

## The Effect of Thought Field Therapy on Dental Fear among Saudi Women during Restorative Treatment

Amal S AlAwdah<sup>1\*</sup>, AlHanouf AlHabdan<sup>2</sup>, Bashayer AlTaifi<sup>3</sup> and Lamyia AlMejrad<sup>3</sup>

<sup>1</sup>Lecturer, Department of Restorative Dental Sciences, College of Dentistry, King Saud University, Riyadh, Saudi Arabia

<sup>2</sup>Assistant Professor, Department of Restorative Dental Sciences, College of Dentistry, King Saud University, Riyadh, Saudi Arabia

<sup>3</sup>Intern, College of Dentistry, King Saud University, Riyadh, Saudi Arabia

**\*Corresponding Author:** Amal S Al Awdah, Lecturer, Department of Restorative Dental Sciences, College of Dentistry, King Saud University, Riyadh, Saudi Arabia.

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### Abstract

**Background:** This study aimed to evaluate the moderating effect of Thought Field Therapy (TFT) on dental fear and to compare this therapy with other non-medical fear-reduction methods.

**Materials and Methods:** We enrolled 160 Saudi women who had presented to King Saud University College of Dentistry Primary Clinics for restorative dental treatment. The participants were randomly assigned into four groups of 40, each of which was subjected to a different fear management treatment: TFT; Tell, Show, and Do (TSD) technique; Control Shift (CS); or a negative control (NG) in which no fear-reduction method was used. Each participant completed a pre-operative questionnaire and a post-operative questionnaire immediately after the dental procedure. Both questionnaires measured dental fear, pulse rate, and blood pressure. Data were collected and analyzed using the Statistical Package for the Social Sciences program.

**Results:** The dental fear survey score for the tested sample was 44/100, indicating moderate dental fear. The TFT group showed significantly low dental fear ( $p < 0.05$ ) after treatment, whereas the TSD and Control Shift groups showed significantly high blood pressure and pulse rate ( $p < 0.05$ ). Approximately 65% patients in the TFT group would recommend this method to reduce fear; 57% patients in the TSD groups were satisfied, and 55% patients in the Control Shift group were satisfied. Only 25% patients in the negative control group were satisfied (25%).

**Conclusion:** TFT was more effective than both TSD and CS in reducing dental fear.

**Keywords:** Dental Fear; Restorative Treatment; Thought Field Therapy

### Introduction

Many terms are used to describe human emotions, and some of them, such as anxiety, fear, and phobia are difficult to define [1]. Despite this, anxiety is the most common psychological symptom in patients encountered by dentists. It can be defined as “an aversive emotional state related to an anticipated or expected encounter with a feared stimulus”. Similarly, a specific phobia is defined as “a marked fear characterized by anxiety” [2]. Odontophobia (dental fear) is “a unique phobia with special psychosomatic components that impact the dental health of the odontophobic people” [3]. Individuals with dental fear may delay dental treatment and cancel many appointments, resulting in poor oral hygiene [4-7]. In fact, such patients often seek dental treatment only when they are in pain, which further increases their anxiety [4,8,9]. Treating anxious patients increases the stress on the dentist. Consequently, treatment is often prolonged and unpleasant for the patient, whose dental fear is then reinforced [10,11].

The management of dental fear differs depending on patients' experiences, dental problems, and stage of fear [12]. Clinicians may use psychotherapeutic interventions, pharmacological interventions, or a combination of both. Psychotherapeutic interventions can be performed either behaviorally or cognitively. Cognitive behavioral therapy (CBT) is a new technique that involves "learning to change negatively distorted thoughts (cognitions) and actions (behaviors)" [12]. CBT generally involves psychoeducation, graded exposure, cognitive restructuring, behavioral experiments, and relaxation, as well as self-assertiveness training [12]. In contrast, pharmacological management comprises either sedation or general anesthesia [12]. If patients' anxiety is treated, they may be more comfortable in seeking dental treatment, and this will improve their short- and long-term dental care [13].

Thought Field Therapy (TFT) is a type of physiological and emotional therapy developed by Dr. Roger Callahan in 2001 and has been used by some psychiatrists in Scandinavia [14,15]. In this therapy, Callahan combined the diagnostic approaches of applied kinesiology with information about meridians [14]. TFT relies on simple tapping and uses the body's own meridian energy system [14,16]. In his book, Callahan explained the theory behind TFT as follows: "A key to the treatment is influencing the body's bioenergy field by tapping with your fingers on specific points of the body located along energy meridians" [15]. The theory behind TFT is a mixture of concepts "derived from a variety of sources. Foremost among these is the ancient Chinese philosophy of chi, which is thought to be the 'life force' that flows throughout the body". Callahan also bases his theory upon applied kinesiology and physics [17]. TFT can be used to treat various health problems [18]. In 2007, Norton and Price compared TFT with CBT [19]. They noted that TFT was better than CBT in terms of both clinical response and complete cure of symptoms in anxiety disorders. In addition, TFT required fewer sessions and reduced beta frequencies, indicating symptom relief [19].

Dental fear is common in people of Saudi Arabia [20,21]. Moreover, in 2000, Akeel and Abduljabbar found that women in Saudi Arabia had more fear of instruments and equipment than men [20]. Thus, there is a need for an effective and easy method for reducing this anxiety.

### Aim of the Study

The present study aimed to evaluate the moderating effect of TFT on dental fear and compare this therapy with other non-medical fear-reduction methods.

### Materials and Methods

One hundred sixty Saudi women participated in this study. To qualify for inclusion, the participants had to be women, Saudi Arabian, aged 18 - 60 years old, and in need of restorative dental treatment requiring local anesthesia and lasting 30 - 45 min. Patients were excluded if they presented to the dental clinic with pain, the procedure took < 30 min or > 45 min and they underwent pulp extirpation to treat pulpal exposure.

Ethical approval was provided by the College of Dentistry Research Center (registration number: IR0165). Written informed consent was obtained from all participants after explaining the experiment to them. Subsequently, their blood pressure and pulse rate were read for the first time using a Beurer wrist blood pressure monitor (BC 58; Omron Corporation, Kyoto, Japan). The participants were then asked to complete a pre-operative fear scale questionnaire.

The most common methods for measuring dental fear in adults and adolescents are the Dental Anxiety Scale and the Dental Fear Survey (DFS), as described by Kleinknecht, *et al.* in 1973 [22]. The DFS comprises 20 questions to be answered on a scale of 1 to 5 ("5" represents maximum fear, whereas "1" represents the least fear). Thus, DFS score is a number from 20 - 100 [23].

The pre-operative questionnaire collected patients’ demographic data, relevant medical history, dental history, and past unpleasant dental experiences. It also contained the DFS translated into Arabic [12], i.e. the survey was translated by a bilingual native speaker of English and Arabic and then back-translated, pretested, and revised. After the procedure, the participants completed a post-operative questionnaire comprising the DFS plus questions regarding their satisfaction with the fear-reduction method used. After completing the post-operative questionnaire, the participants’ blood pressure and pulse rate were re-assessed.

The participants were randomly assigned into four groups of 40, each of which was subjected to a different fear management treatment: TFT; Tell, Show, and Do (TSD); Control Shift (CS); and a negative control (NC) group in which no fear-reduction method was used. In TFT, the patients, under guidance from a researcher, tapped specific points on their body (the so-called “dental phobia sequence”; see table 1) before undergoing the dental procedure. In TSD, the restorative procedure was explained and shown on a video clip prior to treatment. In the CS method, control of the dental visit was shifted to the patients, i.e. the patients controlled the course of the dental visit and could stop the treatment by raising their hand whenever they felt discomfort or pain. In the NC group, no fear-reduction method was used. The study was a double-blind experiment; neither the participants nor the researchers knew to which group each participant belonged [12,13,24]. The participants were asked to draw a folded paper from a jar containing four papers that represented the experimental groups, and they were assigned to the corresponding groups.

A. Sequence	B. 9-Gamut Procedure	C. Repeat the sequence
Tapping sequence (fear)	The gamut point is located between the bones of the ring finger and the little finger: about an inch below the knuckles.	Tapping sequence (fear)
1. Tap the bone under the eye.	1. Close your eyes.	1. Tap the bone under the eye.
2. Tap the notch between the collarbones.	2. Open your eyes.	2. Tap the notch between the collarbones.
3. Tap the armpit point approximately 4 inches below the armpit.	3. Look down to the right.	3. Tap the armpit point approximately 4 inches below the armpit.
4. Tap the notch between the collarbones.	4. Look down to the left.	4. Tap the notch between the collarbones.
	5. Move your eyes clockwise in a full circle.	
	6. Move your eyes anticlockwise in a full circle.	
	7. Hum (6 - 10 notes of music)	
	8. Count 1-2-3-4-5 (out loud)	
	9. Hum (6 - 10 notes of music)	

**Table 1:** Thought field therapy (TFT): Tapping sequence of fear (from A to C) [15].

All researchers had received special training in TFT and had earned a continued medical training certificate by passing 20 TFT algorithms, all of which are approved by Callahan Techniques, Ltd. Each group was treated by a single researcher who conducted the entire procedure on all 40 participants within the group. Inter-examiner reliability was analyzed during a pilot study prior to the present research. The patients’ post-treatment blood pressure, pulse rate, and DFS score were re-assessed during the same visit.

Data were collected and analyzed using the Statistical Package for the Social Sciences program (SPSS Ver. 22.0; Chicago, IL, USA). Frequency distribution was used in the descriptive analysis of the data. The chi-square test was used to determine the statistical relationship between the variables, and a significance level of 0.05 was considered to indicate statistically significant difference.

Results

The mean age of the participants was 30 years. Most participants (80%; n = 128) were healthy, whereas approximately 1.3% (n = 2) reported that they were on antidepressants. Almost all participants received restorative treatment, which was the most common dental procedure, followed by endodontic treatment and simple extractions. More than half of the participants (57.5%; n = 92) were satisfied with their previous dental treatment, whereas 10.6% participants (n = 17) had encountered unpleasant dental experiences. Meanwhile, 31.8% patients (n = 51) gave a neutral response when asked about their past dental experience.

Table 2 shows a comparison of the fear scale scores before and after restorative treatment in the four groups. Among all participants (n = 160), the average pre-operative DFS score was approximately 44/100. Post-operative DFS scores of all participants were lower than their pre-operative scores, regardless of the method used for fear reduction. This indicated that the patients had less dental fear after the procedure. With regard to the difference between the pre-operative and post-operative DFS scores in each study group, the largest difference (-9.5) occurred in the TFT group (P < 0.0001), followed by the NC group (-5.9), the CS group (-4.4) and the TSD group (-3.8; Table 2).

Fear-reduction method	Pre-treatment fear scale reading	Post-treatment fear scale reading	Difference	P-Value	95% confidence limits (for difference between means)
Thought field therapy (TFT)	45.1 (19.9)	35.6 (16.1)	-9.5	< 0.0001*	(6.3, 12.6)
Tell-show and do (TSD)	44.8 (19.4)	40.9 (17.0)	-3.8	0.021*	(0.60, 7.05)
Control shift (CS)	40.4 (21.5)	36.0 (19.7)	-4.4	0.162	(-1.8, 10.7)
Negative control (NC)	44.2 (17.9)	38.3 (18.4)	-5.9	0.022*	(0.9, 11.0)

Table 2. Dental fear scale readings before and after treatment (scale = 20 - 100).

\*: Significant result at P-values < 0.05.

In all participating patients, the post-operative blood pressure and pulse rate were higher than their pre-operative values, regardless of the method used for fear reduction. The difference in the pulse rate was the smallest in the TFT group and the NC group. Conversely, in both the TSD and CS groups, the patients' post-operative pulse rate was significantly increased (P < 0.0001; Table 3).

Fear-reduction methods	Outcome variables	Pre-treatment	Post-treatment	Difference	P-Value	95% confidence limits (for difference between means)
TFT	Systolic BP	129.8 (20.6)	132.0 (17.7)	-2.2	0.383	(-7.2, 2.8)
	Diastolic BP	78.1 (10.3)	78.6 (11.9)	-0.5	0.768	(-3.9, 2.9)
	Pulse rate	80.2 (12.1)	80.8 (10.3)	-0.6	0.673	(-3.6, 2.3)
TSD	Systolic BP	132.9 (16.3)	144.9 (17.4)	-12.0	<0.0001*	(-17.8, -6.2)
	Diastolic BP	78.8 (11.1)	90.9 (16.4)	-12.1	<0.0001*	(-16.9, -7.3)
	Pulse rate	79.4 (13.0)	86.7 (13.4)	-7.3	<0.0001*	(-10.7, -3.9)
CS	Systolic BP	133.0 (25.5)	146.3 (24.1)	-13.3	<0.0001*	(-18.6, -7.9)
	Diastolic BP	77.6 (13.9)	88.4 (14.9)	-10.8	<0.0001*	(-14.5, -7.1)
	Pulse rate	80.7 (11.1)	87.7 (13.5)	-7.0	0.001*	(-1.8, 10.7)
NC	Systolic BP	127.4 (16.1)	132.7 (17.5)	-5.3	0.055	(-10.6,0.05)
	Diastolic BP	77.5 (10.5)	80.3 (11.4)	-2.8	0.119	(-6.1,0.73)
	Pulse rate	79.1 (9.8)	80.8 (11.8)	-1.7	0.269	(-4.8,1.4)

Table 3: Blood pressure (BP) and pulse rate before and after treatment.

\*: Significant result at P-values < 0.05.

In the TFT group, 65% participants were satisfied with the pain reduction technique and found it helpful in reducing dental fear. Meanwhile, 57.5% participants of the TSD group, 55% of the CS group and only 25% of the NC group were satisfied (Table 4).

Questions	Fear-reduction method: No. (%)				$\chi^2$ -value	P-value
	Thought field therapy (TFT)	Tell-show and do (TSD)	Control shift (CS)	Negative control (NC)		
<b>Did the technique help you overcome your dental fear?</b>						
Yes	25 (65)*	23 (57.5)*	22 (55)*	10 (25)	74.6	< 0.0001*
No	0 (0)	3 (7.5)	4 (10)	28 (70)		
Neutral	14 (35)	14 (35)	14 (35)	2 (5)		
<b>Would you recommend this technique in dental clinics?</b>						
Yes	34 (85)*	34 (85)*	28 (70)*	11 (27.5)	69.3	< 0.0001*
No	0 (0)	1 (2.5)	7 (17.5)	27 (67.5)		
Neutral	6 (15)	5 (12.5)	5 (12.5)	2 (5)		
<b>Do you wish to try this technique again in your next dental appointment?</b>						
Yes	38 (95)*	34 (85)*	29 (72.5)*	12 (30)	74.9	< 0.0001*
No	0 (0)	3 (7.5)	4 (10)	27 (67.5)		
Neutral	2 (5)	3 (7.5)	7 (17.5)	1 (2.5)		

**Table 4.** Feedback from patients treated using the different fear-reduction methods.

\*: Significant result at P-values < 0.05.

### Discussion

The average pre-operative DFS score in the present study was 44/100, which constituted the average fear scale among the Saudi women who had received restorative treatment at King Saud University College of Dentistry Primary Clinics. Many scales can be used to quantify fear and anxiety [1,11,12,23]. However, according to Armfield (2010), the DFS is the best method of measuring dental anxiety in research [1]. It is informative and gives a numbered score from 20 to 100, where a score of 35 - 45 is considered average and > 60 represents extreme dental fear [1].

In the present study, the DFS score of all participants was reduced post-operatively, regardless of the fear-reduction method used, probably because the dentist had established a relationship with the patient while explaining the nature, objectives, and requirements of the research. In addition, to ensure that the patients were completely informed, we encouraged them to ask questions about the research or questionnaires. It is well known that a good dentist-patient rapport of this type is essential for managing anxiety [12].

The differences in DFS scores before and after restorative treatment showed that TFT was significantly effective in reducing anxiety ( $P < 0.05$ ). Previous psychological studies have confirmed that TFT is effective in the management of fear and anxiety [14,17,18,25,26]. In addition, the method is safe, inexpensive, and non-invasive [16] as it employs a simple tapping sequence to rearrange the flow of energy along the body's energy meridians [15,16]. In 2001, Callahan showed that TFT greatly improved emotional symptoms in patients, as indicated by heart rate variability [17]. In a clinical study, TFT raised and lowered the heart rate in response to psychological feelings [25]. In 2012, Irgens, *et al.* conducted a study to evaluate the effect of TFT on the symptoms of various anxiety disorders. After the treatment, there was a significant decrease in all symptoms. Furthermore, the 3- and 12-month re-evaluations showed that this effect had been maintained for long term [18]. In the present study, patients were asked during TFT to take a deep breath and close their eyes. These steps, which are a part of TFT, serve to relax the patient, and relaxation is a well-established psychotherapeutic technique for managing dental anxiety [12].

The second most effective method in the present study was the NC method. As reported in many studies a placebo effect may happen during these types of studies [12,27]. The third most effective method was CS, whereby control was shifted to the patient from the dentist. One of the most common causes of dental anxiety is the feeling of powerlessness and loss of control that a patient experiences as they lie back on the dental chair [23,28,29]. Therefore, it is assumed that dental anxiety can be reduced by redirecting control from the dentist to the patient. The least effective method used in this study was TSD, with a mean DFS score difference of -3.8 between the pre- and post-operative values. Most of the patients in this group reported that they would have preferred not to see the steps of the procedure, even though the demonstrative video did not include any images of dental syringes or blood. This corroborates a study by Jimeno, *et al.* who reported that the TSD method increased patient anxiety in anticipation of dental treatment [30].

In the present study, blood pressure and pulse rate were used along with the DFS as objective methods for assessing dental anxiety. It has been documented that anxiety affects the nervous system by increasing activity in the sympathetic branch, leading to higher pulse rate and blood pressure [3]. These parameters are considered reliable indicators of dental anxiety and dental fear [1,4,12,13]. In the present study, post-operative readings of both pulse rate and blood pressure were increased in all groups. Assuming then that an increase in pulse rate can be used as a quantitative indicator of anxiety, the pulse rate readings showed the same sequence of effectivity of the fear-reduction methods as the DFS: TFT, NC, CS, and TSD.

In the TSD and CS groups, post-operative readings of both heart rate and pulse rate were significantly increased, perhaps because the patients in these groups experienced aggravated fear when the responsibility was transferred to them [30].

The patients' subjective opinion regarding the effectiveness of the fear-reduction methods was evaluated in the post-operative questionnaire using the following question: "Did the technique help you overcome your dental fear?" The most satisfied group was the TFT group, followed by the TSD and CS groups. The least satisfied group was the NC group. These results showed that our participants were highly accepting of new methods for reducing dental fear.

Further research on TFT as a fear-reduction method in dentistry should be conducted among both men and women. In addition, other fear-reduction techniques should be evaluated in a dental context to enhance our understanding of which methods are most effective.

### Conclusion

The management of dental fear is an integral part of dental practice. Thus, it is recommended that dentists acquire proper education on fear-reduction methods. In this regard, TFT is a promising method to help patients overcome dental fear and anxiety. Importantly, managing dental fear leads to better oral health and overall well-being.

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