

The evaluation of dental technicians' awareness of silicosis.

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Abstract

Aim: Silicosis is an interstitial lung disease, caused by inhalation of inorganic silica particles. There are many silicosis cases that developed as a result of environmental and occupational exposure. In this study we aimed to evaluate dental technicians' awareness of silicosis diseases.

Material and methods: The nineteen dental technicians were involved into the study. The technicians' demographic features, working conditions and knowledge they had about silicosis disease were recorded.

Results: Twelve of the dental technicians were male and seven of them were women. The average age was 35.16 ± 9.03 . Although 84.2% (16) of dental technicians were attended an occupational disease seminar, only 15.3% (3) of them were reported to have adequate information about occupational diseases. Even though 94.72% (18) of participants had heard about silicosis, 63.2% (12) of them indicated that they had knowledge about silicosis. While 5.32% (1) of them assessed ventilation in the workplace as adequate, 36.8% (7) of them found it as partially adequate and 57.9% (11) as insufficient.

Conclusion: Silicosis disease, which is at increased risk due to inadequate ventilation conditions at workplaces and deficiencies in safeguard measures, still maintains its importance for dental technicians. Training seminars and informative meetings on silicosis have increased in recent years. However, the employees did not consider that they were being informed correctly and effectively. The informative meetings aiming to increase awareness of occupational diseases should be carried out in great numbers and effectively.

Keywords: Silicosis, Dental technicians, Training seminars.

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Introduction

Silicosis is an occupational lung disease, often radiologically detectable, developed by inhalation of silicon dioxide in a crystalline form known as silica. There are three clinical form, namely acute, chronic and accelerated with no a specific treatment. The acute form is developed after exposure to intense amount of silica dust within in a time ranging from few months to two years, and mostly seen in denim sandblasting workers. The chronic form occurs 10 years after the onset of exposure. The accelerated form develops within a short time (4-10 years) than chronic form, but only due to an intense exposure [1,2]. Silica is also a carcinogen substance, and is also known to cause lung cancer as well as silicosis [3].

The jobs including mining, road construction, digging, drilling, tunnel construction works, glass, silica, brick, ceramic, porcelain, sand paper production and working at foundry are among the occupations causing inhalation of silica [4,5].

There are many cases of silica developed as a result of environmental and occupational exposure. It is well known for a long time that silicosis develops in the dental technicians. In the pathogenesis of dental technician pneumoconiosis, exposure to complex substances (metal powders, silica,

gypsum, waxes and resins, liquid volatiles, methyl methacrylate) used by technicians and their effects on lung parenchyma play a role. The risk is further increased when ventilation conditions and the deficiency in safeguard measures are added [6].

In this study, we aimed to evaluate dental technicians' awareness of silicosis disease.

Materials and Methods

The nineteen dental technicians were included into the study. Technicians' demographic data, working conditions and the knowledge they had about silicosis disease were registered. The employees' working hours, working in the same institution and weekly working hours were recorded.

The knowledge they had about silicosis disease, the information on working conditions, ventilation of the workplace, occupational satisfaction and smoking were evaluated.

Results

Twelve of the dental technicians were male and seven of them were women. The average age was 35.16 ± 9.03 . While total working time of participants were 16.6 ± 9.36 , the total working hours in the same institution were 5.6 ± 3.6 . The weekly average working hours were 42.1 ± 2.5 (Table 1).

Table 1. The evaluation of dental technicians' demographic features and working hours.

Gender (M/F)	12 (63.2%)/7 (36.8%)	
	Mean std	Minimum-maximum values
Age	35.16 ± 9.03	23-52
Total working hours(year)	16.6 ± 9.36	2-38
Working time in the same institution (year)	5.6 ± 3.6	1-11
Weekly working hours (hours)	42.1 ± 2.5	40-45

About 84.2% (16) of dental technicians attended an occupational disease seminar, but only 15.3% (3) of them reported that their knowledge about occupational diseases was sufficient. Although 94.72 % (18) of participants had heard about silicosis, 63.2% (12) of them declared their knowledge about silicosis. While 5.32% (1) of them assessed ventilation of the workplace as adequate, 36.8% (7) of them found it as partially adequate and 57.9% (11) as insufficient. 63.2% participants stated that they were satisfied with their professions. 52.6% (10) of participants were smoking cigarettes (Table 2).

The medical examinations of all participants were normal. There was no correlation between knowledge about occupational diseases and knowledge about silicosis, and working time, working hours, job satisfaction and smoking ($p > 0.05$).

Discussion

In this presented study we conducted a survey in order to evaluate the dental technicians' awareness of silicosis and occupational diseases. In this study, we decided that the training seminars about occupational diseases and silicosis were not adequate in terms of number and effectiveness. With this study, we would like to emphasize that employees should be educated about the prevention of silicosis, which is at higher risk due to insufficient ventilation conditions in workplaces and deficiency in safeguard measures, and that better environmental conditions should be created.

In a previous study on the dental technicians, the mean age of dental technicians was 31.31 years, and 83% were males with a mean dental work experience of 9.04 years [7].

In our study the average age was 35.16 ± 9.03 . 63.2% participants were male. The average working hours were estimated as 16.6 ± 9.36 .

The first dental technician pneumoconiosis case was reported in 1939 [8]. The studies in literature have demonstrated that the most common reason for dental technician pneumoconiosis today was reported as exposure to inorganic dust consisting of chromium-cobalt-molybdenum alloy [9-11].

Table 2. The evaluation of survey data of dental technicians.

	N (%)
Do you have enough knowledge about occupational disease?	
Yes	3 (15.8)
Partially	16 (84.2)
No	0
Do you attend seminars about occupational disease?	
Yes	16 (84.2)
No	3 (15.8)
Have you ever heard silicosis disease?	
Yes	18 (94.7)
No	1 (5.3)
Do you have information about silicosis disease?	
Yes	12 (63.2)
Partially	0
No	7 (36.8)
Education level	
Primary	4 (21.1)
Secondary	2 (10.5)
High school	5 (26.3)
University	3 (15.8)
Master degree	5 (26.3)
Are ventilation conditions adequate in the working place?	
Yes	1 (5.3)
Partially	7 (36.8)
No	11 (57.9)
Do you satisfy with your job?	
Yes	12 (63.2)
Partially	7 (36.8)
No	0
The use of cigarettes	
Yes	10 (52.6)
No	9 (47.4)

The pathophysiology of fibrosis originated from chrome-cobalt-molybdenum is not yet known, however, the cobalt was

considered to cause fibrosis by stimulating lymphocyte [10,12].

Smoking is also common in dental technician pneumoconiosis cases [3-5]. In our study, 52.6% (10) of the participants were smokers. While working conditions and occupations alone pose a risk for silicosis, we believe that a special attention should also be given to efforts in smoking cessation.

Studies on silicosis have reported that the duration of exposure and the intensity of exposure are very important in the prognosis of cases in silicosis studies. Diagnosis at a very early stage is known as good prognosis [9,13]. We considered that the working hours of employees in these professions should be reduced in parallel with the working year of them, workers should be informed about silicosis and the routine examinations should be done regularly.

Finally, the informative meetings and seminars about diseases caused by occupational exposure, such as a life threatening silicosis, are inadequate. Besides, training seminars aiming to inform workers are not effective. In addition to preventive factors in workplaces with a higher risk rate, the employees should be educated about protecting themselves. It is necessary for employers to further improve workplace conditions and to conduct more effective training seminars in great number to raise awareness for occupational diseases.

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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Competing Interests

The author declares that they have no competing interests.

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