

Research Paper

## Efficacy of Mindfulness-Based Psychological Intervention Program on the Premenstrual Dysphoric Symptoms and Quality of Life among Late Adolescents in India

Shyla Thomas Puthusserry<sup>1\*</sup>, Clarissa F. Delariarte<sup>2</sup>

### ABSTRACT

Recently Premenstrual dysphoric disorder (PMDD) is considered a severe form of premenstrual syndrome that usually becomes problematic during late adolescence and can affect their Quality of life. The non-pharmacological approach is recommended to reduce the severity of the symptoms early without causing side effects. From this perspective, the current study scrutinized the efficacy of the Mindfulness-based psychological intervention (MPI) program based on Mindfulness-based cognitive-behavioral theory and The Leventhal self-regulation model in reducing PMDD symptoms and improving the Quality of life of college students. The study was executed in three phases, based on the main three elements of Conklin's (1997) program development model, namely (1) planning, (2) design and implementation, and (3) evaluation. As mixed-method research, a sequential exploratory design was used in the program development phase. Its efficacy is tested in the evaluation phase using a "randomized controlled trial" of two groups comprising 36 college students. Eighteen participants each were assigned to experimental and control groups. Participants' demographic details, Premenstrual Symptom Screening Tool (PSST) by Steiner 2003 and WHO Quality of Life-Bref (WHOQOL), and Interview-FGD Protocol were used as assessment tools. The experts' evaluation of the MPI program revealed excellent inter-rater reliability (.845). MANOVA and Paired t-tests were used for data analyses to measure the extent of the effect of the program. The results of MANOVA revealed MPI program had a statistically significant impact on PMDD symptoms and Quality of life ( $F [5,30] = 189.44$ ,  $p < 0.05$ ) among the participants, and Paired t-test was significant at a 0.05 level. Indicates that MPI can be recommended as a psychological intervention in alleviating PMDD symptoms and improving Quality of life. Future research should examine the impact of the intervention on other levels of education and working young female populations.

**Keywords:** *Premenstrual dysphoric disorder (PMDD) symptoms, Quality of life, Mindfulness-based psychological intervention, and Late adolescents*

<sup>1</sup>Graduate school, Santo Tomas University, Philippines

<sup>2</sup>Graduate school, Santo Tomas University, Philippines & Far Eastern University & De La Salle University

\*Corresponding Author

Received: August 23, 2022; Revision Received: October 18, 2022; Accepted: November 05, 2022

© 2022, Shyla, T. P. & Clarissa, F. D.; licensee IJIP. This is an Open Access Research distributed under the terms of the Creative Commons Attribution License ([www.creativecommons.org/licenses/by/2.0](http://www.creativecommons.org/licenses/by/2.0)), which permits unrestricted use, distribution, and reproduction in any Medium, provided the original work is properly cited.

**P**remenstrual Dysphoric Disorder (PMDD) is the severe form of menstrual distress experienced among reproductive-age women, which drastically affects their quality of life (Gowshika et al., 2021). Furthermore, Premenstrual manifestations significantly impact the quality of life among young women, increase medical services use, and lessen work-related productivity (Geta et al., 2020). A previous study also highlighted that if the importance of premenstrual distress is ignored and left untreated during adolescence, when these young women are exposed to more environmental or personal stress, symptoms intensify. Further, it can devastate their Health and Quality of life (Minichil et al., 2020) because this quality of life is an idea regularly influenced by the person's mental, physical state, social relations, and environmental elements (Moudjahid et al., 2019). A study conducted on teenagers' quality of life reported that a severe form of premenstrual syndrome (PMDD) is associated with a higher rate of self-harm behavior (suicide), accidents, absenteeism, poor performance in studies, and acute mental health problems (Malhotra et al., 2020).

Premenstrual dysphoric disorder (PMDD), which is classified as a severe variant of premenstrual syndrome (PMS), has been added to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) under the heading of major depressive disorder (APA, 2013). This disorder is diagnosed when five of the eleven symptoms appear during the penultimate week of the luteal phase. Depressed mood, anxiety, affective lability (sudden sadness, tears), heightened receptivity to rejection, persistent irritability, increased interpersonal conflicts, decreased interest in routine tasks, weariness, eating changes, sleep problems, a feeling of personal overload, and other physical symptoms. Although menstruation is a normal part of a woman's life, it is associated with several myths and behaviors that can lead to adverse health outcomes (Yaliwal et al., 2020). Negative images and attitudes toward menstruation place a considerable physical and psychological burden on young girls (Sivakami et al., 2019). It tends to be challenging in countries like India, where menstruation is stigmatized with restricted freedoms to discuss menstruation-related issues with others, limitations on mobility, and social interactions (McCammon et al., 2020). Perception regarding Menstruation is insufficiently acknowledged in Indian culture. Premenstrual syndrome (PMS) symptoms are also more common among girls with a poor perception of their menstruation. (Belayneh et al., 2020). One of the reasons behind this is that stressful life experiences have also been a common example of environmental and psychological elements that might lead to depressive symptoms or severe depressive disorders, such as PMDD (Younes et al., 2021, p.2). Research carried out during the pandemic supports the above statement by saying that during the COVID-19 pandemic, periods of psychological stress can affect young women's menstrual cycles and premenstrual symptoms severity (Phelan et al., 2021). Furthermore, Indian studies on this subject are relatively few, and non-pharmacological intervention programs on PMS and PMDD are not discussed. Previous research studies reported that the prevalence of psychological symptoms in PMDD is more common than somatic symptoms (Kumari & Sachdeva, 2016). But most intervention studies focused on bodily symptoms management and menstrual hygiene instead of premenstrual distress, which can drastically affect all the domains of quality of life, including social and family relationships (Victor et al., 2019). Selective Serotonin Reuptake Inhibitors (SSRIs), however, are recommended as a pharmacotherapy for treating PMDD, but SSRIs' results are intolerable to numerous women, prompting high rates of withdrawal from the treatment. Furthermore, Pharmacologic treatments have a higher risk of side effects and should only be used by people with symptoms that don't go away (Panahi & Faramarzi, 2016). Previous research also recommended that on-pharmacological treatment

## **Efficacy of Mindfulness-Based Psychological Intervention Program on the Premenstrual Dysphoric Symptoms and Quality of Life among Late Adolescents in India**

be found to eliminate the negative impact of premenstrual symptoms on the overall health of teenage females (Asgari, 2020). Thus, cognitive-behavioral therapies (CBT) have been suggested as an additional treatment approach and are routinely recommended in women with PMS and PMDD (Weise, 2018). Recently, lifestyle change and non-pharmacotherapy treatment recommendations have gained more importance than pharmacotherapy (Yilmaz-Akyuz & Aydin-Kartal, 2019). Prior research also highlighted that regular exercises such as yoga could help reduce premenstrual distress and enhance the health of female employees (Tsai, 2016). This study provides a realistic idea and takes inspiration from the construction of an intervention program to minimize premenstrual dysphoric symptoms and improve teenagers' Quality of Life as early as possible. Thus, in the current study, we combined the Mindfulness-based cognitive theory (MBCT) and Leventhal's self-regulation model of approaches to develop the MPI program to reduce the symptoms of the premenstrual dysphoric disorder and improve the quality of life of late adolescents in India. The newly developed MPI program was subjected to an experimental study to test its feasibility and efficacy. The newly developed MPI program was subjected to an experimental study to test its feasibility and efficacy. Therefore, based on the findings and needs, the following hypothesis is constructed and examined in this current study.

H0.1. There is no significant difference between the level of PMDD symptoms and Quality of Life in the Experimental and Control Group after the implementation of the intervention.

H02: Mindfulness-based Psychological Intervention program (MPI) is not an effective intervention in eliminating PMDD symptoms and enhancing the quality of life among late adolescents.

### **METHODOLOGY**

#### ***Research design***

The current study was executed in three phases, based on the main three elements of Conklin's (1997) program development model, namely (1) planning, (2) design and implementation, and (3) evaluation (cited by Franz et al., 2015). The planning phase is used for the gathering of all inputs for the research. A mixed research method, particularly the 'sequential exploratory design, was used for gathering the data. In Sequential Exploratory design, qualitative information is collected and analyzed before quantitative information is gathered and analyzed. The second phase, the Mindfulness-Based Psychological Intervention Program (MPI), was developed based on the findings of the planning phase. It also included expert evaluation and a pilot study that used one group Pretest-Posttest experimental design. The third phase is the evaluation phase, in which the true experimental research design was employed. This design allows conclusions by comparing the behaviors of different subjects assigned to experimental or control groups.

#### ***Participants***

College students who met the criteria of PMDD symptoms and poor Quality of life were randomly selected for the study based on the following inclusion criteria: 1. Young college students between 18 and 24 years old, 2. Menstruating generally for at least two years, 3. Willingness to participate in the study, 4. Not taking psychotherapy at present, and 5. They were not using support groups, relaxation techniques, or antidepressant medicines.

#### ***Measures***

**1. Personal Information Sheet.** An information sheet is a demographic questionnaire completed by participants at pre-test time. It gives basic and relevant facts for collecting the

## **Efficacy of Mindfulness-Based Psychological Intervention Program on the Premenstrual Dysphoric Symptoms and Quality of Life among Late Adolescents in India**

bio-psycho-social profile of the participants. It includes age, education, duration and regularity of menstruation, age at menarche, history of menstrual-related problems, thyroid abnormalities, financial status, and other medical conditions, along with relevant information.

**2. The Premenstrual Symptoms Screening Tool (PSST).** At McMaster University, Steiner et al. (2003) created a premenstrual symptom screening instrument based on the Diagnostic and Statistical Manual of Mental Disorders fourth edition, text revision (DSM-IV-TR) criteria. It's a self-report questionnaire with a list of psychological and physical premenstrual symptoms and a severity rating for impairment. It is divided into two parts and has 19 questions. The first section of the survey includes 14 questions about premenstrual symptoms and premenstrual dysphoric disorder (PMS/PMDD). The questionnaire's second section looks at the impact of premenstrual symptoms on many aspects of life, ranging from "not at all" to "severe." Mild/No Symptoms, Moderate to Severe PMS, and PMDD are the three categories of subjects depending on the degree of their symptoms. In terms of scoring criteria, three components are required for a diagnosis of Premenstrual dysphoric disorder. To begin with, at least one of items 1,2,3, and 4 is rated severe. Then at least four of the fourteen things must be moderate to severe. Finally, at least one of the A, B, C, D, and E categories must be rated severe. The present study recognized the PSST questionnaire's high reliability, that is, a Cronbach's alpha coefficient of .89. This finding strongly supports the previous research conducted by Maddineshat et al. (2016). They reported that the questionnaire reliability obtained a Cronbach's alpha coefficient of .90. Furthermore, this scale helps identify who does not suffer PMS or PMDD very precisely among young women in Indian society.

**3. World Health Organization Quality of Life (WHOQOL-BREF)** is a frequently used general instrument for generating a Quality of Life profile. Skevington, Lofty, and O'Connell (2004) carefully examined its validity and dependability. WHOQOL-Bref is a condensed version of their flagship instrument and is suitable for research purposes. It's a self-administered survey that takes about 10-12 minutes to complete. The 26-item scale, accessible in 19 languages, assesses Quality of Life in four domains. The four aspects are physical, mental, environmental, and social interactions. The short instrument has three explicit opposed questions, Q3, Q4, and Q26. There is no total score for WHOQOL-Bref. The respondents' answers are recorded in a Likert-type method, with a range of 1-5, while the scores for each domain range from 4-20. The subscale scores are estimated in a progressive dimension, with a high score showing greater Quality of life. This scale is well known for high reliability, such as 0.92, and is widely used by several researchers and clinicians (Kim et al., 2013). This instrument is ideal for usage in various nations due to its multi-national nature and construction on a cross-culturally delicate notion (Skevington et al. 2004).

### **4. Interview and FGD Protocol**

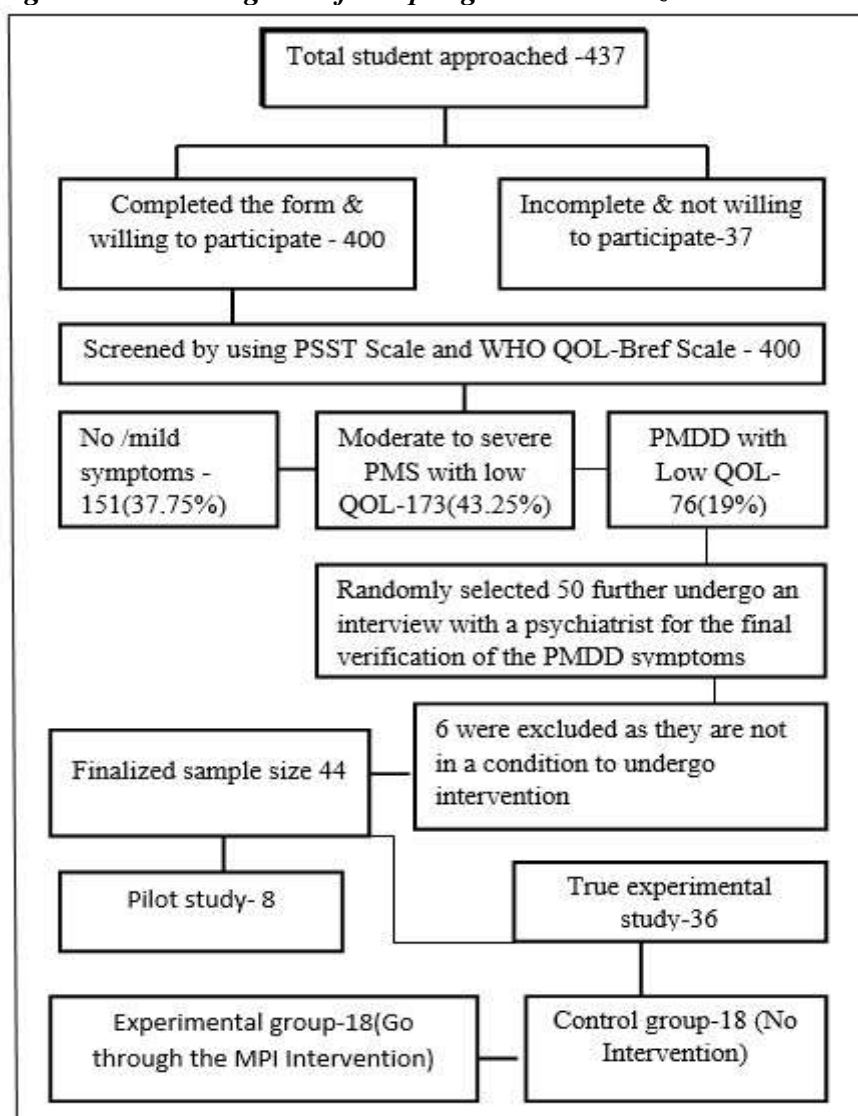
In this study, the researcher developed the interview protocols after reviewing the related literature and in the context of the research questions. Interview questions mainly focus on the four areas of life-related to PMS and PMDD: physical, psychological, sociocultural, and environmental. The interview protocol was evaluated by experts, including a clinical psychologist, psychiatrist, and gynecologist. According to the expert's evaluation feedback, the interview questions were re-arranged and used. The interview group comprised ten college students from the research participants pool who meet the study's inclusion criteria.

## Efficacy of Mindfulness-Based Psychological Intervention Program on the Premenstrual Dysphoric Symptoms and Quality of Life among Late Adolescents in India

### *Procedure and sampling*

The University of Santo Tomas (UST) Nursing school Ethics Review Committee permitted the current research study on September 16, 2021, with the protocol code of 2021 OR38. Data gathering was conducted at the end of September 2021 after the second wave of COVID-19. As a part of the development of the MPI program, 400 late adolescent college students from Karnataka, India, were initially screened. The written consent and approval were taken from the students as per relevant guidelines and regulations. The study's goal was well explained before informed consent and confidentiality were assured. It was also confirmed that participation is purely voluntary without remuneration.

**Figure 1: Flow diagram of sampling and randomization.**



### *MPI Program Development Sessions*

The development of a mindfulness-based psychological intervention (MPI) program was based on the first phase of planning, including the empirical findings, evaluation of various theoretical models in practice, and finally, the issues derived from the interview and focus group discussion (FGD) with participants and experts. The MPI program is called ***“Dare to Delightful Self-Regulation,”*** a six-modular intervention program. The first three modules

## **Efficacy of Mindfulness-Based Psychological Intervention Program on the Premenstrual Dysphoric Symptoms and Quality of Life among Late Adolescents in India**

consisted of 2 to 3 sessions, the remaining modules consisted of single sessions, and a total of 11 sessions were ordered according to the flow of the modules. The time of each session depends upon the objectives and activities of the session most of the sessions were administered for approximately 90 minutes, and a few sessions were administered for 120 minutes.

### ***Interventions details***

The combined model of this intervention program is based on the mindfulness-based cognitive theory and Leventhal's self-regulation model theories. It seeks to improve the perception of disease by increasing adolescents' awareness of their menstrual distress, and attention was given to resolving the target group's cognitive, emotional, behavioral, physical, and sociocultural issues. Furthermore, it aimed to reduce the symptoms of premenstrual dysphoric disorder, improving the target group's quality of life. For this purpose, two main hypotheses were constructed. The first module, "*Lend an ear to self*," focused on promoting a positive contract and vibration in participants and making them feel comfortable within the group. It provides an awareness of problems and concerns, increasing motivation for the group therapeutic process and the benefits of mindfulness practices. The second module, "*Procedure of guiding thoughts*," Mainly focused on dysfunctional cognition, negative perception about the illness, and self-alienation. It includes a total of 3 sessions. This module helps them to create a mindful cognitive restructuring of thought. Provides knowledge about the identity of symptoms, ideas about the Origin of menstrual distress, its impact on different aspects of life domains, duration and timeline of symptoms of distress, and direct how to cope or control negative self-thought. Previous research also reported that a person's knowledge of an illness is critical for self-care determinants. A lack of disease knowledge and negative thought process might lead to a state of vulnerability. (Asgari et al., 2020). The third module, "*Procedure of guiding emotions*," Included two sessions focused on the emotional exhaustion and transient emotions experienced by the target group related to the PMDD issues. Lack of emotional perceptions also includes negative reactions, including fear, anxiety, anger, and discomfort. The intervention facilitated the participants to acquire the necessary knowledge, skills, and coping strategies to manage and control their negative emotions. Special attention was given to stress-control techniques and relaxation skills, reducing emotional exhaustion and increasing emotional perceptions. The fourth module, "*Procedure of guiding maladaptive behavior*," focused on the target group's self-destructive and paralyzing behavior through psychoeducation on the perception of their negative behavior, consequences, and coping skills. Studies also high lights that, Mindfulness cognitive-behavioral approach helps to modify negative and abnormal thoughts and training individuals in effective adaptive mechanisms instead of self-harm behavior. The fifth module, "*Going through bodily discomfort and coping strategies*," Mainly focused on body pains, discomfort, and interruption in sleep. The Leventhal self-regulation model is used to provide a framework for the organization of participant's perceptions about their health and prepare them to minimize physical discomfort by practicing different coping strategies and exercises, including the practice of daily exercises, pain management skills, body scan meditation, sleep hygiene and practicing of muscular relaxation techniques. The main objectives of this module are to be mindful in preparation for facing the physical discomfort of the pre-menstruation phase and coping with them effectively and enhance the quality of life. The sixth module, "*Acceptance, change, and letting go through life*," focuses on the lack of freedom, social and cultural misconceptions about menstruation, and its effects on the adolescent's quality of life and health. This module focused on psycho-education-based knowledge to distinguish between good and harmful taboos and stigmas related to

## **Efficacy of Mindfulness-Based Psychological Intervention Program on the Premenstrual Dysphoric Symptoms and Quality of Life among Late Adolescents in India**

menstrual-related issues. Finally, helping the participants be in the present and taking a nonjudgmental approach to accepting the bodily changes with adequate knowledge of the illness. Finally, *the termination* session includes summing up the learning, assimilating each module's insights, and evaluating the entire intervention program.

### ***Experts Evaluation and pilot study***

A team of 6 experts actively working in mental health hospitals and other related medical and counseling fields evaluated the newly developed Mindfulness-based psychological intervention program for its content and fittingness in clinical practice for dealing with PMDD issues. An updated version of the standard evaluation form developed by the United States Agency for International Development (USAID) was given to the evaluators along with a mindfulness-based psychological program file. The evaluators were requested to validate the entire program, and the inter-rater reliability score of the newly developed intervention program was done using the appropriate statistical analysis. The results indicated that the MPI program scored an inter-rater coefficient Alpha Value of .845 and the intra-class correlation coefficient value of .859. This indicates that various factors of the MPI program were highly reliable and consistent. After the evaluation, the pilot study was conducted to randomly select 8 participants with PMDD symptoms and low quality of life. They received the 6-week MPI program face to face by following the covid-19 protocol. Since the pilot study was conducted with a small number of participants, we used the Wilcoxon signed-rank test, and the results showed a significant difference in the pretest-posttest of the PSST scale ( $Z=2.533$ ;  $p=0.011$ ) and total QOL –Bref scale ( $Z=2.527$ ;  $p=0.012$ ). This indicates that the intervention was effective and can be used on a larger population.

### ***The procedure of the evaluation phase***

In the evaluation phase, we used a true experimental design and selected 36 participants based on the inclusion criteria after the consultation of psychiatrists were randomly allotted to experimental (18) and control (18) groups. The experimental group received the six weeks MPI program and two weeks' follow-up. The control group participants were not given the MPI program and continued their routine activities. The entire intervention program was completed within two months, and the posttest was administered after the MPI implementation. The data gathered through pre-test and post-test before and after intervention were statistically analyzed to evaluate the MPI program's efficacy through the multivariate test of MANOVA and paired sample test. According to ethical considerations, after the end of the experimental study, the intervention will be made available to the control group participants.

## **RESULTS**

The experimental group participants showed remarkable positive changes after receiving the MPI intervention program compared to the control group, which did not take any intervention. MANOVA test's results on the mean and standard deviation between experimental and control group posttests scores reveal significant differences, indicating that the newly developed program effectively dealt with PMDD symptoms among late adolescents. Table 2 below shows the multivariate MANOVA test's overall results on the post-test scores of the PSST and QOL-Bref in both experimental and control groups. Table 3 indicated the multivariate test results of between subject's effects with different domains of QOL-Bref.

**Efficacy of Mindfulness-Based Psychological Intervention Program on the Premenstrual Dysphoric Symptoms and Quality of Life among Late Adolescents in India**

**Table 2 MANOVA Overall results on the post-test score of the PSST and QOL Bref in both Experimental & Control Group**

Group	Effects	Value	F	Df	df	P-Value	Partial $\eta^2$
	Wilks Lambda	0.31	189.44	5	30	0.001	.969

*P<0.05 level of Significance*

**Table 3 MANOVA Multivariate test results of between subject's effects  
MANOVA Results**

	Experimental Group M/SD	Control Group M/SD	F-Value	P-Value	Partial $\eta^2$
PSST	23.83 (3.6)	40.83 (5.69)	112.94	.001	.769
Physical	22.33 (2.42)	12.61 (2.35)	148.87	.001	.814
Psychological	22.44 (2.12)	14.6 (2.42)	104.91	.001	.755
Social	11.58 (1.40)	8.38 (1.19)	64.56	.001	.655
Environmental	26.05 (3.01)	14.66 (2.97)	130.15	.001	.793
Total QOL	82.72 (3.65)	50.33 (3.75)	686.4	.001	.953

*P=0.05 level of significance*

MANOVA overall results on the differences of mean scores and values of experimental and control groups post-test of PSST and QOL-Bref scores revealed significant differences ( $F=189.44$ ,  $P=0.01$  and Partial  $\eta^2=.969$ ). These findings indicated that the MPI program effectively reduced PMDD symptoms and enhanced the quality of life among late adolescents. Furthermore, between-group subjects' effects also show that the Intervention program was statistically significant in enhancing the quality of life's different domains and PSST (Physical:  $F=148.87$ ,  $p=0.001$ , Partial  $\eta^2=.814$ ; Psychological:  $F=104.91$ ,  $p=0.001$ , Partial  $\eta^2=.755$ ; Social:  $F=64.56$ ,  $p=0.001$ , Partial  $\eta^2=.655$ ; Environmental:  $F=130.15$ ,  $p=0.001$ , Partial  $\eta^2=.793$  and PSST:  $F=112.94$ ,  $p=0.001$ , Partial  $\eta^2=.769$ ).

**Table 4 Results of paired sample t-test of the experimental group  
Experimental Group**

	Pretest Mean/SD	Posttest Mean/SD	T Value	P Value
PSST	41.38 (5.53)	23.83 (3.69)	14.700	.001
Physical	12.38 (2.52)	22.33 (2.42)	-11.54	.001
Psychological	14.77 (2.66)	22.44 (2.12)	-9.001	.001
Social	8.83 (1.29)	11.88 (1.40)	-9.04	.001
Environmental	14.61 (3.03)	26.05 (3.01)	-13.42	.001
Total QOL	50.61 (4.46)	82.72 (3.65)	-26.60	.001

Table 4 shows the results of paired sample t-test in experimental group pretest and posttest scores in terms of PSST and QOL-Bref scale domains as well as total QOL. The outcome of the test reveals a significance difference between the pretest –posttest scores of experimental group at  $<0.05$  alpha level significance. This is an evidence that MPI program was very effective.

# Efficacy of Mindfulness-Based Psychological Intervention Program on the Premenstrual Dysphoric Symptoms and Quality of Life among Late Adolescents in India

**Table 5 Results of paired sample t-test of the control group**  
**Control Group**

	Pretest Mean/SD	Posttest Mean/SD	T Value	P Value
PSST	41.05 (5.48)	40.83 (5.69)	1.074	.298
Physical	12.27 (2.49)	12.61 (2.35)	-1.683	.111
Psychological	14.50 (2.33)	14.66 (2.42)	-.825	.421
Social	8.72 (1.36)	8.44 (1.09)	1.567	.135
Environmental	14.55 (2.99)	14.61 (2.93)	-.325	.749
Total QOL	50.05 (3.79)	50.27 (3.78)	-1.288	.215

The table 5 depicts the results of control group pretest and posttest scores of paired sample t-test. As control group is not received any intervention program the p- value indicates that there is no significant difference between the mean score of pretest and posttest scores. The pretest mean scores and standard deviation of variables (PSST: M=41.05, SD= 5.48 and QOL total: M=50.05, SD= 3.79), are almost similar to the posttest mean scores and standard deviation (PSST: M=40.83, SD= 5.69 and QOL total: M=50.27, SD= 3.78). The sub scales of quality of life also indicted that there is no any significant difference between the mean scores of control group pretest and posttest.

## DISCUSSION

The newly developed MPI program, also called “*Dare to Delightful Self-Regulation*,” is a six-modular intervention program based on the mindfulness-based cognitive theory and Leventhal's self-regulation model of theories. This combined intervention program model was validated as an effective psychotherapeutic program to reduce the severity of PMDD symptoms and improve the quality of life among late adolescent college students through a randomized control trial study. In the evaluation phase, the experimental group showed statistically significant differences in pretest and post-test scores on the PSST and QOL-Bref scales. This indicates the effectiveness of the newly developed intervention program in alleviating the PMDD symptoms and increasing the quality of life, so the study's null hypothesis was rejected.

Notable in the results of the study is the participant's feedback on mental and physical wellness after the implementation of the program. They had acquired knowledge techniques on how to regulate menstrual distress mindfully by taking care of themselves through being conscious of their monthly cycle, duration and frequency of the symptoms, level of anger and irritability, amount of sleep, daily exercises, food intake, negative perception about illness, stress relief activities, relaxation techniques, and pain-management tips for self-regulation. Furthermore, these MPI modules successively facilitated the participants to understand their negative behavioral consequences. They helped them make the required behavioral modification through frequent self-evaluation and analysis of behavioral changes before each menstruation and finally helped monitor premenstrual symptoms.

Previous studies have shown that MBCT effectively treats depressive disorders and leads to therapeutic change, such as reducing psychological distress and improving health-related quality of life (HRQOL) and well-being (Dalili & Bayazi, 2019). In addition, a randomized controlled trial study was conducted to treat adolescent girls' menstrual distress, utilizing a psychoeducational intervention based on the Leventhal self-regulation model in Iran

## **Efficacy of Mindfulness-Based Psychological Intervention Program on the Premenstrual Dysphoric Symptoms and Quality of Life among Late Adolescents in India**

revealed that education based on the Leventhal model of self-regulation has successfully reduced physical symptoms, psychological pain, perceived stress, and anxiety in individuals with premenstrual distress (Asgari, 2020). The changes experienced and reported by the participants were statistically validated before and after the implementation of the newly developed MPI program. The finding indicated that the newly developed mindfulness-based psychological intervention program caused statistically significant changes in the severity of premenstrual dysphoric disorder symptoms and enhanced quality of life. Furthermore, the students who participated in the study acknowledged that they have no power to change their environment drastically. Still, after the program, they learned to be more accepting of their limitations and the fact of life, which helped them remove their misconceptions and myths about menstrual distress. Previous research also supports that, saying, Mindfulness-based stress reduction techniques produce more direct relief of Stress and cultivate a nonjudgmental awareness of present body and mind experiences. And thereby developing a positive, healthy attitude towards the environment and establishing an adequate skill for dealing with challenging moods in life (Tomfohr et al., 2016).

### ***Participants feedback***

Most of the participants shared that intervention helped them to reduce their depression symptoms. It effectively decreased anger and irritability; increased concentration and better relationship between family members and friends, and finally changed their negative perception of menstruation. Furthermore, dairy writing and tracking of the monthly cycle enabled them to understand the symptoms better and prepared them to face it more confidently.

### ***Limitations and future recommendations***

We recognize some drawbacks in our study. Our sample size is small compared to a large population affected by severe premenstrual syndrome in India. The study was limited to teenagers between the ages of 18 and 24 who had symptoms of PMDD. Although other female age groups were also affected, the study focused only on female university students. The study was conducted soon after the second wave of COVID -19 in India for a relatively short-term period.

In conclusion, the MPI program successfully improved the quality of life among young college students by alleviating PMDD symptoms. These findings may be important for obstetricians, psychiatrists, nurses, and other health care professionals. For future studies, we strongly recommend more follow-up sessions for better and long-lasting effects. Suffice it to say that this intervention program is recommended for further studies and implementation on a broader and larger population of young female college students in different settings to confirm its efficacy.

## **COMPLIANCE WITH ETHICAL STANDARDS**

***Conflict of Interest*** On behalf of all authors, the corresponding author states that there is no conflict of interest.

***Ethics approval:*** All procedures performed in the present study involving human participants were in accordance with the University of Santo Tomas (UST) Nursing school Ethics Review Committee on September 16, 2021, with the protocol code of 2021 OR38.

## Efficacy of Mindfulness-Based Psychological Intervention Program on the Premenstrual Dysphoric Symptoms and Quality of Life among Late Adolescents in India

**Consent to participate** Each participant in the current study gave informed consent before voluntary participation. In addition, participants were briefed on the nature of the study, were assured that all data collected would be kept confidential, and that participation was purely voluntary without remuneration.

**Availability of data and material:** not applicable due to confidentiality.

### REFERENCES

- American Psychiatric Association: Diagnostic and Statistical Manual of Mental Health Disorders, 5<sup>th</sup> edition. Washington, DC, American Psychiatric Association; 2013
- Asgari, S., Alimoardi, Z., Soleimani, M. A., Allen, K.-A., & Bahrami, N. (2020). The effect of psychoeducational intervention, based on a self-regulation model on menstrual distress in adolescents: A protocol of a randomized controlled trial. *Trials*, 21(1), 747. <https://doi.org/10.1186/s13063-020-04629-z>
- Belayneh, Z., Mareg, M., & Mekuriaw, B. (2020, August 19). *How Menstruation Is Perceived by Adolescent School Girls in Gedeo Zone of Ethiopia?* [Research Article] *Obstetrics and Gynecology International*; Hindawi. <https://doi.org/10.1155/2020/3674243>
- Creswell, J.W., & Plano Clark, V.L. (2011). *Designing and conducting mixed methods research* (2<sup>nd</sup> ed.). Los Angeles, CA: Sage.
- Dalili, Z., & Bayazi, M. H. (2019). The effectiveness of Mindfulness-Based Cognitive Therapy on the illness perception and Psychological Symptoms in Patients with Rheumatoid Arthritis. *Complementary Therapies in Clinical Practice*, 34, 139–144. <https://doi.org/10.1016/j.ctcp.2018.11.012>
- Franz, N., Garst, B., & Gagnon, R. (2015). The Cooperative Extension Program Development Model: Adapting to a Changing Context. *Journal of Human Sciences and Extension*, 3, 3.
- Geta, T. G., Woldeamanuel, G. G., & Dassa, T. T. (2020). Prevalence and associated factors of premenstrual syndrome among women of the reproductive age group in Ethiopia: Systematic review and meta-analysis. *PLOS ONE*, 15(11), e0241702. <https://doi.org/10.1371/journal.pone.0241702>
- Gowshika, R., Emi, G., & Rani, D. (2021). Premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) among 10 to 30-year-old unmarried Indian girls. 3, 2582–5208.
- Kim, W. H., Hahn, S. J., Im, H. J., & Yang, K. S. (2013). Reliability and Validity of the Korean World Health Organization Quality of Life (WHOQOL)-BREF in People with Physical Impairments. *Annals of rehabilitation medicine*, 37(4), 488–497. <https://doi.org/10.5535/arm.2013.37.4.488>
- Kumari, S., & Sachdeva, A. (2016). Patterns and Predictors of Premenstrual Symptoms among Females Working in a Psychiatry Hospital. *Scientifica*, 2016, 1–7. <https://doi.org/10.1155/2016/6943852>
- Leventhal, H., Breland, J.Y., Mora, P.A., & Leventhal, E. A. (2010). Lay representations of illness and treatment: A framework for action. In A. Steptoe (Ed.), *Handbook of behavioral medicine: Methods and applications* (pp.137-154). New York: Springer.
- Maddineshat, M., Keyvanloo, S., Lashkardoost, H., Arki, M., & Tabatabaeichehr, M. (2016). Effectiveness of group cognitive-behavioral therapy on symptoms of premenstrual syndrome (PMS). *Iranian Journal of Psychiatry*, 11(1), 30–36.

**Efficacy of Mindfulness-Based Psychological Intervention Program on the Premenstrual Dysphoric Symptoms and Quality of Life among Late Adolescents in India**

- Malhotra, P., Sharma, S. K., Kaur, R., Gaur, R., & Mudgal, K. (2020). Premenstrual syndrome and health-related quality of life among young adult females at Northern India: A cross-sectional study. *Clinical Psychiatry*, 5.
- McCammon, E., Bansal, S., Hebert, L. E., Yan, S., Menendez, A., & Gilliam, M. (2020). Exploring young women's menstruation-related challenges in Uttar Pradesh, India, using the socio-ecological framework. *Sexual and Reproductive Health Matters*, 28(1). <https://doi.org/10.1080/26410397.2020.1749342>
- Minichil, W., Eskindir, E., Demilew, D., & Mirkena, Y. (2020). Magnitude of premenstrual dysphoric disorder and its correlation with academic performance among female medical and health science students at University of Gondar, Ethiopia, 2019: A cross-sectional study. *BMJ Open*, 10(7), e034166. <https://doi.org/10.1136/bmjopen-2019-034166>
- Moudjahid, A., Abdarrazak, B., & Buheji, M. (2019). *Psychology of Quality of Life and Its Relation to Psychology*. 58–63. <https://doi.org/10.5923/j.ijire.20190302.04>
- Panahi, F., & Faramarzi, M. (2016). The Effects of Mindfulness-Based Cognitive Therapy on Depression and Anxiety in Women with Premenstrual Syndrome. *Depression Research and Treatment*, 2016, 1–7. <https://doi.org/10.1155/2016/9816481>
- Phelan, N., Behan, L. A., & Owens, L. (2021). The Impact of the COVID-19 Pandemic on Women's Reproductive Health. *Frontiers in Endocrinology*, 12, 642755. <https://doi.org/10.3389/fendo.2021.642755>
- Puthusserry, S. T., & Delariarte, C. F. (2022). The Prevalence of Premenstrual Syndrome and Premenstrual Dysphoric Disorder during Covid-19 Pandemic on Late Adolescents. *North American Journal of Psychology*, 24(1), 171. <https://link.gale.com/apps/doc/A695926049/HRCA?u=anon~4e971637&sid=googleScholar&xid=f5466603>
- Sivakami, M., Maria van Eijk, A., Thakur, H., Kakade, N., Patil, C., Shinde, S., Surani, N., Bauman, A., Zulaika, G., Kabir, Y., Dobhal, A., Singh, P., Tahiliani, B., Mason, L., Alexander, K. T., Thakkar, M. B., Laserson, K. F., & Phillips-Howard, P. A. (2019). Effect of menstruation on girls and their schooling, and facilitators of menstrual hygiene management in schools: Surveys in government schools in three states in India, 2015. *Journal of Global Health*, 9(1). <https://doi.org/10.7189/jogh.09.010408>
- Skevington, S. M., Lotfy, M., O'Connell, K. A., & WHOQOL Group (2004). The World Health Organization's WHOQOL-BREF quality of life assessment: psychometric properties and results of the international field trial. A report from the WHOQOL group. *Quality of life research: an international journal of quality of life aspects of treatment, care, and rehabilitation*, 13(2), 299–310. <https://doi.org/10.1023/B:QURE.0000018486.91360.00>
- Steiner, M., Macdougall, M., & Brown, E. (2003). The premenstrual symptoms screening tool (PSST) for clinicians. *Archives of Women's Mental Health*, 6(3), 203–209. <https://doi.org/10.1007/s00737-003-0018-4>
- Tomfohr, L., Campbell, T., Giesbrecht, G., Letourneau, N., Carlson, L., Madsen, J., & Dimidjian, S. (2016). Mindfulness-based cognitive therapy for psychological distress in pregnancy: Study protocol for a randomized controlled trial. *Trials*, 17. <https://doi.org/10.1186/s13063-016-1601-0>
- Tsai, S.-Y. (2016). Effect of Yoga Exercise on Premenstrual Symptoms among Female Employees in Taiwan. *International Journal of Environmental Research and Public Health*, 13(7), 721. <https://doi.org/10.3390/ijerph13070721>
- Victor, F. F., Souza, A. I., Barreiros, C. D. T., Barros, J. L. N. de, Silva, F. A. C. da, & Ferreira, A. L. C. G. (2019). Quality of Life among University Students with Premenstrual Syndrome. *Revista Brasileira de Ginecologia e Obstetrícia / RBGO*

## Efficacy of Mindfulness-Based Psychological Intervention Program on the Premenstrual Dysphoric Symptoms and Quality of Life among Late Adolescents in India

- Gynecology and Obstetrics*, 41(05), 312–317. <https://doi.org/10.1055/s-0039-1688709>
- Weise, C. (2018). *Development and Evaluation of an Internet-based Cognitive Behaviour Therapy for Women with Premenstrual Syndrome (PMS)* (Clinical Trial Registration No. NCT01961479). [clinicaltrials.gov. https://clinicaltrials.gov/ct2/show/NCT01961479](https://clinicaltrials.gov/ct2/show/NCT01961479)
- Yaliwal, R. G., Biradar, A. M., Kori, S. S., Mudanur, S. R., Pujeri, S. U., & Shannawaz, M. (2020, July 16). *Menstrual Morbidities, Menstrual Hygiene, Cultural Practices during Menstruation, and WASH Practices at Schools in Adolescent Girls of North Karnataka, India: A Cross-Sectional Prospective Study* [Research Article]. *Obstetrics and Gynecology International*; Hindawi. <https://doi.org/10.1155/2020/6238193>
- Yilmaz-Akyuz, E., & Aydin-Kartal, Y. (2019). The effect of diet and aerobic exercise on Premenstrual Syndrome: Randomized controlled trial. *Revista de Nutrição*, 32, e180246. <https://doi.org/10.1590/1678-9865201932e18024>
- Younes, Y., Hallit, S., & Obeid, S. (2021). Premenstrual dysphoric disorder and childhood maltreatment, adulthood stressful life events and depression among Lebanese university students: A structural equation modeling approach. *BMC Psychiatry*, 21(1), 548. <https://doi.org/10.1186/s12888-021-03567-7>

### Acknowledgement

We want to thank all the participants and supporters who participated in the current study. We declare that we have no competing interests. This study was supported by Dr. Raji Mathew MBBS, MD Psychiatry as a consultant psychiatrist for further clarification of PMDD symptoms.

### Conflict of Interest

The author declared no conflict of interests.

**How to cite this article:** Shyla, T. P. & Clarissa, F. D. (2022). Efficacy of Mindfulness-Based Psychological Intervention Program on the Premenstrual Dysphoric Symptoms and Quality of Life among Late Adolescents in India. *International Journal of Indian Psychology*, 10(4), 061-073. DIP:18.01.008.20221004, DOI:10.25215/1004.008