Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Effect of core stability exercises on activity of daily living & pain among college-going girls diagnosed with premenstrual dysphoric disorder

Bharti Priti
Parul University
Mansi Bais
mansi.bais36751@paruluniversity.ac.in

Parul University https://orcid.org/0009-0009-2785-0578

Research Article

Keywords: Premenstrual Dysphoric Disorder, Core Stability Exercises, Activity of Daily Living, Pain, College-going Girls, Physiotherapy

Posted Date: June 24th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-10123598/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: The authors declare potential competing interests as follows: mentioned in the revised manuscript

Abstract

Background

Premenstrual Dysphoric Disorder (PMDD) is a severe and disabling form of premenstrual syndrome characterized by significant physical, emotional, and behavioral symptoms that occur during the luteal phase of the menstrual cycle. It markedly affects activity of daily living (ADL), academic performance, social interactions, and overall quality of life among college-going girls. Pain, particularly in the lower abdomen, pelvis, and lower back, along with fatigue and mood disturbances, contributes to functional limitations. Core stability exercises, which enhance neuromuscular control, spinal stability, and muscular endurance, may help in reducing pain and improving functional independence.

Methodology

An experimental study design was adopted. A total of 34 college-going girls aged 18–25 years diagnosed with PMDD based on standard diagnostic criteria were recruited using purposive sampling. Baseline assessment included pain measurement using the Visual Analog Scale (VAS) and evaluation of the Activity of Daily Living using the Daily Record of Severity of Problems Scale (DSRP). Participants underwent a structured core stability exercise program focusing on activation of the transverse abdominis, multifidus, pelvic floor muscles, and deep abdominal stabilizers. The intervention was conducted for 8 weeks. Post-intervention assessment was carried out using the same outcome measures.

Results

Statistical analysis was performed using appropriate tests (paired t-test). The findings demonstrated a statistically significant reduction in pain scores ($p < 0.05$) and significant improvement in ADL scores following the intervention. The results suggest that core stability exercises effectively reduce pain intensity and enhance functional capacity in college-going girls with PMDD.

Conclusion

Core stability exercises are an effective, safe, and non-invasive physiotherapeutic intervention for reducing pain and improving activity of daily living among college-going girls diagnosed with PMDD. Incorporating structured core strengthening programs into routine physiotherapy management may improve quality of life and academic functioning in this population.

INTRODUCTION

Premenstrual syndrome (PMS) is defined as a group of recurrent physical, emotional, and behavioral symptoms that occur during the menstrual cycle's luteal phase between ovulation and menstruation and are minimal or absent in the week after menstruation.[1] The fifth edition of the Diagnostic and Statistical

Manual for Mental Disorders (DSM-5) lists Premenstrual Dysphoric Disorder (PMDD), a more severe and disabling form of PMS.[2]

The clinical features of PMDD are a collection of sentimental, habitual, and somatic features that recur periodically. The following are the most typical symptoms: mood swings, sleep disturbance, anger & irritability, depressed state of mind, tension or anxiety, low concentration, pain in joints, abdominal bloating, and breast tenderness.[3]

Interpersonal connections, scholastic achievement, work productivity, and general psychological wellness can all be adversely affected by the illness.[4] People with PMDD frequently struggle with emotional instability, diminished motivation, and diminished focus, all of which can make it difficult for them to carry out daily tasks efficiently.[4]

Dysphoric mood state, physiological distress symptoms, mood instability, breast/body sensitivity, pain, and nutritional pattern are the six clusters. Except for pain and eating habits, clusters of symptoms seemed to remain constant across two consecutive menstrual cycles as well as between two cycles separated by an eight-week interval. [5]

As per population based research, between 80% and 90% of females show at least 1 PMS features; however, only 2.5% to 3% of female have the pathological condition significant enough to engage with their interactions and activities. It's called premenstrual dysphoric disorder.[6] PMS prevalence estimates in India have been estimated to range from 14.3% to 74.4%. In the same way, reports of PMDD prevalence in India have ranged significantly from 3.7% to 65.7%, [7], and in college-going girls, the rates affect up to 13.8%.[8]

PMS primarily affects college-going girls; this group is thought to have a high prevalence of PMS, which has a negative impact on their lives and scholastic achievement.[9]

The hypothalamus, pituitary gland, and ovaries interact precisely during the menstrual cycle, which is known as the hypothalamic-pituitary-ovarian (HPO) axis. It is separated into the follicular phase, ovulation, and luteal phase, and it usually lasts 28 ± 7 days. Progesterone dominates the luteal phase, readying the uterus for implantation, whereas estrogen predominates in the follicular phase, encouraging endometrial development. Menstruation results from endometrial shedding caused by a drop in estrogen and progesterone levels in the absence of fertilization. Many premenstrual symptoms seen in women are caused by hormonal changes during the luteal phase.[10] Hormonal changes that take place in early adulthood may further exacerbate the disorder's severity. Because of this, many college-bound girls may find it challenging to maintain their daily functioning, social interaction, and academic achievement throughout the premenstrual phase.
When estrogen and progesterone levels are normal, women with PMS or PMDD seem to be more physiologically sensitive to and exhibit more symptoms.[11]

Multiple biological, psychological, and lifestyle factors influence menstruation and the severity of PMS and PMDD. PMDD is largely caused by abnormal sensitivity to hormonal changes, particularly those involving progesterone and estrogen. Increased sensitivity to serotonin fluctuations is a major contributor to the severity of PMDD symptoms, and these hormonal changes impact serotonin levels in the brain, which affects mood regulation.[12]

Functioning and quality of life must be significantly impacted by PMDD. Research has validated this effect on connections with others, hobbies and social activities, and HR-QOL.[13] PMDD usually results in significant social and functional impairment, which negatively impacts well- being and quality of life.[14]

Similar to serious depressive disorders, women with PMDD exhibit cognitive impairment. Maladaptive thought habits and a negative cognitive style. Heightened vulnerability to stress and failure.[15] Suicidal thoughts are more common in PMDD patients with depression, anxiety disorders, and long-term stress.[16] Increased PMS severity is closely linked to sleep issues like sleeplessness and poor sleep quality. Emotional stability and hormone control are impacted by sleep disturbances.[17]

Women with severe PMDD, report significant functional impairment in everyday tasks, including basic ADLs, during the luteal phase.[18] Because of their physical and psychological symptoms, women with PMS/PMDD frequently report decreased productivity, absenteeism, and participation in normal duties.[19]

Fatigue, mood fluctuations, and cognitive disorders further hinder decision-making and decrease productivity in carrying out daily tasks. Fear of movement brought on by PMS pain might make it difficult to engage in physical ADLs, which deteriorates functional results.[20]

PMS symptoms are more severe in women with musculoskeletal pain, indicating a reciprocal link between pain and symptom severity. PMDD symptoms are exacerbated by chronic pain during the menstrual cycle, which also causes psychological discomfort, worry, and depression.[21] Core stability exercises improve mood, reduce discomfort, and lessen movement anxiety, all of which increase engagement in daily activities. Exercises for core stability increase muscle strength and functional abilities, which helps lessen PMS symptoms. [22]

Menstrual pain is lessened when core muscles are strengthened because it increases pelvic stability and eases uterine stress. Bloating and pain are lessened with core activities that improve blood circulation and decrease fluid retention. ADLs are enhanced by better posture and core strength, which lessen musculoskeletal strain and pain perception. [23]

Core muscles include the transverse abdominis, multifidus, pelvic floor muscles, diaphragm, and internal & external obliques, which are essential for lumbopelvic stability and to maintain proper posture.[24]

Impaired core muscle activity may contribute to the increased physical discomfort that women with PMS and PMDD frequently experience, particularly in the lower back and abdomen.[25]

Poor spinal stability and heightened pain perception have been linked to decreased activation of deep core muscles such as the transversus abdominis. Central sensitization and hormonal changes, especially those related to progesterone and estrogen, increase pain sensitivity in PMS/PMDD.[26, 27]

The muscles involved in the core are, namely, Transverse abdominis – the deepest abdominal muscle, which supports the abdomen like a corset. It supports the pelvic organs. Reduces bloating and abdominal pain. It is a main muscle for core stability.[26]

Multifidus – small muscle around the spine to stabilize. Reduces lower back discomfort. Stabilizes the lumbar spine. Pelvic floor muscle – supports the bladder, uterus and rectum. Improves pelvic stability. Reduces pelvic heaviness and discomfort.[28] Internal and external obliques – it is responsible for trunk rotation and side stability. Improves core stability which helps in daily activities. It increases the overall abdominal strength Improves posture and functional movement.[29]

Fatigue and diminished functional capacity are common complaints in PMS, and they may be caused by a weak core.[30] in women with PMS, core stability training has been linked to decreased fatigue and enhanced physical performance, which enhances ADL participation. Menstrual cycle- related low back discomfort can be lessened with lumbar-pelvic stabilization exercises.[31, 32] Exercise-induced parasympathetic activation, which is made possible by controlled core engagement, reduces psychological stress, a major aspect of PMDD.[33]

Better posture during extended sitting, which is typical during academic pursuits like studying and attending lectures, may be facilitated by increased core stability for college-bound ladies. Additionally, improved trunk stability can enhance general physical fitness, balance, and coordination of the body. A higher level of independence in carrying out daily tasks could result from improved physical function, which would enhance one's general quality of life.[34]

AIMS OF THE STUDY:

To evaluate the Effect of Core Stability Exercises on the Activity of Daily Living & Pain among college-going girls diagnosed with Premenstrual Dysphoric Disorder. (PMDD)

OBJECTIVES OF THE STUDY:

To assess the baseline PMDD symptoms in college-going girls.

To implement a structured core stability exercise program.

To evaluate changes in emotional, behavioral, and physical symptoms of PMDD after the intervention.

To compare pre- and post-intervention outcomes using validated scales.

Research design: Experimental study.

Study Population: 18-25 aged college-going girls.

Source of Data: Ahmedabad Physiotherapy College

Sampling Technique: Simple random sampling.

Sample size: 34

Duration of Study: 8 weeks (including recruitment, intervention, and post-assessment).

INCLUSION CRITERIA: [13, 39]

- Females aged 18–25 years (college-going population).
- Fulfillment of diagnostic criteria as per the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, including:
- Presence of ≥5 symptoms in the luteal phase
- At least one core mood symptom (e.g., irritability, depression, anxiety)
- Regular menstrual cycles (typically 21–35 days).
- Participants must have at least one of the symptoms numbered 1, 2, 3, 4, severe in the premenstrual symptoms screening test (PSST).
- Willingness to participate and provide informed consent.
- Participants who are physically able to perform core strengthening exercises.

EXCLUSION CRITERIA: [39, 40]

- Diagnosis of major psychiatric disorders such as major depressive disorder, anxiety disorders, or bipolar disorder.
- Presence of gynecological conditions such as endometriosis, polycystic ovarian syndrome (PCOS), or dysmenorrhea unrelated to PMDD.
- Use of hormonal therapy, antidepressants, or oral contraceptive pills within the last 3 months.
- Irregular menstrual cycles or history of amenorrhea.
- History of recent musculoskeletal injury, spinal pathology, or surgery affecting participation in exercise.
- Presence of chronic medical conditions such as thyroid disorders, diabetes, or cardiovascular diseases.

OUTCOME MEASURES:

DAILY RECORD OF SEVERITY OF PROBLEMS (DRSP):

Many women experiences symptoms that are consistent with other medical or psychological conditions outside of the luteal phase. The Daily Record of Severity of Problems is one method for tracking PMS and PMDD symptoms.[41]

The 14 symptoms on the list match widely used diagnostic criteria, such as those found in the Diagnostic and Statistical Manual of Mental Disorders. Because of its negative predictive value, the instrument can reliably rule out patients who are unlikely to have PMS or PMDD. [42]

VISUAL ANALOGUE SCALE (VAS):

A single handwritten mark is placed at one point along a 10-centimeter line that represents the two ends of the scale: "no pain" on the left end (0 cm) and "worst pain" on the right end (10 cm). Self-reported symptoms serve as the basis for the pain a system of ratings and score..

Measurements are made in centimeters. [29]

INSTITUIONAL ETHICAL COMMITTEE: The study was approved by the Institutional Ethics Committee (IEC) of Ahmedabad Physiotherapy College. Institutional Ethical Committee includes senior faculty members, statistician, and social counsellors. The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and its subsequent amendments. Written informed consent was obtained from all participants prior to their enrollment in the study.

ETHICAL CONSENT: Written and informed consent was obtained from each research participant regarding their involvement in the study and the preservation of proper confidentiality and privacy. Additionally, the physiotherapist made sure that participants had sufficient secrecy and privacy.

PROCEDURE: 34 College-bound students with regular menstrual cycles who were diagnosed using DSM-5 criteria and PSST were assigned to core strengthening activities based on inclusion and exclusion criteria. VAS was taken from each participant's pre- and post-intervention.

All participants were introduced to the exercises and the efficacy of strengthening the core muscles before starting the procedure.

PREMENSTRUAL SYMPTOMS SCREENING TOOL (PSST):

The Premenstrual Symptoms Screening Tool (PSST) is used to evaluate PMDD symptoms. A Likert scale with four possible answers—"not at all," "mild," "moderate," and "severe"—is used to record responses to the measure's 19 items, which represent symptoms of PMDD (such as sad mood and irritability). For a screening to be positive, three requirements must be fulfilled. A person must first choose "severe" for at least one of the items that indicate depression, anxiety, irritability, or heightened sensitivity to rejection. Second, in a subset of 11 items, a participant must choose moderate

to severe. The PSST has shown strong validity and reliability in terms of severity. The scale's internal validity was strong in the current investigation.[43, 44]

RESULTS

The present research, aimed to assess the effects of core strengthening exercises on pain and activity of daily living among college-going students diagnosed as for Premenstrual Dysphoric Disorder: an experimental study. An intervention group received core strengthening exercises. The data was analyzed using SPSS version 26. Before the statistical tests, the data were screened for normal distribution by Q plot graph. Analysis was done within the group using paired t- test, outcome measures taken pre & posttest using paired t-test.The level of significance was kept at 5% with a confidence interval (CI) of 95%.An experimental study was done on 34 college-going girls diagnosed with Premenstrual Dysphoric Disorder. The study aimed to evaluate the effect of core stability exercises on the activity of daily living and pain among college-going girls, were VAS and DSRP was taken. Analyses of data were calculated via Microsoft Excel and SPSS version 26.

Variables	Mean	SD
Age	21.26	1.693
Weight	151.4	9.814
Height	67.97	8.050
BMI	29.96	4.819

Graph 1: Mean of demographic details

Graph 2: VAS Pre-Post Mean & SD

Table 3
DSRP Pre- Post Mean & SD

DSRP Mean Pre	Mean	SD
	24.55	**2.09**
DSRP Mean Post	**11**	**2.44**

Table 3 suggests a within-group, pre-intervention, and post-intervention analysis of DSRP, where the mean was 24.55 to 11, and the SD was 2.09 and 2.44. Hence, a statistically significant difference was seen in the Activity of Daily Living.

DISCUSSION

The goal of the current study was to determine how core strengthening activities affected the pain and the Activity of Daily Living in college- going girls. Over the course of eight weeks, a pre- test/post-test design was used. The Daily Severity Record of Problems (DSRP) and Visual Analogue Scale (VAS) were the outcome measures. A reassessment of both outcome indicators was conducted after eight weeks. According to the Visual Analogue Scale (VAS), there was a slight increase from 0.996 ± 0.171 (pre-intervention) to 1.050 ± 0.180 (post-intervention). These results imply that participants' perceptions of pain were successfully decreased by the intervention.Menstrual pain is lessened when core muscles are strengthened because it increases pelvic stability and eases uterine stress. Bloating and pain are lessened with core activities that improve blood circulation and decrease fluid retention. ADLs are enhanced by better posture and core strength, which lessen musculoskeletal strain and pain perception. [2]Core stability exercises primarily target deep core muscles and neuromuscular control.[26] Instead of reducing pain immediately, improved activation of these muscles improves load distribution and lowers mechanical stress, which helps avoid long-term pain.

The DSRP scores showed a significant and clinically meaningful decrease from 24.55 ± 2.09 (pre-intervention) to 11.00 ± 2.44 (post-intervention), similar to the VAS findings. The overall severity of PMDD symptoms, including their emotional, behavioral, and physical components, has significantly decreased, as evidenced by this notable improvement. A significant therapeutic benefit is indicated by the size of the change in DSRP scores, indicating that core stability exercises are essential in addressing the multifaceted character of PMDD. Previous research showing that exercise interventions improve hormonal balance, lower prostaglandin levels, and increase endorphin release, hence reducing premenstrual symptoms, supports our findings.[12]Exercise has also been demonstrated to have a favorable impact on neurotransmitter activity, especially dopamine and serotonin, which are linked to the pathophysiology of PMDD. Regular exercise improves psychological well-being, which lowers irritation, mood swings, and anxiety, and increases total functional capacity. [44]Additionally, improved performance in Activities of Daily Living is suggested by the improvement in DSRP scores. People can participate in social interactions, physical activities, and intellectual work more successfully when their symptoms are less severe. Exercises for core stability enhance posture, muscular endurance, and trunk control—all of which are critical for carrying out daily tasks effectively.[45]Numerous physiological and psychological processes are responsible for the improvement in ADL:mproved posture and less fatigue during daily tasks are two benefits of increased core muscle strength and endurance.Better neuromuscular coordination results in less perceived effort and more efficient movement.Exercise causes the release of endorphins, which enhances mood and lessens discomfort perception.Frequent exercise is known to alter dopamine and serotonin levels, which are linked to the symptoms of PMDD.

The remarkable improvement in DSRP and the disparity between VAS demonstrate the multifaceted advantages of core stability workouts. Other factors, including weariness, emotional control, and functional capacity, significantly improved while pain intensity stayed low and consistent. This suggests that comprehensive metrics like DSRP offer a more realistic picture of patient outcomes and that pain alone may not adequately reflect the therapeutic advantages of the intervention.

In recent study by, Sanskruti Bang (2024) it was demonstrated that the effect of aerobic exercises along with core stability exercises on premenstrual symptoms in college-going girls. During their mennstrual cycle, up to 80% of women have at least one premenstrual symptom. Exercises for core stability and aerobics can help lessen the discomfort. Eighty female participants with premenstrual syndrome, ages eighteen to twenty-five, make up this study. In this study, participants were divided into two groups: group A and group B. Analysis of the premenstrual syndrome scale and VAS scale shows statistically significant differences; however, results show both groups are effective in reducing the symptoms, but the combined effect of aerobic, along with core stability exercises, shows significant improvement in terms of reducing physical symptoms.[28]

Exercise's ability to lessen premenstrual symptoms is strongly supported by recent research. According to a systematic review by Armour et al. (2020), exercise dramatically lessens PMS symptoms, especially discomfort, exhaustion, and mood swings. This evidence is supported by the current study's findings, which show that structured exercise therapies like core stability can result in significant symptom reduction.[46]

In the same way, a 2021 study by Vaghela et al. showed that focused exercise regimens greatly decreased the discomfort associated with dysmenorrhea and enhanced young women's quality of life. These results are consistent with the current study's decrease in VAS scores, indicating that core strengthening improves pelvic circulation and lessens muscle stress.[47]

From a physiological standpoint, strengthening these muscles enhances neuromuscular coordination and lessens chronic pelvic and lower back pain, according to a recent review by Gordon and Bloxham (2020). This could account for the decrease in discomfort seen in the current investigation.[48]

In recent literature, conflicting results have also been documented. For instance, a 2021 study by Mateus et al. indicated that although exercise has advantages, the degree of improvement varies depending on program adherence, duration, and intensity. This emphasizes the value of standardized protocols, such as the one employed in this work, which might have helped produce the noteworthy results.[49]

Additionally, core strengthening exercises were found to be more beneficial than general stretching in alleviating menstrual-related pain in a randomized controlled experiment conducted by Kaur etal. (2022). This highlights the superiority of focused core therapies over generalist exercise techniques, which directly supports the current study.[50]

The noted benefits may also be attributed to neuroendocrine processes. It has been demonstrated that exercise controls serotonin and endorphin levels, which are important in the pathophysiology of PMDD. Exercise-based therapies dramatically reduce mood symptoms by modifying neurotransmitter activity, according to a 2023 study by Shah et al. These results are corroborated by the current study, which found that DRSP scores improved more than VAS scores.[51]

Recent studies addressing the psychological advantages of exercise corroborate the improvement in DRSP scores seen in this study. Regular exercise dramatically lowers anxiety, anger, and depressive symptoms linked to PMDD, according to research by Zafar et al. (2022). This corroborates the current research, which shows that core stability exercises have a good impact on behavioral and emotional symptoms. [52]

It is highly desired from a clinical standpoint to maintain low pain levels while considerably improving overall symptomatology. The results of this study suggest the use of core stability exercises as a practical, non-pharmacological, and successful intervention for treating PMDD in girls enrolled in college.

The physical, emotional, and social well-being of women in their reproductive years is greatly impacted by premenstrual dysphoric disorder, a severe and impairing type of premenstrual disturbance. PMDD is relatively common, although it is frequently underdiagnosed and undertreated, especially in young women and college-age populations.

Activities of daily living (ADL), academic achievement, interpersonal relationships, and overall quality of life are all significantly affected by PMDD. Symptoms like irritation, depression, anxiety, exhaustion, and musculoskeletal discomfort can hamper routine functioning and productivity. A higher risk of mental health problems, such as depression and suicidal thoughts, has also been connected to undiagnosed PMDD.

Pharmacological methods, including hormonal therapy and antidepressants, are the majority of current PMDD medications; however, these treatments may have adverse effects and have low adherence among young people. As a result, there is an increasing need to investigate accessible, affordable, and non-pharmacological therapies.

Exercises for core stability have drawn interest due to their potential to enhance muscle strength, posture, pain management, and functional ability. Although these exercises have demonstrated efficacy in improving physical performance and lowering musculoskeletal pain, less is known about how they affect PMDD symptoms, especially when it comes to activities of daily living and pain in college-going girls. Therefore, this study is required to assess how well core stability exercises reduce pain and enhance activities of daily living in college-going girls with PMDD.

CONCLUSION

The current study shows that core stability exercises significantly improve the management of premenstrual dysphoric disorder (PMDD) symptoms. DRSP (Daily Record of Severity of Problems) scores decreased from pre-intervention to post-intervention, indicating a significant improvement in symptom severity. This suggests that core stabilization is essential for reducing the psychological and physical symptoms of menstruation problems.

VAS pain modulation, indicating that structured exercise programs are helpful. The intervention's overall efficacy is unaffected by the little fluctuation in pain scores, which could be explained by individual variability, short intervention time, or subjective pain perception. The improvement in DRSP scores demonstrates that core stability exercises support emotional regulation in addition to physical well-being, potentially through improved circulation, neuromuscular control, and hormonal balance.

Additionally, this study is in favor of using exercise-based, non-pharmacological methods to treat PMS and PMDD. Core stability exercises are a practical intervention for long-term symptom management since they are safe, affordable, and simple to perform.

In conclusion, core stability exercises can be regarded as a successful therapeutic approach for lessening the intensity of PMS and PMDD symptoms, especially in terms of enhancing functional results and general quality of life. It is advised that bigger sample sizes and longer intervention durations be used in future studies to confirm and build upon these findings.

LIMITATIONS OF THE STUDY:

Small sample size (n = 34) limiting the generalizability of findings.

The follow-ups of the participants were not taken.

The sample size could have been a dense level of the population.

Blinding was not done.

An appreciable amount of discretion was not kept for authenticity.

FUTURE RECOMMENDATIONS OF THE STUDY:

Include larger sample sizes and randomized controlled designs.

Studies can be performed for the treatment of other underlying conditions.

The study can be continued for a longer duration, as well as the analysis, to have a proper follow-up.

The study can be performed with more specific, sophisticated outcomes

Include objective measures such as muscle strength or functional performance tests.

Explore the role of psychological interventions alongside exercise.

SUMMARY

Premenstrual dysphoric disorder (PMDD) is a prevalent disease that affects women of reproductive age. It is defined by a combination of behavioral, emotional, and physical symptoms that have a major impact on daily functioning and quality of life. Due to their safety, accessibility, and all-encompassing advantages, non-pharmacological interventions—especially exercise-based methods—are receiving more attention.The goal of the current study was to determine whether core stability exercises could lessen the intensity of symptoms in people with PMS/PMDD. These muscles work together to provide pelvic support, postural control, and trunk stability.

The Visual Analogue Scale (VAS) was used to quantify pain, and the Daily Record of Severity of Problems (DRSP) was used to measure the severity of PMS/PMDD symptoms. A sample population was chosen based on inclusion and exclusion criteria. Participants completed a systematic core stability exercise program throughout a predetermined intervention time after the initial evaluation.

According to the study's findings, core stability exercises are crucial for reducing PMS and PMDD symptoms. Enhanced neuromuscular control, better blood circulation, hormonal management, and a decrease in stress levels may all contribute to the improvement in DRSP scores. Improved pelvic support and less discomfort throughout the menstrual cycle may also result from strengthening the core muscles. Since PMDD includes a wider range of symptoms than only pain, even though the change in VAS scores was not significant, it does not compromise the intervention's overall efficacy. The multifaceted advantages of core stability exercises are highlighted by the greater improvement in DRSP scores.

In conclusion, this study supports the use of core stability exercises as a cost-effective, non- invasive, and successful treatment for PMS and PMDD symptoms. The findings highlight how crucial it is to include structured exercise regimens in regular therapeutic practice in order to enhance the general health and functioning ability of those who are impacted.

CLINICAL IMPLICATIONS:

For college-going girls with PMDD, core stability exercises can be suggested as a non- pharmacological intervention to enhance ADL and lessen overall symptom intensity.

However, a multimodal strategy (including cardiovascular exercise, relaxation techniques, and even medicinal care) may be necessary for pain management, as core exercises alone might not be adequate.

In addition to reducing pain, clinicians should concentrate on improving quality of life and functioning, as these aspects may demonstrate more significant improvements. The study shows that for people with premenstrual dysphoric syndrome, the VAS and DSRP are crucial.

The study also suggests that the Effects of Core stability Exercises on Activity of Daily Living and Pain in college-going girls diagnosed with Premenstrual Dysphoric Disorder will show tremendous growth and relief in the well-being of the patients.

To enable objective evaluation of the case of PMDD, certain scales are of utmost value. As of VAS, a pain intensity grading system to evaluate and assess the depth of the protocol required. DSRP can be used in assessing the severity and pattern of symptoms in individuals diagnosed with Premenstrual Dysphoric Disorder. It can be used in underplaying as a baseline in designing a protocol and to spread awareness of symptom patterns.

The study concludes as well as suggests that core stability has been significantly positive and is beneficial in reducing pain and improving functional performance in individuals with Premenstrual Dysphoric Disorder, and can be used in clinical and home settings.

Clinically, these findings highlight the importance of core strengthening as well as stability while exercising to functionally improve daily living and to eliminate the pain intensity, as well as the improvement in functionality.

Declarations

FUNDING:

This research received no external funding. The authors declare that no financial support was received for the conduct, analysis, preparation, or publication of this study.

References

1. Gudipally PR, Sharma GK. Premenstrual syndrome.
2. Dell DL. Premenstrual syndrome, premenstrual dysphoric disorder, and premenstrual exacerbation of another disorder. Clinical obstetrics and gynecology. 2004 Sep 1; 47(3):568-75.
3. Shamnani G, Gupta V, Jiwane R, Singh S, Tiwari S, Bhartiy SS. Prevalence of premenstrual syndrome and premenstrual dysphoric disorder among medical students and its impact on their academic and social performance. National Journal of Physiology, Pharmacy and Pharmacology. 2018 Jul 31; 8(8):1205-.
4. Roomaney R, Lourens A. Correlates of premenstrual dysphoric disorder among female university students. Cogent Psychology. 2020 Dec 31; 7(1):1823608.
5. Kaiser G, Janda C, Kleinstäuber M, Weise C. Clusters of premenstrual symptoms in women with PMDD: Appearance, stability and association with impairment. Journal of Psychosomatic Research. 2018 Dec 1; 115:38-43.
6. Fatemi M, Allahdadian M, Bahadorani M. Comparison of serum level of some trace elements and vitamin D between patients with premenstrual syndrome and normal controls: A cross-sectional study. International journal of reproductive biomedicine. 2019 Sep 22;17(9):647.
7. Dutta A, Sharma A. Prevalence of premenstrual syndrome and premenstrual dysphoric disorder in India: A systematic review and meta-analysis. Health promotion perspectives. 2021 May 19;

11(2):161.

8. Gopika AV, George S, Rose BM, Olickal JJ, Thankappan KR. Attitude towards menstruation, prevalence of premenstrual syndrome and coping mechanisms among adolescent girls in Kerala, India: a cross-sectional study. BMJ Public Health. 2025 Aug 25; 3(2).
9. Abdelmoty HI, Youssef MA, Abdallah S, Abdel-Malak K, Hashish NM, Samir D, Abdelbar M, Hosni AN, Ghafar MA, Khamis Y, Seleem M. Menstrual patterns and disorders among secondary school adolescents in Egypt. A cross-sectional survey. BMC women's health. 2015 Sep 4; 15(1):70.
10. Maekawa M, Miyamoto A, Ariyoshi H, Miura K. A survey of the menstrual status of female college students. InHealthcare 2023 Apr 12 (Vol. 11, No. 8, p. 1108). MDPI.
11. Schmidt PJ, Nieman LK, Danaceau MA, Adams LF, Rubinow DR. Differential behavioral effects of gonadal steroids in women with and in those without premenstrual syndrome. New England Journal of Medicine. 1998 Jan 22; 338(4):209-16.
12. Thakur D, Arya S, Yadav M. Premenstrual dysphoric disorder in Indian schoolgirls: Prevalence and associated demographic factors. Physiotherapy-The Journal of Indian Association of Physiotherapists. 2025 Jul 1; 19(2):141-6.
13. Eissa M. Personality and psychosocial factors affecting premenstrual syndrome. Current Psychiatry. 2010 Jan; 17(1):55-62.
14. Prasad D, Wollenhaupt-Aguiar B, Kidd KN, and de Azevedo Cardoso T, Frey BN. Suicidal risk in women with premenstrual syndrome and premenstrual dysphoric disorder: a systematic review and meta-analysis. Journal of Women's Health. 2021 Dec; 30(12):1693- 707.
15. Śliwerski A, Bielawska-Batorowicz E. Negative cognitive styles as risk factors for the occurrence of PMS and PMDD. Journal of reproductive and infant psychology. 2019 May 27; 37(3):322-37.
16. Roy N, Imran SM, Siddiky A, Sultana S, Mahmud S, Rashid R, ALmerab MM, Mamun MA. Premenstrual dysphoric disorder and its co-existence with depression, anxiety, and stress as risk factors for suicidal ideation and suicide attempts among university students in Bangladesh: A single-site survey. PloS one. 2025 Apr 1; 20(4):e0321097.
17. Yi SJ, Kim M, Park I. Investigating influencing factors on premenstrual syndrome (PMSamong female college students. BMC Women's Health. 2023 Nov 10; 23(1):592.
18. Reid RL. Premenstrual dysphoric disorder (formerly premenstrual syndrome).
19. Liguori F, Saraiello E, Calella P. Premenstrual syndrome and premenstrual dysphoric disorder's impact on quality of life, and the role of physical activity. Medicina. 2023 Nov 20; 59(11):2044.
20. Kaiser G, Janda C, Kleinstäuber M, Weise C. Clusters of premenstrual symptoms in women with PMDD: Appearance, stability and association with impairment. Journal of Psychosomatic Research. 2018 Dec 1; 115:38-43.
21. Abdul-Razzak K, Alshdaifat E, Sindiani A, Alkhatatbeh M. Severity of premenstrual symptoms among women with musculoskeletal pain: relation to vitamin D, calcium, and psychological symptoms. Journal of Medicine and Life. 2024 Apr; 17(4):397.

22. Diono H. Participatory Management of Muscles Strengthening of Core Stability and Lower Extremity to Reduce of Premenstrual Syndrome.
23. Ayyub S, Agrawal M, Sharma V, Aravind A. The effect of physical activity on premenstrual syndrome: a systematic review. Annals of Neurosciences. 2025 Oct; 32(4):315-20.
24. Hodges PW, Richardson CA. Contraction of the abdominal muscles associated with movement of the lower limb. Physical therapy. 1997 Feb 1; 77(2):132-42.
25. Yonkers KA, O'Brien PS, Eriksson E. Premenstrual syndrome. The Lancet. 2008 Apr 5; 371(9619):1200-10.
26. Hodges PW, Moseley GL. Pain and motor control of the lumbopelvic region: effect and possible mechanisms. Journal of electromyography and kinesiology. 2003 Aug 1; 13(4):361-70.
27. Barbosa MD, Guirro EC, Nunes FR. Evaluation of sensitivity, motor and pain thresholds across the menstrual cycle through medium-frequency transcutaneous electrical nerve stimulation. Clinics. 2013; 68:901-8.
28. Wallace SL, Miller LD, Mishra K. Pelvic floor physical therapy in the treatment of pelvic floor dysfunction in women. Current Opinion in Obstetrics and Gynecology. 2019 Dec 1; 31(6):485-93.
29. Bang S, Gunjal S, and Gunjal S. Effect of aerobic exercises along with core stability exercises on premenstrual symptoms in college-going girls: A combined study. Int J Phys Educ Sports Health. 2024; 11(2):301–305.
30. Jehan S, Auguste E, Hussain M, Pandi-Perumal SR, Brzezinski A, Gupta R, Attarian H, Jean-Louis G, McFarlane SI. Sleep and premenstrual syndrome. Journal of sleep medicine and disorders. 2016 Aug 3; 3(5):1061.
31. McGill S. Core training: Evidence translating to better performance and injury prevention. Strength & Conditioning Journal. 2010 Jun 1; 32(3):33-46.
32. Sapsford R. Rehabilitation of pelvic floor muscles utilizing trunk stabilization. Manual therapy. 2004 Feb 1; 9(1):3-12.
33. Salmon P. Effects of physical exercise on anxiety, depression, and sensitivity to stress: a unifying theory. Clinical psychology review. 2001 Feb 1; 21(1):33-61.
34. Akuthota V, Nadler SF. Core strengthening. Archives of physical medicine and rehabilitation. 2004 Mar 1; 85:86-92.
35. Islas-Preciado D, Ramos-Lira L, Estrada-Camarena E. Unveiling the burden of premenstrual dysphoric disorder: a narrative review to call for gender perspective and intersectional approaches. Frontiers in Psychiatry. 2025 Jan 21; 15:1458114.
36. Chekol AT, Reta Y, Ayinewa F, Hailu L, Tesema M, Wale MA. Determinants of premenstrual dysphoric disorder and associated factors among regular undergraduate students at Hawassa University Southern, Ethiopia, 2023: institution-based cross-sectional study. BMC public health. 2024 May 23; 24(1):1390.

37. Sanchez BN, Kraemer WJ, Maresh CM. Premenstrual syndrome and exercise: a narrative review. Women. 2023 Jun 20; 3(2):348-64.
38. Agrawal R, Ahmed R. A comparative study of stretching exercises versus core strengthening exercises on primary dysmenorrhea in young sedentary females. European Journal of Biomedical. 2021; 8(8):368-74.
39. American College of Obstetricians and Gynecologists. ACOG practice bulletin no. 15: Premenstrual syndrome. Obstet Gynecol. 2000; 95(4).
40. Biggs WS, Demuth RH. Premenstrual syndrome and premenstrual dysphoric disorder. American family physician. 2011 Oct 15; 84(8):918-24.
41. Endicott J, Nee J, Harrison W. Daily Record of Severity of Problems (DRSP): reliability and validity. Archives of women's mental health. 2006 Jan; 9(1):41-9.
42. Steiner M, Macdougall M, Brown E. The premenstrual symptoms screening tool (PSSTfor clinicians. Archives of women's mental health. 2003 Aug; 6(3):203-9.
43. Steiner M, Peer M, Palova E, Freeman EW, Macdougall M, Soares CN. The Premenstrual Symptoms Screening Tool revised for adolescents (PSST-A): prevalence of severe PMS and premenstrual dysphoric disorder in adolescents. Archives of women's mental health. 2011 Feb; 14(1):77-81.
44. Hwang RJ, Chen HJ, Ni LF, Liu TY, Shih YL, Chuang YO. Neurobiological effects of exercise intervention for premenstrual syndrome. Cognitive Neurodynamics. 2023 Oct; 17(5):1297-308.
45. Cabanas-Valdés R, Boix-Sala L, Grau-Pellicer M, Guzmán-Bernal JA, Caballero-Gómez FM, Urrútia G. The effectiveness of additional core stability exercises in improving dynamic sitting balance, gait and functional rehabilitation for subacute stroke patients (core-trial): Study protocol for a randomized controlled trial. International journal of environmental research and public health. 2021 Jun 19; 18(12):6615.
46. Shen H, Wang Z, Ren S, Wang W, Duan L, Zhu D, Zhang C, Duan Y. Prognostic biomarker MITD1 and its correlation with immune infiltrates in hepatocellular carcinoma (HCC). International Immunopharmacology. 2020 Apr 1; 81:106222.
47. Shimada M, Hibi M, Nakagawa T, Hayakawa T, Field CJ. High-fructose diet-induced hepatic expression of the Scd1 gene is associated with increased acetylation of histones H3 and H4 and the binding of ChREBP at the Scd1 promoter in rats. Biomedical Research. 2021 Apr 10; 42(2):85-8.
48. Tricard J, Chermat A, Bertin F. Transparenchymal thoracoscopic retrieval of a contraceptive implant pulmonary embolism. JTCVS techniques. 2022 Jun 1; 13:240-1.
49. Halberstadt AL, Chatha M, Klein AK, Wallach J, Brandt SD. Correlation between the potency of hallucinogens in the mouse head-twitch response assay and their behavioral and subjective effects in other species. Neuropharmacology. 2020 May 1; 167:107933.
50. Hemkens M, Stamp K, Loberg LI, Moreau K, Hart T. Industry perspective on the nonclinical safety assessment of heterobifunctional degraders. Drug Discovery Today. 2023 Aug 1; 28(8):103643.
51. Gao D, Wang Y, Zhang R, Zhang Y. Efficacy of acetazolamide for the prophylaxis of acute mountain sickness: A systematic review, meta-analysis and trial sequential analysis of randomized clinical

trials. The American Journal of the Medical Sciences. 2021 May 1; 361(5):635-45.

52. Gao S, Wu G, Li H, Qiao Y, Dong C. [Retracted] ALK7 Knockdown Plays a Protective Role on HG-Stimulated MCs through Activation of the Nrf2/HO-1 Pathway. Disease Markers. 2022; 2022(1):4064733.

Figures

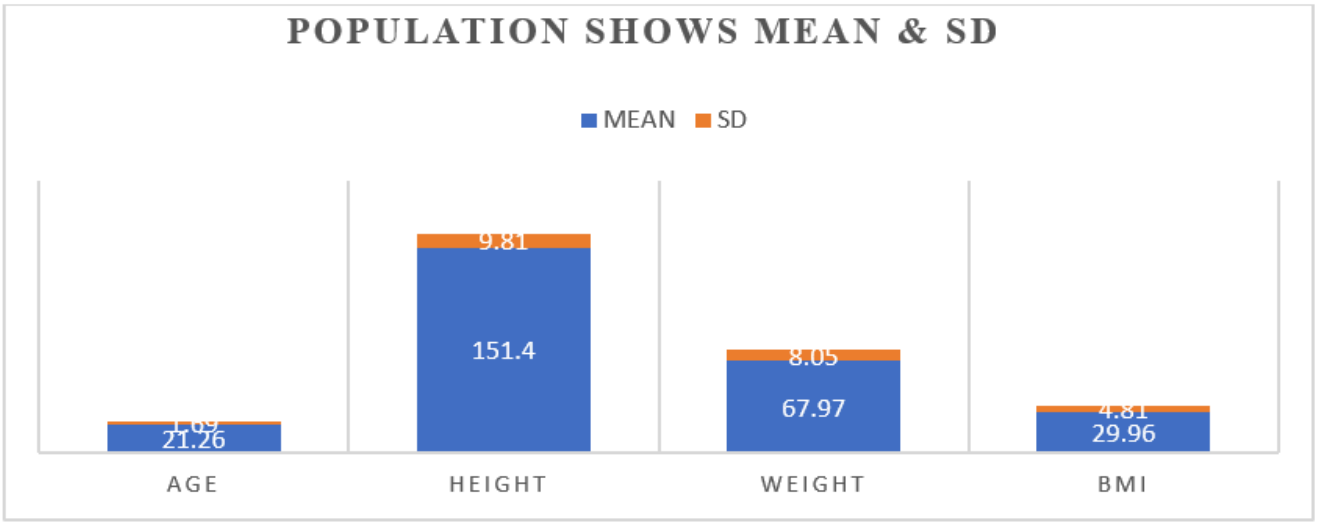


Figure 1

Graph 1: Mean of demographic details

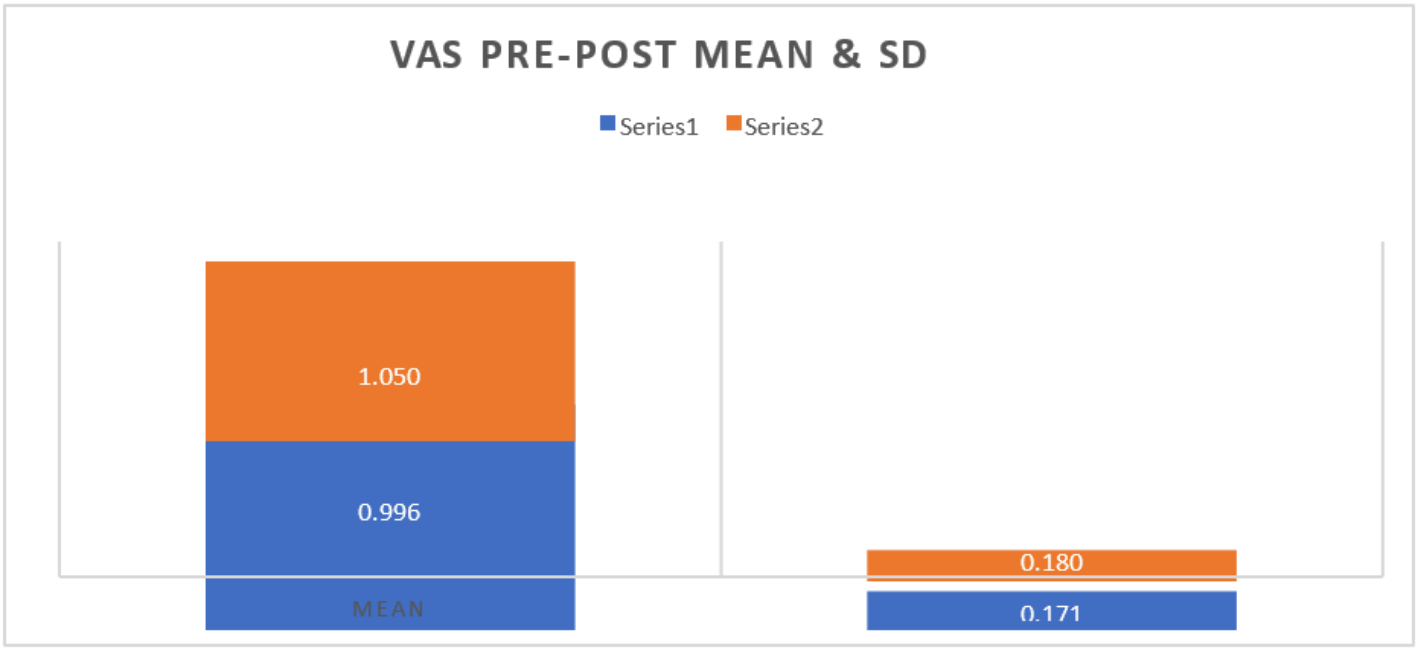


Figure 2

Graph 2: VAS Pre-Post Mean & SD