

## Emotional freedom techniques and breathing awareness to reduce childbirth fear: A randomized controlled study



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### ABSTRACT

**Background:** Emotional freedom techniques (EFT) and breathing awareness (BA) are applicable during labour. The present study aimed to determine the effectiveness of EFT and BA in the reduction of childbirth fear.

**Materials and methods:** This randomized controlled study included 120 pregnant women, of whom the EFT, BA and control groups. The women in the EFT and BA groups were offered their intervention in the latent, active and transition phases of labour.

**Results:** There was no significant difference in the sociodemographic and obstetric factors between the groups ( $p > 0.05$ ). The Subjective Units of Distress Scale in active and transition phases were significantly lower in the EFT group. The difference in the scores for the Wijma Delivery Expectancy/Experience Questionnaire (version B) between the groups was significant ( $p < 0.001$ ).

**Conclusion:** Both EFT and BA were observed to be beneficial in clinical practice; the EFT was found to be more effective and permanent.

### 1. Introduction

Complex feelings experienced in the first trimester of pregnancy are affected by many factors and replaced by childbirth fear in the second and third trimesters. Childbirth fear can be a result of biological, psychological and social factors. Prior obstetric and gynaecological experiences, fear of inability to give birth and to cope with pain and various psychosocial factors may create childbirth fear in pregnant women [1]. Severe fear, especially in the third trimester, leads to anxiety about the possibility of pain and stress during labour [2].

If the primary cause of fear is not solved, the defense mechanism of the body is activated. The sympathetic nervous system starts to function, which causes the release of stress hormones and activates various mechanisms of vasoconstriction [3]. Having fear and anxiety during labour increases the secretion of stress hormones, such as cethacholamines (adrenaline and noradrenaline) [4]. Excessive release of cortisol in the presence of stress affects the secretion of oxytocin, which initiates labour. As a result, labour becomes longer, the mother and the baby may get tired, and lactogenesis is affected, which causes delayed lactation and reduces the frequency of breastfeeding [5]. The hormone cortisol can predispose to maternal and neonatal complications, emergency caesarian section, postpartum emotional problems and difficulty in

adaptation to motherhood roles and mother-infant attachment [1,5]. Increasing the self-confidence of women during labour is effective in creating positive labour experiences and has a positive influence on a woman's adaptation to motherhood [6].

It has been reported that the prevalence of childbirth fear is 10% and is higher in the nullipara [7–9]. There have been various attempts to reduce this fear, such as psychoeducation, relaxation techniques and hypnosis, which have been shown to reduce fear [10–12].

Emotional Freedom Techniques (EFT) is a psychophysiological intervention that combines elements of cognitive behavioral therapy (CBT), exposure therapy and somatic stimulation using acupressure points. Because of this acupressure element, EFT is called “tapping”. The basic EFT protocol has been published as a simplified form of thought field therapy [13,14]. Acupoint stimulation in EFT protocols breaks the cycle of sympathetic nervous system hyperarousal more rapidly than other forms of desensitization, thus allowing for faster symptom reduction, and it may also be beneficial for physical health [15]. The manualized, evidence-based expression of the method is defined as “Clinical EFT” [16]. This method can be safely applied to all age groups, including the elderly, pregnant women and children. Studies have cited hundreds of available EFT applications. Some of these studies are randomized controlled studies, and positive results have

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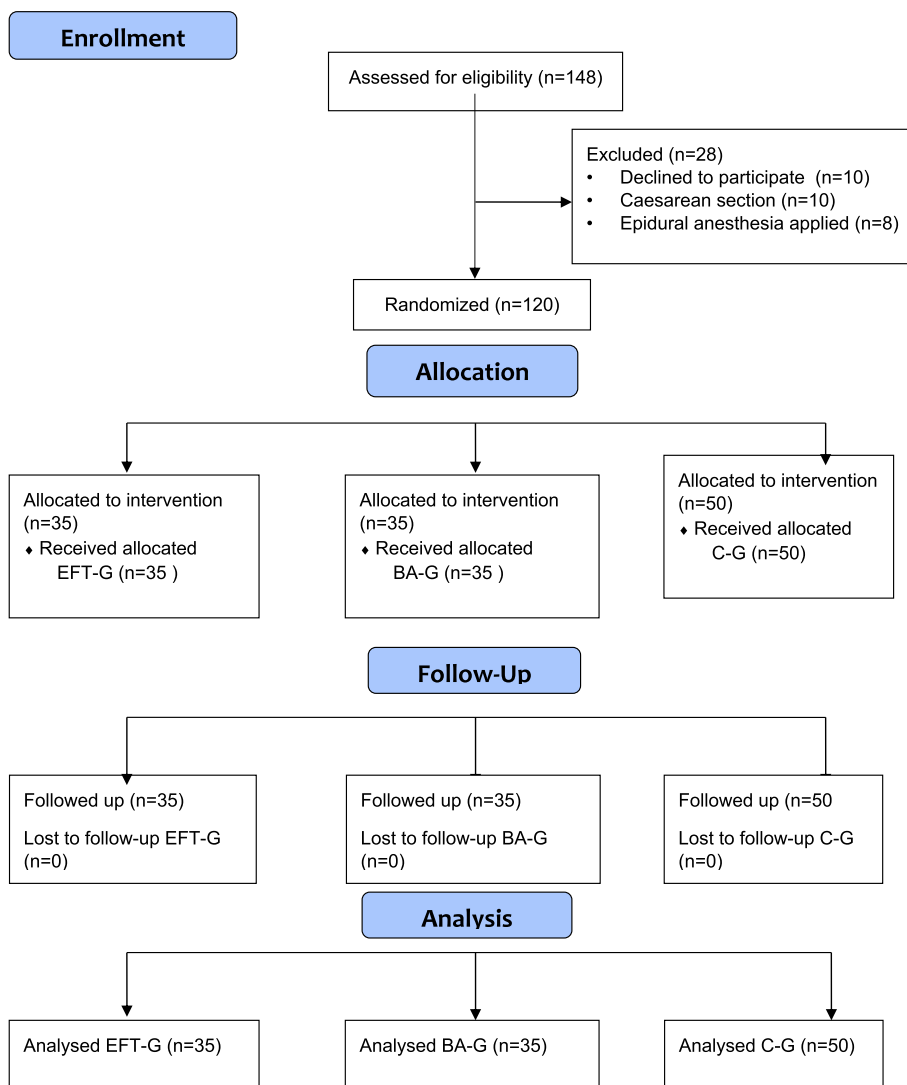


Fig. 1. CONSORT flow diagram.

been obtained with clinical measurements [17]. EFT can be used in many areas, such as for addiction, anger, sexuality, anxiety, beliefs, grief, confidence, death, forgiveness and creativity. It can produce positive effects and has no reported side effects so far [18]. In addition, it has been found that EFT is as effective as cognitive behavioral therapies in studies of depression, post-traumatic stress disorder (PTSD) and anxiety in the clinical application of EFT in meta-analysis studies [19–21]. Solving emotional problems by using EFT before labour empowers pregnant women to cope with fear and other negative situations during labour. It can be implemented safely and effectively to help decrease pain during labour and to shorten the duration of labour [22].

Breathing awareness (BA) can provide physical, mental and emotional control. Because deep breathing increases blood circulation and oxygen flow and decreases stress, both mothers and their babies benefit from it. If pregnant women learn about breathing awareness, they have a calmer and more comfortable labour experience [23]. Slow and deep breathing can help pregnant women to control themselves when uterine contractions start [24]. This maintains the well-being of the foetus and facilitates labour. BA allows pregnant women to manage their respiratory muscles and control their pain and relaxation and increases their self-confidence [25]. Using complex breathing patterns may force the woman to recruit accessory breathing muscles, which may

contribute to an increased level of fatigue and thus may result in maternal dissatisfaction. The use of breathing patterns during labour should be recommended with caution, respecting patients' preferences [26].

There have been very few studies on the best ways for pregnant women to cope with childbirth fear. The present study focused on examining the effects of EFT and BA on reducing the fear felt by pregnant women during labour.

## 2. Materials and methods

### 2.1. Study design

This is an experimental, randomized, controlled study. It was conducted according to the CONSORT guidelines [27,28]. The study was performed in the obstetric ward of an university hospital between April 2016 and May 2017. In 2016, 1417 vaginal births occurred in the hospital. In each labour room, there is a bathroom, a toilet, a sofa for a caregiver, a television, a refrigerator and a wardrobe. A female caregiver can stay with a pregnant woman, and the pregnant woman can walk in the suite and the corridor comfortably, have a shower when she wants, do relaxation exercises and contact the midwife or nurse easily.

## 2.2. Study sample

Eligibility criteria for participants were openness to communication, age 18–45 years, graduation from primary school, nulliparity, experiencing the latent phase of labour (cervix dilatation of 0–3 cm), pregnancy without maternal or foetal risk (e.g. multiparity and pre-eclampsia), achieving a score of  $\leq 37$  for the Wijma Delivery Expectancy/Experience Questionnaire (version A) (W-DEQ-A), voluntary participation in the study, and not having any analgesics or anaesthesia during labour.

Power analysis was made by considering the prevalence of childbirth fear in pregnant women reported in the literature to determine the number of pregnant women to be included in each group [29]. The sample size was calculated using G\*Power (v3.1.9.2). Considering that three independent groups would have a total of 105 pregnant women and that each group would have 35 pregnant women, the significance level, the effect size and the power of the study were found to be 5%, 0.80 and (1- $\beta$ ) 0.91, respectively. The study had a control group (C-G) ( $n = 50$ ) and two experimental groups: the EFT group (EFT-G) ( $n = 35$ ) and the breathing awareness group (BA-G) ( $n = 35$ ).

In the power analysis of the study, at least 105 samples in total were calculated as sufficient. To make statistically stronger analyses, 120 pregnant women were studied. Before the study started, a descriptive characteristics questionnaire was piloted with three pregnant women from each group. In accordance with the feedback obtained, the questionnaire was revised, and these women were then not included in the study. A total of 148 pregnant women were contacted (see Fig. 1). Twenty-eight pregnant women were not included into the sample due to administration of epidural anaesthesia and/or caesarean section. All the pregnant women achieved a score of 16 or higher for the W-DEQ-A. None of the pregnant women were excluded due to their score for the W-DEQ-A. The women were included into the study in the order of randomization. Numbers from 1 to 120 were randomized for 3 groups using [random.org](http://random.org). A pregnant woman was asked to select a paper from a bowl with numbers up to 1–120, and the group was determined according to the number in the paper selected by the pregnant woman.

## 2.3. Instruments

Data were collected with the descriptive characteristics questionnaire, W-DEQ-A, Wijma Delivery Expectancy/Experience Questionnaire (version B) (W-DEQ-B) and the Subjective Units of Distress Scale (SUDS).

The descriptive characteristics questionnaire was created by the researchers, and it was composed of 32 questions, 21 of which were about sociodemographic factors and 11 were about obstetrics characteristics.

The W-DEQ-A was developed by Klaas and Barbro Wijma to measure the childbirth fear experienced by prenatal women. It is composed of 33 items. It uses a 6-point Likert scale: 0 corresponds to completely, and 5 corresponds to never. The lowest and the highest scores for the scale are 0 and 160, respectively. Higher scores indicate a higher degree of childbirth fear. Scores of  $\leq 37$  are indicative of mild fear, scores of 38–65 moderate fear, scores of 66–84 severe fear, and scores of  $\geq 85$  clinical fear [30]. The internal consistency coefficient for the W-DEQ-A has been found to be Cronbach's alpha of 0.88.

The W-DEQ-B was created by Klaas and Barbro Wijma to evaluate intrapartum childbirth fear in the postpartum period. It is composed of 32 items. It uses a 6-point Likert scale: 0 corresponds to completely, and 5 corresponds to never. The lowest and the highest scores for the scale are 0 and 160, respectively. Higher scores show a higher degree of fear. The scale has six subscales: worries about labour pain, lack of positive behaviour, loneliness, lack of positive feelings, worries about labour and worries about the baby [31]. In the present study, the internal consistency coefficient for the W-DEQ-B was found to be Cronbach's alpha of 0.86. It was administered to the women 24 h after childbirth.

The SUDS was developed by Wolpe. The SUDS is a very practical tool commonly used as a subjective verbal rating of discomfort to assess emotional responses. It is an 11-point scale, and 0 refers to a lack of discomfort, while 10 refers to unbearable discomfort [32]. During the session process, energy therapies also introduce a reframing statement (cognitive restructuring), helping the client to develop a new cognitive framework. Clients self-rate their level of distress on the SUDS after each application of the procedure. Energy psychology interventions typically begin with a statement of self-acceptance, while stimulating one or more acupoints, which is believed to ameliorate the client's resistance to treatment. The subject's distress level generally decreases by two or more SUDS points per round of acupoint stimulation [33]. Recorded SUDS level testing provides written evidence to the pregnant woman of beginning disturbance and ending calm. The testing can take many forms, but it must be conducted to provide direction in an EFT session and to track progress [34]. It is emphasized that SUDS should be employed when EFT is implemented [16]. This allows pregnant women to score their feelings of distress due to the stimulus causing fear. The most important aspect of using SUDS is that pregnant women subjectively evaluate the discomfort they experience. Thus, an indicator reflecting a change achieved by an intervention is obtained. The internal consistency coefficient for SUDS was found to be Cronbach's alpha of 0.88.

## 2.4. Interventions

The descriptive characteristics questionnaire, W-DEQ-A and W-DEQ-B were administered by a nurse blinded to the groups and the interventions. Emotional freedom techniques and breathing awareness were offered by the researcher, and the SUDS was also administered by the researcher. All the pregnant women were followed from the latent phase till 24 h after childbirth. The fact that each pregnant woman is present in the individual labour room and not seeing one another removes the possibility of intergroup interaction. Assessments of current labour processes were conducted by a doctoral degree nurse, who was also this survey's researcher for the three groups.

## 2.5. Study groups

EFT-G: The pregnant women in this group were offered the EFT intervention. The EFT protocol was first explained orally and then demonstrated for 15 min in the rooms of the pregnant women during the first phase of delivery. In the first EFT session, the researcher did the tapping, and in the following sessions, the pregnant women did it themselves. When the pregnant women had no pain in each phase of labour; i.e. latent phase (0–3 cm cervical dilatation), active phase (4–7 cm cervical dilatation) and transition phase (8–10 cm cervical dilatation), three EFT sessions were performed. A total of nine EFT sessions were conducted with each pregnant woman. All the pregnant women were asked to score their fear of childbirth by using SUDS before and after each EFT session. Twenty-four hours after childbirth, the W-DEQ-B was administered. Each EFT session was conducted as given in the treatment protocol created by The EFT Manual (2nd edition), as described in Craig's book [33].

BA-G: This group was exposed to abdominal breathing awareness. The researcher explained this intervention by demonstrating it for 10 min in the pregnant women's room in the latent phase of labour. In the first BA session, the researcher helped the women to control their breathing by putting one hand on the pregnant women's abdomen and the other hand on the pregnant women's chest. After that, the researcher continued to accompany the pregnant women and encouraged them to continue the BA session by themselves. There was no fixed number of breaths. The women were asked to lie in a comfortable position and breathe in and out calmly and smoothly at the beginning of each contraction. This method allowed the women to breathe in and out calmly and slowly by using their abdomen. The objective of this

breathing is to take long breaths in and out as much as possible. The woman's back was supported by pillows or she lied down on one side. Both hands were put on the abdomen. First, a short breath was given out to clean the airway, and then breath was taken through the nose by blowing the abdomen, and it was given out through the nose as slowly as breathing in. Taking a short breath in and out was avoided. Each breath should have lasted as long as a contraction. The body should have been kept still and loose. The foetus was imagined during this process. While breathing in, the women imagined that a balloon was blown in the abdomen. During expiration, the air was breathed out slowly downwards and outwards [35]. The women, who continued to use the BA in each contraction, scored their childbirth fear at the beginning and end of each labour phase by using SUDS. Twenty-four hours after childbirth, the W-DEQ-B was administered.

C-G: The women in the C-G group were informed about the study in their rooms in the latent phase of labour by the researcher. They were exposed to the standard care protocol of the clinic. The pregnant woman, who was close to birth, was covered, the necessary information was taken, she was taken to the labour room, and the medical treatment that her doctor decided upon was started. There was a companion to help the pregnant woman. The pregnant woman underwent a non-stress test (NST) during the birth process. The pregnant woman in the C-G was not left alone, and the researcher spent time with the pregnant woman during the treatment and follow-up. The SUDS was administered to the women three times in the latent, active and transition phases to determine the fear of childbirth. Twenty-four hours after childbirth, the women were administered the W-DEQ-B.

## 2.6. Ethical considerations

Ethical approval was obtained from the Ethical Committee of the Medipol University for Non-Interventional Research (approval number:10840098-604.01.01-E.5573). The women who volunteered to participate in the study were informed about the study and approval forms prepared for each group were read and signed by the women. Approval was also received from the hospital where the study was conducted. The researcher received advanced education about EFT and breathing awareness while planning the study. The study was performed in accordance with the "Ethical principles for medical research involving human subjects" of the Helsinki Declaration.

## 2.7. Statistical analysis

Statistical analyses were conducted using the Number Cruncher Statistical System (2007) (Kaysville, Utah, USA). The descriptive statistics of mean, standard deviation, median, frequency, ratio and minimum and maximum values were used. In addition, the Mann-Whitney *U* test was used to compare quantitative data without a normal distribution from the two groups. A one-way ANOVA was employed to compare normally distributed data from three or more groups. Data without a normal distribution from three or more groups were compared using the Kruskal-Wallis test. The Wilcoxon signed-rank test was used to perform intragroup paired comparisons of variables without a normal distribution. The paired samples *t*-test was used to perform intragroup paired comparisons of variables with a normal distribution. The Pearson's Chi-square test and Fisher-Halton test were used to compare qualitative data. Statistical significance was set at  $p < 0.05$ .

## 3. Results

There was no significant difference in age, education, health insurance and spouses' education between the groups ( $p > 0.05$ ). The number of pregnancies, the number of abortions, gestational week, weight gained during pregnancy, type of delivery, health problems in pregnancy, the number of prenatal follow-up visits and meeting a woman giving birth did not significantly differ either ( $p > 0.05$ ). The

groups were similar in terms of sociodemographic and obstetric features (Table 1).

In this study, 120 women (100%) had childbirth fear. Eighty-four women (70%) had a fear of experiencing very severe pain. Thirty-eight women (31.7%) had childbirth fear as they did not know how delivery would occur. Thirty-four women (28.3%) were afraid of an inability to give birth. Twenty-four women (20%) were afraid of possible damage to their babies.

There was no significant difference in the scores for the W-DEQ-A between the groups ( $p > 0.05$ ). However, the difference in the scores for the W-DEQ-B between the groups was significant ( $p < 0.001$ ). This difference was due to the high score of the W-DEQ-B of the C-G. Both EFT and BA interventions enabled to reduce the level of birth fear perceived at postpartum (Table 2).

There was also a significant difference in the scores for the W-DEQ-B subscales related to lack of positive behaviour, loneliness, and worries about childbirth ( $p < 0.05$ ) (Table 3).

There was a significant difference in childbirth fear measured with the SUDS in the latent phase between the groups ( $p = 0.010$ ;  $p < 0.05$ ). After the intervention, the BA-G had a considerably higher score for SUDS in the latent phase than the EFT-G, although the difference was not significant ( $p = 0.055$ ;  $p > 0.05$ ). After the intervention, the BA-G had a significantly higher score for SUDS in the active phase than the EFT-G ( $p = 0.001$ ;  $p < 0.001$ ). The scores for the SUDS during the transition phase differed significantly between the groups ( $p = 0.008$ ;  $p < 0.05$ ). The EFT-G had a significantly lower score for the SUDS in the transition phase than the BA-G ( $p = 0.001$ ;  $p < 0.001$ ) (Table 4).

## 4. Discussion

Complementary therapies have been widely used to cope with various symptoms during pregnancy, childbirth and postpartum periods. Despite the existence of studies showing that EFT and BA decrease anxiety and stress, their effects on childbirth fear have not been investigated [22,24]. The present study is the first study to have conducted randomized controlled EFT and BA applications to reduce the fear of childbirth. When the level of fear of childbirth was compared with the W-DEQ-A of the subjects participating in the sample of the study, it was determined that there was no difference between the groups and that there was moderate childbirth fear. Childbirth fear may be at different levels among cultures, but when we looked at other studies, we concluded that the level of fear of nullipara pregnancy is higher. The nulliparity fear level was found to be similar in the Finnish, Swedish, Australian and many more nations [8,36,37].

In the present study, there was a significant difference in the W-DEQ-B subscales related to lack of positive behaviour, loneliness and worries about labour between the experimental groups, and this difference was due to the high score average of the control group. It has been determined that standard hospital care does not contribute to postpartum women's positive behaviour, feelings of loneliness and reduction of worries about birth [39]. Likewise, in a study using the W-DEQ-B, the pregnant women who were motivated by health professionals were shown to have lower scores for childbirth fear and depressive symptoms. The frequency of childbirth fear and depression symptoms is affected by intrapartum pain management and the caregiving process offered to women [39]. In the meta-analysis studies, in which the EFT was evaluated clinically in the field of depression, PTSD and anxiety, based on the positive outcomes, further studies were needed to assess patient satisfaction, patient preference, accessibility, cost-saving and comparison to standard of care. In the clinic, women who are supported with techniques to reduce their fear have satisfaction after giving birth, thus preventing birth from being remembered as a traumatic experience [19–22].

In the current study, based on the SUDS scores, childbirth fear significantly decreased in both the EFT-G and the BA-G, but it increased

**Table 1**  
Sociodemographic and obstetric characteristics of pregnant women by groups.

		Groups			p value
		EFT-G (n = 35)	BA-G (n = 35)	C-G (n = 50)	
Age (years)	Min-Max (Median)	20-35 (27)	20-38 (26)	20-36 (27)	<sup>a</sup> 0.994
	Mean ± SD	27.29 ± 3.97	27.51 ± 4.65	27.36 ± 4.19	
Marriage Time (years)	Min-Max (Median)	1-13 (2)	1-6 (3)	1-13 (2)	<sup>a</sup> 0.628
	Mean ± SD	2.83 ± 2.11	2.74 ± 1.20	2.74 ± 2.00	
Educational Status n (%)	High school or lower education levels	12 (34.3)	8 (22.9)	6 (12)	<sup>c</sup> 0.130
	University	22 (62.9)	24 (68.6)	39 (78)	
	Postgraduate	1 (2.9)	3 (8.6)	5 (10)	
Income Status n (%)	Lower than expenses	0 (0)	1 (2.9)	1 (2.0)	<sup>c</sup> 0.702
	Equal to expenses	27 (77.1)	26 (74.3)	33 (66.0)	
	Higher than expenses	8 (22.9)	8 (22.9)	16 (32.0)	
Body Mass Index n (%)	Normal (18.5–24.9 kg/m <sup>2</sup> )	20 (57.1)	20 (57.1)	30 (60.0)	<sup>c</sup> 0.937
	Overweight (25.0–29.9 kg/m <sup>2</sup> )	13 (37.1)	14 (40)	19 (38.0)	
	Obese (≥ 30 kg/m <sup>2</sup> )	2 (5.7)	1 (2.9)	1 (2.0)	
Number of pregnancies n (%)	Once	32 (91.4)	31 (88.6)	46 (92.0)	<sup>c</sup> 0.920
	≥ 2	3 (8.6)	4 (11.4)	4 (8.0)	
Number of abortions n (%)	None	32 (91.4)	30 (85.7)	46 (92.0)	<sup>c</sup> 0.638
	≥ 1	3 (8.6)	5 (14.3)	4 (8.0)	
Gestational week	Range (Median)	35-42 (39)	35-41 (39)	35-41 (39)	<sup>a</sup> 0.774
	Mean ± SD	39.11 ± 1.35	39.03 ± 1.12	38.94 ± 1.25	
	Mean ± SD	15.00 ± 4.51	15.29 ± 4.16	15.58 ± 4.31	
Number of prenatal follow-up visits	Range (Median)	5-15 (10)	5-17 (10)	5-15 (10)	<sup>a</sup> 0.447
	Mean ± SD	9.91 ± 2.19	10.57 ± 2.36	10.50 ± 2.15	
Is it a planned pregnancy? n (%)	Yes	29 (82.9)	33 (94.3)	44 (88.0)	<sup>c</sup> 0.323
	No	6 (17.1)	2 (5.7)	6 (12.0)	
Type of Pregnancy n (%)	Spontaneous	34 (97.1)	34 (97.1)	45 (90.0)	<sup>c</sup> 0.415
	Through IVF	1 (2.9)	1 (2.9)	5 (10.0)	
Health problems in pregnancy n (%)	Yes	5 (14.3)	2 (5.7)	8 (16.0)	<sup>c</sup> 0.395
	No	30 (85.7)	33 (94.3)	42 (84.0)	
Seeing a woman giving birth before n (%)	Yes	9 (25.7)	3 (8.6)	6 (12.0)	<sup>b</sup> 0.098
	No	26 (74.3)	32 (91.4)	44 (88.0)	
Her own birth based on what her mother told n (%)	Normal birth	29 (82.9)	31 (88.6)	42 (84.0)	<sup>c</sup> 0.689
	Difficult birth	0 (0)	0 (0)	2 (4.0)	
	Easy birth	6 (17.1)	4 (11.4)	6 (12.0)	

Note. a: Kruskal-Wallis test, b: Pearson's Chi-square test, c: Fisher-Halton test, n: Number of participants, SD: Standard Deviation, EFT-G: Emotional Freedom Techniques Group, BA-G: Breathing Awareness Group, C-G: Control Group, IVF: In Vitro Fertilization.

**Table 2**  
The distribution of the W-DEQ-A and B scores by groups.

		Groups			<sup>b</sup> p value
		EFT-G (n = 35)	BA-G (n = 35)	C-G (n = 50)	
W-DEQ-A	Range (Median)	21-84 (56)	34-90 (54)	16-88 (56)	F = 0.150 0.861
	Mean ± SD	56.40 ± 16.20	54.34 ± 12.84	55.16 ± 17.43	
W-DEQ-B	Range (Median)	29-96 (60)	25-99 (61)	25-95 (76.5)	F = 8.675 0.001*
	Mean ± SD	59.17 ± 18.52	59.57 ± 18.76	71.74 ± 13.74	
	Test Value	t = -0.811	t = -1.237	t = -5.821	
	P	<sup>a</sup> 0.423	<sup>a</sup> 0.224	<sup>a</sup> 0.001*	

Note. a: Paired-samples t-test, b: One-way ANOVA test, \*:p < 0.001, n: Number of participants, SD: Standard Deviation, EFT-G: Emotional Freedom Techniques Group, BA-G: Breathing Awareness Group, C-G: Control Group, W-DEQ-A and B: Wijma Delivery Expectancy/Experience Questionnaire version A and B.

**Table 3**  
Comparisons of the W-DEQ-B subscale scores between the groups.

W-DEQ-B Subscale Scores		Groups			b <sup>a</sup> p value
		EFT-G (n = 35)	BA-G (n = 35)	C-G (n = 50)	
Worries about labour pain	Range (Median)	1.1–4.3 (2.5)	0.9–4.3 (2.5)	1.4–4.4 (2.5)	F = 0.177
	Mean ± SD	2.51 ± 0.96	2.56 ± 1.02	2.46 ± 0.52	0.838
Lack of positive behaviour	Range (Median)	1–3 (2)	0.8–3.3 (1.8)	1.3–5 (3.5)	F = 52.317
	Mean ± SD	1.93 ± 0.67	1.94 ± 0.67	3.26 ± 0.74	0.001**
Loneliness	Range (Median)	0–3 (1.3)	0–3.3 (1.1)	0.4–3.1 (2)	F = 12.347
	Mean ± SD	1.27 ± 0.64	1.26 ± 0.70	1.87 ± 0.66	0.001**
Lack of positive feelings	Range (Median)	0.6–3.3 (2)	0.8–3.1 (1.9)	0.6–3.4 (2.3)	F = 1.879
	Mean ± SD	2.07 ± 0.77	2.04 ± 0.74	2.29 ± 0.60	0.161
Worries about labour	Range (Median)	0–4 (1.7)	0–4 (1.3)	0–3 (2)	F = 4.475
	Mean ± SD	1.47 ± 0.98	1.47 ± 0.98	1.95 ± 0.71	0.013*
Worries about the baby	Range (Median)	0–2.5 (1)	0–2.5 (1)	0–2 (1)	$\chi^2 = 1.913$
	Mean ± SD	0.80 ± 0.69	0.91 ± 0.56	0.88 ± 0.44	<sup>a</sup> 0.384

Note. a: Kruskal-Wallis Test, b: One-way ANOVA test, \*: p < 0.05, \*\*: p < 0.001, n: Number of participants, SD: Standard Deviation, EFT-G: Emotional Freedom Techniques Group, BA-G: Breathing Awareness Group, C-G: Control Group, W-DEQ-B: Wijma Delivery Expectancy/Experience Questionnaire version B.

in the C-G. In a study using the visual analog scale (VAS) to determine childbirth fear, the nullipara were found to have higher VAS scores. The women with the median VAS score of 2.7 ± 2.2 preferred vaginal birth, and those with the VAS score of 7.4 ± 2.7 preferred caesarian section [8]. These findings showed childbirth fear greatly affected the type of delivery. Pregnant women should not only be given physical

care in clinics, but their psychological care needs such as anxiety and fear should also be assessed and realized. This will enable them to cope with psychological and emotional problems during labour because EFT and BA practices are easy to learn, self-applied and effective techniques. These techniques have proven their effectiveness in this study, and these techniques would be more effective if they were taught in the first

**Table 4**  
The distribution of SUDS scores before and after the interventions by groups.

		Groups			p value
		EFT-G (n = 35)	BA-G (n = 35)	C-G (n = 50)	
SUDS in Latent phase Before the interventions	Range (Median)	1–8 (5)	1–8 (5)	1–9 (3)	$\chi^2 = 9.204$
	Mean ± SD	4.77 ± 2.18	4.57 ± 2.09	3.48 ± 1.94	<sup>a</sup> 0.010*
After the interventions	Range (Median)	0–5 (2)	0–6 (2)	–	Z = –1.923
	Mean ± SD	1.91 ± 1.52	2.80 ± 1.81	–	<sup>c</sup> 0.055
	<b>Test Value</b>	Z = –5.198	Z = –4.807		
	<b>p value</b>	<sup>b</sup> 0.001**	<sup>b</sup> 0.001**		
SUDS in Active phase Before the interventions	Range (Median)	3–9 (5)	4–9 (6)	2–10 (5)	$\chi^2 = 1.558$
	Mean ± SD	5.54 ± 1.27	6.06 ± 1.55	5.74 ± 1.79	<sup>a</sup> 0.459
After the interventions	Range (Median)	0–6 (2)	2–7 (4)	–	Z = –4.021
	Mean ± SD	2.51 ± 1.40	4.00 ± 1.48	–	<sup>c</sup> 0.001**
	<b>Test Value</b>	Z = –5.245	Z = –4.995		
	<b>p value</b>	<sup>b</sup> 0.001**	<sup>b</sup> 0.001**		
SUDS in Transition Phase Before the interventions	Range (Median)	4–10 [6]	5–10 [8]	5–10 [8]	$\chi^2 = 9.544$
	Mean ± SD	6.86 ± 1.57	8.00 ± 1.57	7.60 ± 1.44	<sup>a</sup> 0.008**
After the interventions	Range (Median)	2–7 [4]	2–10 [6]	–	Z = –4.552
	Mean ± SD	3.86 ± 1.44	5.94 ± 1.78	–	<sup>c</sup> 0.001**
	<b>Test Value</b>	Z = –5.211	Z = –5.012		
	<b>p value</b>	<sup>b</sup> 0.001**	<sup>b</sup> 0.001**		

Note. a: Kruskal Wallis Test b: Wilcoxon signed-rank test, c: Mann-Whitney U Test, \*:p < 0.05, \*\*:p < 0.001, SD: Standard Deviation, EFT-G: Emotional Freedom Techniques Group, BA-G: Breathing Awareness Group, C-G: Control Group, SUDS: Subjective Units of Distress Scale.

trimester of pregnancy. There is still no definite information on how many sessions should the EFT be implemented. This technique can usually be mastered in a single session and several of the articles in a meta-analysis report significant results using only one guided session [40]. Although the result is likely to be highly individualized, a pilot study suggested that EFT generally achieved effective results in an average of two sessions, whereas CBT required an average of five sessions [41]; in the meta-analyses, articles showed that the EFT sessions were changed between 1 and 8 [19–21].

In the present study, BA caused a more significant decrease in the SUDS scores during the active phase of labour than EFT. This could be evident from the fact that BA creates a quicker effect. However, EFT created a considerable drop in the SUDS scores during the transition phase of delivery than BA. This indicated that EFT generates a slower but more permanent effect on childbirth fear. Keeping the source of stress in mind, acupuncture points are stimulated by tapping. The amygdala reduces the stimulus and sends deactivating signals. The hippocampus loses its function to intervene safely before the stimulus produces a stress response and neural paths initiating the relevant stress response permanently change [42]. In a study on the effects of EFT on perceived stress in pregnant women in Tehran (Iran), EFT caused a significant fall in perceived stress [22]. In a study by Wells et al. to compare EFT and deep breathing practices to cure phobia related to small animals, EFT was found to be more effective [43]. Rowe also reported that EFT created a significant decrease in all elements of psychological stress [44]. The length of stress varies widely due to any reason of pregnancies, and stress has many negative effects on mother and baby. It is thought that EFT and BA application should routinely be used to cope with psychological stress in pregnancy-preparation training [1,2,22]. Church et al. examined the effects of EFT on depression severity in high school students and reported that the students who were offered EFT had lower depression scores [45]. In a study by Patterson on nursing students, EFT was found to reduce stress and anxiety. The students' responses to open-ended questions also confirmed the reduction in their stress and anxiety [46]. The limitation of this study was that EFT and BA were not taught before and during pregnancy.

## 5. Conclusion

In conclusion, although both EFT and BA were observed to be beneficial, EFT could be more effective than BA in reducing childbirth fear during delivery. On the basis of the SUDS scores, EFT can be said to produce a more positive and permanent effect. However, further studies are needed to specify that EFT and BA reduce the fear of birth. The results of the study will help practitioners at labour to decrease childbirth fear in that EFT and BA were specifically used to reduce this fear in this study. EFT and BA practices do not require any equipment, can be easily applied and taught and positively affect the results of standard maintenance. It is also recommended to investigate the long-term effects of these techniques such as maternal-infant attachment and postpartum emotions. These practices support the practice of holistic modern health care.

## Conflicts of interest

All authors have no competing financial interests.

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ctcp.2019.02.011>.

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