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Original Research

Comparison of aerobic exercises and abdominal fascia releasing technique in primary dysmennorhea

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Abstract

The purpose of the study was to compare and to know the effects of aerobic exercises and abdominal fascia-releasing techniques to help women choose the best treatment between aerobics and abdominal fascia-releasing technique. Menstruation has a broad relevance for women in terms of biological, cultural, social, and personal factors. Menstruation-related taboos, which are prevalent in many civilizations, have an impact on girl's and women's emotional well-being, attitude, way of life, and most significantly, health. Primary dysmenorrhea is characterized by spasmodic cramping pain in the lower abdomen that can extend to the lower back and anterior or inner thighs. A quasi-experimental research was conducted on virgin females suffering from primary dysmenorrhea. A sample size of 50 was taken. The data was collected using convenient sampling. The duration of the study was 2 months. WALIDD score and NPRS were used to collect the data. Significance effects of both treatments using NPRS with T value 11.726 at p-value .001. A significant effect was found between treatment using WLID with a T value of 0.003 and a significance value of 0.003. In the end, it is observed that the mean value of group A (aerobics) has less scale value as compared to group B (abdominal fascia release technique). So, the group A effect is better than B. Primary dysmenorrhea was very common among young females. In this study, we compared the aerobic exercise effect with the abdominal fascia-releasing technique in relieving primary dysmenorrhea. Results of the study showed that aerobic exercises played the best role in relieving primary dysmenorrhea. Whereas, the abdominal fascia-releasing technique showed minor effects in a few females. So, aerobic exercises are better than the abdominal fascia-releasing technique in primary dysmenorrhea. Overall, the significance of this study lies in its specific focus on comparing non-pharmacological interventions for primary dysmenorrhea in virgin females, its consideration of broader menstrual health issues, and its use of a quasi-experimental design to address practical research challenges.

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Introduction: Menstruation has a broad relevance for women in terms of biological, cultural, social, and personal factors. Periodic changes like menstruation are crucial for women's physical, emotional, and reproductive health as well as their ability to reproduce [1].

Menstruation, usually known as a "period," is the recurrent passage of blood through the cervix and vagina from the uterus. Between the ages of adolescence and menopause, women start menstruating. The menstrual cycle is the term used to describe the periodic deterioration of the endometrial bed and elimination of the same through the vagina. The typical menstrual cycle lasts 28 days. Adult' s cycles can be anywhere between 21 and 35 days, while young teens' cycles can be as long as 45 days [2]. In clinical settings and written works, the phrases "menstrual pain" and "dysmenorrhea" are frequently used interchangeably [3].

The Greek word dysmenorrhea, which meaning troublesome monthly flow, is most frequently used to describe painful menstruation. Primary dysmenorrhea is distinguished from subsequent dysmenorrhea by the absence of a macroscopically discernible pelvic abnormality. In contrast, secondary dysmenorrhea exhibits macroscopically discernible pelvic disease. This classification enables a management strategy depending on the etiologic mechanism [4]. Endometriosis, pelvic inflammatory disease (PID) and the use of intrauterine devices (IUDs) are common causes of secondary dysmenorrhea[5]. Prostaglandin level doubles during the menstrual cycle. Menstrual discomfort is brought on by prostaglandin's hyperactivity. The release of prostaglandins from the menstrual fluid, which results in uterine contractions and pain, is thought to be the cause of dysmenorrhea. Vasopressin may possibly be involved since it makes the uterus more contractile and causes vasoconstriction, which results in ischemic discomfort. Women with primary dysmenorrhea have been observed to have higher vasopressin levels [6]. Primary dysmenorrhea can be treated in three different ways: surgically, non-pharmacologically, and pharmacologically. By far, the pharmaceutical strategy has greater proof of its effectiveness than the other options, which have more conflicting data. The primary outcome index being evaluated, the time to relief of pain, the onset of peak pain relief, the duration of pain relief, and secondary outcome indices are all crucial factors to take into account when assessing treatment efficacy [7].

Numerous studies have found a link between exercise and physical activity therapy and a decrease in dysmenorrhea. Regular exercise improves blood circulation, lowers tension, and increases levels of serotonin and nerve transmitters [8]. As a result, the uterus receives less blood due to dysmenorrhea. Inhibiting stress is one of the most common causes of the relation between exercise and menstruation. Pelvic tilting, cycling, swimming and walking are a few examples of these exercises. Exercise affects hormone secretion by reducing prostaglandin production and increasing female estrone-estradiol ratio, which works to inhibit endometrial growth and divert the flow of blood away from the uterus [9]. One of the most disregarded reasons of anterior abdominal wall pain and primary dysmenorrhea is myofascial trigger points. It is critical to assess patients from a myofascial perspective in addition to a thorough physical exam and a thorough history. Patients with abdominal wall pain and primary dysmenorrhea should evaluate myofascial trigger points of the rectus abdominis and abdominal oblique muscles. Additionally, it should be remembered that myofascial pain syndrome may be a symptom of some underlying illness or it may be the actual pathology causing the pain [8]. The novelty of this study lies in its comparative analysis of two distinct interventions, aerobic exercises, and abdominal fascia-releasing techniques, for the management of primary dysmenorrhea in virgin females. While previous research has explored various treatments for menstrual pain, including medication and lifestyle modifications, this study specifically focuses on two non-pharmacological approaches and directly compares their effectiveness. Additionally, the study's emphasis on the importance of menstruation-related issues, including taboos and their impact on women's well-being, adds a unique dimension to the research. By highlighting the broader relevance of menstruation in biological, cultural, social, and personal contexts, the study underscores the significance of addressing menstrual health issues from a holistic perspective.

Methodology:

The current study was designed following the methodology used in previously studies with slight modifications such as a randomized clinical trial study conducted on high school girls in MasgedSolayman City who had severe dysmenorrhea [10,11]. Quasi Experimental study was followed from the study of Dehnavi, Z. M., *et al.* (2018) [12].

- **Study design:** A quasi-experimental study
- **Sample size:** 50
- **Sampling technique:** convenient sampling was done
- **Duration of study:** 6 months
- **Setting:** GCUF girl's hostels
- **Instruments:** WALIDD, NPRS

Selection criteria

Inclusive:

Age range: 18-26 years

Moderate to severe pain compared to Numeric pain rating scale (5-8) in the lower region of abdomen during or just before menstruation.

No drug use for dysmenorrhea.

Virgin females

Exclusive:

Not agreed to participate in the study.

Endometriosis, ovarian cyst, uterine fibroid, congenital malformation, or pelvic inflammation.

Having any cognitive problem.

Secondary dysmenorrhea patient.

Data collection procedure:

The data collection method of this study was quasi experimental study. In this method

2 groups were made. Each group contained 25 subjects.

Group A

Time:	30min/session
Frequency:	2 times/week
Intensity:	30 min per session

Type: Running, squatting

Group B

Time: 10min/session

Frequency: 2 times/week

Intensity: Static stretches for 30 sec and 10-15 reps

Type: A series of fascia release for each of the muscle tendon unit is recommended

Statistical Analysis:

All this statistical analysis is done through SPSS.

Results:

For checking the significance effects of both treatments using NPRS with T value 11.726 at p-value .001. A significance effect was founded between treatment using WLID with t value .003 and significance value .003. at the end it is observed that mean value of group A had less scale value as compared to group B so A, effect is better than B.

Within group results in Group A

In Group A we did measurement using NPRS. We checked pretreatment and post treatment effect. Mean ±S.D of Pre NPRS was 5.1923± .70662 and post NPRS was 1.6800 ±.47610. We checked significance of treatment. T value of NPRS test was 17.871 at p-value .021. Its mean there was significance difference founded on both measurements (Table-1). In Group A we did measurement using WLIDD. We checked pretreatment and post treatment effect. Using WLIDD Mean ±S.D of Pre WLIDD was 7.5200 ± .50990 and post WLIDD was 2.1940 ± .21290. We checked significance of treatment. T value of WLIDD test was 12.953 at p-value .011. Its mean there was significance difference founded on both measurements (Table-2).

Within group results in Group B:

In Group B we did measurement using NPRS. We checked pretreatment and post treatment effect. Mean ±S.D of Pre NPRS was 5.1870 ± .76180 and post NPRS was 1.4400 ± .20662. In this table we checked significance of each measurement. T value of NPRS was 14.502 at p-value .001. Its mean there was significance difference founded on both measurements (Table 3).In Group B we did measurement using WLIDD. We checked pretreatment and post treatment effect. Using WLIDD Mean ±S.D of Pre WLIDD was 4.4800 ± .50990 and post NPRS was 1.3021± .32451. In this table we checked significance of each measurement. T value of WLIDD test was 13.695 at p-value .010. Its mean there was significance difference founded on both measurements (Table 4).

Between Groups Effects:

This is a descriptive statistic about comparison on both groups. Using NPRS mean ± SD of group A was 1.6800 ± .47610 and group B was 2.4400 ± .50662 after using WALIDD test mean ± SD of group A was 1.2400 ± .48990 and group B was 3.1930 ± .50000 (Table 5).

For checking the significance effects of both treatments using NPRS with T value 11.726 at p-value .001. A significance effect was founded between treatment using WALIDD with t value .003 and significance value .003. at the end it is observed that mean value of group A had less scale value as compared to group B so A effect is better than B (Table 6).

Discussion:

The main purpose of the study was to do comparison between aerobic exercises and abdominal fascia release and found the more effective one in the treatment of primary dysmenorrhea. One group was given abdominal fascia release and other group performed aerobic exercises. For comparison of both treatments, NPRS (Numeric Pain Rating Scale) and WALIDD score was used.

After evaluating pre and post results it concluded that both techniques shown good effects but the aerobic exercise was found more therapeutic and effective in treating menstrual cramps in primary dysmenorrhea patients. While checking the effects of aerobic exercises and abdominal-fascia release and when we compare the results of both pre and post sessions, it is seen that our research is showing support for aerobic exercises. Patients given aerobic exercises show much improvement on the pain rating scale.

In a study 150 high school girls in MasgedSolayman City who had severe dysmenorrhea participated in a randomized clinical trial. Two groups—"exercise" and "non-exercise"—of students were created. The outcomes of the two periods following the exercise were then recorded for the "exercise" group, who had then received some workouts. For analyzing the statistical data, the repeated measure design and descriptive statistics were employed. According to the findings, the exercise group's pain intensity decreased from 8.59 to 4.63 in the third session and 2.84 in the fourth period (P 0.01). In the third and fourth periods, the average pain duration decreased from 7.15 to 4.22 and 2.23, respectively (P 0.01) [10].

Women between the ages of 16 and 25 with primary dysmenorrhea participated in research that evaluated the effectiveness of exercise to be a form of therapy, its duration and degree of pain, and quality of life. Therapeutic exercise for between eight and twelve weeks may be beneficial for young women with main dysmenorrhea because it lessens the intensity as well as to a lesser extent, the extent of their pain. Even if it could seem like therapeutic exercise improves quality of life. Women between the ages of 16 and 25 with primary dysmenorrhea participated in research that evaluated the effectiveness of exercise to be a form of therapy, its duration and degree of pain, and quality of life. Therapeutic exercise for between eight and twelve weeks may be beneficial for young women with main dysmenorrhea because it lessens the intensity as well as to a lesser extent, the extent of their pain. Even if it could seem like therapeutic exercise improves quality of life [11].

A quasi-experimental approach was employed in the investigation. Ten primary dysmenorrhea women, ranging in age from 18 to 45, participated in the study. The participants performed vigorous aerobic activity on a treadmill in the Institute of Physiotherapy three times in weekly for a period of four weeks, then continued their aerobic exercise at their homes for an additional up to four weeks. The remaining, safety, and commitment to the therapeutic program and prescription were all tested

for viability. Following trial enrolment, pain was measured using the brief portion of McGill agony questionnaires at the first (T1), subsequent (T2), and second menstrual cycles. The overall compliance rate was 98%; the clinic-based remedy and associated prescription had 100% compliance, and the home exercise program had 96% compliance. All employees were kept on. The effectiveness of the intervention was shown by the results. Additionally, the early findings indicate that the intervention led to positive effects [12].

Progesterone production can be increased with regular, three-times-per-week aerobic exercise, such as jogging, yoga, Pilates, gymnastics, and treadmill use. It has the ability to lessen primary dysmenorrhea during menstruation as the generation of prostaglandins decreases as three times weekly progesterone production increases [13].

The primary outcome measure of the research was pain intensity, which was primarily assessed using the VAS (visual analogue scale) and NPRS (Numerical pain rating scale). Other outcome variables, including as core strength, flexibility, and quality of life, have also been recorded in addition to pain severity. Different physiotherapy methods for treating primary dysmenorrhea include isometric exercises, core strengthening exercises, and cardiorespiratory exercises like chair exercises, stretching exercises, moist packs, and TENS. According to this review, physical therapy, in particular core strengthening exercises and different stretches, can significantly lessen the severity of menstruation discomfort while also strengthening and flexibly increasing the core muscles [14].

Fifty students who had signed up for the university's gym and had been exercising regularly Women between the ages of 16 and 25 with primary dysmenorrhea participated in research that evaluated the effectiveness of aerobic activity as a form of treatment, its duration and degree of pain, and quality of life. Therapeutic physical activity for between eight and twelve weeks may be beneficial for young women with main dysmenorrhea because it lessens the intensity and, to an extent, the extent of their pain. But even though it can seem that therapeutic exercise improves quality of life. In 2019 (CarroQuino-Garcia, Jiménez-Rejano, *et al*.), many females use painkillers like paracetamol and NSAIDS to treat primary dysmenorrhea. The study's goal is to investigate the effects of physical. An approach to descriptive research was participating. 50 pupils from the control group weren't registered for gym. Questionnaires that were self-administered were used to gather the data. The majority of students, according to the research, were aware that exercise can help with dysmenorrhea symptoms, yet most nevertheless used painkillers. The majority of students, according to the survey, would consider exercise as an alternate therapy for treating dysmenorrhea symptoms. Overall, this study's findings suggested that exercising regularly can help young females live better lives and lessen the consequences of primary dysmenorrhea symptoms, particularly pain[15].

College females with clinically confirmed primary dysmenorrhea participated in a study to examine the benefits of a 12-week aerobic training regimen on cardiovascular health and menstrual distress symptomatology. The allocation of 36 individuals to the treatment group or a control group was done randomly. Before and during the experiment, the participant's cardiorespiratory fitness was evaluated on the treadmill. The group receiving training ran for an ongoing 30 minutes three days a week whereas the control group did nothing during the experiment. The required level of adherence was decided on at 80%. The training group had significant (p,051) increases in their overall tolerance time, according to the findings of a paired t-test. The training group's mean menstrual phases symptomatology scores were considerably (p.05) lower than the control group's. The exercise group, compared to the control group, displayed a significant (.05) negative linear trend, which suggested that symptomatology decreased linearly as the participants in the training group developed. These results suggest that aerobic activity can significantly reduce symptoms of the menstrual cycle in college women with primary dysmenorrhea [16]."

This study has shown that aerobic exercise group show much effectiveness than the ones who didn't perform any aerobic exercise. This study has shown correlation with our study as aerobic exercising girls have given much positive result. According to research done among university students in Bushehr, the average intensity of dysmenorrhea before the intervention (aerobic exercises) was 40.38 5.5, 37.40 3.8, and 38.45 3.3 in the aerobic, stretches, and control groups, respectively. However, the variations were not in statistical terms significant. However, following the intervention, there was a discernible difference between the three groups in terms of the average severity of dysmenorrhea during the first and two menstrual cycles. The aerobic group with the control group, as well as the stretches group or the control group, both showed a significant difference. Prior to and after the interventions, comparisons between the aerobic and stretching groups revealed a substantial difference. However, the control group showed no such difference [17]."

In our research, a descriptive statistic about comparing both groups a significance effect was founded between treatment using WLID with t value .003 and significance value .003. At the end it is observed that mean value of group A (aerobic exercises) had less scale value1.2400 ± .48990 as compared to group B (abdominal fascial release) 3.1930 ± .50000 so aerobic exercises show better effect than abdominal fascial release. The current clinical trial examined the effects of aerobic exercise on PD symptoms for 8 weeks, looking at pain reduction using the VAS and quality of life improvement using the HRQOL SF-36. The results show that aerobic exercise is helpful in reducing primary dysmenorrhea and enhances quality of life. It has been discovered that aerobic exercise is useful in lowering dysmenorrhea-related discomfort and symptoms. Prostaglandins, which are found in large amounts in menstrual fluid, are thought to be the cause of the pain experienced during the menstrual cycle. They have strong vasoconstrictor effects, which result in ischemia to the uterine, and even low progesterone levels

may result in increased prostaglandin production, which is the mediators of pain. Increased myometrial contraction is brought on by a decreased progesterone titer. Increased myometrial contraction brought on by a lower progesterone titer puts greater strain on the ischemic myometrium and exacerbates the pain associated with dysmenorrhea. Exercises affect the uterine lining and raise blood endorphin levels, which in turn improve the pain threshold. The current study's findings support those of Abbaspour Z, who found that women that exercise at least once a week experienced significant increases in their quality of life and pain management [18].

These above study also support our study. Pain is the main factor reducing the daily life activities. Aerobic exercises, such as brisk walking, jogging or cycling are known to increase endorphins release and improve blood circulation, which can alleviate menstrual pain and stress.

On the other hand, the abdominal fascia release technique showed minor effects in alleviating primary dysmenorrhea. This technique involves the manipulation and release of abdominal fascia to reduce pain and tension in the abdomen. While the technique may have provided some relief for a few females in this study, its overall impact was limited.it is worth nothing that this finding might be influenced by various factors, including individual variations in response to the technique and sample size of these findings suggest that aerobic exercises are a more effective non-pharmacological approach to managing primary dysmenorrhea compared to the abdominal fascia release technique. Incorporating regular aerobic exercises into the lifestyle of young females experiencing menstrual cramps can lead to significant improvements in pain management and overall well-being. However, it is important to note that individual preferences, physical abilities, and access to exercise facilitates should be considered when recommending aerobic exercises as a treatment option. It is important to acknowledge the limitations of this study. Firstly, the sample size was relatively small, which may limit the generalizability of the findings. Further studies with larger and more diverse samples could provide a more comprehensive understanding of the effectiveness of aerobic exercises and abdominal fascia release technique. Additionally, the study focused on young females residing in gcufgirl's hostels, which may limit the generalizability to other population study

Conclusion:

Primary dysmenorrhea was very common among young females. In this study we compared aerobic exercises effect with abdominal fascia releasing technique in relieving primary dysmenorrhea. Results of the study showed that aerobic exercises played a best role in relieving primary dysmenorrhea. Whereas, abdominal fascia releasing technique showed minor effect in few females. So, aerobic exercises are better than abdominal fascia releasing technique in primary dysmenorrhea.

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Table 1. Descriptive statistics of both measurements

		Mean	N	Std. Deviation	T	df	Sig. (2-tailed)
Pair 1	PRE NPRS A	5.1923	25	.70662	17.871	24	.000

	POST NPRS A	1.6800	25	.47610			

Table 2. Descriptive statistics of both measurements

		Mean	N	Std. Deviation	T	df	Sig. (2-tailed)
Pair 2	PRE WLID A	7.5200	25	.50990	12.953	24	.000
	POST WILD A	2.1940	25	.21290			

Table 3. Descriptive statistics of NPRS in Group B

		Mean	N	Std. Deviation	t	df	Sig. (2-tailed)
Pair 1	PRE NPRS B	5.1870	25	.76180	14.502	24	.001
	POST NPRS B	1.4400	25	.20662			

Table 4. Descriptive statistics of WALIDD in Group B

		Mean	N	Std. Deviation	t	df	Sig. (2-tailed)
Pair 2	PRE WLID B	4.4800	25	.50990	13.695	24	.010
	POST WLID B	1.3021	25	.32451			

Table 5. Descriptive statistics between Group

	GROUPS	N	Mean	Std. Deviation	Std. Error Mean
NPRS	A	25	1.6800	.47610	.09522
	B	25	2.4400	.50662	.10132
WLID	A	25	1.2400	.48990	.09798
	B	25	3.1930	.50000	.10000

Table 6. Independent Samples Test

	t-test for Equality of Means						
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
NPRS	11.726	48	.001	.24000	.13904	-.03957	.51957
WLID	8.214	48	.003	.24000	.14000	-.04149	.52149