

## THE PHARMA INNOVATION - JOURNAL

# Prevalence and intensity of parodont tissues diseases in children with catarrhal gingivitis living in environmentally unfavorable areas of Lviv region

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A dental examination 872 children aged 7-16 years, living in environmentally unfavorable areas of Lviv region was conducted. The CPI index was used for the assessment of intensity of parodont tissue inflammation. It was found a significant intensification of inflammatory processes in parodont tissues and prevalence of options bleeding gums and dental calculus in children with catarrhal gingivitis. The prevalence and intensity of inflammatory processes of parodont in children living in ecologically unfavorable regions is significantly higher than in those with conditionally «clean», which can be caused not only by objective somatic, social and dental factors, but also the negative environmental factors.

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*Keyword:* Unfavorable environmental factors, inflammatory diseases of parodont tissues, dental status of children, catarrhal gingivitis.

### 1. Introduction

Research from different countries clearly indicate the negative impact of unfavorable environmental factors on the health of child population [5, 6, 7] and show that in the polluted environmental conditions grows total morbidity, the number of children with chronic diseases, morphological and functional abnormalities increases, the number of healthy children reduce [2, 8, 9].

The children have especially sensitive to the effects of negative environmental factors because of age immaturity of protective and adaptive mechanisms, and the state of health of younger generation can be considered as the most important indicator of the state of environmental conditions [6, 7, 8]. It was found the overall morbidity of children in contaminated areas in 2,0-5,0 times higher than in relatively clean [2, 9], and given the socio-economic conditions in the

areas of environmental preservation voltage is possibly to expect the negative trends in formation of the children's health due to the increase of diseases bronchopulmonary and cardiovascular systems, diseases of the digestive and urinary system, mental disorders and allergic reactions [9].

The formation of dental health is influenced by the same factors that formation of somatic health. Adverse influence of ekopathogenetic factors contribute to the increased frequency of dental caries and parodont disease, non-carious defeats of teeth. In particular, the prevalence of dental caries in children residing in contaminated areas is 34.0-97.0% and in some areas reaches 100% with the intensity of defeat from 4.5 to 7.2 tooth. The prevalence of enamel hypoplasia and fluorosis permanent teeth ranges from 6.4 to 62.0 %, the incidence of parodont tissues - 14.5-77.2

% of the children of dentoalveolar anomalies from 47.0 to 60.0 % [1, 7, 10].

The problem of periodontal pathology in children defined as the prevalence of diseases and the fact of delay treatment in childhood and adolescence subsequently leads to severe irreversible lesions of parodont tissues in adulthood. According to WHO experts in 80% of the child population are recognized particular characteristics or the whole complex of symptoms of parodont inflammation [1, 7].

Considering that ekogeochemic system of Sokal district in Lviv region is a multicomponent, and the cumulative effect of different environmental factors leads to the intensification of parodont disease in children, **the purpose of research** was to determine the intensity of inflammatory processes in parodont tissues of children living in unfavorable environmental conditions using the CPI index.

## 2. Materials and methods

The research covered three towns of Lviv region (Dobrotvir, Chervonograd, Sosnivka), the area of

which is environmentally unfriendly and Lviv condition which is characterized as a conditionally «clean region». 872 cards of examination were used for the assessment of parodont tissues of children in educational institutions in Lviv and Lviv region aged from 7 to 16 years. The CPI index was used for the assessment of degree of inflammation parodont tissues in children. The survey data were entered into the developed extended map, that can be compared with WHO standard form [4, 11]. The results were processed statistically using the Student's test.

## 3. Results of the investigation and their discussion

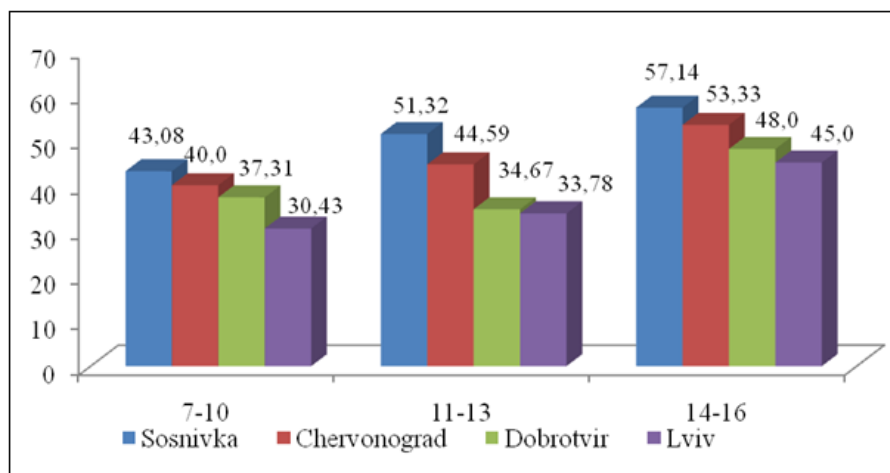
Analysis of parodont status in children of the CPI (Table 1) showed that the majority of children with intact parodont concentrated in Lviv (55.89)% that was at 1.13 times and 1.3 times more regarding the number of children with dental health from Dobrotvir (49.23)% and Chervonograd (42.81)% respectively, and 1.6 times higher than the data examined in Sosnivka (34.46)%.

**Table 1:** State of the parodont tissues in groups of research for the CPI index

| Town         | Symptoms of parodont defeat |                                      |  |                                |                                      |
|--------------|-----------------------------|--------------------------------------|--|--------------------------------|--------------------------------------|
|              | Intact parodont, %          | Prevalence of symptom of bleeding, % | Intensity of symptom of bleeding, sextants | Prevalence of dental plaque, % | Intensity of dental plaque, sextants |
| Dobrotvir    | 49.23                       | 39.99                                | 1.76                                       | 10.77                          | 0.62                                 |
| Sosnivka     | 34.46                       | 50.51                                | 2.15                                       | 15.03                          | 0.81                                 |
| Chervonograd | 42.81                       | 45.97                                | 2.07                                       | 11.21                          | 0.62                                 |
| Lviv         | 55.89                       | 36.40                                | 1.35                                       | 9.84                           | 0.32                                 |

Prevalence of symptoms of bleeding gums in children from Sosnivka was the highest (50.51)% with intensity (2.15) affected the sextant. High prevalence of gingival bleeding was observed in the examined of Chervonograd - (45.97)% with intensity (2.07) affected the sextant. Prevalence of symptoms of bleeding gums was the lowest in the children of Lviv - (36.40)% with intensity destruction (1.35) sextant. Prevalence of plaque

in the children from Sosnivka (15.03)% with intensity of the affected sextant (0.81) was higher than those in the examined Lviv (9.84) % with intensity (0.32) affected sextant and in 1.5 times, and in average, 1.3 times were more similar data in children of Dobrotvir and Chervonograd ((10.77%) and (11.21%)), respectively, at the intensity of the plaque (0.62) of the affected sextant in both groups.

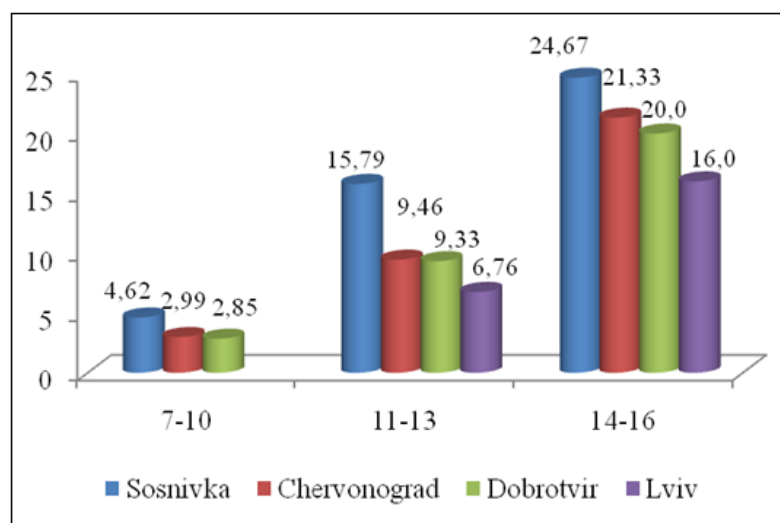


**Fig 1:** Prevalence of bleeding gums for the index CPI in study groups depending on the age

Analysis of structure of the CPI index for the option «bleeding gums» has found that children from Sosnivka (43.08)% and Chervonograd (40.0)% of this component was in 1.3 times, and the children from Dobrotvir (37.31)% in 1.2 times higher than the same index compared to the children from Lviv (30.43)% aged 7-10 years. The prevalence of bleeding gums in children from Sosnivka was (51.32)% in 1.5 times aged 11-13 years and in those examined Chervonograd (44.59)% in 1.3 times higher relatively the similar data of Lviv (33,78)%. It should be noted that the prevalence of bleeding gums in children of Dobrotvir, in this age, with a

value (34.67)% did not differ from the rate of children living in Lviv. The index CPI for the parameter «bleeding gums» aged 14-16 years, the children of Sosnivka (57.14)% and Chervonograd (53.33) % higher than similar data in children of Dobrotvir (48,0)% and Lviv (45.0)% 1.3 and 1.2 times, respectively.

The prevalence of dental calculus by the CPI index in group children study at the age of 7-10 years has shown that examined of Sosnivka (4.62)% prevalence of dental calculus was 2.0 times higher in relation to children of Chervonograd (2.85)% and Dobrotvir (2.99)%.



**Fig 2:** Prevalence of dental calculus for the CPI index in study groups depending on the age

There is a significant increase in the prevalence of dental calculus by the CPI index in study groups aged 11-13 years. Thus, dental calculus was diagnosed at (15.79)% of cases in the children from Sosnivka, that was 1.7 times more compared to the data of children from Chervonograd (9.46)% and Dobrotvir (9.33)% and in 2.3 times higher than the value in examined children and adolescents of Lviv (6.76)%.

It was found further increase in the prevalence of dental calculus in children groups of the study, aged 14-16 years, with a maximum values of people in Sosnivka (24.67)%, which was 1.3 times higher in relation to the received data the children of Chervonograd (21.33)% and Dobrotvir (20.0)% and 1.5 times higher than indicators in children of Lviv (16.0)%.

#### 4. Conclusions

Determination of intensity of inflammatory processes in parodont tissues for the CPI index in children with catarrhal gingivitis residing in different environmental situation in regions allowed to state, that intensity of inflammation in the gums, the prevalence of bleeding and dental calculus in children from Sosnivka and Chervonograd in all age intervals are greater than similar in children from Dobrotvir and Lviv.

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