

SOME RISK FACTORS FOR DENTAL DISEASE IN PRESCHOOL CHILDREN LIVING IN RURAL AREAS OF THE REPUBLIC OF UZBEKISTAN

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ABSTRACT

This article presents the results of an epidemiological survey of 200 preschool children (ages 3 to 6) living in 6 rural regions of the Republic of Uzbekistan, aimed at identifying the main risk factors for the development of dental caries. Factors studied include: the impact of infant feeding (artificial vs. natural), birth order in the family, ankyloglossia, bite irregularities, and the presence of hygienic habits in children living in rural and ecologically unfavorable areas and urban-type settlements.

Keywords: preschool children, dental caries, risk factors.

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НЕКОТОРЫЕ ФАКТОРЫ РИСКА СТОМАТОЛОГИЧЕСКИХ ЗАБОЛЕВАНИЙ У ДЕТЕЙ ДОШКОЛЬНОГО ВОЗРАСТА, ПРОЖИВАЮЩИХ В СЕЛЬСКОЙ МЕСТНОСТИ РЕСПУБЛИКИ УЗБЕКИСТАН

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АННОТАЦИЯ

В статье представлены результаты эпидемиологического обследования 200 детей дошкольного возраста (в возрасте от 3 до 6 лет), проживающих в 6 сельских регионах Республики Узбекистан, направленного на выявление основных факторов риска развития кариеса зубов. Изучались следующие факторы: влияние вскармливания детей грудного возраста (искусственное/естественное), очередность рождения детей в семье, анкилоглоссия, нарушения прикуса, наличие гигиенических привычек у детей, проживающих в сельской местности, экологически неблагоприятных районах и поселках городского типа.

Ключевые слова: дети дошкольного возраста, кариес зубов, факторы риска.

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RELEVANCE OF THE PROBLEM

The health of children is a priority area of state healthcare programs in Uzbekistan. The dental health of children is one of the most important aspects, receiving significant attention from researchers and practicing dentists.

Epidemiological surveys conducted among preschool children indicate a high prevalence of oral diseases in children of this age group in Uzbekistan [1,3,4].

In this context, a key area of work for pediatric dentists is the study of risk factors for the development of dental caries and its prevention. The focus is on educating children about hygiene, both individually and in groups, with the active involvement of parents and caregivers.

Despite certain successes in the prevention and treatment of dental caries in children in various countries, including Uzbekistan, the prevalence and intensity of dental caries remains high, particularly among children living in rural areas.

At present, there is a large body of work on caries prevention and the study of risk factors; however, research on dental diseases in children living in rural areas is limited [1,3,5]. Studies show that the accessibility of all types of dental care for children is better in cities and urban-type settlements than in rural areas [3,5]. Despite significant positive experience in implementing preventive measures, the level of dental morbidity among children, according to the World Health Organization (WHO), has not decreased. Literature data indicates the greatest increase in the prevalence and intensity of dental caries occurs in children between the ages of 2 and 6 years. Early tooth loss creates conditions for the development of dental anomalies, defects in the dental arches, and chronic odontopathogenic foci of infection, which contribute to the onset and development of focal diseases (such as rheumatic polyarthritis, endocarditis, and diseases of parenchymal organs). It has long been established that the most effective preventive measures are those implemented from early childhood during the period of tooth tissue formation. For rational planning, organization, and implementation of effective preventive programs, comprehensive epidemiological dental surveys are necessary. These surveys provide data for situational

analysis of dental morbidity in the population and the identification of climatic, geographical, ecological, and social factors in each specific region. The absence of such data complicates the calculation of scientifically justified norms for the population's need for various types of dental care and reduces the effectiveness of therapeutic and preventive measures.

Epidemiological studies by Japanese authors (Ohsuka, K., Chino, N., Nakagaki, H., 2009) suggest that environmental factors predispose children in rural areas to develop dental caries. One such factor is the children's daily environment. Children who are cared for by grandparents are more likely to develop caries, as they are allowed to consume large amounts of sugary drinks.

Research by authors (Kuriakose, S., Prasannan, M., Remya 2015), conducted on a large clinical sample (1,329 preschool children), found that the prevalence of severe caries with multifactorial origins was 54%. Additionally, a positive correlation was found between caries and the child's age, place of residence, dietary habits, and oral hygiene habits. Scottish researchers (Levin, K.A., Davies, C.A., Douglas, G.V.A., 2010) demonstrated significant differences in dental health indicators between urban and rural areas of Scotland for children under 5 years old. In 2008, the caries rate among children in Scotland was 58% of those surveyed. Possible causes of these differences are discussed, as well as recommendations for future research.

Data obtained through epidemiological dental surveys of the child population allow for the identification of numerous morbidity criteria, assessment of their interconnections, and comparison of regional data according to the WHO standard. In Uzbekistan, comprehensive epidemiological dental surveys of the child population have not yet been fully conducted, mainly due to unstable economic and demographic conditions in certain regions. Dental care for children is primarily focused on treating those who seek care, while prevention is not given due attention.

THE AIM of this study was to assess specific risk factors for dental morbidity in preschool children (ages 3 to 6) living in six rural settlements of the Republic of Uzbekistan.

MATERIALS AND METHODS:

An epidemiological dental survey was conducted using standardized criteria (WHO, 1997) on 200 six-year-old children living in six regions of Uzbekistan: Kashkadarya, Karshi, Yakkabag, Mubarak, Dehkanabad, and Guzar. The data obtained from the survey were recorded on a standard form developed by WHO experts.

The dental examination data for 200 children (118 boys (59%) and 82 girls (41%)), aged 3 to 6 years, who permanently reside in rural areas of Uzbekistan, were collected.

In addition to the place of residence, specific risk factors, dental health, and oral hygiene culture that affect the prevalence and intensity of dental caries in children were studied.

RESULTS AND DISCUSSION

The analysis of pediatric dental records in the surveyed regions revealed a deterioration in dental care for children. Preventive dental exams

are not conducted, and modern technologies and dental materials are not used during treatment. Oral hygiene lessons are only held in kindergartens in the city of Karshi. This situation has led to the widespread presence of dental caries and its complications of varying intensity among the majority of children.

According to numerous sources, there is a clear understanding of how the health of the pregnant woman and the number of births affect the development and formation of the child's dentoalveolar system. Maternal diseases during pregnancy and frequent childbirth can disrupt the normal development of the child's oral cavity organs and tissues [4]. These factors were examined in the children of the surveyed regions.

The influence of infant feeding (artificial or natural breastfeeding) as a risk factor was also studied in the group (Table 2).

Table 1

Birth Order and Risk of Caries

Birth Order	Number of Children	Percentage (%)
1st	107	52.5
2nd	65	32.5
3rd and beyond	28	15.0

Table 2

Infant Feeding and Caries Risk

Feeding Type	Number of Children	Percentage (%)
Artificial Feeding	97	48.5
Natural Breastfeeding	103	51.5

As shown in Table 2, most children (103 children, 51.5%) were breastfed, while a significant portion (97 children, 48.5%) were artificially fed, which could be considered a risk factor for early dental caries.

Congenital dental anomalies in the development of the dental system and their timely correction are crucial for children's dental health. One of the preventive measures aimed at timely prevention of dental diseases is the correction of lip and tongue frenula. Among the children, the pathology of the oral cavity in the

form of a short frenulum of the tongue, known as ankyloglossia, was widespread. Normally, the frenulum length should be about 8 mm, which is sufficient for proper tongue function, speech, and the absence of complications. Developmental abnormalities of the frenula can significantly affect feeding, pronunciation, and can predispose children to various oral diseases. The survey results showed the presence of this pathology in the study group (Table 3).

The most common pathology was a short tongue frenulum (26 cases, 13%), followed by

Table 3

Condition of Frenula in the Study Group

Condition	Total (n=47)	Short Upper Lip Frenulum	Short Lower Lip Frenulum	Short Tongue Frenulum
Total cases	47	11	10	26

a short upper lip frenulum (11 cases, 5%) and a short lower lip frenulum (10 cases, 5%).

The process of forming the bite in children occurs in several important stages, each of which affects the development of bite anomalies. Malocclusions in children are diagnosed during routine check-ups. It is essential to address these issues promptly with preventive or therapeutic treatments. At the age of 6, children start losing their primary teeth and replacing them with permanent ones. The development of

malocclusion negatively impacts both dental health and overall health. Consequently, the state of the bite was studied in the group of children under examination.

In the study group (n=200), 62.5% of children had a primary dentition (milk teeth), while 37.5% had a mixed dentition. Malocclusions requiring dental correction were found in 18 children with a primary dentition and 5 children with mixed dentition (Table 4).

Table 4

Malocclusion in Children

Malocclusion Type	Number of Cases (n=23)	Percentage (%)
Distal	11	47.8
Mesial	7	30.4
Open Bite	3	13.0
Deep Bite	2	8.0

As presented in the table, distal malocclusions were the most common (11 children, 47.8%), followed by mesial malocclusions (7 children, 30.4%), open bite (3 children, 13%), and deep bite (2 children, 8%). Orthodontic care from a specialist is essential for these children. However, most parents do not prioritize this issue and are mainly concerned with the aesthetic appearance of their children's teeth and jaw system.

By the age of 3, a child's bite is typically formed,

and all primary teeth have erupted. Therefore, it is crucial for parents to be aware of any bite pathology early on and seek consultation with a pediatric dentist.

One of the significant risk factors for dental caries in children is the presence of oral hygiene habits and the culture of oral care. Through a survey of parents, we studied the frequency of children's tooth brushing (Table 5).

Table 5

Frequency of Tooth Brushing among Children

Frequency of Brushing	Number of Children	Percentage (%)
Brush 2 times a day	65	32.5
Brush once a day	59	29.0
Brush 2-3 times a week	25	12.5
Brush once a week	18	9.0
Do not brush at all	33	16.5

It was noted that in larger urban-type settlements (Karshi, Mubarak), the children's oral hygiene culture was much better. In these areas, most children followed oral hygiene practices, brushing their teeth 1-2 times a day—65 children (32.5%). According to parental surveys, they reported buying special children's

toothpaste and toothbrushes, with each child using their own individual toothbrush. The lowest adherence to hygiene practices was observed in the Guzar and Dehkanabad regions.

The survey also examined how often parents replace their children's toothbrushes (Table 6).

Table 6

Condition of Frenula in the Study Group

Region	Number of Children	Replacing Toothbrush Every 3-4 Months	Replacing Toothbrush Every 6 Months
Kashkadarya Region	44	37 (30.8%)	7 (8%)
Karshi Region	38	29 (24.1%)	9 (11%)
Yakkabag Region	33	15 (12.5%)	18 (22%)
Mubarak Region	37	21 (17.5%)	16 (20%)
Dehkanabad Region	18	6 (5%)	13 (16%)
Guzar Region	30	12 (10%)	18 (22%)
Total	200	120 (60%)	80 (40%)

Thus, the study of various risk factors for caries and other dental diseases among children in different regions of Uzbekistan reveals that the prevalence of dental anomalies and dental caries in preschool children living in rural areas is significantly higher compared to those living in urban areas. The high prevalence of dental diseases highlights the need for modernizing existing preventive programs for rural populations.

In 6-year-olds, both primary and permanent teeth were affected by caries. The DMF index values of 1.24 and 1.90 with caries prevalence rates of 18% and 23% in the Kashkadarya and Dehkanabad regions, respectively, suggest the onset of caries almost immediately after the eruption of permanent teeth. The ratio of components in the index ("C" = 0.90 and 1.36, "P" = 0.34 and 0.54) indicates an insufficient level of dental care for this group, although no extracted permanent teeth were registered.

In rural areas, the situation differed from that in Karshi. Primary teeth were affected by caries in 92% of 6-year-old children in the Guzar region and 84% in the Kashkadarya region, which is consistent with the identified risk factors in these areas.

CONCLUSIONS

The analysis of the dental status of preschool children in various regions of the Republic of Uzbekistan shows the prevalence and intensity of various dental diseases. Based on these findings, dental care for children should be planned with consideration for the identified diseases.

Children living in rural and environmentally disadvantaged areas show somewhat higher levels of dental caries. The data obtained provides valuable insights into the trends of dental diseases among preschool children and the level of dental care provided to the population, and can serve as a foundation for the development of preventive programs.

ETHICAL STATEMENT AND CONSENT TO PARTICIPATION

The study was conducted in accordance with the local ethical committee.

CONFLICT OF INTERESTS

The authors declare the absence of obvious and potential conflicts of interest related to the publication of this article.

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AVAILABILITY OF DATA AND MATERIALS

All data generated or analysed during this study are included in this published article.

AUTHORS' CONTRIBUTIONS

All authors contributed to the design and interpretation of the study and to further drafts. All authors read and approved the final manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

All applicable international, national and/or institutional ethical guidelines have been followed.

CONSENT FOR PUBLICATION

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ИСТОЧНИКИ ФИНАНСИРОВАНИЯ

Авторы заявляют об отсутствии финансирования при проведении исследования.

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Все данные, полученные или проанализированные в ходе этого исследования, включены в настоящую опубликованную статью.

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Все авторы внесли свой вклад в подготовку исследования и толкование его результатов, а также в подготовку последующих редакций. Все авторы прочитали и одобрили итоговый вариант рукописи.

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