

Prevalence and Intensity of Dental Caries Oil and Gas Refining Plant Workers of Kashkadarya Region

Ramazonova Gulrukh Eshdavlatovna

Basic doctoral student of the Department of Hospital Orthopedic Dentistry, Tashkent State Dental Institute

Mun Tat'yana Olegovna

DSc, Associate professor of the Department of Hospital Orthopedic Dentistry, Tashkent State Dental Institute

Abstract: The problem of dental caries is one of the most discussed topics among dentists around the world. The growth of industrial activity around the world has increased people's living standards, but also led to exposure to occupational hazards. The oral cavity is a link between the external environment and the internal environment of the body and is primarily susceptible to pathologies due to direct exposure to occupational hazards. We studied the intensity and prevalence of dental caries among workers at an oil and gas refinery in the Kashkadarya region.

Key words: dental caries, DMF index (desay/missing/filled tooth), oil and gas refinery.

Relevance of the problem. Oil and gas industry is one of the branches of heavy industry, which includes exploration of gas and oil fields, conducting surveys, drilling wells, oil and gas production, organization of transportation of extracted resources by laying pipelines, storage, processing of oil and gas, and waste disposal. Exposure of oil and gas refinery workers to numerous industrial xenobiotics leads to a variety of changes in their health status, particularly oral health. The oral cavity is a link between the external environment and the internal environment of the body and is primarily subject to pathologies due to direct exposure to occupational hazards. The results of prevalence and intensity of dental caries in factory workers obtained during the study will be relevant during preventive examinations for early diagnosis and prevention of dental caries, as well as the development of new methods of treatment. In turn, in theoretical dentistry, these data will be relevant for the development of concepts on measures to combat and prevent dental caries.

Purpose of the study. To study the prevalence and intensity of dental caries in workers of oil and gas processing plant in Kashkadarya region.

Materials and Methods. Mass dental examinations were conducted in workers of an oil and gas processing plant in Kashkadarya region. A total of 93 workers were examined in this study. The control group consisted of 50 employees whose professional activity was not associated with the action of harmful factors (responsible for the administrative part, etc.) of production. For this purpose, a questionnaire was used, including information on socio-demographic characteristics, oral hygiene compliance, oral health awareness, as well as periodontal and somatic pathology. The workers were asked to fill out a questionnaire. The questions that were taken into account when analyzing the data were: age, frequency of visits to the dentist, frequency of brushing and flossing, presence of gingival recession, tooth extraction history, presence of gum disease and smoking habits.

The study group consisted of workers who met the inclusion and exclusion criteria. The inclusion criterion was the presence of workers on the day of the survey. Exclusion criteria were (1) individuals suffering from any systemic disease, (2) individuals who were unwilling to participate in the study, and (3) individuals with bruxism habit. General exclusion criteria included pregnancy, lactation,

decompensated chronic diseases, presence of tumor processes, hemostasis disorders, inflammatory and autoimmune diseases, viral hepatitis, AIDS, and tuberculosis.

The study group consisted of 93 workers aged 18-60 years divided into age groups 18 - 35; 36 - 50; more than 50 years. The study investigated:

- the intensity of dental caries in petrochemical production workers;
- prevalence of carious lesions in petrochemical workers;

Compliance with oral hygiene was assessed by the frequency of daily brushing (once/day). The frequency of visits to the dentist during the year was taken into account (yes or no). Smoking habit was assessed by categories: smokers (smoking up to 1 pack per day) and non-smokers. All workers in the selected group were informed about the survey.

Intraoral examination was performed under natural light, using an additional light source if necessary. Oral examination was performed using oral mirrors and probes. As an indicator of carious lesion intensity, the value of the CPI index and its components (C-caries, P-fillings, U-extracted teeth) was evaluated.

Statistical analysis of the survey and examination results was performed using OriginPro 8.6 program (OriginLab Corporation, USA) using the Two-sample t-Test method. A p value less than 0.05 was considered statistically significant.

Results and their discussion. Of the 93 workers examined, there were 68 males and 25 females. The work was carried out on a rotational basis (65%) and in shifts (35%). Majority of workers (37.6%) belonged to middle age group (35-60 years) and 32.3% of workers (18-35 years) belonged to young age group. The distribution according to years of work experience was divided into 2 groups: less than 10 years of work experience and more than 10 years of work experience. Smoking habit was almost homogeneous, 45.1% of the examined smoked and 54.8% did not smoke, respectively. Workers rarely and irregularly visited the dentist (37.6%), but 62.4% brushed their teeth at least once a day. (Table 1).

Table 1. Results of questionnaire survey of workers of Kashkadarya oil and gas processing plant

Characteristics of those surveyed	Gradation	Detected	%
1. Age	18 - 35	30	32,3%
	36-50	35	37,6%
	older 50	28	30,1%
2. Brushing frequency	1 once a day	58	62,4%
	2 times	35	37,6%
3. Smoking, alcohol	no	45	48,4%
	yes	48	51,6%
4. Work experience in hazardous workshops	before 10 year	42	45,1%
	more 10 year	51	54,8%
5. Mode of operation	replaceable	32	34,4%
	rotational	61	65,6%
6. Regular visits to the dentist for last 2 years	absent	75	19,4%
	available	18	80,6%
7. History of tooth extraction	absent	20	21,50
	available	73	78,49
8. Presence of gingival recession	absent	33	35,48
	available	60	64,51
9. Presence of gum disease	absent	25	26,88
	available	68	73,12

As a result of examination of workers of oil and gas processing plant it was found out that the prevalence of caries in them is 100%, in the comparison group 98.4%. When collecting anamnesis, workers more often complained of food sticking and teeth blackening, this indicates a chronic course of the process. And only some complained of pain from temperature stimuli and from sweets. In the group with up to 10 years of experience, the workers had a KPU index of 10.79 ± 0.35 . And in the group with more than 10 years of experience there was an increase in the frequency of caries 16.85 ± 0.39 (Table 2). Thus, the average value of CPU 13.82 ± 0.37 in the workers of the main production is 1.5 times higher than this index of the control group.

KPU index (caries intensity) in workers of oil and gas processing plant in Kashkadarya province

Length of service	Cariou lesions (KPU index)
Up to 10 years	$10,79 \pm 0,35$
More than 10 years	$16,85 \pm 0,39$
Control group	$9,12 \pm 0,28$

Conclusions. Thus, dental morbidity among industrial workers is manifested by high prevalence and intensity of dental hard tissue diseases. Industrial workers are at risk of occupational diseases because of their frequent shifts, low socioeconomic status and neglect of oral hygiene. This, in turn, indicates the existence of a resource for improving the effectiveness of dental hard tissue therapy.

References

1. Lee, S.-B. Exposure assessment of carbon nanotube manufacturing workplaces / S.-B. Lee, G.N. Bae, K.S. Jeon et al. // *Inhalation Toxicology*. - 2010. - Vol. 22 (5). - P: 369-381'
2. Roles of the host oxidative-immune:response and bacterial[^] antioxidant ru- brerythrin during Porphyromonas gingivalis infection / P. Mydel, Y. Takahashi, H. Yumoto et al.. II *PLoS Pathog.* - 2006. - Vol: 2, № 7. - P. e76.
3. Solanki J, Gupta S, Chand S. Oral health of stone mine workers of Jodhpur city, Rajasthan, India *Saf Health Work.* 2014;5:136.
4. Baishya B., Satpathy A., Nayak R., Mohanty R. Oral hygiene status, oral hygiene practices and periodontal health of brick kiln workers of Odisha // *J Indian Soc Periodontol* . - 2019; 23(2):163-167. doi: .4103/jisp.jisp_383_18.
5. Viegas, S Genotoxic effects in occupational exposure to formaldehyde: A study in anatomy and pathology laboratories and formaldehyde-resins produc-tion / S. Viegas, C. Ladeira, C Nunes, J Malta-Vacas et all. // *Journal of Occu-pational Medicine and Toxicology*. - 2010.- Vol. 5 (1).
6. Khodabandeh-Shahraki S, Azizzadeh-Forouzi M, Effects of gradual exposure to carbon dioxide gas on the blood pressure status of workers in coal mines of Kerman province, Iran // *ARYA Atherosclerosis Journal*.- 2012. - 8(3):149-152.
7. Sudhanshu S., Pankaj A., Sorabh J., Nidhi S. Dental Diseases of Acid Factory Workers Globally- Narrative Review Article *Iran J Public Health*. 2014 Jan; 43(1): 1–5. PMID: 26060673
8. Carvalho F. C., Godinho M. R., Ferreira A. P. Cardiovascular risk factors among oil refinery workers: ecological study/ Fatores de risco cardiovascular em trabalhadores de uma refinaria de petroleo e derivados: um estudo ecologico // *Revista Brasileira de Medicina do Trabalho*. – 2020. - Vol. 18. - Issue 1.