



Research of the State of Dental Health and Application of Modern Methods of Treatment in Chemical Industry Workers

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Abstract: In the modern chemical industry, where workers are exposed to significant amounts of chemicals, dental health problems are becoming particularly relevant. The study aims to assess the condition of the teeth and oral cavity of employees in this industry, as well as to analyze the effectiveness of modern methods of treatment of dental diseases in the context of their professional conditions.

In the modern world, dental problems have become an important link in the overall structure of the population's morbidity, especially among workers employed in the chemical industry. Frequent interactions with chemicals can lead to various oral diseases, including tooth decay, periodontitis and other pathologies, which affect the overall health and quality of life of employees.

The aim of the study is a comprehensive assessment of the dental health status of chemical industry workers and evaluation of the effectiveness of the applied treatment methods. Materials and methods include clinical examination, questionnaires, collection and analysis of samples of biological fluids, which allows you to get a complete picture of the state of the oral cavity and identify the relationship between professional activity and diseases.

The results of the study showed a high prevalence of dental diseases among chemical industry workers. More than 70% of the participants had signs of at least one dental condition, which indicates a significant impact of occupational factors on oral health. The key risk factors for the development of dental diseases are determined by the specifics of work and its conditions.

The conclusion of the study highlights the need to introduce comprehensive programs for the prevention and treatment of dental diseases among chemical industry workers. This includes developing specialized recommendations for oral care, training employees in proper hygiene skills, and adapting modern treatment methods to the specifics of their professional activities. The implementation of such measures will reduce the incidence of diseases and improve the quality of life of chemical industry workers.

Key words: dental health, chemical industry, modern methods of treatment, prevention, clinical and laboratory research.



Topicality:

In modern conditions, the chemical industry plays a key role in the economic development of many countries, providing the production of a wide range of chemical products necessary for various sectors of the economy. Workers in this industry are exposed to high concentrations of chemicals on a daily basis, which can have a significant impact on their health, including oral health and dental health.

Features of the production process in the chemical industry often include contact with various toxic and corrosive substances that can have negative consequences for the oral cavity. These substances can cause irritation of the mucous membranes, changes in the pH of the oral environment, which contributes to the development of caries, periodontitis and other diseases.

The problem of dental health among chemical industry workers remains relevant and requires a systematic approach to its solution. Despite significant advances in technology and medicine, the presence of specific health risks from chemicals highlights the need for further research and the development of effective prevention and treatment measures.

One of the key aspects of relevance is not only the identification of dental problems in chemical industry workers, but also the development of treatment methods adapted to their conditions. This requires the integration of clinical and laboratory studies to gain a deeper understanding of the mechanisms of exposure to chemicals in the oral cavity and their impact on overall health.

In addition, improving the dental health of chemical industry workers has significant economic and social aspects. Reducing the number of sick days due to oral diseases and increasing labor productivity are important factors for the sustainable development of enterprises in this industry.

Thus, research and development of new approaches to the prevention and treatment of dental diseases in chemical industry workers remains an urgent task of modern medicine and science aimed at improving the health and quality of life of people working in this industry.

Goal:

The aim of the study is to assess the current state of dental health of chemical industry workers, as well as to study the effectiveness of the applied methods of treatment of dental diseases in this professional group.

Materials and methods:

To conduct a study of the state of dental health and evaluate the effectiveness of modern treatment methods among chemical industry workers, a comprehensive approach was chosen, including clinical and laboratory methods. The study included participants working in various chemical industry enterprises. The criteria for inclusion were age from 20 to 60 years, work experience of at least 5 years in this position. All participants were pre-selected based on clinical examination and exclusion of cases of already diagnosed severe systemic diseases that may affect the oral cavity. Each participant underwent a full clinical examination by a dentist. This included assessing the condition of teeth and gums, determining the presence and degree of development of caries, periodontitis, and other dental diseases. Indices of inflammation and hygiene were used to assess the condition of the gums. Each participant completed a structured questionnaire that included questions about their professional activities, their time in the chemical industry, their level of exposure to chemicals, and their daily oral care habits. The collected saliva samples were subjected to laboratory analysis to determine the pH level, the presence of inflammatory markers such as cytokines and metalloproteinase, as well as to assess the concentration of calcium and other important elements. Statistical methods, including analysis of variance and correlation analysis, were used to process the obtained data. This made it possible to identify statistically significant relationships between risk factors, occupational characteristics, and dental diseases. The study was organized in accordance with international standards and ethical standards, and all participants provided informed consent to



participate in the study. The obtained data will serve as a basis for developing recommendations for improving the prevention and treatment of dental diseases in chemical industry workers. The study showed a high prevalence of dental diseases among chemical industry workers. More than 70% of the participants had signs of at least one dental condition, including tooth decay, periodontitis, gingivitis, etc. The incidence rate is significantly higher compared to the general population. The main risk factors identified in the study include the duration of work in the chemical industry, the level of exposure to chemicals, as well as insufficient compliance with oral hygiene rules. Employees with long experience and a high degree of exposure to chemicals had more pronounced indicators of dental diseases. Laboratory tests of saliva confirmed the presence of significant changes in physiological parameters in a group of workers. pH levels were often changed towards acidity, which contributes to the degradation of tooth enamel. Elevated levels of inflammatory markers, such as cytokines and metalloproteinase, were also detected, indicating inflammatory processes in oral tissues. A comparative analysis of the data showed that employees who followed the recommendations for oral prevention and care had a lower incidence of dental diseases. This highlights the importance of educational programs and awareness among chemical industry workers about proper dental and gum care practices. Thus, the results of the study confirm the need to develop and implement specialized programs for the prevention of dental diseases among chemical industry workers. These programs should include both training in hygiene skills and improving working conditions to minimize the impact of harmful chemicals on dental health.

Conclusion:

The study of dental health and treatment effectiveness among chemical industry workers highlights the serious challenges that professionals in this industry face in the field of their health. As a result of the study, it was found that dental diseases, such as caries, periodontitis and other oral pathologies, are highly common among chemical industry workers. This is due to both professional risks and personal factors, such as insufficient compliance with hygiene rules. The main risk factors include long work experience in conditions of increased exposure to chemicals, which leads to changes in the composition of saliva, a violation of the acid-base balance and an increase in inflammatory processes in the oral cavity. Another important aspect is the lack of awareness of employees about the methods of prevention and treatment of dental diseases. The results of the study confirm the need for an integrated approach to improving the dental health of chemical industry workers. The development and implementation of specialized programs for prevention, hygiene training and regular monitoring of the oral cavity should be a priority for enterprises in this industry. Effective implementation of such programs also requires cooperation between dentists, professional medical organizations and representatives of the chemical industry. It is important to develop and implement personalized approaches to prevention and treatment, taking into account the specifics of the production process and the individual characteristics of each employee. Thus, the implementation of the recommendations and conclusions made on the basis of this study will significantly reduce the incidence of dental diseases among chemical industry workers and increase their overall level of health and well-being. This will contribute not only to improving the quality of life of employees, but also to increasing labor productivity and economic efficiency of enterprises.

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