

DENTAL HEALTH RELATED TO FLUORIDE DEFICIENCY IN DRINKING WATER

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Introduction. Water is the major medium of fluoride intake by humans. Fluoride in drinking water can be either beneficial or detrimental to health, depending on its concentration. At present, it is considered that certain fluoride deficiency in drinking water and in the body is accompanied by an increase in the incidence of dental caries, which is one of the most widespread pathological processes in modern humanity. Previous studies in this compartment have shown that in areas with very low concentrations of fluoride in water, lower than 0.5 mg/L, the incidence of tooth decay is increased, which is 3-4 times higher compared to areas where the fluoride concentration is optimal.

Material and methods. Hygienic, sanitary-chemical and statistical investigation methods were used. The results of the laboratory investigations, carried out during the audit monitoring of the drinking water quality from the underground sources, from all the territorial administrative units of Republic of Moldova, for the period 2015-2019 were evaluated.

The dynamics of the incidence and prevalence of dental caries in the population of students in the schools of Republic of Moldova was studied over a period of 15 years (2005-2020), based on the results of medical examinations (f-12 A) retrieved from the Department of Nutritional Health and youth of the National Agency for Public Health.

Results. The population that uses water from surface sources is usually exposed to low concentrations of fluoride. However, the results of the current study indicate that very low levels of fluoride are also found in some groundwater sources. It was found that in all the investigated artesian wells, investigated in the republic, an average fluoride concentration below 0.5 mg/L was registered in Chisinau municipality- 58.4% and Soldanesti district – 66.7%. The results of the estimated fluoride deficiency concentrations in water from the public wells of the republic, showed an average of under 0.5 mg/L found in Leova districts – 84.0%, Nisporeni – 91.9%, Călărași – 84.5%, Soldanesti – 62, 5%, and Straseni district –64%.

Moreover, the spread of dental caries among students living territorially and geographically in Republic of Moldova was studied. The average level of morbidity due to dental caries during the years 2005-2020 is $162.11 \pm 3.98^{0/000}$ incidence and $89.4 \pm 4.34^{0/000}$ prevalence. Dental caries in the period under observation ranges from 4.1% to 4.6% incidence and from 4.3% to 5.1% prevalence in the general morbidity structure included in that category.

Conclusions. The greatest preventive effect of dental diseases (from 40 to 70%) is provided by the fluoride intake found in drinking water. It is obvious that the population in the above-mentioned districts with fluoride-deficient groundwater sources is exposed to a major risk of tooth decay, which, according to some authors, is estimated to 90%. It should be mentioned that a level above the average in incidence and prevalence rate of dental caries is characteristic for students within 43.8% of administrative-territorial units from the Republic of Moldova. Dental caries prevention measures are easier to implement by using fluoride-containing toothpastes, eating fluoride-rich foods, and maintaining dental hygiene.