" Aerobics has been shown to raise the levels of β -endorphin 4-5 times in the blood stream. The more doing exercises, the higher level of b-endorphin. B-endorphin will be released and taken by receptors situated in hypothalamus center and limbic system in turn regulate emotions. β-endorphin Increases shown with intimately

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relationship with reducing pain, remarkable improvement in sexual performance and breathing.

RESULTS

During treatment, patients were randomly allocated in two groups. Group A treated with high intensity aerobic training n=14 and group two treated with pelvic clock exercises n=14 and differences in results of both groups were observed. The mean difference of group A and B was seen in VAS in pre, and post treatment as high intensity aerobics showed more significant rather than pelvic clock exercises. Statistical analysis of nausea, LBP, menstrual cramps, radiating lower leg pain, stress and anxiety also showed differences in both group but high intensity aerobics showed more significant differences by p value in all variables related to pelvic clock exercise. This shows that both techniques were effective for managing the patients of pain during menstruation, but patients who treated with high intensity aerobics exercise shows more significant result as compared to another group. The mean of VAS in HIA is 2.29 ± 0.6 and 1.07 ± 2 pre and post respectively. The mean of nausea in HIA is 0.79 ± 0.426 and 1.64 ± 0.497 pre and post respectively. The mean of lbp in HIA is 1.07 ± 0.267 and 1.93 ± 0.267 pre and post respectively. The mean of menstrual cramps in HIA 1.57 ± 0.514 and 1.97 ± 0.267 pre and post respectively. The mean of stress in HIA pre reading was 2.79 ± 1.12 and 1.14 ± 0.363 post intervention. The mean of anxiety in HIA 4.84 ± 0.53 and 1.12 ± 0.426 pre and post intervention readings respectively. The mean of VAS in PCE is 2.43 ± 0.514 and 2 ± 0.8 pre and post respectively. The mean of nausea in PCE 0.93 ± 0.267 was pre intervention reading and 1.79 ± 0.4262 post intervention reading. The mean of lbp in PCE 1.71 ± 0.469 was pre intervention reading and 1.71 ± 0.489 post intervention reading. The mean of menstrual cramps in PCE 1.43 ± 0.514 and 1.86 ± 0.361 pre and post respectively. The mean of anxiety in PCE 3.86 ± 0.770 and 1.29 ± 0.611. The within group analysis was analyzed by Paired T-test and difference between group was analyzed by using Independent T-test. The analysis showed that 13 participants were in the age group of 16-20 years of age and remaining were in the age group of 21-24 yrs. The analysis showed that height of 14 female's participants were under 4.0-4.5 feet, 6 under 4.5-5.0 and remaining 8 female participants were above 5 feet.

Groups	Visual Analogue Scale			Total
	Mild (1-3)	Moderate(4-6)	Severe (7-10)	
High-Intensity aerobics	1	8	5	14
Pelvic clock exercise	0	8	6	14
Total	1	16	11	28

Table 1: Descriptive statistics of weight of females. The table analysis of VAS shows that 16 participants had moderate pain and 11 participants had worse pain before treatment. Cramps shows that 50% participants had cramping pain during menstruation before treatment.

Groups	Radiating lower legs pain		Total
	Yes	No	
High Intensity aerobics	10	9	14
Pelvic clock exercise	12	4	14
Total	22	13	28

Table 2: Descriptive statistics of radiating lower legs pain during menstruation days before giving treatment. The table shows that radiating lower leg pains was high complained in 22 participants having pain during menstruation before treatment.

Groups	Anxiety During Menstruation				Total
	Mild	Moderate	Severe	Extra Severe	
HighIntensity aerobics	1	1	0	13	14
Pelvic clock exercise	0	2	9	12	14
Total	1	3	9	15	28

Table 3: Descriptive statistics of depression during menstruation days before giving treatment-dass21. The table of anxiety shows that 15 participants had very severe anxiety, 9 had severe and remaining had moderate type of anxiety according to DASS-21, before treatment.

Groups	Depression During Menstruation				Total
	Mild	Moderate	Severe	Extra Severe	
High Intensity aerobics	0	6	4	4	14
Pelvicclock exercise	0	5	5	4	14
Total	0	11	9	8	28

Table 4: Descriptive statistics of depression during menstruation days before giving treatment-dass21. The table shows that majority of participants had moderate depression before treatment.

Groups	Radiating lower legs pain		Total
	Yes	No	
High Intensity aerobics	1	13	14
Pelvic clock exercise	2	12	14
Total	3	25	28

Table 5: Descriptive statistics of cramps during menstruation days after giving treatment

DISCUSSION

The purpose of present study was to compare the effectiveness of pelvic clock exercise and aerobic dance to treat pain, associated symptoms, and stress in primary dysmenorrhea. Gerzson et al., proposed that there is significant improvement by aerobics as well as evidence gained from many studies stated that regular physical exercise was associated with reduced prevalence of primary dysmenorrhea and plays a key role in reduction of pain [16]. Chen et al., earlier reported a study in which the participants adopted many strategies such as rest, warm bath, or drugs to overcome menstrual pain this study planned to treat dysmenorrhea by means of non-pharmacological method such that by pelvic clock exercise and aerobic dance. Post intervention period, participants belonging to both the groups reported that they experienced drop in dysmenorrhea with improved psychological changes, most of the subjects in Group A

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reported that there was more reduction in leg pain, menstrual cramps and low back pain, and subjects in Group B reported that there was reduction in abdomen pain rather than low back pain and this study results matches with presented study [17]. Kannan et al., described that uterine contractions were the main reasons behind abdominal cramps and painful menstruation. Studies reveal that vasoconstriction of uterine arterioles that results in ischemia so that by exercising regularly participants feel a lot of difference between pre and post menstrual conditions by the difference of 2.43 ± 0.49 and after treatment of it was 2.00 ± 0.50 with the $p<0.05$. They improved menstrual cramps, low back pain, legs pains a as well as improved psychological health with good improved daily living activities hence this research shows relevant results [18]. Patel et al., performed high intensity aerobics and gives pre and post results 2.35 ± 2.75 and 1.87 ± 2.0 with the value of $p<0.05$ respectively [19]. Physical therapy is known as cost effective and noninvasive alternative treatment specially designated to treat girls with primary dysmenorrhea. Regular exercise and physical activity increase blood flow and improved metabolism in uterus so that leads to good menstruation without pain. In other words, increasing blood flow to uterus helps a lot in reduction of dysmenorrhea and its associated menstrual symptoms. So here the results and conclusions also coincide these research studies [20, 21].

CONCLUSION

From this present study, it is found that aerobics is effective in minimizing primary dysmenorrhea and helps to overcome pain and its associated symptoms along with stress management. Hence, high intensity aerobics can be incorporated as one of the non-pharmacological methods in treating patients with primary dysmenorrhea in clinical Settings.

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