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Determination of the Effectiveness of Dental Measures for the Prevention of Periodontal Dental Diseases in Workers of the Production of Metal Structures

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Abstract
In the process of intensive industrial development, the study of the role of harmful and health-related factors of the production environment is timely and very important. After all, unfavorable working conditions contribute to the formation of various pathological processes in the human body (Amirov N.H., 2018).

Keywords:

Introduction

Prolonged exposure to a complex of production factors, along with a deterioration in the health of workers, can usually lead to pathological changes in the oral mucosa, periodontal diseases, and hard dental tissues (Galiullin A.N., 2014).

Metallurgical production belongs to the industries with the most severe, dangerous and harmful working conditions, which have a direct impact on the functional systems of the body, change homeostasis, neuro-humoral regulation in it and lead to pathological changes in the oral cavity (Novikova R.T., 2016).

Harmful conditions in the production of metal structures, despite the availability of occupational health and safety measures, represent extreme conditions for workers and require further development of comprehensive programs for the prevention of major dental diseases.

The purpose of the study: to optimize rational measures for the prevention and treatment of periodontal diseases in workers of metalworking production (metal structures).

Research Objectives:

1. To determine the prevalence and intensity of dental caries, the condition of periodontal tissues, oral hygiene of employees of the metalworking enterprise ASIA METAL PROF LLC and its branches in Kattakurgan and Urgut.
2. To study the state of functional parameters and nonspecific reactivity of the oral cavity, biophysical properties of mixed saliva in workers of the studied industries.
3. To study the psychophysiological parameters of the body depending on the intensity of the influencing factor in workers of metalworking enterprises.
4. To develop a set of sanitary and hygienic, general health and dental therapeutic and preventive measures aimed at improving the condition of periodontal disease in workers of metalworking enterprises.

The object of the study: it is planned to inspect the oral cavity of 120 employees of the main workshops of the metalworking enterprise ASIA METAL PROF LLC and its branches in Kattakurgan and Urgut. As a control group, the oral cavity of 35 employees of the studied enterprises who are not in contact with harmful factors of this production will be examined.

Research methods: clinical and instrumental, laboratory, biochemical, statistical.

Supposed scientific novelty:

The state of the structural and functional parameters of the oral cavity, some biochemical parameters of saliva in employees of the company "ASIA METAL PROF" and its branches in Kattakurgan and Urgut will be studied.

The complex of therapeutic and preventive measures aimed at improving the condition of periodontal tissues in workers of metalworking enterprises will be improved.

Practical significance of the study: The obtained clinical and experimental data will allow us to develop and implement in practice an improved set of measures aimed at improving working conditions, preventing professionally caused diseases of the oral cavity, improving the organization of dental care planning for employees of metalworking enterprises.

The results of the work will be implemented in practical healthcare through the development and publication of methodological recommendations and information materials approved by the Ministry of Health of the Republic of Uzbekistan. As can be seen from the presented data, the working conditions of the main professions at the Monomer plant are characterized by a combination of multifactorial effects of low and medium intensity and belong to class 3.13.2. The chemical factor in the studied industries is characterized by medium intensity (class 3.1). The assignment of workers' working conditions to class 3.1 according to the level of the chemical factor is due to a short-term but significant increase in concentrations of harmful substances at the workplaces of the Monomer plant. The general assessment of the working conditions of the apparatchiks corresponds to the 3rd class of the 2nd degree of harmfulness, the machinists to the 3rd class of the 1st degree of harmfulness. For apparatchiks, the priority adverse factors are harmful chemicals in combination with nervous and emotional stress, for machinists - the chemical factor in combination with industrial noise.

The second largest professional group (20% of the total number of employees) are the machinists of pumping and compressor units. In conditions of high noise, the machinists of pumping workshops work 60-68% of the shift time (using individual noise protection equipment). The

equivalent calculated level for this category of workers is 83 dBA. Machinists of pumping and compressor installations, as well as apparatchiks, are exposed to harmful substances at various levels. During monitoring and preventive inspection of equipment, concentrations of harmful substances correspond to the MPC, when performing minor and medium repairs, they may exceed the MPC by 2-3 times. In the process of work, it is possible to contaminate clothing and skin with oils and chemicals. The general assessment of the working conditions of the machinists corresponds to the 3rd class of the 2nd degree.

The production of continuous fiberglass consists mainly of technological processes for the preparation of oiling additives and the production of fiberglass. After gluing elementary fibers into fiberglass and giving it certain qualities, oilers of various formulations are used, which are manufactured in oiler preparation workshops (emulsifiers). Operators of continuous fiberglass production are subjected to combined (steam-gas-aerosol mixture of components of several oils) and the complex effects of chemicals (simultaneous inhalation and subcutaneous entry into the body as a result of abundant contamination of the skin with oils) in combination with fiberglass dust and a heating microclimate. The chemical factor is due to the use of various lubricants. They are a multicomponent mixture of plasticizers, softeners, fixers, film-forming, hydrophobic-adhesive and other preparations, the role of which is performed by complex chemical compounds: sebacinates, chromium-containing products, silanes, aliphatic amines, glycols, synthetic resins - dicyandiamidforaldehyde, epoxy, polyester and others.

After a comprehensive dental examination, a high prevalence of caries, non-carious lesions of hard dental tissues, periodontal tissue diseases and COPD was revealed.

When assessing periodontal tissue inflammation (PMA index (Parma, i960)) in the group of workers with up to 10 years of work experience, we determined a mild degree of inflammation in 47.1±0.05% of cases, in the group with 10 to 20 years of work experience - in 24.1±0.40% of cases, in the group with more than 20 years of work experience years - in 2.7 ±0.02% of cases. With an increase in work experience, there is an increase in the degree of inflammation in periodontal tissues.

Our study revealed significant differences in the condition of periodontal tissues in individuals with different nature and degree of contact with production factors. The greatest prevalence of severe signs of periodontal pathology was revealed by NCP in apparatchiks and by PSV in operators of continuous glass fiber production. Thus, periodontal pockets with a depth of 4 to 5 mm were diagnosed in 33.6±2.44% and 35.7±3.66%, respectively, periodontal pockets with a depth of 6 mm or more in 18.9±1.77% and 19.5±2.05%, respectively. The intensity of this trait per examined person was 2.7±0.07 ($p<0.05$). Among mechanics repairing equipment and instrumentation of the above-mentioned industries, signs of periodontal disease had approximately the same prevalence. Hard dental deposits were found in 28.4±3.55% of cases, bleeding during probing - in 36.4±3.44% of cases, periodontal pockets with a depth of 4 to 5 mm - in 13.4±2.14% of cases, periodontal pockets with a depth of 6 mm or more - in 10.64% of cases. The proportion of workers in this specialty with normal periodontitis was 10.2±1.86% ($p<0.05$).

In refinery workers, periodontal diseases with course features associated with systematic exposure to occupational factors (the transition of mild forms of diseases to more pronounced, the formation

of deep periodontal pockets, pronounced tooth mobility) can be attributed to occupational diseases.

To identify the role of negative occupational factors of production in the occurrence and development of diseases of the oral mucosa, we determined the dependence of this pathology on work experience and profession. When examining the oral mucosa in Wood's rays, early (preclinical) signs of leukoplakia were detected in 28.7±1.66% of refinery workers and in 34.3±2.54% of fiberglass production workers. In the control group, the indicators were significantly lower: only 7.2±0.78% of the examined patients showed early changes in the mucous membrane ($p<0.05$). Table 6 presents data on the prevalence of COPD diseases among employees of various specialties.

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