



# The Effectiveness of Transdiagnostic Treatment Program on Clinical Symptoms and Emotion Regulation in Girls Adolescents with Premenstrual Syndrome

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## Abstract

**Background:** Premenstrual Syndrome (PMS) is the experience of some physical and psychological symptoms periodically in the last days of the menstrual cycle that interferes with academic, social and family functioning. We aimed to evaluate the effectiveness of Transdiagnostic Treatment Program (TTP) on clinical symptoms and emotion regulation in girl's adolescents with PMS.

**Methods:** This experimental trial study was carried out on 32 girls adolescents with PMS referred to two medical centers located in Tehran, Iran from Mar 21, 2019, to Oct. The patients randomized in 2 groups, 1-intervention (n=16, 8 sessions, 90-minute weekly) and 2-control (n=10). The PMS Screening Tool (PSST) and Emotion Regulation Questionnaire (ERQ) before and after treatment were filled out by participant. The SPSS software and  $P < 0.05$  considered for data analysis and as significant levels respectively.

**Results:** The study sample was 32 girls adolescents with PMS (mean age intervention and control were  $16.30 \pm 2.02$  and  $16.40 \pm 1.6$ ,  $P = 0.915$ ). The score of two questionnaires, PSST (symptom, effect) and ERQ (cognitive reappraisal, suppression) between two groups in before treatment were the same. After intervention the change of variable symptom ( $-1.05$  vs  $-0.02$ ,  $P < 0.001$ ), effect ( $-0.53$  vs  $-0.04$ ,  $P < 0.001$ ), cognitive reappraisal ( $0.67$  vs  $0.02$ ,  $P < 0.001$ ) and suppression ( $-0.64$  vs  $-0.07$ ,  $P < 0.001$ ) were significant between two groups.

**Conclusion:** TTP is an effective technique for controlling clinical symptoms and emotion regulation in girl's adolescents with PMS.

**Keywords:** Premenstrual syndrome; Transdiagnostic treatment program; Adolescents

## Introduction

Pre-Menstrual Disorders (PMS) psychological or somatic symptoms that arise during the menstrual cycle's luteal period impair the normal daily functioning of the patient and resolve shortly after menstruation (1-3). Menstruation is a normal physiological phenomenon undergone by all

women and is marked by highly orchestrated changes in the levels of ovarian estrogen and progesterone (4). Depressed mood, restlessness, tension and anxiety, severe irritability, overt anger and interpersonal conflicts are important symptoms of PMS (5, 6). The obvious onset of these



symptoms begins in adolescence and gradually worsens in the process of aging (7). Overall prevalence of PMS in Iranian women were 70.8%. The PMS were 68.9% and 54.9% in high school and university students respectively (8).

The PMS affects academic achievement and social performance and interpersonal relationships (9). During puberty, approximately 30% of these adolescents suffer from anxiety disorders and 12% of them experience depression (10). Concurrent depression is increased by the severity of PMS symptoms (11). It is important to reduce the anxiety and stress of this period because this disease affects women physically and emotionally for about a week every month (12-14). Many approved experimental treatment guidelines have been effective in reducing the symptoms of anxiety and depression in adolescents (15, 16).

However, many behavioral treatments do not fully address the needs of many adolescents because they only treat one disorder, so they will not achieve the desired results (17). Therefore, psychologists, today tend to use Transdiagnostic Treatment Program (TTP) (18). The focus of these therapies is a set of central principles for positive change used in a wide range of types of disorders (19). Theoretically, TTM should enable the therapist to conceptualize the processes of continuity between existing disorders, provide evidence-based treatment strategies in the form of a protocol increase the effectiveness and efficiency of treatment, the need for multiple treatment guidelines Reduce and facilitate its easy implementation (20, 21). The TTP is an emotion-focused meta-diagnostic and cognitive-behavioral therapy that utilizes emotion regulation skills for a wide range of emotional disorders (22). This method builds on the achievements of cognitive-behavioral theories by extracting and integrating common principles among existing empirically validated psychological therapies (23).

However, the knowledge about the effect of emotion regulation in women with PMS is low, but studies using TTP on depression and anxiety have shown that the results are effective (16, 24-29). Therefore, due to the importance of reduc-

ing depression and anxiety in PMS and the lack of studies in this field

We aimed at evaluating the effectiveness of TTP on clinical symptoms and emotion regulation in female adolescents with PMS.

## Methods

### *Study design and participants and sample size*

An experimental study was carried out on 32 adolescent girls with premenstrual syndrome referred to two medical centers located in Tehran, Iran from Mar 21, 2019, to Oct 23, 2020. The required sample size was estimated 30 girls (15 girls in each group) based on Moradmamand et al. study (30) (mean±SD difference in experimental group=16±6 vs. mean±SD difference in control group=2.46±10.2), based on independent *t*-test formula

$$n = \left( Z_{\frac{\alpha}{2}} + Z_{\beta} \right)^2 \times (SD_1^2 + SD_2^2) / (\text{Mean}_1 - \text{Mean}_2)^2$$

with  $\alpha=5\%$ ,  $1-\beta=90\%$ . Considering the dropout rate 10%, two samples were added to this number and finally, this study was performed on 32 samples.

### *Inclusion and exclusion criteria*

The conditions, (i) At least one year has passed since reaching adulthood, (ii)-13≤Age ≤19, (iii) 19≤Beck depression score≤29, (iv) diagnosis of premenstrual syndrome by a gynecologist, (v) existence of at least one anxiety disorder based on clinical interview, (vi) do not receive medication or psychological treatment for at least one year before start the study (vii) not having psychotic disorder and physical illness, (viii) no history of drug use

Patients unwilling to participate, having more than two absences in intervention sessions and failure to complete the questionnaires by the participants were excluded. In general, 43 patients were firstly registered in this research and according to research criteria and limitations, and the research continued with 32 patients (Fig. 1).

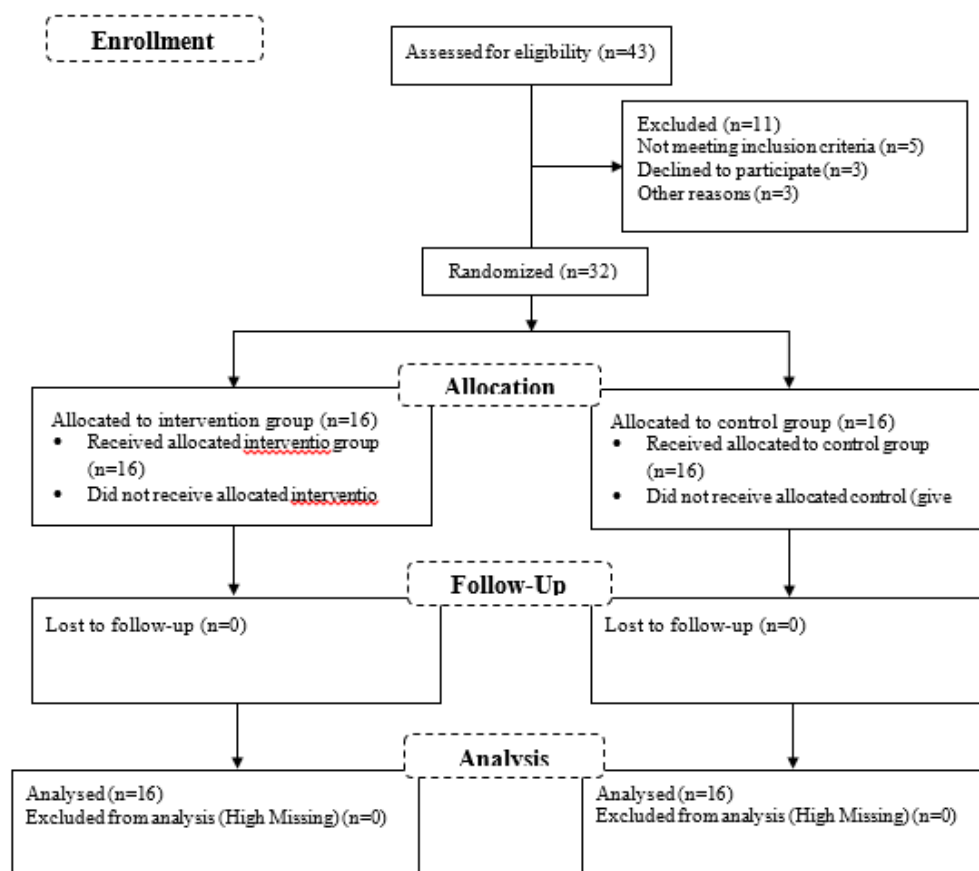


Fig. 1: Consort follows diagram

### Outcomes and questioner

In the present study, the following tools have been applied

#### Demographic questionnaire

This form includes variables such as age, education and fields of study participant in addition consent form.

#### Premenstrual Symptoms Screening Tool (PSST)

The Premenstrual Symptoms Screening Tool is a 19-item (not at all = 0, mild = 1, moderate = 2, severe = 3) questionnaire with two domains: 1-domain includes 14 items related to physical, behavioral and psychological symptoms and the 2-domain includes 5 items related the impact of symptoms on women's functioning (31). Women must record at least five symptoms as moderate or extreme in this questionnaire, where at least

one of the symptoms should be 1-4 (namely core symptoms). They must also disclose if their symptoms moderately or seriously interfere with their ability to operate in at least one of five second-domain things [(a) work performance, (b) coworker relationships, (c) family relationships, (d) social life activities, and (e) home responsibilities]. The Cronbach's alpha in Yen et al. study in first and second parts of this scale was 0.96 and 0.91 respectively (32). Translation and psychometric properties of the Iranian version of PSST have been studied (33). The content validity and internal reliability of this questionnaire showed good validity (CVR=0.7, CVI=0.8) and reliability (Cronbach's alpha range 0.80 to 0.93). In this study, the Cronbach's alpha of the PSST was calculated from 0.81 to 0.89.

### Emotion Regulation Questionnaire (ERQ)

The Emotion Regulation Questionnaire was developed by Gross et al. (34) and was designed to evaluate two emotion regulation strategies including depression and cognitive reassessment. This questionnaire has 10 items, cognitive reassessment (6 items) and suppression (4 items). The questionnaire is scored on a 7-point Likert scale (1= strongly disagree to 7= strongly agree), for each question. The instructions in this questionnaire ask the subject to answer some questions about emotional life, especially how to regulate and manage emotions. Cronbach's alpha coefficient for re-evaluation was 0.79 and for suppression was 0.73 and retest reliability for the whole scale was 0.69 (34). The internal consistency coefficient of this scale has been reported from 0.48 to 0.68 for re-evaluation and from 0.42 to 0.63 for suppression. In the Persian version of this questionnaire, Cronbach's alpha of this questionnaire has been reported from 0.87 to 0.90 (35). In this study, the Cronbach's alpha of the ERQ was calculated from 0.79 to 0.88.

### Randomization and Intervention

Patients were randomly assigned to two groups' treatment and control. The random assignments were prepared outside the study center and by statistician and using software Random Allocation Software. The patients were randomized in 2 groups, 1-treatment and 2-control groups. The treatment group received 8 sessions group therapy, weekly and for 90 minutes. The protocol of this study was proposed by Barlow et al. study (19). This protocol consisted of 5 therapeutic components: (i) psychological education about emotions and awareness of them, (ii) increased cognitive flexibility, (iii) identification and prevent patterns of emotion avoidance and maladaptive behaviors caused by emotion, (iv) tolerance of physical emotions Related to emotion and (v) internal and situational emotion-driven exposure. These five main components are followed by an introductory section focused on increasing motivation and readiness to change and engage in the treatment process. The content of the training sessions has been presented in Table 1.

**Table 1:** The content of the training sessions

<i>Sessions</i>	<i>Content of Training Sessions</i>
1 and 2	In these two sessions, teaching and presenting information that after establishing a therapeutic relationship with clients and increasing motivation and readiness for change, extensive information about the components of emotion, the three-system model of emotion and the role of emotions in symptom persistence depression and anxiety were presented
3 and 4	In these two sessions, participants deal with cognitive flexibility that worked on spontaneous thoughts and cognitive distortions, re-evaluating cognitions, practicing the down-arrow technique, and analyzing the usefulness of beliefs
5 and 6	In these two sessions, participants were about avoiding emotion and inconsistent behaviors caused by emotion
7 and 8	In these two sessions, the therapist's emphasis was placed on preventing emotion avoidance and correcting emotion-induced behaviors, emotion-related physical work, and internal and situational emotion-centered exposure

### Ethics approval

After a comprehensive explanation, all participants in this research program were aware of the methodology used. Participants' written informed consent was obtained after giving suffi-

cient explanations about the study goals. The research procedure was entirely in line with the university human ethics committee and implemented with an ethical code IR.UT.PSYEDU.REC.1399.023.

### Statistical analysis

The statistical analysis was carried out using SPSS for Windows ver. 18 at a significant level less than 5% ( $P < 0.05$ ). Qualitative and quantitative variables were reported by frequency (percent) and mean ( $\pm$ Standard Deviation (SD)), respectively. The distribution normality of quantitative variables was checked by the Kolmogorov Smirnov test. The between variable significance calculated by Mann–Whitney U test or *t*-test, and within variable significance is tested by paired sample *t*-test or Wilcoxon test. For comparison of qualitative variable between two groups, the Chi-square test was used.

### Results

The mean and standard deviation of age in two groups are  $16.30 \pm 2.02$  and  $16.40 \pm 1.6$  ( $P = 0.915$ ) in treatment and control groups respectively.

Overall, 26%, 37% and 37% of the participants in the intervention group were in mathematics, experimental and humanities, respectively, and also 38%, 25% and 37% of the participants in the control group were in mathematics, experimental, respectively ( $P = 0.819$ ). The mean  $\pm$ SD of study variables before and after study according to the two groups has been presented in Table 2. The score of two questionnaires, PSST (symptom, effect) and ERQ (cognitive reappraisal, suppression) between two groups in before treatment were the same. After intervention the variables symptom, effect and cognitive reappraisal were just significant differences in intervention group but these variables were not significant in control group. The variable suppression significantly changes in both groups but this change in intervention group is more significant rather than a control group.

**Table 2:** The mean  $\pm$ SD of study variables before and after study according to the two groups

Variables	Groups	Time				Difference	Within P-value	Between P-value
		Before		After				
		Mean	SD	Mean	SD			
PSST Symptom	Intervention	2.47	0.33	1.42	0.29	-1.05	0.001	<0.001
	Control	2.47	0.34	2.45	0.32	-0.02	0.517	
		P-value	0.975	P-value	<0.001			
PSST Effect	Intervention	2.47	0.35	1.94	0.43	-0.53	0.001	<0.001
	Control	2.39	0.29	2.35	0.30	-0.04	0.170	
		P-value	0.443	P-value	0.004			
ERQ Cognitive reappraisal	Intervention	5.15	0.66	5.82	0.54	0.67	<0.001	<0.001
	Control	5.13	0.66	5.15	0.64	0.02	0.311	
		P-value	0.941	P-value	0.006			
ERQ Suppression	Intervention	5.70	0.55	5.06	0.54	-0.64	0.001	<0.001
	Control	5.67	0.50	5.60	0.51	-0.07	0.006	
		P-value	0.873	P-value	0.015			

PSST: Premenstrual Symptoms Screening Tool, ERQ: Emotion Regulation Questionnaire, SD: Standard Deviation

### Discussion

According to the WHO guild line, health is considered one of the most obvious human rights and needs. To achieve health, all countries must

pay attention to different groups in society, one of which is adolescents. One of the most important issues for adolescent girls after puberty is getting involved with PMS (36).



The most common complaints of girl with PMS are related to increased psychological problem such as anxiety and depression (37).

Approved experimental treatment guidelines have been effective in reducing the symptoms of anxiety and depression in adolescents (15, 16) but most of them except TTM not more effective because they only treat one disorder, so this study with aim of evaluating the effectiveness of TTP on clinical symptoms and emotion regulation in girl's adolescents with PMS has been done.

The result of this study showed the change of variable symptom (-1.05 vs. -0.02,  $P<0.001$ ), effect (-0.53 vs -0.04,  $P<0.001$ ), cognitive reappraisal (0.67 vs. 0.02,  $P<0.001$ ) and suppression (-0.64 vs -0.07,  $P<0.001$ ) were significant between two groups. TTP on clinical symptoms and emotion regulation in girl adolescents is effective. The results of this study can be explained by the type of TTM intervention that is used through the extraction and integration of common principles( among existing psychological therapies (23).

This study is consistent with the studies done by ealier (16, 24-29). The TTP is an effective technique in reducing anxiety and tendencies in young people (25). Moreover, the effectiveness of TTP in decreasing the symptoms of depression and anxiety were evaluated (26-29). It has been showed that TTP tends to significant reduction in the symptoms of depression and anxiety. Focusing on treatment the set of disorders not just one disorder in TTP is the main reason for the efficiency of this method (18).

The limitations of the present study included the limitedness of the present sample to the patients of the Tehran city and small sample size. It is recommended that in future research, larger samples be considered for the generalization and effectiveness of the TTP on clinical symptoms and emotion regulation in female adolescents with PMS.

## Conclusion

TTP is an effective technique for controlling clinical symptoms and emotion regulation in girl's adolescents with PMS.

## Journalism Ethics considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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## Conflict of interest

The authors declare that there is no conflict of interest.

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