Effect of Mindfulness Training on Premenstrual Syndrome among Young Females

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Abstract

Background: Premenstrual syndrome (PMS) significantly affects the daily lives of young females. Mindfulness training can empower them by providing practical techniques to manage PMS symptoms effectively, potentially reducing their reliance on medication. This study **aimed** to examine the effect of mindfulness training on premenstrual syndrome among young females. **Study Design:** A quasi-experimental one-group pre-post-test design was adopted. **Study Setting:** The Gynecological Outpatient Clinic of Sohag University Hospital, Sohag Governorate, Egypt. **Study Subjects:** A convenient sample of 84 young females was recruited. **Study Tools:** Three tools were used for data collection: a structured interview questionnaire, a modified premenstrual syndrome screening tool, and a five-factor mindfulness questionnaire. **Results:** Mindfulness training significantly reduced the total physical, behavioral, and psychological symptoms of PMS as compared to pre-intervention (45.6±9.4 vs. 77.1±9.6, respectively). Moreover, the mindfulness mean score increased significantly from pre- to post-intervention (130.9±9.3 vs. 169.6±16.5, respectively). **Conclusion:** Young females who engaged in mindfulness training demonstrated improvements in their physical, behavioral, and psychological symptoms associated with premenstrual syndrome, alongside an increase in their mindfulness scores. **Recommendation:** A mindfulness training was effective in managing, alleviating the symptoms and intensity of premenstrual syndrome. Mindfulness training program may be used as a therapy for premenstrual syndrome. Future studies should test MBSR in larger and more diverse groups of women with premenstrual syndrome.

Keywords: Mindfulness, Premenstrual syndrome & Young females

Introduction

Approximately 900 million adolescent and young females reside in developing nations out of a total of 1.8 billion young people globally. This demographic represents a significant segment of the youth population, particularly in areas where access to education, healthcare, and economic prospects may be constrained. The presence of premenstrual syndrome (PMS) among young females can significantly impact their overall well-being, manifesting in physical, psychological, and behavioral symptoms that can hinder their daily functioning **(Liu, et al., 2023)**.

The American College of Obstetricians and Gynecologists characterizes PMS as a spectrum of physical and psychological symptoms encountered by females in the reproductive age. These symptoms typically diminish shortly after the onset of menstruation. The occurrence of these symptoms, including those that are mild, is widely documented, with statistics suggesting a prevalence of 80% to 90%. While the exact causes of PMS remain unknown, hypotheses related to the hormonal cycles of the ovaries have been put forward **(Dutta & Sharma, 2021)**.

Approximately 200 mild to severe symptoms associated with PMS have been identified, a considerable number of which can significantly interfere with a female's daily life activities. Among these, psychological manifestations such as irritability, mood fluctuations, depression, anxiety, and impulsive behavior are commonly observed with this syndrome. Additionally, prevalent physical symptoms include headaches, abdominal and lower back pain, acne, nausea, weight fluctuations, constipation, and breast tenderness **(Saglam & Orsal, 2020)**.

Behavioral symptoms of PMS include poor coordination, sleep difficulties, and changes in appetite. PMS has a major and negative impact on female health and quality of life, with consequences for mental health, work productivity, and academic

achievement, visit gynecologist more frequently, increasing the cost of healthcare systems. As a result, effective non-pharmacological measures are required for PMS (**Álvarez et al., 2022**).

Unfortunately, medical therapy strategies for PMS remain a considerable issue. Over the last two decades, multiple studies have been undertaken to investigate the efficacy of various pharmacological and nonpharmacological PMS therapy options. While drugs efficiently treat PMS, they can cause gastrointestinal issues, sleep problems, sexual dysfunctions. Because PMS symptoms can be severe and long-lasting, it is critical to consider the potential adverse effects of medical therapies (**Mazaheri Asadi, et al., 2022**).

Due to the potential side effects or contraindications associated with pharmaceutical treatments for PMS, many females do not comply with medication regimens. As a result, females often turn to alternative safe and efficacious approaches, such as non-pharmacological management options, to alleviate PMS symptoms. In this context, non-pharmacological management options have shown encouraging outcomes in the management of PMS (**Askari, et al.,, 2018**).

The non-pharmacological management options are the first-line therapy choice for less severe PMS, according to the American College of Obstetricians and Gynecologists. It includes biofeedback, stress management, exercise, dietary changes, mindfulness, and cognitive-behavioral therapy. Healthcare practitioners can improve the overall well-being of females with PMS and urge them to adopt non-pharmacological techniques (**Kiloatar & Kurt, 2024**).

One of the therapeutic approaches that has shown promise in the last few years for treating PMS is mindfulness therapy. It is the practice of deliberately focusing one's attention on the present moment in a nonjudgmental way. It entails being curious about one's ideas, feelings, bodily sensations, and surroundings rather than attempting to change or evaluate them. Mindfulness can be developed by a variety of approaches, including meditation, breathing exercises, and mindful movement, and it is frequently used to reduce stress and increase emotional regulation (**Segal, et al., 2019**).

Several studies have looked into how mindfulness affects PMS. **Bluth, et al., (2015)** found that seven of the eleven PMS symptoms had a significant decrease in severity. Similarly, **Panahi & Faramarzi (2016)** discovered that females with PMS symptoms benefit from mindfulness intervention. Similarly, **Khaleghi, et al., (2019)** discovered that mindfulness training significantly increased satisfaction and decreased non-impulsive behavior in PMS-affected females.

The current study investigates the impact of mindfulness training on the daily lives of young females with PMS. The study highlights the potential benefits of mindfulness training as a non-pharmacological solution for young females suffering from PMS. The significant reduction in symptoms and increase in daily functioning show that mindfulness can be a useful approach for controlling PMS.

Significance of the study

About 80.7% of females affected by PMS experience decreased productivity at work, with 13.8% being absent during their menstrual periods. Alongside feelings of guilt and overwhelm, PMS often disrupts females' work-life balance, sometimes leading to job resignations or changes (**Loukzadeh, et al., 2024**). PMS not only negatively impacts females' reproductive health, social relationships, family dynamics, and national productivity but also imposes a broader economic and social burden (**Al-Hmaid, et al., 2024**).

Globally, 47.8% of females of reproductive age are affected by PMS. 53% of Ethiopians, 41.5% of Iranians, 43% of Indians, and 59%, 50.3%, and 66% of Turkish high school students, university students, and married women, respectively, were found to be PMS (**Dutta & Sharma, 2021; Erbil & Yücesoy, 2021; Fatemi, et al., 2019; Geta, et al., Nascimento et al., 2020**).

Furthermore, a study conducted in **2022** by **AbdelQadir et al.** discovered that PMS is a highly prevalent condition among Arab females. According to their analysis, Egypt (77.7%) has a higher prevalence of the conditions than both Jordan (72.9%) and Syria (66.3%). Moreover, the prevalence rates of psychological, physical, and behavioural symptoms of PMS in females in the United Arab Emirates were 83.0%, 79.4%, and 76.6%, respectively (**Al Sabbah, et al., 2024**).

Mindfulness training has become a popular psychological treatment in recent years, involving techniques such as meditation, breathing exercises, and body awareness, and it has emerged as a viable intervention to help control PMS symptoms (**Wielgosz, et al., 2019**). Given how PMS affects daily life and the significance of mindfulness training to empower young females by teaching them practical techniques for dealing with PMS symptoms and reducing the need for medication, the aim of this study was to examine how mindfulness influences the lives of young females suffering from PMS.

Study Aim

The current study aims to examine the effect of mindfulness training on premenstrual syndrome among young females.

Study Hypothesis

To reach the aim of this study, the following hypotheses were formulated:

Hypothesis 1: Young females who receive mindfulness training will have lower mean scores of physical, behavioral, and psychological symptoms of PMS than before.

Hypothesis 2: Young females who receive mindfulness training will have higher mean mindfulness scores than before.

Subjects and Methods

Study Design: This study used a quasi-experimental one-group pre and post-test design to investigate the impact of the independent variable (mindfulness training) on the dependent variables (premenstrual syndrome). This is one of the most common quasi-experimental study designs, in which a single set of subjects is pretested, given an intervention, and then post tested. If there is a significant difference in pre and post test scores, it can be attributed to the independent variable.

Study Setting: The study was conducted at the obstetrics and gynecology outpatient clinics of Sohag University Hospital, located in Sohag City, Egypt. Sohag University Hospital is a tertiary care and teaching hospital affiliated to the Ministry of Higher Education, offering free healthcare services to residents of both rural and urban areas within the Sohag Governorate. The outpatient clinics consist of two rooms one dedicated to obstetrics and the other to gynecological conditions. Care in the gynecology outpatient clinics is provided by two gynecologists and two nurses, operating from 9 a.m. to 1 p.m. Every month, the clinic receives over 100 cases for management.

Study Sampling: For the current study, 84 young females were invited to participate as a convenient sample. The inclusion criteria were young females aged 18 to 24, with regular menstrual cycles and no medical or psychological disorders. The exclusion criteria were young girls who had surgery in the previous three months and had used antidepressants or hormone therapy in the same time period.

Sample size: The sample size was determined using open epi: sample size **(Dean, et al., 2013)** for comparing two means' program, with a power of 80% (Zβ=0.84), a significance level of 0.05 (Zα/2=1.96), a 95% confidence interval, a margin of error (d) of 5%, and a mean total PMS score from a previous study **(Askari et al., 2018)**. The sample size was determined to be 84.

Allocation of the study subjects One hundred young females were examined for research eligibility. Ten females did not return to Sohag University Hospital's Gynecology Outpatient for follow-up, and six females refused to participate in the study. Finally, 84 young

females were eligible, and no research articipants were lost during the follow-up **(Consort Diagram)**.

Study Tools: Three tools were used for data collection.

CONSORT Diagram
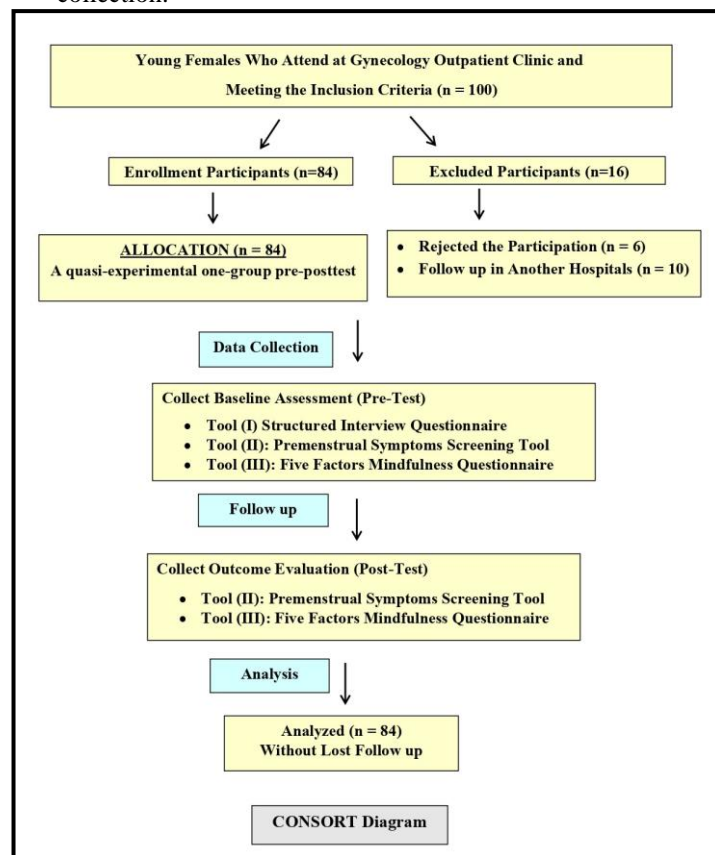
Tool (I): Structured Interviewing Questionnaire:

Tool (I): A Structured Interview Schedule was designed by the researchers after reviewing the relevant literature **(Abbas et al., 2020; Kanteret al 2016 and)**. It consists of two parts:

Part I: Biodemographic data of young females included age, residence, education, and body weight categories.

Part II: Young females' menstrual cycle included the age of menarche, the number of menstruation days, the menstrual interval, and the amount of blood flow.

Tool II: A Premenstrual Symptoms Screening Tool: It was originally developed by **Steiner, et al., (2003)** and extracted from previously conducted studies **(Bakhshani, et al., 2009; Naeimi, 2015)** and translated into Arabic to better reflect the Egyptian language with Cronbach's alpha scores for adapted premenstrual symptoms screening tool were (α=0.89) which has excellent internal consistency. The tool divided into 14 physical, 6 behavioral, and 12 psychological items. The participants rank each item as either absent, mild, moderate, or severe.

Scoring system: Scores vary from 0 to 96, with <24 indicating no PMS, 25-48 mild PMS, 49-72 moderate PMS, and >73 severe PMS. Physical symptoms range from 0 to 42, psychological problems from 0 to 36, and behavioral symptoms from 0 to 18.

Tool III: Five Factors Mindfulness Questionnaire (FFMQ)

Baer, et al., (2006) developed this questionnaire aimed at evaluating different facets of mindfulness. This questionnaire comprises 39 items, each rated on a five-point Likert scale. Responses vary from 1 (indicating "never" or "very seldom true") to 5 (representing "very often" or "always true"). The questionnaire encompasses five distinct subscales: observing, describing, acting with awareness, non-judging, and non-reactivity to inner experiences. Tool III were adopted and translated into Arabic to better reflect the Egyptian language with Cronbach's alpha were scores (α=0.76).

Scoring system: The total score for all 39 items ranges from 39 to 195. Except for the non-reactivity subscale, which ranges from 7 to 35, the scores for each subscale fall between 8 and 40. Higher scores are indicative of a heightened level of mindfulness.

Content Validity and Reliability

Three professors' experts in women's health and midwifery nursing, as well as one professor in psychiatric mental health nursing evaluated the tools' content validity to improve their clarity, relevance, completeness, simplicity, and application; only minor changes were made before releasing the final version. Three tools were translated and back-translated to guarantee their accuracy. Cronbach's alpha scores for modified premenstrual symptoms screening tool were (α=0.89) and FFMQ were (α=0.76), indicating reliability.

Study Method

Study Preparation:

Ethical Considerations: Prior to the study, the Research Ethics Committee of the Faculty of Nursing at Sohag University granted ethical approval (**IRB No. 176**) for the year **2024**. After being told about the aim and nature of the study, all young females gave their formal consent. Participants were informed that their participation in the study was voluntary and that they might withdraw at any time. Throughout the study, anonymity, privacy, safety, and confidentiality were maintained. The findings were used in research, publication, and education.

Preparation of Study Tools: After conducting an in-depth examination of relevant and current literature, the researchers formulated Tool I. Tools II, III, and IV were adopted

Preparation of Mindfulness Sessions Content: Following a thorough evaluation of relevant and current literature (**Gupta, et al, 2023; Mazaheri et al., 2022**), the researchers created content for mindfulness sessions as well as an instructional brochure. The researchers created a brochure in plain Arabic with illustrated photographs.

Study Procedure: Over a span of five months, data collection took place between May and September 2024. Researchers visited the gynecological clinic thrice weekly (on Sundays, Tuesdays, and Thursdays) from 10 a.m. to 1 p.m. After outlining the study procedures comprehensively, the pertinent authorities at the research site granted formal approval for data collection. The mindfulness sessions were structured into four distinct phases: assessment, planning, implementation, and evaluation.

Pilot Study: A pilot study of eight young females (10% of the sample) was carried out to evaluate the applicability and relevance of the study methods, as well as the clarity of the mindfulness sessions and educational brochure that were prepared. The necessary changes were made. The eight woman not included in sample size.

Assessment phase: The researchers interviewed the young females who met the inclusion criteria, obtained their informed consent to participate in the study, and collected demographic and menstrual cycle data. During the assessment process, a modified premenstrual symptoms screening instrument and a five-factor mindfulness questionnaire were used to gather baseline assessments pre mindfulness sessions.

Planning phase: The researchers established specific objectives during the planning phase to empower females in developing a realistic change plan before implementing the mindfulness training classes. These objectives included reducing stress and anxiety, enhancing emotional regulation, and improving pain management using mindfulness strategies that shift pain perception, making physical symptoms like headaches and cramps more controllable. The mindfulness sessions, which consisted of three sessions, were implemented in accordance with the defined objectives.

Implementation phase: During the implementation phase, the researchers encourage females to apply mindfulness training classes. The interview began with a warm greeting for the female participants, a brief description of the session's objectives, and the teaching technique that will be employed. The researchers separated 84 females into eight groups and conducted mindfulness sessions with seven of them that include 10 women while the eighth group included 14 females. Each group had a weekly follow-up visit, during which they received one session after the researcher scheduled a phone call to remind them of the session time. During three gynecologic follow-up visits, the researchers held sessions with each group in a waiting area at the previously mentioned site as follows:

Mindfulness Sessions		Session Objective	Session Procedure	Session Duration	Teaching Martials
1st Session	Body Scan Meditation	To raise females' awareness of PMS-associated physical symptoms, such as abdominal cramps, and promote relaxation.	Help females gently bring awareness to different parts of the body, noticing sensations without judgment.	15-20 minutes	▪ PPT Slides ▪ Discussion
	Mindful Movement	To help females managing physical symptoms such as fatigue, and muscle strain.	Help females stretch while remaining in the moment with each movement.	15-20 minutes	▪ PPT Slides ▪ Demonstration
2nd Session	Mindful Breathing	To help females in calming their nerve systems and reducing stress, which can increase PMS symptoms such as anxiety.	Help females concentrate on their breath as it travels in and out of their bodies.	10-15 minutes	▪ PPT Slides ▪ Demonstration
	Emotional Awareness Meditation	To help females reduce the intensity of mood swings and irritability.	Help females sit quietly and notice the emotions that arise, labeling them without judgment.	10-15 minutes	▪ PPT Slides ▪ Demonstration
3rd Session	Loving-Kindness Meditation	To help females alleviate irritability and low self-esteem, which are common PMS-associated emotional symptoms.	Help females think of love, kindness, and compassion for themselves and others.	15-20 minutes	▪ PPT Slides ▪ Discussion
	Gratitude Practice	To help females in improving their mood and reducing the negative emotional effects of PMS.	Encourage females to ponder on three things they are grateful for every day.	15-20 minutes	▪ PPT Slides ▪ Discussion

Evaluation phase:
One month after implementing the mindfulness training, the researchers met with female participants via coordinated phone conversations and conducted a post-test to establish the effect of mindfulness training on physical, behavioral, and psychological symptoms of PMS and mindfulness scores among female participants.

Data Analysis:
The Statistical Package for the Social Sciences (SPSS 27.0) software was employed to analyse the data.
Categorical data were represented in numbers and percentages, while quantitative variables were depicted using descriptive statistics like means and standard deviations. The paired sample t-test was utilized to assess differences in mean values before and after the intervention. For comparisons involving more than two related proportions, the Cochran's Q test was applied. All statistical tests were two-tailed, with statistical significance set at p-values less than 0.05.

Results:
The study outcomes offer insights into the profiles of the female participants, encompassing details about their menstrual history, physical, behavioral, and psychological symptoms of PMS, alongside their mindfulness scores both pre- and post-undergoing mindfulness training.

Table (1): General characteristics of the studied females (N=84)

Variables	Studied Females (N=84)	
	Frequency	%
Age (Years)		
▪ Less than 20	54	64.3
▪ More than 20	30	35.7
Residence		
▪ Urban	40	47.6
▪ Rural	44	52.4
Education		
▪ Secondary	50	59.5
▪ University	34	40.5
Body weight categories		
▪ Normal	52	61.9
▪ Overweight	30	35.7
▪ Obese	2	2.4
Body Mass Index (BMI) (Kg/m^2)	Mean±SD	24.6±3.1

SD: Standard Deviation.

Table (2): Menstrual history of the studied females (N=84)

Variables	Studied Females (N=84)	
	Frequency	%
Age of menarche (Years)		
▪ 9-12	18	21.4
▪ 12-15	54	64.3
▪ 15-18	12	14.3
Menstrual interval		
▪ 21-30 days	84	100.0
Number of menstruation days		
▪ 3-5 days	54	64.3
▪ >5 days	30	35.7
Daily Pad change		
▪ 2-3	84	100.0
Menstrual pain experience		
▪ Mild to moderate pain	30	35.7
▪ Severe pain	42	50.0
▪ Very severe pain	12	14.3

Table (3): Physical symptoms of premenstrual syndrome pre and post mindfulness training among the studied females (N=84)

Variables		Pre-Mindfulness Training	Post-Mindfulness Training	p-value
Physical symptoms n (%)	No	0 (0.0)	26 (31.0)	P<0.001[a]
	Mild	0 (0.0)	56 (66.7)	
	Moderate	14 (16.6)	2 (2.4)	
	Severe	70 (83.4)	0 (0.0)	
Physical symptoms score		36.00±2.4	23.01±13.9	P<0.001[b*]

*a: Cochran's Q test;   b: Paired sample t-test;   * Statistically significant (p<0.05).*

Table (4): Behavioral symptoms of premenstrual syndrome pre and post mindfulness training among the studied females (N=84).

Variables		Pre-Mindfulness Training	Post-Mindfulness Training	p-value
Behavioral symptoms n (%)	No	0 (0.0)	80 (95.2)	P<0.001[a]
	Mild	0 (0.0)	3 (3.6)	
	Moderate	72 (85.7)	1 (1.2)	
	Severe	12 (14.3)	0 (0.0)	
Behavioral symptoms score		13.2±2.8	6.7±2.3	P<0.001[b*]

*a: Cochran's Q test;   b: Paired sample t-test;   * Statistically significant (p<0.05).*

Table (5): Psychological symptoms of premenstrual syndrome pre and post mindfulness training among the studied females (N=84).

Variables		Pre-Mindfulness Training	Post-Mindfulness Training	p-value
Psychological symptoms n (%)	No	0 (0.0)	68 (80.9)	P<0.001[a]
	Mild	0 (0.0)	11 (13.2)	
	Moderate	57 (67.9)	5 (5.9)	
	Severe	27 (32.1)	0 (0.0)	
Psychological symptoms score		28.0±1.8	15.8±7.9	P<0.001[b*]

*a: Cochran's Q test;   b: Paired sample t-test;   * Statistically significant (p<0.05).*
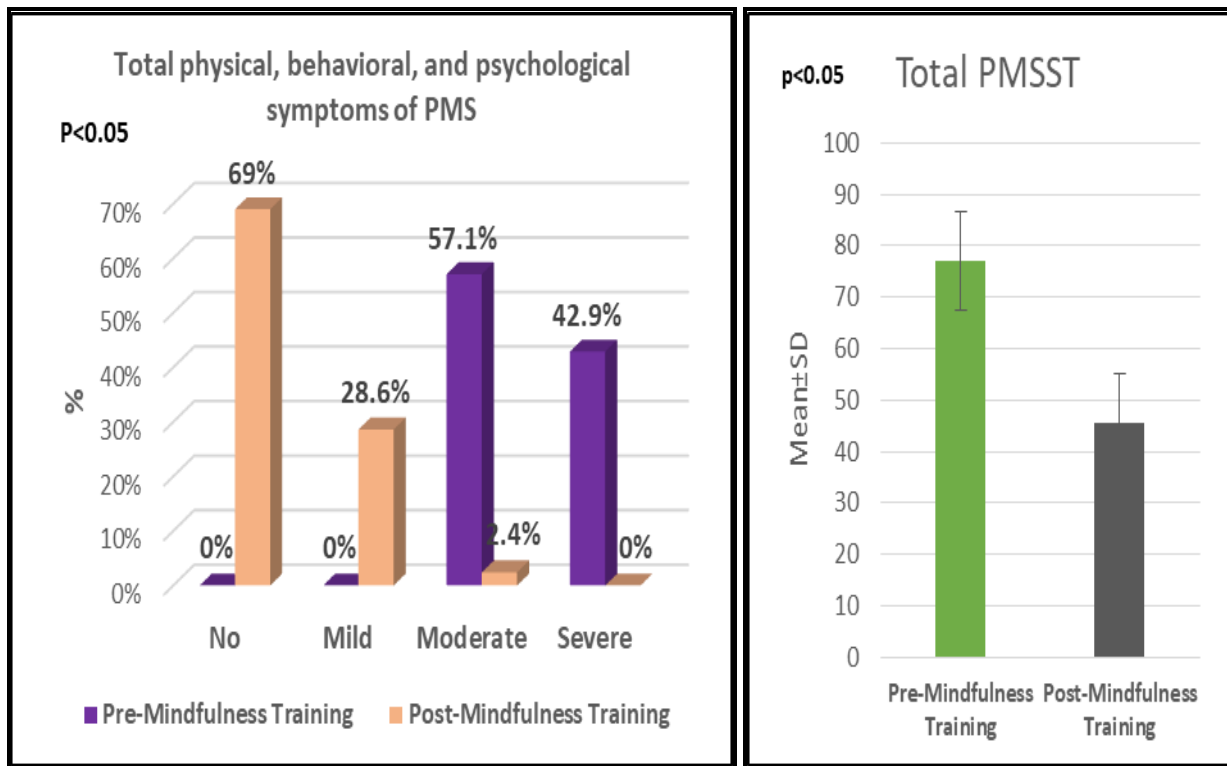

Figure (1): Total physical, behavioral, and psychological symptoms of PMS pre and post mindfulness training among the studied females (N=84).
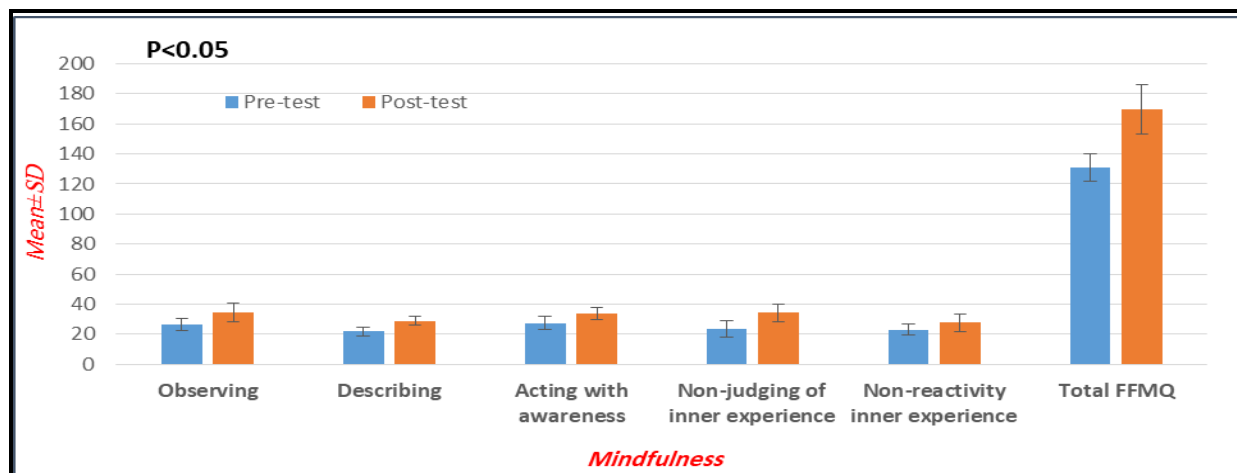
Figure (2): Error bars of mindfulness measured by the Five Factors Mindfulness Questionnaire (FFMQ) among the studied females (N=84).

Table (1): Summarizes the general characteristics of the female participants. The age distribution shows that 64.3% of participants are under 20. More than half of females resided in rural areas (52.4%), and 59.5% of them completed secondary education. Regarding weight categories, 61.9% were classified as having normal weight, and the mean BMI is 24.6 ± 3.1 kg/m^2.

Table (2): Presents that (64.3%) of participants reached menarche between the ages of 12 and 15 years, and all participants had a menstrual interval frequency of 21-30 days. In terms of menstrual days, (64.3%) reported a duration of 3-5 days, with (100%) reporting 2-3 pad changes per day, and (50.0%) of them reported had severe menstrual pain.

Table (3): Shows a significant shift in the physical symptoms of PMS from (83.4%) reported severe symptoms in the pre-mindfulness training to (31.0%) reported no symptoms in the post-mindfulness training, with a notable decrease in the total mean physical symptoms score from 36.00 ± 2.4 to 23.01 ± 13.9.

Table (4): Displays significant improvements in the behavioral symptoms of PMS, with reduction in moderate and severe behavioral symptoms post-mindfulness training, leading to a decrease in the total mean behavioral symptoms score from 13.2 ± 2.8 pre-mindfulness training to 6.7 ± 2.3 post-mindfulness training.

Also, it can be seen in **Table (5):** that the psychological symptoms improved, with a decrease in severe symptoms from 32.1% pre-mindfulness training to 0.0% post-mindfulness training and a reduction in the total mean psychological symptoms score from 28.0 ± 1.8 to 15.8 ± 7.9.

Figure (1): Highlighted an improvement in the total physical, behavioral, and psychological symptoms of premenstrual symptoms post-mindfulness training,

significantly reducing the total PMS mean score from 77.1 ± 9.6 pre-mindfulness training to 45.6 ± 9.4 post-mindfulness training.

Figure (2): Presents significant improvements in mindfulness levels from the pre- to post-mindfulness training across all measured factors: observing, describing, acting with awareness, non-judging of inner experience, non-reactivity inner experience, and the overall total FFMQ score, with all changes being statistically significant ($p < 0.05$).

Discussion

Premenstrual syndrome (PMS) is a significant health issue affecting females of reproductive age. Mindfulness training has received attention as a potential treatment for a variety of health concerns, including PMS. Research on its effects on young females with PMS suggests several crucial areas where mindfulness can help in daily life (**Şener Çetin & Şolt Kırca, 2023**). The aim of the current study was to investigate how applying the mindfulness training regarding premenstrual syndrome impacted young female's daily lives.

The study's main findings were that young females who underwent mindfulness training had lower mean scores for physical, behavioral, and psychological symptoms of PMS and higher mean mindfulness scores. These findings supported the study's hypotheses that **Hypothesis 1:** Young females who receive mindfulness training will have lower mean scores of physical, behavioral, and psychological symptoms of PMS than before. **Hypothesis 2:** Young females who receive mindfulness training will have higher mean mindfulness scores than before.

The current study looked at the young female's physical and behavioral symptoms associated to PMS pre- and post-mindfulness training. The study found significant decreases ($P<0.001^{b*}$) in the mean

physical and behavioral symptoms scores post-mindfulness training. These findings can be attributed to the therapeutic benefits of the mindfulness training delivered to the study's females, which raised females' experiences and acceptance of their physical and behavioral symptoms, such as discomfort in PMS. As a result, their attention and hypersensitivity to reporting these symptoms declined, and their awareness of the physiologic process of menstruation improved, allowing them to better adapt to it and the resulting physiological changes.

The present study findings are in line with **Mazaheri Asadi, et al., (2022) they** aimed at examining the effect of mindfulness training mobile app on PMS among Iranian women. Their study found that the intervention significantly reduced the PMS' physical and behavioral symptoms in the intervention group (P < 0.001). Similarly, another Iranian study conducted by **Askari et al., (2018)** aimed at discovering the mindfulness effects on PMS among females' students. Their study found that mindfulness sessions significantly reduced the mean score of physical and behavioral symptoms in the intervention group (P < 0.001).

The current study indicated that mindfulness training significantly reduced psychological symptoms of PMS in female participants (P<0.001[b*]). This finding can be explained by the fact that mindfulness training helps female participants become fully aware of their thoughts and feelings, accept them without judgment, stay calm and focused, and gain control over their thoughts, anxiety, and emotions. As a result, mindfulness therapy helps women in establishing an outstanding ability to cope with the psychological symptoms of PMS.

The results of the present study aligned with those of a study conducted in **2021** by **Enayat, et al.,** aimed at exploring the effect of mindfulness training on depression, anxiety, and stress in women with PMS. Their results showed that mindfulness training significantly reduced depression, anxiety, and stress in females with PMS (P<0.05). Similarly, **Shabani & Khalatbari (2019),** which investigated the impact of mindfulness training on the psychological well-being of women with PMS, they found the difficulties with emotion regulation significantly reduced after 8 sessions of a mindfulness program (P<0.001). Likewise, **Panahi & Faramarzi (2016)** also found the anxiety and depression symptoms significantly reduced (P<0.001) after applying 8 weeks of mindfulness sessions.

Concerning the total physical, behavioral, and psychological symptoms of premenstrual symptoms among the female participants, the results of the current study showed that, a significant reduction in the total PMS mean score post-mindfulness training (p<0.05). In this regard, it could be said that this is a logical finding in our current study because, post-mindfulness training, the female participants applied mindfulness practices such as deep breathing, meditation, and mindful observation that helped them promote more consistent self-care routines and healthier lifestyle choices, such as improved diet, exercise, and sleep habits, all of which can positively influence PMS symptoms and improved mood stability during the menstrual cycle. Consequently, the overall impact of PMS on females' daily lives improved.

The results of the present study are consistent with research done in **2020** by **Abbas et al.,** which looked at how Pakistani women's daily lives were impacted by psychological and physical symptoms of PMS. According to their study, the majority of women with PMS said that their menstrual cycle caused disturbances to their daily schedule and activities. Also, **Tayel, et al., (2018)**, investigated the association between mindfulness and PMS in Egyptian females. They proposed that mindfulness training be provided to improve its implementation in daily life.

The current study found significant improvements in mindfulness levels among female participants using the FFMQ, including observing, describing, acting with awareness, non-judgment of inner experience, non-reactivity inner experience, and overall total FFMQ score. All changes were statistically significant (p < 0.05). **Chien et al., (2020)** provide support for these findings. They found a significant correlation (p < 0.05) between the mean scores of the five components and improved outcomes for all participants after a mindfulness program. Similarly, **Tayel et al., (2018)** reported in their study that females' scores in all subscales of mindfulness varied from more than half to more than two-thirds, with a moderate degree in all subscales of FFMQ, namely, observing, describing, acting with awareness, non-judgmental, and non-reactivity, respectively.

Conclusion

Based on the results of the present study, young females who engaged in mindfulness training demonstrated improvements in their physical, behavioral, and psychological symptoms associated with premenstrual syndrome, alongside an increase in their mindfulness scores.

Recommendations

- Offer mindfulness training classes at gynecological outpatient clinics to support young females in effectively managing and alleviating the symptoms and intensity of PMS.

- Disseminate informative booklets that educate females on utilizing mindfulness techniques like deep breathing and meditation to mitigate the overall effects of PMS on their daily lives.
- Integrate mindfulness practices into the clinical gynecological nursing syllabus.
- Conduct future studies to examine the effectiveness of mindfulness training for managing the symptoms of PMS among deaf and dumb females.

Acknowledgments

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