



# KNOWLEDGE, ATTITUDE TOWARDS IMPACT OF PERIODONTAL DISEASES ON CARDIAC HEALTH AMONG DENTAL AND MEDICAL PRACTITIONERS IN A CITY IN CHHATTISGARH STATE, INDIA

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## ABSTRACT

**Aim:** The present study is conducted to explore the knowledge, attitude towards impact of periodontal diseases on cardiac health among general practitioners.

**Material and Methods:** The present study is a Cross-sectional questionnaire descriptive study. The present study was conducted in a city in Chhattisgarh state among the general dental and medical practitioners running their private clinic. Dental and medical practitioners present on day of survey in the clinic and given their written informed consent were interviewed by the single investigator.

**Results:** To the questions regarding impact of periodontal diseases on cardiac health, 23 (56%) of dental practitioners agree with this fact while for 21 (55%) of medical practitioners says that there is no impact. Majority of study subjects 71 (90%) agree with the statement that patients diagnosed with cardiovascular disease are more likely to have periodontal disease. Forty-two (53%) of study participants agree with the fact that controlling periodontal diseases is important for managing cardiovascular disease.

**Conclusions:** It has been concluded that both dental and medical practitioners had moderate knowledge and fair attitude towards the impact towards impact of periodontal diseases on cardiac health.

**KEYWORDS:** knowledge, attitude, periodontal diseases, cardiac, health

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## INTRODUCTION

Periodontal disease is an inflammatory disease that affects the soft and hard structures that support the teeth. In its early stage, called gingivitis, the gums become swollen and red due to inflammation, which is the body's natural

response to the presence of harmful bacteria<sup>1</sup>. Periodontal diseases range from simple gum inflammation to serious diseases that result in major damage to the soft tissue and bone that support the teeth. In the worst cases, teeth are lost<sup>2</sup>.

Various studies<sup>3-5</sup> in the past shows correlation of periodontal diseases with many systemic diseases. One of the associations is between periodontal diseases and Cardiac Health. According to World Health Organization (WHO) cardiovascular disease is the main cause

of death worldwide<sup>6</sup>. Many risk factors for coronary heart disease (CHD) have been identified, but a significant proportion of coronary heart disease (CHD) cases have not been yet explained by traditional risk factors. Recently, evidence has implicated chronic inflammation in CHD and cardiovascular disease (CVD)<sup>7</sup>.

On the other hand periodontal diseases associated with elevations of several markers of chronic inflammation<sup>8-10</sup>. Since evidence has implicated chronic inflammation in the etiology of CHD, an etiologic relationship has been hypothesized between periodontal disease and coronary heart disease<sup>7</sup>. For these reasons, there has been strong interest in evaluating whether periodontal disease is independently associated with CHD.

It has been shown by various studies that Coronary heart disease and periodontal disease have many similar contributing risk factors such as smoking, diabetes, and obesity<sup>11-13</sup>. Periodontal disease is a direct pathway for which the two diseases could be related.

In a study by Mucciet al<sup>14</sup> which reported that inflammatory mediators that react in response to periodontal pathogens could have a possible effect on the systemic inflammatory response to the development of atherosclerotic plaque. In a study by de Oliveira et al<sup>15</sup>. The results indicated that individuals with poor oral hygiene had higher risk of cardiovascular disease. A meta- analysis conducted in the general population which aims to determine the relationship between PD and coronary heart disease states that biological markers such as C-reactive proteins serve as indicators of additional coronary heart disease (CHD). It reported that PD results in approximately 24-35% of increase in risk

for CHD<sup>16</sup>.

As there is enough evidence of correlation between periodontal diseases and cardiovascular diseases, therefore general dental and medical practitioners should have proper knowledge about the aggravating and reliving factors so every patient should be educated regarding the impact. Therefore the present study is conducted to explore the knowledge, attitude towards impact of periodontal diseases on Cardiac Health among general Practitioners.

### MATERIAL AND METHODS

The present study is a Cross-sectional questionnaire descriptive study conducted to determine the knowledge, attitude towards impact of periodontal diseases on Cardiac Health among General Practitioners.

The present study was conducted in a city in Chhattisgarh state among the general dental and medical practitioners running their private clinic. The city is divided into 5 geographical directions consisting of south, north, east, west and central. From each direction 5 dental and medical clinics were selected randomly. Dental and Medical practitioners present on day of survey in the clinic and given their written informed consent were interviewed by the single investigator. The questionnaire was handed over to the practitioners who were not free to take up the survey on the same day and taken again after 2 days.

Ethical clearance was obtained from independent ethical committee in Chhattisgarh state. Before the survey a pilot survey was conducted to check the validity and reliability of the Questionnaire. Internal consistency of questionnaires was measured by applying Chronbachs-Alpha ( $\alpha$ ) and the

value of  $\alpha=0.82$  was measured. Reliability of the Questionnaire was measured by using Test-Retest and the values of measured Kappa (k) =0.91 Weighted Kappa (kw) = 0.9.

A closed ended questionnaire was framed to measure the knowledge and attitude of practitioners. The first part of questionnaire consists of Demographic details of study participants includes age, gender, socio-economic status, years of practice, Average patients per day in clinic, Specialization and super- specialization if the study participants had done. Second part of questionnaire consists of six questions based on the knowledge of study participants regarding the impact of periodontal diseases on Cardiac health. Third part consists of questions related to attitude of study participants regarding impact of periodontal diseases on Cardiac health.

The data collected was entered into Microsoft excel 2010. Percentages and frequencies were calculated and presented.

### RESULTS

Table 1 shows the demographic details of study subjects. Majority of dental practitioners {18 (44%)} were between 31 to 40 years of age group while medical practitioners {33(42%)} were above 40 years of age group. Majority of both dental {26 (63%)} and medical practitioners {21 (55%)} were male. Most of study participants {42(53%)} of study participants were of high socio-economic status. Most of dental practitioner {22(54%)} were practicing for more than 10 years while three-fourth of medical practitioners were practicing for less than 10 years. Among the clinics of 30 (73%) dental practitioners average patient per day is less than 10 while in 26 (68%)

medical practitioners average patients per day was more than 10. Majority of study participants 45 (57%) had done specialization in their course. Table 2 shows knowledge of study participants regarding the impact of periodontal diseases on cardiac health. To the questions regarding impact of Periodontal Diseases on cardiac Health, 23 (56%) of dental practitioners agree with this fact while for 21 (55%) of medical practitioners says that there is no impact. 27 (34%) of all study participants know that inflammation is the key component between Periodontal diseases and Cardiac health. Most of study participants 50 (64%) says that patients with periodontal diseases likely to have both Myocardial infarction, Atherosclerosis. Majority of study participants 56 (71%) reported that males with periodontal diseases with age above 40 years of age are more vulnerable to bad cardiac health. 47 (59%) of study participants don't know that periodontal diseases are cause or risk factor for bad cardiac health. Table 3 shows the attitude of study participants towards the impact of periodontal diseases on cardiac health. Majority of study subjects 71 (90%) agree with the statement that Patients diagnosed with cardiovascular disease are more likely to have periodontal disease. 42 (53%) of study participants agree with the fact that Controlling periodontal diseases is important for managing Cardiovascular disease. Most of study participants agree with the fact that it is important for cardiologists and periodontists to work together to educate their patients on these diseases. 56 (71%) study participants was agree with the statement that Medical and dental professionals should be trained to work collaboratively. 39 (95%) of dental professionals were disagree with the fact the statement that professional

education, including oral health content should be added in medical curriculum, and 20 (53%) medical professionals were agree with this statement.

## DISCUSSION

The present study is one of its first kind in which comparison between dental and medical professionals was included regarding the knowledge and attitude towards impact of periodontal diseases on cardiac health.

In the present study only 5% of medical practitioners were having bachelor's degree and 53% of them had passed their specialization degree while in a study by Vellayappan et al<sup>3</sup> 13% were holding bachelor's degree and 55% had passed their specialization degree. In the present study 74% of medical practitioners had practice less than 10 years while in study conducted by Vellayappan R et al<sup>3</sup> 50% of medical practitioners have practice from 0 to 1 year.

In the present study private dental and medical practitioners were included in the study as compared to study by Kashefimehr et al<sup>16</sup> in which only cardiologists were included. In the present study 51% of study participants knew that there is impact of periodontal diseases on cardiac health while in study by Kashefimehr et al<sup>16</sup> 27 (54%) study participants knowledgeable regarding the link between periodontal disease and cardiovascular disease. While in study conducted by Vellayappan et al<sup>3</sup> on medical practitioners which reported that 60% of study participants aware of the relationship between periodontal health and cardiac disease. In the present study 27(34%) study participants knew that Inflammation is a key component between periodontal disease and cardiovascular disease, while in study by Kashefimehr et al<sup>16</sup>, 41 (82%) knew this

link. 50 (64%) of study participants reported that Patients with periodontal disease are more likely to have Myocardial infarction and Atherosclerosis, while in study conducted on Cardiologists by Kashefimehr et al<sup>16</sup> in which 44 (88%) medical professionals reported the same.

In the present study majority of study subjects 71 (90%) agree with the statement that Patients diagnosed with cardiovascular disease are more likely to have periodontal disease. While in the study conducted by Kashefimehr et al<sup>16</sup> 66% of study participants agree with the statement. In the present study majority of study participants agree with the statement that controlling periodontal diseases is important for managing cardiovascular disease same results were seen in the study conducted by Kashefimehr et al<sup>16</sup>. More than half of study participants in the present study was agree with the fact that It is important for cardiologists and periodontists to work together to educate their patients on these diseases. Same results were shown in study by Kashefimehr et al<sup>16</sup> in which 80% of study participants agree with the statement. In the present study 71% of study participants agree with the statement that Medical and dental students should be trained to work collaboratively, While in the study by Kashefimehr et al 80% of study participants says yes to this statement. In the present study most of study participants disagree with the statement that Professional education, including oral health content should be added in medical curriculum, same results were seen in the study by Kashefimehr et al<sup>16</sup>.

Table 1. Demographic detail of study participants.

Demographic variables		Dental Practitioners N (%)	Medical Practitioners N (%)	Total N (%)
Age	21-30 years	9 (22%)	6 (16%)	15 (19%)
	31-40 years	18 (44%)	13 (34%)	31 (39%)
	More than 40 years	14 (34%)	19 (50%)	33 (42%)
	<b>Total</b>	<b>41 (100%)</b>	<b>38 (100%)</b>	<b>79 (100%)</b>
Gender	Male	26 (63%)	21 (55%)	47 (60%)
	Female	15 (27%)	17 (45%)	32 (40%)
	<b>Total</b>	<b>41 (100%)</b>	<b>38 (100%)</b>	<b>79 (100%)</b>
Socio-economic status	Low	3 (7%)	2 (5%)	5 (6%)
	Middle	18 (44%)	14 (37%)	32 (41%)
	High	20 (49%)	22 (58%)	42 (53%)
	<b>Total</b>	<b>41 (100%)</b>	<b>38 (100%)</b>	<b>79 (100%)</b>
Year of practice	Less than 10 years	19 (46%)	28 (74%)	47 (59%)
	More than 10 years	22 (54%)	10 (26%)	32 (41%)
	<b>Total</b>	<b>41 (100%)</b>	<b>38 (100%)</b>	<b>79 (100%)</b>
Average patients per day in clinic	Less than 10	30 (73%)	12 (32%)	42 (53%)
	More than 10	11 (27%)	26 (68%)	37 (47%)
	<b>Total</b>	<b>41 (100%)</b>	<b>38 (100%)</b>	<b>79 (100%)</b>
Type of Degree	Bachelor's	16 (39%)	2 (5%)	18 (23%)
	Specialization	25 (61%)	20 (53%)	45 (57%)
	Super- Specialization	00 (0%)	16 (41%)	16 (20%)
	<b>Total</b>	<b>41 (100%)</b>	<b>38 (100%)</b>	<b>79 (100%)</b>

Table 2. Knowledge regarding the impact of periodontal diseases on cardiac health.

		Dental Practitioners N (%)	Medical Practitioners N (%)	Total N (%)
Is there any Impact of Periodontal Diseases on cardiac Health?	Yes	23 (56%)	17 (45%)	40 (51%)
	No	18 (44%)	21 (55%)	39 (49%)
	<b>Total</b>	<b>41 (100%)</b>	<b>38 (100%)</b>	<b>79 (100%)</b>
Which is the key component between Periodontal diseases and Cardiac Health	Infection	9(22%)	10(26%)	19(24%)
	Inflammation	17(42%)	10(26%)	27(34%)
	bleeding	5 (12%)	6 (16%)	11 (14%)
	All of the above	10 (24%)	12 (32%)	22 (28%)
<b>Total</b>	<b>41 (100%)</b>	<b>38 (100%)</b>	<b>79 (100%)</b>	
Patients with periodontal disease are more likely to have	Myocardial infarction	8 (20%)	5 (13%)	13 (16%)
	Atherosclerosis	9 (22%)	7 (18%)	16 (20%)
	All of the above	24 (58%)	26 (69%)	50 (64%)
	<b>Total</b>	<b>41 (100%)</b>	<b>38 (100%)</b>	<b>79 (100%)</b>
Male or female with Periodontal diseases, who is more vulnerable to Cardiovascular diseases	Male	32 (78%)	24 (63%)	56 (71%)
	Female	9 (22%)	14 (37%)	23(29%)
	<b>Total</b>	<b>41 (100%)</b>	<b>38 (100%)</b>	<b>79 (100%)</b>
Which age group with periodontal diseases is more vulnerable to Cardiac problems?	20-30 years	3 (7%)	2 (5%)	5 (6%)
	30-40 years	14 (34%)	9 (24%)	23 (29%)
	More than 40 years	24 (59%)	27 (71%)	51 (65%)
	<b>Total</b>	<b>41 (100%)</b>	<b>38 (100%)</b>	<b>79 (100%)</b>
Is periodontal diseases is the risk factor for Cardiac diseases or cause of cardiac disease	Risk factor	16 (39%)	16 (42%)	32 (41%)
	Cause	0 (0%)	0 (0%)	0 (0%)
	Don't know	25 (61%)	22 (58%)	47 (59%)
<b>Total</b>	<b>41 (100%)</b>	<b>38 (100%)</b>	<b>79 (100%)</b>	

Table 3. Attitude regarding the impact of periodontal diseases on cardiac health.

		Dental Practitioners N (%)	Medical Practitioners N (%)	Total N (%)
Patients diagnosed with cardiovascular disease are more likely to have periodontal disease.	Agree	38 (93%)	33 (87%)	71 (90%)
	Disagree	3 (7%)	5 (13%)	8 (10%)
	<b>Total</b>	<b>41 (100%)</b>	<b>38 (100%)</b>	<b>79 (100%)</b>
Controlling periodontal diseases is important for managing Cardiovascular disease.	Agree	22 (54%)	20 (53%)	42 (53%)
	Disagree	19 (46%)	18 (47%)	37 (47%)
	<b>Total</b>	<b>41 (100%)</b>	<b>38 (100%)</b>	<b>79 (100%)</b>
It is important for cardiologists and periodontists to work together to educate their patients on these diseases.	Agree	32 (78%)	24 (63%)	46 (58%)
	Disagree	9 (22%)	14 (37%)	33 (42%)
	<b>Total</b>	<b>41 (100%)</b>	<b>38 (100%)</b>	<b>79 (100%)</b>
Medical and dental professionals should be trained to work collaboratively.	Agree	32 (78%)	24 (63%)	56 (71%)
	Disagree	9 (22%)	14 (37%)	23 (29%)
	<b>Total</b>	<b>41 (100%)</b>	<b>38 (100%)</b>	<b>79 (100%)</b>
Professional education, including oral health content should be added in medical curriculum.	Agree	2 (5%)	20 (53%)	22 (28%)
	Disagree	39 (95%)	18 (47%)	57 (72%)
	<b>Total</b>	<b>41 (100%)</b>	<b>38 (100%)</b>	<b>79 (100%)</b>

## CONCLUSIONS

From above results it has been concluded that both dental and medical practitioners had moderate knowledge and fair attitude towards the impact towards impact of periodontal diseases on cardiac health. More studies with larger sample size and multicentric studies are needed to explore the knowledge of the practitioners.

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