Assessment for the Children's Fear Survey Schedule—Dental Subscale

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***Objectives**: Child dental fear causes a significant management problem. The Children's Fear Survey Schedule-Dental Subscale (CFSS-DS) is the most widely used measure of dental fear in children. This study was undertaken to develop and test reliability and validity for the Arabic version of the CFSS-DS.* ***Study design**: the English CFSS-DS was translated to Arabic language and its reliability and validity were evaluated by distributing it to 6-12 year old Arabic pediatric dental patients (n=220). Of whom 144 children were assigned for test- retest reliability. To test criterion validity; 44 children were subjected to behavior rating during treatment and compared with their CFSS-DS. Fear of returning to the dentist was evaluated for all the children to test construct validity.* ***Results**: the Arabic version of the CFSS-DS showed good internal consistency (alpha = 0.86) and test-retest reliability (0.86, P<0.001). Treatment with or without local anesthesia did not affect the children's behavior or fear scores. Significant correlations were found between total fear scores and both Frankl rating scale (r=-0.54, p<0.001) and willingness to return to the dentist (r=0.50, p<0.001).* ***Conclusion**: the Arabic version of the CFSS-DS appears to be a reliable and valid method for evaluating child's dental fear in Arabic cultures.*

***Key words:** Fear, anxiety, Fear Survey behavior, reliability, validity, Arabic version, CFSS-DS, children.*

INTRODUCTION

Dental anxiety and fear, which possess a significant behavior management problem, are associated with avoidance of dental treatment and deteriorated dental health [1-4]. In adults fear from dental work was reported to develop mainly during childhood [5]. Different methods used to assess dental fear vary from physiological methods [6], Venham picture test (VPT) [6], behavioral rating scales [6,7] to several forms of questionnaires such as the Modified Dental Anxiety Scale [8,9] and the Children's Fear Survey Schedule-Dental Subscale (CFSS-DS) [10].

The CFSS-DS was developed to assess dental fear in children; it is a revised form of the Fear Survey Schedule for Children FSS-FC [11] including specific dental fear items as one of its subscales [10]. The CFSS-DS questionnaire consists of 15 items related to different aspects of dental treatment. As a self-report measurement of dental anxiety and fear it has been suggested that the CFSS-DS is preferred over the VPT and Dental Anxiety Scale [8]. It has better psychometric properties, measures dental fear more precisely and covers more aspects of the dental situation.

In recent years most fear studies were directed to validate the CFSS-DS rather than studying fear itself. The CFSS-DS is showing good reliability (internal consistency and test–retest) and acceptable validity in English [10] and several other languages [12-20]. Cultural and social norms of behavior can affect the development and expression of children's fear and as dental care systems can vary considerably across cultures, normative data in each culture are needed [17]. Arabic countries have different cultural, religious and social habits compared to other countries. Early recognition of the child dental fear by the use of a simple reliable scale and management of this fear is the key to an effective treatment delivery to the child patient. Studies to assess the Arabic communities and rely on questionnaire data using Arabic language are needed.

The aim of this study was to develop and test the reliability and validity of the Arabic version of Children's Fear Survey Schedule-Dental Subscale (CFSS-DS)

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MATERIALS AND METHOD

The study sample consisted of 220 consecutive healthy 6-12 year old pediatric dental patients seeking treatment at the pediatric dental clinics in Faculty of Dentistry, King Abdulaziz University over a period of 8 months. Inclusion criteria for the child included: (1) Healthy child class I ASA with no mental or communication disorders, (2) of any Arabic nationality, (3) the primary and native language of both the child and parent was Arabic (4) the child and/or parent could read and understand Arabic.

The English version of the Children's Fear Survey Schedule–Dental Subscale (CFSS-DS) [10] was used to develop the Arabic version. The scale consists of 15 items related to various aspects of dental treatment, such as drilling, injections, having to open the mouth etc. Each item is scored on a 5-point Likert scale from 1 (not afraid at all) to 5 (very afraid). The scores of the 15 items were summed to get the total fear score for each child that ranged from a minimum of 15 to a maximum of 75. The scale items-questionnaire was translated to formal Arabic language by a native speaker and corrections in the Arabic translation were done through a pilot study. Then re-translated into English again by another person and comparison with the English version was done to assess their matching. In item 15 the word nurse was replaced by dentist to be more representative to the Arabic communities.

Ethical approval was obtained from the Research Ethics committee, Faculty of Dentistry, King Abdulaziz University, Jeddah, Saudi Arabia. Consent form was obtained from the parent of the children in addition to verbal approval from the children.

The questionnaires were distributed and collected by the receptionist after treatment [21] in the reception area. For the retest visit the questionnaire was completed before treatment. Children were instructed to complete the questionnaire by themselves. Young children who could not read were assisted only in reading the items by his/her parents. Parents were instructed not to direct their children response but only to help in reading. Personal data was obtained from the parents.

Internal consistency (the homogeneity of different items of the scale**):** the 220 children completed the 15 item-questionnaire in Arabic to self-rate their dental fear after receiving treatment (initial test).

Test-retest reliability: (the reproducibility of the scale at different times): out of the total sample, a subsample of 144 children, who returned for another visit after one week [17], were invited to complete the same 15 item-questionnaire at the beginning of the visit (retest). The fear scores in the two visits were compared.

Construct validity: in an assumption that a high level of dental fear as measured by the CFSS-DS should be associated with high levels of fear of returning to the dentist soon [17]. The following item (item 16) "how afraid are you of returning to the dentist soon?" [17] was added to the same 15-items questionnaire in Arabic. This item was scaled in the same way as the CFSS-DS and used to test the construct validity as a single question for all the 220 children. This item was completed with the 15 items after receiving treatment but was not added to them on calculating the total fear scores.

Criterion validity (the relation between the CFSS-DS scores and the actual behavior of children during dental examination and treatment**)**: the 220 pediatric dental patients were enlisted and given serial numbers. Patients participated in this subsample were randomly selected systematically every fifth patient. The child behavior during the visit was assessed by the Frankl Behavior Rating Scale [7] during the appointment by a trained and calibrated pediatric dentist (intra-rater reliability; Kappa = 0.87, $P < 0.001$) where 1 equals 'definitely negative' (child is crying forcefully, behaving in a fearful manner), 2 equals 'negative' (child is reluctant, uncooperative), 3 equals 'positive' (child may be cautious but willing to comply), and 4 equals 'definitely positive' (child and dentist have good rapport, child is laughing). The rating was then compared to the CFSS-DS score self-reported by the child at the end of the visit.

Statistical method

Data was analyzed using the SPSS program version 18.0 (SPSS Inc, Chicago, IL, USA). Since the data was not normally distributed (most children scoring low); in addition to descriptive statistics Mann Whitney Test was used to compare age and total CFSS-DS scores according to gender and previous experience. Differences in total fear scores among different nationality were evaluated by Kruskal-Wallis Test.

Cronbach's Alpha was used to test the internal consistency (reliability). Intra-class correlation coefficient (ICC) was used to assess the test–retest reliability of the paired CFSS-DS questionnaire. Spearman's rho correlation was used to assess the correlations between the CFSS-DS (the 15 items) scores and age, fear of returning to the dentist soon (item 16); (construct validity) as well as the Frankl rating of children behavior (criterion validity). Kruskal-Wallis Test was used to compare the total CFSS-DS scores among the different Frankl ratings.

To study the effect of dental procedures on the CFSS-DS, because of low numbers of children receiving certain procedures, the variable with or without local anesthesia was used in the analyses. Mann Whitney Test was used to measure the relation between the CFSS-DS scores and receiving anesthesia and between having anesthesia or not at the initial test visit and the CFSS-DS scores at the retest visit. To compare the effect of receiving local anesthesia on the child's behavior; the Frankl rating was dichotomized into negative (rating 1 and 2) and positive (rating 3 and 4). These two categories were compared in relation to receiving local anesthesia using the Fisher Exact Test. The level of significance was set at $P < 0.05$.

RESULTS

Due to missing data 1, 3 and 2 children were excluded from the total sample, the test retest and the criterion validity subsamples respectively. Table 1 and 2 show description of the total sample and the two subsamples. The mean age of all the children was 8.97 ± 1.76 with a mean total fear scores of 23.0 ± 7.75. Boys represented 50.23% of the sample. Mann-Whitney Test showed no significant differences between either age or total fear scores of boys and girls ($P > 0.05$). No correlation was found between age and total CFSS-DS score ($r = -0.004$, $P = 0.96$). No significant difference was found in total fear scores among different nationalities in total sample ($X^2 = 4.78$, $P = 0.57$). The same was true for the two subsamples ($P = 0.30$ and 0.75 respectively).

Children mainly came for restoration (35.1%), examination or recall (29.7%), extraction (14.9%), pulp therapy (9.5%) and other procedures (10.8%). Almost 94 % of children had previous dental experience. No statistically significant difference in total CFSS-DS scores was found between children with or without previous

experience in the total sample (Z= 0.85, P = 0.40) as well as the two subsamples (P > 0.05).

The total fear scores (for the 15 items) of all the children ranged between 15 and 57. Means and standard deviation for all items for all children as well as for boys and girls are shown in Table 3. The most feared items in a descending order were injections, the dentist drilling; choking and having a stranger touch them. However, items ranking differed by boys and girls.

Internal consistency of the Arabic version of the CFSS-DS scale (Cronbach's Alpha) was 0.86.

Test-retest reliability: Tables 1 and 2 show the description of the subsample of children participated in test-retest analysis. The total CFSS-DS scores at the initial test and retest visits are shown in Table 4. The test-retest reliability (intra-class correlation) was 0.86, P < 0.001. The invasive dental procedures at the initial visit (receiving local anesthesia) versus noninvasive procedures (without anesthesia) was not related to the total CFSS-DS scores at the retest visit (Z = 0.10, P = 0.34).

Construct validity, assessed by the correlation between fear of returning to the dentist soon and total fear score; measured by the CFSS-DS (table 4), showed a significant moderate correlation (P<0.001). Around 65.7% of children scored "not afraid at all", 26.9% "a little afraid", 4.2% "a fair amount afraid", 1.9% "pretty much afraid" and 0.9% "very afraid" of returning to the dentist soon.

Criterion validity: Patients participated in this part mainly attended for restoration (35.7%), examination or recall (31%), extraction (23.8%), pulp therapy (9.5%) and other procedures (11.9%). The total CFSS-DS scores of the 42 participated children ranged between 15 and 41. The invasive dental procedures (receiving local anesthesia) versus noninvasive procedures (without anesthesia) was not related to the total CFSS-DS scores (Table 5; P = 0.96). In addition categorization on the Frankl scale was not related to the treatment received with or without anesthesia (Table 5; P = 0.68).

Regarding Frankl rating of behavior (Table 6); a statistically significant moderate correlation was found between the total CFSS-DS scores and Frankl rating scale (P <0.001). Children rated as definitely negative in Frankl rating had the highest mean total CFSS-DS scores followed by negative, positive and definitely positive respectively. Differences in total CFSS-DS scores among Frankl ratings were statistically significant by Kruskal-Wallis Test (P = 0.004). Furthermore the dichotomized Frankl categories also showed statistically significant higher levels of dental fear with negative categories compared to those with positive (Z = - 2.98, P = 0.002).

DISCUSSION

The CFSS-DS has been translated from English to many languages such as Finish [12], Swedish [13], Dutch [15], Japanese [17], Chinese [22], Greek [18], Hindi [19] and Bosnian [20] languages. This study offers the CFSS-DS in Arabic language that is available from the first author.

In the present study the total mean CFSS-DS score for all the children was 23.0 which fall in the range of fear scores (22.1 – 33.25) observed by other studies [12,13,15,17-19]. This finding suggest low level of dental fear [23] which suggested a cut-off score around 24.5 for self-ratings of dental fear. Other studies reported higher mean fear scores of 45.9 [24] and 37.8 [13] for fearful and 31.79 for uncooperative children [25].

No significant difference was found between boys and girls in the total fear scores that is supported by previous studies [15,18,19,24], however other studies done on school children reported that girls have more fear scores than boys [17,18]. This may be attributed to difference in age as these studies evaluated older age groups with a mean age of 11.0 years and a median of 13 years respectively. Different studies showed that dental fear fluctuates across time and that the fear scores are higher among 12- and 15-year old children than among younger ones [19,26]. Among 15 year-olds, girls are more likely to report dental fear than boys [27].

Table 1. Characteristics of children participated in total sample, reliability and criterion validity subsamples.

Variables	Total sample Number (%)	Test-retest subsample Number (%)	Criterion validity subsample Number (%)
Total	219 (100)	141 (100)	42 (100)
Gender			
Boys	110 (50.23)	71 (50.35)	19 (45.24)
Girls	109 (49.77)	70 (49.65)	23 (54.76)
Nationality			
Saudi	100(45.66)	64(45.39)	18(42.86)
Yamani	63(28.77)	49(34.75)	10(23.81)
Palestinian	23(10.50)	7(4.96)	5(11.90)
Egyptian	13(5.94)	4(2.84)	5(11.90)
Sudanese	10(4.66)	8(5.67)	1(2.38)
Jordanian	3(1.37)	2(1.42)	1(2.38)
Other Arabic	7(3.20)	7(4.96)	2(4.76)
Previous experience			
With	206 (94.06)	140 (99.29)	38 (90.5)
Without	13 (5.9)	1 (0.71)	4 (9.5)

Table 2. Comparison of age and total fear scores according to gender in total sample, reliability and criterion validity subsamples.

Variables	Total sample N= 219	Test retest subsample N= 141	Criterion validity subsample N= 42
Age mean±SD(years)			
Boys	8.99±1.88	9.08±1.98	8.32±1.97
Girls	8.96±1.63	8.85±1.46	9.09±1.44
Total	8.97±1.76	8.97±1.74	8.73 ±1.73
Z (P value)	**0.139 (0.89)**	**0.625(0.53)**	**1.09 (0.28)**
Fear score mean±SD			
Boys	23.50±7.66	22.18±7.31	21.53±6.33
Girls	23.51±7.85	23.87±7.36	22.0±6.68
Total	23.0±7.75	23.02 ± 7.36	21.78±6.44
Z (P value)	**1.21 (0.23)**	**1.61 (0.11)**	**0.52 (0.60)**

Z Mann-Whitney test, P > 0.05.

Table 3. Mean Children's Fear Survey Schedule-Dental Subscale item scores and standard deviation (SD) for all children, boys and girls.

Item	All (N=219)		Boys		Girls	
	Mean	SD	Mean	SD	Mean	SD
1.Dentists	1.42	0.79	1.36	0.78	1.47	0.81
2. Doctors	1.34	0.69	1.34	0.76	1.35	0.61
3. Injections (shots)	2.33	1.33	2.18	1.13	2.49	1.32
4.Having somebody examine your mouth	1.22	0.56	1.20	0.49	1.24	0.62
5.Having to open your mouth	1.30	0.74	1.28	0.73	1.32	0.76
6.Having a stranger touch you	1.78	1.05	1.65	0.93	1.91	1.16
7.Having somebody look at you	1.62	0.98	1.49	0.83	1.75	1.10
8.The dentist drilling	1.90	1.15	1.87	1.15	1.93	1.16
9.The sight of the dentist drilling	1.65	1.05	1.65	1.07	1.65	1.02
10.The noise of the dentist drilling	1.60	0.97	1.54	0.94	1.66	1.01
11.Having somebody put instruments in your mouth	1.58	0.97	1.51	0.90	1.64	1.04
12.Choking	1.85	1.13	1.90	1.24	1.81	1.00
13.having to go to the hospital	1.21	0.59	1.25	0.61	1.16	0.56
14.People in white uniforms	1.08	0.39	1.10	0.47	1.06	0.30
15.Having the dentist clean your teeth	1.20	0.62	1.21	0.65	1.19	0.59

Table 4. Reliability and construct validity for the Arabic version of Children's Fear Survey Schedule-Dental Subscale (CFSS-DS).

Method	Value
Internal consistency	
Cronbach's Alpha	0.86
Test retest reliability	
Mean ± SD total CFSS-DS at initial test	23.02 ± 7.36
Mean ± SD total CFSS-DS at retest	22.31 ± 6.68
ICC (P value)	**0.86 (<0.001)*^**
Construct validity	
r (P value)	**0.50 (<0.001)*#**

*Statistically significant P < 0.05.

^ Intraclass correlation

Spearman's rho

Table 5 . Effect of treatments with or without local anesthesia on Children's Fear Survey Schedule-Dental Subscale (CFSS-DS) total scores and behavior.

Variables	With local anesthesia N= 25	Without local anesthesia N=17	P value
Total CFSS-DS			
Mean ± SD	21.92±6.37	22.29±7.21	**0.96^**
Behavior (Frankl)			
negative	5	2	
positive	20	15	**0.68#**
Total number		42	

^Mann-Whitney test Z= - 0.05, P > 0.05

Fisher's Exact test

Table 6. Mean total Children's Fear Survey Schedule-Dental Subscale (CFSS-DS) of different Frankl behavior ratings and criterion validity analysis.

Frankl rating	Number (%)	total CFSS-DS Mean ± SD
Definitely negative	2 (4.76)	34.00 ± 1.41
Negative	5 (11.90)	28.60 ± 8.56
Positive	17 (40.48)	21.65 ± 5.22
Definitely positive	18 (42.86)	18.47 ± 3.64
Criterion validity analysis		
Total CFSS-DS versus Frankl rating		
Kruskal-Wallis Test (P value)		13.14 (0.004)*
Spearman's correlation (P value)		0.54 (< 0.001)*

*Statistically significant P < 0.05.

The present study revealed no correlation between age and the total fear scores. This finding is in accordance with other studies [12,15,17,18]. However, other studies found a weak correlation with age [10,19]. This can be attributed to the fact that the distribution of fear scores is not linear but irregularly change over age groups [10]. The younger age (< 3.99 years) was found to have the highest CFSS-DS scores compared to the older age groups (4-, 5-, 6- and ≥ 7 years old) [22], and the dental fear found among 6-7 year olds decreased as age increased [10], other studies found higher dental fear among 12 and 15 year old children compared to younger children [19,26].

The most feared items for all the children were injections, the dentist drilling and choking. This finding is in accordance with other studies [10,12,17,18,24]. However, ranking of the most feared items somewhat differs among different studies. Ranking was choking, injections and the dentist drilling in USA and Finland [10,12], while, drilling and injections were ranked high in Netherland [24]. Some studies having to go to the hospital was among the most feared items [12,18]. However girls in the present study ranked fear of having a stranger touch them before choking. This may be due to culture and social differences. In Japan, children were most afraid of choking, injections of having a stranger touch them and drilling [17]. These differences may be attributed to differences in cultures however these specific concerns are constant across different cultures.

The Arabic version of the CFSS-DS showed good reliability and validity. It has a high internal consistency (0.86) which is in accordance with previous studies reported values between 0.83 and 0.86 with different languages [12,16,18,20]. Still, other studies reported higher values; that ranges from 0.90 to 0.92 [15,17,19]. This indicates the high correlation and homogeneity [28] of different items of the Arabic scale.

In previous studies the questionnaire is often filled by the child or parent before treatment. This is contrary to the CFSS-DS design as it is supposed to be filled after treatment to avoid the false results as a child may express anticipatory anxiety prior to treatment [21], which was followed in the present study. The retest evaluation was done at the begging of the retest visit after one week. One week period for the retest is in accordance with a previous study [17]. This is also supported by the suggestion that a maximum of 2-4 weeks is a reasonable period between the initial and follow up administration of the questionnaire to minimize the possibility of real or random changes occurring [28] if the child had dental visits or subjected to acquired fear from friends or family members between the two evaluations.

The test-retest reliability also showed a high reliability (0.86) for the scale. This finding is in agreement with other studies reported significant test re-test correlation with correlation coefficient values between 0.74 and 0.97 [13,17,18]. This means that, the answer to the same item-question of the scale; at different times is highly correlated and reproducible [28]. Therefore the Arabic version of the CFSS-DS appears to be reliable to measure the child dental fear in Arabic speaking children.

No relation between invasive dental procedures (restoration, pulp therapy or extraction) with local anesthesia and non-invasive dental procedure (examination or prophylaxis) without local anesthesia and the total fear score. This finding is supported by a previous study in which dental treatment with or without local anesthesia was not related to the total CFSS-DS [18].

For the construct validity a significant moderate correlation ($r = 0.50$, $p < 0.001$) was found between the CFSS-DS and fear of returning to the dentist soon which is similar to the finding of a Japanese ($r = 0.51$, $p < 0.01$) study using the same single question [17]. This shows that higher levels of dental fear, measured by the CFSS-DS, are associated with higher levels of fear of returning to the dentist soon. This shows that the scale can be valid and effective to differentiate between children who are expected to differ in fear [28].

The type of treatment with or without local anesthesia did not affect the children's behavior rated by Frankl scale which is in agreement with Nakai *et al* [17]. The Frankl scale [7] is probably the most frequently used behavior rating scale. Criterion validity testing the relation between the CFSS-DS and this gold standard administered at the same time [28] was found to be significant. Children with uncooperative behavior had higher fear scores than those with cooperative behavior. This is consistent with other studies [17,18,25]. A significant moderate correlation ($r = -0.54$, $p < 0.001$) was found with Frankl behavior rating scale. This is consistent with Aartman *et al* [8] who reported that Frankl scale correlates moderately with questionnaires assessing dental anxiety and fear. However with another self-reporting measure; a face version of the Modified Child Dental Anxiety Scale [29]; a significant high correlation was found with the CFSS-DS ($r = 0.80$, $P < 0.001$). This can be explained by the fact that, inter-correlations between different techniques used to measure anxiety and fear (behavioral, self-report and physiological measurements) are low. Theoretically each of the three techniques has a unique part in the construct of fear. Therefore the inter-correlation can never be high [8]. In addition cooperative patients can have hidden dental fear [25] and that child patient with behavior management problem does not always have dental fear [30].

Only children of different Arabic nationalities participated in this study, no significant difference was found among the total fear scores reported by children of different Arabic nationalities. This is because the Arabic language is the formal, written educational language in the Arabic countries, easy for the children to read and understand. In addition the Arabic countries share the same culture and religion that is reflected on the parents and children.

This psychometric questionnaire directly measuring dental fear would be helpful in giving a more detailed prospective of the cause of dental fear for a child [21]. Early recognition of a child dental fear by the use of a simple reliable scale is the key to an effective treatment delivery to the child patient. A recent study in Saudi Arabia assessed school children's feelings and attitudes toward their dentist, reported that 12% of the children were afraid [31]. By using the CFSS-DS, dentists will be able to distinguish children in need of extra attention and subsequently select the most appropriate behavior guidance approach for these children, or decide to refer the child to a specialist. By using this scale to identify the most fear producing items will enable the dentists to select the most appropriate behavior guidance strategy (tell show and do, modeling, desensitization etc.) for the child to deal with his/her specific fear.

Although this psychometric scale has been popularly used and approaching gold standard for measuring dental fear in children, it is still presenting a challenge to the investigators [32]. Cut-off point is still a problematic. A recent study provided information on cut-off scores differentiated by age (8 years and older) and gender, that were below the standard one [23]. In addition the inability of the young children to fill this questionnaire by themselves, and the problem in comprehension of the questionnaire contents are difficulties facing this scale [21].

This study has some limitations including that the sample was from clinical context, so the data were not normally distributed, and the children's scores distribution appears to be positively skewed, with most of respondents scoring low. This finding was also found in other studies [17,18]. In addition, Cuthbert and Melamed [10] who developed the dental subscale reported that "the frequency distribution was skewed to the right, showing the predominance of lower fear-scores with a subset of more highly fearful children". These findings have been reported for other fear schedules as well [33]. Criterion validity was assessed using Frankl's scale, which is focused in negative/positive behavior. Patients with dental experience will develop coping mechanisms that enable them to tolerate the associated discomfort which allows for some bias as the rater often equates dental fear with the child ability to accept treatment [21]. In this study the operator rated the child behavior using a standard scale (Frankl) which may be biased, however in previous studies the operating dentist assessed the child behavior during treatment [13,18,34]. In addition in another study the dentists and nurses independently rated the anxiety level of children during treatment using the Child Fear Survey Schedule [35]. Good inter-examiner agreement was found between dentists and nurse which reveals the ability of the operating dentist to rate the child's behavior. Hence, the same concept was followed in the present study. Other observational measures will be needed to gather additional validity to adequately establish how the adapted scale is associated with dental fear-related variables. Construct validity was assessed by using a single-item measure. In order to provide further evidence for the scale's validity, comparing this scale with other self-report measures aiming to assess the children's dental fear is needed. Further samples including school children to investigate those children who do not go to dentists are needed.

This study describes the evaluation of the Arabic version of the CFSS-DS that has not been previously described. Arabic people, who are more than 360 million distributed in 22 countries, mingle with other countries worldwide through scholarship, diplomatic and other missions. Those persons usually take their families and children and live for several years in those foreign countries. During this period their children may need dental treatment, so it will be beneficial for the dental practitioners worldwide to have knowledge about the fear norms for those Arabic speaking children. Therefore, more research on dental fear in Arabic children using this well-known measure (CFSS-DS) is needed.

CONCLUSION

It can be concluded that the CFSS-DS appears to be a reliable and valid method for evaluating child's dental fear in Arabic cultures.

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