

Assessment of hygienic knowledge and oral health practices among children under dynamic observation for periodontosis in Aktobe

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Keywords

Periodontal diseases • Oral hygiene • Orthodontic treatment • Dental education • Dentistry

Summary

Introduction. Oral diseases are a serious global public health problem affecting more than 3.5 billion people, are among the most common diseases in the world, and carry serious medical and economic problems, substantially reducing the quality of life of those affected. Oral diseases undoubtedly represent a global public health problem, with particular concern about their growing prevalence in many countries, which is associated with broader social, economic, and commercial changes. The purpose of the study is to establish the level of hygienic education among schoolchildren undergoing orthodontic treatment in Aktobe.

Material and methods. The design of the study is experimental and descriptive. The sample was gathered without pre-selection.

It included children from 6 to 18 years old who were on dynamic observation, with a diagnosis of periodontal diseases.

Results. According to the data obtained, it was identified that 300 respondents aged 6 to 18 years took part in the survey, the average age of the respondents was 13.75 ± 1.38 years. The survey identified a low level of dental education in hygiene and oral care among children and a lack of motivation to maintain dental health.

Conclusions. It is necessary to strengthen educational work with the involvement of dentists, teachers, and parents to increase the low level of knowledge on dental health and oral care among the interviewed schoolchildren.

Introduction

Oral diseases, particularly periodontal diseases, represent a significant global public health concern, affecting over 3.5 billion individuals worldwide. These diseases have a significant impact on quality of life, causing discomfort and pain and resulting in profound medical, social, and economic implications. A lack of oral health can result in several adverse consequences, including the persistence of pain, sepsis and a reduction in the quality of life experienced by the individual. For children, these effects are particularly concerning as they have the potential to impact their overall well-being, academic performance, and social interactions. Despite the preventable nature of periodontal diseases, they remain prevalent, largely due to insufficient oral hygiene, unhealthy diets, lack of awareness, and limited access to dental care, especially in marginalised communities [1, 2].

Children are particularly susceptible to oral health issues due to their limited comprehension of optimal hygiene practices and the habits they establish during their developmental years. Inadequate oral hygiene and unhealthy dietary habits, such as the frequent consumption of sugary foods and drinks, are significant

contributing factors to the development of dental diseases. Those undergoing orthodontic treatment are at an even greater risk, as they often have difficulty maintaining proper hygiene around braces, which can exacerbate periodontal issues. In the absence of adequate education and guidance, these children are at an increased risk of developing severe oral health issues that may persist into adulthood.

Despite the preventability of many oral diseases, oral health education remains inadequate in many regions, particularly among children. A paucity of oral health knowledge frequently gives rise to inadequate hygiene practices and a lack of motivation to maintain oral health. A substantial body of research indicates that the level of hygienic education among children is frequently inadequate. Many children lack awareness of the significance of maintaining optimal oral hygiene and its impact on their overall health. Furthermore, parental involvement in the reinforcement of healthy oral hygiene practices represents a crucial element in the prevention of periodontal diseases in children [3-5].

The objective of this study is to evaluate the extent of hygienic education and oral health awareness among schoolchildren undergoing orthodontic treatment in

Aktobe. A comprehensive understanding of their current knowledge and the identification of deficiencies in their oral health education will facilitate the development of targeted interventions designed to enhance oral hygiene practices. The objective of this study is to contribute to the development of more effective oral health education programmes for children, with the ultimate goal of improving long-term oral health outcomes and reducing the prevalence of periodontal diseases.

Materials and methods

The study employs an experimental and descriptive design. The sample size was determined on the basis of the statistical power required to detect significant differences in oral hygiene education among schoolchildren undergoing orthodontic treatment. The sample comprised 300 children and adolescents, aged between 6 and 18 years, who had been diagnosed with periodontal disease and were undergoing dynamic observation. The mean age of the respondents was 13.75 ± 1.38 years. Of these, 183 (61%) were female and 117 (39%) were male. The sample was gathered without prior selection, comprising both male and female participants. The study included children with concomitant diseases, such as gastrointestinal and nervous system disorders. The exclusion criteria included adults, children under the age of six, and individuals with oral diseases or tumour-like changes.

A sociological survey was conducted using a validated questionnaire recommended by the World Health Organization. The questionnaire was specifically designed to assess the level of hygienic knowledge among schoolchildren. The reliability of the questionnaire items was confirmed through the calculation of Cronbach's alpha coefficient, which ensured content validation. Furthermore, test-retest validation was conducted to ensure the consistency of responses over time.

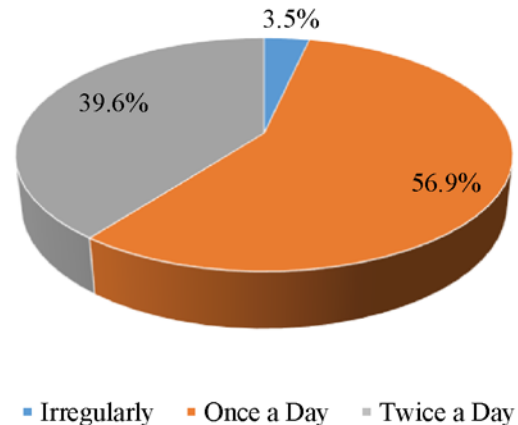
The questionnaire comprised 14 closed or semi-closed questions pertaining to the respondents' self-assessment of their oral health, dental care practices, reasons for dental visits, use of dental care products, dietary habits, and the presence of oral health-related behaviours such as smoking. The questions were designed in such a way as to allow for straightforward and unambiguous selection of responses, thus ensuring the efficient collection of data. The data were then processed using the Statistica 10 program, and descriptive statistics were performed in order to analyse the responses. Furthermore, the study also evaluated the correlation between parental education levels and the children's dental health behaviours, such as the frequency of dentist visits, the condition of the gums, and brushing habits.

The project was approved by the Ethics Commission of the West Kazakhstan Marat Ospanov Medical University, No. 1356. Informed consent to the survey was acquired from the parents of the subjects.

Results and discussion

Substantial differences were obtained when answering the question about personal assessment of the condition of teeth ($p = 0.002$); teeth brushing ($p = 0.003$), and difficulty biting off food ($p = 0.016$). When asked about the frequency of brushing teeth, the following results were obtained (Fig. 1).

Fig. 1. Frequency of tooth brushing among participants.



The majority of children are dissatisfied with the appearance of their teeth, which amounted to 60.25%. The main reasons for dissatisfaction with their teeth are anomalies in the location of teeth – 63.5%, caries processes of the central group of teeth – 24.6%, and insufficiently white enamel colour – 11.9%. For this reason, many children avoid smiling and laughing when communicating, covering their mouths with their palms. According to the results of the survey, the majority of children go to the dentist because of a toothache that has already appeared, which is 54.6%. According to the results of the survey, 25.7% of children undergo routine examination and treatment by a dentist. When questioning children about the consumption of sweet confectionery products and sweet drinks that cause damage to teeth and gums, 71.3% gave a positive answer, tea is drunk with added sugar by 75.8%, several times a day, which is a trigger in the development of dental disease. Children constantly consume easily digestible carbohydrates in large quantities, which in combination with poor oral hygiene leads to deterioration of their dental health. When analysing the section on the education of parents, during statistical analysis of the relationship, a statistically highly reliable correlation was determined between the education of the father and the visit to the dentist. A strong correlation was observed between parental education and dental health outcomes in children. Fathers' and mothers' secondary or higher education levels (97.2% and 97.8%, respectively) were linked to better dental care practices in children, including frequency of dentist visits and oral hygiene maintenance (Tab. I).

Tab. I. Correlation between parental education and dental care.

Parent's Education Level	Frequency of Dentist Visits	Oral Hygiene Practice
Secondary Special & Higher Education	Positive Correlation	Better Hygiene Habits

Periodontal disease in adolescence is affected not only by the state of oral hygiene but also by personal parameters and psychological factors. In school dental health, personal health guidance from a responsible teacher who knows the student well is very important to improve the periodontal condition, along with proper examination and evaluation by school dentists [6]. A positive relationship between periodontitis and hypothyroidism was identified. Further well-controlled prospective clinical and immunological studies are required to confirm this link, measure the strength of any link with the severity of the disease, and establish a causal relationship and the role of one disease in the pathogenesis of another [7].

Putative periodontal pathogens play a crucial role in the onset of the disease and provoking host inflammation, continuing to perpetuate the disease through immune subversion and tissue manipulation [6]. Observations showed that the oral cavity changes considerably due to periodontal disease, indicating potential mechanisms by which viral species can manipulate both bacterial and host processes during disease progression [5, 8]. Factors affecting microbial dysbiosis and periodontal inflammation have gone beyond a simple lack of oral hygiene and now include the person's environmental factors such as psychological stress and diet [9, 10]. Studies among children and adults in the southern region of the Lisbon agglomeration in Portugal show a high burden of periodontitis. Age, level of education, smoking status, and diabetes mellitus were identified as substantial potential risk factors for periodontitis [11, 12]. The model, which includes age, gender, ethnicity, HbA1c (A haemoglobin A1c), and smoking habit, can be used as a reliable screening tool for periodontitis in primary health care institutions to facilitate referral of at-risk patients for periodontal examination and diagnosis.

Based on the presented data, the following recommendations can be made to improve periodontal health and reduce the incidence of periodontitis: well-structured educational programmes on oral hygiene for schoolchildren to develop a positive attitude toward dental care, consolidate knowledge by including oral health and oral hygiene issues in school curricula, and involve teachers in training programmes; implementation of preventive school dental programmes to establish control and prevention of dental plaque; comprehensive screening programmes to assess oral health and treatment needs of schoolchildren [13-15]. These preventive services should be given high priority and started at an early age. Dental services, both preventive and therapeutic, should be widely available to all [16-18].

Thus, the elucidation of the elements of susceptibility to periodontal disease (genetic factors, oral hygiene, smoking) and the family component of this disease is crucial for the development of this disease [19-21].

A potential limitation of this study is the reliance on self-reported data, which may be subject to bias or inaccuracies. Furthermore, the study sample was limited to children from a single region (Aktobe), which may not fully represent the broader population of children undergoing orthodontic treatment. It would be beneficial for future research to expand the sample size and include data from multiple regions in order to gain a more comprehensive understanding of children's oral hygiene education across different demographic groups. Furthermore, the study did not investigate the long-term effects of improved dental hygiene education, which represents an important avenue for future research.

Further research could investigate the efficacy of particular interventions, such as the integration of dental hygiene education into the school curriculum and evaluate their impact on both immediate and long-term oral health outcomes. Furthermore, an investigation into the role of parents, teachers, and healthcare professionals in promoting oral health could provide valuable insights into the most effective methods of fostering better hygiene practices among children.

Conclusions

The study reveals a dearth of knowledge regarding oral hygiene among schoolchildren undergoing orthodontic treatment in Aktobe. It is of paramount importance to prioritise the enhancement of children's dental education, particularly within the context of orthodontic care, in order to guarantee long-term oral health. Furthermore, the participation of parents, educators, and dental professionals is vital to reinforce oral hygiene practices and promote a culture of dental care. The reinforcement of educational programmes and the provision of accessible preventive dental services will assist in addressing the current deficiencies in dental knowledge and improving oral health outcomes for these children. A comprehensive approach, which encompasses both child and family education, is essential for more effective oral health management.

Funding

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Ethics approval

The project was approved by the Ethics Commission of the West Kazakhstan Marat Ospanov Medical University, No. 1356.

Conflicts of interest statement

Not applicable.

Authors' contributor

NZ and LY: conceptualization, methodology, data curation, writing-original draft preparation. MU: visualization, investigation, and supervision. SS and GS: software, validation, writing-reviewing, and editing. All authors read and approved the final manuscript.

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