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# Diagnosis of Oral Disease in Silk Lining Workers

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**Summary:** It is known that dental morbidity directly depends not only on environmental factors, but also on chemical influences that lead to aggravation of somatic pathology and dental morbidity. Analyzing the literature data on the impact of occupational factors of various chemical industries on the formation of dental pathology, it can be stated that the prevalence of diseases of hard tissues of teeth, periodontal tissues and oral mucosa in workers of these industries is more common than in the control group, where the effect of chemicals on organs of the oral cavity are absent.

**Keywords:** Oral mucosa, periodontal disease, social, domestic.

**Relevance of the topic.**

It is known that a complex of occupational factors contributes to the development of chronic diseases of the oral cavity, such as hypertrophy of the palatine tonsils, subatrophic diseases of the oral mucosa, inflammation of periodontal tissues, carious and non-carious lesions of hard dental tissues. The study of the epidemiology of dental diseases, conducted in many countries of the world, indicates significant differences in the prevalence and intensity of dental caries, periodontal and oral mucosa diseases, the decisive role in the development of these processes of natural, social, domestic, cultural, as well as professional and industrial factors.

During the years of independence of our country, the expansion of silk enterprises, the implementation of fundamental reforms in the industry, emphasizing the growth of employment at these enterprises, protecting the health of workers in this industry are important tasks. Currently, "... working conditions at various silk enterprises, its modernization, the elimination of risk factors affecting workers, as well as the assessment of morbidity is one of the most pressing problems." The detection and prevention of dental diseases among workers, along with improving their quality of life, is also important to increase their ability to work.

Worldwide, especially in developed countries, automation of technological processes in silk enterprises, the introduction of remote control, the use of information technology have minimized the direct contact of workers with chemicals used in the technological process, but their impact still persists, there is no downward trend. Based on this point of view, a lot of work is being done at silk enterprises to reduce adverse factors in the production environment, to properly organize labor, and to improve the health of workers. However, the researchers express more clear and evidence-based thoughts that a large role in the origin of occupational pathologies and dental diseases in silk production is played by the appearance of various combinations of different chemicals associated with the production environment at silk enterprises, the increase in their harmful effects, and the complication of production technologies.

A number of tasks have been set in our country aimed at adapting the healthcare system in accordance with world standards, protecting the environment, constantly ensuring the health of the population engaged in various activities, "...improving the efficiency, quality and popularity of medical care in our country, introducing high-tech methods of early diagnosis and treatment of diseases, support for a healthy lifestyle and prevention of diseases through the creation of patronage services ... " These tasks are one of the important areas of theoretical and practical medicine in the development of preventive measures to identify and prevent dental diseases at silk enterprises in the context of production modernization.

In such cases, the state of health of workers and their level of labor productivity, the identification of factors that have a negative impact on labor productivity and the reduction of their negative impact on workers are of great importance for preventive measures at manufacturing enterprises. For planning and carrying out preventive measures, it is important to conduct a hygienic assessment of the working conditions of the main professional groups and determine the health status of workers. Preserving the health of workers, working capacity, labor productivity in adverse production conditions is relevant and has not lost its necessity. One of such industrial enterprises is the silk-spinning enterprise.

It is known that all systems and organs, tissues of the human body are faced with various pathological conditions as a result of the action of negative production factors that have a negative impact on life. One such system is the oral cavity.

It is known that the mucous membrane of the mouth, teeth and other tissues, as well as the normal micro flora of this biotope, the state of local immunity factors are sensitive to environmental factors, one of these external factors is negative factors of production, adverse production conditions. Negative influencing factors are different and depend on the place of their work and the stages of production processes.

The aim of the study is a comparative identification of dental morbidity and optimization of prevention among workers of silk production enterprises. Material and research methods

In order to conduct scientific research, the state of health and dental status of workers working at the silk-spinning enterprise "Bukhara Brilliant Silk", located in the city of Bukhara, was studied and assessed.

**Research results and discussion**

In total, 262 employees of the Bukhara Brilliant Silk enterprise took part in the study; they were of working age (19-60 years old) and formed as the main group. To compare the results, the control group included 421 people aged 19 to 60 living in the nearby areas of the enterprise, but not working at the Bukhara Brilliant Silk enterprise.

In both groups, the number of interviewed women exceeded the total number of men - 200 (n=262) employees of the enterprise "Bukhara Brilliant Silk" were women (76.3±2.6%) and 62 men (23.7±2.6%). Of the surveyed residents of mahallas in nearby areas (n=421), women accounted for 300 people (71.3±2.2%) and men made up 121 people (28.7±2.2%). If in the main group the ratio of women and men was 1:0.31, then in the control group it was 1:0.40. The gender differences appeared to be similar, indicating that the condition was representative of the study groups. The examined groups were evenly distributed according to the level of working capacity.

The distribution of the working contingent by length of service is of great importance for the study of dental diseases among the studied contingent. The majority of study participants (n=156, 59.5±3.1%) were workers with 5 years of work experience or more, followed by workers with 1 to 5 years of work experience (n=57, 21.8±3, 0%), as well as workers with work experience up to 1 year (n=49, 18.7±1.5%) took the following places.

To compare the results, the duration of residence of residents living in nearby mahallas around the enterprise was taken into account. According to the duration of residence, they were located as follows: up to 1 year - n=89, 21.1±1.5; from 1 to 5 years - n=97, 23.1±1.9%; 5 years and more - n=235, 55.8±2.0%. In the process of conducting a scientific study, attention was paid to the randomization of the study.

The entire technological process of natural silk production at the Bukhara Brilliant Silk enterprise consists of the following stages: transportation and collection of cocoons on the territory of the enterprise; cocoon sorting; wetting the cocoon with water; wrapping them in roller devices; wrapping with special scrolling; winding silk threads from cocoons into coils; yarn construction; yarn packaging; preparation of finished products for shipment to customers. Weavers, spinners, sorters and warpers work in the technological process of silk fabric production. The dyeing process was carried out by

men, all other production processes were carried out by women. The leading factors affecting workers are high air temperature and relative humidity (Kobilova G.A., 2020).

In order to study the dental status of the employees of the Bukhara Brilliant Silk enterprise and the population living near the enterprise, the medical records of employees and the population were studied, and a medical examination was carried out. Dental examinations were carried out by a survey - questionnaire and traditional methods, a comparative assessment of the condition of the teeth, oral mucosa was carried out among those involved in the study, all the results obtained were recorded in cards prepared specifically for these studies.

The following methods were used in the scientific study: dental, clinical-functional, immunological, microbiological and statistical methods. Dental research was carried out in the following areas: KPU index, determination of the hygienic index of the oral cavity according to the Green-Vermilion method (1964); assessment of the intensity of damage to periodontal tissues according to the periodontal index (PDI, A.L. Russel, 1956); Muhlemann gingival bleeding index - SBI (Muhlemann 1971).

Using enzyme immunoassay (ELISA), the amount of secretory immunoglobulin A (sIgA) lysozyme in saliva was determined by the method proposed by Kagramanova K.A. and Ermolyeva Z.V. (1966) and modified by Bektimirov A.M-T and Adilov Sh.K. (1987). In order to determine the cellular composition of the oral fluid, the method proposed by L.E. Leonov was used. et al. (2002).

Traditional bacteriological methods were used to determine the indigenous and facultative microflora of the oral cavity. The identification of microorganisms was carried out according to Bergy's Manual Systematic Microbiology (1997). Microorganisms were grown on HiMedia food media (India).

During the statistical processing of the obtained results, the generally accepted variational statistical methods (Student's and Fisher's method) were used. All studies were carried out on personal computers based on Pentium-IV processors using the Excel software. When organizing and conducting research, the principles of evidence-based medicine were strictly observed.

“The results of the determination and analysis of dental diseases in silk factory workers” The study of dental status began with a survey and evaluation of patient complaints based on a questionnaire. In order to ensure the reliability of the results obtained, the indicators of the main and control groups are given in a comparative aspect. (Table 1).

Comparative indicators of the frequency of occurrence of symptoms of dental diseases in representatives of the main and control groups

| **Symptoms** | **Control group, n=421** | | **Main group, n=262** | |
|---|---|---|---|---|
| | abc | % | abc | % |
| Pain with mechanical and thermal effects | 87 | 20,7±1,9 | 30 | 11,5±1,9* ↓ |
| I-degree of tooth movement | 48 | 11,5±2,6 | 100 | 38,2±3,0* ↑ |
| Bleeding gums | 26 | 6,2±1,1 | 100 | 38,2±3,0* ↑ |
| Increased tooth sensitivity under the influence of sweets | 15 | 3,6±0,9 | 57 | 21,8±3,7* ↑ |
| Bleeding while brushing teeth | 38 | 8,5±3,4 | 40 | 15,3±3,2* ↑ |
| Discomfort in the mouth | 4 | 1,5±0,6 | 29 | 11,1±1,9* ↑ |
| Increased sensitivity of teeth under the influence of food | 6 | 1,4±0,5 | 28 | 10,7±1,8* ↑ |
| Erosion of the anterior teeth | 25 | 5,9±1,5 | 23 | 8,8±2,4* ↑ |
| Tooth stains | 0 | 0 | 3 | 1,1±0,6 ↑ |

Note: * - reliability of indicators of the main group relative to the control group; ↑, ↓ - change direction.

According to the results of a dental examination, out of 9 identified and analyzed indicators, in 8 (88.9%), the indicators of the main group were statistically significantly higher relative to the control group (P<0.05 - P<0.001). According to the results of the study, it was shown that the prevalence of identified symptoms in workers is higher than in non-working members of the population, and that some symptoms of the studied dental diseases are significantly different from those in non-working in this production (P<0.05).

Differences between the main and control groups in identifying symptoms among employees of the enterprise were as follows: increased sensitivity of teeth under the influence of food by 7.6 times; discomfort in the mouth by 7.4 times; bleeding gums by 6.2 times; increase in tooth sensitivity under the influence of sweets by 6.1 times. For other indicators, similar results were also obtained. It is noteworthy that only the pain from mechanical and thermal effects in the control group was higher than in the representatives of the main group.

The results obtained show that there is a significant difference between these indicators (P>0.05), which indicates a high practical difference in the diagnosis of dental diseases in employees and non-workers at this enterprise.

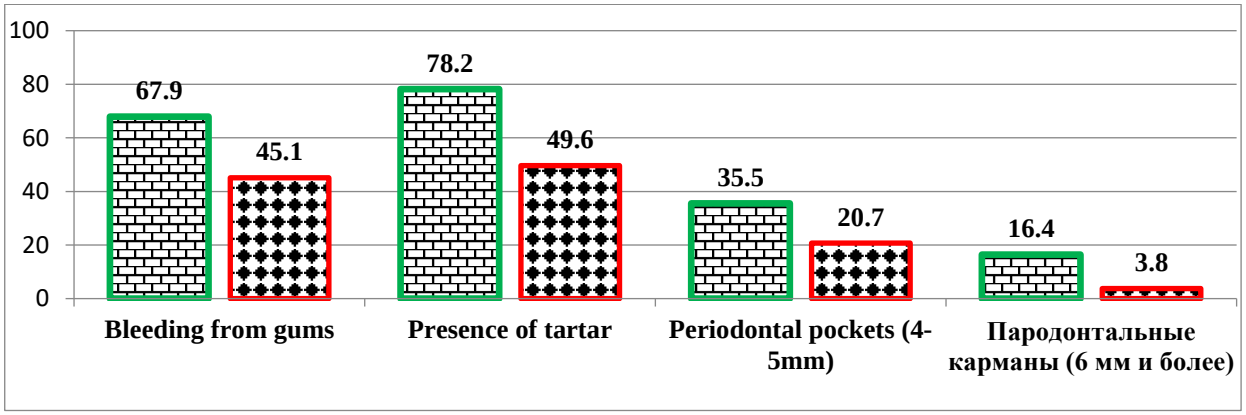
In the studied groups, caries and its complications were studied. According to it, the KPU indicator in 96.9% (n=254) of 11.5±0.94 employees of the enterprise is close to the indicators of patients in the control group (11.9±1.03 in 95.01% (n=400)) of the population. Such similar figures in the study groups mean that the internal environment of the enterprise is not a basis for evaluation as a risk factor for the formation of caries of hard dental tissues.

Somewhat different features were observed in the study of the state of the OM among workers and the local population who took part in the study.

Among the workers, 31.9% of all examined had pathological changes in the oral mucosa, while in the population this figure was 11.4%. A comparative study of the incidence of oral mucosa revealed their statistically significant differences between workers (main group) (P<0.05 - P<0.001), including exfoliative cheilitis in workers by 5.1 times, desquamative glossitis occurred in workers (1.5± 0.1%), while the population was not observed. Chronic recurrent aphthous stomatitis (CRAS) occurred 2.2 times more often, oral glossitis 5.4 times more often.

In the enterprise under study, the incidence of periodontal diseases was 84.7±2.4% (n=222), the same parameter among the population (control group) living in the area of the enterprise was 1.5 times lower - 50.36± 2.4% (n=212) (P<0.05). According to other clinical signs that determine the state of the oral cavity, there were also different signs in severity. (picture 1).

The results obtained showed that all indicators of the workers were higher than in the control group. In the absence of pathological changes in the study groups, the difference between the main and control groups was 3.31 times. The difference in the incidence of gingivitis was 1.14 times. Significant differences were observed in the frequency of periodontitis in the studied groups, with a difference of 2.55 times. There were no significant differences in the frequency of periodontal disease in the groups.



**Picture 1. Comparative indicators of detection of clinical signs of periodontitis in workers and the population, %**

The prevalence of these indicators depending on the length of service was also studied. The results obtained showed that the percentage of periodontal diseases increased with the increase in the length of service of the employees of this enterprise. Confirmation of this conclusion can also be seen in the study of the trend of change in the type and degree of gum inflammation among employees of the enterprise and among the population living near the enterprise, depending on the length of service.

Mild degree of catarrhal gingivitis in workers with work experience less than 1 year by 1.6 times, with work experience from 1 to 5 years by 1.1 times, with an average degree of catarrhal gingivitis in workers from 1 to 5 years by 2.25 times and more than 1.3 times in workers, severe catarrhal gingivitis -1.9 times in workers with work experience less than 1 year 1.3 times - in workers with work experience from 1 to 5 years 1.2 times - in workers with work experience of 5 years or more was significantly higher. Similar indicators were observed in the incidence of hypertrophic gingivitis. It was found that mild hypertrophic gingivitis is 1.8 times more common in workers with experience up to 1 year, 1.9 times more common in workers with experience up to 1 year, and 3.4 times more common in workers with experience up to 1 year. times a significantly high propagation frequency. The greatest differences were observed in workers with atrophic gingivitis of mild severity with work experience up to 1 year and from 1 to 5 years (3.7 and 3.4 times, respectively). У рабочих со стажем работы 5 лет и более было в 1,6 раза достоверно выше. Заболеваемость атрофическим гингивитом средней и тяжелой степени также увеличивалась с увеличением стажа работы, заболеваемость была достоверно выше в среднем в 1,1-1,5 раза. Аналогичная ситуация наблюдалась при язвенно-некротическом гингивите в среднем от 1,75 до 2-х раз достоверно высокой распространенностью.

For workers with work experience of 5 years or more, it was 1.6 times significantly higher. The incidence of moderate and severe atrophic gingivitis also increased with the increase in work experience, the incidence was significantly higher on average by 1.1-1.5 times. A similar situation was observed with necrotizing ulcerative gingivitis on average from 1.75 to 2 times with a significantly high prevalence.

Thus, the clinical manifestations of gingivitis showed an increase not only in the incidence, but also in the severity of the course of the disease in workers with an increase in work experience compared to the population with a period of stay in the region adjacent to the enterprise.

Confirmation of this conclusion can also be seen in the analysis of changes in the type and degree of periodontal tissue diseases in workers of the enterprise, depending on the length of service. The results obtained show that the life expectancy of periodontitis increased with the increase in the length of service of the workers of this enterprise. It was established that the incidence of periodontitis among the employees of the enterprise increased sharply in accordance with the experience of patients. Mild periodontitis was found in 8.16±1.1% (n=4) of workers with less than 1 year of work experience compared to 15.79±1.7% (n=9) of workers with 1 to 5 years of work experience. years. This figure is a significant increase of 1.94 times compared to the previous period, which is 1.3 times the population living in this region, due to the fact that workers are exposed to extended effects on periodontal tissues. A similar increase was found in 52 workers (33.33±3.5%) with work experience of 5 years or more. This indicator significantly differed from previous periods and turned out to be 4.1 and 2.1 times higher, respectively, and 3 times higher than that of the population living during this time ($P<0.05$). A similar trend of change was observed between the middle and severe stages of periodontitis. Differences between the highest rates were 2.9 and 4.3 times more significant for workers with 5 or more years of work experience, respectively ($P<0.05$).

Between the employees of the enterprise and the population living in this region, on the contrary, there were different results of the incidence of periodontal disease. While only 8 silk factory workers suffered from periodontal disease, this figure was 13 among the population. In workers with a work experience of 5 years or more, mild periodontal disease occurred 1.3 times more often than in the

population living during this time, while in terms of the prevalence of the disease in all other years, the incidence was dominated by the population. This is due to a violation of the protective factors of periodontal tissues under the influence of risk factors at the enterprise, a change in the local cellular composition and the occurrence of inflammatory processes in the tissues.

When studying the formation of periodontal pockets, there was a tendency to increase the degree of pathology, that is, with an increase in work experience, the degree of detection of damage to periodontal tissues of the oral cavity, periodontal pockets in workers increased.

Thus, in a comparative study of the incidence of periodontal diseases among silk workers and the population living in the area of the enterprise, and their changes depending on the length of service, these diseases and their clinical signs were more common than in the control group and the number significantly increased in accordance with the length of service. work ($P<0.05$). Among the population living in this area, this pattern was not observed. If workers had significant differences in 6 indicators out of 7 compared (85.7%), while only 2 indicators significantly differed among the population. The obtained results show that the risks when working at the enterprise affect the periodontal tissues of the oral cavity of workers and increase the incidence, the growth of the pathological process depending on the length of service indicates the need to optimize the primary prevention of dental diseases to prevent diseases in this enterprise.

Such profound differences in periodontal tissues were also evident when analyzing the gingival bleeding index and the oral hygiene index between groups, and poor performance was found in the main group of patients (Fig. 3 and 4).

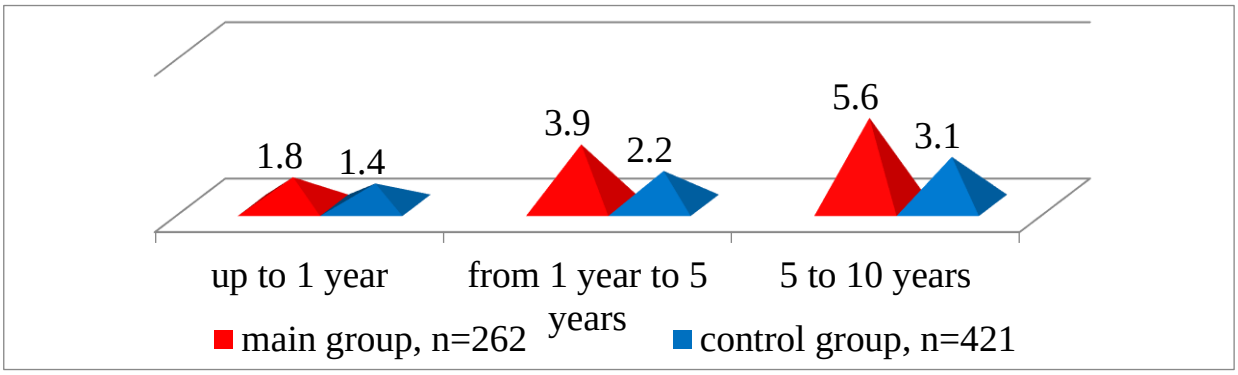



**Figure-3. Evaluation of the hygienic state of the oral cavity among the workers of the enterprise "Bukhara Brilliant Silk" and the population living in this region**

When checking the hygienic condition of the oral cavity in workers and non-workers at the enterprise, in persons with work experience up to 1 year, GI was 1.8, as work experience increased, unsatisfactory results of GI indicators increased as the production process at the enterprise influenced. In particular, workers with 1 to 5 years of work experience had a GI of 3.9, while workers with 5 or more years of work experience had a very poor GI of 5.6. These figures are 2.2 and 3.1 times worse than those of the previous group, respectively.of work experience had a very poor GI of 5.6. These figures are 2.2 and 3.1 times worse than those of the previous group, respectively.

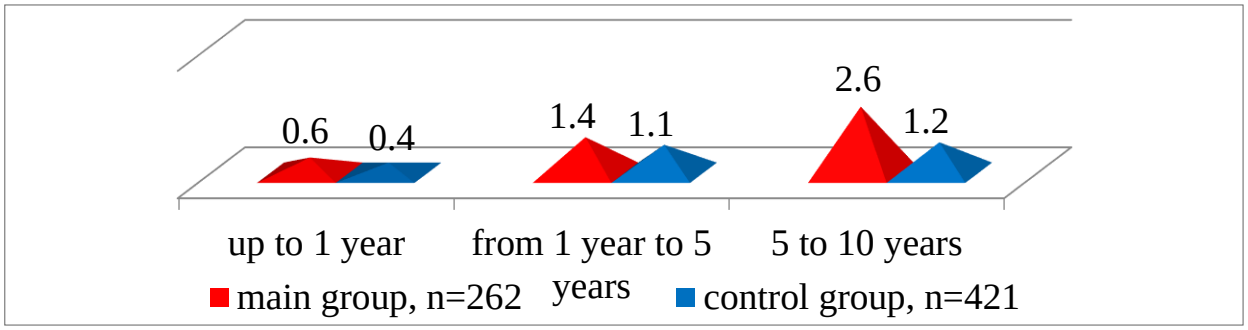


**Figure-4. Comparative indicators of the frequency of gum bleeding in the main and control groups**

In patients of the control group, fluctuations in these indicators increased from satisfactory to unsatisfactory. The average sum of hygienic indicators in the population in terms of life expectancy was 1.4, 2.2 and 3.3 points, respectively. It is noteworthy that the worst sanitary and hygienic conditions among the population were not observed.

The difference between the main and control groups in terms of bleeding from the gums was 1.5 times (67.9±2.9% (n=178) versus 45.1±2.4% (n=190), respectively.

The degree of occurrence of periodontal diseases and the clinical signs of this pathology in the workers of the studied silk factory, conducted studies to determine the intensity of periodontal tissue damage, as well as a comparative analysis revealed the following features:

Firstly, periodontal disease was characterized by an increase in the incidence of this disease among workers compared with the population by 1.5 times, the same trend was observed in the clinical manifestations of this pathology - mild gingivitis by 1.07 times, moderate gingivitis by 1.37 times , severe gingivitis by 1.07 times, the formation of periodontal pockets up to 3 mm, up to 3-6 mm and 6 mm or more by 2.22, 2.2, and 3.01 times, respectively ($P<0.05$ - $P<0.001$).

Secondly, the incidence of periodontal disease was inextricably linked with work experience, that is, an increase in work experience led to an increase in the percentage of occurrence of periodontal disease among workers; such a relationship was not observed among the population.

Thirdly, in 6 (85.7%) out of 7 comparable indicators associated with the detection of periodontal diseases and their clinical signs, workers showed significant changes, while in the control group, significant changes were observed only in 2 cases ( 28.5%.)

Fourthly, the intensity of periodontal tissue damage in workers is significantly higher than in the population by 1.1-4.3 times for all studied indicators.

Fifthly, the high incidence of periodontal diseases and their clinical manifestations among the employees of the enterprise, a significant increase in this pathology with an increase in the length of service of workers ($P<0.05$-$P<0.001$) is explained by the negative impact of production risks on them.

Sixthly, it is a relatively low incidence and clinical symptoms of periodontal diseases among the population living in the region where the silk factory is located, a significantly low intensity of periodontal tissue damage, and it is also shown that this pathology does not depend on the length of stay of the population in this region, the enterprise does not have a negative environmental impact in the region where it is located.

In the course of the research, it was found that although dental services are provided among the employees of the enterprise, this is done chaotically and does not meet modern requirements. Given the fact that the systematic implementation of dental care among the employees of the enterprise serves to prevent these diseases, it becomes necessary to systematize dental care, develop and recommend certain regulations to improve efficiency. Scientific sources and the results of personal research were used in the development of the regulations for the provision of dental care at the Bukhara Brilliant Silk enterprise.

The application of this regulation made it possible to systematize the implementation of dental care among employees, develop the results of treatment and prevention, give the employee specific recommendations on the continuation of his official duties and ensure their legitimacy. This situation reduced the likelihood of conflicts between workers and management, did not have a negative impact on labor productivity, and also allowed workers to constantly monitor their dental health.

## Conclusions

1. It has been established that the incidence of the main symptoms of dental diseases among the employees of the enterprise "Bukhara Brilliant Silk" is higher than among the population living in

the region where the enterprise is located, but not working at the enterprise. Of the 9 identified indicators, 8 were detected 1.1-7.6 times more often among workers; Among workers, 31.9% of all examined had pathological changes in the oral mucosa, while among the population this figure was 11.4%; including the recognized occurrence of exfoliative cheilitis 5.1 times, desquamative glossitis 1.5 times, chronic recurrent aphthous stomatitis 2.2 times, candidiasis 5.4 times the frequency of occurrence.

2. In terms of KPU, 96.9% of the employees of the enterprise showed a result close to the indicators of patients in the control group 11.5±0.94 (11.9±1.03 in 95.01% of the population), characterized by a relatively high incidence of 1.5 times , a similar trend was observed in the clinical manifestations of this pathology: - mild gingivitis by 1.07 times, moderate gingivitis by 1.37 times, severe gingivitis by 1.07 times, the formation of periodontal stones up to 3 mm in size, 3-6 mm and a volume of 6 mm and more relative to the control group 2.2; 2.2 and 3.01 times higher respectively. The incidence of periodontal diseases was inextricably linked with work experience, that is, an increase in work experience led to an increase in the percentage of occurrence of periodontal diseases; such a relationship was not observed among the population;
3. It was found that as the work experience of workers increased, the number of lymphocytes and monocytes of oral fluid cells decreased by 1.5 times, and stab neutrophils by 1.1 times. The titer of lysozyme in the saliva of workers was 2.6 times higher, and the amount of sIgA was reduced by 1.4 times; bacteria E.coli and P.aureginosa 3.9 times, Klebsiella spp, Enterobacter spp, Proteus spp were found 2.8 times more often and were directly proportional to the increase in work experience.
4. Based on these three cases, preventive measures were developed in three directions: on the scale of the silk enterprise; across the workshops of the enterprise; individual prevention (for each worker). Primary prevention of dental diseases among workers of "Bukhara Brilliant Silk" is recommended to be carried out at the enterprise level, on the scale of workshops and on the scale of workers, it has been proven that it is advisable to carry out primary prevention in the form of etiological, pathogenetic and individual prevention.

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