



Original Article

Effects of Parental Oral Health knowledge on Early Childhood Caries and Oral Health Status of Children 3-5 Years of Age in Abbottabad

Arooj Irfan¹, Arifullah Khan^{2*}, Alina Irfan³, Zara Mehmood⁴ and Rabia Tahir⁵

¹Department of Community and Preventive Dentistry, Peshawar Dental College, Peshawar, Pakistan

² Department of Community and Preventive Dentistry, Institute of Dental Sciences Kohat, Khyber Medical University, Pakistan

³Combined Medical Hospital, Rawalpindi, Pakistan

⁴Department of Oral Biology, Army Medical College, Rawalpindi, Pakistan

⁵Department of Oral Surgery, Watim Medical and Dental College, Rawalpindi, Pakistan

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***Corresponding Author:**

Arifullah Khan

Department of Community and Preventive Dentistry, Institute of Dental Sciences Kohat, Khyber Medical University, Pakistan

Khan55578@hotmail.com

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ABSTRACT

Dental caries can spread rapidly in children and was given the term "Early Childhood Caries" (ECC) that was coined to describe "one or more carious, non-cavitated or cavitated tooth surfaces that are missing or filled due to caries on a deciduous tooth" in a child of 5 years and 9 months of age or younger. Early childhood caries (ECC) is a "complicated condition affecting the maxillary primary incisors which quickly propagate to other primary teeth about a month of eruption". It is a serious issue of socio-behavior or dental health which strikes pre-schoolers across the globe. **Objective:** To determine effects of parental knowledge on their children's oral health practices and status. **Methods:** A cross-sectional study was carried out, with a total of 384 kids from Government and Private Schools of Abbottabad City. Oral hygiene of the children was assessed through dmft scores upon the request of school administration and parents. Structured oral health questionnaires were distributed by the instructors among the parents during parent-teacher conferences/ meetings that were held after every three months in a fiscal year of the school. **Results:** A total of 372 of the youngsters in the study have all their primary teeth erupted (98.7%). Three-year-olds make up 35.7% of the overall sample, while four-year-olds make up 23%, and five-year-olds make up 0.5% of the sample. One or more of the sample's 245 decaying teeth affects 40.5% of the total. **Conclusions:** Parental knowledge and practise of oral hygiene were found to be linked to their children's oral health in this study.

INTRODUCTION

Dental caries is defined as "a multifactorial microbial infectious disease characterized by demineralization of the inorganic and destruction of the organic substance of the tooth" [1]. Dental caries persists to be the most prevalent childhood disease, five times more common than asthma. Dental caries can spread rapidly in children and was given the term "Early Childhood Caries" (ECC) that was coined to describe "one or more carious, non-cavitated or cavitated tooth surfaces that are missing or filled due to caries on a deciduous tooth" in a child 5 years and 9 months of age or younger [2]. Early childhood caries (ECC) is a

"complicated condition affecting the maxillary primary incisors which quickly propagate to other primary teeth about a month of eruption." It is a thoughtful matter of socio-behaviour or dental health which strikes pre-schoolers around the world [3]. ECC is a highly prevalent disease worldwide. The load of ECC's worldwide disease diverges significantly. Conferring to Maharani et al., the disease is not very dominant in Europe, with frequency stretching from 11.4% in Sweden between children aged three to six years to 19.0% in Italy [4]. High frequency is seen in Middle East countries, such as Palestine (76%) and

the UAE (83%). India registered a prevalence of (51.9%); its frequency amongst Pakistani children is (44.4%) [5-8]. ECC is a disease that can be caused by several reasons. These factors include a fermentable diet with sugars, a susceptible host, the presence of dental plaque, and a large number of pathogenic micro-organisms such as lactobacillus, streptococci mutants, and time [9]. Children from low socioeconomic backgrounds suffer twice as tooth decay as their more affluent peers, mainly because their disease is more likely to go unattended [1]. Preschoolers and adults alike suffer greatly if their teeth aren't properly cared for. ECC negatively affects children's lives. Dental decay in children can lead to school absences and financial hardships for parents. Moreover, psychological and social well-being can be adversely affected by dental decay. These include pain when drinking hot and cold beverages, difficulty chewing and biting, decreased appetite, weight loss, sleep disturbances, behavioural changes such as irritability and low self-esteem, and a decrease in school performance. Parents are early children's primary providers in every society. They are aware of not just their children's psychology but also their health demands. In order to ensure that their children's teeth remain healthy, parents must be aware of the importance of oral hygiene. As a parent, you can set the stage for a healthy lifestyle, boost your child's confidence, and help them adopt good habits [9]. Additionally, when it comes to their children's oral hygiene habits, parents' skills and attitudes toward oral hygiene can have a significant impact on the prevalence of oral diseases, controlling their children's tooth brushing, and sugar-snacking habits, which is the most significant predictor of children's favorable habits. Research shows that children's dental health is directly linked to their parents' education and income. This study was carried out to emphasis on parental oral health knowledge and also the risk causes responsible for ECC. Furthermore, parental behavior, mother's education level and the willingness of parents to avoid cariogenic snacks are variables related to ECC [10]. The objectives of the study were to assess parents' knowledge related to dental problems among children and to evaluate oral health hygiene of children 3-5 years of age using 'dmft' scoring.

METHODS

A cross-sectional study was conducted in both public and private schools of Abbottabad after approval for the research was given by the Institutional Review Board of Prime Foundation Pakistan. Institutional Review Board (Prime/IRB/2021-355 and formal approval was sought from the Education Department, and the Office of the District Education officer (D.E.O) Abbottabad, as well as the Heads

of the selected schools. The parents of all children to be involved in the project were sent introductory letters accompanied by the consent forms through the school principals. All children aged 3-5 years attending the pre-school and their Parents were included in this study while children with any mental medical condition were not included in this study. A stratified random sampling technique was used. In this technique, dmft scores were taken from children aging 3-5 years of age from the schools which were selected by the D.E.O Abbottabad. Children were selected randomly from the pre-nursery and nursery class. As the sample size was 384, we divided the children into three categories on the basis of their ages 3,4 and 5 years. From each class 30 children were selected randomly who took part in this study while children having any mental or psychological disorders were excluded from the study. A total of 384 students by using Open Epi software using the following parameters: Population Size, Frequency of outcome, Population Size, Frequency of outcome, Confidence Level. The data were collected from parents during the parent teacher meeting using a structured questionnaire. A set of 10 questions to assess the knowledge related to the oral health of a child was formulated. The questionnaire was used to collect information about the (e.g., child's age) and dental health practices (e.g., details about tooth-brushing duration, toothpaste amount used). dental visit, current caries. Each question scored 1 was labeled as the correct answer and zero for the incorrect answer. The questionnaire with >8 scoring was considered as having good knowledge about their child's oral health whereas score from 4-7 was considered as having average oral health knowledge and questionnaire scoring <4 was considered as having little or no knowledge regarding their child's oral health. Oral health status of children participating in this study was assessed using dmft scoring, which was our second questionnaire. dmft is the number of decayed, missing in caries, and filled teeth in deciduous and permanent teeth. This helps in determining the oral health status of the children. The children having Early Childhood Caries was counted according to the AAPD which focuses on the appearance of one or more decayed, missing or filled in any primary tooth in a child up to or below 71 months of age, we had made groups according to the age limits which they have recommended i.e., missing or filled or decayed dmft score of ≥ 4 (age 3), or ≥ 5 (age 4), or ≥ 6 (age 5). Children with 3 years of age if their dmft score is >4 than it's considered that they have poor oral hygiene, Children with 4 years age having dmft score >5 and children with age 5 having dmft >6 was considered as compromised oral health status and they were advised to improve their oral health status and visit the dentist. Children with dmft scores of 0 or less than

4 was considered as having a good oral health status. After successful collection of data, data were entered and analyzed using SPSS software version 20.0. Descriptive statistic like Mean and Standard deviations were calculated for age and dmft scores. The categorical variables like frequencies and percentages were calculated for gender location, age groups and mother's knowledge. T-test was used to compare mean dmft scores between Government and Private school children and between Prenursery and Nursery group. ANOVA was used to compare mean dmft score between three different age groups (3, 4 and 5 years). Chi square test was used to compare parental knowledge from private and government schools. Correlation analysis (Pearson's analysis) was used to evaluate the relationship between oral health dmft score of children and parental knowledge score regarding early childhood caries. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Total 384 students were examined of which maximum belonged to 5 years of age 161 (41.81%) followed by 4 years 157 (40.77%) (Table 1).

Variable	Government schools	Private schools	Total
Age groups	N (%)	N (%)	
3years	28(14.58)	37(19.27)	65(16.88%)
4years	79(41.14)	78(40.62)	157(40.77%)
5years	85(44.27)	76(39.58)	161(41.81%)
Total	192(50)	192(50)	384(100%)

Table 1: Children's Mean Age

ANOVA test showed that there is no significant difference among all the age groups ($p > 0.05$). The highest mean difference (0.0482 ± 0.369) was noted between age group 5 and 4 years followed by (0.0250 ± 0.485) between age group 5 and 3 years (Table 2).

Age Groups	Mean \pm SD DMFT	p-value
3 years	3.05 ± 0.48	>0.05
4 Years	3.90 ± 0.36	
5 Years	3.12 ± 0.48	

Table 2: Mean dmft score in different age groups

Table 3 statistics shows that mean value for Questionnaire score for 192 students each in Govt. and primary school having mean values of 6.3438 ± 2.612 and 7.3385 ± 1.959 respectively.

School	Mean \pm SD OHK score	p-value
Govt	6.34 ± 2.61	<0.05
Private	7.33 ± 1.95	

Table 3: Mean Parental oral health score

The chi-square test shows a p-value of <0.05. Hence, showing a significant difference between the Parental health knowledge scores between the Private and

government schools of Abbottabad (Table 4)

Oral Health Knowledge	Private	Govt.	p-value
Good Oral Health Knowledge	67(34.89%)	12(6.25%)	>0.05
Average Oral Health Knowledge	95(49.47%)	84(43.75%)	
Poor Oral Health Knowledge	30(15.62%)	12(6.25%)	

Table 4: Chi-Square analysis of parental oral health knowledge

This correlation revealed an inverse relationship between dmft and parental knowledge (-0.450) and also a negative covariance (-4.116) indicating that with the increase of parental knowledge the dmft decreases. Pearson's correlation revealed an inverse relationship between dmft and parental knowledge (-0.094) and also a negative covariance (-.555) indicating that with the increase of parental knowledge the dmft decreases (Table 5).

Variable	Mean \pm SD	Pearson value	p-value
Correlation b/w dmft scores of govt school children and their parental health knowledge			
Mean dmft	3.92 ± 3.50	-0.45	<0.05
Mean OHS	6.34 ± 2.61		
Correlation b/w dmft scores of private school children and their parental oral health knowledge			
Mean dmft	3.26 ± 3.01	-0.09	<0.05
Mean OHS	7.33 ± 1.95		

Table 5: Correlation b/w dmft scores of private school children and their parental oral health knowledge and Correlation b/w dmft scores of govt. school children and their parental health knowledge

DISCUSSION

According to the findings of this cross-sectional study, parental knowledge of oral health is directly related to their children's dental health. To ensure their child's oral health, parents who teach their children to clean their teeth early and visit the dentist regularly to treat dental disorders have been effective [10]. These findings show a strong link between parents' attitudes, beliefs, and behaviours and their children's. Their children's behaviour reflected their parents' improved knowledge, attitudes, beliefs, and behaviours [11]. Children's oral health-related conduct appears to be correlated with both their parents' and children's understanding of oral health issues. Poor education among parents is a sign of poor child's oral health practices. Children reported oral health behaviour appears to be related to parents' reported actions [10]. According to these findings, a child's behaviour is influenced by the example set by their parents. Like prior surveys, most parents who responded were women (79%), (61%), (69%), (90%), as females spend more time with their children and they know more about their children as compared to the fathers because usually the fathers are busy with their work and it's the mother who looks after a child's needs and wants and the children mostly look up to their mothers when it comes to adapting habits, behaviours and attitude

[12-15]. We found a substantial correlation between parents' educational attainment and their children's oral health. Caries was a significant predictor of parental education level exclusively amongst mothers. Mothers' enhanced ability to monitor and maintain their children's dental health can explain their increased understanding of good behaviours [16, 17]. A statistically significant difference was found between children whose moms graduated from high school and those whose mothers graduated from college or university. Previous study by Basir *et al.*, have also demonstrated that parents' educational level affects their children's oral health. Due to the role model status of mothers, the high number of moms participating in the study could have influenced the findings. Previous study by Bağ (-0.07), (-0.41) have shown a correlation between mothers' attitudes toward dental health and their young children's exposure to caries [18, 19]. Another study by Kotha found a correlation between mother self-perception of their own oral health and their children's experience of dental caries. As a result, it implies that maternal perception can provide helpful information about a child's oral health state and the need for treatment, as well as regarding the mother's own impression of her own dental health [14]. The dental health status of mothers is a strong predictor of the oral health status of their children. The youngsters whose parents had a higher educational level washed their teeth twice as frequently as those whose parents had a lower educational level every day [8]. Furthermore, a study in Norway by Garrocho-Rangel *et al.*, found that parental education and socioeconomic position affected a child's oral health. Dental caries was more likely to be prevented (71%) by parents with higher education (83%) and wealth than by parents with lower levels of this factors [13]. These parents were also more concerned about their children's dental health. There was a correlation between lower family incomes and less educated parents in families with children who had dental caries. Dental caries can also be caused by a lack of a proper diet, leading to cavities [19]. Children, in particular, enjoy snacking, do not adhere to good eating habits, and choose sugary, sticky foods. Almost everyone agrees that these behaviours harm youngsters' teeth. Poor food habits and an unhealthy lifestyle can be attributed to a lack of parental knowledge and a low socioeconomic standing. Parents' attitudes about oral health are heavily influenced by their educational background [20]. According to systematic research educated parents (79%) are more concerned about the oral health of their children [19]. Furthermore, research Tabakcilar *et al.*, show that parental education and family socioeconomic status directly impact children's oral health. Oral dental caries is more common in low-

income and low-educated families because they are less concerned about basic dental care measures and regular preventative dental check-ups with the dentist [21].

CONCLUSIONS

Children's oral health practices are heavily under parental influence especially the mothers, who play a key role in helping them establish healthy habits early on. If parents are properly motivated and informed, oral diseases, especially caries in young children, can be greatly avoided. One of the key elements impacting oral health is dental knowledge. Poor health attitudes are associated to poorer health understanding. The dental health of children is strongly connected with a family's attitude. When compared to parents of children with caries, parents of children without caries showed more optimistic attitudes and beliefs. Therefore, evaluating the knowledge, attitude, and behavior of parents of young children might indicate gaps in the knowledge as well as wrong attitudes and actions. Dentists should educate parents about good dental hygiene habits for their children's overall health. As a result, a more scientifically sound health education programme encompassing the entire family is required to give parents the direction they need to preserve their children's dental health.

Conflicts of Interest

The authors declare no conflict of interest.

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