

The effects of emotional freedom techniques on coping with premenstrual syndrome: A randomized control trial

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Abstract

Purpose: The present study evaluated the efficacy of Emotional Freedom Techniques (EFT), commonly called “tapping,” for premenstrual (PMS) symptoms.

Design and Methods: This study was conducted with the participation of 50 nursing students who scored 111 or higher on the Premenstrual Syndrome Scale (PMSS). The students in the experimental group were instructed to apply EFT.

Findings: There were statistically significant differences between the mean depressive affect, fatigue, nervousness, sleep-related changes, and swelling subscale scores and the PMSS total scale score of the experimental group measured during the pretest and posttest ($p < 0.05$).

Practice Implications: The results demonstrate the efficacy of EFT in reducing PMS symptoms. As a fast and efficient self-treatment method, EFT can be easily implemented as a nonpharmacological intervention.

KEYWORDS

distress, Emotional Freedom Techniques, menstrual cycle, premenstrual syndrome, student

1 | INTRODUCTION

Premenstrual syndrome (PMS), identified by somatic, psychological, and behavioral indications experienced during the luteal phase of the menstrual cycle, affects an estimated 75% of women of reproductive age (Mayo Clinic, 2021). Epidemiological studies report various prevalence rates. In one such study, the frequency of PMS in Turkey ranged from 10% to 98% (Topatan & Kahraman, 2020) and in another study, 5%–85% (Crow & Jeannot, 2017).

The most common symptoms of PMS are anxiety, social isolation, irritability, depression, the sensation of losing control, lethargy, insomnia, changes in sexual desire, increased desire for certain foods or binge eating, mastalgia, weight gain, edema, muscle and joint pain, headache, upset stomach, constipation, and diarrhea (Hofmeister & Bodden, 2016). PMS symptoms may be severe enough to cause loss of function and/or affect relationships, social activities, school, and work. According to the criteria of the American College of

Obstetricians and Gynecologists (ACOG), a diagnosis of PMS should be considered if the symptoms appear periodically throughout the luteal phase and progress to considerable discomfort. The primary indicator is the periodic symptom pattern starts 5 or more days before menstruation and ceases with onset of menstruation or within 4 days after its termination. In addition to the symptoms cited above, emotional and cognitive symptoms cited by ACOG include explosive disorder, weeping, confusion, and concentration impairment; other physical symptoms include abdominal pain, fatigue, and skin problems (American College of Obstetricians and Gynecologists ACOG, 2020). Although the exact etiology is unknown, PMS may arise from an increase in sensitivity to progesterone and to neurotransmitter dysfunction (Yonkers & Simoni, 2018).

The onset of PMS symptoms most commonly occurs in adolescence (Maddineshat et al., 2016). Nonpharmacological treatment of chronic disorders such as PMS is significant, especially in this age group. Alternative treatments for PMS include herbal medicines,

acupuncture, acupressure, dietary changes, reflexology, massage, and aromatherapy (Armour et al., 2018; Es-Haghee et al., 2020; Hasanpour et al., 2019; Heydari et al., 2018; Lotfipour-Rafsanjani et al., 2018; Sharma et al., 2019; Uzuncakmak & Alkaya, 2018). Maddineshat et al. (2016) studied the effects of group cognitive behavioral therapy (CBT) on PMS symptoms by providing female nursing/midwifery students with eight sessions of group CBT and reported improvements in the PMS symptoms of the experimental group after the intervention. In another study, 10 sessions of CBT were administered to 28 women with PMS; the trial group presented statistically meaningful decreases in their premenstrual symptoms (Babajani et al., 2017). The findings in this body of evidence suggest that complementary and alternative medicine practices and CBT can be effective in treating and healing PMS symptoms.

The present study investigated the effectiveness of Emotional Freedom Techniques (EFT), commonly known as “tapping,” in reducing the physical and psychological symptoms of PMS. EFT, developed by Gary Craig, entailed gentle tapping with the fingertips on 12 acupressure points (acupoints) on the body (Figure 1). The acupoints are located along the body's meridians, or basic energy channels. The basic EFT protocol, called the “Basic Recipe,” now consists of eight points. Research has shown EFT to be effective in reducing anxiety, phobias, and posttraumatic stress disorder, among other disorders (Church, 2018).

EFT is a modality in the field of energy psychology. Simple to learn and apply, EFT blends components of exposure therapy, cognitive therapy, and acupressure (Bach et al., 2019) to calm the stress/distress response in the body. Based on allopathic frameworks, the stress response is initiated by stimulation of the hypothalamic-pituitary-adrenal axis (Wolpe, 1973) and diminishes when the stress is eliminated. However, the secretion of stress hormones such as cortisol, norepinephrine, and adrenaline continues when stress is chronic, as it is for many people in modern life. This repetitive stimulation increases the activity of the amygdala, hippocampus, and regions of the cerebrum related to anxiety (Gilomen & Lee, 2015). Unless this feedback cycle is interrupted, the stress response often causes a chronic inflammatory response along with physical and psychological dysfunction (Rancour, 2016). A principal subset of the cerebral regions is intimately correlated with the pain matrix; this subset includes the cingulate cortex, amygdala, hippocampus, thalamus, insula, and periaqueductal gray. The amygdala is significant for handling emotions, particularly anxiety and fear. Neuroimaging studies have shown the activity of the amygdala in acute pain. Brief inactivation of the amygdala can initiate an advancing standardization of motion through neuroplasticity, progressing to long-term physiologically and clinically crucial reactions (Qiu et al., 2016).

EFT affects both cognitive and emotional functions. When a disturbing emotional memory is recalled, the amygdala initiates the stress response in reaction to the perceived threat. Stimulating the EFT acupoints reduces the threat perception and the stress response is inactivated. The hippocampus then registers the former threat without the emergence of distress, causing the related anxiety response to be unlinked from the distressing memory (Stapleton et al., 2020). A study



FIGURE 1 EFT tapping points 31. Church D. Chapter 4. The Roots of EFT in Medicine and Psychology, *In Clinical EFT Handbook: A Definitive Resource for Practitioners, Scholars, Clinicians & Researchers*, Church, D., Marohn, S. (Editor), (1):53–65. Energy Psychology Press, 2013. EFT, Emotional Freedom Techniques

investigating stress biochemistry and changes in mental stress symptoms (Stapleton et al., 2020) found a significant reduction in cortisol levels in the group receiving EFT (43.24%, $p < 0.05$) compared to the group given talk therapy (19.67%) and the control group (2.02%). In a recent randomized controlled trial (Bach et al., 2019) investigating the effects of EFT on biochemical measures (e.g., blood pressure, cortisol levels), participants ($n = 31$) showed decreases in psychological measures of anxiety (40%), depression (35%), and posttraumatic stress disorder (PTSD; 32%). There were also changes in the cardiovascular system (e.g., resting heart rate, blood pressure) and the endocrine system (e.g., cortisol 37%, $p < 0.001$).

EFT uses the patient-centered approach originated by Carl Rogers and is modeled on personal coaching rather than psychotherapy, which involves different competence levels (Church, 2013). As noted, research has shown EFT's effectiveness for a range of symptoms and conditions. This study found that EFT decreased the PMS symptoms of depressive effect, fatigue, irritability, sleep-related changes, and bloating. Gaesser and Karan (2016) compared EFT with CBT and demonstrated that EFT caused decreases in anxiety in teenagers in educational institutions, particularly in comparison with a wait-list control. Lane (2009) reevaluated the literature on the practice of energy psychology acupoint stimulation as a counterconditioning method in psychotherapy. He described physiological mechanisms concordant with a decrease in distress and calming of the threat-evaluation systems in the midbrain. The mechanisms included decreased secretion of the stress hormone cortisol, a rise in endogenous opioids, and a calming of amygdala activity.

A meta-analysis of 14 randomized controlled trials of EFT for anxiety disorders ($N = 658$) found a very large treatment effect of $d = 1.23$ (95% confidence interval [CI]: 0.82–1.64, $p < 0.001$), while the effect size for combined controls was 0.41 (0.17–0.67, $p = 0.001$). EFT treatment was associated with a significant decrease in anxiety scores, even when accounting for the effect size of the control treatment (Clond, 2016). Several studies have investigated the effects of EFT on pain; one by Church and Nelms (2016) showed that EFT could diminish pain within a short therapy period as well as produce long-lasting reductions in anxiety and depression. Another

study investigating the effects of EFT on anxiety and stress in nursing students demonstrated a decrease in somatic symptoms of both stress and anxiety (Patterson, 2016). This body of evidence supplies a background for the current research, which analyzes the utilization of EFT for PMS.

Complex hormonal interactions, which are thought to cause premenstrual complaints, and the existence of more than one etiological theory produces considerable variation in the current treatment options for PMS. Relevant therapies include ovulation suppressants, diuretics, bromocriptine, prostaglandin, melatonin inhibitors, antidepressants or alternative psychopharmaceuticals, relaxation training, exercise therapy, support groups, and dietary changes (Babajani et al., 2017; Yonkers & Simoni, 2018).

The current research examined the effects of EFT, a non-pharmacological treatment, on PMS. The number of published studies using EFT for women's health is limited (Baker & Hoffman, 2015; Ghamsari & Lavasani, 2015; Vural & Aslan, 2019; Yuniarti et al., 2016). To our knowledge, to date there have been no studies in the literature investigating the application of EFT in PMS. The current

research aimed to assess the effects of EFT on indications of PMS in college students.

2 | METHODS

2.1 | Project and participants

The current experimental, randomized controlled research was conducted according to the CONSORT guidelines (Figure 2; Moher et al., 2010) at a university in Turkey between February 2019 and June 2019. The Department of Nursing where this study was conducted had 153 female students who were asked to participate in this study and complete the Premenstrual Syndrome Scale (PMSS). A score of 111 or higher on the PMSS indicates the existence of premenstrual symptoms. A final 50 students met the study standards and agreed to participate in this research (Figure 2). The eligibility criteria for participants were as follows: speaking Turkish, age between 18 and 45 years, having regular menstrual cycles, not having any chronic

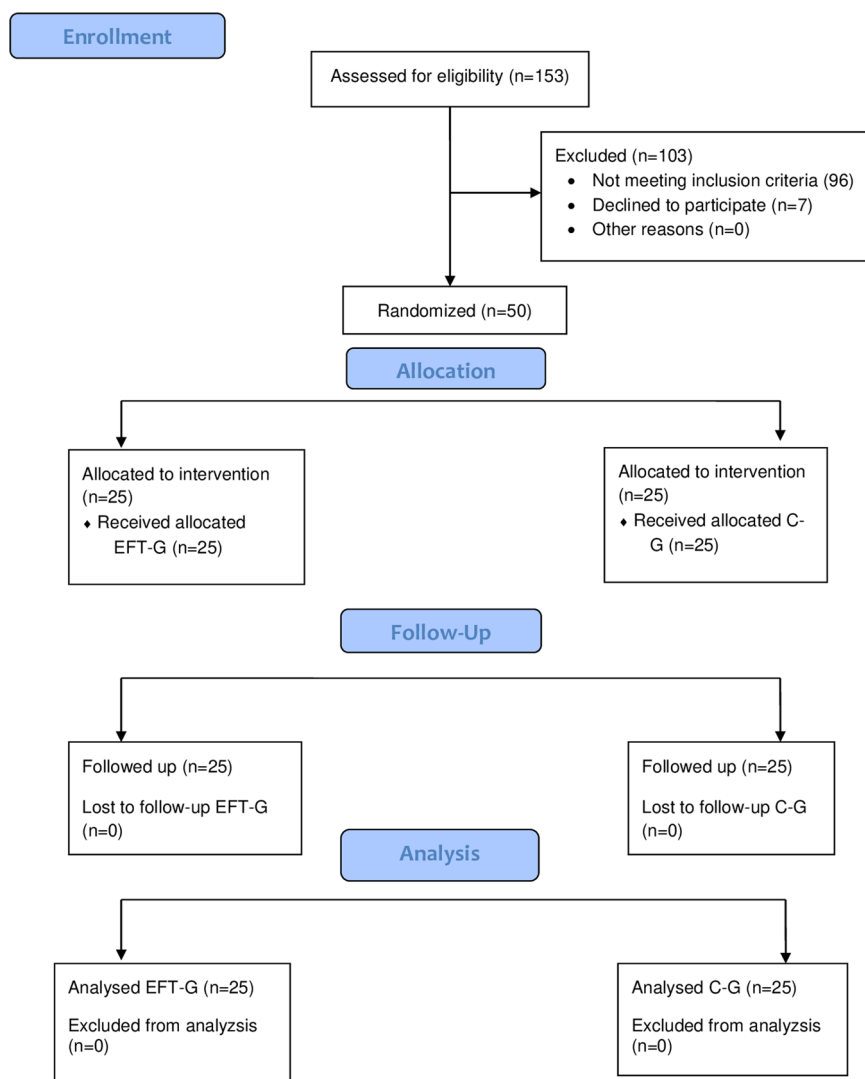


FIGURE 2 CONSORT flow diagram

diseases (such as diabetes mellitus, hypothyroid), not using prescription medications regularly, not having had a pregnancy or birth, and not utilizing a therapy to treat PMS.

2.2 | Tools

Data were obtained handling a descriptive characteristics survey, the PMSS, and the Subjective Units of Distress (SUD) scale.

The researchers prepared the descriptive characteristics of the PMSS survey, which consisted of 14 questions: 6 of them socio-demographic and 8 of them related to menstrual characteristics and PMS symptoms. In addition, the PMS indications of the participants were assessed according to the ACOG guidelines of emotional and physical symptoms for PMS beginning at least 5 days before menstruation and ending by 4 days afterward (American College of Obstetricians and Gynecologists ACOG, 2020).

The PMSS scale was developed by Gencdogan (2006) to define premenstrual indications and their severity. The Cronbach's alpha coefficient of the scale was 0.75 (Gencdogan, 2006). In the current research, Cronbach's alpha coefficient of the scale was 0.95. The PMSS is a 5-point Likert scale that contains nine subscales and 44 items. In the scale's grading, a response of "never" is scored as 1 point, "rarely" as 2 points, "occasionally" as 3 points, "often" as 4 points, and "always" is scored as 5 points. The lowest and highest points that can be read from the scale are 44 and 220, respectively. Higher scores indicate greater PMS severity. Women are considered to have PMS when they have at least 50% of the highest PMSS score (Gencdogan, 2006).

This study also used the SUD scale (Wolpe, 1973) to evaluate the level of physical and emotional symptoms of PMS. The level of each symptom is assessed on this 10-point Likert-type scale, with 0 being no symptoms and 10 being the highest level of pain or other distress or discomfort. The SUD scale provides physicians and patients with a measure of the degree of discomfort before intervention and after intervention to determine the effectiveness of a procedure. In this study, the Cronbach's alpha coefficient of the SUD scale was 0.89.

2.3 | Intervention

This randomized controlled study was conducted in two groups (experimental and control groups). Nursing students were asked to draw a sheet of paper from a box containing odd and even numbers. As a result of this lottery, 25 nursing students who got an odd number were assigned to the experimental group, and 25 nursing students who got an even number were assigned to the control group.

2.4 | Experimental group

The students ($n = 25$) in this group were gathered in a suitable classroom with communication facilities. First, the SUD

measurements were performed to determine the severity of premenstrual symptoms. Then, the first author, who is a certified EFT administrator, gave a visual presentation on EFT (Church, 2018). The researcher showed the steps of the EFT tapping on her own body (face and torso) and asked the students to tap on theirs. Questions about the EFT application were answered. The training lasted until all the students learned how to apply EFT and each participant had been instructed individually. Training of the experimental group lasted an average of 35 min. Each student gave their phone numbers and the last menstrual cycle dates voluntarily. The researcher explained that she would call to remind them weekly to perform EFT and would answer their questions if any. The students were informed that they should contact the researcher after completing three menstrual cycles following the pretest to take the posttest. During the premenstrual period of each menstrual cycle, the researchers called all students and provided support for the application of EFT. After each student completed three menstrual cycles, the researchers met with the student and administered the PMSS and the SUDS as the posttest.

2.5 | EFT tapping

The following steps comprise EFT's protocol, the Basic Recipe (Church, 2013; Moore-Hafter & Garfield, 2020).

- (1). Rate the SUD level before tapping. The participants self-evaluate their symptoms on the 0-to-10 scale, with 0 being no distress/discomfort and 10 being the greatest amount of distress or discomfort.
- (2). Tap on the side of the hand point (acupressure) while saying a Setup that includes statement of the problem (exposure therapy) and acceptance (cognitive therapy) such as: "Even though I feel really bloated right now, I strongly and absolutely approve of myself."
- (3). Tap on the 8–12 EFT acupoints (Figure 1) while saying a Reminder Phrase such as "This bloated feeling."
- (4). Perform the 9 Gamut Procedure. Tap on the Gamut point on the back of the hand while keeping the problem in mind and performing specific eye movements, humming, and counting (based on the principles of Eye Movement Desensitization and Reprocessing, EMDR).
- (5). Tap the 8–12 acupoints again.
- (6). Rate the distress/discomfort level again on the SUD scale to determine any alteration in the symptom.

2.6 | Control group

The students ($n = 25$) in the control group group were gathered in a suitable classroom with communication facilities. The students gave their phone numbers and the last menstrual cycle dates voluntarily. The PMSS and SUD scale were applied as a pretest to identify the

severity of premenstrual symptoms. The students were instructed to contact the researcher after completing three menstrual cycles following the meeting date to take the posttest. The researcher called each student after three menstrual cycles, planned a meeting, and administered PMSS and SUD scale as the posttest. After this study was complete, the control group was offered training in coping with PMS.

2.7 | Data analysis

The data were examined using the SPSS (Statistical Package of Social Sciences) version 16.0 software. Statistics, including the number, frequency, and average and normal deviation, were used to present the demographic characteristics of the participants in this study. Qualitative variables were checked using the Chi-square test. Continuous variables were indicated as an average and normal deviation. The groups' scale scores were checked using the Mann-Whitney *U* test, Fisher-Halton test, and Wilcoxon signed-rank test. The level of statistical significance was determined at $p < 0.05$.

2.8 | Ethical consideration

The ethical approval for this research was obtained from the Ethical Committee of the Istanbul Medipol University for Non-Interventional Research (Approval Number: 10840098-604.01.01-E.53655). The students who volunteered to participate in this research were provided with information about this study and their written consent was obtained. The endorsement was also obtained from the university in which this research was conducted. The researchers obtained sophisticated instruction on EFT during the preparation stage of this research. This study was conducted under the "Ethical principles for medical examination, including human subjects" of the Helsinki Declaration. After the data collection was complete, a training session on the effects of EFT on reducing PMS was planned for the control group.

3 | RESULTS

The difference between the sociodemographic and menstrual characteristics of the two groups was not significant ($p > 0.05$; see Table 1). In this study, 92% of the experimental group and 84% of the control group experienced pain during the premenstrual period. The pain was primarily abdominal (32% of the experimental group and 40% of the control group). Of the students in the experimental group, most (48%) drank herbal teas to cope with premenstrual pain; most (44%) of the students in the control group took painkillers for the same purpose.

There were no statistically significant differences between the mean pretest SUD scores of both groups ($p > 0.05$). The experimental group had significantly lower mean posttest SUD scores than the control group ($p < 0.001$; see Table 2).

There were no differences between the PMSS total and subscale mean scores measured during the pretest ($p > 0.05$). There was a statistically significant difference between the PMSS total and subscale mean scores measured during the posttest ($p < 0.05$; see Table 3). There were statistically significant differences between the mean depressive affect, fatigue, nervousness, sleep-related changes, and swelling subscale scores and the PMSS total scale score of the experimental group measured during the pretest and posttest ($p < 0.05$), whereas the control group had no statistically significant difference concerning the scores ($p > 0.05$). The PMSS subscale average scores of the experimental group decreased by 34.7% for depressive affect, 21.9% for anxiety, 28.4% for fatigue, 37.0% for irritability, 28.8% for depressive thoughts, 24.5% for pain, 23.6% for appetite changes, 36.6% for sleep-related changes, 39.5% for swelling, and 30.7% for PMSS total mean score (Table 3). None of the students reported any side effects related to the EFT application.

4 | DISCUSSION

PMS is a reproductive health problem that negatively affects the quality of life of adolescents. For this condition, adolescents resort to pharmacological and nonpharmacological methods to cope with symptoms (Maddineshat et al., 2016). In this study examining the effectiveness of EFT application in PMS, compatible with the findings obtained from the present research, the mean depressive affect, fatigue, irritability, sleep-related changes, and swelling subscale scores and the PMSS total scores of the students in the experimental group significantly decreased, whereas the control group had no changes. In this study, the experimental group was followed up for three menstrual cycles. In a study evaluation, Feinstein (2019) noted that in all studies of EFT, including a follow-up evaluation, participants preserved their acquisitions, with the period of rehabilitation evaluated between 3 months and 2 years (Feinstein, 2019). As noted previously, to our knowledge, there is no study in the literature investigating the effects of EFT on PMS. However, there are studies showing its effects on anxiety, distress, depression, and PTSD.

Concerning test anxiety specifically, Benor et al. (2009) noted that EFT compared to CBT alone significantly lowered psychological distress, with participants reporting positive qualitative effects and a willingness to use the therapy in other situations. Gaesser and Karan (2016) compared EFT to CBT and found that using EFT resulted in significant reductions in adolescent anxiety in schools, especially compared to a wait-list control. As noted previously, Lane (2009) reviewed the literature on applying energy psychology acupoint stimulation as a counterconditioning method in psychotherapy and described physiological mechanisms consistent with a lowering of the stress response and a calming of the threat-assessment structures in the midbrain. A systematic review with meta-analysis (Clond, 2016) reports that EFT is significantly effective, with large effect sizes, in reducing anxiety compared with control conditions, and that because of its ease of use, this is highly appealing as an available intervention against other interventions requiring greater resources, such as CBT.

TABLE 1 Sociodemographic and menstrual characteristics of women by group (N = 50)

		Groups		p value
		Experimental (n = 25)	Control (n = 25)	
Age (years)	19–20	14 (56.0)	20 (80.0)	0.082 ^a
	21–22	11 (44.0)	5 (20.0)	
Primary place of residence	Village	4 (16.0)	3 (12.0)	0.710 ^b
	Town	10 (40.0)	10 (40.0)	
	County	11 (44.0)	12 (48.0)	
Current residence	Dormitory	17 (68.0)	17 (68.0)	1.000 ^b
	With family	7 (28.0)	7 (28.0)	
	With friends at home	1 (4.0)	1 (4.0)	
Educational status of mother	Illiterate	2 (8.0)	1 (4.0)	0.142 ^b
	Literate + primary school	16 (64.0)	11 (44.0)	
	Middle school	2 (8.0)	6 (24.0)	
	High school	4 (16.0)	6 (24.0)	
	University	1 (4.0)	1 (4.0)	
Educational status of father	Literate+primary school	10 (40.0)	4 (16.0)	0.534 ^b
	Middle school	4 (16.0)	10 (40.0)	
	High school	5 (20.0)	7 (28.0)	
	University	6 (24.0)	4 (16.0)	
Income status of family	Lower than expenses	4 (16.0)	5 (20.0)	0.820 ^b
	Equal to expenses	20 (80.0)	17 (68.0)	
	Higher than expenses	1 (4.0)	3 (12.0)	
Menarche age	12–13	14 (56.0)	13 (52.0)	0.943 ^a
	14–16	11 (44.0)	12 (48.0)	
Menstruation cycle length (days)	20–25	4 (16.0)	4 (16.0)	0.252 ^a
	26–30	21 (84.0)	21 (84.0)	
Duration of menstruation (days)	4–6	15 (60.0)	18 (72.0)	0.357 ^a
	>6	10 (40.0)	7 (28.0)	
Using birth control pills	Yes	1 (4.0)	1 (4.0)	1.000 ^b
	No	24 (96.0)	24 (96.0)	
Experiencing premenstrual pain	Yes	23 (92.0)	21 (84.0)	0.389 ^b
	No	2 (8.0)	4 (16.0)	
Premenstrual pain area	Head	2 (8.0)	1 (4.0)	0.128 ^b
	Back	4 (16.0)	1 (4.0)	
	Middle of the back	9 (36.0)	8 (32.0)	
	Abdomen	8 (32.0)	10 (40.0)	
	Leg	–	1 (4.0)	
Coping strategies for menstruation pain	Pain killer pill	4 (1.0)	11 (44.0)	0.053 ^b
	Pain killer injection	3 (12.0)	–	
	Hot application	2 (8.0)	6 (24.0)	

(Continues)

TABLE 1 (Continued)

	Groups		p value
	Experimental (n = 25)	Control (n = 25)	
Herbal tea	12 (48.0)	5 (20.0)	
Exercise	2 (8.0)	2 (8.0)	

Note: $p < 0.001$.

Abbreviations: EFT, Emotional Freedom Techniques Group; n, number of participants,

^aMann-Whitney *U* test.

^bFisher-Halton test

	Groups		Test, p value
	Experimental (n = 25) (mean ± SD)	Control (n = 25) (mean ± SD)	
Primary SUDS score	7.52 ± 2.38	8.02 ± 2.59	Z = -1.093; p = 0.065 ^a
Final SUDS score	3.66 ± 1.07	7.85 ± 2.48	Z = -4.358; p = 0.000 ^{a,*}
Test:	Z = -5.198;	Z = -0.215;	
p value	p = 0.001 ^{b,*}	p = 0.523 ^b	

Note: * $p < 0.001$.

Abbreviation: SUDS, Subjective Units of Distress Scale.

^aMann-Whitney *U* test.

^bWilcoxon signed-rank test.

This body of evidence provided a rationale for this study examining the use of EFT for PMS, which entails both physical and emotional symptoms.

In this study, it was determined that the pain level, which is one of the PMSS sub-dimensions in the experimental group, decreased by 24.5% in the posttest compared to the pretest. In addition to the research on EFT and pain cited previously, a study of 216 healthcare workers (doctors, nurses, chiropractors, psychotherapists, and alternative medicine practitioners) found a highly significant 68% decrease in pain (Church & Brooks, 2010). In a randomized controlled trial of veterans with PTSD, the pain significantly reduced by 41% (Church, 2014).

Many neuroimaging studies reveal that the midbrain, especially the amygdala, is affected by acupuncture stimulation (Qiu et al., 2016; Scheffold et al., 2015; Wang, 2021). An increase in the serotonin level causes the secretion of gamma-aminobutyric acid, which halts the biochemical pathway of the anxiety-reducing neurotransmitter in the basolateral amygdala, prevents glutamine generation, and creates a fear response. Acupuncture sends signals to the amygdala and other structures in the limbic system of the brain that process fear (Armour et al., 2018). Wang (2021) stated that acupuncture produced comprehensive inactivation of the limbic-paralimbic-neocortical system. Acupressure, where pressure is implemented to acupoints rather than the insertion of acupuncture needles, is as effective as needling. A meta-analysis study revealed that acupuncture and acupressure were effective in decreasing PMS. However, we should note that the number of evidence-based studies was small (Armour et al., 2018). In this context, this evidence-

based study revealed that EFT, like acupuncture and acupressure, has a positive effect on mood, notably a decrease in the PMSS sub-dimensions of depressive affect, anxiety, irritability, and depressive thoughts.

4.1 | Limitations

This study has a few limitations. First of all, the control group received no intervention aside from the pretest and posttest. Second, the researcher monitored the students for three menstrual cycles. This period was chosen because 3 months after the study began, the students started their summer holiday and most left the city to visit their families. There was not a follow-up assessment beyond the 3 months. Third, this study was limited to a university in a city in the Mediterranean region of Turkey. Thus the findings obtained in this study cannot be generalized to all of Turkey or worldwide. Conducting further studies with other reproductive age groups and comparing the results can contribute valuable insights to the literature.

5 | CONCLUSION

The current research aimed to assess the effects of EFT on PMS in college students. The results demonstrate the efficacy of EFT in reducing PMS symptoms. As a fast and efficient self-treatment method,

TABLE 2 The distribution of SUDS scores by group

TABLE 3 Comparison of the primary and final tests of PMSS total and subscale mean scores between the groups

PMSS total and subscales	Groups	Pre-test (mean ± SD)	Posttest (mean ± SD)	Test, <i>p</i> value	Percent changes
Depressive affect	Experimental	23.72 ± 5.21	15.48 ± 4.87	Z = -4.201; <i>p</i> = 0.000 ^{b,**}	-34.7%
	Control	23.68 ± 4.28	25.36 ± 4.48	Z = -1.676; <i>p</i> = 0.094 ^b	7.0%
	test, <i>p</i> value	Z = -0.263; <i>p</i> = 0.793 ^a	Z = -5.014; <i>p</i> = 0.000 ^{a,**}		
Anxiety	Experimental	17.52 ± 5.73	13.68 ± 5.11	Z = -2.488; <i>p</i> = 0.013 ^{b,*}	-21.9%
	Control	16.08 ± 4.26	20.60 ± 5.29	Z = -3.127; <i>p</i> = 0.002 ^{b,*}	28.1%
	test, <i>p</i> value	Z = -0.721; <i>p</i> = 0.471 ^a	Z = -4.200; <i>p</i> = 0.000 ^{a,**}		
Fatigue	Experimental	19.96 ± 4.99	14.28 ± 3.63	Z = -3.535; <i>p</i> = 0.000 ^{b,**}	-28.4%
	Control	20.24 ± 4.02	22.24 ± 4.85	Z = -1.917; <i>p</i> = 0.055 ^b	9.8%
	test, <i>p</i> value	Z = -0.107; <i>p</i> = 0.915 ^a	Z = -5.139; <i>p</i> = 0.000 ^{a,**}		
Nervousness	Experimental	18.68 ± 3.82	11.76 ± 3.81	Z = -4.218; <i>p</i> = 0.000 ^{b,**}	-37.0%
	Control	19.20 ± 4.21	18.72 ± 2.68	Z = -0.699; <i>p</i> = 0.484 ^b	-2.5%
	test, <i>p</i> value	Z = -0.458; <i>p</i> = 0.647 ^a	Z = -5.287; <i>p</i> = 0.000 ^{a,**}		
Depressive thoughts	Experimental	19.80 ± 6.54	14.08 ± 4.85	Z = -3.217; <i>p</i> = 0.001 ^{b,*}	-28.8%
	Control	19.96 ± 4.65	22.24 ± 4.07	Z = -1.880; <i>p</i> = 0.060 ^b	11.4%
	test, <i>p</i> value	Z = 0.000; <i>p</i> = 1.000 ^a	Z = -4.701; <i>p</i> = 0.000 ^{a,**}		
Pain	Experimental	8.96 ± 2.99	6.76 ± 2.04	Z = -2.967; <i>p</i> = 0.003 ^{b,*}	-24.5%
	Control	9.84 ± 2.42	11.92 ± 2.981	Z = -2.424; <i>p</i> = 0.015 ^{b,*}	21.1%
	test, <i>p</i> value	Z = -1.203; <i>p</i> = 0.229 ^a	Z = -5.031; <i>p</i> = 0.000 ^{a,**}		
Appetite changes	Experimental	11.00 ± 3.10	8.40 ± 3.51	Z = -2.820; <i>p</i> = 0.005 [*]	-23.6%
	Control	10.84 ± 3.11	11.12 ± 2.50	Z = -0.022; <i>p</i> = 0.982 ^b	2.5%
	test, <i>p</i> value	Z = -0.353; <i>p</i> = 0.724 ^a	Z = -2.665; <i>p</i> = 0.000 ^{a,**}		
Sleep-related changes	Experimental	9.28 ± 3.12	5.88 ± 1.96	Z = -3.543; <i>p</i> = 0.000 ^{b,**}	-36.6%
	Control	8.64 ± 3.28	9.72 ± 3.10	Z = -1.255; <i>p</i> = 0.209 ^b	12.5%
	test, <i>p</i> value	Z = -0.880; <i>p</i> = 0.379 ^a	Z = -4.280; <i>p</i> = 0.000 ^{a,**}		
Swelling	Experimental	11.44 ± 3.15	6.92 ± 2.48	Z = -3.861; <i>p</i> = 0.000 ^{b,**}	-39.5%
	Control	10.56 ± 3.34	10.68 ± 2.71	Z = -0.130; <i>p</i> = 0.896 ^b	1.1%
	test, <i>p</i> value	Z = -0.950; <i>p</i> = 0.342 ^a	Z = -4.207; <i>p</i> = 0.000 ^{a,**}		
PMSS total score	Experimental	140.36 ± 21.10	97.24 ± 20.97	Z = -4.270; <i>p</i> = 0.000 ^{b,**}	-30.7%
	Control	139.04 ± 17.88	152.60 ± 18.40	Z = -2.705; <i>p</i> = 0.007 ^{b,*}	9.7%
	test, <i>p</i> value	Z = -0.058; <i>p</i> = 0.954 ^a	Z = -5.668; <i>p</i> = 0.000 ^{a,**}		

Note: **p* < 0.05, ***p* < 0.001.

Abbreviation: PMSS, Premenstrual Syndrome Scale.

^aMann-Whitney *U* test.

^bWilcoxon signed-rank test.

EFT can be easily implemented as a nonpharmacological intervention. The significant decrease in the mean SUD scores between pretest and posttest indicates that EFT reduces PMS symptoms and can help women cope with PMS. However, further study is needed to confirm whether these results are indicative and durable. Many studies have shown that EFT can alleviate a range of physical and emotional conditions, but research is lacking on the evaluation of EFT for

women who suffer from PMS. Further studies are needed before recommending EFT for all women, including long-term studies to evaluate long-term outcomes. EFT can also be studied in women with a diagnosis of premenstrual dysphoric disorder, a severe form of PMS. As there is no scale in the literature for assessing PMS specific to young women, the PMSS was used. It is recommended to develop a scale that specifically assesses PMS in young women.

6 | IMPLICATIONS FOR NURSING PRACTICE

PMS symptoms are one of the most common problems encountered among women. The findings of this study suggest that EFT is an effective method that nurses can use to help patients cope with these symptoms. Since EFT is a nonpharmacological method, it is an intervention that has no side effects and it can also be easily learned and applied.

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CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

DATA AVAILABILITY STATEMENT

Data is available on request due to privacy/ethical restrictions.

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