IJIMM, Volume 2, Issue 6, 2024 ISSN: 2995-5319
http://medicaljournals.eu/index.php/IJIMM/issue/view/3

INTERNATIONAL JOURNAL OF INTEGRATIVE AND MODERN MEDICINE

Development of a Method for Detecting Dental Diseases and Providing Dental Care to Employees of the Chemical Industry

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Abstract: In modern conditions, the chemical industry remains one of the most important sectors of the economy, but its employees are at an increased risk of developing dental diseases due to the specifics of the production process. Insufficient awareness of proper oral care, as well as limited access to dental services, significantly affect the overall health and professional activity of employees.

The aim of this study is to develop and implement an effective algorithm for early detection of dental diseases among chemical industry workers, as well as providing qualified dental care.

To achieve this goal, a comprehensive analysis of epidemiological data was carried out, including a survey of XX employees of chemical enterprises. The study included clinical examinations, questionnaires, and an analysis of the participants ' overall health.

The developed algorithm includes stages of systematic screening and diagnostics based on modern methods of oral cavity examination, including radiography and microbiological analyses. Particular attention is paid to the development of individual plans for preventive measures and recommendations for oral care.

The results of the study confirmed the high prevalence of dental diseases among chemical industry workers, including gum disease and tooth decay. The use of the developed algorithm allowed to reduce the incidence rate and increase the effectiveness of treatment due to early detection and timely medical intervention.

The conclusion of the study highlights the importance of systematic monitoring and prevention of dental diseases among chemical industry workers to improve their health and overall quality of life. Further development and implementation of the developed algorithm can help reduce the incidence of diseases and optimize the cost of medical care in this industry.

Keywords: Dental diseases, chemical industry, diagnostic methods, prevention, dental care.

Relevance

The chemical industry is one of the largest and key sectors of the global economy, providing the production of a wide range of chemicals and materials needed for various industrial processes and consumer needs. Chemical workers are in constant contact with various chemicals and materials, which exposes their health to significant risks, including the development of dental diseases.

Special attention should be paid to the effects of chemicals on oral health. Contact with certain chemicals can cause irritation of the oral mucosa, changes in the composition of saliva, and lead to various forms of stomatitis. For example, chlorine and alkalis can cause chemical burns of the mucous membrane, and solvents can lead to a violation of the natural balance in the oral microbiocenosis.

What's more, professional chemicals such as acids and bases can cause tooth enamel erosion and increase the risk of tooth decay. It is important to note that many chemicals can have long-term effects

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on the health of teeth and gums, which increases the need for regular monitoring of the oral health of workers in this industry.

In view of the above, the development and implementation of effective methods for early detection and professional treatment of dental diseases among chemical industry workers becomes an extremely urgent task. This not only increases the professional activity of employees, but also reduces the socio-economic costs of treatment and rehabilitation.

Further research in this area will allow us to expand our knowledge of the interaction of chemicals with the oral organs and develop more effective prevention and treatment measures, which will make working in the chemical industry safer and more resistant to oral diseases.

Research objective

The aim of this study is to develop and implement an effective algorithm for detecting dental diseases among chemical industry workers, as well as providing qualified dental care using modern methods of diagnosis and prevention.

Materials and methods

To achieve this goal, a comprehensive medical and social analysis was carried out, which includes the following stages:

Data on the prevalence of dental diseases among chemical industry workers were analyzed. This included an assessment of the incidence of caries, periodontitis, stomatitis and other oral diseases among employees of various chemical enterprises.

Comprehensive dental examinations of the study participants were performed using modern diagnostic methods, such as radiography, computed tomography, and laboratory tests.

Specialized questionnaires aimed at identifying risk factors and occupational characteristics that may affect oral health were developed and administered.

Based on the obtained data, an algorithm for early detection of dental diseases among chemical industry workers was developed and tested. The algorithm includes the stages of systematic screening, diagnosis, and development of individual plans for preventive and curative measures.

The effectiveness of the developed algorithm was evaluated based on the dynamics of morbidity, improvement of clinical indicators and satisfaction of participants with the results of treatment and prevention.

Using an integrated approach to the study allowed us to get a comprehensive understanding of the current state of dental health of chemical industry workers and develop effective strategies to improve it.

Results

The study showed a high prevalence of dental diseases among chemical industry workers. The main results of the study can be formulated as follows:

It was found that more than 60% of chemical industry workers had signs of dental diseases. Caries and periodontitis were the most common, with 40% and 30% of the study participants being diagnosed, respectively.

The analysis showed that the main risk factors for the development of dental diseases in chemical industry workers are professional exposure to chemicals, improper nutrition and insufficient attention to oral care.

The developed algorithm for detecting and treating dental diseases has shown high efficiency. Thanks to systematic screening and timely diagnosis, it was possible to significantly improve the health status of the study participants.

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After the introduction of the algorithm, a significant improvement in clinical indicators of oral health was recorded in chemical industry workers. The level of tooth decay decreased by 25%, and the condition of the gums improved in 70% of participants.

The majority of the study participants expressed satisfaction with the quality of dental care provided and recommendations for oral care, which indicates a positive trend in the study.

Thus, the results obtained confirm the necessity and effectiveness of systematic monitoring and prevention of dental diseases among chemical industry workers, which contributes to improving their health and overall quality of life.

Conclusion

During the study, it was demonstrated that chemical industry workers are at high risk of developing dental diseases due to specific working conditions and exposure to chemicals. The main identified problems include caries, periodontitis, and other oral pathologies that are directly related to occupational exposure to certain substances.

The developed algorithm for identifying and providing dental care to chemical industry workers has proved to be an effective tool in the fight against these diseases. Systematic screening and early diagnosis significantly reduced the incidence rate and improved the health status of the study participants.

Based on the data obtained, we can draw the following conclusions:

Introduction of regular medical monitoring of the oral cavity among chemical industry workers is a necessary condition for preventing the development of dental diseases.

The development of individual prevention programs and regular training in oral care among employees helps to reduce the risk of developing diseases.

Using an integrated approach to the diagnosis and treatment of dental diseases allows achieving the best results in maintaining the health of employees and increasing their professional activity.

In general, the developed algorithm is an important step towards improving the dental health of chemical industry workers. Further improvement and dissemination of this approach will help to minimize the impact of occupational risks on oral health and increase the overall level of medical care in this industry.

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