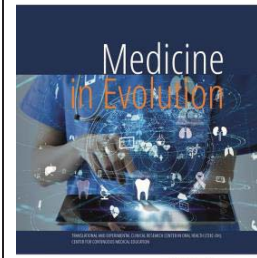


Assessment of Parental Knowledge and Behaviour Regarding the Oral Hygiene of Preschool Children

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Abstract

In young age, oral health is strongly influenced by the primary caregivers' attitude towards oral health. Parental factors such as socioeconomic status, education level, and dental anxiety of the parent may play a role in their knowledge about dental hygiene practices. 1. Background/objectives: The objective of this paper is to identify the gaps in parental knowledge regarding children's oral hygiene and to highlight the influence that variables such as the parent's level of education, fear of the dentist, or even gender may have on their knowledge about dental caries, tooth eruption and oral health habits. 2. Material and methods: The present work is an analytical cross-sectional study of parental attitude towards oral health of their children, aged between 0 and 6 years. Data collection was done by questionnaire and the sample population included 50 respondents and the results were statistically analysed. 3. Results: Regarding the parent's level of knowledge about dental eruption and oral health practices, no statistically significant differences were identified between the two sexes ($p=0.853$), between different levels of education ($p=0.628$), and also the absence or presence of parents' fear of the dentist and their level of knowledge are not correlated ($p=0.723$). However, the differences between dental fear of parents and their children proved to be statistically significant according to the chi-square test ($p<0.001$). 4. Conclusions: The study showed that the parent's gender, level of education and fear of the dentist do not influence their knowledge about dental caries, eruption of temporary teeth, eruption of permanent teeth and oral health. However, there seems to be a correlation between the dental fear of the parent and that of the children, and also between oral hygiene practices of parents and their children.

Keywords: oral hygiene; children; parental knowledge; education level; dental fear

INTRODUCTION

The concern for oral hygiene among the general population has made considerable progress from the previous century to the present, but nevertheless dental caries is one of the diseases with a high prevalence all over the world [1,2]. A comprehensive global epidemiological study published in 2017 estimated that 2.3 billion people suffer from cavities in permanent teeth, and more than 530 million children have cavities in primary teeth [2]. Although it is relatively easily preventable, tooth decay remains one of the most common diseases among children, being five times more common than asthma and seven times more common than hay fever [3-5]. A study carried out on a sample of 3000 Italian children showed a prevalence of early childhood caries (ECC) approaching 15% in the age group between 4 and 6 years and highlighted the association between the prevalence of caries in children and the parents' incorrect oral care behaviours [5]. Another study, carried out in Romania in 2022, revealed an increased prevalence of caries in the same age group [6].

Children's oral health status can be influenced by many different factors, like parental knowledge about oral practices and their awareness on the importance of oral hygiene, parental level of education, dental fear or access to educational programs related to oral health. Diet and oral hygiene practices are among the life skills children learn from their parents and/or primary caregivers. Therefore, there is a correlation between the oral health status of children and the knowledge and behaviours of parents, caregivers and older siblings [7]. According to Broadbent et al., socioeconomic status, as well as beliefs about oral health care held by individuals and their parents early in life, are related to oral health in early adulthood [8]. Salama et al. noted the strong link between educational level and oral health literacy, but also emphasized how, despite social status, most parents are still unaware of the importance of prevention. According to their results, 46.7% of children under the age of 5 never visited the dentist, 41.8% were bottle-fed on demand, and only between 8 and 22% of children, depending on family income, had their first dental visit during this time [9]. Hiratsuka found in a sample of Alaska residents that although most parents did not achieve adequate oral hygiene frequency, the odds ratio of children achieving the required frequency of tooth brushing was 49 times greater if their parents were used to brush their teeth at least twice a day [10]. In a Mexican sample, Vallejos-Sanchez et al. pointed out that a better maternal approach to oral health and dental care was associated with a 2.4-fold higher chance of frequent tooth brushing in the child [11]. Improvements in parental knowledge are generally associated with short-term improvement in children's plaque index [12]. Very few studies have been conducted to assess the incidence of dental caries after oral health education. Indeed, there is a need to understand children's and parents' knowledge to develop more effective approaches to promoting oral health. Periodic reminder through educational programs is fundamental to achieve a significant long-term result. A 2016 study on 396 parents and their children aged 3 to 6 years, in which parents' awareness was determined by comparing the parents' perception of their child's oral hygiene with the results of the dental exam, showed that 40.9% of parents did not know the child's dental hygiene level. Awareness was closely related to children's and parents' oral hygiene, education level, and socioeconomic status. Therefore, educational interventions aimed especially at young people, families with low socio-economic status and parents of children with poor oral hygiene are very important first steps in the prevention of dental caries [13].

Dental fear is generally a common problem among patients of all ages, that frequently leads to avoiding or delaying treatment. Estimates are that approximately 6-15% of the population globally suffer from high levels of dental fear and anxiety [14]. Dental fear and anxiety are thought to be maintained through a vicious cycle, demonstrated by Armfield in a

study of 1036 subjects [15]. The study showed that dental fear acts as a determinant of avoiding or postponing dental visits, which has flow-on effects in terms of additional treatment needed and problem-oriented visits. Avoidance of routine dental care leads to a higher incidence of pain which in turn affects anxiety and vice-versa. It is important to note that negative memories of previous experiences at the dentist's office may act as an indirect, possibly even unconscious way in which parents transfer dental anxiety to their children [16]. Smith et al. showed that parents expressed their own negative experiences with dental treatments through words and expressions and also by delaying dental treatment for themselves and their children [17]. Most visits to the dentist are due to tooth pain, followed by tooth decay, while very few parents bring their children for routine check-up [18]. In a study led by Sakai et al., 58% of parents and 41% of children had never been to the dentist [19].

Dental health education is fundamental in the prevention of dental caries in children, with the aim of changing the knowledge, attitudes and behaviours of the patient and parents. However, the child's ability to assimilate and imitate the good and bad habits of adults cannot be ignored [20]. As highlighted by the WHO, oral health education and community involvement are essential to prevent caries in early childhood, especially in low- and middle-income countries. The family is the child's primary source of learning about oral health and risk factors. WHO suggests improving oral health awareness and CTC prevention among parents through appropriate communication and provision of sound information on prevention and treatment [21]. Evidence suggests the effectiveness of behavioural therapies against CTC when used at individual and family level [22]. Motivational interviewing is a promising approach to induce positive changes in parents' oral health knowledge and child behavioural outcomes. Outcomes are improved when delivered in a patient-centred environment rather than the potentially stressful and distracting environment of a busy dental clinic [23].

Aim and objectives

The objective of this paper is to identify the gaps in parental knowledge regarding children's oral hygiene and to highlight the influence that variables such as the parent's gender, level of education or fear of the dentist have on their knowledge about dental caries, tooth eruption and oral health habits. Awareness of this topic can indicate to the pedodontist and other professionals in the field of dental medicine, at what level to educate and intervene to improve the prevention of dental caries.

MATERIAL AND METHODS

The present paper details an analytical cross-sectional study carried out on a target population represented by parents of children aged between 0 and 6 years. Data collection was done by completion of a questionnaire by the parents of patients treated in the Clinic of Pediatric Dentistry from the Faculty of Dental Medicine of "Victor Babeş" University of Medicine and Pharmacy, Timișoara, during the period October-December 2023. The questionnaire items were translated from the study published by Hazal Deniz Köse et al. [24], and used with the consent of the authors. The confidentiality of personal data was respected according to the GDPR, and the respondents gave their written consent to participate in the study. The inclusion criterion was the child's age between 0 and 6 years.

The questionnaire consists of 33 questions, divided into 6 categories. The first part of the questionnaire consists of questions related to demographic information, such as the gender of the parents, the gender of the child, the age of the parents, the age of the child and the level of education of the parents. The second part includes questions about attitude and

behaviour regarding dental visits, such as the time of the child's first visit to the dentist, the reason for the visit, and the dental fear of both the parents and the child. The third part includes questions about the child's diet, such as consumption of dairy products, fruit juices, carbonated drinks and sweets. The fourth part asks questions that test the parents' knowledge about tooth eruption, such as the number of temporary teeth, the number of permanent teeth, the first temporary tooth and the first permanent tooth that erupts, and the fifth and sixth parts include questions about tooth decay and oral hygiene, such as how often you change your toothbrush or when you should start brushing.

A total of 50 questionnaires were completed by parents. Collected data were entered into an Excel spreadsheet and analysed using IBM SPSS (version 29) software. The following research hypotheses were formulated:

1. There are significant differences between parents' level of knowledge about dental caries and eruption, depending on their level of education.
2. There are significant differences between parents' level of knowledge about dental caries and eruption, depending on the presence or absence of the parent's fear of the dentist.

The research hypotheses were verified using the Chi-square independence test at the level of statistical significance $p < 0.05$.

RESULTS

The age distribution of the 50 respondents to the questionnaire is: parents under 20 years old - 10%, between 20-40 years old - 58%, and over 40 years old - 32%. The gender distribution of the respondents is: female - 62%, male - 38%. Regarding the level of education, 2% of parents who responded to the questionnaire are secondary school graduates, 48% of parents are high school graduates, 16% of parents are post-secondary school graduates, and 34% of parents have university degrees.

According to the answers in the questionnaire related to dental visits, all parents (100%) declared that they had been to the dentist before, while in case of the children 86% have had their first dental visit prior to the study and 14% were visiting the dentist for the first time. The reason for visiting the dentist was in 60% of the cases dental caries, 10% pain, 8% tooth mobility and 22% routine visit.

The level of parental knowledge about the total number of permanent and temporary teeth and their eruption is the following: 61.3% of mothers and 63.2% of fathers answered correctly, 9.7% of mothers and 5.3% of fathers answered incorrectly, and 29% of mothers and 31.6% of fathers stated that they did not know. Regarding the parent's level of knowledge on this topic, no statistically significant differences were identified between the two sexes ($p = 0.853$), between different levels of education ($p = 0.628$), and also the absence or presence of parents' fear of the dentist and their level of knowledge are not correlated ($p = 0.723$), therefore the two research hypotheses are not confirmed.

Concerning dental fear, 16% of the parents in our study were reported to be afraid of the dentist. The study revealed that in 14% ($n = 7$) of the study group, fear of the dentist was present in both parents and children and in 2% ($n = 1$) fear of the dentist was present in the parent, but not to the child. In 4% ($n = 2$) fear of the dentist was absent in the parent and present in the child, and in 80% ($n = 40$) fear of the dentist was absent in both the child and the parent. These information are summarized in Table 1. The differences between dental fear of parents and their children proved to be statistically significant according to the chi-square test ($p < 0.001$).

Table 1. The parent's dental anxiety related to the child's dental anxiety

| Dental anxiety of the parent | Child dental anxiety | | Total |
|------------------------------|----------------------|----------|----------|
| | Present | absent | |
| present | 7 (14%) | 1 (2%) | 8 (16%) |
| absent | 2 (4%) | 40 (80%) | 42 (84%) |

Parents' knowledge of dental caries and oral health habits are as follows: the majority of mothers (83.9%) and fathers (84.2%) do not consider dental caries to be contagious diseases, and statistical differences are again not significant between sexes ($p = 0.975$). Over 90% of parents know that decayed temporary teeth need to be treated and that the toothbrush should be changed between 0-3 months. A percentage of 32.3% of mothers and 47.4% of fathers consider tooth brushing sufficient to prevent dental caries. Moreover, 53.2% of mothers and 47.4% of fathers do not know the moment when they should start brushing their child's teeth. When asked about the cause of dental caries, 44% of parents consider food and drinks, 12% consider dental plaque and tartar, 10% of parents attribute dental caries to genetic causes and 12% to bacteria and viruses.

Regarding children's nutrition habits, the questions focused on the frequency of dairy, sugar and carbonated drinks consumption. The results are summarised in Figure 1.

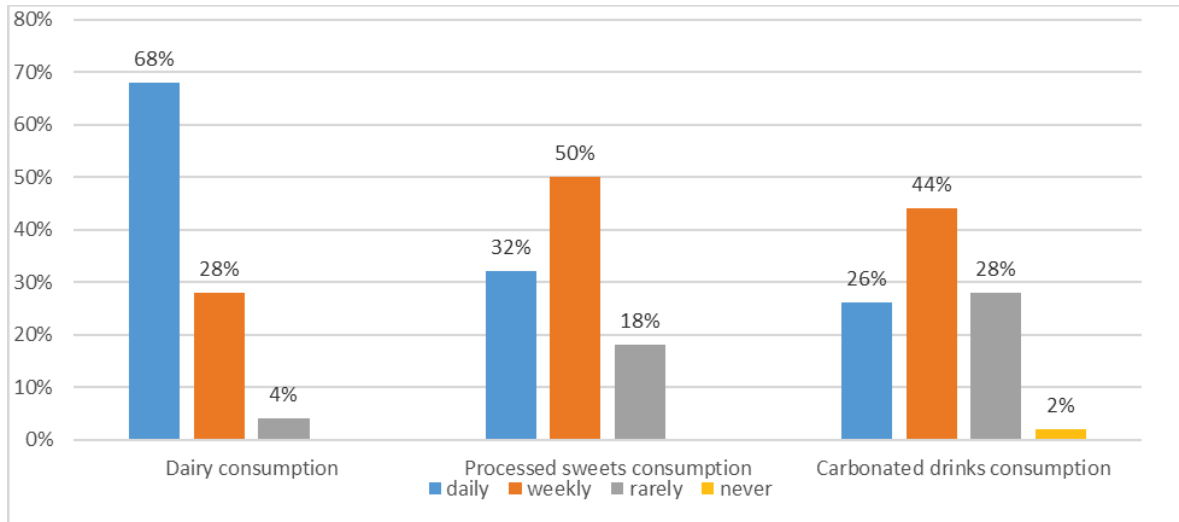


Figure 1. Chart of the nutrition habits in preschool children

DISCUSSIONS

Oral health behaviours that begin in childhood continue to have an impact into adulthood. Given the influence that parents have on their children, it is important to examine parents' attitudes toward factors that influence children's oral health. This study provides important data on parental knowledge of their children's oral health.

In this study, 84% of the children were visiting the dentist for the first time compared to 18% of the children in the study group published by Köse et al (24). Furthermore, the percentage of parents who believe that other diseases can be caused by tooth decay is much lower in our study (62%) compared to that in the study published by Wyne et al. (98%) [25].

Also, more than 80% of the participants did not consider dental caries to be a contagious disease. In the study by Saied Moallemi et al., approximately 75% of mothers believe that temporary teeth should be treated if they are affected by caries [26]. In the present study, the majority of participants stated that temporary teeth should be treated if necessary, approximately 71% of mothers. After the eruption of the first tooth, tooth brushing should

begin. In Jain et al.'s study, the correct response rate for when to start brushing was 21% [27]. The proportion of correct answers in our study was only 24%. The incorrect answer given by most parents reflects a serious concern for the oral health of children and for development of early childhood caries. On the other hand, the percentage of parents who knew it was necessary to change the toothbrush every three months was much lower in the study of Jain et al [27] - (52%), compared to our study (92%). Parents' answers regarding dental caries and oral health habits did not show a statistically significant difference according to gender, level of education, fear of the dentist or parents' previous knowledge and attitudes about oral health, these conclusions also being reported in the study published by Köse et al [24].

The present study had some limitations, like the small sample size, with only 50 parents who met the study criteria agreeing to complete the questionnaire, and the low sociodemographic diversity since the study was conducted in a single university clinic.

CONCLUSIONS

The study showed that the parent's gender, level of education and fear of the dentist do not influence their knowledge about dental caries, eruption of temporary teeth, eruption of permanent teeth and oral health. However, there seems to be a correlation between the dental fear of the parent and that of the children, and also between oral hygiene practices of parents and their children.

Conflicts of Interest

The authors declare no conflict of interest.

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