RESEARCH ARTICLE

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Study on Assessment of Knowledge, Attitude and Practice of Aerobic Exercise on Pre-menstrual Syndrome Among College-Going Students

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Abstract

Background: Pre-Menstrual Syndrome (PMS) is characterised by recurring physical and psychological symptoms such as cramps, headaches, mood swings, anxiety, and poor concentration that occur 5 to 14 days before menstruation and typically resolve at menstruation onset. These symptoms can disrupt students' daily activities and academic performance. Regular aerobic exercise has been shown to reduce the severity of both physical and emotional PMS symptoms by promoting overall well-being[1] . Objective: This study aimed to assess college students' Knowledge, Attitudes, and Practices (KAP) concerning aerobic exercise in relation to PMS management. **Methods:** In this cross-sectional study, a validated questionnaire was distributed online to 189 college students in Bangalore to assess their KAP regarding aerobic exercise and PMS. Responses were analysed using descriptive and inferential statistics. **Results:** Two-thirds of students (66%) had moderate knowledge about aerobic exercise and PMS, and 75% reported a positive attitude towards exercise. However, only 34% of students reported regular practice of aerobic exercise, indicating a significant gap between awareness and actual behaviour. Mood swings were the most commonly reported PMS symptom among participants. **Conclusion:** The findings of the study emphasise the need to encourage regular physical activity among students to better manage PMS symptoms and enhance menstrual health and overall well-being.

Major Findings: Premenstrual syndrome was common among college students and frequently affected daily activities. Although knowledge and attitude toward aerobic exercise were generally positive, regular exercise practice was limited. Preference for exercising was influenced more by awareness and motivation than by the severity of PMS symptoms.

Keywords: Adolescents, Aerobic Exercise, College Students, Knowledge, Attitude and Practice, Menstrual Health, Non-Pharmacological Management, Physical Activity, PMS

1. Introduction

The American College of Obstetricians and Gynaecologists describe PMS as a condition with recurring somatic and psychological symptoms that appear during the luteal phase of the menstrual cycle and end within four days of menstruation, without returning until at least day 13 of the cycle[1].

The prevalence of PMS in India was found to be 86%, whereas the global prevalence of PMS was found to be 48%. In 2025, a meta-analysis study noted that 75% of women suffer from at least one PMS symptom, although fewer meet the diagnostic criteria[2-4].

Diagnosis requires symptom tracking over two cycles, and symptoms must not be due to medications, hormones, or substance use. Common physical symptoms include breast tenderness, bloating, weight gain, headaches, and swelling in the hands or feet, while emotional and behavioural symptoms often involve depression, irritability, mood swings, anxiety, confusion,

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social withdrawal, trouble sleeping, changes in appetite and thirst, and difficulty concentrating. The severity of women's symptoms can vary widely, from mild discomfort to intense and disruptive effects[4,5].

One of the most defining features of PMS is the timing of symptoms in relation to the menstrual cycle. This pattern suggests that gonadal steroid hormones and their byproducts likely play a role in influencing the biological systems that help the body adapt for reproductive functioning. Interestingly, women with PMS typically do not show abnormalities in how reproductive hormones are released. Instead, they appear to have an increased sensitivity in their neuroendocrine system to the normal fluctuations of estrogen and progesterone. This increased sensitivity may trigger menstrual-related symptoms and worsen mood disturbances, especially during hormonal transition phases[6].

Researchers have explored that the role of the progesterone-to-estrogen ratio plays an important role in PMS. With a decrease in estrogen levels during the luteal phase, the synthesis of serotonin decreases. Since serotonin is a key neurotransmitter and plays a major role in the regulation of mood, satiety and appetite control, the decrease in serotonin synthesis can lead to low mood, irritability, increased food cravings and increased appetite. Hence, there is increased consumption of carbohydrate-rich food during PMS, as carbohydrate intake can temporarily boost serotonin levels and produce a calming effect. In contrast, rises in estrogen levels contribute to specific physical symptoms such as breast tenderness or water retention[6,7].

During the late luteal phase, if pregnancy does not occur, the corpus luteum degenerates, leading to a sharp decline in progesterone levels. As progesterone normally suppresses prostaglandin synthesis, this hormonal withdrawal triggers the release of large amounts of prostaglandins from the endometrium just before and during menstruation. Elevated prostaglandin levels cause powerful and irregular uterine contractions and vasoconstriction of uterine blood vessels, which results in reduced blood flow and ischemia. In addition, these chemicals sensitise pelvic pain receptors, making women more responsive to normal physical and chemical changes, thereby producing the cramping pelvic pain characteristic of primary dysmenorrhea[8].

Another common hormone responsible for PMS is the sex hormone. There is a stronger link with sex hormones and their byproducts, which interact with brain chemicals and hormones like serotonin, GABA, cholecystokinin, and the renin-angiotensin-aldosterone system.

The brain's primary inhibitory neurotransmitter, called GABA (Gamma-Aminobutyric Acid), promotes calmness and relaxation when a metabolite of progesterone called allopregnanolone interacts with GABA-A receptors. While this usually has a calming effect, some women with PMS appear to be unusually sensitive to this interaction, resulting in increased emotional instability or anxiety[6,9].

The management of Premenstrual Syndrome (PMS) requires a multifaceted approach tailored to the individual needs of each woman. Effective strategies typically include a combination of lifestyle changes, therapeutic interventions, and, when necessary, medications. Regular physical exercise has been shown to alleviate many PMS symptoms by boosting mood and reducing fatigue[10].

Dietary modifications, such as reducing caffeine, sugar, and salt intake while increasing the consumption of complex carbohydrates and calcium-rich foods, can also help manage symptoms effectively. In addition to these physical changes, managing stress through techniques such as mindfulness, yoga, or relaxation exercises is essential, as stress can exacerbate PMS symptoms. Cognitive-Behavioural Therapy (CBT) is another valuable tool that helps women reframe negative thought patterns and develop healthier emotional responses, thus improving overall well-being. Pharmacological treatment may be considered for women with moderate to severe symptoms that do not respond to lifestyle modifications. This can include the use of antidepressants, hormonal therapies, or analgesics, depending on the dominant symptoms. According to the American College of Obstetricians and Gynaecologists (ACOG), non-pharmacological treatments should be the first line of intervention for all women with PMS. These therapies are generally safe, accessible, and effective for many women, emphasising the importance of holistic and individualised care in the management of PMS[6].

Studies have suggested that engaging in regular physical activity, especially aerobic exercise at a moderate intensity, can be a helpful and natural way to manage symptoms of Premenstrual Syndrome (PMS). This type of physical activity has been shown to improve overall health by increasing important blood components, such as haemoglobin, haematocrit, red blood cells, and platelets. At the same time, it helps reduce hormone levels like prolactin, oestradiol, and progesterone, which are often linked to PMS symptoms. These hormonal and

blood-related changes brought about by aerobic exercise can lead to noticeable improvements in issues such as tiredness, lack of focus, mental confusion, and many other discomforts that women commonly experience before the onset of their menstrual cycle. Because of these benefits and the low risk of side effects, regular aerobic exercise is increasingly recommended as a safe and effective option, especially for women with mild to moderate PMS symptoms[11].

Apart from its general health benefits, aerobic exercise also has a direct impact on hormonal balance. Aerobic exercise helps to stabilise the estrogen–progesterone ratio through several interconnected mechanisms. Regular physical exercise helps break down body fat, which is an additional source of estrogen, thereby promoting the maintenance of the estrogen-to-progesterone ratio. The regulation of the hypothalamic-pituitary axis improves with regular exercise, ensuring a more consistent release of hormones. To add on, aerobic exercises reduce cortisol levels, thereby reducing stress-related disruptions in ovarian hormone production[12,13].

Understanding the relevance of hormonal regulatory exercises and their mechanism of action is particularly important for populations that experience greater hormonal fluctuations. A recent study conducted in Eastern India suggested that 27.3% of women aged between 17-24 years reported moderate to severe symptoms of premenstruation when compared to only 13% of women aged between 25-30 years who experienced mild symptoms of PMS[14]. The higher prevalence of PMS in this age group could be due to the continued maturation of ovarian hormones and the hypothalamic-pituitary-ovarian axis postmenarcheally, leading to greater fluctuations in the estrogen and progesterone levels[15]. Added to this, lifestyle and psychosocial factors such as academic stress, irregular sleep, poor dietary habits, lack of physical activity, and increased caffeine consumption are common in college students and have been linked to worsening PMS symptoms[16].

Despite the growing recognition of aerobic exercise as a safe and effective strategy to manage mild to moderate symptoms of PMS, knowledge, awareness, and practice of this approach remain limited, particularly among young women. The hormonal and circulatory changes induced by regular physical activity are known to bring about measurable relief from premenstrual challenges. However, there is still a significant gap in understanding how well-informed college-going women are about these benefits and how their attitudes influence their management choices. This study, therefore, seeks to address this gap by examining the prevalence, awareness, and perceptions related to PMS and its treatment, especially focusing on exercise as a potential non-pharmacological intervention. By exploring students' knowledge, attitude, and practice regarding PMS and exercise, this research aims to promote informed health decisions and develop supportive strategies that can enhance the well-being and daily functioning of women during the premenstrual phase[12,13].

2. Materials and Methodology

This cross-sectional study utilised a carefully constructed and validated Knowledge, Attitude, and Practice (KAP) questionnaire. The questionnaire was administered to college-going students in Bangalore using Google Forms. Female students aged 16–27 years who were currently enrolled in colleges in Bangalore were considered eligible for participation. Participants were included if they met the inclusion criteria and excluded if they had a history of menstrual irregularities in the preceding six months, were known cases of psychological or medical disorders, or were using hormonal contraception or other medications.

A total of 189 participants, aged 18–27 years, from various institutions in Bangalore met the eligibility criteria and were included in the final analysis. Ethical clearance was obtained from the Institutional Ethical Committee, and informed consent was obtained from all participants before data collection. Following consent, participants completed the questionnaire, which was designed to assess their knowledge, attitudes, and practices regarding aerobic exercise and its role in the management of Premenstrual Syndrome (PMS). Upon completion of data collection, responses were subjected to statistical analysis. The collected data were analysed to calculate and interpret KAP scores, which were used to evaluate the participants' level of knowledge, attitude, and practice related to aerobic exercise as a potential non-pharmacological intervention for premenstrual syndrome.

3. Results

The collected data were summarised using the Descriptive Statistics: frequency, percentage, mean and S.D. To assess the knowledge, attitude, and practice of aerobic exercise on premenstrual syndrome among

college going students, the frequency and percentages were used. The Pearson correlation coefficient ("r") was used to find the relation between knowledge, attitude, practice, and age (Years). To find the relation of knowledge, attitude, and practice with intensity of pain and preference for exercising, Spearman's ratio was used. The p-value < 0.05 was considered significant. Data were analysed by using the SPSS software (SPSS Inc., Chicago, IL) version 29.0.10.

Table 1. Descriptive statistics for age, intensity of pain, and preference for exercising

(n = 189)	Range	Mean	S.D.
Age (Years)	18 to 27	21.94	2.13
Intensity of pain	0 to 10	5.19	2.61
Preference for exercising	0 to 10	6.28	2.56

Age of the participants ranged from 18 to 27 years, with a mean of 21.94 ± 2.13 years; intensity of pain ranged from 0 to 10, with a mean of 5.19 ± 2.61; and the preference for exercising ranged from 0 to 10, with a mean of 6.28 ± 2.56.

Among the 189 college going students, all had the regular period cycle (100%); and none of them (0%) had an irregular period cycle. The majority of the students had the period cycles between 27 to 31 days; followed by 24 to 27 days (29.1%), and 21 to 24 days (13.2%). Over the last few months, the bleeding flow in period cycles was moderate with variation among most of the cases (66.1%); 24.9% were light and consistent; and 9% were heavy with clots. 88.9% of the girls experienced symptoms a week before the menstrual cycle starts, and 11.1% had never experienced them. The response to "rate the intensity of your pain using the 0 to 10 points scale were "zero" (5.3%), "one" (3.2%), "two" (11.1%), "three" (5.8%), "four" (11.6%), "five" (17.5%), "six" (10.6%), "seven" (15.9%), "eight" (9.5%), "nine" (3.7%), and "ten" (5.8%) (Table 2).

77.8% of the college going students heard of Premenstrual Syndrome (PMS), and 22.2% never heard about PMS. The symptoms experienced during PMS were mood swings (79.4%), back pain/breast pain (58.2%), weakness (51.9%), depression/anxiety (46%), headache

Table 2. Demographic characteristics

		Frequency	%
Is your period cycle regular or irregular?	Regular	189	100
	Irregular	0	0
How many days are your period cycles?	21-24 days	25	13.2
	24-27 days	55	29.1
	27-31 days	109	57.7
What was the bleeding flow like in your period cycles over the last 3 months?	Light and consistent	47	24.9
	Moderate with variation	125	66.1
	Heavy with clots	17	9
Do you experience any symptoms a week before your menstrual cycle starts, such as Mood swings, Depression or Anxiety, Sleep disturbance, back pain, bloating, cramps, etc.?	Yes	168	88.9
	No	21	11.1
If yes, please rate the intensity of your pain using the scale provided below:	Zero	10	5.3
	One	6	3.2
	Two	21	11.1
	Three	11	5.8
	Four	22	11.6
	Five	33	17.5
	Six	20	10.6
	Seven	30	15.9
	Eight	18	9.5
	Nine	7	3.7
	Ten	11	5.8

Table 3. Assessment of knowledge about aerobic exercise on premenstrual syndrome among college going students

Knowledge		Frequency	%
Have you heard of Pre-Menstrual Syndrome? (PMS)	Yes	147	77.8
	No	42	22.2
Which of the following symptoms do you experience during PMS?	Abdominal cramps	1	0.5
	Anger	1	0.5
	Back pain/Breast Pain	110	58.2
	Bloating	3	1.6
	Depression/Anxiety	87	46.0
	Diarrhoea	1	0.5
	Digestive issues	1	0.5
	Dizziness	1	0.5
	Excessive hunger	1	0.5
	Generalised body pain	1	0.5
	Headache	62	32.8
	Joint pain	1	0.5
	Knee pain	1	0.5
	Leg cramps	1	0.5
	Leg pain	3	1.6
	Mood Swings	150	79.4
	Nausea	2	1.1
	Pimples and bloating	1	0.5
	Reduced appetite	1	0.5
	Sleep disturbance	50	26.5
	Stomach Cramps	1	0.5
	Vomiting	2	1.1
	Weakness	98	51.9
	White discharge	1	0.5
How often do you experience the symptoms during the cycle?	Rarely	44	23.3
	Often	84	44.4
	Always	55	29.1
	Never	6	3.2
Do you think PMS affects academic performance and other activities?	Yes	141	74.6
	No	48	25.4
Can PMS be managed with lifestyle changes?	Yes	157	83.1
	No	32	16.9
Did you know that regular physical activity and other activities such as running, jogging or treadmill exercises (also known as aerobic exercises) can help in reduction of PMS symptoms?	Yes	137	72.5
	No	52	27.5

(32.8%), sleep disturbance (26.5%), bloating (1.6%), leg pain (1.6%), nausea (1.1%), vomiting (1.1%), abdominal cramps (0.5%), anger (0.5%), diarrhoea (0.5%), digestive issues (0.5%), dizziness (0.5%), excessive hunger (0.5%), generalized body pain (0.5%), joint pain (0.5%), knee pain (0.5%), leg cramps (0.5%), pimples and bloating

Table 4. Assessment of the attitude of aerobic exercise on premenstrual syndrome among college going students

Attitude		Frequency	%
Do you think PMS is a serious medical condition?	Yes	109	57.7
	No	80	42.3
How important do you think it is to prioritise menstrual health?	Very important	157	83.1
	Somewhat important	30	15.9
	Not very important	0	0
	Not at all important	2	1.1
Do you think PMS affects mental health?	Yes	173	91.5
	No	16	8.5
Should PMS/Menstrual leave be an option at the university or workplace?	Yes	157	83.1
	No	32	16.9
Is PMS a significant issue to be discussed?	Yes	164	86.8
	No	25	13.2
How do you feel about discussing PMS with friends/family?	Very comfortable	63	33.3
	Somewhat comfortable	103	54.5
	Not very comfortable	23	12.2
	Not at all comfortable	0	0
Do you feel like exercise could help reduce your PMS symptoms?	Yes	164	86.8
	No	25	13.2
If not, what is preventing you from doing so?	I'm not convinced it would work	29	15.3
	I don't have the time and resources to try it	68	36.0
	I'm worried about possible side effects or changes	17	9.0
On a scale of 0 to 10, how would you rate your preference for exercising?	Zero	4	2.1
	One	4	2.1
	Two	8	4.2
	Three	14	7.4
	Four	11	5.8
	Five	31	16.4
	Six	25	13.2
	Seven	26	13.8
	Eight	30	15.9
	Nine	7	3.7
	Ten	29	15.3
Do you believe customised exercises or working with a trainer would help manage PMS?	Yes	170	89.9
	No	19	10.1

(0.5%), reduced appetite (0.5%), stomach cramps (0.5%), and white discharge (0.5%). The response to "How often do you experience the symptoms during the cycle?" was rarely (23.3%), often (44.4%), always (29.1%), and never (3.2%). The majority of the participants perceived that PMS affects academic performance and other activities (74.6%), and 25.4% said it never affects them. Most of the college students said that PMS can be managed with lifestyle changes (83.1%), and 16.9% said it cannot be managed with lifestyle changes. 72.5% of the participants

know that regular physical activity and other activities such as running, jogging or treadmill exercises (also known as aerobic exercises) can help in the reduction of PMS symptoms; and the 27.5% were unaware of it (Table 3).

Among the 189 participants, the majority thought PMS is a serious medical condition (57.7%), and 42.3% never thought about it. Regarding the priority of menstrual health, most of the students agreed it is very important (83.1%), followed by somewhat important (15.9%), and not at all important (1.1%). 91.5% thought that PMS affects mental health, and 8.5% never thought that PMS affects mental health. 83.1% of the college going students said that PMS/Menstrual leave should be an option at university or workplace, and 16.9% said it is not an option. Most of the participants said PMS is a significant issue that needs to be discussed, and 13.2% said it is not. The response to "How do you feel about discussing PMS with friends/family?" was very comfortable (33.3%), somewhat comfortable (54.5%), not very comfortable (12.2%), and not at all comfortable (0%). The majority felt like exercises could help reduce PMS symptoms (86.8%), and 13.2% never felt. The reasons that prevent the participants from exercising to reduce PMS symptoms were "I'm not convinced it would work" (15.3%), "I don't have the time and resources to try it" (36%), and "I'm worried about possible side effects or changes" (9%). The response to "On a scale of 0 to 10, how would you rate your preference for exercising" were "zero" (2.1%), "one" (2.1%), "two" (4.2%), "three" (7.4%), "four" (5.8%), "five" (16.4%), "six" (13.2%), "seven" (13.8%), "eight" (15.9%), "nine" (3.7%), and "ten" (15.3%). Most of the participants (89.9%) believed customised exercises or working with a trainer would help manage PMS, and the 10.1% never believed it (Table 4).

The majority of the participants track their menstrual cycle (83.6%), and 16.4% never track it. Most of the cases

Table 5. Assessment of the practice of aerobic exercise on premenstrual syndrome among college going students

Practice		**Frequency**	**%**
Do you track your menstrual cycle?	Yes	158	83.6
	No	31	16.4
Do you engage in regular physical activity or other exercise programs?	Yes	97	51.3
	No	92	48.7
Do you seek any medical help while experiencing PMS symptoms?	Yes	32	16.9
	No	157	83.1
Do you stick to the steps of the exercise routine, including warming up, exercising, followed by cooling down period at the end?	Yes	70	37
	No	33	17.5
How frequently do you exercise as part of your daily routine?	2-3 days/week	51	27.5
	3-4 days/week	24	12.7
	4-5 days/week	11	5.8
	5-6 days/week	10	5.3
What type of exercise do you incorporate into your daily routine?	Brisk walking, Swimming, Dancing, cycling	59	31.2
	Jumping Jacks, Burpees, Mountain climbers	21	11.1
	Running, Jumping Rope, Boxing or Kick Boxing	17	9
How long do you typically exercise each time you work out?	Less than 30 minutes	47	24.8
	30-60 minutes	45	23.8
	More than 60 minutes	6	3.2
Have you noticed any changes in your PMS symptoms after doing aerobic exercise?	Yes	77	40.7
	No	22	11.6
Are you increasing the complexity or challenge level and the number of times you exercise?	Yes	65	34.4
	No	34	18

(51.3%) were engaged in regular physical activity or other exercise programs, and 48.7% were never engaged. The 83.1% never seek any medical help while experiencing PMS symptoms, and the 16.9% seek help. 37% of the participants stick to the steps of the exercise routine, including warming up, exercising, followed by a cooling down period at the end, and 17.5% never stick to it. The responses to "How frequent do you exercise as part of your daily routine?" were 2 to 3 days/week (27.5%), 3 to 4 days/week (12.7%), 4 to 5 days/week (5.8%), and 5 to 6 days per week (5.3%). The type of exercise that is incorporated into daily routine among the college going students was "brisk walking, swimming, dancing, cycling" (31.2%); "jumping jacks, burpees, mountain climbers" (11.1%); and "running, jumping rope, boxing or kick boxing" (9%). The majority of the students typically exercise for less than 30 minutes (24.8%) each time during the workout; 23.8% were 30 to 60 minutes; and 3.2% were more than 60 minutes. Most of the participants (40.7%) noticed changes in PMS symptoms after doing aerobic exercise, and 11.6% never noticed it. 34.4% of the students increased the complexity or challenge level and the number of times they exercise, and 18% never increased or challenged the levels and number of times they exercise (Table 5).

Table 6. Relation between knowledge, attitude, and practice

Correlations	"r"	p value
Knowledge and attitude	0.432	< 0.001*
Knowledge and practice	0.137	0.049*
Attitude and practice	0.197	0.007*

("r" = Pearson correlation coefficient; * Significant)

Table 7. Relation of knowledge, attitude, and practice with intensity of pain, and preference for exercising

		Intensity of pain	Preference for exercising
Knowledge	Spearman's ratio	0.057	0.300
	p value	0.434	< 0.001*
Attitude	Spearman's ratio	0.030	0.168
	p value	0.681	0.021*
Practice	Spearman's ratio	-0.124	0.159
	p value	0.088	0.028*

(* Significant)

The Pearson correlation coefficient ("r") was used to find the relation between knowledge, attitude, and practice of aerobic exercise on premenstrual syndrome. The knowledge, attitude, and practice were positively correlated ($p < 0.05$) with each other among the college going students (Table 6).

The Spearman's ratio was used to find the relation of knowledge, attitude, and practice with intensity of pain, and preference for exercising. The knowledge, attitude, as well as practice were positively correlated ($p < 0.05$) with preference for exercising (Table 7).

4. Discussion

This study offers a valuable insight into how college-going students experience PMS and manage it, particularly with the aid of aerobic exercise. Although PMS is a common monthly occurrence for many menstruating individuals, how they understand, perceive, and respond to it varies widely. This variation was reflected in our findings.

4.1 Awareness and Knowledge of PMS

To begin with, it's encouraging to note that most participants (77.8%) had heard of PMS. Many could correctly identify key symptoms, such as mood swings (79.4%), back or breast pain (58.2%), fatigue (51.9%), and emotional distress like depression or anxiety (46.0%). These findings align with existing literature, confirming that awareness of PMS symptoms is relatively widespread among young women[17].

However, this awareness doesn't necessarily translate into informed action. A significant minority (22.2%) of students had never even heard of PMS, and 27.5% were unaware that aerobic exercise could help alleviate its symptoms. Given that this study focused on college students, who are often assumed to be more health-literate, these gaps are both surprising and concerning. They highlight the ongoing need for accessible and relatable reproductive health education, not just in schools, but also in higher education institutions.

In this study, the average intensity of PMS symptoms reported was 5.19 (±2.61) on a 0–10 scale, with over half of the students experiencing moderate to severe discomfort. Importantly, 74.6% of participants reported that PMS interfered with their academic performance and daily activities. This highlights that PMS is more than just physical pain; it represents a significant disruption to both students' educational engagement and overall

well-being. These findings align with previous research, demonstrating that PMS adversely impacts the quality of life among female university students[18,19].

4.2 Attitude Toward PMS and Aerobic Exercise

The attitude of participants demonstrated a largely positive outlook, i.e., 91.5% agreed that PMS affects mental health, 83.1% believed menstrual leave should be available, and 86.8% felt that exercise could help reduce symptoms. Moreover, 83.1% rated menstrual health as "very important". These findings indicate that the participants perceive PMS as both a serious condition (57.7%) and a socially relevant issue worth discussing (86.8%). Such openness toward discussion is a positive cultural shift. However, barriers still exist. A significant proportion (36%) reported lack of time and resources as the main factor that prevents them from doing exercise during PMS, while[14].3% were unconvinced of its effectiveness. This highlights the gap between positive attitudes and actual behavioural adoption, a trend previously identified in KAP studies on PMS and exercise[19].

Despite the discomfort, many participants showed a positive inclination toward physical activity. While 83.1% agreed that lifestyle changes can improve PMS, only 72.5% specifically recognised aerobic exercise as an effective approach. So, while the intent is there, the action doesn't always follow, and the reasons are likely layered. Cultural stigma, lack of personalised guidance, misinformation, or even the simple fact that exercising during a painful episode feels counterintuitive could all contribute[19,20].

4.3 Practice Towards PMS and Aerobic Exercise

While the knowledge and awareness regarding PMS and the role of aerobic exercise were generally encouraging, it was important to further examine how these translated into actual practices and behavioural patterns among the students.

Interestingly, only 16.9% of students sought medical help for PMS symptoms, indicating that most preferred to self-manage or considered PMS a non-medical issue. Moreover, just 37% followed structured exercise routines including warm-up and cool-down, suggesting a lack of adherence to safe and effective exercise practices. Most participants reported exercising fewer than 3 days per week, typically less than 30 minutes per session. These findings suggest that although students may initiate exercise, frequency and duration remain below the recommended levels for therapeutic benefit.

This analysis aligns with previous studies that identified time constraints, lack of resources, and limited motivation as common barriers to exercise adherence among young women[21].

Similarly, a recent study on women with PMS reported that they often perceive lower benefits of exercise while facing higher barriers, such as lack of motivation and considering exercise inconvenient, which further explains the inconsistency in adopting structured physical activity despite awareness of its advantages[22].

The type of exercise most commonly reported was brisk walking, swimming, dancing, and cycling (31.2%), followed by bodyweight activities such as jumping jacks and mountain climbers (11.1%) and more vigorous exercises like running and boxing (9%). Such preferences may reflect accessibility, cultural acceptability, and perceived feasibility of different exercise forms. Importantly, 40.7% of participants noticed improvements in PMS symptoms after engaging in aerobic exercise, underscoring its clinical relevance.

4.4 Correlation between Knowledge, Attitude and Practice

A moderate positive correlation was found between knowledge and attitude ($r = 0.432$, $p < 0.001$), indicating that greater awareness contributes to a more positive perception of exercise in PMS management. However, the correlation of knowledge with practice was weaker ($r = 0.137$, $p = 0.049$), suggesting that even when students are aware, practical implementation remains limited. Attitude also showed a small but significant correlation with practice ($r = 0.197$, $p = 0.007$), implying that fostering a positive mindset towards exercise may encourage actual behavioural change.

In relation to pain intensity and preference for exercise, knowledge, attitude, and practice showed no significant correlation with pain severity, suggesting that symptom burden alone does not dictate engagement in preventive strategies. Instead, all three domains (knowledge, attitude, and practice) were positively correlated with preference for exercising, indicating that motivation and personal inclination play a more crucial role than pain perception. These findings are consistent with previous qualitative[23] where women with PCOS found that psychological

barriers, lack of motivation, poor knowledge, and low self-interest were stronger predictors of non-adherence to exercise than symptom severity itself. This emphasises the importance of interventions targeting behavioural motivation, structured exercise promotion, and addressing barriers such as time, resources, and misconceptions about exercise.

Taken together, these findings reveal that while knowledge and attitude towards aerobic exercise for PMS are generally positive, practices remain inconsistent and suboptimal.

5. Conclusion

The study emphasises the high prevalence of PMS symptoms, particularly mood swings. Despite awareness of its benefits, many women do not engage in regular physical activity to relieve the symptoms. Promoting exercise as a non-pharmacological intervention could significantly improve menstrual health, reduce PMS severity, and enhance overall well-being. By encouraging women to incorporate physical activity into their lifestyle, we can empower them to better manage PMS symptoms and improve their quality of life. Exercise offers a promising solution to mitigate PMS symptoms and promote women's health, making it imperative for further promotion of the incorporation of regular physical activity in daily routine, as it is the most effective, non-invasive, and non-pharmacological course of action for managing PMS.

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Author Contribution

Conceptualisation and methodology were developed by Jagrruthi N S. Data collection was carried out by Rajlakshmi Deb. Data analysis and interpretation were performed by Rajlakshmi Deb and Jagrruthi N S. Manuscript preparation and drafting were done by Jagrruthi N S. All authors contributed to manuscript revision and approved the final version.

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