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Effect of a psychoeducation program based on cognitive-behavioral psychodrama techniques on premenstrual syndrome symptoms: a randomized controlled trial

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ABSTRACT

Premenstrual syndrome is characterized by physical and psychological symptoms that negatively affect daily functioning. This study investigated the effect of a psychoeducation program based on cognitive-behavioral psychodrama techniques on premenstrual syndrome symptoms. This study utilized a 2 × 2 pretest-posttest, experimental-control group research design. The sample consisted of 32 participants randomized into experimental ($n = 16$) and control ($n = 16$) groups. The experimental group participated in a seven-session psychoeducation program based on cognitive-behavioral psychodrama techniques. Data were collected using a personal information questionnaire and the Premenstrual Syndrome Scale (PMSS). The experimental group demonstrated a significantly lower median posttest PMSS total and 'depressive affect', 'fatigue', 'irritability', 'depressive thoughts', 'changes in appetite' and 'changes in sleeping habits' subscale scores than the pretest score ($p < .05$). Moreover, the experimental group had a significantly lower median posttest 'anxiety' score than the control group ($p = .021$). A psychoeducational program based on cognitive-behavioral and psychodrama techniques can be used as an effective therapeutic intervention to relieve or managing premenstrual symptoms.

ARTICLE HISTORY

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KEYWORDS

Cognitive-behavioral therapy; premenstrual syndrome; psychodrama; therapeutic intervention

Introduction

Premenstrual syndrome (PMS) is characterized by physical and psychological symptoms that occur during the luteal phase of almost every menstrual cycle. Some women have only minor symptoms, whereas others may have severe symptoms that disrupt their daily lives (Van Der Leij et al., 2010). About nine out ten women have at least one PMS symptom (Fatemi et al., 2019). PMS has a complex structure of emotional, behavioral, somatic, and motor symptoms (Rapkin & Akopians, 2012). PMS symptoms are typically mild; however, 5–8% of women experience PMS with a severity

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that significantly impacts their personal and professional lives (Chin & Nambiar, 2017; Yonkers et al., 2008). The most common PMS symptoms are changes in appetite, weight gain, bloating, breast tenderness, constipation, stomachaches, headaches, fatigue, mood swings, irritability, anxiety, and restlessness (Gudipally & Sharma, 2022).

Research indicates that counseling, psychological support, psychoeducation, and psychotherapeutic interventions are effective in managing PMS symptoms (Frackiewicz & Shiovitz, 2001; Kolahi et al., 2015; Malik & Bhat, 2018; Samartzis et al., 2013; Shariati et al., 2019). Psychosocial care interventions executed by nurses ensure and sustain the well-being of women with PMS symptoms (Leonardi, 2018). Numerous psychological approaches, such as different types of therapy [interpersonal relations therapy, cognitive-behavioral therapy (CBT), brief solution-focused therapy, problem-solving therapy, humanistic-existential therapy, etc.] and mindfulness training programs have been used to improve psychosocial adjustment (Misra, 2018). Group psychotherapy encourages clients to learn faster, recognize their behaviors and attitudes, adopt new behaviors, and develop coping skills (Yalom & Leszcz, 2005). Group cognitive-behavioral therapy (GCBT) focuses on getting clients to identify triggered moods, replace automatic negative thoughts with positive alternatives, and recognize thought distortions (Treadwell et al., 2010). Research has shown that CBT reduces PMS symptoms (Basogul et al., 2020; Kancheva Landolt & Ivanov, 2021; Maddineshat et al., 2016). Psychodrama is a group therapy in which therapists use guided drama and role-playing to address underlying issues. Psychodrama helps clients recover from their mental blocks and focuses on their well-being. It also gives them hope and encourages them to make better choices in order to improve their lives (López-González et al., 2021). Psychodrama allows clients to look at themselves from the outside and see the same things from different angles or from the perspective of others, which helps them re-evaluate situations (Blatner, 2005). Therefore, psychodrama is an eclectic tool that promotes internal changes, provides insight, fosters self-awareness, enhances personal development, and stimulates cognitive-behavioral integration (Giacomucci, 2021; Treadwell & Dartnell, 2017). Treadwell et al. (2010) advocated that CBT must be integrated with psychodrama to help clients develop their self-reflection and problem-solving skills. In this context, more psychoeducational studies based on psychodrama and CBT are needed to help university students manage their PMS symptoms. Therefore, this study focused on university students, and investigated the effects of a psychoeducation program based on CBT psychodrama techniques on PMS symptoms.

Research Hypotheses

Hypothesis 1: The experimental group has significantly fewer PMS symptoms than the control group.

Methods

Design

This study utilized a 2×2 pretest-posttest, experimental-control group research design.

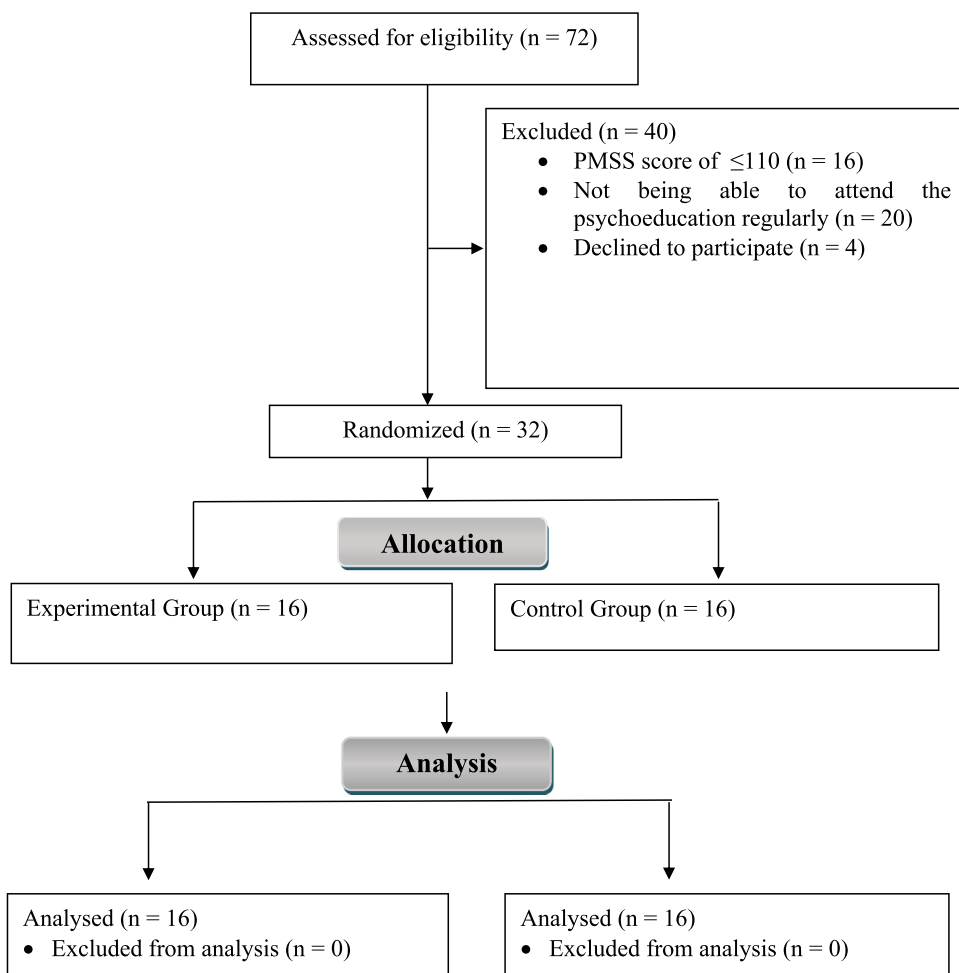


Figure 1. Consort diagram of the study.

Population and sample

The study population consisted of 72 fourth-year female nursing students from a university in northwest Turkey in the 2020–2021 academic year. All student filled out the Premenstrual Syndrome Scale (PMSS). All students with a PMSS score of ≥ 110 were briefed on the psychoeducation program (intervention) by the researchers. The sample consisted of 32 participants randomized into experimental ($n = 16$) and control ($n = 16$) groups (Figure 1).

Randomization and Blinding

Participants were randomly assigned to the experimental or control group by a statistical expert, independent of the study, at an allocation ratio of 1:1. The randomization process was performed using numbers generated on a statistical randomization website (<http://www.stattek.com/statistics/randomnumber-generator.aspx>). Because the assignment of

the participants to the experimental and control groups was performed by an independent expert, selection bias was eliminated through random assignment. The participants' data were coded as 'A' and 'B' according to group distribution by the researchers and transferred to the computer. However, because the participants were informed of the groups they were in, participant blinding could not be performed.

Intervention

The program was designed to help university students experience fewer PMS symptoms than usual. The intervention was based on CBT and psychodrama (Treadwell & Dartnell, 2017). The intervention facilitated the development of new thoughts and behaviors while fostering a safe and supportive group environment conducive to sharing feelings (Treadwell et al., 2010). The intervention involved psychodrama interventions (warm-up, role-play, and sharing) (López-González et al., 2021) and CBT-based techniques (negative automatic thoughts, emotions, and bodily sensations related to menstrual symptoms, etc.) (Wenzel et al., 2016). The sessions were planned according to the research purpose and group needs. The intervention consisted of seven sessions (one session per week). Each session lasted for 90 min. Each session consisted of two parts (40 min each) and a 10-min recess. Each week, the participants were reminded of the training by text messages before the training to increase motivation and were encouraged to complete the program. During the sessions, participants were asked to keep their notes and record their home activities. Each session concluded following feedback from participants, which informed any adjustments for subsequent sessions. They administered a pretest and posttest to determine the effectiveness of the intervention. To evaluate the effectiveness of the program, participants in the control group were not given any intervention and were instructed to continue their daily lives. To ensure equity of access to the Cognitive-Behavioral Psychodrama Techniques-Based Psychoeducation Program following research ethics, after the completion of the study, participants in the control group were informed about PMS and were given the opportunity to participate in seven group sessions. One of the researchers completed the CBT theoretical training and supervision. The other researcher completed psychodrama training and received the title of 'psychodramatist'. Researchers have supported academic research in this field.

The main themes of the sessions were as follows:

Session 1: The researchers had all members play group games to provide an environment of trust that encourages them to know each other, share their feelings and thoughts, learn about rules, and express their expectations. All members completed the PMSS as a pretest at the end of the session. *Session 2:* The researchers encouraged members to talk about what they thought PMS was and what their emotional, behavioral, and physiological symptoms were. They introduced the A-B-C model to members and performed psychodramatic practices on the emotion-thought-behavior relationship and cognitive distortions.

Session 3: While members were talking about PMS, the psychodramatist considered the previous session and had them play psychodramatic games to identify their irrational beliefs. She subsequently stopped playing the game. The therapist used techniques such as Socratic questioning, evidence-counter-evidence, down arrow, and profit-and-loss analysis to help all members recognize the irrational beliefs discussed in the previous

week and restructure their cognition. She gave them home activities to help them further recognize their irrational beliefs. *Session 4:* The psychodramatist used mapping, role-playing, and mirroring techniques to help members become aware of the emotions (anger, sadness, etc.) they experienced during their premenstrual period. She played a warm-up game to familiarize them used to the idea of role-playing. Each member then acted out the moment she experienced it during the premenstrual period. After the psychodrama scene, they provided feedback and shared their experience. The feedback showed that they recognized the emotions underlying their behavior and how they expressed their emotions more clearly.

Session 5: The psychodramatist gave each member a pen and a piece of paper and asked them to make drawings to illustrate the physical, psychological, and behavioral strains of the premenstrual period. They put some of the drawings on the stage. The researchers observed that this process helped the participants realize that their mental, physical, and behavioral challenges during the premenstrual period were similar and that they were not alone.

Session 6: Psychodramatists used a CBT framework to identify how members cope with their unwanted and self-destructive feelings, thoughts, and behaviors. She taught them diary-keeping, relaxation techniques, mindfulness, and breathing exercises.

Session 7: The researchers used spectrograms to help each member to evaluate their processes. The researchers then evaluated the group processes. Before leaving the group, all members talked about their experiences and future expectations. All members completed the PMSS posttest at the end of the session.

Data collection

Before the intervention, all participants completed a Personal Information Questionnaire and the PMSS. All the participants completed the PMSS after the intervention. It took 15–20–each participant to complete the data collection forms.

Tools

Personal information questionnaire

The personal information questionnaire consisted of eight items (age, body weight, height, age at first menstruation, menstruation duration and frequency, regularity of the menstrual cycle, and family history of PMS).

Premenstrual syndrome scale

The PMSS was developed by Gencdogan (2006) to assess the severity of PMS symptoms. The instrument consists of 44 items rated on a five-point Likert-type scale (1 = never, 2 = rarely, 3 = sometimes, 4 = very often, and 5 = always). The instrument has nine subscales: depressive affect (Items 1–7), depressive thoughts (Items 24, 26–30, 44), fatigue (Items 12, 14, 17, 18, 25, 37), irritability (Items 9–23), anxiety (Items 8–11), pain (Items 31–33), bloating (Items 41–43), changes in appetite (Items 34–36), and changes in sleeping habits (Items 38–40). The total score ranged from 44 to 220. The total score was the sum of the

subscale scores. Higher scores indicated more severe PMS symptoms. A PMSS score ≥ 110 indicated the presence of PMS symptoms. The original scale has a Cronbach's alpha of 0.75, which was 0.91 (pretest) and 0.94 (posttest) in the present study.

Data analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS, v. 25.0) at a significance level of 0.05. The normal distribution of the scores obtained from each continuous variable was examined using descriptive (skewness and kurtosis values and the ratio of standard deviation to mean), graphical (Q – Q plots), and statistical methods. The Kolmogorov–Smirnov test was used for normality testing. The results indicated that the data were not normally distributed. Moreover, the sample size was smaller than 60. Non-parametric tests were used to analyze the data. Mann–Whitney U and Chi-square tests were used to assess the homogeneity of the groups. Descriptive statistics (mean, median, interquartile range, and standard deviation) were used for quantitative variables. Numbers, percentages, and Pearson's correlation coefficients were used for categorical variables. The Mann–Whitney U test was used to compare significant differences in the pretest scale scores between the groups. The Wilcoxon Z test was used to compare pretest and posttest scores. Cohen's d values were analyzed for the effect size.

Ethical considerations

Ethical approval for the study was obtained from the ethics committee of the university hospital (date: 3 February 2020; no: 03/03) and from the institution where the research was conducted. Permission was obtained from the owners of the scale used in this study. All participants were asked whether they wanted to participate in this study after being informed of its purpose, procedure, and benefits. To protect the welfare of the participants, they were informed that participation was voluntary, they were free to quit the study at any stage, and that confidentiality was guaranteed. Informed consent was obtained from all participants who agreed to participate. Data collection and intervention procedures were initiated after obtaining participants' consent. Participants' welfare was monitored regularly throughout the intervention. All collected data were reported as group data. The Declaration of Helsinki adhered to ensure the protection of the rights of the participants.

Results

The mean age was 22.25 ± 1.43 years, mean body weight was 59.93 ± 10.17 kg, and height was 164.12 ± 7.37 cm in the experimental group. The mean age was 21.43 ± 1.75 years, mean body weight was 57.56 ± 12.25 kg, and mean height was 165.31 ± 5.85 cm in the control group. The mean age of menarche of the experimental group was 12.87 ± 1.31 years, and the mean menstruation period and menstruation frequency were 5.68 ± 1.13 days and 29.37 ± 2.68 days, respectively. The mean age of menarche of the control group was 13.50 ± 1.09 years, and the mean menstruation period and menstruation frequency were 6.12 ± 1.62 days and 29.18 ± 1.10 days,

Table 1. Comparison of sociodemographic characteristics of experimental and control groups.

	Experimental (<i>n</i> = 16)			Control (<i>n</i> = 16)		Statistics Test	p
	Mean±SD			Mean±SD			
Age	22.25±1.43			21.43±1.75		89.500 ^a	0.148
Body weight (kg)	59.93±10.17			57.56±12.25		106.50 ^a	0.423
Height (cm)	164.12±7.37			165.31±5.85		139.50 ^a	0.668
Menarche age	12.87±1.31			13.50±1.09		167.00 ^a	0.149
Menstruation period (days)	5.68±1.13			6.12±1.62		146.50 ^a	0.490
Menstruation frequency (days)	29.37±2.68			29.18±1.10		108.50 ^a	0.467
	n	%		n	%		
Menstrual regularity							
Regular periods	12	75		10	62.5	0.582 ^b	0.446
Irregular periods	4	25		6	37.5		
Premenstrual syndrome complaint status in the family							
Yes	12	75	7	43.8	3.239 ^b	0.072	
No	4	25	9	56.3			

^a=Mann–Whitney U test; ^b=Chi-square test; SD=Standard Deviation.

respectively. Regular and irregular menstruation were reported in 75% and 25% of patients in the experimental group, respectively. Regular and irregular menstruation were reported in 62.5% and 37.5% of patients in the control group, respectively. The experimental group reported that they received complaint status of their family 75%, and the control group reported that they received premenstrual syndrome complaint status in their family 43.8%. There were no significant differences in sociodemographic characteristics between the experimental and control groups ($p > 0.05$), suggesting that they were homogeneous (Table 1).

There was no significant difference in pretest PMSS total and subscale scores between the experimental and control groups ($p > 0.05$) (Table 2). The experimental group exhibited significantly lower median posttest PMSS total scores ($p = 0.004$, Cohen's $d = 0.75$) as well as reductions in depressive affect ($p = 0.012$, Cohen's $d = 0.77$), anxiety ($p = 0.019$, Cohen's $d = 0.50$), fatigue ($p = 0.009$, Cohen's $d = 0.70$), irritability ($p = 0.043$, Cohen's $d = 0.62$), depressive thoughts ($p = 0.012$, Cohen's $d = 0.63$), changes in appetite ($p = 0.008$, Cohen's $d = 0.86$), and changes in sleeping habits ($p = 0.009$, Cohen's $d = 0.93$) subscale scores. Posttest median 'anxiety' scores were significantly lower in the experimental group compared to the control group ($p = 0.021$, Cohen's $d = 0.73$) (Table 2).

Discussion

PMS is characterized by moderate-to-severe physical, emotional, and behavioral symptoms that negatively affect women's personal and professional lives. Although there is a large body of descriptive research on PMS, few researchers have focused on interventions to reduce PMS symptoms (Karakucuk et al., 2022; Kleinstäuber et al., 2016; Shehadeh & Hamdan-Mansour, 2018; Ussher et al., 2017). Moreover, no intervention study has integrated CBT and psychodrama to reduce the symptoms of PMS. This study investigated the effects of a psychoeducation program based on CBT psychodrama techniques on functional health, well-being, and PMS. Our results confirmed these hypotheses. Therefore, we believe that this study contributes to the literature.

Table 2. Comparison of the median score of PMSS and sub-dimensions within-group and between-group difference.

	Experimental Group Mean±SD	Median (IQR)	Control Group Mean±SD	Median (IQR)	P ^a Value	Cohen's d
Pretest PMSS score	144.75 ± 26.10	142.00 (130.25-158.50)	138.25 ± 21.35	139.00 (123.50-148.75)	0.514	
Posttest PMSS score	122.68 ± 32.47	112.50 (100.00-151.50)	140.50 ± 19.69	135.50 (126.00-159.00)	0.110	-
p ^b Value	0.004*		0.379			
Cohen's d	0.75		-			
Pretest depressive affect score	24.37 ± 4.48	25.00 (21.25-27.00)	23.18 ± 4.08	23.00 (20.25-25.75)	0.254	
Posttest depressive affect score	20.06 ± 6.43	18.50 (15.25-26.00)	22.00 ± 5.26	23.00 (20.25-25.75)	0.423	-
p ^b Value	0.012*		0.645			
Cohen's d	0.77		-			
Pretest anxiety score	17.75 ± 5.92	17.00 (14.25-19.00)	20.87 ± 5.04	19.00 (17.00-26.75)	0.118	
Posttest anxiety score	14.93 ± 5.14	15.00 (12.00-17.00)	18.87 ± 5.64	19.00 (13.75-20.75)	0.021*	0.73
p ^b Value	0.019*		0.102			
Cohen's d	0.50		-			
Pretest fatigue score	20.87 ± 5.42	21.00 (17.25-25.50)	19.62 ± 4.52	18.50 (17.25-22.75)	0.490	
Posttest fatigue score	17.18 ± 5.00	16.50 (12.25-22.50)	21.31 ± 3.75	21.00 (18.25-25.25)	0.300	-
p ^b Value	0.009*		0.108			
Cohen's d	0.70		-			
Pretest irritability score	18.31 ± 3.96	18.50 (16.25-20.00)	16.25 ± 3.53	15.00 (14.25-19.75)	0.110	
Posttest irritability score	15.43 ± 5.21	14.00 (12.00-20.00)	16.18 ± 4.4	15.50 (14.25-19.50)	0.564	-
p ^b Value	0.043*		0.789			
Cohen's d	0.62		-			
Pretest depressive thoughts score	22.37 ± 6.61	22.50 (17.00-27.75)	20.50 ± 3.86	22.00 (18.25-24.50)	0.539	
Posttest depressive thoughts score	18.68 ± 4.96	19.50 (14.00-22.75)	20.37 ± 4.54	20.00 (17.00-24.00)	0.360	-
p ^b Value	0.012*		0.716			
Cohen's d	0.63		-			
Pretest pain score	8.62 ± 4.20	9.50 (3.50-12.00)	9.81 ± 3.35	10.00 (9.00-12.75)	0.490	
Posttest pain score	7.93 ± 3.83	7.50 (5.00-11.75)	9.81 ± 3.12	9.50 (8.00-12.75)	0.128	-
p ^b Value	0.432		0.964			
Cohen's d	-		-			
Pretest changes in appetite score	11.93 ± 2.81	12.00 (10.25-14.75)	10.87 ± 3.75	12.50 (6.25-13.75)	0.724	
Posttest changes in appetite score	9.25 ± 3.39	8.50 (6.00-11.75)	10.87 ± 2.98	11.00 (8.50-13.75)	0.159	-
p ^b Value	0.008*		0.798			
Cohen's d	0.86		-			
Pretest changes in sleeping habits score	10.87 ± 3.26	10.50 (9.00-12.75)	9.43 ± 2.80	9.50 (8.00-11.00)	0.304	
Posttest changes in sleeping habits score	8.12 ± 2.55	8.50 (5.00-10.00)	9.37 ± 3.38	9.50 (6.25-12.75)	0.270	-
p ^b Value	0.009*		0.771			
Cohen's d	0.93		-			
Pretest bloating score	11.06 ± 3.75	12.00 (7.00-12.75)	10.00 ± 2.70	10.00 (7.25-12.00)	0.423	
Posttest bloating score	9.81 ± 2.63	9.00 (7.25-12.00)	10.18 ± 2.80	11.00 (8.25-12.00)	0.696	-
p ^b Value	0.268		0.865			
Cohen's d	-		-			

Abbreviations: IQR, Interquartile range (1st-3rd quartile); SD=Standard Deviation; p^a=Mann-Whitney U test; p^b=Wilcoxon Test; Cohen's d classified effect sizes as small (d = 0.2), medium (d = 0.5), and large (d ≥ 0.8); Statistical significance *p<.05 is indicated by bold.

PMS has a substantial impact on women's physical and psychological well-being. The first hypothesis was 'The experimental group participants have significantly better functional health and well-being than the control group participants'. Shamnani et al. (2018) concluded that PMS and premenstrual dysphoric disorder (PMDD) are common problems affecting students' educational and social activities. Prasad et al. (2021) found that women with PMS and PMDD are more suicidal than those without premenstrual disorders. Seyedtabaee et al. (2019) also emphasized that PMS predicts students' psychological well-being. Our results showed that PMS affected the functional health and well-being of all students before the intervention. Izadi-Mazidi et al. (2016) stress that GCBT practices can help women with PMS enjoy a higher health-related quality of life. Karakucuk et al. (2022) found that about half of female students had severe PMS symptoms in the last three menstrual cycles. The prevalence of PMS among female students ranges from 92.3% to 84.5% (Isik et al., 2016; Shehadeh & Hamdan-Mansour, 2018). Our experimental and control group participants experienced moderately severe PMS symptoms (depressive affect, anxiety, fatigue, irritability, depressive thoughts, pain, changes in appetite, changes in sleeping habits, and bloating) before psychoeducation.

Babajani et al. (2017) found that women who received CBT had fewer PMS symptoms than those who did not. Borji-Navan et al. (2022) reported that women who underwent Internet-based CBT had fewer symptoms than those who did not. Izadi-Mazidi et al. (2016) and Maddineshat et al. (2016) concluded that CBT had a positive effect on PMS symptoms. Our experimental group participants also had significantly lower posttest PMSS scores than their corresponding pretest scores, suggesting that CBT-based psychoeducation positively affects PMS-related emotional and psychological symptoms. Although our experimental group participants had significantly lower posttest 'depressive affect', 'fatigue', 'irritability', 'depressive thoughts', 'changes in appetite' and 'changes in sleeping habits' scores than the pretest scores, there was no significant difference in those scores between the experimental and control groups. The findings further indicated that the experimental group's posttest 'anxiety' scores were significantly lower than those of the control group. CBT aims to help clients replace their dysfunctional thoughts, feelings, and behaviors with functional ones, become more aware of their challenges, and develop coping skills to cope with them. Azari et al. (2021) documented that women who participated in a CBT-based stress management training program had fewer depressive symptoms than those who did not. The higher the spontaneity, the lower the anxiety (Karp, 1994). Sahebalzamani et al. (2014) stated that psychodrama has a positive effect on improving emotional reactions (stress, anxiety, and depression) related to physical illness. A spectrogram was conducted to encourage each participant to evaluate the process. They stated that the intervention helped them adopt healthier and more functional behaviors, develop adaptive behavioral responses to various situations, and develop new skills to cope with PMS symptoms. Ko (2003) maintains that psychodrama positively affects physical and mental health by encouraging clients to think positively, reach a consensus, cope with challenges, understand things, and make plans for the future. We think that the intervention (GCBT and psychodrama-based psychoeducation) allowed our experimental group participants to identify negative cognitions about PMS symptoms, explain what PMS symptoms meant, recognize and re-experience their coping strategies, restructure their dysfunctional thinking patterns, and transform their emotions and behaviors.

Limitations

The lack of evaluation of the long-term effectiveness of the psychoeducation program combining CBT and psychodrama and the fact that the participants were only university students can be considered limitations of this study.

Conclusion

Psychiatric nurses play a crucial role in implementing therapeutic interventions to alleviate disease symptoms. We provided university students with CBT and a psychodrama-based psychoeducation programme. The results demonstrated that the intervention contributed to improved functional health, enhanced well-being, and a reduction in PMS symptoms. We conclude that our psychoeducation program is an effective therapeutic intervention to reduce PMS symptoms. The strength of this study was that it was a randomized controlled trial that involved a psychoeducation program that combined CBT and psychodrama. Although our intervention helped students experience less severe PMS symptoms, more longitudinal studies should be conducted to determine its long-term effects.

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Authors' contributions

NAS and DKM contributed to the ideas of research, collection of data, analysis, discussion, and writing. NAS participated in generating tables. NAS and DKM proofread the manuscript. All authors approved the final version for submission.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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