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The effect of William's Flexion Exercise and isometric exercise on pain among college studnets with primary dysmenorrhea

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Abstract
Background: Dysmenorrhea, is one of the most common women's problems. Most women begin having Dysmenorrhea during adolescence, usually within four to five years of the first menstrual period. Primary dysmenorrhea is the most common cyclic pelvic pain and is also the most common gynecological problem worldwide affecting quality of life. It also affects the functional capacity of many women which increases stress levels and absenteeism from work or school.
Aim & Objectives: The aim & objective of the study is to find out the Effect of William's Flexion Exercises and Isometric Exercises on pain among college students with Primary Dysmenorrhea.
Methodology: A Pre-test and Post-test Quasi Experimental study design was used. A Convenient Sampling Method was used to recruit patients (N=20) diagnosed with Primary dysmenorrhea and they were randomized into two groups. The Group A was treated with William's Flexion Exercises and the Group B was treated with Isometric Exercises for the period of 6 weeks. The treatment outcome was assessed by using Numeric Pain Rating Scale (NPRS). Both Paired & Unpaired't' test was used to show the treatment effectiveness.
Result: After 6 weeks of training period the William's Flexion Exercises scored significantly higher than the Isometric Exercises for pain using Numerical Pain Rating Scale (NPRS).
Conclusion: There is a significantly reduction in Pain intensity after the treatment session William's Flexion Exercises group registered a significant improvement when compared to Isometric Exercises on relieving pain.

Keywords: Primary dysmenorrhea, William's Flexion Exercises, isometric exercises, pain, Numerical Pain Rating Scale (NPRS)

Introduction

Dysmenorrhea is the medical term for painful menstrual periods which are caused by uterine contractions. Painful menstruation is also known as Dysmenorrhea. It is one of the most common women's problems. Most of the women begin having Dysmenorrhea during adolescence, usually within four to five years of the first menstrual period. Dysmenorrhea is a common gynecological issue that causing severe cramping in the lower abdomen before or during menstruation.

Dysmenorrhea may be classified as primary, in the absence of pelvic abnormalities, secondary, often resulting from conditions such as endometriosis, uterine fibroids and pelvic inflammatory disease.

According to WHO (World health organization) Dysmenorrhea or painful menstruation is defined as a severe, painful cramping sensation in the lower abdomen. The World Health Organization (WHO) has reported that more than half of the population in all countries suffers from severe dysmenorrhea while 10-15% experience milder symptoms.

Primary Dysmenorrhea usually presents during adolescence, within three years of menarche. Pain usually starts in first menstrual cycle itself. Affected women experience sharp, intermittent spasms of pain, usually centered in the suprapubic area, which may radiate to the back of the legs or the lower back.

The prevalence of dysmenorrhea is particularly high among young woman, with estimates ranging from 67% to 90% for those aged 17 to 24 years.

Primary dysmenorrhea is the most common cyclic pelvic pain and is also the most common gynecological problem worldwide affecting quality of life. It also affects the functional capacity of many women which increases stress levels and absenteeism from work or school. In primary Dysmenorrhea, there is abnormal and increased prostanoid and possibly eicosanoid secretion which in turn induces abnormal uterine contractions. PGF2 alpha stimulates myometrial contractions leading to ischemia and sensitization of nerve endings. The contractions reduce uterine flow, leading to uterine hypoxia thereby causing pain. The increased vasopressin release during menstruation in women results in persistence pain.

Primary dysmenorrhea has multiple contributing factors, including a family history of dysmenorrhea, early onset of menstruation, sleep disturbances, lack of physical exercise, lumbopelvic malalignment and insufficient abdominal muscle strength.

William's Flexion Exercise is designed to enhance the strength of the abdominal muscles and promote mobility in the lower lumbar region. By engaging in lower abdominal and lumbar muscle contractions, individuals can apply pressure to the major blood vessels in the abdominal region, resulting in improved blood circulation throughout the body,

including the reproductive organs. As a result, this can help increase the delivery of oxygen to constricted blood vessels, ultimately reducing menstrual pain. The William Flexion exercise is a non-pharmacological intervention designed to relieve lower back and pelvic pain, making it particularly useful for individuals suffering from primary dysmenorrhea. This exercise targets the muscles of the pelvic region, helping to reduce muscle tension, increase blood flow, and alleviate discomfort associated with menstrual cramps.
Isometric exercises have been proved to reduce pain as well as other distress related to dysmenorrhea. Isometric exercises work on muscle in static position and generate muscle tension without actual movement. Moreover, it is localized to area or joint. Occurs with normal ovulatory menses in the absence of any pelvic pathology such as pelvic inflammatory disease, endometriosis, adenomyosis, infertility issues, ovarian cysts, uterine myomas or polyps, intra-uterine adhesions, or cervical stenosis.

Methodology

Study design: A pre – test and post – test quasi experimental study design was used with two different interventions groups to assess the effectiveness of William's Flexion Exercise and Isometric exercises on pain among college students with Primary Dysmenorrhea.

Selection criteria

Inclusive criteria: Age group between 18 to 25 years. The participant should have moderate or severe pain, with an NPRS Score ≥5 out of 10 at the time of menstruation. Having a regular menstrual cycle of 28-30 days. Subjects with no pelvic pathology. No drug users.

Exclusive criteria: Age group 18 below and 25 above. Secondary Dysmenorrhea. Those who are taking any hormonal medications. Patients suffering from Any pelvic disease. Married women. Subjects taking painkillers. Subject irregular menstrual cycle.

Sampling method: By using convenient sampling method subjects were divided into two groups with 10 subjects in each group.

Variables: Independent variables – William's Flexion Exercise and Isometric exercises. Dependent variables – Pain.

Method of Study: It is a quasi-experimental study design. The study was conducted at Sree Abirami Institution and Sree Abirami college of Physiotherapy, Coimbatore. The subjects who stratified all the criteria and went for the duration of 6 weeks to participate, patients had to be willing to comply with the enter study protocol. Therefore, the procedures were described the purpose of the study were explained and written consent form was sought before any part of the study procedure was administered / any medication / intervention was dispensed.

Procedure:

Group A - William's flexion exercise

1. Initial movement position, the female student sleeps on his back nice mattress but a bit hard. Both knees bend and both feet flat on the surface of the mat. Flatten waist with press waist down against the mat with Contract the abdominal and buttock muscles. Every contraction hold for 5 seconds then relax. Repeat this exercise 10 times.
2. The starting position of movement 2 is the same as the starting position Movement 1. Contract the abdominal muscles and flex the head so that chin touching chest and shoulders lifted until off the mat, then hold for 5 seconds then relax. Do this exercise 10-25 time.
3. The starting position of movement 3 is the same as the starting position Movement 1. Flex one knee towards your chest as far as possible, then both hands reach the hamstrings and pull his knees to his chest. At the same time raise head so chin touching chest and shoulders off the mat, and hold for 5 seconds. This exercise is repeated with the other leg. Done 10 times.
4. The starting position of movement 4 is the same as the starting position movement 1. This exercise is the same as movement position exercise 3, but both knees are bent, raised up and pulled both hands towards the chest. Raise head and shoulders off the mat. This exercise is repeated 10 times. Warning: when raising both legs up as far as possible, then pulled both hands close to the chest.
5. One leg straight back, one the other leg bends forward, both arms straight on the mat and support back straight forward. Move it back down so that the chest hits the thighs several times. After the pelvic moves up and down, together with the waist several times. Then alternate with the other leg. Movement repeated 10 times.
6. The student's position is standing with back leaning against the wall. Both feet are 10-15 cm from the wall. Flatten back against the wall keeping the back flat, the student walks away from the wall. Average back resistance 10 seconds, then the time to hold the back flat, increases to the best of his strength.
7. Position initially the student sleeps on the back with the arms straight up, with both knees bent. Then the student is given a bath stand up with the arms straight. This movement is repeated 10 times.
8. The female student's position is sitting upright with both legs straight forward. Then with both arms straight in front of the body bend down to reach the toes. Head and back not can flex, so it doesn't cause problems to back.
9. The female student stands with the back slightly bent, both arms straight down slightly forward, legs slightly flexed on the knee. Then the students keeps both hands and feet fixed in place, sit crouched and both hands touch mat, then stand up again. This action is repeated 10 times.

Group B - Isometric Exercises

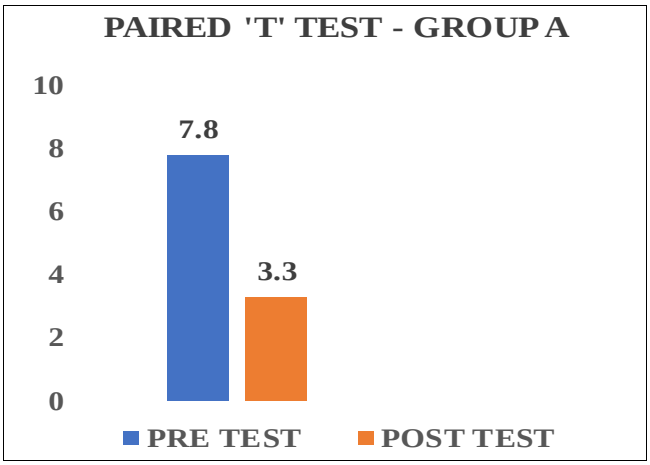
1. Sleeping in supine position, extending feet next to each other, pressing feet on each other, holding for 5 second, and relaxing.
2. Sleeping in supine position, putting feet crossed and pressing them on each other, holding for 5s, and relaxing.
3. Sleeping in supine position, bending knees and thighs, putting a pillow between two knees, pressing knees to each other, holding for 5s, and relaxing.

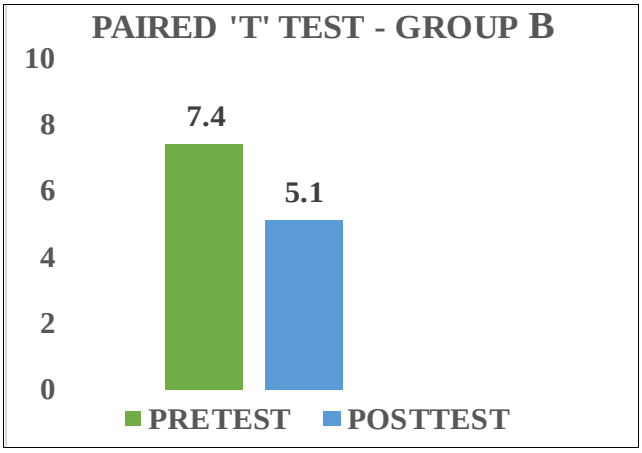
4. Going back to the third position, putting hand below waist and pressing waist to the ground, holding for 5s, and relaxing.
5. Sleeping in supine position, bending knees and thighs and trying to raise head and neck above the ground level, holding for 5s, and relaxing.
6. Sleeping in supine position, bending knees and thighs and trying to move head and neck toward the right thigh, holding for 5s, and relaxing.
7. Sleeping in supine position, bending knees and thighs and trying to move head and neck toward the toward the left thigh, holding for 5s, and relaxing.
8. Taking one abdominal deep breath among above-mentioned movements (sleeping in supine position with bent knees and thighs and breathing through nose in a way that abdomen expands. One hand can also be placed on abdomen to ensure abdominal breath. Then, exhaling from mouth such a way that abdominal muscles stick to waist.

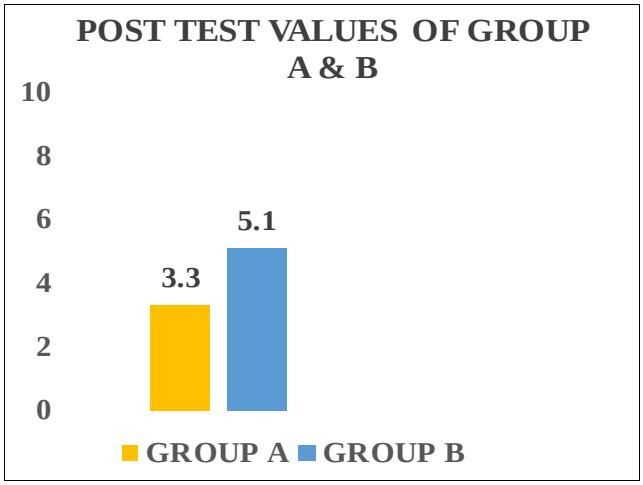
Frequency: 45 Minutes / sessions for 3 Days per weeks

Duration: 6 Weeks.

Statistical Analysis: The Collected data were tabulated and analysed using Student‘t’ test. Paired‘t’ test is used to analyses significance between Pre-test and Post-test values and Unpaired‘t’ test was used to analyses significance between two groups. P valve < 0.05 was considered as statistically significant.







Result: From the Statistical analysis made with the student ‘t’ test, paired ‘t’ test revealed that the mean is statistically significant between pre-test and post-test in William’s Flexion exercises group with ($p<0.05$) and the unpaired ‘t’ test conducted between group A & B resulted that there was a significant difference between the groups with the p value of (0.001). Thus, William’s Flexion exercises has a significant role in reducing pain. The difference between the two groups was analysed using post mean values of components. In general, both the groups showed significant recently ($p<0.05$), however Group A William’s Flexion exercises showed better reducing on pain in comparison to Group B Isometric Exercises.

Discussion

The aim of the study is to investigate the effect of William’s Flexion exercise and Isometric Exercise on Pain among college students with Primary Dysmenorrhea. Dysmenorrhea is the medical term for painful menstrual periods which are caused by uterine contractions. Painful menstruation, also known as Dysmenorrhea, is one of the most common women’s problems. Most women begin having Dysmenorrhea during adolescence, usually within four to five years of the first menstrual period. There are two types of Dysmenorrhea namely primary and secondary Dysmenorrhea.

The efficacy of William Flexion exercises in reducing menstrual pain, it is recommended that healthcare providers consider incorporating this exercise into treatment plans for patients with primary dysmenorrhea. The exercise has proven to be an effective and low-cost intervention, with benefits that extend beyond pain management. Integrating this approach into clinical practice can offer patients a holistic treatment option that minimizes dependence on medication while enhancing their physical and psychological health. Further longitudinal studies would help solidify its role in the broader management of primary dysmenorrhea (Johnson & Taylor, 2023).

Conducted the study to find out The William Flexion exercises can also improve psychological well-being. The patients who engage in regular physical activity such as the William Flexion exercise report lower levels of stress and anxiety, both of which can exacerbate dysmenorrhea symptoms. By improving mood and promoting relaxation, these exercises not only alleviate pain but also reduce the psychological burden associated with chronic menstrual discomfort. The mind-body connection cultivated through such exercises enhances overall health, making it an

attractive option for managing primary dysmenorrhea (Williams and Clarke 2022).

This study was to investigate the effect of isometric exercise on the duration of pain among inactive young females with primary dysmenorrhea. Results showed a significant difference after 8 weeks of intervention between exercise and control groups regarding the intensity and duration of menstrual pain, which is in line with several studies. Rakhshee et al. (2011) and Yang et al. (2016).

Conclusion: In conclusion of this study has demonstrated that William's Flexion Exercise are more effective on pain reduction than Isometric Exercises among college students with Primary Dysmenorrhea.

Limitation and Recommendation

- Study was done with small sample size.
- Limited to specific age group 17-25 years.
- Study was primary dysmenorrhea young females.
- Study was not limited with BIM.
- To do study with large sample size.
- Study duration more than 2 months.
- Study with reduce pain in young females.
- Study can be done with different age group.
- Study was recommended to compare with Quality of life in young females during patient with primary dysmenorrhea.

References

1. Abidin J, Supriyadi S, Surendra M. The Effect of William Flexion Exercise on Reducing the Intensity of Menstrual Pain (Dysmenorrhea) in Female Students at Sman 7, Malang City. Sport Science Journal, 2020.
2. Amila, Syapitri H, Sembiring E. The Effect of William Flexion Exercise on Reducing Pain Intensity for Elderly with Low Back Pain. International Journal of Nursing and Health Services, 2021.
3. Anggreini SN, Desriva N, Ramadhani SP. The Effect of the William Flexion Exercise Technique on the Level of Menstrual Pain (Dysmenorrhea). 2022.
4. Oktaviani AS, Lestari U. Effectiveness of William's Flexion Exercise in Reducing Menstrual Pain (Dysmenorrhea). 2017.
5. Purwandani D, Anggraini N. The Effect of William's Flexion Exercise on Reducing the Intensity of Dysmenorrhea in Young Women. 2023.
6. Mammo M, Alemayehu M, Ambaw G. Prevalence of Primary Dysmenorrhea, Its Intensity and Associated Factors among Female Students at High Schools. 2022.
7. Purwandani D, Anggraini N. The Effect of William's Flexion Exercise on Reducing the Intensity of Dysmenorrhea in Young Women. 2023.
8. Alfi NM. The Effect of William's Flexion Exercise on Prostaglandin Levels (PGF2α) and Pain in Adolescents with Primary Dysmenorrhea. Universitas Hasanuddin, 2022.
9. Shavandi N, Taghian F, Soltani V. The Effect Of Isometric Exercise On Primary Dismenorrhea. Arak Medical University Journal,2010:13(1):71-7.
10. Azima S, Hajar R, et al. Effect Of Isometric Exercises On Primary Dysmenorrhea: A Randomized Controlled Clinical Trial. Galen Medical Journal,2015:4(1):26-32.