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Prevalence of Dental Caries in the Municipality Gorazde During the Period 2007-2012

Emsudina Deljo¹, Semra Cavaljuga², Belma Meskovic³Health center Gorazde, Gorazde, Bosnia and Herzegovina¹Faculty of medicine, University of Sarajevo, Bosnia and Herzegovina²Faculty of Dental medicine, University of Sarajevo, Bosnia and Herzegovina³

Corresponding author: Emsudina Deljio, MDD. Mr. sci. Health center „dr. Isak Samokovlija“ Tel/Fax: +38738221072.

E-mail: emsudinab@hotmail.com

ABSTRACT

Introduction: Dental caries today, regardless of known multi causal etiology of the disease and the possibility of its effective prevention still represents the most widespread disease of our civilization, which affects about 95% of our population. It affects all populations and age groups and is a disease that is very difficult to completely eradicate due to a complex interaction of biological factors, eating habits, social status Etc. **Goal** is to report the prevalence of dental caries, DMFT-index and DMFT index in the first and seventh grades of grammar school in the municipality Gorazde during the last six years. **Material and methods:** Children, which have yet to enroll in school and in the seventh grade children, have required medical examinations. A total of 1198 first grade and 1666 seventh-grade students are included. To determine the prevalence of dental caries DMFT was used. Examinations are carried out in accordance with the methodology and criteria of the WHO, by a dental mirror and dental probe. **Results:** The prevalence of dental caries is extremely high as well as the values of DMFT index in the first and seventh grades in the municipality Gorazde. **Conclusion:** In practice it is necessary to introduce prevention programs for pregnant women, toddlers, preschool and school-aged children with a wider use of the mass media.

Key words: oral health, DMF index, children, Municipality Gorazde.

1. INTRODUCTION

Caries is today, regardless of familiarity of its multi causal etiology of the disease and the possibility of its effective prevention still the most widespread disease of our civilization, which affects about 95% of our population. It covers all populations and age groups (1), and is a disease that is very difficult to completely eradicate due to a complex interaction of biological factors, eating habits, social status, etc. (2).

Although it rarely leads to dramatic medical states as some other diseases, tooth decay may be a cause of many disorders in the body (3).

In the oral cavity due to carious destruction of tooth structure is reduced chewing ability, because it can cause pain and insufficiently chewed food can cause disturbances in the gastrointestinal system, which over time can cause irreversible changes in the mucosa of the stomach and intestines. Sharp edges of by caries damaged teeth irritate oral soft tissue and enable the development of various diseases due to local irritation, such as gingivitis, glossitis, stomatitis and even precancerous lesion. Progression of caries to the pulp opens the door to bacterial invasion

of the body and can cause various diseases such as osteomyelitis, osteitis, various forms of abscess, phlegmon, acute and chronic lymphadenitis and sepsis. It has possibility to create a secondary disease of the skin, eyes, heart, lungs, kidneys and the joints (4).

According to the definition of the World Health Organization (WHO) the term caries implies local, pathological process of exogenous origin, with progressive flow of universal nature and unclear etiology (5), but one of the best definitions, which also provides further guidance for its effective prevention has been given by professor Loesch: “Tooth caries is a chronic, complex bacterial infection, which results in milligram loss of minerals from the tooth, which is affected by the infection. Despite multi causal etiology, the main factors are bacteria and eating habits, which ensure conditions for disease development and its detection” (6).

2. MATERIAL AND METHODS

This research was conducted in the municipality Gorazde from 2007 to 2012. Systematic examinations of children attending the first and seventh grade are carried out each year

by the WHO recommendations and are performed in the dental clinic of Primary Health Care Center in Gorazde. The research was conducted using cross-sectional epidemiological study, also called prevalence study, so to measure the incidence of dental caries among children examined the prevalence was calculated (%).

Included are children who attended the first and seventh grades of primary schools in the municipality Gorazde. The total number of students is shown in Table 1.

	2007	2008	2009	2010	2011	2012	Total
First grade students	242	223	192	184	176	181	1198
Seventh grade students	212	285	408	347	141	273	1666

Table 1. Total number of students

Assessment of oral health:

Examinations students were carried out in the dental clinic of the Primary Health Care Center Gorazde with unique access to all respondents (7).

All data that were determined by examination were entered into a single chart, which is used during regular check-ups at the Health Care Center (Figure 1).

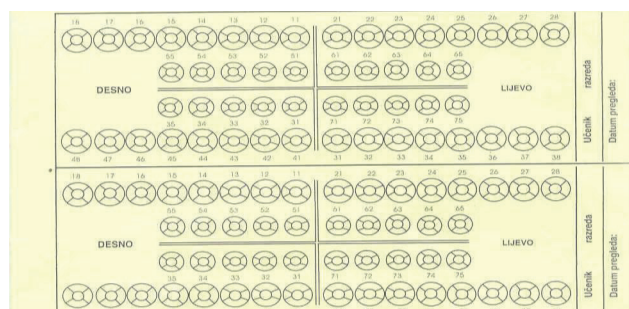


Figure 1. Patient chart for the systematic review

The data, which were entered in this chart are obtained on the basis of an objective review, which was carried out by dentists, skilled for this type of research (8,9).

DMF index

For the analysis of caries prevalence in populations most commonly is used DMF index (D-Decay, M-Missing, F-Filled), also called the Klein-Palmer Index. This index is simple, fast and versatile diagnostic tool to assess the state of the teeth. For baby teeth is used is DMFs index. If for a statistical analysis is

Labels for deciduous teeth	Labels for permanent teeth	Teeth status
A	0	Healthy
B	1	Carious
C	2	Filled with caries
D	3	Filled without caries
E	4	Extracted due to caries
	5	Extracted due to some other reason
F	6	Cast fissure
	7	Girder bridge, porcelain cover etc.
	8	Unrupted tooth
T	T	Trauma
	9	Unregistered permanent tooth

Table 2: Codes for determination of dental status

taken the whole tooth, then this index is marked as DMFT and if only tooth surface is taken then it is called DMFS.

In determining the dental status was used visual and tactile methods of caries detection with the help of a flat dental mirrors and probes. Testing was done with one on the adjacent tooth.

To mark the teeth were used letters for baby teeth and permanent teeth numbers for the codes listed in Table 2.

The basic criterion for the presence of teeth was to have at least one active area of the studied teeth.

In the case of the presence of milk and permanent teeth at the same place the presence of permanent teeth was registered (9).

DMFT values were calculated as $D(1+2)+M(3)+F(4)$

3. RESULTS

First grade:

The prevalence of dental caries in children in the first grade

The prevalence of dental caries in children who are just enrolled in school in the municipality Gorazde is extremely high, as it can be seen in the Figure 2.

DMFT for children in first grade

DMFT-index in children in the first grade in the municipality Gorazde ranged from 7.93 to 9.86. Over 90% of the DMFT-index makes untreated tooth caries. Fillings of primary teeth are very scarce as structure itself, as well as value of DMFT index shown in Figure 3 and 4.

DMFT index for children in first grade

DMFT-index in children in the first grade in the municipality Gorazde has a tendency to change the structure of DMFT index in favor of repaired teeth.

Also is encouraging the fact that in 2009 there was not a single extracted tooth.

Seventh grade:

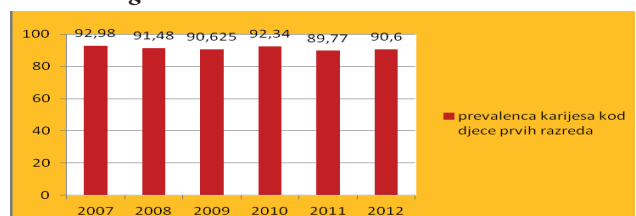


Figure 2. Prevalence of dental caries in children in the first grade

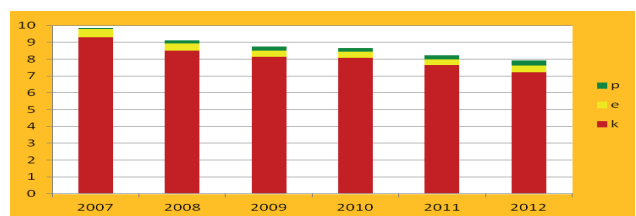


Figure 3. Structure of DMFT index among first grade students in the municipality Gorazde

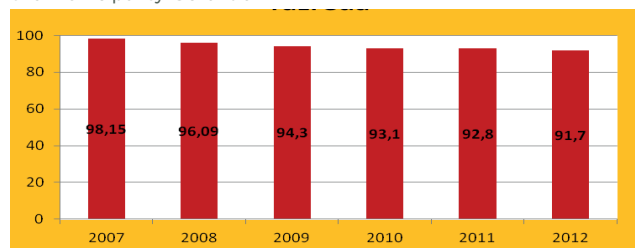


Figure 4. The value of DMFT index among first grade students in the municipality Gorazde

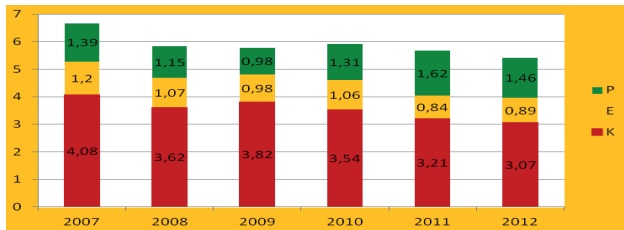


Figure 5. The prevalence of dental caries in children of seventh grade

The prevalence of dental caries in children of seventh grade

Neither among the seventh grade students the situation is not much better. Caries prevalence ranging from 91.7% in 2012 to 98.15% in 2007, which can be seen in the Figure 5.

DMFT for children seventh grade

Analyzing the intensity of caries in the municipality Gorazde among children of seventh grade, we came to the result that the DMFT index in the period 2007-2012 range from 5.42 in 2012 to 6.67 in 2007.

The largest component of DMFT index is still untreated caries, although there is apparent positive trend in terms of increase in recently healed teeth.

4. DISCUSSION

DMFT-index in children in the first grade in the municipality Gorazde during the period 2007-2012 ranged from 7.93 to 9.86.

In the study published in 1987 Hatibovic presented the fact, that the average DMFT index of six years old children in Bosnia and Herzegovina 6.54, while Vrbic in his study that year reported that the average DMFT index of six years old in Bosnia and Herzegovina was 7.3 (10,11).

Kobaslija et al. in study conducted 1999 in Sarajevo found that the average DMFT in children at age from 5-7 years was 7.53, with caries prevalence of 89.6% (12).

Selimovic-Dragas in the study, which was carried out in Sarajevo in 2001 listed information that the average DMFT index at six year-old children in Sarajevo was 8.32 to 8.74, depending on whether the child was born or came to live later in Sarajevo (13).

Deljo in extensive research conducted in 2008 in the Bosnia-Podrinje Canton, which center is municipality Gorazde determined that the DMFT index for children at first grade was 9.26 (14).

DMFT-index for five-year olds in Denmark amounted to 1.0 in 2001, in Norway 1.4 for 2005. In Finland, 56% of six years old was without any teeth with caries in 2000 (15-17).

According to a study from Portugal, which was published in 2003 the prevalence of dental caries in six year-old children was 46.9% and the average DMFT index in this age group was 2.1 (18).

In Saudi Arabia, according to a study from the 2006 the caries is registered in 96% of children at the age of six, and the DMFT was 8.06 (19).

In Western Europe, the United States, or in the developed industrial countries caries is becoming rarer (20,21). The main reasons for the reduction in the prevalence of dental caries and periodontal diseases are conducting systematic school-based prevention programs and health education programs, then mass and continuous application of fluoride, improved oral hygiene, more sensitive approach to the consumption of sugar, as well as

changes in lifestyle and living conditions (22,23).

In Finland, there were 56% of six years old children without any teeth caries in 2000, while the DMFT for this age group was 0.2, while the value of DMFT index in seven year old in Norway amounted to 0.1 (15-17).

DMFT in children of seventh grade ranged from 5.42 in the 2012 to 6.67 in 2007. These values do not differ much from the values from Vrbic study, which was conducted in 1986, where it was found that the DMF index was 6.3 (10). Hatibovic in 1987 found that the average DMF index at twelve years old in Bosnia and Herzegovina is 6.15 (11). Ivankovic in his research from 2003 determined value of DMF index of 6.2 with the prevalence of caries of 94% (24). Sulejmanagic et al (2000) presented data that the DMF index at twelve years old in Bosnia and Herzegovina was 6.10 (25).

Deljo in his research from 2008 determined DMFT index in children of seventh grade at 5.84 (26). Something better oral health is determined in 2008 by Muratbegovic in his research from the entire territory of Bosnia and Herzegovina, and is registered DMFT-index for B&H of 4.16 for twelve years old, with a prevalence of 91% teeth affected by caries (27).

Worse values of DMF index of 7.9 and prevalence of caries of 98.25% were recorded in Montenegro, but much better value is registered in Italy: DMF index 1.09 and caries prevalence of 43.1% (28,29). For the twelve years old in Portugal DMFT was 1.5 and the prevalence of caries was 52.9% (17).

There are many reasons for such a poor state of oral health in Bosnia-Podrinje Canton. The first reason is the low level of knowledge among parents about oral health, especially in the primary dentition, and rare are parents which bring the child to the dental clinic before the onset of acute symptoms. A large number of parents do not know that the "sixes" are permanent teeth, or why baby teeth are important and need to be brushed regularly.

One important reason is the insufficient amount of fluoride, which is introduced into the body, because the natural water in Bosnia and Herzegovina is deficient in fluoride.

Probable cause may be a lack of prevention programs, which can be implemented in early childhood and the lack of pre-school dental clinics. In Bosnia-Podrinje Canton there isn't a single specialist pediatric dentists but with children are working polyvalent dentists, who, due to the volume of work preferred permanent dentition, and to the primary teeth are not given special attention.

Based on the results of this epidemiological study and comparison with similar studies it can be concluded that in the area of Bosnia-Podrinje Canton oral health is a major health and social problem. This finding is in some way are warning alarm for the health care system but also for the whole society.

Improving oral health and dental health can only be achieved if the programs for the promotion of oral health and disease prevention are implemented at the community, region or state level. To lead to improvement of oral health it is necessary to find effective modes for solving problems related to oral health, putting emphasis on the organization of primary health care system and the introduction of measures and prevention programs that will provide optimal results in the future period.

5. CONCLUSION

Since the state of oral health in Bosnia-Podrinje Canton is really poor, it is necessary as soon as possible to introduce into practice a preventive program for children aged up to 15 years, which would in the near future give positive results. Then it is necessary the involvement of all sectors of health and education in the prevention of oral diseases and risk factors for oral diseases, as well as wider use of the mass media in order to improve and strengthen individual awareness about the importance of oral health.

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