

## Comparison effectiveness of cognitive-behavioural therapy and relaxation technique on curing premenstrual syndrome

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### Abstract

The main purpose of this study was to compare the efficacy of cognitive-behavioural therapy and relaxation technique in the treatment of premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD). For this purpose, after screening 82 girls students, they were randomly divided into three groups: relaxation, cognitive-behavioral and control. Results showed the amelioration of PMS and PMDD with cognitive-behavioural therapy and relaxation technique but relaxation technique was a superior method. It can be recommended that the relaxation technique for relief of PMS and PMDD.

**Keywords:** Cognitive-behavioral therapy, relaxation technique, premenstrual syndrome.

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## 1. Introduction

Menstruation is the uterine cycle bleeding that the most women experience it in the reproductive ages. The most women experience menstruation in the age of 13 for the first time, with the normal range (8–16 years). The average length of menstrual bleeding is seven days with the normal range (3–7), and less and more than it are considered hypomenorrhea and hypermenorrhea (Speroff, 2011). Luteal phase of menstrual cycle begins when ovulation starts and ended with menstrual bleeding. The average duration of luteal phase is 14 days. Premenstrual syndrome is relating to the luteal phase. Premenstrual syndrome includes recurrent periods of changes which are distressing, causing physical, psychological or behavioural in during the luteal phase which causes interference with social, job or family activities. (Kistners, 1995). Premenstrual dysphoric disorder (PMD) is a severe form of premenstrual syndrome that, some consider it a separate clinical categories that characterised by prominent symptoms of irritability, anger, dysphory and very wide range of physical and behavioural symptoms has been attributed to different behaviors. The most common physical symptoms include headaches, abdominal bloating, exhaustion and painful breast. The most common behavioural symptoms include mood instability, irritability, depressed mood, increased appetite, forgetfulness, trouble in concentrating (Speroff, 2011). There are pharmacological and non-pharmacological treatments for premenstrual syndrome. American college of obstetrics and women, women health, baby care Nursing accurate assessment of initial treatment of premenstrual syndrome with non-drug treatments (Taylor, 2005).

Cognitive behavioural approaches are based on the theory that learning processes play a formative role in the development and maintenance of addictive behaviours. These treatments are among the most widely studied. Considering the extensive research that has been conducted in establishing cognitive behavioural therapy as an empirically supported treatment and that few differences are found when comparing cognitive behavioural treatments (see the Mesa Grande study described earlier), researchers have suggested that effective elements across cognitive behavioural approaches be combined. More recently, Sharpe et al. (1996) and Speckens et al. (1995) implemented a series of randomised control trials which utilised between six and 16 sessions of cognitive-behavioural therapy to demonstrate the effectiveness in managing problems of chronic fatigue and medical patients with unexplained physical symptoms, respectively. As mentioned, there is no need to replicate the efficacy of cognitive-behavioural therapy with this client group but it is appropriate to elaborate on the main themes and highlight some of the common cognitive distortions. The cognitive-behavioural approach has much to offer in the management of spinal cord injury. There is common consensus on the efficacy of its application to this client group. Crewe and Krause (1981) and Kennedy (1991) describe the applications of cognitive-behavioural therapy with this population. During therapy, thoughts and beliefs about the consequences of the injury are explored. Specific periods of emotional distress are examined; they include the antecedent events, thoughts and beliefs and emotional and behavioural consequences. These are separated and their interrelationships are discussed. Once specific negative thinking patterns and inferences are identified, related core assumptions are made explicit. By focusing on maladaptive and irrational patterns, negative assumptions about the consequences of the injury can be challenged and people are encouraged to respond to their injury in a rational and realistic fashion (Solati 2016). The results of previous research studies support the conceptual model of research. Depression constitutes one of the most common mental disorders, and medical and psychological therapies are the major therapeutic options for it. The results of previous research studies support the conceptual model of research. According to Solati (2016), the aim of the present study is to examine the efficacy of group cognitive-behavioural therapy, psycho-educational family and medical therapy in reducing and preventing the recurrence of symptoms in patients with major depressive disorder. This is a clinical trial on 60 women with major depressive disorder. Our findings indicate significantly difference between depression scores of the two experiment groups and the control group after intervention. On follow-up, however, only the second experiment group (family education) indicated a significant difference from the control group and the other groups were not significantly different.

Aim of Hafmann et al. (2012) study was cognitive behavioural therapy (CBT) which refers to a popular therapeutic approach that has been applied to a variety of problems. The goal of this review was to provide a comprehensive survey of meta-analyses examining the efficacy of CBT. We identified 269 meta-analytic studies and reviewed of those a representative sample of 106 meta-analyses examining CBT for the following problems: substance use disorder, schizophrenia and other psychotic disorders, depression and dysthymia, bipolar disorder, anxiety disorders, somatoform disorders, eating disorders, insomnia, personality disorders, anger and aggression, criminal behaviours, general stress, distress due to general medical conditions, chronic pain and fatigue, distress related to pregnancy complications and female hormonal conditions. Additional meta-analytic reviews examined the efficacy of CBT for various problems in children and elderly adults. The strongest support exists for CBT of anxiety disorders, somatoform disorders, bulimia, anger control problems and general stress. Eleven studies compared response rates between CBT and other treatments or control conditions. CBT showed higher response rates than the comparison conditions in seven of these reviews and only one review reported that CBT had lower response rates than comparison treatments. In general, the evidence-base of CBT is very strong. However, additional research is needed to examine the efficacy of CBT for randomised-controlled studies. Moreover, except for children and elderly populations, no meta-analytic studies of CBT have been reported on specific subgroups, such as ethnic minorities and low income samples. The current study investigates and compares the effectiveness of family education by cognitive behavioural method and common method on the psychological well-being of parents and girl students in secondary programme. This research tries to confirm the following hypothesis: 1) there is a significant difference between the effectiveness of family education courses by cognitive behavioural method and common method on the psychological well-being of parents and 2) there is a significant difference between the effectiveness of family education courses by cognitive behavioural method and common method on the psychological well-being of girl students.

Relaxation training help person to detect physical responses and change them although most of them are automatic responses. For example, many report heart throb when are angry. Deep breath is one of the relaxation techniques that reduce heart throb and it doesn't happen in many people normally. It leads to increase brain efficiency and control psyche. Person can control worry, anger and nervousness. Coote and Tenenbaum (1998) studied the role of relaxation in aggression and it showed that imagery and relaxation are effectiveness in stress tolerance. Watanabe, Fukuda, Hara and Maeda (2006) surveyed relaxation imagery in the health of people of society and resulted the more relaxation imagery is done, the more it will be effective. Moreover, Walds (2006) studied the effect of relaxation therapy to reduce physical-psychological symptoms of stress in mothers who worked and it showed stress level and tension decreased meaningfully. The progressive relaxation training (Jacobson, 1934), which is one of the most common technique for stress management, was developed by Jacobson (1934) for the first time. It is supposed that with relaxation training, people obtain skills in which by using them can manage their anxiety in stressful circumstances (Biggs, Kelly & Toney, 2003; Borkovec, Newman, Pincus & Lytle, 2002; Cheung, Molassiotis & Chang, 2003; Hanley, Stirling & Brown, 2003; Lolak, Connors, Sheridan & Wise, 2008; Richardson & Rothstein, 2008). In this study, the progressive relaxation training in the type of 16 groups muscles was used. This training contained 10 session and home weekly practices with CD (Quoted from Tavousi, 2014). For example, aim of Tavousi (2014) study was the effectiveness of progressive relaxation training in evaluating the stress of daily life events was examined. Data showed that by controlling the levels of self-esteem, hardiness and tension, the experimental group, after receiving the relaxation training, appraised the daily life events as less stressful than did the control group that did not receive the training. It can be concluded that the appraisal of stressful circumstances were influenced on individual resources. Aim of Aliasghary (2012) study was to investigate the effects of relaxation exercises with selected physical activity on girl's mental health. In this regard, 60 female students (18–30 years) participated in this study. They were divided into four similar groups. Categories include: relaxation groups ( $n = 15$ ), the physical activity group ( $n = 15$ ), relaxation with physical activity group ( $n = 15$ ) and control group ( $n = 15$ ). Experimental groups did exercise for 6 weeks and two times a week. But the control group did their routine activities. The statistical data show that the effects of relaxation training, effects of selected

Physical activity and effects of combined exercises. This study showed that relaxation training and selected physical activity and combined exercises cause to be improving the general health in student girls. Although not differences were observed between the three groups, but this study emphasises the relaxation of role in general health. The employing different methods of relaxation are as an effective and practical aims. Therefore, it is suggested that effect of other relaxation methods with physical activity and also interactivities influences of combination training types would be used and Aim of Demiralp et al. (2010) study was to investigate the effect of progressive muscle relaxation training on sleep quality and fatigue in Turkish women with breast cancer undergoing adjuvant chemotherapy. Sleep problems and fatigue are highly prevalent in patients with breast cancer. Progressive muscle relaxation training is a promising approach in ameliorating the sleep quality and reducing the fatigue associated with cancer and its treatment. A prospective, repeated measures, quasi-experimental design with control group. The study sampling consisted of 27 individuals (14 individuals formed the progressive muscle relaxation group, 13 individuals formed the control group) who met the criteria for inclusion in the study. Progressive muscle relaxation training was given to the progressive muscle relaxation group but not to the control group. The effect of the progressive muscle relaxation training was measured at different stages of the treatment. A data collection form, Pittsburgh Sleep Quality Index and Piper Fatigue Scale were used to collect the data for this study. The progressive muscle relaxation group experienced a greater increase in improved sleep quality and a greater decrease in fatigue than the control group. The findings indicated that progressive muscle relaxation training would improve sleep quality and fatigue in patients with breast cancer undergoing adjuvant chemotherapy. Aim of Lohaus (2001) study was to compare the effects of progressive muscle relaxation and an imagery-based relaxation training on childrens' physiological and subjective responses in a randomised controlled trial. Sixty-four children aged 9 to 13 years were randomly allocated to either one of three experimental conditions: progressive muscle relaxation, imagery-based relaxation or a control condition (neutral story). There were five training sessions in each condition. Heart rate (HR), skin conductance level (SCL) and skin temperature (ST) were measured continuously during a 5 minute baseline period, an 8 minute relaxation training period and a 5 minute follow-up in each session. In addition, subjective ratings of mood and physical well-being were collected intermittently. A physiological pattern indicating relaxation was most clearly associated with the imagery-based relaxation approach (decreases in HR and SCL) although ST remained unchanged. In contrast, progressive muscle relaxation led to an increase in HR during the training. The neutral story condition showed a similar trend as the imagery-based relaxation approach (although not reaching statistical significance). Furthermore, children's ratings of positive mood and physical wellbeing increased during baseline and training periods but there were no differences between training conditions. The results indicate psychophysiological effects of relaxation instructions which, however, are not specific for systematic relaxation training.

Aim of Jablon, Naliboff, Gilmore & Rosenthal (1997) study was examined the effects of progressive relaxation training and EMG biofeedback on acute glucose disposal in diabetic subjects, as measured by glucose tolerance and three other measures of diabetic metabolic control. Twenty subjects with non-insulin-using Type II diabetes took part in progressive relaxation training and EMG biofeedback in a pre-post treatment versus wait-list experimental design. Treatment effects were assessed on glucose tolerance along with three measures of diabetic control: fasting blood glucose, 2 hour postprandial blood glucose and fructosamine. Stress reduction and relaxation were assessed with two physiological measures and two subjective questionnaires. The training programme produced significant reductions in stress, as measured by State Anxiety, and significant changes in physiological measures of muscle activity and skin conductance compared to the control condition. However, no changes were found in glucose tolerance (while practicing relaxation) nor in any of the three measures of general diabetic metabolic control. The major implication of this study is that relaxation training does not appear to directly improve diabetic control in mildly stressed non-insulin-using Type II diabetic patients. Aim of Tsai and Crockett (1993) study was to test the effectiveness of relaxation training, which was based on the cognitive-behavioural model and specifically focused on helping Chinese registered nurses employed in large teaching hospitals to

reduce their work stress in Taiwan, Republic of China. The study design was a pretest–posttest control design with two posttest points. The treatment of the experimental group consisted of two sessions of relaxation training based on Smith's (1988) cognitive behavioural model of relaxation at weeks 1 and 2, with a follow-up session in the 5th week. The control group had the same sequence of sessions with a presentation by the researcher on theory analysis in nursing. The mean scores on the nurse stress checklist (NSC) and the Chinese General Health Questionnaire (CGHQ) differed significantly between the experimental and control group in posttest 2 at week 5. These results supported the hypotheses that the relaxation training decreased the Chinese nurses' self-reported work stress as measured by NSC and increased the Chinese nurses' self-reported psychophysiologic health as measured by CGHQ. The significant difference on means of the CGHQ in posttest 1 at week 2 showed that the self-reported psychophysiologic health level responded to the relaxation training earlier than to the self-reported work stress level. In the relaxation treatment, duration of practice was an important factor of the effectiveness of the treatment on the dependent variable of NSC. It is suggested that even brief teaching of relaxation techniques may reduce work stress levels and promote a sense of psychophysiologic health in Chinese nurses who are employed in large teaching hospitals in Taiwan. As far as, non pharmacological treatments have lower complications than pharmacological treatments and are cheaper and more available, we design this research. Many of studies showed the effectiveness cognitive—behavioural therapy and relaxation techniques on curing premenstrual syndrome, but more and more research's should be doing (are be needed). Although, there is a few research's about comparison among these methods in curing PMS. There were three hypotheses. In this study: 1) Relaxation technique is effective in treating of PMS; 2) Cognitive-behavioural therapy is effective in treating of PMS; and 3) There is significance difference between relaxation technique and cognitive-behavioural therapy in treating of PMS. Our question was: which method can be preferred?

## **2. Methods and tools**

### **2.1. Methods**

This study was semi-experimental study. At first guidance, girl students screening was done with with PSST Questionnaire (Iranian version, 1390). Our primary prototype was 400 students. By using statistics formulas, we needed 196 students for sampling. After screening 90 girls students have been premenstrual syndrome (PMS). Whole randomized groups were performed into three groups: cognitive-behavioural group, relaxation group and control group.

Criteria in this study were: 1) minimum age **15** and maximum age **18**; 2) having menstrual cycles with duration:21–35 days; 3) cycle length between 3–8 days; and 4) lacking of tragic events (for example, divorce or dying their parents); 5) being single; 6) lacking of physical or psychological illness and 7) consenting to participate in research.

According to these criteria, eight girl students were excluded from the study.

Thus, our sample has 82 subjects so that the cognitive-behavioural group were 28, relaxation group were 29 and control group were 25. Pretests were being done. After that cognitive-behavioural group was (were) received Micheal Ferry Hawton cognitive-behavioral training.

Once a week, with 2 hours section, for 12 sections. Relaxation group were (was)

Received Benson relaxation training, once a week for 2 months 3/day for 20 minutes.

Control group haven't received any construction training. After training, post tests were be done. We used descriptive and deductive statistical & deductive statistical methods such as Average (mean), Standard deviation and T-test ( chi-square )

Kolmogorov–Smirnov test, Kruskal–Wallis test (Anova), Variance by statistical software SPSS 16 in order to analyze our findings and data.

**Then, statistical analysis were performed with using SPSS version 16. Anova, chi-2, and LSD method in post hoc were being done.**

## 2.2. Tools

The used tool in this study is PSST questionnaire. PSST questionnaire was developed by Steiner et al. (2003) (Kathleen, Lustyk & Grysh, 2010). In this study, we used Iranian version of PSST questionnaire, that normed by Moghaddambanaem, Montazeri, Hariri & Siahbazi (2011)

PSST questionnaire has two parts. The first part has 14 question, that evaluate mood, behavioural, physical symptoms, and the second part has five question that evaluate the effect of these symptoms on life. PSST is answered with Likert scale of four degrees. Reliability of PSST (Iranian version) was evaluated with Internal consistency with cronbach's alpha, that equal or greater than 0.7, is considered an acceptable amount. For validity has been used two method, content validity and apparent (observational) validity. For questions, internal consistency were being using Cronbach's alpha value with 0.91 for the section effect of symptoms on life and 0.93 for all questions.

## 3. Results

According to data, in this study the mean age was  $16.6 \pm 0.6$  and the mean menarche age was  $13.03 \pm 0.9$ . The mean age and the mean menarche age in the cognitive behavioural group were  $16.6 \pm 0.6$  and  $13.03 \pm 0.09$ . The mean age and the mean menarche age in the relaxation group were  $16.9 \pm 0.7$  and  $13.03 \pm 1.1$ . The mean age and the mean menarche age in control group were  $16.8 \pm 0.4$  and  $12.6 \pm 1.02$ .

(see Table1)

**Table 1 Descriptive statistical of age and menarche age in three groups**

Group	n	mean age	Sd	mean menarche age	Sd
Relaxation	n=29	16.9	0.7	13.03	1.1
Cognitive-behavioural	n=28	16.6	0.6	13	0.9
Control	n=25	16.8	0.4	12.6	1.02
Total	n=82	16.8	0.6	12.09	0.6

Students were studying 25.6% in human field,53.7% in experimental field and 20.7% in math field. (see table 1-2)

So that in cognitive-behavioural group, students were studying 21.4% in human field, 57.1% in experimental field, 21.4% in math field. In relaxation group were 34.5% in human field, 37.9% in experimental and 27.6% in math field. In control group were 20% in human field,53.7% in experimental field and 20.7% in math field. Father's students had educational : 22% in primary school, 26% in secondary school, 31% in high school and 1.2% in educational university. Mother's students had educational: 7.3% no education, 24.4% primary school, 29.3% secondary school and 39% had educational university.

**Table 2 Distribution of studying course in groups**

studying course	mathematics	experimental	human
group	Percent & n (%)	Percent & n (%)	Percent & n (%)
relaxation	27.6 (n = 8)	37.9 (n = 11)	34.5 (n = 10)
cognitive-behavioural	21.4 (n = 6)	57.1 (n = 16)	21.4 (n = 6)
control	12 (n = 3)	68 (n = 17)	20 (n = 5)
total	20.7 (n = 17)	53.7 (n = 44)	25.6 (n = 21)
chi-Square Tests = 5.3	Df = 4	P-V = 0.2	

The mean length of bleeding days was: In cognitive-behavioural group 6.27, in relaxation group 6.31, in control group 6.32 days. The mean duration cycle length was: In cognitive-behavioural group 28.03 s, in relaxation group 27.79, in control group 28.08 days.

The prevalence rate of PMS and PMDD was 41.8% and 13.7%, respectively. Previously mentioned in cognitive-behavioural group were 28 students; in relaxation group were 29 students and in control group were 25 students that all of them had PMS. In relaxation group, the amelioration rate was 72.4% (21 out of 29) for premenstrual syndrome and 83.3% (10 out of 29) for premenstrual dysphoric disorder ( $p < 0.05$ ). This showed the effectiveness relaxation technique in treating PMS and PMDD (our first hypothesis). In cognitive-behavioural group, the amelioration rate was 40% (11 out of 28) for premenstrual syndrome and 25% (2 out of 28) for premenstrual dysphoric disorder ( $p < 0.05$ ). This showed the effectiveness of cognitive-behavioural therapy in treating PMS and PMDD (our second hypothesis).

Recovery rate in cognitive-behavioural group and relaxation group for premenstrual syndrome:

Chi-square=6.3      df = 1      p-v = 0.011.

Recovery rate in relaxation group and cognitive-behavioural group for premenstrual dysphoric disorder:

Chi-square = 20.3      df = 1      p-v = 0.001

(see Table3)

**Table3 The comparison ratios in groups of relaxation and cognitive-behavioral**

Group	the amelioration rate of PMS	the amelioration rate of PMDD
relaxation	72.4% (21 out of 29)	83.3% (10 out of 12)
cognitive-behavioral	40% (11 out of 28)	25% (2 out of 8)

According to the results, there was significance differences between relaxation techniques and cognitive-behavioural therapy in treating PMS and PMDD (our third hypothesis) ( $p < 0.05$ ). According to comparison, the ratios of recovery rate in relaxation group and cognitive-behavioural therapy and the relaxation method had higher recovery rate and more affective (our question). It mentioned that in this study confidence level was 95% ( $p < 0.5$ ).

#### 4. Discussion and conclusion

The main purpose of this study was comparing the effectiveness cognitive-behavioural therapy and relaxation techniques on curing premenstrual syndrome.

Previous research has also demonstrated the effectiveness cognitive-behavioural and relaxation techniques on curing premenstrual syndrome. So that the result of this study consisted with Khosravi, Ameri & Mobini (1384); Davdandi, Navvabinezhad & Kashani (1390); Nazari, Birashk & Ghasemzade (2012); Brein et al. (2007); Bleil et al. (1988) (the second hypothesis). This study also consisted with Lotfikashani, Sarafraz & Pashasharifi (1386) Goodal et al.; Steinerdio (2007), Benmenacgin (2013) (the

first hypothesis). There are a few research in curing PMS and PMDD with comparison among relaxation and cognitive-behavioural method. Although Silver (1981) didn't find any difference indicated between relaxation technique and cognitive-behaviour therapy on curing migraine headache. Also, Christensen, Oei and Tian (1994) had been showed that therapy based on cognitive-behavioural preferred IFT (information-focused therapy) in decreasing (recovery) depression, negative automatic thought, behavioural and physical symptoms. Regarding to our screening and whole randomized sampling and significance difference among relaxation technique and cognitive-behavioural therapy ( $p < 0.05$ ) and following treatment relaxation method can be preferred and can be recommended to cognitive-behavioural therapy.

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