

Variation in levels of anxiety to dental treatment among nonorphan and orphan children living under different systems

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Abstract

Background: It is essential to understand the factors influencing the level of anxiety to dental treatment among different children as it can influence seeking dental care. Here, we assessed the impact of parental loss on dental anxiety among 6-13-year-old children. **Materials and Methods:** A total of 444 children within the age group 6-13 years were selected. Group 1 consisted of orphan children living in government-run orphanages, Group 2 consisted of orphan children taken care by a person with a motherly relationship, Group 3 consisted of abandoned children living in private organization and Group 4 consisted of children living with their parents. Dental anxiety was measured using children's fear survey schedule-dental subscale and modified faces version of modified child dental anxiety scale. **Results:** The highest number of anxious children were observed in Group 4 and the difference in the anxiety levels among the four groups was found to be highly statistically significant. Children living in government-run orphanages had least dental anxiety. **Conclusion:** All the orphans may not have the same anxiety levels and the environment of upbringing the orphans plays a significant role in the development of the anxiety.

Key words: Children's fear survey schedule-dental subscale, dental anxiety, dental anxiety scales, modified faces version of modified child dental anxiety scale, orphan children

INTRODUCTION

Dental anxiety is a common condition and is ranked 5th among the most commonly feared situations.^[1] Incidentally 6-15% of people avoid regular dental care due to dental anxiety.^[2] Etiology of dental anxiety is multifactorial among which parental attitudes, familial development, home, and school environment seem to play important role.^[1,3] It is highly likely that anxiety levels vary between the orphan and nonorphan children as orphan children

lack necessary parental care and supervision at the critical period of their lives, which may lead to the development of psychological problems.^[4] The pattern of orphanage living, that is, whether the orphans are living in the juvenile homes operated by the state, or living in the orphanages run by private trusts, religious groups, or nongovernmental organizations also play an important role in extent to which the behavioral changes develop. However, the influence of such different living conditions on the development of dental anxiety is not well-known. Hence in the present study, we assessed dental anxiety among orphan children living under different systems, using children's fear survey schedule-dental subscale (CFSS-DS) and a new version of modified child dental anxiety scale with faces (MCDAS_f). This is a cross-sectional descriptive study carried out in different orphanages and a private school in Visakhapatnam district of Andhra Pradesh, India.

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MATERIALS AND METHODS

Ethical clearance was obtained from the ethical committee of Gandhi Institute of Technology and Management Dental College and Hospital, Visakhapatnam, Andhra Pradesh, India. Before the start of this study, the study design and purpose of the study were explained, and consent was obtained from the respective orphanage/school authorities. The subjects having a severe physical illness, psychiatric illness, and mental disorders were excluded from the study.

Subject selection

A total of 444 children, aged 6-13 years participated in the study. Based on the nature of the environment the children lived, the children were categorized into four groups. Group 1 consisted of 101 children who had lost both the parents and were staying in government run orphanages (juvenile homes). Group 2 consisted of 111 orphan children taken care by a resident lady with a motherly relationship in orphanage village. Group 3 consisted of 102 abandoned children staying in the private organization. Group 4 consisted of 130 nonorphan children studying in a private school (this group served as a control group).

A biographical form was used to collect personal data, and CFSS-DS and a new version of MCDAS_f were used to assess anxiety. CFSS-DS consists of 15 items rated on a Likert scale, with scores ranging from 1 (not afraid) to 5 (very afraid). Thus, the total score on the CFSS-DS ranges from 15 to 75 and represents trait anxiety of children. The revised MCDAS_f consists of eight questions to evaluate dental anxiety about specific dental procedures. Total scores on the MCDAS_f ranged from 8 (little or no dental anxiety) to 40 (extreme dental anxiety). These were answered by children in classrooms under the supervision of their teachers/guardians. In an attempt to achieve a valid instrument for use, these scales were translated into local language.

Statistical analysis

Statistical Package for Social Sciences version 20.0 (IBM Corporation) was used for data analysis. Pearson's Chi-square test was used to assess the anxiety levels between the groups. Mann-Whitney test was used to measure mean values of anxiety in different groups. Differences with $P < 0.05$ were regarded as statistically significant.

RESULTS

Based on the previous research,^[5] scores of <32 were considered as nonanxious, 32-37 as risk range and ≥ 38 as anxious. When comparing the dental anxiety by CFSS-DS

difference in the anxiety levels among the four groups was found to be highly statistically significant ($P = 0.0001$), with Chi-square value of 24.63. About 60% of the nonorphan children (Group 4) were found to be anxious, followed by 53.2% in orphanage village children (Group 2), 51.0% in private orphanage homes (Group 3), and only 35.6% children were anxious in government juvenile homes (Group 1). The non-anxious children percentage (42.6%) was highest in government juvenile home [Table 1 and Figure 1]. With MCDAS_f also the mean anxiety levels were found to be more for nonorphan children compared with orphan children [Figure 2].

DISCUSSION

Dental anxiety is considered to be a significant barrier for children to seek dental care. The etiology of dental

Table 1: Descriptive statistics of level of anxiety scores in different groups of children

Groups	CFSS category			Total
	Nonanxious	Risk range	Above anxious	
Group 1				
Count	43	22	36	101
Percentage within group	42.6	21.8	35.6	100.0
Group 2				
Count	38	14	59	111
Percentage within group	34.2	12.6	53.2	100.0
Group 3				
Count	28	22	52	102
Percentage within group	27.5	21.6	51.0	100.0
Group 4				
Count	22	30	78	130
Percentage within group	16.9	23.1	60.0	100.0

CFSS: Children's fear survey schedule

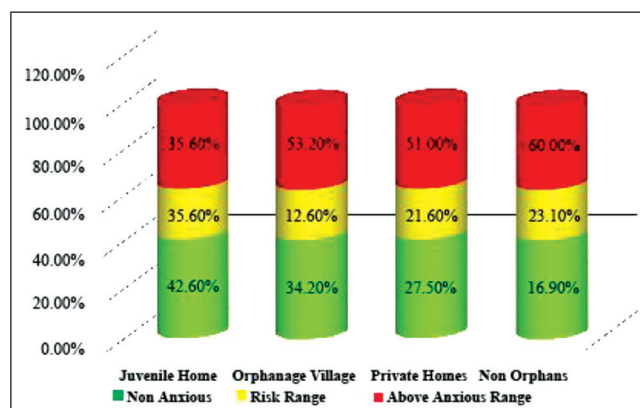


Figure 1: The range of anxiety levels (nonanxious, risk range and above anxiety range) in each group according to children's fear survey schedule-dental subscale

anxiety in children is poorly understood, but three main mechanisms have been suggested:

1. Direct conditioning whereby an early, negative dental experience induces the acquisition of dental fear and anxiety.^[3,5-7]
2. Vicarious learning whereby negative personal experiences or possibly frightening, stereotypical views about dentistry are relayed to children through family members or peers^[8-10] and
3. Personality traits whereby some individuals are inherently and genetically nervous or anxious, and as a result have a greater predisposition to develop dental anxiety.^[11-13]

Identification and assessment of anxiety play an important role for the successful management of patients, which in turn affects the outcome of the therapy. An ideal pediatric dental anxiety measurement scale should:

1. Have reliability and validity.^[14]
2. Be relatively bias-free.^[14]
3. Be versatile.
4. Yield numbers on an identifiable number scale.^[14]
5. Be short in length.
6. Include items which are most relevant to the child dental experience.
7. Easily hold the attention of the child.^[15] and
8. Be simple to score and interpret.^[15]

Four types of measurements have been used for assessing dental fear in children. Behavior rating scales during dental visits like Frankel’s scale, physiological measures such as measuring pulse rate, blood pressure, muscle tension etc., projective techniques like children’s dental fear picture test and various other psychometric scales. Usually, scales are preferred over single item measures because they contain data that are suitable for statistical calculations using summed and weighted scores.^[16] CFSS along with its DS

is better over other scales^[17] and is reported to be most reliable and valid.

Another most frequently used method of dental anxiety assessment in adults is Corah’s Dental Anxiety Scale (CDAS).^[18] When applied to children the wording of the CDAS is considered too complex and hence modified versions of the scale are used.^[19-21] The MCDAS was thus developed by Wong *et al.*^[22] MCDAS includes eight questions and it contains five point Likert scale to assess dental anxiety with scores ranging from 1 to 5 given to “relaxed/not worried” to “very worried.” Total scores of the MCDAS range from 8 (little or no anxiety) to 40 (extreme dental anxiety). The MCDAS appears to be a useful measure of dental anxiety but is however; limited by the level of cognitive functioning required to complete the numeric rating scale. Hence, its modified version (MCDAS_f) which includes the faces that correspond to the scores on the Likert scale is more useful in assessing dental anxiety among young as well as anxious older children with less cognitive functioning. It has the advantage of being shorter and consequently faster to complete. This will help dentists to understand the specific fears of patients, which in turn might help the patients to control the anxiety.

Modified faces version of modified child dental anxiety scale

Dental general anesthesia and regional analgesia which are the last two parameters in MCDAS_f were not included in the present study to minimize the complexity. So, this revised MCDAS_f contained only six questions and hence the total score ranges from 6 (little or no anxiety) to 30 (extreme anxiety) [Figure 3].

Even though, the development of anxiety in children is multifactorial, people around and surroundings in which the children live play an important role. As the orphan children cannot meet their basic and secondary needs without help from nonparents, their emotional development is disturbed leading to potential risk of abnormal psychological development. An orphan is defined as “a child bereaved of parents” either by the

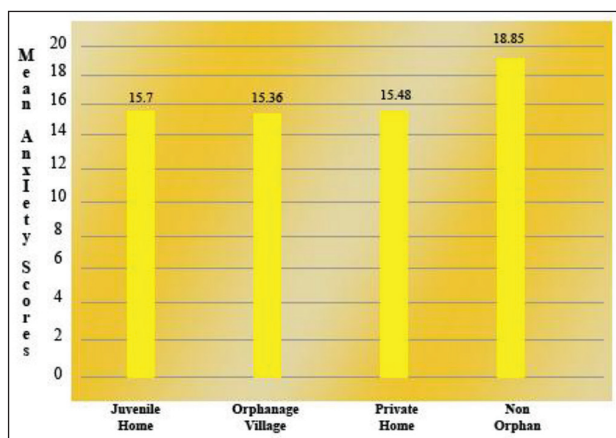


Figure 2: Modified faces version of modified child dental anxiety scale mean anxiety scale in different groups

Modified MCDAS _f		How do you feel about				
		😊	🙂	😐	😞	😡
1. Going to dentist generally		1	2	3	4	5
2. Having your teeth looked at		1	2	3	4	5
3. Having your teeth scraped and polished		1	2	3	4	5
4. Having an injection in the gum		1	2	3	4	5
5. Having a filling		1	2	3	4	5
6. Having a tooth taken out		1	2	3	4	5

Figure 3: Modified faces version of modified child dental anxiety scale

death of the parent or by deprived relationship. Children who have one or both parents, but deprived of parental care are regarded as “social orphans”.^[23] It is not the mere absence of the parents but the identity of parent absent that is, only mother, only father, or both parents, and age of the child at the time of death of parents are the factors that significantly influence emotional development of the child. In addition, the number of children, funding the orphanage receives, and the availability of the trained staff to meet the developmental needs of the children in the orphanage also plays an important role. In essence, the orphanage set up plays a significant role in the overall development of the child. Different orphanages have different kinds of set up which can impact the variable emotional status among children. In the present study, children from different orphanage set ups were evaluated for anxiety to dental treatment. The highest percentage of anxious children were present in the nonorphan group, that is, 60% followed by 53.2% in children’s village home, 51.0% in private homes and 35.6% in the juvenile home. Surprisingly our observation of higher anxiety to dental treatment among nonorphan children is contradictory to the previous studies reporting no difference or higher anxiety among orphan children.^[4,25] Perhaps, the reason for least anxiety for children from juvenile home may be due to their ability to cope with the psychological challenges associated with the loss of parents. In addition, guidance and counseling services offered to orphans perhaps helped them to understand their problems and to re-adjust appropriately. This was a significant finding because studies have shown that counseling is useful in alleviating the symptoms of anxiety and aggression in victims of trauma.^[24,26] We conclude that the environment in which the children are growing, the surrounding people, the guidance and counseling children receive during childhood play an important role rather than mere absence of parents in the emotional and anxiety development of the child.

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