



The efficacy of hypnotherapy on pain and distress in premenstrual dysphoric disorder: A randomized clinical trial

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Original Article

Abstract

BACKGROUND: Premenstrual dysphoric disorder (PMDD) is a health difficulty that is so similar to premenstrual syndrome (PMS) but is more serious. Many women with PMDD may also feel anxious or depressed; bloating, breast tenderness, headaches, and joint or muscle pain are some of the prevalent symptoms suffered by women with PMDD.

METHODS: The present research was a randomized controlled trial (RCT). The participants were selected randomly from female students of Shahed University, Tehran, Iran, and were randomly divided into two groups. Each group encompassed 30 women aged 20 to 35 who were diagnosed with PMDD using the Premenstrual Symptoms Screening Tool (PSST) between December 2019 and May 2020. In this study, one group received hypnotherapy, and the other group received no intervention.

RESULTS: The analysis showed significant differences between experimental and control groups. The efficacy of the procedure of hypnotherapy in the experimental group was shown significant.

CONCLUSION: The findings demonstrate that employing suggestions informed by cognitive flexibility and ego strength in hypnotherapy mitigates pain intensity and distress in women with PMDD.

KEYWORDS: Menstruation; Psychological Distress; Pain; Hypnotherapy; Psychotherapy

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Introduction

Premenstrual dysphoric disorder (PMDD) is a health difficulty that is so similar to premenstrual syndrome (PMS) but is more serious, causing severe irritability, depression, or anxiety in the week or two days before menstruation.¹ Women with PMDD may also experience anger, sadness, despair, or even suicidal thoughts. Symptoms normally go away for two to three days after menstruation starts.² PMDD affects up to 8% of women of childbearing age.³ Hormonal changes and

brain chemicals may play a role in PMDD, yet the gaps remain about the causes of PMDD or PMS.^{1,4}

Based on research literature, a combination of biopsychosociocultural factors contribute to PMDD such as educational degree, marriage, age, bleeding, personal psychiatric history, treatment-seeking behavior, history of traumatic events, sleeping hours, physical exercise, and maternal history of PMDD.^{4,5} It has been stated that PMDD is associated with committing suicide, accident frequencies, depressive disorders, work-related disfunction and lower quality of life (QOL).⁶ One of the most effective factors that can predict the intensity of symptoms of PMDD is flexibility in

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thought changing and selecting different attitudes toward objects, as psychological maturity, coping styles, and self-perception can significantly affect the incidence and intensity of PMDD symptoms.⁷

Research has demonstrated that pain is the most common complaint among menstruating women; it has some different difficulties for them. For instance, PMDD increases both pain intensity and the risk of pain medication misuse.⁸ In this way, it has been reported that psychological distress is another essential symptom women suffer from before and during menstruation.¹ After the pain complaints, psychological distress is the most common symptom that makes women consult with a mental health practitioner.² Moreover, pain intensity might be influenced by components such as pain catastrophizing, beliefs about pain, coping skills, perceived social support, and learning about pain from important others.⁵

Cognitive-behavioral therapy (CBT) was one of the first types of psychotherapy used in PMDD.³ One of the weaknesses that have been introduced following studies of this type of treatment for patients with PMDD is the difficulty of performing the tasks provided to patients to maintain the results of treatment after the session's recurrence.² Another treatment studied in this field has been psychotherapy based on interpersonal communication.⁴ This treatment has not produced integrated results; patients have reported that involving other people in the treatment process or performing therapeutic tasks has created difficulties for them that lead to the cessation of therapeutic tasks and consequent recurrence of symptoms.⁵ Another limitation that negatively affects the effectiveness of therapies used to treat PMDD is the limitations of therapies in influencing various aspects of PMDD.⁷ Because theoretical studies have shown that in both the clinical and non-clinical populations,

premenstrual symptoms develop, intensify, or persist under the influence of various factors, the treatments used for this disorder often have specific aspects.⁸

Different theoretical and practical explanations have addressed the potential causes of the disorders, in response, different therapeutic methods have emerged.⁹ Hypnotherapy serves as one example. Hypnosis is a condition that results from attention, acceptance, and concentration, in which there must be degrees of three facets at the same time: decomposition or abstraction, absorption, and inclusiveness.¹⁰ The main idea is that psychological conditions are representations of self-hypnosis, so that negative reflections are accepted without informed knowledge.¹¹ Basically, hypnotherapy consists of different methods such as desensitization, reconstruction, imagery, and relaxation.¹²

Hypnotherapy in its modern sense is not only aimed at treating and relieving symptoms but also at broader, non-clinical goals such as improving individual functioning among patients with PMDD.² In this regard, it should be noted that one of the reasons for facilitating behavior change using hypnosis is that in a state of trance, self-criticism decreases and conscious control over the body increases.⁴ In the last two decades, another issue besides the therapeutic effects of hypnotherapy has been studied that is the preventive ability of hypnotherapy in the occurrence and recurrence of clinical symptoms.¹⁰ The preventive ability of hypnotherapy comes from the numerous conditionings and self-hypnosis training for patients that guarantee the long-term sustainability of the therapeutic results obtained from hypnotherapy.¹¹

In one study, it was concluded that hypnotherapy using anesthesia-related inductions was able to significantly reduce the pain experienced in PMDD. The induction method used in this study was relaxation. One of the limitations of this study was that it

evaluated and treated only one of the symptoms of premenstrual boredom, namely pain.¹ A comparative study found that the effects of hypnotherapy on the clinical symptoms of PMDD were similar to those of hormone therapy. However, hormone therapy can reduce a person's function in various aspects and affect a person's life satisfaction.³ Research has shown that hypnotherapy can also reduce the stress of these symptoms and eliminate the environmental context of the disorder to a great extent.⁹ Considering suggested theories on the formation of PMDD, the main necessity of this study is the use of non-pharmacological methods that have an effective and lasting effect over time to treat PMDD and reduce the harmful effects of this disorder on the QOL among women with PMDD. In this investigation, we aimed to analyze the effectiveness of hypnotherapy on pain intensity and psychological distress about the applicability of suggestions focused on cognitive flexibility and ego strength.

Methods

To conduct the present randomized controlled trial (RCT), female students from Shahed University of Tehran, Iran, were randomly selected and assigned to two groups. Each of groups encompassed 30 women between 20 up to 35 years old who were diagnosed with PMDD using the Premenstrual Symptoms Screening Tool (PSST) from December 2019 to May 2020. The experimental group received hypnotherapy, while the control group received no intervention. All 60 participants conformed to the research criteria and none of them were excluded from the analysis process. To control the obtrusive variables, we matched the groups in terms of demographic variables. The inclusion criteria were age ranging between 20 and 35 years and PMDD diagnosis. The exclusion criteria were psychotic disorder diagnosis, menopause, and lack of cooperation in the therapeutic process. To determine the baseline, a pretest was conducted

in the first session, mid-test, and post-test, as well as a follow-up test 2 months later. The level of significance in this investigation was 0.05. Moreover, the research plan was approved by the Institutional Review Board (IRB) of Shahed University under the code of IR.SHAHED.REC.1399.118 and was registered by the Iranian Randomized Controlled Trials (IRCT) website under the code IRCT20201110049332N1.

The Numerical Rating Scale (NRS): The NRS is a unidimensional instrument of pain intensity and its total score ranges between 1 and 10, where 1 means no pain and 10 means the most severe pain. Different investigations have estimated its reliability to be about 0.84, 0.89, and 0.92.¹² NRS scores strongly correlated to visual analog scale (VAS) scores at all periods [$r = 0.94$, 95% confidence interval (CI) = 0.93-0.95]. The slope of the regression line was 1.01 (95% CI = 0.97-1.06) and the y-intercept was -0.34 (95% CI = -0.67 to -0.01). The minimum clinically significant difference in pain was 1.3 on the NRS and 1.4 on the VAS.¹³

Depression Anxiety Stress Scales (DASS): This tool has 3 elements, including depression, anxiety, and stress containing 42 questions. The reliability of this instrument in Iran has been estimated at 0.95, 0.92, and 0.97.¹⁴ In another investigation, it has been reported that the Cronbach's alpha was 0.84 for depression, 0.74 for anxiety, and 0.79 for stress. Additionally, factor loading values for most items were 0.39 to 0.73. Moreover, correlations between scales were estimated from 0.54 to 0.68. This tool assesses psychological distress in a range from normal to extremely severe.¹⁴

PSST: This tool identifies women who meet the criteria for PMDD by monitoring symptoms over two reproductive cycles. Research has shown that the PSST with Cronbach's alpha of 0.91 demonstrates internal consistency as well as adequate convergent and discriminant validity.¹⁵

The Stanford Hypnotic Susceptibility Scale (SHSS): This tool measure susceptibility from

0 to 12. The lower score estimates the lower rate of susceptibility. It has been shown that scores from 5 to 7 are more common. Based on research literature, Cronbach's alpha is 0.79 for the total scale, 0.45 for the subscale of perceptive and cognitive abilities, 0.44 for sensory-motor subscale, and 0.66 for cognitive distortions.¹⁶

The process of therapy: The participants underwent 8 sessions of hypnotherapy with each session about 60 minutes. This protocol is outlined by Hammond.¹⁷ The hypnotherapy protocol was implemented individually, and the trance was induced through progressive muscle relaxation. Session 1 included initial familiarization and preparation for a flowing trance. In session 2, the main suggestions included restructuring attitude Via cognitive flexibility and improving ego strength. Then, participants gradually returned to their normal state. In session 3, after suggesting a change in the sense of pain, suggestions were made about tolerating bad sensations (not only about pain). In sessions 4-6, after changing the sense of pain and increasing the tolerance of pain,

suggestions informed by ego strength were induced to promote beliefs about living normally like others. Session 7 prepared the patient for termination of therapeutic sessions in the next session. Fixation of conditioning was the main task of session 8; in addition, the patients received feedback on their sensations. Moreover, sessions 5 and 8 were allocated to take mid-test and post-test, respectively. After the end of the trance, recommendations were presented to fix the post-hypnotic suggestions.

Results

The age range of participants was 20 to 35 years, with a mean age of 25.36 ± 2.70 . The mean of suggestibility was 9.90 ± 1.16 . Most participants were single; only 9 of them were married and 51 of them were single. Moreover, 20 (33.3%) participants were Bachelor of Science (B.A.) students, 31 (51.7%) of them were Master of Science (M.A.) students, and finally 9 (15%) of them were PhD students. It should be mentioned that 3 (5%) of them had offspring and 57 (95%) of them did not (Figure 1).

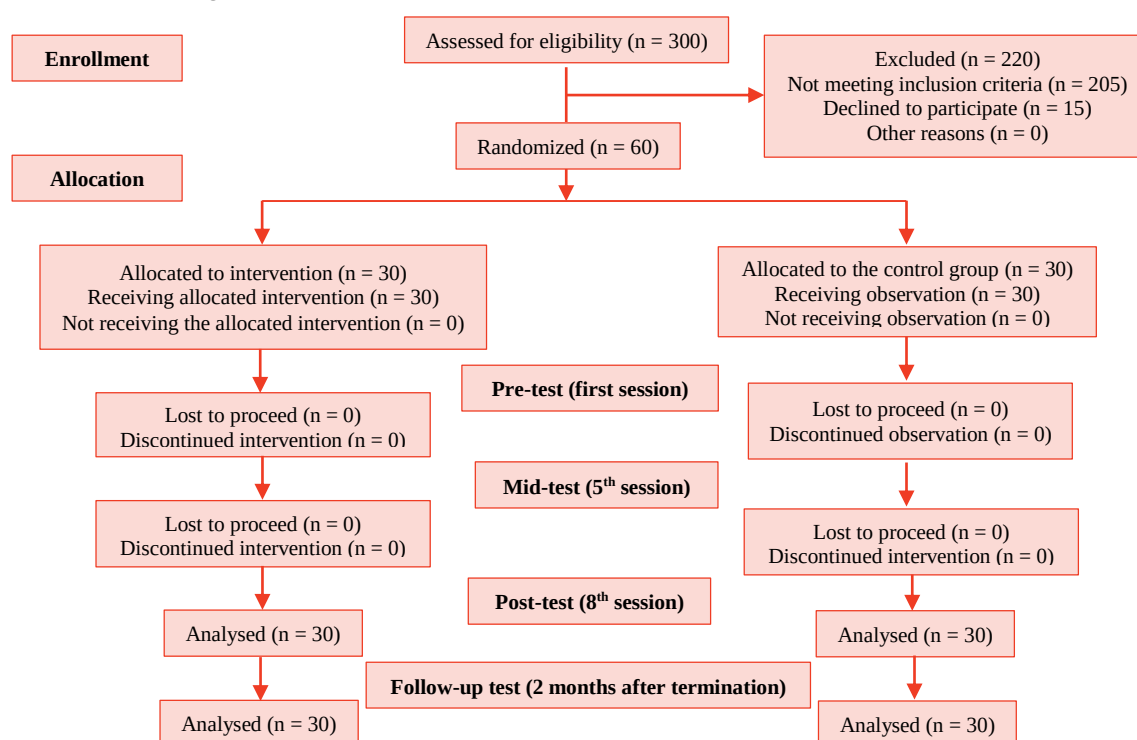


Figure 1. Consolidated Standards of Reporting Trials (CONSORT) flow diagram

Table 1. Mean and standard deviation (SD) of Depression Anxiety Stress Scales (DASS)-42 (n = 30 for each group)

Group		Mean $\pm$ SD	Group		Mean $\pm$ SD
Pretest depression	Hypnotherapy	33.66 $\pm$ 2.50	Posttest anxiety	Hypnotherapy	4.20 $\pm$ 2.23
	Control	31.26 $\pm$ 1.87		Control	32.40 $\pm$ 1.73
	Total	32.46 $\pm$ 2.50		Total	18.30 $\pm$ 14.35
Mid-test depression	Hypnotherapy	23.53 $\pm$ 6.29	Follow-up test anxiety	Hypnotherapy	5.73 $\pm$ 2.55
	Control	32.53 $\pm$ 1.88		Control	31.76 $\pm$ 1.94
	Total	28.03 $\pm$ 6.46		Total	18.75 $\pm$ 13.31
Posttest depression	Hypnotherapy	3.90 $\pm$ 1.91	Pretest stress	Hypnotherapy	32.06 $\pm$ 1.96
	Control	32.06 $\pm$ 1.98		Control	30.90 $\pm$ 1.34
	Total	17.98 $\pm$ 14.33		Total	31.48 $\pm$ 1.77
Follow-up test depression	Hypnotherapy	4.86 $\pm$ 1.77	Mid-test stress	Hypnotherapy	22.63 $\pm$ 2.18
	Control	31.43 $\pm$ 1.88		Control	32.53 $\pm$ 1.92
	Total	18.15 $\pm$ 13.51		Total	27.58 $\pm$ 5.39
Pretest anxiety	Hypnotherapy	32.80 $\pm$ 2.38	Posttest stress	Hypnotherapy	4.36 $\pm$ 1.92
	Control	30.96 $\pm$ 1.69		Control	32.93 $\pm$ 1.46
	Total	31.88 $\pm$ 2.24		Total	18.65 $\pm$ 14.50
Mid-test anxiety	Hypnotherapy	23.30 $\pm$ 2.01	Follow-up test stress	Hypnotherapy	5.03 $\pm$ 3.75
	Control	33.10 $\pm$ 1.70		Control	31.23 $\pm$ 1.63
	Total	28.20 $\pm$ 5.27		Total	18.13 $\pm$ 13.51

SD: Standard deviation

Mauchly's test of sphericity for pain intensity demonstrated 0.959 ($P = 0.797$) for DASS-42 including 0.459 ($P < 0.001$) for depression, 0.890 ($P = 0.250$) for anxiety, and 0.714 ($P = 0.002$) for stress. Regarding significant differences between the two groups, improvement of pain intensity and psychological distress in the experimental group showed the efficacy of hypnotherapy (Table 1).

After that, table 2 shows the mean and standard deviation (SD) of pain intensity. The results of this analysis regarding the F value on pain intensity have been shown in table 3.

Table 2. Mean and standard deviation (SD) of pain intensity

Group		Mean $\pm$ SD
Pretest pain	Hypnotherapy	8.73 $\pm$ 0.78
	Control	8.83 $\pm$ 0.74
	Total	8.78 $\pm$ 0.76
Mid-test pain	Hypnotherapy	4.78 $\pm$ 0.89
	Control	8.93 $\pm$ 0.69
	Total	6.85 $\pm$ 2.24
Posttest pain	Hypnotherapy	2.66 $\pm$ 0.80
	Control	8.73 $\pm$ 0.73
	Total	5.70 $\pm$ 3.15
Follow-up test pain	Hypnotherapy	2.53 $\pm$ 0.93
	Control	8.76 $\pm$ 0.72
	Total	5.65 $\pm$ 3.25

SD: Standard deviation

The significance level of the F value on pain intensity showed that the model in between-subjects and within-subjects was significant ($P < 0.05$). The results of this analysis regarding the F value on DASS-42 have been shown in table 4.

The significance level of the F value on psychological distress showed that the model in between-subjects and within-subjects was significant ($P < 0.05$).

There were significant differences between the two groups. The efficacy of the procedure of hypnotherapy in the experimental group was more than that in the control group from the point of view of pain intensity and psychological distress.

Discussion

In the present study, the main goal was to assess the efficacy of hypnotherapy on pain intensity and level of psychological distress among women with PMDD.

Results demonstrated a higher decrease in pain intensity in the experimental group in comparison with the control group.

The data also showed that only the participants who underwent hypnotherapy

Table 3. Multivariate tests on the within-subject and between-subject effects (pain intensity)

Source	SS	df	MS	F	P	Partial eta squared	Consent parameter
Intercept	10921.504	1	10921.504	19465.728	< 0.001	0.997	19465.728
Group	1092.204	1	1092.204	1834.382	< 0.001	0.969	1834.382
Error	32.542	58	0.561				

SS: Sum of squares; df: Degree of freedom; MS: Mean square

experienced a significant decrease in psychological distress. In other words, the present study indicates that hypnotherapy affected both variables significantly during 4 phases of assessments.

Consistent with this result, Saghebi Saeedi *et al.* reported that hypnotherapy could decrease the sedative and psychiatric drugs misuse by decreasing the pain intensity.¹⁸ However, in the meantime, it has been reported that restructuring attitude toward menstruation via increasing cognitive flexibility and improving patience has an essential role in perception of pain and pain behaviors.¹⁹ In another study, Bañuelos-Atienza⁹ and Alladin¹² found that physiotherapy could not influence patients' viewpoints on pain but reduced perceived pain significantly.

In contrast, Alladin and Amundson have shown that the effectiveness of hypnotherapy in relieving pain is related to the demographic characteristics, as younger clients have benefited more from hypnotherapy in relieving pain.²⁰

Imai *et al.* have shown that hypnotherapy improved both psychological distress and pain

intensity.¹⁹ In this manner, some researchers such as Bañuelos-Atienza,⁹ Khan *et al.*,²¹ and Imai *et al.*¹⁹ reported the effectiveness of hypnotherapy on stress subscale of psychological distress.

Cope⁷ and Bijur *et al.*¹³ showed that suggestibility and attitude to menstruation could significantly predict the degree of pain intensity and psychological distress among women before and during menstruation; therefore, hypnotherapy, cognitive hypnotherapy and psychoeducation focused on self-hypnosis can be applicable in therapeutic plans of women with PMDD. Regardless of the therapeutic effects that the present study has investigated, hypnotherapy and hypnotherapy-focused psychoeducation can be used as an important and effective strategy in prevention programs among women with PMDD.¹³

In contrast, it has been suggested by McGregor that due to the limited number of clinical trials that measure the effect of hypnotherapy on psychological distress, hypnotherapy can have an effect of 0.65 on psychological distress.²²

Table 4. Multivariate tests on the within-subject and between-subject effects [Depression Anxiety Stress Scales (DASS-42)]

Source	Subscale	SS	df	MS	F	P	Partial eta squared	Noncent parameter
Intercept	Depression	140070.017	1	140070.017	16949.256	< 0.001	0.997	16949.256
	Anxiety	141523.267	1	141523.267	32497.589	< 0.001	0.998	32497.589
	Stress	137808.338	1	137808.338	29380.643	< 0.001	0.998	29280.643
Group	Depression	140106.667	1	140106.667	1706.986	< 0.001	0.967	1706.986
	Anxiety	14508.150	1	14508.150	3331.466	< 0.001	0.983	3331.466
	Stress	15120.938	1	15120.938	3212.801	< 0.001	0.982	3212.801
Error	Depression	479.317	58	8.264				
	Anxiety	252.583	58	4.355				
	Stress	279.975	58	4.706				

SS: Sum of squares; df: Degree of freedom; MS: Mean square

It has been reported by Bañuelos-Atienza⁹ and Alladin¹² that one of the most important advantages of hypnotherapy-focused psychotherapies is longitudinal therapeutic effects. Consistent with the research literature,^{8,18} the results of the present study demonstrated that hypnotherapy had the potential of reducing both psychological distress and pain intensity for a long time after the follow-up assessment phase. However, more definitive studies are needed for it to be a first-line intervention but there is evidence to consider hypnotherapy as a therapeutic method for persistent pain.¹³ Moreover, consistent with our results, a meta-analysis by Cope gives strong support for the beneficial effect of hypnotherapy on anxiety and depression in women with PMS.⁷

Hofmeister and Bodden stated that psychiatric conditions were common and could be effective on gynecologic conditions and their treatment outcomes; therefore, it is essential for therapeutic approaches to address psychiatric comorbidities in patients with gynecologic conditions.³

Bijur et al. have demonstrated that ego-strengthening suggestions and scripts can enhance treatment effects of pain reduction plans among women with PMDD.¹³ The results of an investigation by Imai et al. indicated the effectiveness of ego-strengthening-based hypnotherapy on reducing both negative self-talk and attitudes.¹⁹

Moreover, short-term group psychotherapy with individuals diagnosed with PMDD improves cognitive functioning about restructuring attitudes manifested through the increase in ego strength. Ego-strengthening suggestions initially were verbal in nature and later, imagery was added emphasizing projective scripts with the purpose of accessing internal resources.¹⁸ Currently, studies on hypnosis consider some forms of ego strengthening as an important aspect of the therapeutic plan.^{1,18}

Findings of Moghtader confirmed significant reductions in anxiety and depression among women with PMDD who experienced group hypnotherapy using cognitive flexibility, with results maintained at the follow-up phase.²³ In this manner, it has been reported that high cognitive flexibility increases the women's capacity to cope with distress.¹⁷ Imai et al. believe maternal cognitive perceptions can influence menstrual, premenstrual, labor, and delivery-related pain perception and need to be addressed in working with clients diagnosed with premenstrual difficulties. Besides, these findings are aligned with the relationship between mind and body.¹⁹

Considering research literature, it has been approved that the incidence and intensity of symptoms especially pain and psychological distress are affected by personal attitudes toward menstruation, intergenerational education, and cultural context.^{1,3,11,22} One of the most important limitations of the present study was that it was an investigation on only a sample of the capital city of Iran. Employing solely student groups has also been one of the limitations of this research. Another limitation of the present study was the lack of use of information from the people around the sample such as parents and siblings in the evaluations.

Future research can study the effectiveness of hypnotherapy on PMDD symptoms considering cultural varieties. Moreover, we suggest that the future investigations should study the effectiveness of hypnotherapy on PMDD symptoms with regard to important others behavior and attitude to menstruation.

Conclusion

Our findings revealed that hypnotherapy informed by suggestions about cognitive flexibility and ego strength reduced both pain intensity and psychological distress in women diagnosed with PMDD.

Conflict of Interests

Authors have no conflict of interests.

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References

- Beddig T, Reinhard I, Ebner-Priemer U, Kuehner C. Reciprocal effects between cognitive and affective states in women with premenstrual dysphoric disorder: An ecological momentary assessment study. *Behav Res Ther.* 2020; 131: 103613.
- Lanza di Scalea T, Pearlstein T. Premenstrual dysphoric disorder. *Psychiatr Clin North Am.* 2017; 40(2): 201-16.
- Hofmeister S, Bodden S. Premenstrual syndrome and premenstrual dysphoric disorder. *Am Fam Physician.* 2016; 94(3): 236-40.
- Sepede G, Brunetti M, Di Giannantonio M. Comorbid premenstrual dysphoric disorder in women with bipolar disorder: Management challenges. *Neuropsychiatr Dis Treat.* 2020; 16: 415-26.
- Weise C, Kaiser G, Janda C, Kues JN, Andersson G, Strahler J, et al. Internet-Based cognitive-behavioural intervention for women with premenstrual dysphoric disorder: A randomized controlled trial. *Psychother Psychosom.* 2019; 88(1): 16-29.
- Wakatsuki Y, Inoue T, Hashimoto N, Fujimura Y, Masuya J, Ichiki M, et al. Influence of childhood maltreatment, adulthood stressful life events, and affective temperaments on Premenstrual mental symptoms of nonclinical adult volunteers. *Neuropsychiatr Dis Treat.* 2020; 16: 1-10.
- Cope GF. Premenstrual dysphoric disorder: A new psychological entity. *Indep Nurs.* 2019; 2019(5): 28-31.
- Yen JY, Lin PC, Huang MF, Chou WP, Long CY, Ko CH. Association between generalized anxiety disorder and premenstrual dysphoric disorder in a diagnostic interviewing study. *Int J Environ Res Public Health.* 2020; 17(3): 988.
- Bañuelos-Atienza CN. A literature review on expressive dance/movement therapy supporting mental health and menstruation. [Thesis]. New York, NY: Graduate School of Arts and Social Sciences; 2021.
- Heydarpour S, Dehghan F. Comparing the effectiveness of relaxation by hypnotherapy and virtual reality technology in alleviation of the symptoms of premenstrual syndrome. *Cogent Psychol.* 2019; 6(1): 1686962.
- Fisher CY. Cyclic perimenstrual pain and discomfort and the role of complementary and alternative medicine in its treatment. [Thesis]. Sydney, Australia: University of Technology Sydney; 2019.
- Alladin A. Evidence-based cognitive hypnotherapy for depression. *Contemp Hypn.* 2009; 26(4): 245-62.
- Bijur PE, Latimer CT, Gallagher EJ. Validation of a verbally administered numerical rating scale of acute pain for use in the emergency department. *Acad Emerg Med.* 2003; 10(4): 390-2.
- Pirbaglou M, Katz J, de Souza RJ, Stearns JC, Motamed M, Ritvo P. Probiotic supplementation can positively affect anxiety and depressive symptoms: A systematic review of randomized controlled trials. *Nutr Res.* 2016; 36(9): 889-98.
- Boyles L, Baxter C. Premenstrual syndrome. *InnovAiT.* 2021; 14(5): 313-7.
- Kekecs Z, Roberts L, Na H, Yek MH, Slonena EE, Racelis E, et al. Test-retest reliability of the stanford hypnotic susceptibility scale, form C and the elkins hypnotizability scale. *Int J Clin Exp Hypn.* 2021; 69(1): 142-61.
- Hammond DC. Handbook of hypnotic suggestions and metaphors. 1st ed. New York, NY: W. W. Norton & Company; 1990.
- Saghebi Saeedi K, Abolghasemi A, Akbary B. The effectiveness of positive thinking and self-compassion training on cognitive flexibility and cognitive failure in girls with primary dysmenorrhea. *Casp J Neurol Sci.* 2020; 6(1): 45-56.
- Imai A, Ichigo S, Matsunami K, Takagi H. Premenstrual syndrome: management and pathophysiology. *Clin Exp Obstet Gynecol.* 2015; 42(2): 123-8.
- Alladin A, Amundson J. Cognitive hypnotherapy as a transdiagnostic protocol for emotional disorders. *Int J Clin Exp Hypn.* 2016; 64(2): 147-66.
- Khan A, Hardway M, Younas K. Premenstrual dysphoric disorder. *InnovAiT.* 2021; 14(4): 234-9.

22. McGregor AJ. Are women more likely to exhibit psychogenesis... or just more likely to be diagnosed that way? *R I MED J*. 2019; 102(3): 10-1.
23. Moghtader L. Comparison of the effectiveness of cognitive-behavioral group therapy with cognitive hypnosis on reducing depression in students with premenstrual syndrome. *MOJ Clin Med Case Rep*. 2017; 7(6): 331-5.