Abstract

Periodontal disease is a non-specific term for a disease or disease process that affects the periodontium. It is a diverse group of diseases with similar etiology, different course, prognosis and response to conventional therapy. Due to the prevalence and their effects, periodontal diseases are classified as social diseases. Periodontitis is the most common inflammatory disease of the oral cavity and the most common dental disease after caries. It is one of the ten largest and most common chronic infections and one of the most chronic infectious diseases.

Risk factors for periodontitis are considered in epidemiological studies. From a practical point of view, the most useful is the division into non-modifiable and modifiable factors that should be controlled as part of primary and secondary prevention. As in many social diseases, the non-modifiable risk factors for periodontitis are; age, sex, genetic conditions. Modifiable factors include: non-specific and specific bacteria, tobacco dependence syndrome, selected systemic diseases (diabetes, obesity, osteoporosis), some nutritional deficiencies, socio-economic factors and stress. The severity and progression of periodontitis is multifactorial, depending on the number of microorganisms and the sensitivity of the host, and the severity of the disease and its progression are modified by environmental and behavioral factors.

The most important objective of the study was to assess the impact of environmental and systemic factors on the periodontal condition of residents of Białystok aged 35-44. Additional goals were: assessment of the periodontal condition of these residents, indication of dental treatment needs of the study group and development of an algorithm for interdisciplinary medical and dental care.

The study was conducted among Białystok residents aged 35-44, 272 people were examined, including 153 women (56.25%) and 119 men (43.75%). Clinical trials were carried out at the Department of Periodontal and Oral Mucosa Diseases of the Medical University of Bialystok and NZOZ Agmed, ul. Piast 10/2, Bialystok in the period from January 2011 to December 2013.

The survey provided information on social conditions - place of residence and income, education, smoking habits (number of cigarettes smoked per day, duration of active smoking), general health (information on general diseases), data on the patient's weight and height.

The patients' waist and hip circumferences were measured. Based on the collected data, body mass index (BMI) and waist-to-hip ratio (WHR) were calculated.

The clinical examination was performed in artificial light, using a dental mirror and a periodontal probe PCPUNC 15 (Hu-Friedy, USA), with a scale in millimeters. The number of natural teeth (excluding third molars), the number of implants and teeth with fixed prosthetic restorations were assessed, and the reference point for determining the CAL was the edge of the prosthetic restoration (crowns, veneers). If the PD or CAL measurement was between full millimeters, it was rounded to the nearest full millimeter.

Changes in the mucosa, and PSR (Periodontal Screening and Recording) index were assessed. Periodontal health or pathology (gingivitis/periodontitis) was diagnosed based on the criteria of the latest World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions, which further correlates periodontal status with overall health. The periodontal assessment was based on the following: plaque index (PI according to O'Leary), Lange's approximate plaque index (API), bleeding index after probing (BOP), probing depth (PD), clinical attachment position (CAL) and height was measured and class was determined. recession.

The mean values of the tested parameters were as follows: PI 43.9%±24.00, API 49.28%±27.26, BOP 28.98%±21.16, PD 2.29±1.06 mm, CAL 2.49±1, 24mm. The largest group were PSR 3 subjects, recessions occurred in almost 60% of the subjects, and almost 47% were diagnosed with localized stage III.

The influence of gender on periodontal status has been demonstrated. Men had higher API, BOP (not statistically significant), higher PD (p=0.0004) and CAL (p=0.004). The PSR 4 code was more frequent in men (p=0.0009), a higher percentage of men with class IV recession was found, also in the case of stage a tendency to higher values in men was shown (p=0.006).

The following conclusions were formulated:

1. **The state of oral hygiene and periodontium among the inhabitants of Białystok aged 33-44 is unsatisfactory.** High values of hygiene (PI 43.9%±24.00, API 49.28%±27.26) and inflammation (BoP 28.98%±21.16) indicate the need to improve hygiene habits. The largest group of respondents (52.6%) were patients with PSR 3, which indicates the need for professional removal of calculus and plaque, and also requires specialist periodontal care.

2. **The study showed that gender is related to periodontal status**. All assessed parameters (API, BOP, PD, CAL, PSR, recession classes, stage) showed higher values in the group of men. Statistical significance was demonstrated for PD (p=0.0004), CAL (p=0.004), PSR 4 (p=0.0009) and stage of periodontal disease (p=0.006).

3. **The analysis of periodontal status in the context of income showed a tendency that the higher the income, the better the periodontal condition.** The lowest mean value of the BOP index was recorded in the 3rd income group, statistical significance occurred when comparing groups 1 and 3 (p=0.0001) and groups 2 and 3 (p=0.0001). A similar situation was observed when comparing the mean PD distribution in a patient; the lowest values were in the 3rd income group, comparing with group 1 (p=0.013) and group 2 (p=0.03). Statistical significance was obtained by comparing the distribution of mean CAL values for groups 3 and 1 (p=0.008) and 3 and 2 (p=0.0384). Comparing the income group and the number of recessions, it was shown that the number of people with recessions significantly decreases (p=0.02) with the increase in income.

4. **The study showed that smoking has an effect on the condition of the periodontium.** Active smokers had the worst oral hygiene and the most symptoms of inflammation, expressed by API and BOP. A statistically significant difference (p = 0.025) was shown when comparing the average API values of active and former smokers, to the disadvantage of the former. Statistically significant (p = 0.013) differences in CAL values were also found between people who had never smoked and those who are currently smoking. Similar results were also obtained for the stage. Significantly worse results were recorded in the group of active smokers compared to the group of never-smokers, at p = 0.014.

5. **Education has an impact on periodontal status and oral hygiene**. The higher the education, the better the oral hygiene (API, BOP) and the favorable values of the assessed periodontal parameters. The higher the education, the significantly lower the CAL and PD values, the fewer high recession classes, the lower the percentage of patients with stage 4

6. **The higher the weight, above the normal weight level, the higher the API and BOP values, i.e. worse oral hygiene and greater symptoms of inflammation.** Similarly, analogies (dependencies) apply to: sounding depth (PD), stage, CAL, recession class and PSR.

7. The most frequently declared (occurring) disease were diseases of the heart and circulatory system, it was 31 people, which constituted 52.5% of people with a general disease. BOP was statistically significantly higher in the group of people declaring the presence of general diseases (p = 0.003), similarly in the case of the mean CAL value (p = 0.014) and the mean PD value (p = 0.039).

8. **To sum up:** evaluating all the above results, it can be concluded that smoking, education, overweight/obesity and burden of systemic diseases have the most unambiguous influence on the periodontal conditio

9. Of the 2,000 invitations sent, only 272 residents of Białystok applied for the study. The low and unsatisfactory reporting rate, which in the presented study was only 13.6%, proves the low awareness of the importance of oral health and its impact on the health of the whole body. It also suggests a lack of willingness to learn about the current state of the periodontium, to obtain information on the prevention and treatment of periodontal diseases. Low awareness of caring for oral health is reflected in the obtained values of oral hygiene indicators.

10. It seems necessary to implement preventive and therapeutic programs aimed at changing behaviors into pro-health ones, such as improving oral hygiene, combating smoking, combating obesity and overweight, or raising awareness of the correlation between oral health and systemic diseases.