

## **Utilization of the WHO programs in monitoring of oral health among Belarus population**

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### **Introduction**

During the past three decades, a dramatic reduction in dental caries has been noted in children in the majority of countries, particularly in Western Europe. Oral diseases in general, however, remain an important health problem among adults and elderly everywhere. Indeed, according to the World Health Organization publication [1, 2], the incidence of dental caries will increase in many of the developing countries until preventive measures are implemented effectively.

While there has been some success in improving oral health status in many countries, a large proportion of the world's population remains well short of the global oral health goals set by WHO for the year 2000. This is particularly true for more than 350 million people living in eastern and central Europe, where the prevalence of dental caries is in "moderate" level and where periodontal diseases affect even children.

One of WHO's policies for the prevention of oral disease is the promotion of simple, efficient, and effective oral hygiene measures through practical, community-based programs. Dental caries is to a large extent preventable by such simple measures as the systemic and/or topical use of fluorides and the adoption of a prudent diet; future approaches to caries management are expected to be geared more towards prevention than towards treatment alone. Chronic periodontal diseases can also be prevented by appropriate oral hygiene measures if these are started early in childhood and continued throughout life. This approach is well documented and its effectiveness is supported by data showing that periodontal disease is declining among the younger age groups of the populations of certain industrialized countries.

### **Rationale**

In 1969, the WHO Global Oral Data Bank (GODB) was established to monitor the disease trends in the world, and WHO's Oral Health program promoted the collection of epidemiological data by offering data analysis free of charge to those who used WHO standard methodology. This opportunity was particularly interesting for countries with minimal resources. A "pathfinder" methodology was proposed in the oral health survey with the aim of enabling administrators to obtain working estimates of oral health status very rapidly and to develop national oral health programs.

In May 1981, the World Health Assembly adopted a global oral health status indicator - an average of no more than three decayed, missing, or filled permanent teeth (DMFT) at 12 years of age by the year 2000. This goal was developed jointly by the WHO Oral Health program and the FDI (World Dental Federation). Since that time, data on caries levels have been regularly updated by WHO.

The overall value of DMFT (3.5) in the former USSR (including Belarus) was appreciably lower than in many other industrialized countries, but - perhaps unsurprisingly in view of the vastness of the territory - wide variations were apparent, both in the level of dental caries and in trends. The most recent data show that, among countries with transitional economies, the number in which DMFT values exceed 3 has decreased [3].

### **Objectives**

The main objective of this study was to evaluate the significance of WHO oral health criteria to the national oral health information systems. It was the authors' intention:

- to perform a national oral health survey among key age groups of the population in Belarus;
- to analyze the progress in achieving the WHO long-term oral health goals;
- to develop general recommendations based on the results of the study.

## Materials and methods

A stratified cluster sampling technique was used, in accordance with WHO's recommendations [4] and samples were drawn from the most important subgroups of the population - ages 6, 12, 15, 18 and 35-44 years. The sampling sites chosen were all six provinces in Belarus. Each group at each site contained 50 or more subjects. A total of 1937 subjects were surveyed. Survey data were recorded using the 1986 WHO Oral Health Assessment Form, and a team of four dental epidemiologists from Belarus was calibrated to ensure appropriate assessment of the oral health status.

For inter-country and global comparison of the national oral health data obtained, the authors used previous studies [5]. A suitable computer program was used to calculate mean values and standard deviations (SD), and to determine statistical significance (t-test) when necessary.

## Republic of Belarus

The Republic of Belarus has a population of approximately 10 million. Children under 14 years of age make up 20.6% of the population and elderly people about 20%. Dental care is carried out in the state polyclinics and dental surgeries; in 2002 there were 5482 dentists. Oral health in Belarus has been monitored since 1960.

During the 1990s, the Republic of Belarus started collaborating with WHO in the development of oral health programs. This undertaking coincided with increasing international cooperation and assistance in all aspects of oral care, including prevention.

## Oral health survey data and WHO goals

Details of the prevalence of dental caries in the Republic of Belarus are summarized in Table 1 and data on the periodontal status of the population in Table 2. Collection of these data provided the opportunity to assess the trend of dental caries in Belarus in terms of WHO's long-term goals or oral health criteria.

The mean number of healthy sextants by CPITN (Community Periodontal Index of Treatment Needs) in 15-year-old children according with the proposed WHO goal for the year 2010 should be at least 5. In the present study, an average of only 0.9 sextants were healthy, with values ranging from 0.65 to 1.0 different localities. Among 18-year-olds, the national average for healthy sextants was 0.5 ranging from 0.5 to 0.8; the proposed goal of the WHO Regional Office for Europe (EURO) for 2010 is at least 4 healthy sextants.

In the 35-44-year age group, the proposed WHO/EURO goal for the year 2010 is no more than 0.1 sextant with a CPI score of "4". Among this section of the Belarus population, an average of 0.2 sextants (range 0.1-0.3) had a CPI rating of "4", with an average 0.2 sextants excluded (and possibly reflecting an even worse condition).

More significant periodontal conditions were recorded among 65+ -year-olds (survey

Table 1. Prevalence of dental caries in Belarus

Age group (years)	Number	Percentage of subjects affected	Average no. of teeth			
			Decayed (D)	Missing (M)	Filled (F)	DMFT
6	450	95	-	-	-	6.6 (dmf)
12	300	92	1.5	0.1	1.4	3.0
15	410	92	1.6	0.2	2.9	4.7
18	384	94	2.3	0.4	4.1	6.8
35-44	393	100	2.1	6.5	5.2	13.8

**Table 2.** Prevalence of periodontal disease (by CPITN) in Belarus

Age group (years)	Number of subjects	Percentage with CPITN score of 0-4					Mean number of sextants per subject					
		0	1	2	3	4	Healthy (0)	Bleeding (1+2+3+4)	Calculus (2+3+4)	Pockets		Excluded (x)
		Shallow (3+4)		Deep (4)								
15	410	0.2	6.7	78.5	14.6	0	0.9	5.1	3.7	0.2	0	0
18	384	0.2	1.6	70.0	28.0	0.2	0.6	5.4	4.3	0.5	0.003	0
35-44	393	0	0	24.2	62.5	13.3	0.1	5.7	5.2	2.2	0.2	0.2

data available in separate publication). For this group, however, comparison with WHO goals was difficult because of the large number of excluded sextants. It is believed that the CPITN "4" indicator lacks validity for individuals aged 65 and over.

For 15-year-olds, the WHO/EURO goal for the year 2010 is for 100% of individuals to retain complete dentition. The survey in Belarus showed that the average number of missing (extracted) teeth in this age group was 0.2, with a range of 0.1-0.3 in the different provinces, in the 35-44-year age group, the average number of extracted teeth was 6.5, ranging from 6.1 to 7.3.

Percentage of edentulous individuals aged 65 years and over was varying for the different provinces ranging from 11.3 to 28.6. A lack of reliable information made it impossible to evaluate the trend of this criterion.

Among the 15-year-olds surveyed, an average of 92% were affected by dental caries. Average DMFT was 4.7. Relatively small proportion of children in these age groups was reported to have fillings: 50% of 12-year-olds and 62% of 15-year-old subjects.

The number of extracted permanent teeth was varying from 0.1 for 12-year-olds and 0.2 for 15-year-olds; this reflects a low promotion of dental care. In the 35-44-year age group, recorded prevalence of dental caries was 100%, with an average DMFT level of 13.8. About 50% of the DMFT were extracted teeth.

Temporary dentition status at age 5-6 years was evaluated among children attending kindergartens in 13 localities. Prevalence of dental caries ranged from 81 % to 100% (average 95%), and dmft value was 6.6, indicating a high level of the disease across the country.

## Conclusions and recommendations

Practical application of oral health programs in Belarus has proved the acceptability of the WHO oral health criteria in the national oral health information system. All criteria tested, with the exception of CPI "4" in the 65+ year age group, are very effective for evaluating the oral health of a population and for monitoring the trend towards WHO's long-term oral health goals. The criteria provided a unique possibility to compare the national oral health parameters with the situation in other WHO Member States.

Oral health promotion and oral disease prevention based on systemic or topical uses of fluorides should be the first priority for national programs. Primary health care and community oral health activities are also important elements. Undertaking a comprehensive comparative study of fluoride exposure, intake, and utilization at different levels of environmental fluoride would probably be extremely valuable.

Research and community trials have demonstrated the likely benefits of several preventive methods in Belarus. However, the methods are not necessarily appropriate in other CIS countries; for example, the implementation of salt fluoridation requires infrastructure and technology that may not be available.

Self-care and a healthy lifestyle are emphasized in our recommendations, including the use of fluoride toothpastes and strictly limiting consumption of caries-inducing snacks. In developing oral health programs for older adults in countries of the CIS, priority should be given to preventive and minimum intervention approaches that can bring about decisive improvements in health and quality of life.

Use of WHO health objectives and epidemiological principles in this study made it possible to identify the approaches that are effective in improving oral health and that might

guide other communities in developing systems suited to their own health and socioeconomic status.

## References

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