

Dental Practices and Awareness toward the Impact of Periodontal Disease on Systemic Health among Medical Doctors in Jazan, Saudi Arabia

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ABSTRACT

Aim: To evaluate knowledge and awareness of medical doctors regarding the impact of periodontal disease on a set of systemic diseases.

Materials and methods: A questionnaire-based cross-sectional study recruiting medical doctors in Jazan region. One hundred participants from four governmental hospitals in Jazan city responded to multiple-choice-question-type questionnaire. The obtained data were analyzed using SPSS version 20. For Chi-square test, p -value ≤ 0.05 was considered significant.

Result: In our study, participants had a positive attitude toward their self-oral hygiene practices. Regarding knowledge, only 5% got their information from medical curricula. Most of the participants (90%) agreed that oral disease impacts general health; nevertheless, their awareness of the impact of periodontal disease on specific body systems was poor. There was a significant correlation between positive oral hygiene practices and gender, age, and experience.

Conclusion: Our study showed limited knowledge of medical doctors about the association between periodontal diseases and general health. It also reflected poor medical curricula in this regard. It is strongly recommended to include oral health-relevant subjects in medical curricula and continuous medical education programs and to stress on the joint subjects that require multidisciplinary care.

Clinical significance: Improving the awareness of medical health providers about the association between periodontal diseases and general health improves the well-being and patient management.

Keywords: Attitude, Awareness, Periodontal disease, Systemic impact.

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INTRODUCTION

Periodontal disease is a prevalent chronic inflammatory disease of the periodontium with most common consequences of alveolar bone loss and tooth loss.¹ The consequences of periodontal diseases can even go beyond this local destruction and disseminate to distant organs. The association between oral disease and systemic diseases has been attributed to the periodontal infection as the commonest oral infection.²

The relationship between periodontal diseases and systemic diseases has been discussed in many ways through the literature, and a strong bidirectional relationship between them has been found.³ Conditions in which the influence of periodontal disease on systemic health was documented were coronary heart disease (CHD) including angina, infarction and atherosclerosis, cerebrovascular accident (CVA), diabetes mellitus (DM), premature low birth weight (PT/LBW), and chronic obstructive pulmonary disease (COPD).^{4,5}

Periodontal lesions are recognized as continually renewing reservoirs for the systemic spread of gram-negative bacteria, bacterial antigens, cytokines, and other proinflammatory mediator.⁶

Since many medical professionals are unfamiliar with the oral cavity and oral health research, they do not recognize the potential infection that may exist within the oral cavity. The World Dental Congress in 2013 stated that all healthcare providers must be aware of the relationship between oral diseases and general health, and they should play an important role in diagnosis and referral to dentists.⁷ Several studies were conducted in many countries to assess the health workers' knowledge about

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periodontal disease and its association with systemic health. Some of the published research papers on this area were done in Saudi Arabia^{8,9} and other gulf countries like Kuwait,¹⁰ and many studies were conducted in Asian countries like India¹¹ and Pakistan.¹² Some other studies were conducted in western countries.¹³ Most of these studies concluded that medical doctors had inadequate knowledge regarding periodontal disease and its impact on systemic health.

The aim of this study was to evaluate knowledge and awareness of medical doctors regarding the impact of periodontal disease on a set of systemic diseases. Sufficient knowledge about oral diseases and association with systemic health will result in better

and more efficient collaboration between oral health and medical health professionals. Competent physicians will advise and educate their patients about the importance of periodontal health and its association with systemic health. By all means, the two fields (medicine and dentistry) have to work together for the well-being of their patients.

MATERIALS AND METHODS

Prior to commencement of the study, ethical approval was obtained from the vice deanship of graduate studies and research, College of Dentistry Jazan University. The study design was a cross-sectional study using a self-administered, structured, and prevalidated close-ended questionnaire that evaluated dental practices and awareness toward the impact of periodontal disease on systemic health among medical doctors in Jazan city, kingdom of Saudi Arabia.

A 16-item questionnaire was designed by a team of dental professionals after a thorough literature review to insure its validity. The questionnaire was prepared in English language. The questionnaire was designed to be comprehensible. It was pretested on a group of 10 doctors.

The study was carried out in November–December 2018. Written informed consents were signed by participants at the start of the study. The purpose of the study and all the terms used in the study were explained to the respondents. Questionnaires were distributed to participants to be filled on the spot. Confidentiality and anonymity of the respondents were assured. One hundred medical doctors working in four different governmental hospitals in Jazan, Kingdom of Saudi Arabia, were included in the study. They had different job titles namely interns, general practitioners, specialist, and consultants and from different specialties; cardiology, pulmonology, gynecology, diabetology, and neurology.

The questionnaire was designed to give overall view of participants' demographic data and oral hygiene practices. Last part of the questionnaire assessed knowledge and awareness of the participants concerning the impact of periodontal diseases and infections on general health. Close-ended (yes or no) responses were preferred in this study; however, some other question types (agree, disagree, and not sure) were used.

Oral health educational pamphlet, with links for further reading of the impact of periodontal disease on systemic diseases, was distributed to respondents after collection of questionnaires.

Data were processed and analyzed using SPSS version 20 to calculate frequencies and to assess reliability using Cronbach's alpha, and correlation using Chi-square test as p -value of <0.05 was considered significant.

RESULTS

Reliability of the questionnaire was assessed by calculation of Cronbach's alpha which was good (0.81). Our study involved 100 subjects. Response rate was 100%.

Table 1 shows demographic data; male–female ratio which was 1.17:1; age range distribution as the participants were divided into four age-groups (20–29, 30–39, 40–49, and ≥ 50 years), and almost half of participants were in the age-group 20–29 while only 6% were in the group ≥ 50 years; job titles of participants (24% intern, 20% medical officers, 54% specialists, and 2% consultants); distribution of specialties which was as follows: 52% nonspecialists, 19% in cardiology, 13% in pulmonology, 7% in obstetrics and gynecology, 7% in diabetes specialist center, and 2% neurology; and also

experience in years as the majority of participants had experience of 10 years or less (83%).

Table 2 and Figure 1 show the dental practices among participants; most of the participants (97%) brush their teeth with some difference in frequency. Almost half of them (48%) were using dental floss.

Table 1: Demographic data (gender, age, and professional characteristics)

| <i>Demographic data of respondents</i> | <i>Percentage</i> |
|--|-------------------|
| Gender | |
| Male | 46% |
| Female | 54% |
| Age range in years | |
| 20–29 | 48% |
| 30–39 | 25% |
| 40–49 | 21% |
| ≥ 50 | 6% |
| Job title | |
| Intern | 24% |
| Medical | 20% |
| Specialist | 54% |
| Consultant | 2% |
| Years of experience | |
| 0–5 | 52% |
| 6–10 | 31% |
| 11–15 | 8% |
| 16–20 | 3% |
| ≥ 20 | 6% |
| Specialty | |
| No specialty | (52%) |
| Cardiology | (19%) |
| Chest specialty | (13%) |
| Obstetrics and gynecology | 7% |
| Diabetes specialty | (7%) |
| Neurology | (2%) |

Table 2: Oral hygiene practices among the study participants

| | |
|--------------------------------------|-----|
| Brushing teeth | |
| Brushing teeth | 97% |
| Not brushing teeth | 3% |
| Frequency of brushing | |
| Brushing 3 times/day | 14% |
| Brushing 2 times/day | 44% |
| Brushing 1 time/day | 37% |
| Not brushing or irregularly brushing | 5% |
| Using dental floss | |
| Using floss | 48% |
| Not using floss | 52% |

Figure 2 shows previous dental visits among participants; 90% of the study participants visited dentists before; however, the cause of dental visit was pain in 70%.

Regarding attitude, there was significant correlation between frequency of brushing and specialty, years of experience, age, and gender. The frequency of brushing was higher among nonspecialists, low years of experience, young-aged, and female participants. The *p*-values were 0.016, 0.000, 0.026, and 0.006, respectively. On the other hand, using dental floss has no association with the mentioned variables.

Figure 3 illustrates participants' source of information about oral health care and impact of oral diseases on systemic health. Only 5% of participants got their information from medical curricula, 28% from dental professionals, and 22% from mass media and Internet while 45% were not sure about the source of information.

Figure 4 shows participants' good awareness of the impact of oral diseases on systemic health in general as 90% of respondents were aware of this relation; nevertheless, their awareness of its impact on specific systemic diseases was poor.

Figure 5 shows the poor awareness of participants of the impact of periodontal disease on specific systemic diseases as most of the participants (67, 72, 52, 46, and 47%) were not sure about the effect of periodontal disease on DM, CHD, PT/LBW, COPD, and CVA, respectively, while the percentage of those who were aware of this association was (28%, 21%, 39%, 41%, and 42%) for DM, CHD, PT/LBW, COPD, and CVA, respectively.

Awareness of the impact of periodontal disease on (CHD) was significantly higher among female participants compared to males (*p*-value was 0.037). Awareness of the impact of periodontal health on PT/LBW was the least among participants working in the obstetrics and gynecology compared with other specialties, where the *p*-value was 0.010.

DISCUSSION

The study was conducted to evaluate practices and awareness of medical doctors toward the adverse effect of periodontal disease on systemic health. There was a strong need for medical

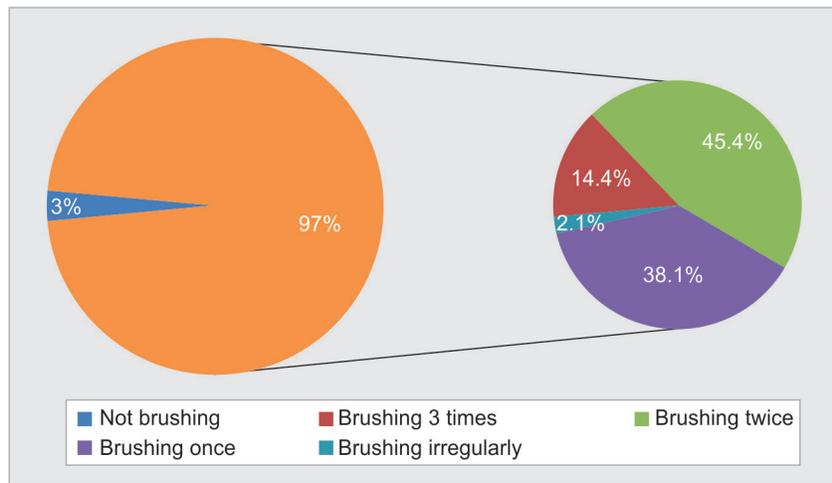


Fig. 1: Brushing frequency among participants. Ninety-seven percent of the study participants are brushing their teeth, and only 3% are not brushing. Percentages of frequency of brushing three times, twice, once, or irregularly were 14.4%, 45.4%, 38.1%, and 2.1%, respectively

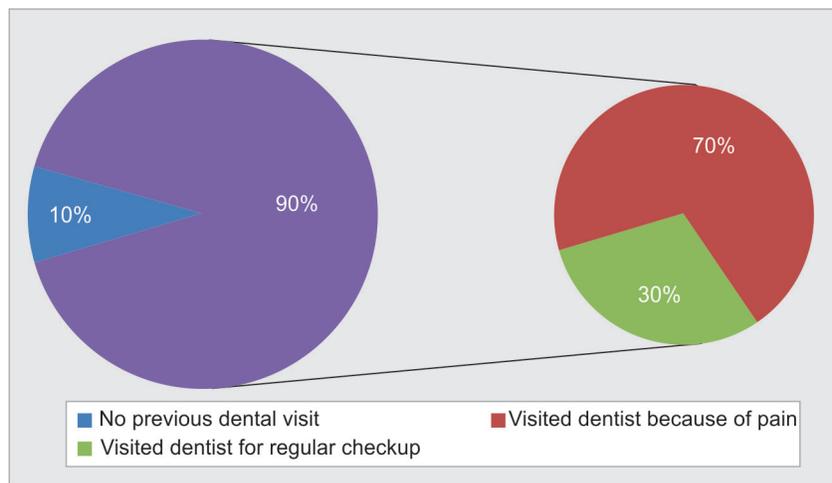


Fig. 2: Attitude of participants toward professional dental care. Ninety percent of the study participants visited dentist before; 70% of those who visited dentist, the driving factor was for treatment of pain; and only 30% visited for regular dental checkup

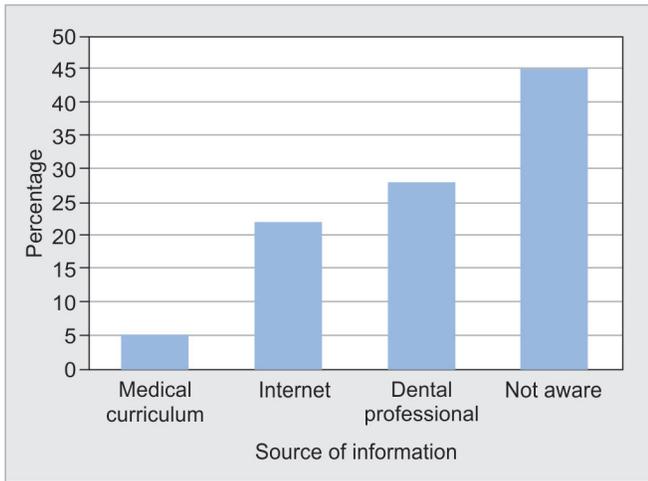


Fig. 3: Source of oral health information. Study participants' source of information about oral health care and impact of oral infection on systemic general health; they showed that only 5% from medical curricula, around half of the participants (45%) unaware, while 28% got their information from dental professionals and 22% from mass media and Internet

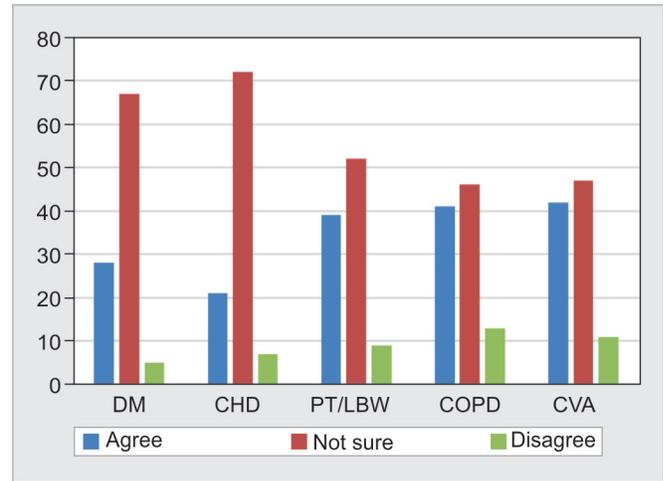


Fig. 5: Awareness of participants of the association between periodontal diseases and various systemic disorders. The impact of periodontal health on specific body system and disorders, most of participants were not sure (67, 72, 52, 46, 47% for DM, CHD, PT/LBW, COPD, and CVA, respectively). The study participants' percentage that agree for the association were 28, 21, 39, 41, 42% for DM, CHD, PTLBW, COPD, and CVA, respectively

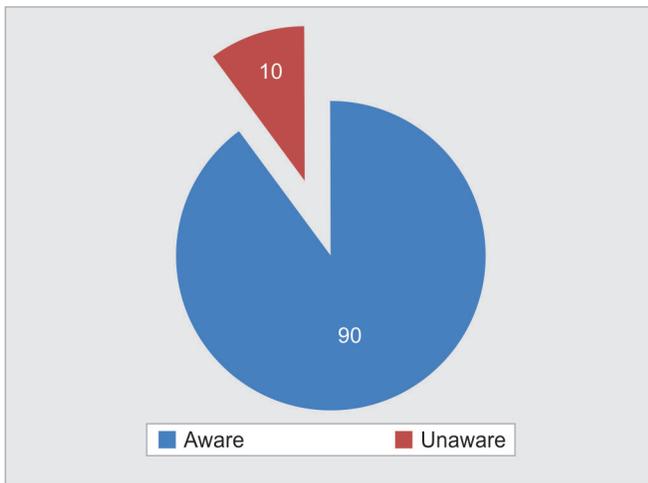


Fig. 4: Awareness of the impact of oral diseases on general health. Ninety percent of the participants are aware of the association between oral health and general health

practitioners to have clear understanding of the association between periodontal disease and systemic health. Improving health-care providers' knowledge and awareness would help in patient management. Sufficient knowledge about oral health and association with systemic health would result in better and more efficient collaboration between oral health and medical health professionals. Participants in the current study were aware of the effect of oral diseases on general and systemic health, yet specific effects on many disorders mentioned in the study were unclear to them. Awareness of these effects should be given more concern. It was seen by many studies in Saudi Arabia, Kuwait, India, Pakistan, and the United States that there is lack of knowledge and awareness among medical practitioners.

Assessing the oral health-related knowledge, attitude, and practices is crucial for the role they are supposed to play to motivate

and educate their patients and to stimulate behavioral changes in the community. Almost all the study participants said that they cleaned their teeth regularly by toothbrush and toothpaste (97%), and half of them are using dental floss, which was consistent with the results of Baseer et al.'s study,¹⁴ and which was expected from health-care workers to demonstrate higher personal oral health care.

One of the interesting finding of this study was that the frequency of brushing was higher among nonspecialists, low years of experience, and young-aged participants which reflected that the fresh medical doctors are more aware and they have positive attitude toward oral health practices. This could be attributed to that most youth are attracted more to media and Internet where educational health programs are available. It is also supported by our finding that 22% of participants got their information from the internet and 45% were not sure about the source while only 5% gained their information from the curricula.

Female participants are also having positive attitude toward oral health practices which was evidenced by many studies that females usually care more for their esthetics and well-being according to Baseer et al.'s study.¹⁴ This is in complete agreement with our finding.

Positive attitude toward professional dental care and regular routine checkup dental visits gave real reflection of the knowledge and awareness; 90% of participants said that they actually visited dentist previously, which was higher compared with the results of Baseer et al.'s study (43.5%).¹⁴ However, two-thirds of those who visited dental clinics (70%) were suffering from pain which reflected the negative attitude of this study participants toward the necessity of visiting dentists regularly for preventive care services.

Study respondents to the question concerning the source of information showed that only 5% gained their information from medical curricula, around half of the participants (45%) were not sure of the source, while 28% got their information from dental professionals and 22% from mass media and internet. This finding is consistent with the results of Obulareddy et al.⁷ and inconsistent with

the finding of Ebtisam's study¹⁵ as 74% did not receive information and only 11.1 received their information from dental professionals.

Ninety percent of our study participants reported that they are aware of the impact of oral diseases on systemic general health, but when they were questioned about their knowledge of the impact of periodontal disease on specific body systems and disorders, most of the participants were not sure. Only 21% of them agreed that there was strong association between periodontal disease and CHD, which is in agreement with the result of Gur et al.'s study (23%)¹¹ and less than the results of Abid et al.'s study (62%).¹²

Forty-one percent of our study participants agreed that periodontal disease is a risk factor for COPD and hospital pneumonia which is higher than the results obtained by Gur et al.¹¹ Only 28% of our study participants agreed that periodontal disease is a risk factor for DM, which was a bit higher than the result of Gur et al.'s study (12%)¹¹ and was very low for the majority of studies done on same area⁷ (Obulareddy et al. and Abid et al.)¹²

This poor knowledge and awareness could be due to the fact that their source of information was not scientific and basic oral health was not a part of their education and training.

It was an interesting result to find that 100% of the obstetrician in the study were not sure that periodontal disease is a risk factor for pregnancy outcome (PT/LBW), which was absolutely different from the results of the study done by Abid et al.,¹² in which 84% agreed that periodontal disease is a risk factor for PT/LBW.

It is important to note that the sample of this study was not representative of obstetric providers everywhere. In a systemic review analyzing 25 published studies, 18 of them suggested association between periodontal disease and increased risk of adverse pregnancy outcome.¹⁶ However, this study was based on self-reported data and utilized a low study sample set. Further, similar studies should be conducted with a larger sample to obtain concrete results.

Current scientific evidence shows that periodontal infection may significantly impact systemic diseases. This study and many other studies reflected lack of knowledge and awareness among medical practitioners to the association between periodontal disease and systemic health. So, it is strongly recommended to include oral health-relevant subjects in medical curricula and continuous medical education programs to keep them updated, to stress on the joint subjects that require multidisciplinary care, and to encourage dental professionals to play their role in oral health education to their patients.

CONCLUSION

The study participants showed positive attitude toward personal oral health care; however, they have limited knowledge about the association between periodontal diseases and general health.

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