

ORIGINAL RESEARCH

Assessment of periodontal disease as a risk factor in cardiovascular diseases**Dr. Nitika Trehan^{*1}, Dr. Irum²**¹B.D.S (Himachal Pradesh University), Consultant at Yash Hospital, Dehradun, Uttarakhand, India;

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Corresponding author: Dr. Nitika Trehan, B.D.S (Himachal Pradesh University), Consultant at Yash Hospital, Dehradun, Uttarakhand, India**ABSTRACT:**

Background: Periodontitis is a multifactorial, chronic inflammatory disorder, that can lead, if untreated, to the non-reversible damage of supportive tissues (periodontal ligament, cementum and alveolar bone) surrounding the teeth with consequent tooth loss. The present study was conducted to assess periodontal disease as a risk factor in cardiovascular diseases (CVD). **Materials & Methods:** 160 dentists of both genders were divided into 4 groups. Group I - dentists in dental colleges, group II – Sole private practitioners, group III – dentists associated with dental colleges and having their private practice and group IV - post-graduate students pursuing MDS. Questionnaires were distributed among all. **Results:** Group I had 22 males and 8 females, group II had 20 males and females, group III had 15 males and 25 females and group IV had 17 males and 23 females. 1-5 years of experience was seen in 8 in group I, 12 in group II, 7 in group III and 10 in group IV, 6-10 years in 10 in group I, 18 in group II, 7 in group III and 10 in group IV and 10-15 years in 22 in group I, 10 in group II and 23 in group III. Oral Health related to systemic health replied by 100% by all groups, major risk factors by 6% in group I, 7% in group III and 23% in group IV, minor risk factors in 5% in group I, III and 22% in group IV, risk factor by 2% in group I, 3% in group III and 3% in group IV, not a risk factor by 1% in group I and III, do not know by 1% in group I and not answered by 1% in group IV. **Conclusion:** All had sufficient knowledge regarding the periodontal disease as a risk factor in CVD.

Key words: CVD, Periodontitis, Dentist**Introduction**

Periodontitis is a multifactorial, chronic inflammatory disorder, that can lead, if untreated, to the non-reversible damage of supportive tissues (periodontal ligament, cementum and alveolar bone) surrounding the teeth with consequent tooth loss.^{1,2} Importantly, one of the major determinants of the development and progression of periodontal disease is represented by an increased concentration of pathogenic bacteria, within the dental plaque, that activates a massive noxious immune response.³ For instance, the augmented concentration of bacterial surface molecules, such as lipopolysaccharides (LPS), stimulates the production of inflammatory mediators and cytokines that, in turn, promotes the release of the matrix metalloproteinases (MMPs). These tissue-derived enzymes then participate in the extracellular matrix remodelling and bone destruction.⁴

Several studies have suggested the existence of a bidirectional link between periodontal health and CVDs. People with diabetes are more likely to suffer from periodontitis than people without this syndrome. Analogously, it is now evident that cardiac disorders are

worsened by periodontitis, both in humans and experimentally.⁵ Therefore, it is very crucial that preventing periodontitis has an impact on the onset or progression of CVD and diabetes. It has also been established that in response to LPS (lipopolysaccharide)/endotoxin from the bacterial micro-organisms, endogenous host products are produced that can activate the host immune response, releasing cytokines, TNF-alpha, prostaglandins, and matrix metalloproteinases.⁶ The present study was conducted to assess periodontal disease as a risk factor in cardiovascular diseases (CVD).

Materials & Methods

The present study comprised of 160 dentists of both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. They were divided into 4 groups. Group I - dentists in dental colleges, group II – Sole private practitioners, group III – dentists associated with dental colleges and having their private practice and group IV - post-graduate students pursuing MDS. Questionnaires were distributed among all. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

Results

Table I Distribution of subjects

Parameters	Variables	Group I	Group II	Group III	Group IV	P value
Gender	Male	22	20	15	17	0.09
	Female	18	20	25	23	
Year of experience	1-5 years	8	12	10	30	0.05
	6-10 years	10	18	7	10	
	10-15 years	22	10	23	0	

Table I shows that group I had 22 males and 8 females, group II had 20 males and females, group III had 15 males and 25 females and group IV had 17 males and 23 females. 1-5 years of experience was seen in 8 in group I, 12 in group II, 7 in group III and 10 in group IV, 6-10 years in 10 in group I, 18 in group II, 7 in group III and 10 in group IV and 10-15 years in 22 in group I, 10 in group II and 23 in group III. The difference was significant ($P < 0.05$).

Graph I Table I Distribution of subjects

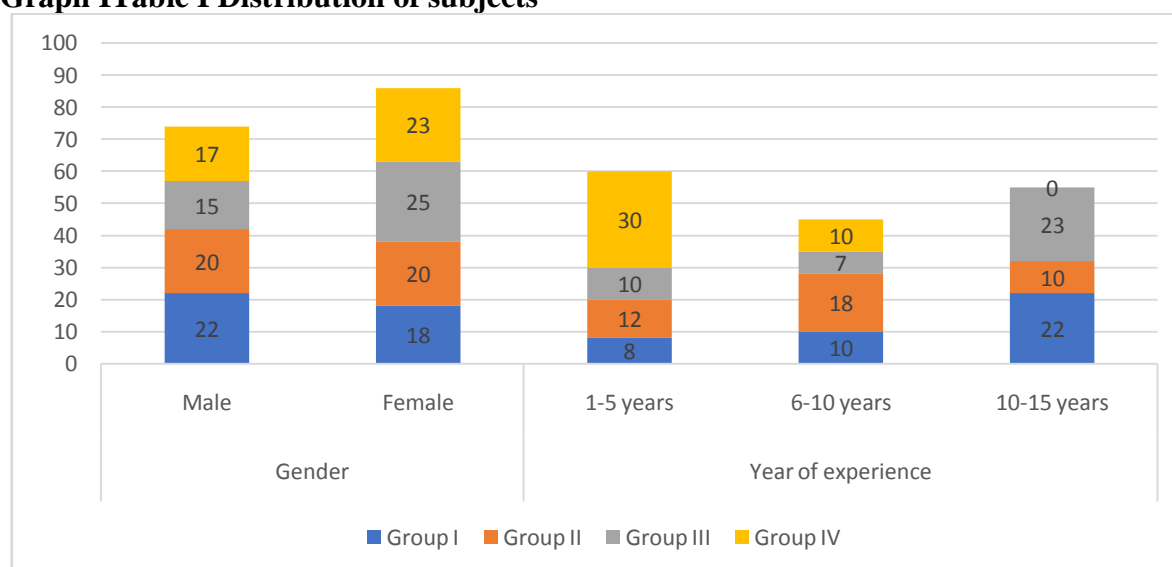
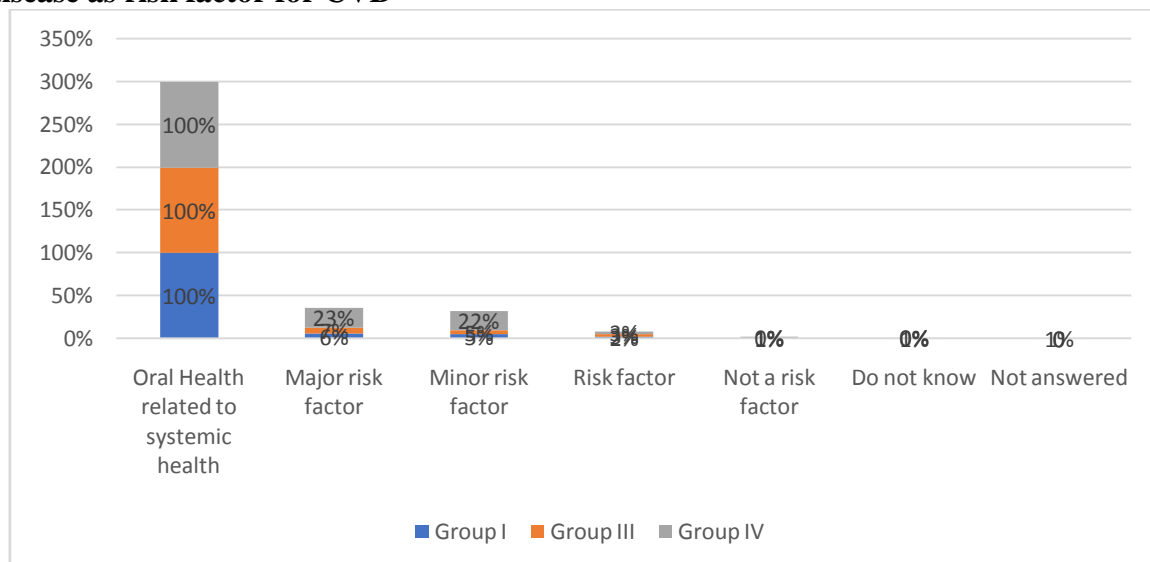


Table II Knowledge regarding oral health related to systemic health and Periodontal disease as risk factor for CVD

Questionnaire	Group I	Group III	Group IV	P value
Oral Health related to systemic health	100%	100%	100%	1
Major risk factor	6%	7%	23%	0.01
Minor risk factor	5%	5%	22%	0.05
Risk factor	2%	3%	3%	1
Not a risk factor	1%	0%	1%	0.91
Do not know	1%	0%	0%	0.21
Not answered	0	0	1%	0.17

Table II, graph I shows that oral Health related to systemic health replied by 100% by all groups, major risk factors by 6% in group I, 7% in group III and 23% in group IV, minor risk factors in 5% in group I, III and 22% in group IV, risk factor by 2% in group I, 3% in group III and 3% in group IV, not a risk factor by 1% in group I and III, do not know by 1% in group I and not answered by 1% in group IV. The difference was significant ($P < 0.05$).

Graph II Knowledge regarding oral health related to systemic health and Periodontal disease as risk factor for CVD

Discussion

Periodontal pathogens can destroy the epithelium of the periodontal pocket thus allowing the entry of noxious endotoxins and exotoxins into the bloodstream.⁷ This process leads to bacterial dissemination and systemic infection, with a consequent rise in inflammatory response.⁸ For instance, periodontal pathogens have been detected in disparate tissues and organs of the cardiovascular system including human cardiac tissue, pericardial fluids, heart valves and in atherosclerotic lesions.⁹ For these reasons, in the last decades, periodontitis has been associated with the onset of systemic disorders including cardiovascular disease (CVDs) and diabetes.¹⁰ The present study was conducted to assess periodontal disease as a risk factor in cardiovascular diseases (CVD).

In present study, group I had 22 males and 8 females, group II had 20 males and females, group III had 15 males and 25 females and group IV had 17 males and 23 females. 1-5 years of experience was seen in 8 in group I, 12 in group II, 7 in group III and 10 in group IV, 6-10 years in 10 in group I, 18 in group II, 7 in group III and 10 in group IV and 10-15 years in 22

in group I, 10 in group II and 23 in group III. Janket et al¹¹ evaluated the potential correlation between oral disease and CVD, concluding that periodontal disease is a potential risk factor for cardiovascular (CV) events, such as stroke and coronary heart disease. Furthermore, it has been previously demonstrated that individuals with periodontitis have a sensible increased risk of developing CVDs, including myocardial infarction, heart failure, peripheral artery disease (PAD), atherosclerosis and stroke.

We found that oral Health related to systemic health replied by 100% by all groups, major risk factors by 6% in group I, 7% in group III and 23% in group IV, minor risk factors in 5% in group I, III and 22% in group IV, risk factor by 2% in group I, 3% in group III and 3% in group IV, not a risk factor by 1% in group I and III, do not know by 1% in group I and not answered by 1% in group IV. Arya et al¹² assessed the knowledge and practices of physicians on periodontal disease as a risk factor in cardiovascular diseases (CVD). Out of a total of 106 physicians, 56 (52.3%) participated in the survey. Periodontal disease was considered to be a risk factor in CVD by 87.5% (n=47) respondents and 96.4% (n=54) respondents stated that bleeding/enlargement of the gingivae was a sign of periodontal infection. Only 40% (n=23) of the respondents asked about oral problems during general check-up.

Myocardial infarction and periodontal disease share several common risk factors, including diabetes, smoking and inflammation. For this reason, a growing body of evidence suggests that periodontal disease is associated with increased myocardial infarction risk. Of note, in the 1980s Mattila and colleagues observed that dental health was significantly worse in patients with myocardial infarction than healthy controls. Twenty-years later, Willershausen and coworkers¹³ demonstrated that there was a strict association between chronic dental infection and acute myocardial infarction. Further to this, Jansson and coworkers suggested that oral disease could be used as a risk indicator of death due to CVD, especially when this was combined with other well-established risk factors, such as smoking.¹⁴

Conclusion

Authors found that all had sufficient knowledge regarding the periodontal disease as a risk factor in CVD.

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