



# Knowledge and attitude of medical practitioners towards periodontal diseases in New Delhi: A questionnaire based study.

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## Abstract

**Background:** Periodontal diseases have been linked with many systemic conditions / diseases. Due to limited access to dental care, patients turn to primary health care providers for their oral health needs. This would result in medical practitioners encountering patients with dental problems. The physicians training program has limited curriculum about oral diseases. Also, their knowledge is not so comprehensive about the systemic condition and periodontal disease correlation. Hence, the present study was conducted to assess the awareness and knowledge about the correlation between periodontal and systemic diseases amongst medical practitioners.

**Methods:** A cross-sectional questionnaire based survey was carried out in New Delhi (India). A total of 300 registered medical practitioners were included in the study. Each participant was given a self – administered multiple-choice questionnaire. The responses were collected and analyzed.

**Results:** A total of 168 (54%) medical practitioners had correct knowledge about the etiology of periodontal diseases. 71% had the knowledge about the two – way relationship between periodontal diseases and systemic conditions. About 215 (72%), 107(36%), 107(36%) and 116 (39%) medical practitioners were aware that periodontal disease was a risk factor for coronary heart disease, preterm labour, cerebral infarction and infective endocarditis, respectively. Out of 300 medical practitioners, 188 (62.6 %) had an overall good knowledge about different periodontal diseases and their treatment modalities.

**Conclusion:** The level of awareness about periodontal diseases and their correlation with systemic diseases was fairly good in the medical practitioners. However, some important diseases were overlooked which requires certain updation in their knowledge.

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## Introduction

Periodontology, the specialty of dentistry deals with the preventive and curative aspect of oral health, specifically about periodontal supporting tissues. Along with preventive measures, it offers various cosmetic and regenerative therapies. In the past few decades, periodontal diseases have shown an association with multiple systemic conditions / diseases. Periodontal diseases, being a gram negative infection results in severe local inflammation with a potential to disseminate in the vascular system producing or acting as a risk for many systemic conditions or diseases. Periodontal diseases affect the medical condition of a person, either by causing or acting as a risk factor for a wide range of conditions like hypertension, stroke, atherosclerosis, poor pregnancy outcomes/ preterm labor, low birth weight babies, diabetes mellitus and chronic obstructive pulmonary disorder (COPD).<sup>(1,2)</sup>

In India, periodontal diseases are the most common form of oral infections. Its prevalence rate is 67.7% amongst individuals of the age group of 15 years and about 89.6% in adults in the age group of 35-44 years.<sup>(3)</sup> In India, the dentist to population ratio is 1:10,000 in the urban areas and 1:50,000 in the rural areas.<sup>(4)</sup> Due to limited access to dental care, patients may turn to primary health care providers and medical practitioners for their oral health care needs.

Traditionally, the physicians training program has limited curriculum about oral diseases. So even though there is a great impact of periodontitis on the systemic health, there is less awareness regarding the same amongst the medical practitioners.

Hence the present study was conducted to understand the level of awareness regarding periodontal diseases and their systemic effects amongst medical practitioners and also to know their attitude towards dental health care.

## Materials and Methods

The study was carried out by a cross-sectional survey in New Delhi (India). A simple random sampling was done. Convenient sample size of 300 medical practitioners was decided. Data was collected from medical practitioners by visiting various General Hospitals, Private Practitioners and Teaching Institutes & Hospitals. Ethical clearance was obtained from the Institutional Ethical Committee of Jamia Millia Islamia University, New Delhi (India). The study was conducted during a 6-month period from March to August 2014.

A specially designed questionnaire was made which included 21 multiple-choice questions. Registered medical practitioners were approached personally and the

purpose of the study was explained. Those who voluntarily agreed to participate were then given the questionnaire to answer. It was mentioned to the doctors that their responses would remain confidential. The filled questionnaires were collected after answering and then analyzed. Those questionnaires which were found to be incomplete were excluded from the analysis.

Results were expressed in terms of percentages and proportions and some data was analyzed using the IBM - SPSS Statistics Desktop Version 22.0 and interpreted. To determine the levels of awareness, the responses were graded from 0-15 based on the correct responses. The respondents securing 0-7, 8-12 and 13-15 scores were graded as having awareness levels as poor, average and good, respectively.

## Result

**Table 1** represents the study population. Based on their qualifications, 105 (35%) were graduates and 195 (65%) were postgraduate medical practitioners.

**Table 1: Distribution of Study Subjects on Gender and Qualification**

Qualifications	Sex		Total
	Male	Female	
<b>Graduate</b>	68 (36%)	37 (33%)	105 (35%)
<b>Post Graduate</b>	121 (64%)	74 (67%)	195 (65%)
<b>Total</b>	189 (100%)	111 (100%)	300 (100%)

**Table 2** denotes their different age groups and compares them with their type of practice and experience (years in practice). Out of 300 practitioners, 153 were into private practice, 117 in General Hospital and 30 in Teaching Institute & Hospital. 213 (71%) medical practitioners were of the opinion that there was a bidirectional relationship between periodontal diseases and systemic conditions. However, 84 (28%) practitioners knew only half the fact. 4 (1%) practitioners said that there is no relationship between periodontal diseases and systemic conditions (**Table 3**).

Among the study subjects, about 168 medical practitioners were of the opinion that plaque and calculus was the most important factor for the causation of periodontal diseases. 120 considered dental caries to be the etiology for periodontal diseases out of which 96 were post graduate medical practitioners. Also, among the study subjects, 18 of them considered deficiency of Vitamin C as the reason for the occurrence of periodontal diseases (**Figure 1**).

**Table 2: Distribution of Study Subjects on Age Group and Type & Years of Practice**

Type & Years of Practice	AGE (Years)					Grand Total
	≤ 25	26-35	36-45	46-60	≥60	
<b>Private Practice</b>	<b>11</b>	<b>35</b>	<b>38</b>	<b>54</b>	<b>15</b>	<b>153</b>
0-5 YEARS	11	27	5	1	-	44
5-10 YEARS	-	6	25	16	1	48
≥ 10 YEARS	-	2	8	37	14	61
<b>General Hospital</b>	<b>20</b>	<b>70</b>	<b>20</b>	<b>5</b>	<b>2</b>	<b>117</b>
0-5 YEARS	20	61	3	-	-	84
5-10 YEARS	-	8	14	1	-	23
≥ 10 YEARS	-	1	3	4	2	10
<b>Teaching institute&amp; hospital</b>	<b>12</b>	<b>12</b>	<b>3</b>	<b>3</b>	<b>-</b>	<b>30</b>
0-5 YEARS	12	11	1	1	-	25
5-10 YEARS	-	-	2	-	-	2
≥ 10 YEARS	-	1	-	2	-	3
<b>Grand Total</b>	<b>43</b>	<b>117</b>	<b>61</b>	<b>62</b>	<b>17</b>	<b>300</b>

**Table 3: Relationship between Periodontal and Systemic Disease**

Response Options	Response	% Response
Periodontal Disease may lead to Systemic Disease	42	14%
Systemic Disease may lead to Periodontal Disease	43	14%
It is a 2-way Process	213	71%
There is no relationship	4	1%

**Table 4: Level of Awareness regarding different Periodontal Diseases and their Treatment Options**

Qualifications/Score	0-5 YEARS	5-10 YEARS	≥ 10 YEARS	Grand Total
<b>Graduate</b>	<b>87</b>	<b>9</b>	<b>9</b>	<b>105</b>
Poor	11			11
Average	25	4	2	31
Good	51	5	7	63
<b>Post Graduate</b>	<b>66</b>	<b>64</b>	<b>65</b>	<b>195</b>
Poor	7	1	6	14
Average	18	19	19	56
Good	41	44	40	125
<b>Grand Total</b>	<b>153</b>	<b>73</b>	<b>74</b>	<b>300</b>

**Table 5: Chi-Square test Results – Comparing Years of Experience and Awareness Levels**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.021 <sup>a</sup>	4	0.135
Likelihood Ratio	9.075	4	0.059
N of Valid Cases	300		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.08.

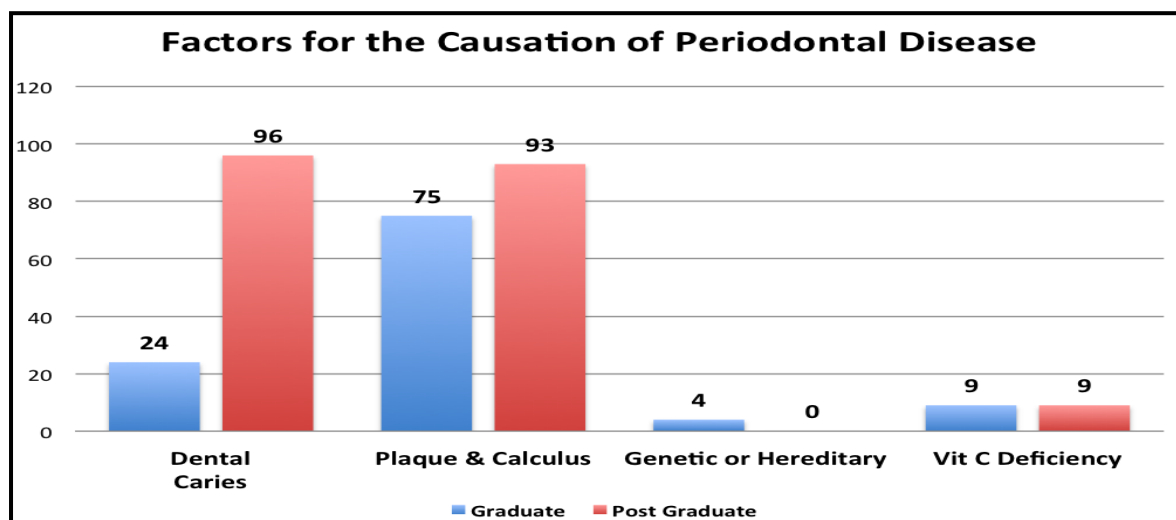
**Table 6: Chi-Square test Results – Comparing Education Qualification and Awareness Levels**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.089 <sup>a</sup>	2	0.580
Likelihood Ratio	1.061	2	0.588
N of Valid Cases	300		

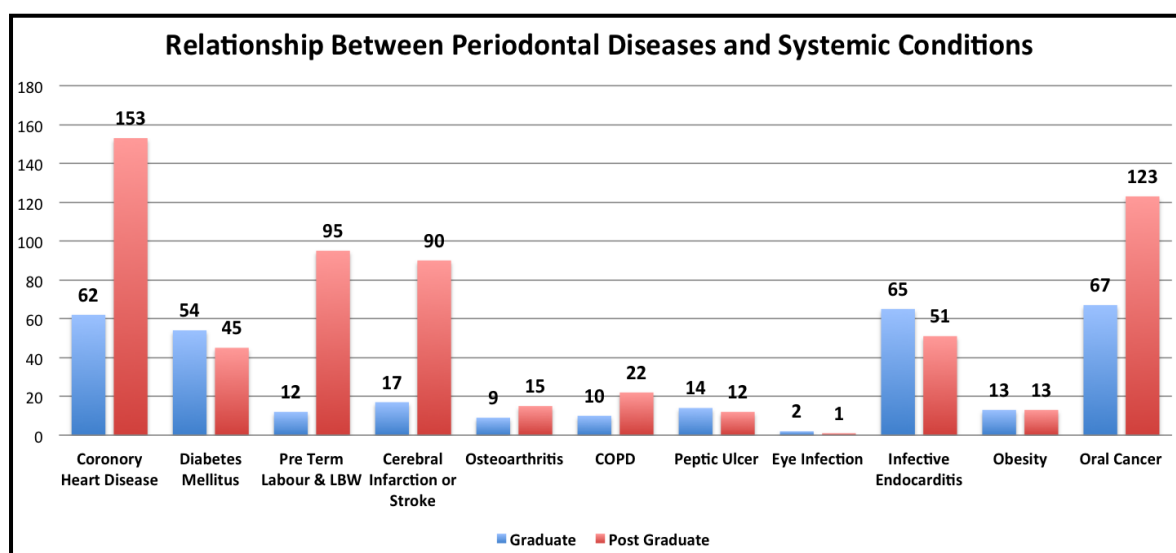
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.75.

**Table 7: Attitude of Study Subjects towards their patients having Dental Problems**

Attitude of Study Subjects	Options	Graduate	Post Graduate	Total
<b>Do you advice Dental Checkup to Pregnant Women?</b>	Yes	77 (73%)	158 (81%)	235 (78%)
	No	28 (27%)	37 (19%)	65 (22%)
<b>Do you advice Periodic Visit to a dentist for Pediatric Patients?</b>	Yes	84 (80%)	178 (91%)	262 (87%)
	No	21 (20%)	17 (9%)	38 (13%)
<b>Your Line of Action with Patient having Dental Problem</b>	Refer to Dentist	97 (92%)	192 (98%)	289 (96%)
	Prescribe Medication	8 (8%)	3 (2%)	11 (4%)
	Ignore	0	0	0 (0%)

**Figure 1: Factors for the Causation of Periodontal Disease<sup>⊗</sup>**

(<sup>⊗</sup> The number of responses is > 300 as some practitioners gave more than 1 response)

**Figure2: Relationship between Periodontal Diseases and Systemic Conditions\***

(\* The number of responses is > 300 as multiple options were allowed)

About 215 (72%), 107(36%), 107(36%) and 116 (39%) medical practitioners were aware that periodontal disease was a risk factor for coronary heart disease, preterm labour and low birth weight infants, cerebral infarction / stroke and infective endocarditis, respectively. 99 (33%) medical practitioners said that there was an association between diabetes mellitus and periodontal diseases. Also, 190 (63%) were of the opinion that periodontal diseases are a risk factor for oral cancer (**Figure 2**).

**Table 4** shows the Level of Awareness regarding knowledge about different periodontal diseases and their treatment options. They were scored into good, average and poor categories based on the total number of correct responses. 125 (64 %) of postgraduates and 63 (60 %) of graduates had good knowledge about periodontal diseases. A Chi-Square test was performed to test the Null

hypothesis of no association between Years of Experience & Awareness levels and between Educational Qualification & Awareness levels. There was no association between Years of Experience & Awareness levels,  $\chi^2(4, N = 300) = 7.021, p < 0.136$  (**Table 5**). Also, no association was found between Education Qualification & Awareness levels,  $\chi^2(2, N = 300) = 1.089, p < 0.581$  (**Table 6**).

Most of the medical practitioners, 235 (78%) graduates and 262(87%) postgraduates advised their pregnant and pediatric patients for periodic dental checkups. Also it was found that 289 (96%) medical practitioners would refer a patient to a dental clinic if he/she complained of dental problem (**Table 7**).

### Discussion

Periodontal disease is an infectious disease, caused by an interaction between the bacteria and host. It is infre-

quently a painful disease. It is an insidious disease and if left untreated, it will continue to destroy the soft tissue (gingiva) and the underlying alveolar bone. As the microorganisms along with their lipopolysaccharides disseminate in the systemic circulation, they can affect different organs/ systems of the body. The host response offers explanatory mechanism for the interaction between periodontal infection and a variety of systemic diseases like coronary heart disease <sup>(5,6,7)</sup>, preterm labour and low birth weight infants <sup>(8,9)</sup>, diabetes mellitus <sup>(10)</sup>, stroke <sup>(2)</sup> and chronic obstructive pulmonary disorder <sup>(11,12)</sup>.

The total surface area of the pocket epithelium in contact with the subgingival bacteria and their products in a patient with generalized moderate periodontitis is estimated to be the size of an adult hand.<sup>(13)</sup> An infection of the size of a palm of an individual would be a major concern for the patient and his/her doctor. Hence, periodontal disease must be viewed seriously, especially in susceptible individuals.

In India, the prevalence of periodontal disease is high and seeing its deleterious effect on the general health of the patient, it is essential for the medical practitioners to have a sound knowledge about the association of periodontal diseases and systemic conditions. Also, as the dentist-population ratio is less in India, so it is not unusual to find a patient visiting a medical practitioner / physician for oral problems. Thus, the medical practitioner can play a pivotal role in their medical care as well as dental care.

The present study reveals that the medical practitioners had a fairly good knowledge about the association between periodontal diseases and systemic conditions. However, Gur and Majra observed contrasting results in medical interns. They reported that the knowledge of medical interns was limited and recommended that more space be allocated to the subject of dental sciences in the medical curriculum.<sup>(14)</sup>

In regards to the etiology of periodontal disease, 168 (54%) medical practitioners said that plaque and calculus was responsible for the causation of periodontal disease. A substantial number of medical practitioners mentioned that dental caries was the important etiology of periodontal diseases; whereas, in a study by Srinidhi et al. the percentage of positive respondents was much higher (73.3%) than the present study. They reported that caries was next important factor for the causation of periodontal diseases, which was similar to the present study.<sup>(15)</sup>

The two – way relationship between periodontal diseases and systemic conditions was mentioned by about 71% of medical practitioners in the present study. However,

in a study conducted in medical interns, it was reported that most of them were unaware about the two - way relationship.<sup>(14)</sup> The awareness about the correlation between periodontal diseases and coronary heart disease, preterm labour and low birth weight, cerebral infarction and infective endocarditis was higher as compared to the study by Gur and Majra. They reported that 16%, 12%, 8% and 3% respondents were aware that periodontal disease might be a possible risk factor for coronary heart disease, cerebral infarction, diabetes mellitus and preterm labour and low birth weight infants.<sup>(14)</sup> Another study reported that periodontal disease was an important risk factor for infective endocarditis as compared to heart attack, myocardial infarction and peptic ulcer.<sup>(15)</sup>

The present study reports that medical practitioners consider periodontal disease to be an important risk factor for oral cancer as compared to diabetes mellitus. In fact, literature reports that periodontal diseases are more closely associated with diabetes mellitus.<sup>(16)</sup> There is hardly any evidence about periodontal disease being a risk factor for oral cancer.<sup>(17)</sup> This would hence attract certain knowledge updation as India is labeled as diabetes capital of the world.<sup>(18)</sup>

188 (62.6%) of medical practitioners had overall good knowledge about different periodontal diseases and their different treatment modalities. Only 25 (8.3%) had poor knowledge. However, a study conducted among medical professionals mentioned poor awareness levels about different periodontal problems and their treatment modalities.<sup>(19)</sup>

## Conclusion

To conclude, the level of awareness regarding medical practitioners was fairly good in the New Delhi (India). The knowledge regarding certain systemic diseases, especially diabetes mellitus were not significantly correlated to periodontal disease and hence require updating of the knowledge levels so as to serve the community in a better way. However, this study was conducted in a particular area and hence, the findings may not be applicable nationally.

## Future recommendations:

- Continuing medical education programs / seminars should be conducted to update their knowledge about the periodontal and systemic diseases correlation and increase their awareness regarding the two-way process.
- Setting up of combined clinics where both medical and dental treatments can be made available to patients.
- Similar survey on a national level will give a better insight of the topic.

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## Competing Interests

None declared.

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