

Physiotherapy Interventions as an Adjunct Approach in Patients with Primary Dysmenorrhea: A Narrative Review

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ABSTRACT

Primary Dysmenorrhea (PD) is a major contributor in teenage and young female absenteeism following menstrual cramps and abdomen pain before and during their menstrual cycle. Prostaglandin secretion causes uterine muscles and blood arteries to contract. The discomfort is usually modest, but in some cases, it is so terrible that it prevents them from going to work for many days in a month without any social, psychological and physical activity. The purpose of this review was to assess impact of physiotherapy on psychological, social and physical wellbeing in patients with PD. Physiotherapy intervention without surgical management can improve psychological, physical and social wellbeing of PD patients. All articles incorporated in the review were reported to reduce the pain intensity and the frequency in PD. A healthier and more appropriate eating style, as well as more frequent physical activity can help school and college going females to avoid dysmenorrhea. Educational activities can help in raising awareness among young women about the importance of a healthy diet and physical activity. The present review concluded that physiotherapy treatment strategies are effective treatments for reducing pain and psychological effects on PD females. Conservative management by physiotherapy reduces intensity and frequency of pain, anxiety, depression, stress, poor sleep quality and improved quality of life in PD.

Keywords: Impact, Management, Menstruation, Therapeutic, Treatment

INTRODUCTION

Dysmenorrhea is a frequent menstruation condition with influenced emotion of anxiety, sadness, and stress [1]. There are wide variations in dysmenorrhea prevalence. Prevalence for female aged 17 to 24 ranges from 67% to 90% [2,3]. Total 93% of teenagers reported menstruation pain and 15% to 75% of adult women experience dysmenorrhea [2,4].

Age, smoking, a higher body mass index, a younger menarche age, nulliparity, a longer and heavier menstrual flow and a familial history of dysmenorrhea are risk factors for increased severity of dysmenorrhea [5]. There are two types of dysmenorrhea: primary and secondary. PD, which typically starts in adolescence and affects women with normal pelvic anatomy, is described as painful menstruation [6]. Menstrual pain associated with underlying pathology such as endometriosis, pelvic inflammatory disease, intrauterine devices, irregular cycles or reproductive issues, ovarian cysts, adenomyosis, is known as secondary dysmenorrhea, and its start might occur years after menarche. The prevalence of PD among various countries ranges from 16 to 89% [Table/Fig-1] [7-10].

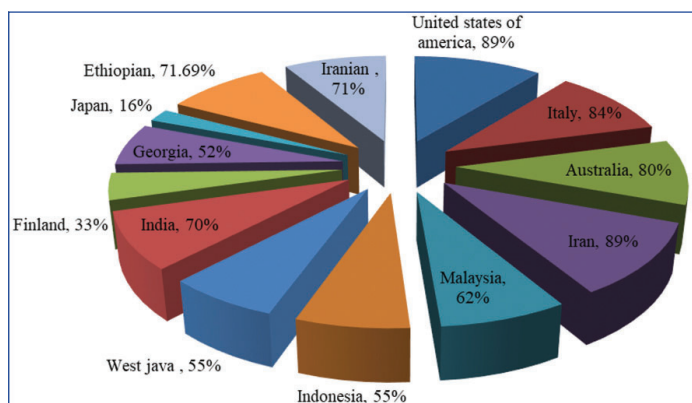
The pathomechanism of PD is complex and may be influenced by a wide range of conditions. The menstrual cycle is believed to be

influenced by cyclical changes in ovarian hormone levels, as well as cyclical changes in prostaglandin levels and uterine contractile activity. Prostaglandin concentration rising before menstruation may be one of the causes of dysmenorrhea. Prostaglandins cause the uterine muscles to contract abnormally, causing ischemia, hypoxia and narrowing of the blood vessels, as well as making the nerve endings more sensitive. Other factors, such as food, early menarche age, stress, duration and severity of menstrual periods and the incidence of Premenstrual Syndrome (PMS), may also contribute to hormonal changes that take place in the body [11].

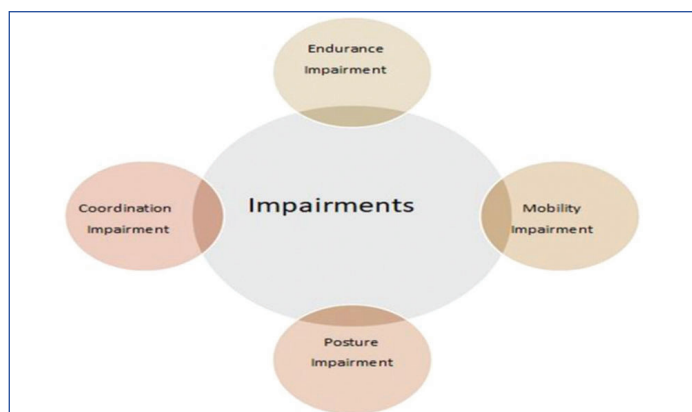
Impairments in the body during periodic time are: coordination, endurance, mobility, and posture [Table/Fig-2]. Although, it has been generally stated that exercise can help with dysmenorrhea; there is no substantial data to back this up. For this work, researchers looked at studies that examined this relationship. Exercise reduced prevalence and/or improved symptoms in the majority of cases. Before a definitive link between exercise and dysmenorrhea can be established, controlled longitudinal trials with women with verified PD who are appropriately blinded to the study objectives are required [12].

Main Hormonal Influences on Growth and the Development of Secondary Sexual Characteristics during Adolescence [Table/Fig-3].

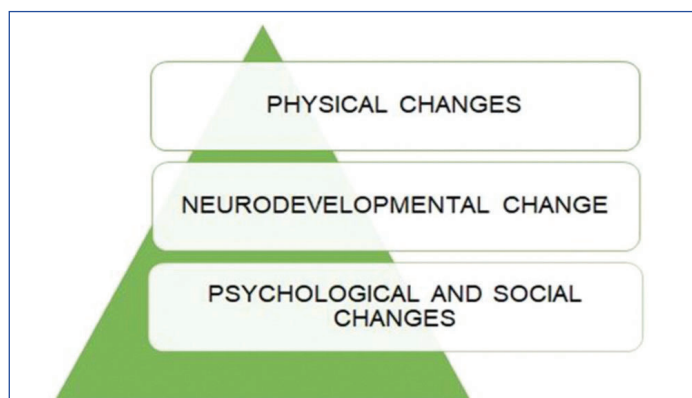
Social impact during period time: The age during which adolescents can adopt mature social roles is rising together with the early beginning of puberty, which is drastically transforming nature of adolescence [13]. Recent research has shed new light on the complex and changing influences of social media, puberty, and brain development on adolescent health. Many public health initiatives, including the millennium development goals to lower child and maternal mortality, depend on adolescence for success. If global health goals are to be met, adolescence needs to be given more consideration in public health areas. Strategies that prioritise adolescent development rather than just concentrating on particular health agendas offer significant changes to improve health, both during adolescence and later in life [13]. Teenagers'



[Table/Fig-1]: Prevalence of PD in different countries.



[Table/Fig-2]: Impairments impact on the body during PD.



[Table/Fig-3]: Social, physical & psychological impact on periodic time [13].

menstrual hygiene practices are crucial because they affect their health by making them more susceptible to Reproductive Tract Infections (RTI). Increased awareness of menstruation from an early age may therefore increase safe practices and lessen the suffering of women [14].

One study was conducted to evaluate the high school girls' beliefs and behaviour regarding menstrual hygiene in settings with limited resources in the Bangalore metropolitan area. A total of 506 girls in were interviewed with age range of 12 to 16 years. Among them, 99.6% of the students had heard of menstruation, and 57.9% had heard even before they reached menarche. Only 28.7% of people knew what menstruation was, 73.7% knew that it was a common occurrence. About 48.1% of people were unaware that menstruation and pregnancy were related. Only 44.1% of girls reported using sanitary pads for their periods. Only 31.3% of people who used cloth, cleaned them with soap and water. A 56.8% of people cleaned their genitalia with soap and water, and 88.8% of girls took daily baths while having their periods [15].

Another cross-sectional study of 350 adolescent girls in Tamil Nadu who were enrolled in school found that 87.7% of the girls had at least one menstrual problem. A 78.5% were unable to attend class while they were menstruating, 51.1% were unable to participate in household or sports activities, and they were more likely to miss the school [16].

2.2 Physical impact during period time: Female student absenteeism and limitations on female workers were more prevalent in individuals having increasing severity of dysmenorrhea [17]. One study was conducted to examine young girl's experiences with dysmenorrhea in light of the comfort theory and the coping mechanisms they employed. The prevalence of PD was 95%. It was found that young girls with dysmenorrhea suffer bio-psychosocial difficulties, and dysmenorrhea experiences are affected by their surroundings and society, which brought up the relieving aspect of personal convenience. Young girls should receive support in learning how to cope with dysmenorrhea [18].

2.3 Psychological impact during period time: A study was conducted to look at the link between PD and Attention-Deficit/Hyperactivity Disorder (ADHD) as well as psychosocial symptoms in teenagers and to investigate non psychogenic PD variables and sleep quality with 259 adolescent. During menstruation, 104 adolescents (49.8%) expressed pain that interfered with their everyday activities. In comparison to other adolescents, these adolescents reported poorer sleep quality, higher inattention, hyperactivity-impulsivity issues, and other psychological symptoms such as anxiety, melancholy, somatisation, negative self-perception, and hostility. The degree of menstruation pain, as measured by VAS, was found to be positively linked with ADHD symptoms and all other psychological variables. ADHD symptoms and psychiatric distress may be linked to PD which affects daily activities. The study concluded future research is needed to confirm the link between ADHD and PD. It's crucial to assess the psychiatric difficulties of teenagers with dysmenorrhea [10].

Dysmenorrhea and menstrual cycle abnormalities can both be made worse by emotional and behavioural problems, such as depression and/or anxiety feelings, which have been proven to interfere with menstrual cycle function. There is a significant link between psychosocial factors and dysmenorrhea, such as excessive anxiety, low self-esteem, and a poor social pattern [19]. Psychological illnesses such as anxiety, sadness, and stress have been linked to dysmenorrhea; however, past research has shown mixed results. A systematic review with extensive subgroup analysis to find the link between PD and psychological distress, such as sadness, anxiety, and stress lead to a better understanding of the factors that affect the relationship between dysmenorrhea and psychological discomfort [1].

A family history of dysmenorrhea as well as low social support was found to be the best predictors of PD, and psychological factors should be taken into account. Women with alexithymia are 3.1 times more likely to have a 7-day menstrual cycle, 2.5 times more likely to have a neurotic personality, and 2.4 times more likely to have a neurotic personality [3].

Physiotherapy Techniques Impact on Social, Physical and Psychological Wellbeing in Patients: Most of the young girls are not aware about the PD and importance of physiotherapy in managing social, physical and psychological wellbeing. A study in Punjab revealed that most of young females suffer from low back pain i.e., 96.5% and hips/thighs pain 89.5% with majority of female suffering from moderate intensity of pain during menstruation. And only 6.5% of females performing physiotherapy exercises as a pain relief technique even though 23% were student of physiotherapy. This situation can explain about the awareness of physiotherapy in managing PD [20].

Exercises like stretching the muscles in the inner thighs, hip flexors, and connective tissue surrounding the pelvis for ten minutes, jogging at an intensity of between 60 and 70 percent of one's maximum heart rate for ten to thirty minutes three times a week, and Kegel exercises that involve contraction of the pelvic floor musculature as well as deep breathing relaxation improve physical health, increase aerobic capacity, and minimise pain, agitation, and depression in PD [21]. An exercise program influenced pain, sleep, and menstruation symptoms in women with PD. Zumba exercise may assist people with PD reduce the severity and duration of their symptoms. As a result, more research into the causes and factors that impact dysmenorrhea's development and severity is needed [22]. Physical workouts can help manage PD in terms of pain severity and duration. Pain, sleep, and menstruation symptoms were all improved by a combined exercise regimen [23]. Eight weeks of aerobic exercise significantly reduced the intensity of pain in patients with PD in one study [24]. Both types of exercises (stretching and core strengthening exercises) decrease the

symptoms of PD in terms of pain severity and duration to suggest that physical workouts can help control PD pain. Active stretching or core strengthening activities appear to be a straightforward, non pharmacological strategy to treat PD [25]. Physical activity reduces stress, has anti-nociceptive properties, and reduces levels of PGF2 α (the Prostaglandin subtype most closely linked with PD) [26]. One of the causes of the effect of aerobic exercise on PD appears to be the enhancement of blood flow and enhanced mental and physical relaxation and also improve relaxation in the body and mind [24].

A comparative descriptive study to investigate the link between physical activity and diet and PDs concluded that a healthier and more favourable eating pattern, as well as more regular physical activity, reduces the severity of dysmenorrhea in females. As a result, educational efforts are needed to create awareness among young women about the need for a healthy diet and physical activity in their lives [23].

A randomised controlled trial was done with the purpose of to find out that Zumba exercise might lead to a reduction in severity and duration of discomfort in young girls with PD. After 4 and 8 weeks of Zumba, the intensity of menstruation discomfort in the Zumba group was significantly reduced when compared to the control group. The Zumba group experienced a shorter duration of pain than the control group after 8 weeks [22]. A randomised controlled trial was carried out to see how a combined exercise program influenced pain, sleep, and menstrual symptoms in women with PD with 28 participants. According to the study, intragroup comparisons of the exercise group found that the ratings of low back pain and abdominal pain, as well as the MSQ and PSQI scores, were significantly different after the 8-week program [23]. Another randomised study was conducted to see how effective app-based self-acupressure is for women with menstrual pain when compared to traditional therapy in 221 women. The study found that self-acupressure delivered via a smartphone app reduced menstruation discomfort when compared to traditional treatment. Over time, the effects became greater, and adherence was greater and concluded future studies should include comparisons with different active therapy alternatives [27].

A study was carried out to compare two types of exercises (stretching and core strengthening exercises) in terms of pain severity and duration to suggest that physical workouts can help control PD pain. When compared to the control group, pain intensity and duration were significantly reduced in the both stretching and core strengthening group. Active stretching or core strengthening activities appear to be a straightforward, non pharmacological strategy to treat PD, according to the findings [25].

A systematic review and meta-analysis with goal to determine effectiveness and safety of acupuncture in women with PD found that acupuncture can successfully reduce menstrual pain and accompanying symptoms and that the efficacy can be sustained for over a short period [28]. A research was performed carried to explore if deep breathing relaxation technique help teenagers with dysmenorrhea. Researcher stated that that the majority of adolescents who experienced moderate pain before using the breathing relaxation technique; after using it, the majority of adolescents experienced a decrease in pain to mild; and some additional adolescents did not experience any pain [24].

The combination of thermotherapy using Microwave Diathermy (MWD) and Transcutaneous Electrical Nerve (TENS) stimulation for 20 and 30 minutes, respectively, immediately reduces pain intensity as well as the sensory intensity, the cognitive effect, and the emotional impact of pain, as measured by the McGill pain questionnaire [29]. Isometric exercises stimulate the A-delta and C fibres in the constant muscles, which block the effects of pain. These exercises also help to strengthen the

pelvic muscles, improve the flow of blood and waste products containing prostaglandins, increase in-depth sensation, control pelvic movements (by improving muscular balance) and lower sympathetic system activity, which causes uterine muscle contraction and pain. It helps in physical functioning and psychological functioning in PD [30].

Deep breathing relaxation can help women with lower sleep quality, increased inattention and hyperactivity-impulsivity problems, and other psychological symptoms such as anxiety, sadness, somatisation, and negative self-perception [1]. The use of relaxation techniques with deep breathing exercises, followed by music, and muscle-stretching exercises can boost immunity, lessen sadness and improve daily living. They have also been demonstrated to be effective in reducing tension and anxiety. Relaxation techniques cause parasympathetic activity to rise and sympathetic activity to fall. As a result, there is a reduction in heart rate, blood pressure, respiratory rate, oxygen demand, muscle tension, discomfort, or pain perception, as well as an improvement in sleep quality and dilating of peripheral arteries [31].

One RCT studied the effect of kinesiotaping on ligament technique (75-100% stretch) on the sacral and suprapubic region in PD and concluded kinesiotaping to the abdominal area reduce the severity of pain in PD and also decrease the level of anxiety associated PD [32]. Stress contributes to an increase in sympathetic nerve activity, which in turn may enhance uterine muscle contraction and menstruation pain. Exercise can lower stress levels, which in turn lowers sympathetic nervous system activity and, as a result, lowers menstrual symptoms. Exercise also lowers blood levels of stress chemicals like cortisol and adrenaline. It encourages the release of endorphins, which are the body's natural painkillers and mood enhancers [33].

Somatovisceral reflexes are increased by somatic dysfunction. It causes the uterus's autonomic neural tone and uterine contraction to increase, and relative ischemia to result from uterine pressure exceeding artery pressure. Such dysfunction can be treated with manipulation techniques including myofascial release, strain-counterstrain, soft tissue, muscular energy, suboccipital release, abdominal plexus release, and joint articulation that also helps in psycho social and pain management of PD [34].

CONCLUSION(S)

Physiotherapy techniques are efficient treatments for lowering the negative impacts on psychological, physical and social impact on women with PD. It improves the quality of life by lowering stress, anxiety, depression, pain frequency and intensity. Influence of various types of exercise like aerobic exercises, Zumba, deep breathing exercises, isometric exercises, relaxation exercises, Kegels exercises and other therapeutic techniques like TENS, MWD, kinesio taping also improves the physical fitness of PD patients.

Acknowledgement

The authors express their appreciation to the individuals who helped in preparing this review.

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PLAGIARISM CHECKING METHODS: [Jan H et al.]

- Plagiarism X-checker: Dec 12, 2022
- Manual Googling: Feb 10, 2023
- iThenticate Software: Mar 10, 2023 (9%)

ETYMOLOGY: Author Origin

AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? No
- Was informed consent obtained from the subjects involved in the study? No
- For any images presented appropriate consent has been obtained from the subjects. No

Date of Submission: **Dec 12, 2022**

Date of Peer Review: **Jan 13, 2023**

Date of Acceptance: **Mar 14, 2023**

Date of Publishing: **Apr 01, 2023**