

Dental pain and oral health in children-A literature review

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1. Introduction- Several chronic diseases are known to affect children, requiring significant adjustments in life management and leading to decreased quality of life. Among the most prevalent diseases of childhood are oral diseases. Problems in oral health can disrupt daily life functioning in various aspects such as the ability to perform daily activities and expected social roles or maintain usual emotional state. Dental pain is a major consequence of many oral conditions such as untreated dental caries, trauma, periodontitis etc.¹ Dental pain is highly prevalent among children ², even in contemporary populations with historically low levels of caries experience. Pain perception in children is complex, and is often difficult to assess. Although the principles of pain evaluation and management apply across the human lifespan, children present unique challenges ³ that necessitate consideration of the child's age, developmental level, cognitive and communication skills, previous pain experiences, and associated beliefs. It has also been shown that infants and children, who experience pain in early life, show long-term changes in terms of pain perception and related behaviors

Oral Health care workers need to be able to detect the symptoms and signs of dental pain in different age groups. However, in spite of its frequency, dental pain in children is often underestimated. Knowing factors associated with dental pain is important to provide adequate intervention and attention to oral health. Thus the impacts of dental pain are important when assessing children's burden of oral diseases and their perceived need for dental care

2.1 A study was done by **João Luiz Dornelles Bastos et al (2005)** to assess dental pain prevalence and its association with dental caries and socioeconomic status in 18-year-old males

from Florianópolis, Santa Catarina, Brazil. Response rate was 95.6%. Dental pain prevalence was 21.2% (95%CI: 17.3-25.1). After adjustment, individuals with one or more untreated caries were 3.2 times more likely (95%CI: 1.7-5.8) to have dental pain compared to caries-free subjects. Conscripts with low family income were 1.8 times more likely (95%CI: 1.0-3.3) to have dental pain than those with higher income. ⁴

2.2 Study by **S.N. Kiwanuka et al(2005)** reported experience with dental pain confirmed by 42.1% boys and 53.2% girls. The prevalence of dental caries was 37.9% in boys and 42.1% in girls. Plaque was present in anterior teeth and 84.3% complained at least of one oral problem. Multiple logistic regression analysis revealed that reporting at least two oral problems (OR=2.7), being dissatisfied with dental appearance (OR=2.7) and having visited a dentist twice during the previous 3 years (OR=2.2) were associated with higher odds of reported dental pain ⁵

2.3 Traebert et al (2005) done a study to estimate the prevalence of dental caries and orofacial pain in 12-year-old schoolchildren in the Southern Brazilian town of Palhoça in 2003 and to compare it with results from 1997. A cross-sectional study was carried out involving 444 randomly selected 12-year-old schoolchildren in 2003. WHO (1997) criteria for dental caries and Locker and Grushka (1987) criteria for orofacial pain were used. The prevalence of caries was 55.8%. The mean DMF-T was 1.65. Component D was the one that most contributed to the indicator. In 1997, caries prevalence was 73.5% and the mean DMF-T was 2.84. Similarly, the component that most contributed to the indicator was D with 74.0%. In the trend analysis a reduction of 24.1% in the caries prevalence and 41.9% in the severity measured by the DMF-T was observed. The prevalence of orofacial pain was 66.6%. In 1997, the prevalence was 79.5%. In both years the most common type of pain was stimulated toothache. A reduction of 12.9% in the prevalence of orofacial pain and 28.3% in stimulated toothache was observed. Results of the logistic regression analysis showed that orofacial pain was associated with dental caries independently of other studied variables. ⁶

2.4 A study was done by **Pau A et al(2007)** to determine the prevalence, associated correlates and impact of oral pain in 12-year-old schoolchildren in Stayroypoli, Greece. Associations

between pain experience and impact on daily activities were examined. Of the 296 children registered, 225 (76.0%) were present on the days data were collected. Usable questionnaires were completed by 187 children (83.1%). Oral pain in the previous 4 weeks, reported by 70 (37.4%), was more likely to affect children living with one parent/other people (OR 3.0, 95% CI = 1.2-7.4, P = 0.013) and those who brushed less than twice a day (OR 2.8, 1.5-5.2, P = 0.001). Impact on daily activities was reported by 64 children (91.4%). The most commonly stated impacts were eating (40.0%), cleaning teeth (25.7%) and sleeping (18.6%).⁷

2.5 A cross-sectional study was done by **Barrêto EPet al (2009)** carried out to determine the prevalence, severity and impact of toothache among schoolchildren associated with socio-demographic variables (gender, degree of maternal schooling, economic group, and oral health status). Six hundred and one 8- and 9-year-old children were randomly selected from schools in Belo Horizonte, MG, Brazil. The prevalence of toothache was 45.9% (276/601), of which 15.6% (94/601) had occurred during the previous month. Among the children who had experienced pain, 39.4% (109/276) classified its severity as intense or very intense. Nearly 35% (96/276) were awoken by the pain, and 63.8% (176/276) were unable to carry out daily tasks as a result. Gender did not influence either the experience of toothache or its severity and impact. The prevalence of toothache found in the age group between 8 and 9 years is very high and associated to social determinants and poorer conditions of oral health.⁸

2.6 A study was done by **Dandi KK (2011)** to assess factors associated with dental pain that determine the expressed needs for dental care among 12-year-old school children in India. A total of 2,250 school children were surveyed after being drawn through stratified cluster random sampling. Among the studied school children, 71.4% suffered from dental pain, only 27.7% expressed need for dental healthcare. Socioeconomic status (SES) was a statistically significant determinant. Impact characteristics associated with expressed needs were embarrassment in showing teeth, brushing teeth, and difficulty in eating and drinking. Logistic regression analysis yielded a Nagelkerke R² value of 0.106.³

2.7 A study was done by **Vadiakas G(2011)** to estimate the frequency in use of oral health services, oral health self-assessment, oral hygiene practices of 12- and 15-year-old Greek children and adolescents, to investigate possible influences of these factors and other socio-demographic parameters on oral health. A stratified cluster sample of 1224 12 year old and 1257 15 year old children and adolescents of Greek nationality were selected and examined by calibrated examiners. Caries experience and untreated caries were significantly higher among children and adolescents who visited the dentist only when in pain or for restoring a tooth, compared to those visiting for check-ups or prevention and having more frequent application of topical fluorides. The multivariate analysis revealed that parental educational status and reason for visiting a dentist were strong determinants for caries experience and oral hygiene status but not for periodontal health of children and adolescents. This study has identified several socio-demographic and behavioral determinants for dental caries, oral hygiene and periodontal health of Greek children and adolescents.⁹

2.8 A study was done by **Ferreira L.L et al(2012)** to understand the prevalence of dental pain as reason for the most recent dental appointment among 15-year old adolescents and at checking its association with socioeconomic factors, behavioral variables and oral health. The probabilistic sample was made up of 592 students. From 592 participants, 33.44% have reported dental pain as reason for their most recent dental appointment. After statistical analysis, dental pain was associated with low income ($p = 0.04$), higher number of people living in the same home ($p < 0.01$), low frequency of daily tooth brushing ($p = 0.01$), long interval between dental appointments ($p < 0.001$), longer time elapsed since last dental appointment ($p < 0.001$), dental anxiety ($p < 0.01$), consumption of cariogenic food ($p = 0.03$), high dental caries experience ($p < 0.01$) and with the presence of untreated dental caries ($p < 0.001$). Dental pain is related to dental caries experience and activity and to socioeconomic and psychosocial factors, showing the need for further attention to these conditions.²

2.9 A cross-sectional, population-based study was **Kakoei Et Al S(2013)** conducted among individuals aged over 18 years ($n=1800$). Prevalence of toothache and associated factors that patients recalled previous to their interview were analyzed by chi-square test and multivariate logistic regression analysis. Nine hundred ninety-one individuals (55.1%) reported toothache

during the 6 months before the interview. The participants who flossed daily, had regular dental visits, and had higher education showed a significantly lower prevalence of toothache ($P < 0.05$), whereas regular tooth brushing and economic level of residency had no significant effect on the prevalence of toothache. Individuals between the ages of 26 and 45 [odds ratio (OR)=2.0], with a family size of more than 4 (OR=1.5), not using dental floss (OR=1.5), or having a mental or psychological illness (OR=1.5) were more likely to have a history of toothache. High prevalence of toothache (more than half) among residents of Kerman shows a serious and major public health problem. Toothache prevalence in middle aged adults, lower education, bigger family size, lower dental hygiene habit and/or those having mental or psychological illness were more common in the city of Kerman.¹⁰

2.10.A Study was done by **Krisdapong et al(2013)** to assess prevalence and extent of school absence due to toothache, dental caries, and Oral Health-Related Quality of Life (OHRQoL) in a subsample of the Thailand national oral health survey. In addition, associations of school absence as the outcome variable with explanatory behavioral and socio demographic variables, dental caries, and OHRQoL were investigated. Study sample was half of the Sixth Thailand National Oral Health Survey sample (1,063 12-year-old and 811 15-year-old children). Over a 3-month period, 5.1 percent of 12- and 4.4 percent of 15-year-olds absented themselves from school due to toothache. The number of days absent in 12-year-olds was significantly higher than in 15-year-olds. For 12-year-olds, OHRQoL and toothache were significantly associated with school absence. About one in 20 of Thai school-aged children reported missing school due to toothache. School absence due to toothache was inversely associated with the current year of study and positively with recently receiving dental treatment and with OHRQoL and toothache in 12-year-olds.¹¹

2.11.A study was done by **Naidoo S et al(2013)** to assess the prevalence, extent and intensity of oral impacts in relation to perceived clinical conditions in primary school children in South Africa. Sixty four per cent of the sample of 2610 children aged 11-13 years participated. 36.2% reported having one or more oral impacts on daily performances, 61.1% having one affected and 63.1% reporting impacts were of "very little" or "little" intensity. Eating was most commonly affected (22.8%) mainly related to decay (40%), followed by cleaning the teeth

(17.2%). Toothache impacted on speaking (32.5%), whereas toothache (35.7%) and tooth decay (28.6%) influenced studying. Position of teeth impacted on smiling (19.2%), social (8.5%) and speaking (7.5%). Bleeding gums" and "tooth color" affected cleaning teeth and smiling respectively. The prevalence of oral impacts on the quality of life in this South African population of schoolchildren was relatively modest, as was the extent and intensity of the impacts, affecting mainly eating, cleaning of teeth and smiling.¹²

2.12 A study was done by **Suprabha BS (2013)** to assess the existing knowledge, attitude, and oral health care practices among 11- to 13-year-old children and the association of knowledge with attitude, oral health care practices, and dental caries prevalence. The dental caries prevalence was 59.4%, and 54.5% had low knowledge. They lacked knowledge regarding use of fluoridated toothpaste and did not use them. Children with low knowledge had significantly higher odds of having $DMFT \geq 1$, not using fluoridated toothpaste, and being afraid of going to the dentist due to possible pain. There was no association of other oral health care practices and attitudes with knowledge.¹³

2.13. A study was done by **Kumar YS et al(2014)** to evaluate the prevalence of dental pain and its relationship to caries experience in 10-15-year-old school children of Udupi district of India. A cross-sectional survey was conducted in Udupi district among 10-15-year-old school children. A total of 306 children participated in the study; of whom, 56.5 % were ≤ 12 years old, 58.8 % were males, 50.7 % attended a government school and 54.9 % were from urban areas. The prevalence of dental pain was 35 %. Only gender showed significant association with presence of tooth pain ($p = 0.027$). A total of 14.3 % reported mild pain, 8.8 % reported moderate pain and 11.7 % reported severe pain. Almost half of the study participants (45.1 %) had experienced dental caries. The mean scores of each subscale and total scale scores were significantly higher among caries-experienced than among caries-free children ($p = 0.017, 0.043, 0.022$ and 0.02 , respectively). There was significant weak positive correlation of global single item question with prevalence ($r = 0.115, p = 0.045$), severity ($r = 0.146, p = 0.010$) impact subscales ($r = 0.117, p = 0.040$) and total scale ($r = 0.144, p = 0.012$). The substantial effect that dental pain has on adolescents indicates an urgent need for public health strategies.¹⁴

3. Conclusion

Dental Pain among children has been identified as an important public health problem. Pain is difficult to measure due to its subjectivity, especially in children. Children have different perceptions about the impact of health problems on quality of life as children have a singular vision related to their physical and emotional stages of development. It is necessary to evaluate which social and psychological characteristics and oral health factors are associated with dental pain and to estimate the impact of dental pain on the daily lives of children.

4. References

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