Evaluation of Regulation Strategies and Traumatic Experiences as Factors Predicting the Severity of Premenstrual Syndrome

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Abstract

Background: The goal of the present study was to investigate the prediction of severity of premenstrual syndrome based on traumatic life experiences and adaptive and maladaptive emotion regulation strategies.

Methods: this was a descriptive-correlational study. The participants included a total of 207 adolescent girls studying in the high schools of Shiraz selected through convenience sampling method. The Premenstrual Symptoms Screening Tool (PSST), the Cognitive Emotion Regulation Questionnaire (CERQ), and the Traumatic Experiences Checklist (TEC) were used to gather data. Means, standard deviations, Pearson correlation coefficient and regression analysis were used to analyze the data.

Results: The results indicated a significant relationship between premenstrual syndrome and maladaptive cognitive emotion regulation strategies, so that catastrophizing predicted 37% of the variance of premenstrual syndrome. In addition, there was a significant relationship between premenstrual syndrome and traumatic events, so that threat to life/bizarre punishment/intense pain as a traumatic event, predicted 34% of the variance of premenstrual syndrome. However, no significant association was found between premenstrual syndrome and adaptive cognitive emotion regulation strategies.

Conclusion: The results suggest that emotion regulation-based interventions and trainings can be useful in helping female students apply adaptive cognitive emotion regulation strategies in coping with premenstrual syndrome.

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Introduction

Premenstrual syndrome (PMS) is a cluster of physical (cramps, breast sensitivity), behavioral (changes in the patterns of sleep and diet, reduced concentration), and emotional (increased irritability, mood changes) symptoms that occur in women of reproductive age (1). Premenstrual symptoms reach to a peak during 7-14 days before menstruation, and decrease in the follicular phase of the menstrual cycle or by the start of menstruation (2). Premenstrual symptoms occur in 30% to 40% of women of reproductive age (3). PMS interferes with the

work, social, and family functioning of women, and imposes a significant financial burden on the society as it is related to increased absences from work and reduced productivity (4-5). The cost of PMS in the US is estimated to be about 4500 dollars a year per patient, based on the insurance costs and the costs related to absence from work (6). In Iran, the prevalence of PMS is 80.4% in high school students, 68.9% in college students, and 54.9% in the general population (7). Despite the high prevalence of PMS, little is known about its etiology, and the previous studies on the causes of PMS were mostly focused on the biological factors, such as genetic aspects, hormones, and neurotransmitters. However, it seems that biological factors alone cannot account for the etiology of PMS. Therefore, there must be other factors explaining why PMS is not experienced by all women. Bio psychological models for PMS have a strong emphasis on psychological factors (8). Two important psychological factors that have been studied as major risk factors of PMS include traumatic life experiences and emotion regulation strategies (1,8). According to DSM-5, being exposed to traumatic events corresponds with the criterion A of post-traumatic stress disorder (PTSD). The symptoms of this disorder are emerged after being exposed to death or threatened death, serious injury, or sexual violence, in the following ways: 1- Being exposed to the traumatic event directly, 2- Witnessing the traumatic event happening to someone else, 3- Learning that a family member or a close friend was exposed to the traumatic event, 4- Being exposed to the unpleasant details of the traumatic event repeatedly or in a severe manner (9). It has been found that women who experience premenstrual symptoms with a greater intensity are more likely to have experienced bodily threats and sexual abuse during childhood or serious accidents (10). In addition, it has been reported that women

with a history of PTSD are more likely to experience premenstrual symptoms during their lifetime (11).

On the other hand, sociocultural theories emphasize on the role of negative emotions and emotion regulation strategies as possible variables influencing PMS (12). Emotion regulation strategies can be defined as processes by which people can impact their emotions, in terms of determining what emotions they experience, when to experience them, or how to express them. Emotion regulation refers to internal and external processes responsible for controlling, evaluating, and modifying our emotional reactions toward achieving personal goals, and any deficiency in emotion regulation can make us vulnerable to mental disorders, like depression and anxiety. People use different strategies to regulate their emotions. Some strategies are adaptive, such as refocusing after a love failure or modulating emotions through writing them down and some are maladaptive, such as catastrophizing and rumination (13). PMS is negatively related to adaptive emotion regulation strategies and positively related to maladaptive emotion regulation strategies. In fact, adaptive emotion regulation strategies can reduce the intensity of emotions and psychological arousal, therefore leading to positive effect and higher psychological wellbeing and interpersonal performance, while maladaptive strategies, such as suppression cannot reduce the intensity of emotions, therefore leading to negative effect and lower psychological wellbeing and interpersonal performance (14). Therefore, investigating PMS and its possible risk factors seems to be useful in reducing its complications. Given the lack of studies in Iran focused on this topic, the present study was aimed at exploring the role of traumatic life experiences as a psychological risk factor of PMS, and also the role of cognitive

emotion regulation strategies as a way of alleviating the symptoms of PMS.

Materials and Methods

Participants

A descriptive-correlational design was utilized. The statistical population included all high school students of Shiraz in the school year 2017-2018. The sample included a total of 235 students who were selected through convenience sampling method. Due to attrition, finally, a total of 207 students were included in the analysis. The inclusion criteria were as follows: aged 12-18 years, no serious psychiatric disorders, and informed consent for participation. The exclusion criterion was lack of consent to participate at any stage of the study.

Procedure

After making necessary arrangements with the high school officials, the participants were selected based on the inclusion and exclusion criteria, among the female high school students without a history of serious mental or physical illness requiring pharmacological or psychological treatment. In the next step, the instruments were distributed to the participants. Before gathering the data, the participants were reassured that their personal information remained completely confidential. In addition, they were allowed to leave the study at any stage.

Instruments

The following three instruments were used to collect data: The Premenstrual Symptoms Screening Tool (PSST), the Cognitive Emotion Regulation Questionnaire (CERQ), and the Traumatic Experiences Checklist (TEC).

The Premenstrual Symptoms Screening Tool (PSST)

This 19-item questionnaire has two parts: Part 1 has 14 items assessing mood, physical, and behavioral symptoms, and part 2 has 5 items assessing the impact of these symptoms on the life of the respondent. The items are rated on a 4-point Likert-type scale, ranging from 1 (Not present) to 4 (Severe), and the score range on each item is 0-3. The reliability of the questionnaire using the Cronbach's alpha coefficient was found to be 0.96 for the part assessing symptoms and 0.91 for the part assessing the impact of symptoms (15). In Iran, Cronbach's alphas of 0.91, 0.87, and 0.87 were reported for the total scale, the part assessing symptoms, and the part assessing the impact of symptoms, respectively (16). In the present study, a Cronbach's alpha of 0.92 was found for the total scale, an alpha of 0.86 for the part assessing symptoms, and an alpha of 0.86 for the part assessing the impact of symptoms.

The Cognitive Emotion Regulation Questionnaire (CERQ)

This 36-item questionnaire was developed by Garnefski et al. (2001). It is a multidimensional questionnaire assessing cognitive emotion regulation strategies people use after unpleasant experiences. The items of the CERQ are rated on a 5-point Likert-type scale, ranging from 1 (Always) to 5 (Never) (17). The CERQ assesses 9 cognitive emotion regulation strategies, including Acceptance, Positive refocusing, Refocus on planning, Positive reappraisal, and Putting into perspective as adaptive strategies and self-blame, other-blame, catastrophizing, and rumination as maladaptive strategies. Total score ranges from 36 to 180. The CERQ can be administered to normal and clinical groups over 12 years of age (18). Cronbach's alphas ranging from 0.77 (for Acceptance) to 0.93 (for Positive refocusing) were reported for the 9 strategies (19).

In Iran, Cronbach's alphas ranging from 0.64 (for Acceptance) to 0.82 (for Positive refocusing) were reported (20). A Cronbach's alpha of .87 was found in the present study.

The Traumatic Experiences Checklist (TEC)

This is a self-report checklist that assesses 29 traumatic events corresponding to the criterion A of PTSD. Total score ranges from 0 to 29. It has 6 main subscales, including Emotional neglect, Emotional abuse, Sexual harassment, Sexual abuse, physical abuse and threat to life/bizarre punishment/intense pain (21). A Cronbach's alpha of 0.86 and a test-retest reliability of 0.91 were reported for the TEC. In addition, a concurrent validity of 0.77 was found between the TEC and the Stressful Life Events Screening Questionnaire (SLESQ) (22). A Cronbach alpha of 0.82 was found in an Iranian sample (23). In the present study, a Cronbach's alpha of 0.74 was found.

Data Analysis

The data were analyzed using Pearson Correlation Coefficient (PCC) to assess the relationship between traumatic experiences, emotion regulation strategies and Premenstrual Symptoms. Stepwise regression analysis was utilized to assess the effect of adaptive and maladaptive cognitive emotion regulation strategies and traumatic life experiences on PMS. All the analyses were performed using SPSSS, version 22.

Results

The study sample included 207 adolescent girls in the age range of 13-17 years (mean = 14.21, SD = 1.24). Means,

standard deviations, and correlations are shown in Table 1, 2, and 3.

There was a significant relationship between PMS and the following maladaptive cognitive emotion regulation strategies: other-blame (r=0.276, P<0.0001), self-blame (r=0.257, P<0.0001), and rumination (r=0.173, P<0.0001), but there was no significant relationship between PMS and adaptive cognitive emotion regulation strategies. In addition, PMS was significantly associated with emotional neglect (r=0.251, P<0.0001), emotional abuse (r=0.241, P<0.0001), physical abuse (r=0.166, P<0.0001), threat to life/bizarre punishment/intense pain (r=0.274, P<0.0001), and sexual harassment (r=0.158, P<0.0001).

The multiple regression analysis was used to examine the effect of adaptive and maladaptive cognitive emotion regulation strategies and traumatic life experiences on PMS (Table 4). According to the results, catastrophizing (a maladaptive cognitive emotion regulation strategy) was the best predictor of PMS, and explained 37% of its total variance. Physical threat (a subscale of the TEC) entered the analysis in the second step, and explained 34% of the variance of PMS. Emotional abuse (a subscale of the TEC) and refocus on planning (an adaptive cognitive emotion regulation strategy) entered the analysis in the third and fourth steps, and explained 15% and 13% of the variance of PMS, respectively. Finally, in the fifth step, Self-blame (a maladaptive cognitive emotion regulation strategy) was entered the analysis, and explained 17% of the variance of PMS.

Table 1. Means and standard deviations for PMS, cognitive emotion regulation strategies, and traumatic experiences

Variables	Mean	SD
PMS	38.40	13.04
other-blame	9.26	3.04
Self-blame	10.08	3.11
Rumination	11.26	3.49
Catastrophizing	9.52	3.76
Acceptance	11.51	3.32
Refocus on planning	12.63	3.74
Positive refocusing	11.05	3.35
Positive reappraisal	12.49	4.02
Putting into perspective	10.81	3.25
Emotional neglect	0.45	0.84
Emotional abuse	0.26	0.55
Physical abuse	0.15	0.41
threat to life/bizarre punishment/intense pain	0.11	0.34
Sexual harassment	0.08	0.36
Sexual abuse	0.06	0.32

Table 2. The relationship between PMS and cognitive emotion regulation strategies (Pearson correlation coefficients)

Variable	1	2	3	4	5	6	7	8	9	10
PMS	1									
other-blame	0.276**	1								
Self-blame	0.257**	0.340**	1							
Rumination	0.173**	0.384**	0.558**	1						
Catastrophizing	0.377**	0.513**	0.481**	0.449**	1					
Acceptance	0.066	0.188**	0.364**	0.377**	0.268**	1				
Refocus on planning	-0.131	0.108	0.299**	0.403**	-0.022	0.374**	1			
Positive refocusing	-0.079	0.061	0.088	0.185**	-0.091	0.222**	0.583**	1		
Positive reappraisal	-0.115	0.037	0.181**	0.326**	-0.099	0.387**	0.782**	0.565**	1	
Putting into perspective	0.133	0.255**	0.345**	0.354**	0.162*	0.394**	0.429**	0.338**	0.442**	1

*p < .05, **p < .01   (Pearson correlation coefficients)

Table 3. The relationship between PMS and traumatic life experiences

Variable	1	2	3	4	5	6	7
PMS	1						
Emotional neglect	0.251**	1					
Emotional abuse	0.241**	0.467**	1				
Physical abuse	0.166*	0.287**	0.323**	1			
Threat to life/bizarre punishment/intense pain	0.274**	0.257**	0.151*	0.079	1		
Sexual harassment	0.158*	0.034	0.108	0.296**	0.197**	1	
Sexual abuse	0.129	0.000	0.068	0.352**	0.238**	0.846**	1

*p < .05, **p < .01   (Pearson correlation coefficients)

Table 4. Stepwise regression analysis for PMS based on cognitive emotion regulation strategies and traumatic life events

Model	Predictor variables	R	R Square	SE	Beta	T	Sig.
1	Catastrophizing	0.377	0.142	12.14	0.377	5.81	0.0001
2	Catastrophizing	0.436	0.190	11.83	0.343	5.37	0.0001
	threat to life/bizarre punishment/intense pain				0.221	3.46	0.001
3zz	Catastrophizing	0.460	0.212	11.69	0.318	4.96	0.0001
	threat to life/bizarre punishment/intense pain				0.202	3.17	0.002
	Emotional abuse				0.152	2.36	0.01
4	Catastrophizing	0.479	0.229	11.59	0.314	4.94	0.0001
	threat to life/bizarre punishment/intense pain Emotional				0.207	3.28	0.001
	abuse				0.152	2.38	0.01
	Refocus on planning				-0.132	-2.12	0.03
5	Catastrophizing	0.498	0.248	11.48	0.233	3.20	0.002
	threat to life/bizarre punishment/intense pain Emotional				0.218	3.47	0.001
	abuse				0.136	2.14	0.03
	Refocus on planning				-0.185	-2.81	0.005
	Self-blame				0.170	2.25	0.02

Discussion

The goal of the present study was to examine the role of cognitive emotion regulation strategies and traumatic experiences in predicting PMS. Consistent with our results, previous studies have shown that women reporting premenstrual symptoms have more difficulty regulating their

emotions (24-25). In the present study, among the cognitive emotion regulation strategies, catastrophizing accounted for a large part of the variance of PMS. Because some women experience premenstrual symptoms and some not, this finding may indicate that the emergence of premenstrual symptoms in some women is due to their false interpretation of normal physical changes. Perhaps women who experience more severe premenstrual symptoms, expect these symptoms, and become overly alert to the signs of normal physical changes, therefore paying too much attention to painful feelings. In fact, catastrophizing is related to inability to divert attention away from pain (26).

In addition, among the traumatic experiences, threat to life/bizarre punishment/intense pain and emotional abuse accounted for a large part of the variance of PMS. Previous studies have referred to traumatic experiences as a possible risk factor of premenstrual symptoms, in other words, women with premenstrual symptoms are more likely to have experienced traumatic events during adulthood (27). Moreover, subthreshold premenstrual symptoms may be intensified by traumatic experiences. In other words, in women who experience mild to moderate symptoms of PMS, traumatic experiences may increase the intensity of symptoms (28). Research has shown that women with a history of trauma report a higher rate of PMS, experience more severe premenstrual symptoms (29), and show higher levels of stress (30). Examination of neurobiological factors shows that exposure to traumatic events may lead to long-term dysregulation of the stress-response system that can have a supportive role against trauma in the pathophysiology of premenstrual symptoms (31). In addition, traumatic experiences may be related to a significant decrease in progesterone, allopregnanolone and other neurosteroids in the luteal phase of the menstrual cycle, therefore leading to PTSD symptoms (32). Overall, it can be said that methods of evaluating the self and the peripheral reality that are formed by one's failures in life, feedbacks from parents, or experiences of rejection are hidden, and negatively influence one's performance when a stressful event occurs. Activation of this evaluation as a result of stress causes one to experience a bad mood and have a distorted perception of the reality. On the other hand, hormonal changes influence emotional reactivity in women with premenstrual syndrome (PMS). Estrogen, through its receptors, has an important effect on the reactivity of serotonergic pathways of the brain. Estrogen and progesterone influence the performance of the hypothalamic-pituitary-adrenal axis (HPA axis), therefore increasing stress reactivity. Because increased emotional reactivity is present in all women in the late luteal phase, it cannot be considered a determining factor in PMS, but methods of negative evaluation hidden in the follicular phase of menstrual cycle are activated during emotional reactivity in the luteal phase, and women with PMS compared to those without it, tend to have a more negative evaluation in the late luteal phase, without the presence of this evaluation in the follicular phase (33).

The variables examined in the present study were among the most important factors in predicting premenstrual symptoms in adolescent girls, therefore, they can be subjected to more rigorous examinations, and can be used in treatment protocols based on emotion regulation strategies.

The first limitation of this study is related to the study sample and the sampling method used. Because the sample only consisted of adolescents and due to using a convenience sampling method, caution should be taken in generalizing the

results. We suggest future studies to use sampling methods that allow for comparison between different age groups. Another limitation of our study is related to the use of self-report instruments to gather data that are prone to various response biases. Therefore, future studies are suggested to use a combination of methods to collect data.

Conclusion

Cognitive emotion regulation strategies and traumatic experiences are important factors in predicting the severity of premenstrual symptoms in adolescent girls. Therefore, they can be useful in designing interventions to decrease the severity of premenstrual symptoms in this group.

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