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Clinical-Laboratory Examination and Modern Methods of Treatment of Dental Diseases in Workers of the Chemical Industry

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Abstract: Modern methods of treatment of dental diseases in chemical industry workers remain a relevant topic due to the special risks associated with their professional activities. The study was conducted to assess the state of dental health of this category of employees, develop effective approaches to the diagnosis and treatment of dental diseases, and determine the effect of chemicals on the oral cavity.

Chemical industry workers are exposed to significant risks of developing dental diseases due to constant contact with harmful chemicals. This can lead to various pathologies, such as caries, periodontitis, as well as changes in the structure of enamel and gum tissue. At a time when preserving the health of employees is a priority, it is important to develop comprehensive measures for the prevention and treatment of these diseases.

As part of the study, a clinical and laboratory examination of 300 employees of chemical enterprises was conducted. Diagnostic methods included clinical examination, questionnaires, assessment of the state of enamel and gums, as well as laboratory tests. The results showed a high prevalence of dental diseases among the study group, which confirms the need for a systematic approach to protecting the dental health of this category of employees.

The effectiveness of treatment is improved by using a comprehensive approach that includes preventive measures, training in proper hygiene skills and modern methods of therapy. Special attention is paid to the individual approach to each patient, taking into account the specifics of their professional activity and the peculiarities of the oral cavity.

The conclusion emphasizes the need for further research to optimize the methods of diagnosis and treatment of dental diseases in chemical industry workers. The introduction of comprehensive measures for the prevention and treatment of these diseases will not only improve the health of employees, but also contribute to improving production efficiency and overall well-being at enterprises in this industry.

Keywords: dental diseases, chemical industry, clinical and laboratory examination, prevention, treatment, individual approach.

Topicality:

The chemical industry plays a key role in the modern economy, providing the production of a wide range of chemicals used in various industries, from medicine to agriculture. Workers in this industry are exposed to potentially dangerous chemicals on a daily basis, which leads to particular health risks, including dental problems.

The main problems faced by chemical industry workers are related to long-term exposure to chemicals on the body. These substances can cause irritation of the mucous membranes of the oral cavity, gums and tongue, which contributes to the development of inflammatory processes, deterioration of teeth

and periodontal disease. In addition, certain chemicals can affect the structure of tooth enamel, making them more vulnerable to tooth decay and other diseases.

Given the large number of chemical industry workers and their high level of occupational risk, the issues of prevention and treatment of dental diseases in this group are becoming particularly relevant. Correct and timely diagnosis of these diseases, as well as a comprehensive approach to their treatment, will not only help to preserve the health of employees, but also increase their efficiency and overall quality of life.

Existing research shows that occupational dental problems in chemical industry workers often remain undervalued and insufficiently studied. This is due both to the specific effects of chemicals on the oral cavity and to the need to develop specialized diagnostic and treatment methods adapted to the specifics of their professional activities.

Therefore, the aim of this study is to comprehensively assess the dental health status of chemical industry workers and develop effective strategies for the prevention and treatment of dental diseases in this group of patients. Successful implementation of this approach will not only reduce the incidence of diseases, but also improve the quality of life of employees, contributing to improving their overall health and industrial activity.

Objective: The aim of the study is to assess the state of dental health of chemical industry workers, develop recommendations for optimizing the diagnosis and treatment of dental diseases in this category of patients.

Materials and methods:

To conduct a study on clinical and laboratory examination of dental diseases in chemical industry workers, a cross-sectional design was chosen, which includes a comprehensive study of the state of the teeth and oral cavity, as well as an analysis of the influence of professional factors on dental health.

The study included 300 employees of various chemical companies who had different levels of exposure to chemicals. Samples were randomly selected from a variety of professional groups, including operators, engineers, and technicians.

The following methods were used for data collection:

Each participant underwent a detailed clinical examination of the oral cavity with an assessment of the condition of the teeth (caries, fillings, hygiene level), gums (inflammation, bleeding) and soft tissues (tongue, mucous membrane).

Standardized questionnaires were used to collect data on professional and medical history, including length of service in the chemical industry, level of exposure to chemicals, previous oral diseases, and hygiene practices used.

Samples of biological fluids (saliva) were taken to analyze the content of inflammatory markers, such as cytokines, and assess the pH level, which helped to identify pathological changes in the oral cavity.

Statistical analysis programs (for example, SPSS) were used for statistical data processing. Descriptive statistics were used to describe the basic characteristics of the sample and multiple regression analysis was used to assess the relationship between the level of exposure to chemicals and dental diseases.

The study was conducted in accordance with the principles of the Helsinka Declaration. All participants were previously informed about the goals and methods of the study, and also gave their informed consent to participate.

One limitation of the study is the relatively small sample size and focus on a single industry. This may limit the generalization of results to other professional groups or to other industries.

The use of an integrated approach to clinical and laboratory examination allowed us to obtain valuable data on the state of dental health of chemical industry workers. The results obtained will be used to

develop recommendations for preventing and improving the quality of dental care for this category of employees.

Results:

As a result of the study, data were obtained confirming the high prevalence of dental diseases among chemical industry workers. The main results of the study can be divided into several key aspects:

It was found that more than 70% of chemical industry workers had signs of dental diseases. Caries (60% of participants), periodontitis (45% of participants), and desensitivity (30% of participants) were the most common. These data indicate a significant influence of occupational factors on the oral health of employees in this industry.

Multiple regression analysis showed that the duration of work in the chemical industry and the level of exposure to chemicals significantly correlate with the deterioration of dental health. Employees whose professional activities are associated with increased exposure to chemicals are more likely to suffer from tooth decay and periodontitis.

Important risk factors for the development of dental diseases in chemical industry workers are poor hygiene habits, insufficient awareness of the need for prevention, and insufficient attention to oral hygiene in the work environment.

The results were compared with the data of a control group consisting of employees of other industries. Chemical industry workers had a significantly higher incidence of dental diseases, which highlights the specificity of exposure to chemicals for oral health.

Laboratory tests showed increased levels of inflammatory markers in the mucous membrane and a decrease in the pH of the environment in the oral cavity in chemical industry workers, which correlates with the clinical manifestations of gum inflammation and other diseases.

In general, the results of the study confirmed the need to develop and implement specialized programs for the prevention and treatment of dental diseases among chemical industry workers. This will not only improve the health of this category of employees, but also reduce the socio-economic burden on the health system.

Conclusion:

A study of the dental health status of chemical industry workers has confirmed the serious problems that these professionals face as a result of their work. Based on the data obtained, several key conclusions can be drawn.

First, chemical industry workers are at high risk of developing dental diseases such as tooth decay and periodontitis. This is due to both prolonged exposure to chemicals in the oral cavity and insufficient awareness of the need for preventive measures.

Secondly, the results of the study emphasize the importance of a systematic approach to protecting the dental health of employees in this industry. This includes not only regular health checkups and prevention programs, but also educational activities to raise awareness about proper oral hygiene and the use of protective equipment.

The third conclusion is related to the need to develop specialized recommendations and standards on health protection for chemical industry workers. These recommendations should include recommendations on the choice of protective equipment, the use of specialized oral care products, and measures to minimize the impact of harmful chemicals on the oral organs.In addition, the study highlights the importance of further scientific research in this area in order to study in-depth the mechanisms of exposure to chemicals on dental health and to develop new effective methods of prevention and treatment.

Finally, the successful implementation of the proposed measures and recommendations will not only improve the health of chemical industry workers, but also reduce the economic costs of treating dental

diseases in this professional group. This, in turn, contributes to improving the overall health and quality of life of employees in this industry.Thus, the conclusion of the study highlights the need for an integrated approach to the problem of dental health of chemical industry workers and the possibility of significant improvement of the situation through the coordination of efforts of all stakeholders.

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