



ASSESSMENT OF ORAL HEALTH CONDITION IN CHILDREN WITH DIFFERENT SOCIAL STATUS.

Health Science

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ABSTRACT

The field of medicine, such as pediatric dentistry for children and adolescents, has achieved the successes, which allows to realize one of the main tasks of the dentistry - to grow a child with healthy teeth and oral cavity. This may be achieved by introduction of the various preventive measures. However, the prevalence of dental diseases is significantly related to the population's social and economic factors. The aim of this review is to analyze statistical data on the spread of dental diseases in Georgia, and not only, against the background of this factor.

KEYWORDS

Children, Adolescents, Oral Health, Social Status.

INTRODUCTION

Oral diseases are prevalent worldwide (Peres et al., 2019). The caries and periodontal diseases are characterized by high prevalence among the oral diseases and are a global problem for the public health, however, especially their increasing prevalence is observed in low and middle-income countries and is associated with extensive social, economic and commercial changes (Kassebaum et al., 2017; Petersen et al., 2005). Periodontal diseases occur in about 50% of the adults, while about 11,2% of the world's population have a severe periodontitis (Kassebaum et al., 2014). Caries is the most common in permanent dentitions, it covers 2.4 billion of people, and early childhood caries are a silent global epidemic affecting 621 million of children (Kassebaum et al., 2015) that negatively affects their quality of life and well-being (Duangthip et al., 2020).

Etiology of Caries and Periodontal Diseases.

Both the caries and inflammatory diseases of periodontal tissues are diseases of the poli-etiological genesis, they can be caused by both external and internal, local and general, mental and socio-economic factors. The authors have combined the factors causing caries and periodontal diseases into two groups: groups of etiologic and pathogenetic factors. So called Cariesogenic bacteria belong to the etiologic factors (Elkhadem, Wanees, 2015). There are many ways to get these microorganisms into the mouth, although improper oral hygiene is named as the main cause of colonization of the mouth by these microorganisms (Ceron-Bastidas, Suares, 2018). The carbohydrate, exogenous and endogenous factors belong to the pathogenetic factors. Periodontal inflammatory diseases are defined as a pathological process that damages periodontal tissue and is expressed in the form of gingivitis and periodontitis (Grant, Stern, Listgraten, 1988, Jenkins, Collin, 1984). The main pathogenesis factor is a bacterial plaque, which is collected under the conditions of poor hygiene of the oral cavity. The general factors contributing to the development of the inflammatory diseases of periodontal tissues are digestive, endocrine, cardiovascular, hematopoietic diseases, diseases nervous systems, pathologies of the immune system (Ashraf 2017). At the same time, the evidences exist that the inflammatory diseases of the periodontium are not just a local infectious processes, and they are associated with the diseases of the different localization or general inflammatory diseases. (Winning, Linden, 2015, Souto, Rovai, Villar, Braga, Pannuti, 2019).

Dental caries, its complications and, as a result, the early extraction of the deciduous and permanent dentitions, is the cause of the appearance of deformation of the maxillofacial system, which can affect the aesthetic of visual, chewing function, facial harmony and psychosocial well-being (Perillo et al., 2013; Perillo et al., 2014). Untreated caries and its complications, such as toothache, directly cause decreased chewing function or asymmetric chewing (Gilchrist et al., 2015), a change in the distribution of functional occlusive contact. Prolonged unilateral chewing may cause the anomalies in facial growth and development, which leads to incorrect occlusion and maxillofacial deformities (Poikela et al., 1997; Zhang, Wang, 2003). The interproximal caries of mammary eaves and molars cause reduction of

mesiodistally crown. Adjacent teeth have the tendency to migrate toward the affected area, which may reduce the dental arch length. Loss of arch length may lead to problems associated with tooth displacement (De Oliveira et al., 2014) occlusal stability, (Sarita et al., 2003) dental crowding, (Howe et al., 1983) reduced chewing ability (Sarita et al., 2003), etc. Therefore, the correct prevention and timely treatment of caries, as well as the optimal recovery of morphology and function of deciduous dentitions is very important for children's dentists.

Global Burden of Oral Diseases.

According to the research of the Global Burden of Disease 2015 around 3,5 billion people all around the world live with dental diseases, mostly with untreated dental caries in the deciduous and permanent dentitions, severe periodontal disease, edentulism (complete loss of tooth), and severe tooth loss. (Kassebaum et al., 2017). Recent data 2015 shows that untreated dental caries of the permanent dentitions remains one of the most prevalent health condition in the world (34.1%). Unlike earlier data, the peak prevalence of untreated caries of permanent dentitions was observed in 2015 in a younger age group 15-19 (Kassebaum et al., 2017). From 1990 (31 407 cases for every 100 000 population) to 2017 (30 129 cases for every 100 000 population) there was only 4% of reduction in the prevalence of untreated caries. The global distribution of prevalence and inter-county variations were changed slightly during this period. Thus, the global problem of untreated caries in deciduous and permanent dentitions is remained relatively unchanged over the past 30 years, which usually contradicts with the information that the issue of caries has generally improved (Peres et al., 2019).

Studies in the United States have found that the prevalence of oral diseases is in a correlative relation with the age of the child: the prevalence of caries among the children under the age 1 is 1,1%, there are almost no periodontal diseases in this age group; in the case of children aged 2, 10.5% of American children had a dental caries, and 4.7% of the children of the same age had a periodontal diseases; the prevalence of caries among the children aged 3 was 22.6%; and the prevalence of caries among the four-year-old children was 28.8%, and prevalence of periodontal diseases was 46.6% (Ghazal et al., 2015). The studies like this also have been carried out in Australia, the results showed the prevalence of the oral diseases among Australian children aged 18 months was increased by 8% over the past 5 years, and by 36% among the Australian children aged 36 months (Owen et al., 2018).

According to the Global Burden of Disease study (2016), severe periodontal disease was the 11th most prevalent disease in the world (GBD, 2017). The prevalence of periodontal disease was within the range from 20% to 50% all around the world (Sanz, 2010). It is one of the main causes of tooth loss, which can be a risk for mastication, esthetics, self-confidence, and quality of life (Tonetti et al., 2017).

Reynolds, Duane, 2018).

Dental diseases impose a substantial economic burden on society (Listl et al., 2015). Economic burden of the dental diseases includes

the direct costs (treatment costs), indirect costs (loss of the productivity because of absence from the work and school), and intangible costs (e.g. pain, problems with biting, chewing and eating, tasting, speaking and the expression of emotions, e.g. smiling; they all are involved in social and family life) (Peres et al., 2019). Direct expenses for dental diseases in 2015 were estimated at 356.80 billion USD and indirect costs at 187.61 billion USD (Peres et al., 2019). As of 2015, the list of three diseases whose direct and indirect costs of prevention and treatment are the highest in the world is as follows: diabetes (119 billion euros); cardiovascular disease (111 billion euros); dental diseases (90 billion euros) (Chen, 2020).

Oral Health and Socioeconomic Inequalities.

The stark and persistent socioeconomic inequalities exist in the prevalence of oral diseases in a consistent and graded manner across the social hierarchy, serving as a classic example of a social gradient in health (Peres et al., 2019). The Dunedin (New Zealand) study showed that untreated dental caries in adulthood was negatively associated with socioeconomic status in the childhood (Poulton et al., 2002). Together with the increase of the social and economic status, number of poor oral health indicators was decreased. The Pelotas Birth Cohort study showed that poverty in at least one stage of early life (0-15 years) effects the dental caries, oral health-related behaviours, and use of the dental service at age 15. (Peres et al., 2007). The study revealed that at age 24, poverty in early life was associated with unsound teeth. (Peres et al., 2011).

In a review of Slade studies it was found that the prevalence of dental pain was in range 5%-33%, and increased in relation with child's age, caries severity and decreasing socioeconomic status (Slade, 2001).

Dental problems can cause absence from the school and can have a negative effect on school performance, and increase the social inequalities. (Petersen et al., 2005; Blumenshine et al., 2008; Jackson et al., 2011; Pourat, Nicholson, 2009; Guarnizo-Herreño, Wehby, 2012; Piovesan et al., 2012; Seirawan, 2012). A lot of the recent studies show that untreated dental caries and related oral problems permanently decrease the quality of life for the child and their caregivers. (Chaffee, 2017; Kramer et al., 2013; Wong et al., 2011; Do, Spencer, 2007; Krisdapong et al., 2009; Filstrup et al., 2003).

It is often recommended to strengthen the prevention of oral diseases (Pitts, Zero, 2016) in order to reduce the prevalence and severity of the disease that is consistent with the general health agenda (World Health Organization, 2013).

(Petersen, Kandelman, Ogawa, 2015) According to the researchers, oral health programs must be integrated into the national health programs, which the World Health Organization also underlines.

Very limited data are available on the proportion of dental budgets spent on various aspects of treatment. However, estimates for the Organisation for Economic Co-operation and Development (OECD) countries showed that spending on prevention across all health care is less than 3% of the total health care expenses (Gmeinder et al. 2017). The figures for all health care in the countries with low income are not available but it is known that the proportion of primary health care spend on prevention is higher than in the countries with high income, but the absolute spend is very low (\$26 per person/per year in comparison to \$1 303, in the USA, respectively) (World Health Organization 2019). One example of a cost-saving is the Childsmile program in Scotland (Anopa et al. 2015). In this national program, which includes the teeth brushing supervision in preschool institutions, calculated dental treatment costs decreased from 8.8 million pounds to 4.8 million pounds during 8-year period of existence of this program, while the annual cost of the program amounted to 1,8 million pounds. Financially the economy amounts to 2.2 million pounds in the 8th year.

However, the oral diseases are a neglected issue, rarely seen as a priority in the health policy. (Benzian et al. 2011). Oral health and dentistry have become somewhat isolated and marginal in health policy and the health-care system. The existing model of dental care and clinical preventive approaches does not solve the issue of the global burden of oral diseases. The so called "Westernized" model of the modern dentistry (focused on high technologies and treatment) is not available and acceptable in many low-and middle-income countries (Yee & Sheiham, 2002). Dentistry, even with the presence of

resources, does not meet the needs of the masses of the country's population and increasingly concentrates on providing aesthetic services, which is caused by the desire of profit-making and consumption (Holden, 2018). A radically different approach is needed to overcome the global challenge of the oral diseases. Dental diseases are a complex problem and social and economic status is an important risk factor for its development, especially among the children. (Bast, Nordahl, 2015; Geboers et al., 2018). In order to solve this problem, the development of the multiprofessional measures and its full adaptation in practice is necessary. Children from the families with low economic capacity are particularly vulnerable to this group of diseases. The faulty insurance system is considered as a main cause of the high prevalence of the disease by the researchers, the main shortcomings of which are considered its low covariance and a poor access to the dental services in the packages (Cheng, Emmanuel, 2015; Baggio, Abarca, 2015; Innes, Frencken, 2016; Dusseldorp, Kamphuis, 2015; Bast, Nordahl, 2015; Geboers, Reijneveld, 2018, Hofstetter, Dusseldorp, 2016.)

At the end of 2019, the 2020 State Program for Social Rehabilitation and Child Care was developed and published by Georgian government, which came into force in 2020. The aim of this program is to improve the physical and social situation of the persons with disabilities (including children), elderly and children deprived of family care, homeless children and children at risk of abandonment and their integration into society, as well as to help families with children in crisis. However, the above-mentioned order does not hold an appropriate place for oral health and its provision. Dental services are only funded only in acute, urgent cases. A similar situation is in the insurance sector, which is one of the most important sectors of modern healthcare and where the deficit of the dental sector is sharply felt in terms of supply of care, on the one hand, and dental service, on the other hand.

The cohort involved in the prevention and deinstitutionalization of child abandonment, who are deprived of parental and family care, at the same time suffers from a sharp shortage of the preventive measures for caries and other dental diseases, which naturally is a great risk of developing of these diseases.

The fact is that the realization of mass prevention of each disease is possible only through the specific programs that meet the registrable objectives, include effective methods of access and can actually provide funds and personnel. In the case of the dental diseases the first stage of preventive work is the examination of the prevalence and intensity of dental caries and periodontal diseases among the children. Based on this, the cohort deprived of care involved in the prevention and deinstitutionalization, as a population existed in the reality of the shortage of preventive measures, should definitely be subjected to the comprehensive dental examinations. There is no data on the dental status of children and adolescents deprived of care included within the leaving prevention and deinstitutionalization process in Georgia. In this regard, it is relevant to conduct the studies aimed at studying the dental morbidity among a given contingent of the population, justifying the need for the dental care in order to develop an adequate service system for integration into the state insurance. Thus, all of the above-mentioned has defined the relevance of this study and became the basis for its conduction.

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