

Original Research

Dental Fear Assessment for Children in Saudi Arabia Using the Children's Fear Survey Schedule-Dental Subscale: A Cross-Sectional Study

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Abstract

Background: Dental fear is defined as a subjective state of feeling or a reaction to a dental source of danger such as needles or hand pieces. This study aims to assess the prevalence of dental fear and the associated factors in Saudi children.

Methods: This is a cross-sectional survey-based study that utilized the translated and validated Arabic version of the Children's Fear Survey Schedule-Dental Subscale (CFSS-DS) on a total of 374 participants. It has used Spearman's correlation analysis to determine the correlation between the CFSS-DS items and the reported scores.

Results: A total 374 participants were included in the study. Among these, 77% were female and 23% were male. Moreover, most children (62%) attended private schools while the remaining (38%) attended government schools. The total mean CFSS-DS score for the study population was 24.7 ± 7.2 . Female children had significantly higher total mean CFSS-DS scores than males (25.2 ± 6.9 versus 22.8 ± 7.6 , respectively, $p = 0.007$). Moreover, patients who attended private schools had higher total mean CFSS-DS scores than patients who attended government schools (25.4 ± 6.9 versus 23.4 ± 7.5 , respectively, $p = 0.008$). Our results also indicate that all of the CFSS-DS items show significant correlations and scores ($p < 0.001$), with injections being the most feared practice ($r = 0.64$).

Conclusion: Our results indicate a high degree of fear and anxiety among Saudi children towards dental practices, with injections being the most feared practice. Creative ideas should be considered when approaching children with a high probability of developing fear.

Keywords: Anxiety; Survey Schedule-Dental Subscale CFSS-DS; Assessment; Pediatric dental care.

Introduction

It is internationally accepted that people develop specific fears as a result of learning (1). Fear is generally defined as an individual's response to real life-threatening events or dangerous situations (2). However, for anxiety the source of threat is unclear, ambiguous, or may not be immediately present (3, 4). Dental fear is defined as a subjective state of feeling or reaction to a dental source of danger such as needles or hand pieces (5). It is well-known that fearful and anxious patients are generally uncooperative during dental visits. This can frequently cause a lower pain threshold to develop and lead to the cancellation of appointments (6). In 1998 a study was conducted by Kruger and his colleagues that concluded that non-anxious adolescents have lower incidences of severity and incidence when compared to anxious patients (3, 7). Fear and anxiety are some of the most commonly experienced problems in the dental system and are a source of challenge to the clinician and many children who are anxious to avoid dental treatment may need to be referred to pharmacological behavior management.

Most studies report that dental anxiety occurs due to the dental treatment procedure and that it is related to negative expectations which are often linked to previous traumatic experiences or negative attitudes in the family (5, 6, 8). Factors affecting children's behavior have been studied over the past few decades and evidence indicates that there is a correlation between dental anxiety, dentist-patient interactions (9, 10), and time spent waiting for dental treatment (11). Assessment of dental fear can be challenging because of the various physiological and psychological considerations. Many techniques are available, including the Venham Picture Test (VPT) and behavioral rating scales.

However, more advanced and well-adapted questionnaires that are more commonly used and validated by many studies include the Modified Dental Anxiety Scale and the Children's Fear Survey Schedule-Dental Subscale (CFSS-DS) (12-14). The CFSS-DS is a revised form of the Fear Survey Schedule for Children (FSS-FC) (15) and was developed to assess children's dental fear.

Many researchers have pointed the prevalence of childhood dental anxiety. In 1992, a study was conducted in Scotland which estimated a prevalence rate

of 7.1% (16). In 2004, a study by Folyay et al. reported that 3 to 43% of children have dental anxiety (17). Other studies have shown that the prevalence in the USA is at 10.5% (18), while in the UK the prevalence ranges between 6% to 20% (19). Multiple surveys have been performed across the world to evaluate the prevalence of fear in children. However, studies in Saudi Arabia are scarce and have been conducted only on adults. Therefore, this study aims to assess the prevalence of dental fear and the associated factors in Saudi children.

Methods

Study design and population

In this survey-based study, we aimed to assess the prevalence of dental fear and anxiety among children. We used the validated adapted questionnaire by El-Housseiny et al. (20), which was translated into Arabic. The questionnaire was composed of three parts: 1) cover page, which outlines the title, a brief introduction about the study, and consent form, 2) demographic data, 3) dental anxiety questions using the CFSS-DS, which consists of 15 points. Initially, a total of 500 children were intended to participate in the survey. However, the final number of participants that were included in the study was 374. Data collection is not taken from a dental or hospital setup in order to eliminate the potential of exacerbating stressful situations.

The inclusion criteria included children that were 1) between 8 to 12 years old, 2) male and female 3) healthy with no learning or mental disabilities. Children were excluded if they 1) were younger than 8 and older than 12 years old, 2) had learning or mental disabilities. After the questionnaire was explained to the child and parents, written consent was obtained.

Statistical analysis

All statistical analysis was undertaken using SPSS version 22 data processing software (IBM Corp, Armonk NY, USA). Aside from the descriptive statistics, T-test was used to compare age with the CFSS-DS score, and Spearman's test for correlation between the participants.

Results

We included 374 patients in the present study, based on their fulfillment of our criteria. Among these patients, 77% were female while 23% were male. Patients were

divided into age groups with many (35.8%) being less than 8 years old. Moreover, most patients (62%) attended private schools while the rest (38%) attended government schools. The total mean CFSS-DS scores for the study population were 24.7 ± 7.2 . Female children had significantly higher total mean CFSS-DS scores than males (25.2 ± 6.9 versus 22.8 ± 7.6 , respectively, $p = 0.007$). Moreover, patients that attended private schools also had higher total mean CFSS-DS scores than patients who attended government schools (25.4 ± 6.9 versus 23.4 ± 7.5 , respectively, $p = 0.008$) (Table 1).

Our results also indicate that all of the CFSS-DS points showed significant correlations and scores ($p < 0.001$). The most feared practices are: injection ($r = 0.64$), having somebody look at you ($r = 0.62$), being touched by a stranger ($r = 0.599$), drilling ($r = 0.57$), choking ($r = 0.57$), dentists ($r = 0.55$), noise of drilling ($r = 0.50$), the sight of a dentist ($r = 0.48$), opening of the mouth ($r = 0.45$), doctors ($r = 0.42$), examination of the mouth ($r = 0.41$), going to hospital ($r = 0.40$), instruments in the mouth ($r = 0.37$), scaling ($r = 0.28$), and people in white ($r = 0.19$) (Table 2).

Table 1. Baseline characteristics and Children’s Fear Survey Schedule-Dental Subscale (CFSS-DS) scores.

Table 2. Spearman’s analysis to investigate the correlation between the CFSS-DS items and scores.

Characteristics		count	%
Age	0	12	3.2
	<8	134	35.8
	8	93	24.9
	9	64	17.1
	10	34	9.1
	11	32	8.6
	12	5	1.3
Gender	Male	86	23.0
	Female	288	77.0
School	Governmental	142	38.0
	Private	232	62.0
Total		374	100.0
CFSS-DS scores		Mean ± SD	
Age	0	21.7±6.0	
	<8	24.6±6.9	
	8	27.1±7.6	
	9	23.6±6.25	
	10	24.1±7.5	
	11	22.2±7.3	
	12	22.4±3.9	
Gender	Male	22.8±7.6	
	Female	25.2±6.9	
School	Governmental	23.4±7.5	
	Private	25.4±6.9	
Total		24.7±7.2	

Spearman's rho		
CFSS-DS items	Correlation Coefficient	p-value
CFSS-DS Score	1	
Dentist	0.55	< 0.001
Doctors	0.42	
Injections	0.64	
Having somebody examine your mouth	0.41	
Having to open your mouth	0.45	
Having a stranger touch you	0.599	
Having somebody look at you	0.62	
The dentist drilling	0.57	
The sight of the dentist drilling	0.48	
The noise of the dentist drilling	0.5	
Having somebody put instruments in your mouth	0.37	
Choking	0.57	
Having to go to the hospital	0.4	
People in white uniforms	0.19	
Having the dentist clean your teeth	0.28	

All correlations are significant at the 0.01 level (2-tailed).

Discussion

In this study, we aimed to assess the degree of dental fear and anxiety among Saudi children, using the Arabic version of the CFSS-DS questionnaire. This questionnaire is commonly used to assess dental fear in children and has been translated and validated in many languages (21, 22). Such surveys are more likely to enhance the comprehension of dental fear and direct efforts to identify it and find solutions for it (23). The Arabic version of the questionnaire has been previously validated (24), and was depended on when conducting this study. We found that the mean CFSS-DS score for our population is 24.7. This total score is higher than the previous score identified by El-Housseiny *et al.* (20), who reported a score of 23. These scores are comparable with previous studies that reported similar scores within the range of 22.1 to 33.3 (25-28).

On the other hand, other studies have reported higher scores ranging between 37.8 to 45.9 in their populations (25, 29). We also found that female children had a higher mean score than male children. This is consistent with the findings of previous studies from Japan and Greece (30, 31). Conversely, other studies have reported that both genders showed similar rates of the estimated total fear scores (20, 26, 28, 29).

We also found that all of the CFSS-DS procedures can be correlated with the estimated scores. The largest correlations were found in injections, being looked at, being touched by a stranger, drilling, choking, dentists, and drilling noises. The lowest correlations were found in scaling and people in white. The results also indicated that injections were the most feared in the recruited children in our population. This is consistent with the results of previous studies (24, 27, 29, 30, 32).

The fear of injections is logical among children who are usually frightened by older individuals or have considered injections to be a traumatic experience since infancy. Additionally, previous research has shown that some dentists may not apply local anesthesia to their patients before starting the management process, and only utilize hand instruments (33, 34). However, the fear of injections is not necessarily related to the dental field, but the medical field in general, and pediatric dentists usually hide injections from their patients. Many pediatric dentists have previously reported the use of

statements and sources of distraction when trying to inject their patients.

Studies that previously used the CFSS-DS for assessment of dental fear and anxiety in children have also analyzed the consistency of the CFSS-DS items to determine whether a correlation is present between these items, which may in turn suggest that the correlated items could have common concepts of interest (35). For instance, the El-Housseiny *et al.* (20) study authors identified four factors including, 1) a common fear of the less invasive general instruments, 2) a fear of all medical aspects, 3) a fear of drilling, and 4) a fear of strangers, which was consistent with the results of a previous Dutch study (36). Moreover, they reported that although injections were the most feared procedure in their study, like ours, it did not correlate to factor 1 and only moderately to factor 2. Not all studies have reported the same patterns for these factors (28, 36, 37). However, having a fear of dental treatment (36, 37) and undergoing highly-invasive dental procedures (27, 28, 30) seem to be the one unifying factor among the different studies. Therefore, it has been concluded that CFSS-DS is useful when measuring uni-dimensional concepts of fear and anxiety in children (28).

There are some limitations that must be considered in this study. Firstly, the CFSS-DS should be completed before performing the dental operations as studies show that feelings can be significantly reduced after the procedure (38). Secondly, the effect of the procedure type on the scores should be also assessed as the different procedures may have different impacts on feelings of fear and anxiety (39). We suggest that further studies assess more children for further assessment of this phenomenon and validation of the CFSS-DS Arabic questionnaire.

Conclusion

Our results indicate a high degree of fear and anxiety among Saudi children towards dental practices, with injections being the most feared procedure. Females and patients studying at private schools appear to be the most significantly affected. Therefore, creative ideas should be considered when approaching patients at high risk of developing fear.

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Disclosure**Statement:**

The authors declare no conflict of interest. All data and supplementary files are available upon request.

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Ethical Consideration:

The study was approved by the Institutional Review Board (IRB) of Riyadh Elm University. An informed written consent was obtained from all participants that took part in answering the survey.

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