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Research Article

**EVALUATING THE KNOWLEDGE, ATTITUDE AND PRACTICE  
OF DENTISTS WITH REGARD TO OBSERVING THE MERCURY  
HEALTH PRINCIPLES IN PRIVATE HOSPITALS OF AHVAZ,  
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**Abstract:**

**Introduction:** Due to the complications of using mercury in the dentistry profession, observing mercury health principles should be at the top of the comprehensive guidelines of the clinic administration to protect the health of clinic staff and optimize the work and life environment. Thus, in this research, the knowledge and attitude and practice of dentists with regard to observing the mercury health principles were examined in Ahvaz city in southwestern of Iran.

**Materials and Methods:** This descriptive and analytical research was conducted on 100 dentistry students in Ahvaz city by using knowledge, attitude and practice questionnaires, each containing 17, 10, and 15 questions, respectively. Data were analyzed by software SPSS.

**Results:** based on the obtained data, the mean knowledge of the subjects was 46.40 with standard deviation of 7.5. The mean attitude of the subjects was 62.37 with standard deviation of 8.09. The mean practice of the subjects was 20.3 with standard deviation of 6. Therefore, the results revealed that knowledge and practice of dentists in Ahvaz are at undesirable level in terms of observing the principles of mercury health. Moreover, dentists had a positive attitude to observing mercury health principles and no significant relationship was found between knowledge, attitude and practice of dentists of Ahvaz with regard to observing the principles of mercury health.

**Discussion and Conclusion:** based on the research results, it is necessary to take appropriate measures in order to enhance the knowledge of dentists, especially during the curriculum or retraining courses.

**Keywords:** Knowledge, Attitude, Mercury Health Principles, Clinic, Dentistry.

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## INTRODUCTION:

The dentistry profession has high delicacies and attractiveness (3-2-1). However, due to the relation with patients, the risk of transmission of risky diseases is also high in this profession (5-4). Amalgam has been used widely in dentistry in posterior teeth restoration for more than 150 years and there have always been concerns about mercury vapor, resulting from it, especially among those working in the clinic (6). Mercury health involves the use of mercury in a way that its hazards are minimalized (7). The World Health Organization has defined the maximum mercury vapor of 50 mg/m<sup>3</sup> for 40 hours of work per week as standard in dental clinics (8). Dental amalgam, mercury alloy with other metals, is one of the oldest consumed materials in restorative dentistry and is still the most commonly used restoration material (6). Almost 75% of restorations performed in the mouth are amalgam (9). However, based on the performed studies, mercury in amalgam restoration (50% weight of amalgam) penetrates into the saliva and the human body in the form of vapor, ion, or amalgam particles (10). Due to toxicity of mercury, its potential effects on general health have been discussed over the last few decades (11). If mercury contamination related to dental amalgam (raw materials of dental amalgam, recently mixed amalgams, amalgam under purification and removal, etc.) is not controlled properly, the health of the health staff would be endangered due to increased value of mercury vapour (12). Despite the variety of tooth-bonded and tooth-coloured materials, which can be used to restore the dental cavities, selective amalgam is still appropriate for extensive posterior oral restorations and it is widely used in dentistry (13). Dental amalgam is a mixture of silver and mercury alloys. Mercury is toxic and mercury toxicity is particularly hazardous due to gradual removal of mercury from body. Thus, even if the daily contact with mercury is low, it can gradually accumulate in the body and reach to toxic level (14). Another important issue is environmental health. The incorrect disposal of amalgam or mercury-contaminated waste also highly affects the health of the environment (15). As a result, knowing the principles of mercury health and practicing them should be at the top of the clinic administration guidelines to protect the clinic staff and optimize the work environment. Thus, the knowledge and attitude and practice of dentists with regard to observing the mercury health principles were evaluated in Ahvaz city in south western of Iran.

## MATERIALS AND METHODS

This research was descriptive-analytical study. It was also an applied and cross-sectional study, since it

describes the current status on one hand and examines the relationship between knowledge and practice, between knowledge and attitude, and between attitude and practice on the other hand.

Research sample: The research sample was selected to be 100 people among the research population. Sampling was performed randomly. Out of 100 subjects, 91 were general dentists and 9 were specialized dentists. The number of male and female dentists was 88 and 12, respectively.

Research variables: the main variables included dentists' knowledge, attitude and practice with regard to the observing the mercury health principles and secondary variables included gender, education level, graduation period, place of graduation, and the duration of the clinic administration. The questionnaire included 17 4-option questions. Ten items are used to assess the attitude and 15 items are used to assess the practice of dentists with regard to observing mercury health principles in private clinics. These questionnaires were approved by the restoration group. After entering the data into the computer, their statistical analysis was performed by Win 14 / SPSS software and *t - test*, One-way ANOVA, and Pearson correlation tests were used for calculating the distribution and centrality indices and examining the relationship between the variables.

## RESULTS:

The mean knowledge of the subjects was 4.60 with the standard deviation of 7.5. The minimum knowledge of the subjects was 31, and the maximum knowledge of them was 58. The mean attitude of the subjects was 62.37 with the standard deviation of 8.09. The minimum attitude of the subjects was 42 and maximum attitude of them was 78. The mean practice of the subjects was 20.3 with standard deviation of 6 (median=19.5). The minimum practice of the subjects was 11 and maximum practice of them was 28. No significant relationship was found between the attitude, knowledge and practice in the areas of gender, duration of clinic establishment, data of graduation, place of graduation, and educational level. Moreover, the results revealed that knowledge and practice of dentists in Ahvaz is at undesirable level in terms of observing the principles of mercury health. Dentists had also a positive attitude to mercury health principles and no significant relationship was found between knowledge, attitude and practice of dentists of Ahvaz with regard to observing the principles of mercury health.

## DISCUSSION AND CONCLUSION

In order to answer the question of whether adequate knowledge and attitude of dentist in mercury health will improve his practice with regard to observing the principles of mercury health in the clinic in Ahvaz, 100 people were randomly selected in a descriptive-analytical research. In this research, the knowledge, attitude and practice of subjects (as the main variables) and its relationship with a series of secondary variables (gender, educational level, graduation period, and also the duration of clinic administration) were studied. Based on the results obtained from statistical comparison, no significant difference was found between male and female subjects in terms of knowledge, attitude and practice. In other words, the dentist's gender did not have effect on his practice in relation to mercury health.

Given lack of significant difference in knowledge, attitude and practice of general and specialized dentists, it can be concluded that the higher educational level of dentists does not necessarily have an effect on their practice with regard to observing the principles of mercury health. As the subjects have been graduated from different faculties, the effect of graduation place on these variables was also studied with regard to observing the mercury health, but no significant difference was found in the level of knowledge, attitude and practice of dentists based on the graduation place. In order to determine whether the level of knowledge of people affects their attitude and practice and whether attitude of subjects affects their knowledge and practice, correlation between these variables was examined. Significant correlation was not found between knowledge and attitude of dentists, knowledge and observing the principles of mercury health, and attitudes and observing the principles of mercury health. The mean knowledge level of the subjects with regard to observing the mercury health principles was 46.4%, which is lower than the determined average (desirable) (50). Therefore, it can be concluded that the level of knowledge of the subjects is less than desired level.

The mean practice of the subjects with regard to observing the principles of mercury health was 20.3%, which is low compared to the determined average (50), so it can be concluded that the practice of the subjects is lower than the desired level. The higher mean score of attitude (62.3%) compared to the determined average (50) indicates that the attitude of dentists towards the mercury health without being affected by gender, educational level, graduation period, and the duration of the clinic administration, was positive with regard to observing the principles of mercury health. With regard to principles of mercury health, as the mean knowledge level of

dentists in Ahvaz was 46.4 and their mean practice was 20.3, which was at low and lower level, respectively, compared to desired level, it could be stated that some dentists do not pay much attention to this issue and their practice was negative and they did not even have adequate knowledge in this regard. Thus, more attention is required to pay on this issue during the education period and after that in the form of well-developed re-training programs in order to enhance the knowledge of dentists in this regard (especially, by adopting appropriate methods in the dentistry faculties to make students more obliged to observe the principles of the mercury health).

The higher mean of attitude scores (62.3%) than the average level (50) indicates that most of the subjects did not have a negative attitude towards observing the principles of mercury health. Therefore, it can be concluded that dentists have adequate readiness to obtain more information and increase their knowledge on mercury health and more accurate practice in this regard. However, given the lack of significant relationship between knowledge and practice, and attitude and practice, it is likely that other factors (such as inappropriate design and facilities of the place selected for clinic and lack of changing them, economic issues, and not considering the issue serious by the authorities, and paying insufficient attention to practical training in this area during education in dentistry faculties) are involved in low practice of the subjects. Significant difference was not found between the mean scores of knowledge, attitude and practice of dentists based on gender, education level, graduation place, graduation period, and clinic administration period. It suggests that the above-mentioned factors do not have a significant effect on the knowledge, attitude and practice of dentists in the area of observing the mercury health.

The results of this research are consistent with those of the research conducted by Alizadeh et al. (16), Shokrani et al (17) and Shokrani et al. (18). However, the results of the research conducted by Sood et al in India showed that dentists have a good knowledge on observing the principles of mercury health (19). The level of knowledge of dentists and dentistry students was also reported at good level in the study conducted by Sawair et al in Jordan (20), which their results are not consistent with the results of this research. Complications related to use of mercury in the dentistry profession should be explained well in pre-university textbooks (21) as well as in the dentistry curriculum and its possible risks and complications should be adequately reflected (22).

Given the positive attitude and readiness of the dentists to enhance their knowledge and improve their practice, proper planning to train the principles of mercury health during the education period and during the retraining programs can be helpful. Despite adequate knowledge and positive attitude of Ahvaz dentists, their practice is less than desirable level.

#### Ethical considerations

Ethical issues have been completely observed by the authors.

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