Prevalence of dental fear and its relationship to dental caries and gingival disease among school children in Puducherry: A cross-sectional study

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Abstract

Background: Dental fear in children has a devastating effect on their behavior which includes them to have a predetermined notion that the dental treatment would be of a painful experience.

Aims and Objectives: This study aims to evaluate the prevalence of dental fear and its association with dental caries and gingival disease in 6-12-year-old school children in Puducherry.

Materials and Methods: A total of 400 school children (200 boys) and (200 girls) were selected randomly between 6 and 12 years age group. Children completed a modified questionnaire from dental fear survey questionnaire and undertook an oral examination using decayed, missing, and filled teeth (DMFT) Index and Loe and Silness gingival index (GI).

Results: Prevalence of low to moderate "general dental fear" was 46%, and while that of high dental fear was 72%. The mean DMFT (1.82 ± 1.74) and GI (1.02 ± 0.54) of boys was not significantly different from the DMFT (1.96 ± 81) and GI (0.95 ± 0.55) of girls (P > 0.05). Spearman's correlation test demonstrated negative correlation between age and dental fear (r = −0.523; P = 0.005).

Conclusion: No significant alteration was found between male and female children regarding DMFT and gingival scores. Dental fear scores decreased with increasing age. No association was found between dental fear and DMFT and GI scores.

Keywords

Children, dental anxiety, dental caries, gingival condition

Introduction

Dental fear is a definite type of fear affecting an individual’s emotional reaction to frightening stimuli, and dental anxiety describes as a feeling or response to a known source of danger that is present in the subconscious mind.[1] Children always had a preconceived notion about dental treatment which instilled a fear/anxiety in them. This dental fear creates a devastating effect on their behavior which hampers their ability to adapt to the clinical situation and fail to seek timely dental treatment. Among common fears, the fear of dentist has been ranked the fourth.[2]

A study by Milgrom et al. proposed that in children and adolescence, conditioning is an important provider to dental fear.[3] Several factors influencing dental anxiety could be negative childhood dental experiences, negative attitudes within the family, and bad experience from previous dental procedures. The idea of “dental fear and anxiety” (DFA) is interchangeable and has been used to contain all forms of this disorder.[3]

The occurrence of DFA has found to vary in content and pattern across various cultures and different inhabitants. Several research indicates that the prevalence of dental fear estimated to vary from as little as 4% to as great as 43% in different populations.[4]

Studies have reported that, children with more active caries lesions are further fearful than others, most probably due to previous negative dental experience.[5] Dentally anxious patients had considerably more decayed surfaces, more missing teeth, and fewer filled surfaces when compared to dentally non-anxious patients.[6] The reason could be that these dentally anxious patients were lesser probable to accept preventive dental behaviors and hence necessary extensive dental treatment had to be taken. This suggested that dental anxiety impacts the apt preventive and treatment facilities, resulting in the deterioration of oral health.[7]
This study correlates the levels of dental fear among school children which is needed in designing appropriate measures for the improvement and promotion of the oral health among Puducherry population. Hence, the cross-sectional study was designed and conducted to assess and evaluate the following objectives:

1. To measure the level of dental fear among 6-12-year-old school children
2. To describe the gender distribution according to level of dental fear
3. Assessment of dental condition in terms of decayed, missing, and filled teeth (DMFT) and gingival index (GI) in boys and girls
4. To evaluate the prevalence of dental caries and gingivitis and compare it to dental fear.

Materials and Methods

A sample of 400 school children, including 200 girls and 200 boys, between the age group of 6 and 12 years from private English medium school were chosen. Written informed consent and assent from the parents and children for conducting examination were obtained. The study received clearance from the Institutional Ethical Committee from the institution.

Inclusion criteria were children between 6 and 12 years of age and who had not attained any dental treatment before but had gone to a dental clinic with parent or relatives and were acquainted with all the dental procedures. Exclusion criteria were children with systemic disease, mental disorders, and other disabilities.

Questionnaire

In this study, a 10-item questionnaire was revised from the dental fear scale (DFS) of Klienknecht et al. and used. To evaluate dental fear, partakers were asked the question with four response categories being: Not afraid = 1; little afraid = 2; quite afraid = 3; very afraid = 4. Overall scores thus ranged from 10 to 40. The ten questions related to dental treatment were as follows: (1) inside the dental office, (2) while sitting in the dental chair, (3) seeing the dentist walk in, (4) having oral examination, (5) seeing the injection needle, (6) feeling the needle injected, (7) seeing the drill, (8) sound of drill, (9) having the teeth cleaned, and (10) feeling the pain after local anesthesia. Applicants who evaluated themselves as “quite” or “very” afraid were grouped as “high fear” while those who replied “not afraid” or “a little” were grouped as “low fear.”

The questionnaire was given to the children by teacher after description under the pedodontist supervision in the classroom. Children’s doubts were simplified by a translator to their native language and back to English, and the children were not permitted to debate with each other. The survey took an average of 15 min to complete.

Clinical examination

After the conclusion of the questionnaire, dental examinations were carried out in school by a trained examiner. Children were assessed for dental caries by seating the child on a chair beside the window, using natural light for visual examination. The diagnostic criteria used for caries were those formulated by the WHO. DMFT scores were recorded in permanent teeth and decay, extracted filled teeth were recorded in deciduous teeth. The gingival state was assessed by examining the gingiva associated with the six indexed teeth, by Loe and Silness GI.

After completing the oral examination, the questionnaires were collected and gathered for statistical analysis.

Statistical analysis

Statistical Package for Social Science data were collected and entered into the computer program for statistical analysis. Descriptive analysis with the mean and standard deviations was calculated for dental fear, DMFT, and GI. Pearson’s correlation test was used to evaluate the association between dental fear and dental diseases. All $P < 0.05$ were considered statistically significant.

Results

A total of 400 school children (200 males and 200 females) aged 6-12 years were questioned and examined. Table 1 demonstrates frequency distribution of the study population by age and sex. The mean age of the children was found to be 9.08 and standard deviation 2.007. Table 2 shows the distribution by sex according to their degree of “general dental fear.” It was found that 65.5% of males and 77% of females had moderate dental fear, whereas 3.5% of males and 11% of females had severe dental fear. The percentage of girls with general dental fear was considerably higher than that of boys ($P < 0.001$). Figure 1 shows distribution of the age group of school children by general dental fear. It was found that young children of age 6-9 years had 72% of moderate dental fear and 12% severe dental fear. Older children between the age group of 10 and 12 years had 69% moderate dental fear and 0.6% severe dental fear. Spearman’s correlation test validated negative correlation between age and dental fear ($r = -0.523; P = 0.005$). Table 3 shows the mean and standard deviation of DFS score related to the mean and standard deviation of DFS score related to the mean and standard deviation.
DMFT and GI. The mean DMFT score for boys (1.82 ± 1.74) was not significantly different from that of girls (1.96 ± 1.81) (P = 0.005). The mean GI score for boys (1.02 ± 0.54) was also not considerably different from that of girls (0.96 ± 0.55) (P = 0.180). Apparent no correlation was found between general dental fear and DMFT on one side, and among general dental fear and GI scores on the other using Spearman’s correlation test.

Discussion

Kleinknecht RA et al. stated that the most common fear-tempting aspect of the dental treatment was the treatment associated with the needle and the drill.[8] In the present study, children were greatly afraid of “injections” and “dentist drilling”.

A study by Milgrom et al. on children aged 5-11 years suggested that more than 66% acquired their fear in early childhood.[3] It was observed in our study that young children of age 6-9 years had 72% of moderate dental fear and 12% severe dental fear when compared to older children.

Bedi et al.[9] stated that high dental anxiety was associated with girls having higher levels of anxiety than boys which were in association with our study. Males are more probable to prompt their fear through different emotional expressions such as anger or impatience.[10]

According to LeBaron and Zeltzer,[11] children may learn to control the way to express their fear as they grow older which is in accordance with our present study that dental fear scores decreased with increasing age.

Krugger et al. in their study stated that the most likely predictor for dental caries is dental fear itself and this may also be a risk factor for the occurrence of dental caries.[12] In our present study, no major difference was found between “general dental fear” and DMFT and gingival scores.

Careful precaution needs to be paid to the use of epidemiologic ideas of using caries activity tests, fluoride intervention, and timely efforts in using preventive fissure sealants. In order to lessen the level of dental fear in children, repetitive oral health examinations, oral hygiene teachings and parental counseling were required to stop the child from experiencing pain and hence reduce the essential for injections at a very young age.[13]

Conclusion

The present study revealed that gender was a strong determinant of reported dental fear; in which, girls were more likely to report dental fear than boys. Dental fear scores decreased with increasing age. No noteworthy difference was found among male and female children concerning DMFT and gingival scores. No correlation was also established between “general dental fear” and DMFT or GI scores. Hence, by treating dental fear, we can improve their consistent dental attendance and also improve their oral health especially those with high dental fear. Hence, as a pediatric dentist, we need to create the child’s dental treatment experiences an enjoyable one and instill a positive attitude toward future dental procedures.

References
