



Knowledge and Attitude of General Dentists and Last-year Students Regarding the Management of Medically Compromised Patients in Shiraz, Iran

**Jannan Ghapanchi¹, Sara Pour Shahidi², Fereshteh Kamali³,
Mehrdad vosoughi⁴, Laleh Zamani⁵ and Homan Ebrahimi^{2*}**

¹Department of Oral Medicine, School of Dentistry, Shiraz University of Medical Sciences, Shiraz, Iran.

²Department of Oral Medicine, School of Dentistry, Tehran University of Medical Sciences, Tehran, Iran.

³Department of Oral Pathology, School of Dentistry, Shiraz University of Medical Sciences, Shiraz, Iran.

⁴Department of Dental Public Health, School of Dentistry, Shiraz University of Medical Sciences, Shiraz, Iran.

⁵School of Dentistry, Shiraz University of Medical Sciences, Shiraz, Iran.

Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: An increase in the number of medically compromised patients in dental clinics may cause serious problems for practicing dentists all over the world. When a dentist does not understand well the relationship between oral and systemic diseases, dental care may become a quite complicated issue. The present study was conducted to analyse the level of general dentists' knowledge about systemic disease management in Shiraz, Iran.

Materials and Methods: As a cross-sectional descriptive survey of private dental practitioners, the current study was conducted in Shiraz, Iran, from September through November 2010. In order to

*Corresponding author: Email: feresh_876@yahoo.com;

evaluate general dentists' knowledge, experience and perceptions of medical emergencies in dental offices, a cross-sectional questionnaire approach was applied.

Results: Out of 120 general dentists, only 57 filled out the questionnaire. Among these, 15 dentists (25.86%) had good knowledge, 21 (36.20%) had moderate knowledge and 22 (37.93%) had a poor level of knowledge. The knowledge score differences of males and females were not statistically significant ($p=0.439$). No significant relationship was observed between the dentists' knowledge and their school of graduation ($p=0.256$). When treating patients with systemic diseases, 43% of the dentists mentioned that they consulted with their medical colleagues. A total of 68 last-year students also filled out the questionnaire. Among them, 65 students (95.58%) had good knowledge about systemic disease management and only three (4.42%) were at the moderate level. The knowledge scores of the students were significantly higher than that of practitioner dentists ($p=0.005$).

Conclusion: The knowledge of some Iranian dentists regarding the management of medically compromised patients is not at an acceptable level, and continuing post-graduate education courses beyond dental school seems necessary. It is also recommended to think about broadening the scenario for practice during undergraduate courses.

Keywords: Knowledge; general dentists; systemic disease.

1. INTRODUCTION

Increasing numbers of medically compromised patients in dental clinics may cause serious problems for practicing dentists around the world. Medical emergencies can be alarming for any clinician, but they may be less alarming if suitable preparations are made [1].

If the relationships between oral and systemic diseases are not well understood, dental care may be complicated. Most dentists work individually, so when they encounter a problem with a patient's systemic disease, they rely on colleagues, textbooks and journals as their leading sources for more information [2,3].

Limited time and distance from other practitioners make this communication more difficult. In recent years, many studies were conducted to evaluate the correlation between systemic disease and oral health status (referred to as the oral-systemic connection). The role of oral bacteria in other types of systemic inflammation has been established [4,5], and the American Heart Association (AHA) has reported that atherosclerotic vascular disease may be associated with periodontal problems [6].

Invasive dental procedures may sometimes be performed on patients with systemic diseases, so dentists should be aware of potential complications in the management of these diseases. Modifications of the dental care protocol must be based on a current understanding of the risks of altering the patient's medical management [7]. It has also been noted

that elderly patients tend to have more medical complications and different medication consumption than younger patients [8].

Only one clinical guideline by the AHA on the prevention of infective endocarditis appears to be well established [9]. In a survey, the majority of dentists take a history about diabetes from new patients, but only 15% monitor glucose levels or communicate with the patients' physicians [10]. Another survey found that 86% of practicing dentists advise diabetic patients about periodontal risks, but only 18% provide diabetic-related services [11].

Salehi et al. [12] concluded that dentists' knowledge about coagulation testing was at an appropriate level in Isfahan, Iran.

A few surveys around the world have looked at dentists' knowledge regarding systemic disease management, but there have been no evidence-based clinical practice guidelines in Iran. The present study was conducted to analyse the level of general dentists' knowledge about systemic disease management in Shiraz, Iran.

2. MATERIALS AND METHODS

The study was conducted as a cross-sectional descriptive survey of private dental practitioners and last-year dental students in Shiraz, Iran, during September to November 2010. The cross-sectional questionnaire approach was chosen to evaluate general dentists' knowledge, experience and perceptions of medical emergencies in the dental office. After referring to the Medicine

Deputy of Shiraz University of Medical Sciences, the names, addresses and phone numbers of 534 dentists were recorded. Although 120 general dentists were randomly selected, only 58 (7 women [11.9%] and 51 men [88.1%]) volunteered to participate in the study. Women refused to fill out the questionnaire more often than men. The mean age of the respondents in this group was 42±4.4 years.

Sixty-eight last-year students (29 females [42.64%] and 39 males [57.36%]) also enrolled in this study. The mean age of this group was 25.5±2.3 years.

The designed questionnaire items were derived from two main credible oral medicine textbooks [13,14] and were revised according to common systemic diseases in southern Iran (cardiac problems, hypertension, renal disease, hepatitis, HIV infection and diabetes). To evaluate the reliability and validity of the questionnaire, we consulted with other oral medicine specialists, as well as with an internal medicine specialist. Subsequently, a pilot study was conducted on 10 dental students, and the reliability and validity of the questionnaire were confirmed.

The questionnaire consisted of two parts: (1) demographic data, including age, sex, place and year of graduation and (2) 24 multiple-choice questions about the management of 12 common systemic diseases in dental clinics. We did not need to obtain permission from the local ethical committee to administer this survey.

The questionnaire included 24 questions about cardiac problems and endocarditis risk, kidney disorders, current medication toxicity, bleeding and clotting disorders, hepatitis, thyroid disorders, diabetes mellitus, adrenal insufficiency, anxiety, syncope/fainting, allergic reactions and anaphylactic shock. A positive point was considered for every correct answer and a zero score was assigned to every incorrect one (false or blank). A review of several articles regarding the scoring system in Iran showed that the following scoring was used frequently for dentists' knowledge [12], poor (0-7 correct

answers), moderate (8-14 correct answers) and good (17-23 correct answers).

All data were analysed using SPSS software version 17.0 (SPSS Inc., Chicago, IL, USA). The Kruskal-Wallis H test and Mann-Whitney U test were used to compare knowledge scores between gender groups and different schools. The significance level was set at 0.05.

3. RESULTS

The questionnaire was distributed to 120 general dentists but only 58 filled it out; other dentists mentioned that the questions were too difficult. Fifteen dentists (25.86%) had a good level of knowledge, 21 (36.20%) had a moderate level and 22 (37.93%) had a poor level. Only seven females (11.9%) answered the questionnaire. Among them, two (28.57%) had good knowledge, one had moderate knowledge (14.28%) and four (57.14%) had a poor level of knowledge. A total of 51 male dentists answered the questionnaire. Among them, 13 (25.49%) were in a desirable position, 20 (39.21%) had a moderate status and 18 (35.29%) had a poor level of knowledge of systemic disease management. Table 1 describes the distribution of knowledge levels by gender.

There were no significant differences between the males (mean rank=29) and the females (mean rank=33.14) in knowledge scores (p=0.439). There was also no significant difference between mean knowledge scores among the three dentistry schools from which they had graduated, in Tehran, Shiraz and Isfahan (p=0.256).

Forty-three percent of the dentists mentioned that they consult with medical colleagues when treating patients with systemic diseases. Thirty-eight (64.4%) of the general dentists gave the correct answer to the question about managing anaphylactic shock, but only six (10.2%) had proper knowledge about the dental management of patients using corticosteroids.

Table 1. Frequency (%) of knowledge levels of participants according to gender

Knowledge	Dentists			Students		
	Male	Female	Total	Male	Female	Total
Good	13 (25.49)	2 (28.57)	15 (25.86)	51 (96.23)	14 (93.33)	65 (95.58)
Moderate	20 (39.21)	1 (14.28)	21 (36.20)	2 (3.77)	1 (14.28)	3 (4.42)
Poor	28 (35.29)	4 (57.14)	22 (37.93)	0 (0)	0(0)	0 (0)
Total	51 (100)	7 (100)	58 (100)	53 (100)	15 (100)	68 (100)

Thirty-four (57.6%) participants correctly answered the question about management of patients with renal disease and 32 dentists (54.2%) were familiar with complications of myocardial infarction (MI).

A total of 68 last-year students, including 53 (77.94%) males and 15 (22.06%) females, also filled out the questionnaire. Among them, 65 students (95.58%) had good knowledge about systemic disease management and only three (4.42%) were at the moderate level (Table 1). The knowledge scores of the students were significantly greater than that of practitioner dentists ($p=0.005$).

4. DISCUSSION

Inadequate training and inability to cope with medical emergencies may lead to tragic consequences and, sometimes, to legal action. The fact that a high percentage of general dentists in Shiraz, Iran, are not capable of managing medical emergencies and that their knowledge is not at suitable levels is a warning for dentists.

The results of this research confirmed that dentists need more instructional programs about systemic disease management. Medical emergencies can occur in the dental setting; Atherton's [15] research in the United Kingdom showed that 70.2% of general dental practitioners could manage such events properly. Fortunately, these emergencies are mostly non-life-threatening, but over a ten-year period, 20 deaths were reported. Eighty-nine percent of the dentists in our study stated that they obtain medical histories but only 25.86% had proper knowledge of systemic disease and medical-emergency management.

Van Diemen [16] and colleagues in the Netherlands evaluated 487 questionnaires and reported that most of the responders (91%) stated that they received their medical knowledge primarily in dental school. Fifty percent were not familiar with the international normalized ratio (INR) and the majority of the participants stated that they needed clinical practice guidelines on using oral antithrombotic medications in order to manage their patients.

Robati and Farokhi [17], in a descriptive-analytical study during 2011 and 2012, evaluated Iranian dentists' knowledge about bleeding and clotting disorders. In this research, they

distributed a questionnaire to 146 general practitioners in Shiraz. They reported that the dentists' knowledge about these kinds of diseases was at a moderate level, with no significant difference in the mean knowledge scores among males and females.

In our study, 15 general dentists had good knowledge, 21 were in the intermediate range and 22 were at the minimal level of knowledge in managing systemic diseases.

In the current study, only 23% of general dentists were aware of normal INR values, but in Van Diemen's research, 50% of participants were familiar with this test. Salehi et al. [12] reported that dentists' knowledge about coagulation testing was at an appropriate level in Esfahan, Iran, while our study showed that Shiraz dentists were not as knowledgeable on this subject.

In the current study's last-year-student group, 68 students were enrolled. Among them, 65 (95.58%) had good knowledge about systemic disease management and three (4.42%) were at the moderate level. Praveen et al. [18] evaluated 105 interns at two dental colleges in Belgaum City, India. All of the interns mentioned that they need more medical-emergency training to increase their knowledge and confidence in the management of medical emergencies. Fortunately, most of the Shiraz dentistry-school interns in our study had a high level of knowledge about the management of medically compromised patients.

Cave et al. [19], in a survey of recently qualified doctors in the UK in 2000-2001, found that 42% did not feel ready for their first year of employment in clinical posts.

Tomruk Özçakir Ceyda et al. [20] evaluated the level of knowledge, skills and learning consequences of 52 fourth-class dental students after a basic life support (BLS) course and appraised the success and maintenance of BLS training after 8 months. That study concluded that intensive education and continuous BLS training during dental education is necessary.

All of the participant in this research filled out a questionnaire regarding the preferred method to help them improve their knowledge, and 92% agreed that evidence-based practice guidelines should be available (such as CDs or DVDs) for better management of patients with systemic diseases in dental clinics. These guidelines

should be adapted to each country in its native language and distributed among all dental care centres. Last-year students agreed with the idea that all practitioners should increase their knowledge about medical emergencies and must be qualified in health care services, not only cosmetic services.

5. CONCLUSION

This study showed that the knowledge level of some Iranian dentists regarding the management of medically compromised patients was not acceptable. Therefore, continuing postgraduate education courses beyond dental school is necessary, and dental association authorities should also think about broadening the scenario for practice during undergraduate courses.

CONSENT

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Greenwood M. Medical emergencies in the dental practice. *Perio 1. Dntol* 2000; 2008;46:27-41.
2. Strother EA, Lancaster DM, Gardiner J. Information needs of practicing dentists. *Bull Med Libr Assoc*. 1986;74(3):227-230.
3. Selvi F, Ozerkan AG: Information-seeking patterns of dentists in Istanbul. *Turkey. J Dent Educ*. 2012;66(8):977-980.
4. Teles R, Wang CY. Mechanisms involved in the association between periodontal diseases and cardiovascular disease. *Oral Dis*. 2011;17(5):450-461.
5. Kamer AR, Craig RG, Dasanayake AP, Brys M, Glodzik-Sobanska L, de Leon MJ. Inflammation and Alzheimer's disease: possible role of periodontal diseases. *Alzheimers Dement*. 2008;4(4):242-250.
6. Lockhart PB, Bolger AF, Papapanou PN, Osinbowale O, Trevisan M, Levison ME, Taubert KA, Newburger JW, Gornik HL, Gewitz MH, Wilson WR, Smith SC, JrBaddour LM. Periodontal disease and atherosclerotic vascular disease: does the evidence support an independent association? A scientific statement from the American Heart Association. *Circulation*. 2012;125(20):2520-44.
7. Lockhart PB, Gibson J, Pond SH, Leitch J. Dental management considerations for the patient with an acquired coagulopathy. Part 2: Coagulopathies from drugs. *Br Dent J*. 2003;195(9):495-501.
8. Ettinger RL. Meeting oral health needs to promote the wellbeing of the geriatric population: Educational research issues. *J Dent Educ*. 2010;74(1):29-35.
9. Wilson W, Taubert KA, Gewitz M, Lockhart PB, Baddour LM, Levison M, Bolger A, Cabell CH, Takahashi M, Baltimore RS, Newburger JW, Strom BL, Tani LY, Gerber M, Bonow RO, Pallasch T, Shulman ST, Rowley AH, Burns JC, Ferrieri P, Gardner T, Goff D, Durack DT. Prevention of infective endocarditis: Guidelines from the American heart association: A guideline from the American heart association rheumatic fever, endocarditis, and Kawasaki disease committee, council on cardiovascular disease in the young, and the council on clinical cardiology, council on cardiovascular surgery and anesthesia, and the quality of care and outcomes research interdisciplinary working group. *J Am Dent Assoc*. 2008;139(3):253.
10. Kunzel C, Lalla E, Albert DA, Yin H, Lamster IB. On the primary care frontlines: the role of the general practitioner in smoking-cessation activities and diabetes management. *J Am Dent Assoc*. 2005; 136(8):1144-1153.
11. Esmaili T, Ellison J, Waish MM. Dentists' attitudes and practices related to diabetes in the dental setting. *J Public Health Dent*. 2010;70(2):108-114.
12. Salehi MR. Evaluation the knowledge and application of Isfahan dentists about coagulation tests in patients with coagulation disorders. *Journal of Isfahan Dental School*. 2006;2(1):59-62.
13. Little J, Falace D, Miller C. Dental management of the medically compromised patient. 7th ed. St Louis: Mosby Elsevier; 2008;396-432.
14. Greenberg M, Glick M, Ship J. *Burkets9s Oral Medicine*. 11th ed. Hamilton, Canada: Bc Decker Inc. 2008;412-34.
15. Atherton GJ, McCaul JA, Williams SA. Medical emergencies in general dental practice in Great Britain. Part 1: Their

- prevalence over a 10-year period. *Br Dent J*. 1999;186(2):72–9.
16. Van Diermen DE, Bruers JJ, Hoogstraten J, Bovenlander M, Van den Bosch A, Van der Waal I. Treating dental patients who use oral antithrombotic medication: a survey of dentists in the Netherlands. *J Am Dent Assoc*. 2011;142(12):1376-82.
 17. Robati R, Farokhi M. Evaluation the dentists' knowledge of inherited bleeding disorders and anticoagulants in Shiraz Iran *J Ped Hematol Oncol*. 2013;3(4):159-63.
 18. Praveen S, Jodalli, Anil V, Ankola. Evaluation of knowledge, experience and perceptions about medical emergencies amongst dental graduates (Interns) of Belgaum City. *India J Clin Exp Dent*. 2012; 4(1):e14-8.
 19. Cave J, Goldacre M, Lambert T, Woolf K, Jones A, Dacre J. Newly qualified doctors' views about whether their medical school had trained them well: questionnaire surveys. *BMC Med Educ*. 2007;7:38.
 20. Tomruk ÖT, İnci Oktay AN, Kemal S. Evaluation of effectiveness of basic life support (BLS) training and retention of BLS knowledge and skills. *Balkan Journal of Stomatology*. 2011;15(2):99-104.

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