KNOWLEDGE OF MEDICAL DOCTORS IN TWIN CITIES OF PAKISTAN ABOUT THE RELATIONSHIP BETWEEN PERIODONTAL DISEASE AND SYSTEMIC HEALTH

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ABSTRACT

This descriptive, cross-sectional study aimed to assess the need for interdisciplinary medical and dental training by evaluation of the level of awareness among medical doctors for the relationship between periodontal disease and systemic health. The study was carried-out in public, private and military hospitals of Islamabad and Rawalpindi. Data were collected from medical doctors (MBBS, Post-FCPS, and Consultants only). A sample size of 375 was selected through convenient sampling technique. A pre-validated, self-administered questionnaire was used consisting of questions regarding knowledge about relationship between systemic health and periodontal disease among medical doctors. Data were analysed using SPSS v24. Of the total 375 medical doctors, 358 agreed that there is an association between systemic health and periodontal disease, while 17 disagreed. Majority (309) of the participants knew about some of the signs and symptoms of the periodontal disease and only small number of them (66) were unaware of the symptoms. Many of the doctors (264) thought of gingival bleeding to be the primary clinical sign of periodontal disease whereas 102 doctors listed gingival pain as the primary symptom. Besides, majority of the doctors (249) expressed awareness about the association between the diabetes and periodontal disease while 213 medical doctors pointed out cardiovascular diseases and obesity to be linked to periodontal disease. Knowledge about relationship between systemic health and periodontal disease was satisfactory among medical doctors of Islamabad and Rawalpindi.

Keywords: Cardiovascular Diseases, Diabetes Mellitus, Gingival Bleeding, Obesity, Periodontal Disease, Systemic Health

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INTRODUCTION

Periodontal disease (PD) is considered as a complex disease of multifactorial origin. It is unquestionably initiated by bacteria, predominantly by gram-negatives, and is characterized by the periodontal tissues' destruction, including connective tissue attachments and alveolar bone.¹

Despite its bacterial etiology, it is the host inflammatory response of the individual and other modifying and predisposing factors that are the determinants of the clinical presentation of the many varied forms of periodontal disease. Specifically, the progression of disease appears to be regulated by genetic and environmental factors specific to the individual.²It has been suggested that chronic periodontitis might increase the systemic bacterial load, endotoxins, bacterial antigens and inflammatory cytokines that are the initiating factors of an inflammatory response.³

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The chance of oral health possibly influencing systemic health (SH) was once proposed by Walter Miller in 1891⁴. Later in 1996, the term "periodontal medicine" was coined by Offenbacher, exhibiting the relationship between periodontal diseases and systemic conditions.⁵ Recent evidence based researches have revealed that PDs can possibly influence and they also can be among the risk factors for cardiovascular diseases like myocardial infarction and angina, coronary heart disease, atherosclerosis, cerebrovascular disease like stroke, diabetes mellitus, preeclampsia, low birth weight infants and many more systemic diseases.^{6,7,8} However, it still needs to be established through further investigations whether these relationships are causal or not.

A similar study was carried out in different cities of Turkey using self-reported questionnaires that were sent to medical doctors who worked at various public and private hospitals, and in universities found that 56.5% of medical doctors who had their patients referred to periodontists for varied reasons. The most common symptom for patient referrals was gingival bleeding (44%), and when compared with doctors of other medical specialties, general medical practitioners most frequently made these referrals.⁹ Another study carried out in Chennai city of India showed that 82% of medical practitioners were aware that PD may be a risk factor for diabetes mellitus and on the lower side, only 42% of the medical practitioners were aware that periodontitis may cause stroke.¹⁰

Hence, it is important that a multidisciplinary approach, with co-operation between medical and dental professionals (whether general practitioners or specialists) be utilized in the management of patients with these diseases.

World Health Organization (WHO) states that oral diseases, including PDs, are an essential part of an individual's general health.¹¹ Thus, medical doctors should familiarize themselves with this information and use it, because they can modify the progression of systemic diseases, as well as correctly define their treatment and prognosis. There is no published data regarding the knowledge of medical doctors about periodontal diseases and its association with systemic diseases in Pakistan. Therefore, it was the aim of this study to evaluate knowledge of medical doctors in Rawalpindi and Islamabad with regard to the association between periodontal disease and systemic health by conducting a survey.

METHODOLOGY

It was a descriptive, cross-sectional study conducted on medical doctors working at 7 different universities and at public as well as at private hospitals of Islam-

abad and Rawalpindi. Approval for the study was formally taken from the Ethical review committee of the Foundation University. Duration of the study was two months. A total of 375 subjects were selected through convenient sampling technique. A validated, self-reported questionnaire was used for data collection, consisting of questions regarding the demographic information of the medical doctors, along with their knowledge about the association between systemic disease (SH) and periodontal disease (PD). The questionnaire was distributed among the respondents through hard copies at their respective workplaces (public or private). Only those doctors who wilfully consented to be part of the study were included. All those medical doctors (both genders) who had MBBS degrees, and were either post-FCPS or consultants, medical doctors working in hospital setups (public or private) were included in the study. Undergraduate students, postgraduate trainees and doctors working at private clinics and those who did not consent to be part of the study were excluded. Data were analysed using SPSS version 24.0. Descriptive analysis was performed to find out the frequencies and percentages. Data are presented in tables and descriptive form.

RESULTS

The demographic data of the doctors who participated in this study are given in Table 1. Out of total 375 subjects, 230 (61.3%) were males and 145 (38.7%) were females. The age distribution in years was < 25 years = 71 (18.9%), between 25 - 45 years = 300 (80.0%), and above 40 years = 4 (1.1%). The majority of these medical practitioners (70%) had more than 10 years' experience and the remaining 28.8% had less than 10 years' experience. Medical doctors from private hospitals were 41.6%, from university hospitals and public hospitals they were 34.7% and 23.7% respectively. Regarding their specializations, 191 (50.9%) of the doctors were from medical sciences, 127 (33.9%) from surgical sciences and 57 (15.2%) of them were from basic medical sciences.

Of the study participants, 282(75.2%) had referred their patients to a dentist, with gingival bleeding being the most common reason of the referral, as mentioned by 222(59.2%) doctors (Table 2). Majority of the doctors 309(82.4%) reported they were aware of the periodontal disease (PD) symptoms and 264(70.4%) of them knew that gingival bleeding is the chief clinical symptom of PD. Nearly all the doctors in this study, 358(95.5%)agreed that there is an association between systemic health and periodontal disease (Table 2). Books and journals were reported as main source for acquiring information by 263(70.1%) of these doctors.

The most common systemic disease known to have an association with PD was diabetes mellitus, with 249

TABLE 1: DEMOGRAPHIC DATA FOR THE 375MEDICAL DOCTORS

	Characteris- tic	Number (%)
Age (years)	< 25	71(18.9%)
	25-45	300 (80.0%)
	> 45	4 (1.1%)
Gender	Male	230~(61.3%)
	Female	145(38.7%)
Years in Practice	≤ 10	108(28.8%)
	>10	$263\ (70.1\%)$
Institution	Public Hospital	89(23.7%)
	Private Hos- pital	156 (41.6%)
	University Hospital	130 (34.7%)
Specialty	Basic Medical Sciences	57 (15.2%)
	Medical Sci- ences	191 (50.9%)
	Surgical Scienc- es	127 (33.9%)





(66.4%) doctors supporting it, followed by cardiovascular diseases and obesity, with 213 (56.8%) doctors answering in affirmative for each (Fig 1).

DISCUSSION

The probable two-way association between systemic health (SH) and periodontal disease (PD) has been already established in modern studies.^{12,13} For the proper maintenance, diagnosis and treatment of both systemic and periodontal diseases, an understanding of this association is essential. An impression has been drawn through few clinical observations that when compared with periodontists, there was lesser interest shown by

TABLE 2: KNOWLEDGE OF MEDICAL DOCTORS ABOUT PERIODONTAL DISEASE AND SYSTEMIC HEALTH

Questions	Responses (%)
Referred Patient to a Dentist?	
Yes	282(75.2%)
No	93 (24.8%)
Most Frequent Reason for Referral?	
Presence of Intraoral Lesion	90 (24.0%)
Malodor	57~(15.2%)
Gingival Bleeding	222~(59.2%)
Oral Findings of Systemic Disease	20~(5.3%)
Knowledge of Relationship between Periodontal Disease & Systemic Dis- ease	42 (11.2%)
Before any Medical Intervention to Minimize Oral Microbial Burden	13 (3.5%)
Have Knowledge of the Symptoms of Periodontal Disease?	
Yes	309 (82.4%)
No	66(17.6%)
Any Relationship between Periodontal Disease & Systemic Health?	
Yes	358~(95.5%)
No	17~(4.5%)

the medical doctors in the association between SH and PD.¹⁴⁻¹⁹ The number of studies that have explored the medical doctors' knowledge about the linkage between SH and PD (which are relatively less), majority of them have fixated on the association between a specific specialty and a certain systemic disease.^{14,17,19,20} This study was different from these previous ones in that among the doctors who participated, we took into deliberation varied specialties and also, various systemic diseases.

In present study, it was reported by 82% of medical doctors that they had awareness about the periodontal disease (PD) signs and symptoms. In other similar studies, this ranges from 94.6% to 98%.^{18, 19} This small disparity may be due to the fact that different kinds of questions and expected answers (yes/no vs. false/ true) were used in various studies. The respondents' knowledge on PD symptoms was assessed by specific question about primary symptoms of PD. Another possible reason for this apparent disparity might be due to the fact that the two studies were conducted in Kingdom of Saudi Arabia and Brazil, and it could be attributed to the difference in undergraduate medical curriculum.

Awareness about the linkage between systemic health (SH) and periodontal disease (PD) among medical doctors has been assessed by few studies.¹⁴⁻¹⁸ kidney disease, respiratory disease, pregnancy, coronary heart disease and diabetes mellitus have all been investigated in this regard. In this study, 95% of the medical doctors responded that a possible link between SH and PD exists. Results of current studies differ with those of Quijano et al.¹⁵ In their study, majority of respondents negated a link between PD and SH. However, their study population was different, almost the whole study population constituted of interns, and there was stratification according to the level of knowledge to the responses of this question. On the other hand, present study did not include the medical interns and only senior doctors and consultants were included. Therefore, the difference in our results and Quijano et al might be due to the disparity in education and experience levels of the study population.

Regarding the relationship between systemic health (SH) and periodontal disease (PD), medical doctors primarily derived the information from journals and books, with few deriving it via internet and others through dental practitioners, mainly. The results of Al-Habashneh et al. can be used for comparison, which showed that the same information was acquired by the responders principally from magazines.²⁰ Different study groups in both the studies might be the reason for this disparity: the respondents in the Al-Habashneh et al. study fixated on general physicians, whereas our population consisted typically of private and university hospital doctors.

About the association between diabetes mellitus and periodontal disease (PD), although the knowledge rate in this study was 66.4%, it was 97% and 42.2% in the studies of Quinjano et al. (interns) and Al-Khabbaz et al. (general physicians)¹⁴⁻¹⁵, respectively. Another finding of prominence was the inferior knowledge rates regarding the relationship between other systemic conditions and PD in this study as compared to the previous ones^{16, 21} (kidney disease: 21.3% vs. 74.2%, cardiovascular diseases: 56.8% vs. 89%-95.1%). The possible explanation for this might be the diversified distribution of workplaces of the participants in this study, and their varying exposure levels to dental problems as a manifestation of different systemic conditions.

Amongst the awareness of association between systemic (SH) and periodontal disease (PD) and number of years in practice, the relationship was found to be insignificant in this study. This outcome is in disagreement with the conclusions of Rocha et al., which stated that there was a positive correlation between practice's timeline among obstetricians and the frequency during pregnancy of recommendation for dental examinations.²² The differences in study populations and years in practice might offer an explanation for this disparity.

For the linkage between systemic health (SH) and periodontal disease (PD), an investigation into the referrals of patients by medical doctors has been done in previous studies. When compared with the findings of Owens et al. and Al-Habashneh et al., with rates of 48% and 49.7%, respectively, the referral rate (75.2%) in this study was slightly better.^{17, 20} The requirement for promotion of partnership between medical and dental doctors is highlighted by our findings for the improvement in outcome of patients in respect to different systemic conditions and PD. Thus, in order to achieve this goal, there is a dire need for the inculcation at both undergraduate and postgraduate levels for a program teaching about the association between SH and PD. Particularly in the presence of any systemic conditions or inflammatory diseases, this association of SH and PD should not be ignored by the medical doctors. This way, these patients can have better treatment results and prognosis if there is consultation with dental practitioners and a multidisciplinary approach is followed.

Compared to other studies in the literature, the strong points of this study were the relatively large number of addition of doctors from various specialties and institutions, and the analysis of the linkage of periodontal disease (PD) to several different systemic conditions, rather than with some certain systemic disease.¹⁴⁻²⁰ However, bias may arise from the answers given on a self-reported questionnaire by the medical doctors, and this was one limitation of our study. To minimize this bias, an attempt was made by extending the range of the questionnaire and sequencing the questions. Another limitation of this study was that the result might be very different if conducted in rural areas of Pakistan.

CONCLUSION

It was concluded that the knowledge of medical doctors of Islamabad and Rawalpindi regarding the link between periodontal disease (PD) and systemic health (SH) was fairly satisfactory, as most of them were aware of the inter-relationship between the two conditions.

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	pretation of data, and drafted the initial manuscript.
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