



Assessment of Apprehension Related with Noise in Dental Office Among Children in The Age Group 6-15 Years

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Abstract

A normal unpleasant emotional reaction to specific frightening stimuli related to dental treatment is called dental fear, whereas dental apprehension or anxiety is an extreme and perverse emotional condition experienced by patients visiting the dental office. Dental fear and anxiety (DFA) refer to strong negative emotions related to dental treatment among children. Many studies suggest that the anxiety-provoking stimuli include the view of the needle, odor of various dental materials, and sound generated in the dental office. The present study aims to assess apprehension related to noise in the dental office among children aged 6-15 years. Corah's dental anxiety-based survey questionnaire was circulated amongst the study subjects. The results suggest the sound generated in the dental office leads to apprehension, thus attributing to evasion of dental treatment.

Key Words: Anxiety, noise, children, fear, dental clinic

Introduction

Anxiety is an emotional and physiological response to known and unknown causes ranging from normal to extreme dysfunction. Dental anxiety is a significant problem for patients and dental care providers. A common problem for dentists is the fear of dental treatment (Newton JT, Buck DJ 2000). There may be negligence of oral hygiene and the dental treatment may be delayed in fearful patients. Dental anxiety patients have often reported social and psychological disabilities. Dental fear is differentiated from dental anxiety based on the occurrence of the situation and they are highly related to each other. Dental fear is a normal unpleasant emotional reaction to specific frightening stimuli related to dental treatment, whereas dental apprehension or anxiety is an extreme and perverse emotional condition experienced by patients visiting the dental office (Armfield JM et al., 2006).

Anxious children are often hard to manage and likely to evade essential dental treatment. This, in turn, leads to significant worsening of the children's oral and ultimately, general health. With the recent advancement in dentistry, like introducing new techniques and new dental materials, oral health awareness has improved. (Withers RD) Regardless of these advances, the fear and anxiety associated with the dental setting is a setback.

Significance | Important in finding apprehension related to noise in dental offices among children.

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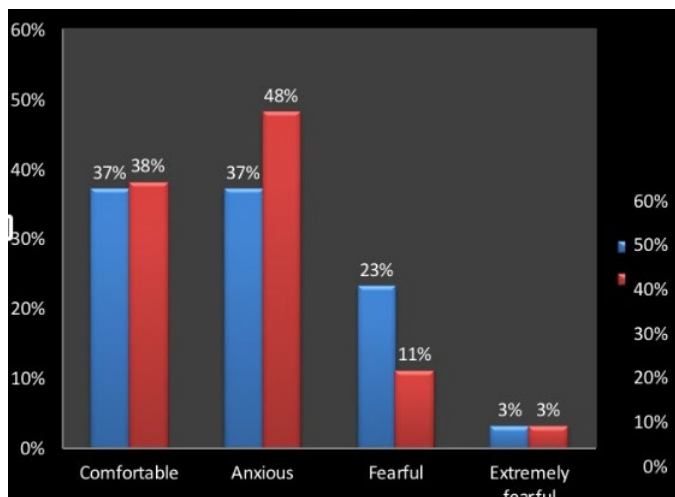


Figure 1. Percentage showing subjects feeling towards dental visit

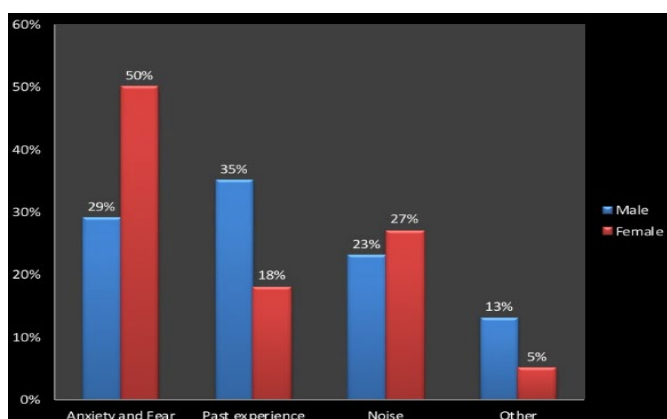


Figure 2. Reasons for avoiding dental treatment

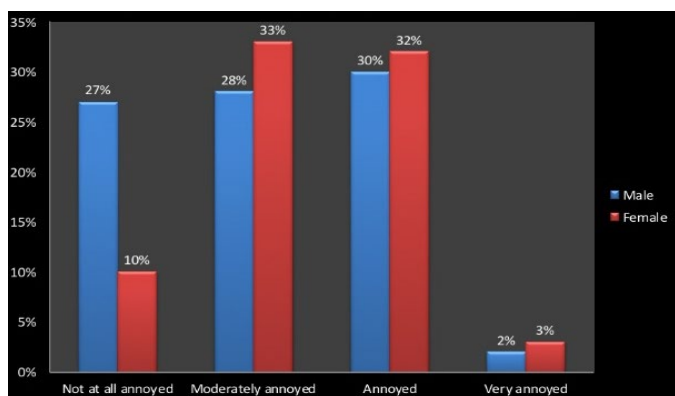


Figure 3. Annoyance levels of patients by noise from dental tools

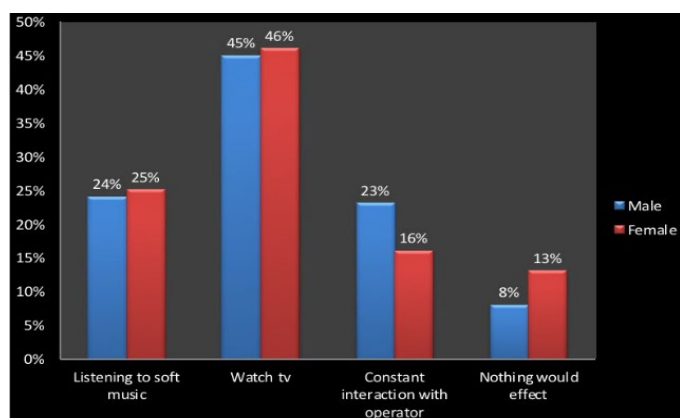


Figure 4. Preferred ways to cope with noise in dental clinic

Amongst commonly feared situations, dental fear and anxiety have been graded fifth. Thus, anxious children avoid visits to the dental office due to its high predominance (Appukuttan DP et al., 2013).

The dental surgeon and the dental nurse require significant knowledge and skill for children with fear and anxiety. Currently, non-invasive techniques are gaining importance in the dental setting (Muppa Ret et al., 2013). Many studies suggest that the anxiety-provoking stimuli include the view of the needle, odor of various dental materials, and sound generated in the dental office. The present study aims to assess apprehension related to noise in the dental office among children aged 6-15 years. Corah's dental anxiety based survey questionnaire was circulated amongst the study subjects. The results suggest the sound generated in the dental office leads to apprehension, thus attributing to evasion of dental treatment (Oosterink Fet et al., 2008).

Materials And Method

Corah's dental anxiety-based survey questionnaire was circulated amongst the study subjects. Name, age, gender, and school were included in the primary component whereas the secondary component of the questionnaire included query designed at children's mind-set towards the sound generated in the dental office and its association to dental fear and anxiety.

Results

It can be clearly stated that greater part of females (50%) stay away from visits to the dental office when compared to males because of dental anxiety and fear (Figure 1 & 2). It can also be seen that anxiousness is the feeling felt by about 48% of the people visiting a dental clinic (Figure 1).

Around 30% of the males find it moderately annoying due to the noise produced. Also, about 32% of the females find it annoying (Figure 3).

Patient satisfaction is one of the most important meters to assess health care quality, so to cope with the noise in the dental clinic 46% of the females prefer to watch TV and 45% of the males do too (Figure 4).

Discussion

Regardless of the recent advances in the modern era of dentistry, the incidence of dental fear and anxiety in the current study was found to be 53.5%, suggesting that levels of anxiety and apprehension related to the dental treatment was extensive in the study subjects, which was comparatively higher than the other studies (Swetah V, Kumar RP). The prevalence rates in the other studies ranged from 4 to 30%. Methodological, geographical, and cultural variation can be the reason for this dissimilarity.

The present study aims to assess apprehension related to noise in the dental office among children aged 6-15 years. Various researches were done to determine the effect of sound generated in dental setting on dental experts. (Lahmann C et al., 2008). Dental professionals continuously exposed to noise for considerable period are reported to have hearing loss, which was observed in a study conducted by (Derryberry D, Reed MA 2002). Many studies were focused on the effect of noise on dental experts. This study, as well as other studies have concentrated on professionals working in dental clinics overlooking the outcome of such noises on the patients receiving dental treatment. The sound in the dental office may not provoke hearing loss in the patients as the treatment time is only for shorter duration but there may be discomfort due to dental fear and anxiety stimulate by equipments and instruments in the dental office. (Kanegane Ket et al., 2003, Norlund Set et al., 2010).

Males were found to be more dentally anxious when compared to females. Fear and anxiety levels were higher in males than females but anxiety levels for the age group were statistically significant, corroborating with the study conducted by Malvania EA, Ajithkrishnan CG. 2011. Kleinknecht RA et al., 1973.

Each individual has a specific response for a different stimulus during dental treatment. (Samorodnitzky GR, Levin L) 2005. The current study reported that hearing greater noise intensity was the universal cause for fear and anxiety among dental patients, similar to the previous studies (Hannah Aet et al., 2004 Lourenço EA et al., 2011).

The noise level from the devices used for teaching in dental schools was calculated by placing a microphone near the operator's ear in a study conducted by Oxford School of Dentistry. (Ribeiro de Souza HMM 1998, Travaglini F1997). The noise intensity from dental devices triggered only during the cutting moments ranged from 64 to 97 dB (Mojarad F 2009). Even though this differs from the current study's methods, the results are the same. (Kadanakuppe S 2011, Willershausen Bet et al., 2014).

An analogous study was conducted by Jundiai et al. in Brazil in the private dental practice (Choosong KW et al., 2007 Lawrence SM et al., 1991). They found the noise generated from a high-speed dental handpiece increased the anxiety levels in the patients, which was similar to the current study. (Prabhakar AR et al., 2007, Klein SA, Winkelstein ML 1996.)

Conclusion

The current study concludes that dental fear and anxiety incidence was comparatively higher in study subjects. Males are likely to be more anxious than females during visits to the dental office. The general reason for fear and anxiety was during invasive

dental procedures like tooth preparation for restoration and administering local anaesthetic solution for extraction. Many procedures like tell-show-do, relaxation, distraction, systematic desensitization, modeling, audio analgesia, hypnosis are available for managing a child with dental anxiety. Behavior management techniques can be blooming among all these procedures. Currently, non-invasive techniques are gaining importance in the dental setting. The most effective management of dentally anxious children was an audiovisual distraction. Now non-invasive techniques like distraction are becoming more popular.

Author Contributions

Bhaskaran Sathyapriya conceived the presented idea. Swamikannu Bhuminathan, Jayesh S Raghavendra, Adugula Chandrakala, Geo Danny C and Vignesh N R encouraged and supervised the findings of this work. All authors discussed the results and contributed to the final manuscript.

Acknowledgment

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Competing financial interests

The author(s) declare no competing financial interests.

References

- Armfield JM, Spencer AJ, Stewart JF 2006. Dental fear in Australia: who's afraid of the dentist?. *Australian dental journal*. Mar 1;51(1):78-85. <https://doi.org/10.1111/j.1834-7819.2006.tb00405.x>
- Choosong KW, Kaimook W, Tantisarasart R, Sooksamear P, Chayaphum S, Kongkamol C et al 2011. Noise exposure assessment in a dental school. *Saf Health Work*; 2: 348-354. <https://doi.org/10.5491/SHAW.2011.2.4.348>
- Derryberry D, Reed MA 2002. Anxiety-related attentional biases and their regulation by attentional control. *Journal of abnormal psychology*. May;111(2):225. <https://doi.org/10.1037/0021-843X.111.2.225>
- Hannah A, Millichamp CJ, Ayers KM 2004. A communication skills course for undergraduate dental students. *Journal of Dental Education*. Sep 1;68(9):970-7. <https://doi.org/10.1002/j.0022-0337.2004.68.9.tb03846.x>
- Kadanakuppe S, Bhat PK, Jyothi C, Ramegowda C 2011. Assessment of noise levels of the equipments used in the dental teaching institution, Bangalore. *Indian J Dent Res*; 22: 424-431. <https://doi.org/10.4103/0970-9290.87065>
- Kanegane K, Penha SS, Borsatti MA, Rocha RG 2003. Dental anxiety in an emergency dental service. *Revista de Saúde Pública*. Dec;37(6):786-92. <https://doi.org/10.1590/S0034-89102003000600015>

- Klein SA, Winkelstein ML 1996. Enhancing pediatric health care with music. *J Pediatr HealthCare*; 10:74-81. [https://doi.org/10.1016/S0891-5245\(96\)90030-9](https://doi.org/10.1016/S0891-5245(96)90030-9)
- Appukkuttan DP, Tadeballi A, Cholan PK, Subramanian S, Vinayagavel M 2013. Prevalence of Dental Anxiety among Patients Attending a Dental Educational Institution in Chennai, India-A Questionnaire Based Study. *Oral Health Dent Manag*. Dec;12(4):289-94.
- Kleinknecht RA, Klepac RK, Alexander LD 1973. Origins and characteristics of fear of dentistry. *The Journal of the American Dental Association*. Apr 1;86(4):842-8. <https://doi.org/10.14219/jada.archive.1973.0165>
- Lahmann C, Schoen R, Henningsen P, Ronel J, Muehlbacher M, Loew T, Tritt K, Nickel M, Doering S 2008. Brief relaxation versus music distraction in the treatment of dental anxiety: a randomized controlled clinical trial. *The Journal of the American Dental Association*. Mar 31;139(3):317-24. <https://doi.org/10.14219/jada.archive.2008.0161>
- Lawrence SM, McTigue DJ, Wilson S, Odom JG, Waggoner WF, Fields HW Jr 1991. Parental attitudes toward behavior management techniques used in pediatric dentistry. *Pediatr Dent*; 13:151-5.
- Lourenço EA, Berto JMR, Duarte SB, Greco JPM 2011. Can noise in dental clinic produce hearing loss? *Arq Int Otorrinolaringol* ; 15: 84-88. <https://doi.org/10.1590/S1809-48722011000100013>
- Malvania EA, Ajithkrishnan CG 2011. Prevalence and socio-demographic correlates of dental anxiety among a group of adult patients attending a dental institution in Vadodara city, Gujarat, India. *Indian Journal of Dental Research*. Jan 1;22(1):179. <https://doi.org/10.4103/0970-9290.79989>
- Mojarad F, Massum T, Samavat H 2009. Noise levels in dental offices and laboratories in Hamedan, Iran. *J Dent* ; 6: 181-186.
- Muppa R, Bhupatiraju P, Duddu M, Penumatsa NV, Dandempally A, Panthula P2013. Comparison of anxiety levels associated with noise in the dental clinic among children of age group 6-15 years. *Noise and Health*. May 1;15(64):190. <https://doi.org/10.4103/1463-1741.112371>
- Newton JT, Buck DJ 2000. Anxiety and pain measures in dentistry: a guide to their quality and application. *The Journal of the American Dental Association*. Oct 31;131(10):1449-57. <https://doi.org/10.14219/jada.archive.2000.0056>
- Norlund S, Reuterwall C, Höög J, Lindahl B, Janlert U, Birgander LS 2010. Burnout, working conditions and gender-results from the northern Sweden MONICA Study. *BMC Public Health*. Jun 9;10(1):326. <https://doi.org/10.1186/1471-2458-10-326>
- Oosterink F, De Jongh A, Aartman IH 2008. What are people afraid of during dental treatment? Anxiety-provoking capacity of 67 stimuli characteristic of the dental setting. *European Journal of Oral Sciences*. Feb 1;116(1):44-51. <https://doi.org/10.1111/j.1600-0722.2007.00500.x>

- Prabhakar AR, Marwah N, Raju OS 2007. A comparison between audio and audiovisual distraction techniques in managing anxious pediatric dental patients. *J Indian Soc Pedod Prev Dent*; 25:177-82<https://doi.org/10.4103/0970-4388.37014>
- Ribeiro de Souza HMM 1998 . Análise experimental dos níveis de ruído produzido por peça de mão de alta rotação em consultórios odontológicos: possibilidade de humanização do posto de trabalho do cirurgião dentista de ruído. Tese Doutorado, Universidade de São Paulo, São Paulo, Brazil , pp 121.
- Samorodnitzky GR, Levin L 2005. Self-assessed dental status, oral behavior, DMF, and dental anxiety. *Journal of Dental Education*. Dec 1;69(12):1385-9.<https://doi.org/10.1002/j.0022-0337.2005.69.12.tb04038.x>
- Swetah V, Kumar RP. Dental Anxiety and Fear Levels among Outpatients in a Private Dental College in Chennai.
- Travaglini F 1997. Ruído nos consultórios pode comprometer a audição do cirurgião dentista. *J APCD* ; 38: 554.
- Willershausen B, Callaway A, Wolf TG, Ehlers V, Scholz L, Wolf D 2014. Hearing assessment in dental practitioners and other academic professionals from an urban setting. *Head Face Med*; 10: 3-7.<https://doi.org/10.1186/1746-160X-10-1>
- Withers RD. The relationship of conditioning experiences to strength of fear, anxiety responses and fear-onset memories: an examination of Rachman's three-pathways theory: a thesis presented in partial fulfilment of the requirements for the degree of Master of Arts in psychology at Massey University (Doctoral dissertation, Massey University).

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