

# Periodontal Disease and Its Bi-Directional Relationship with Systemic Disease: A Survey among Medical Interns and Graduates.

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## ABSTRACT

**Background:** To assess the level of awareness on periodontal disease and its bidirectional relationship with systemic diseases among medical interns and graduates. **Methods:** A Cross sectional survey was conducted among 105 Medical interns and 53 Graduates in a medical college of northern India. Statistical analysis: Descriptive statistical analysis and chi-square test were used. **Results:** Regarding awareness on the importance of oral health 92% of the participants reported very important and 77.1% of them were aware of periodontal disease but only 6.7% of them were knowing about the bidirectional relationship between periodontal disease and systemic diseases. 94.3% of the participants were agreed for the inclusion of certain dental topics on oral examination and diagnosis in medical curriculum. **Conclusion:** We conclude that there is an urgent need to include selected dental topics of oral examination and diagnosis in medical curriculum.

**Keywords:** Knowledge; Medical curriculum; Periodontal disease; Systemic disease

## INTRODUCTION

Periodontitis is an infectious disease associated with a small number of predominantly gram-negative microorganisms that exist in a subgingival biofilm.<sup>[1]</sup> According to World Health Organization (WHO) 10 – 15% of the world populations suffer from severe Periodontitis. In India it is the most common oral infection with a prevalence rate of 55.4% at the age of 12 and 89.2% in the age group of 35-44 years and 79.4% in 65-74 years of age group.<sup>[2]</sup>

Periodontal disease has many stages, ranging from easily treatable gingivitis to irreversible severe Periodontitis. During pathogenesis of the periodontal disease, periodontal pathogens and

their toxins such as cytolytic enzymes & lipopolysaccharides have access to the blood stream, a number of inflammatory mediators, including tumor necrosis factor alpha, interleukin (IL)-β, Prostaglandin E2, interferon-γ are produced. These inflammatory mediators stimulate a chronic inflammatory response in the body that lead to breakdown of connective tissue attachment leading to formation of periodontal pocket, alveolar bone resorption, gingival recession, tooth mobility & tooth loss.<sup>[3,4]</sup>

Although pathogenic bacteria are necessary for periodontal disease, they are not sufficient alone to cause the disease, a susceptible host is also imperative. The importance of host susceptibility is clearly evident in the medical literature. Many of the systemic conditions act as a modifier or a risk factor for Periodontitis. Two way relationship of periodontitis and systemic disease such as cardiovascular disease, stroke, diabetes mellitus, preterm labour, preeclampsia and respiratory condition such as chronic obstructive periodontal

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disease (COPD) and pneumonia has been established.<sup>[1-5]</sup>

A number of possible biological pathways link is present between periodontal infection and systemic disease i.e (a) oral – hematogenous spread of periodontal pathogens and direct effects to target organs (b) Transtracheal spread of periodontal pathogens and direct effects to target organs (c) Oral hematogenous spread of cytokines and antibodies with effects at distant organs.<sup>[3]</sup>

The interrelation between dentistry and medicine has been documented throughout history. In the past, where knowledge of health science was very poor and where people had to survive epidemics of infectious diseases, oral health was far from a priority and likely very precarious, creating terrible images of dirty and decayed teeth with bad breath. Reports from the ancient Egyptian Medicine suggested that health of the body could be improved after tooth extractions.<sup>[6]</sup>

In the year 1891 Walter Miller described the mouth as a “focus of infection” through which “microorganisms or their waste products obtain entrance to parts of the body adjacent to or remote from the mouth.” In 1900 William Hunter believed that teeth are liable to septic infection. Mattila and co-workers in 1989 reintroduced the association between oral infection and systemic disease.<sup>[7]</sup> This relationship between periodontal health or disease and systemic health or disease has given rise to a discipline in periodontology termed as “Periodontal Medicine” by Offenbacher in the year 1996.<sup>[8]</sup>

Hence the present study was undertaken to assess the awareness among medical interns and graduates about the periodontal disease and its bidirectional relationship between systemic diseases in a medical college of northern India.

## MATERIALS AND METHODS

The present study was carried out in one of the private medical college of northern states of India. Consent for conducting the study was obtained from the concerned authority of the institution, after appraising them regarding the purpose and significance of the study. This cross sectional survey was conducted among medical interns and graduates to assess the awareness on periodontal disease and its bidirectional relationship with systemic disease.

The study consisted of total 163 participants which included 105 interns and 53 medical graduates. A verbal consent was obtained from all the participants. The data was collected using a self structured, pretested questionnaire.

The questionnaire included the demographic details and 15 questions with multiple choice answers. The questions were framed to assess the awareness among study group regarding the importance of oral health in having good systemic health, on the

cause and consequences of periodontal disease regarding the bidirectional relationship between periodontal disease and systemic diseases, about the attitude related to referral of their patient to periodontist or dentist and finally on their opinion on the inclusion of certain dental topics related to oral examination and diagnosis in the medical curriculum. The study participants were instructed not to discuss any answer with any of the study participants. The purpose of the study and all the terms used in the study were explained to participants and were ensured maintaining total confidentiality.

## Statistical Analysis

The responses were complied, computed and statistically analyzed by descriptive statistical analysis and chi-square test. The results were expressed in terms of percentage.

## RESULTS

All the participants answered each question. 92% of participants reported very important and 8% of them considered as moderately important, regarding the importance of oral health to have good systemic health, which is found to be statistically significant [Figure 1].

77.1% of them were aware of what is periodontal disease, 13.3% and 9.5% of the subjects reported no and not sure respectively on the awareness of periodontal disease, 44.8% were reported yes regarding awareness on the cause of periodontal disease and 27.6% of them responded no for the same. Regarding the awareness on the consequences of periodontal disease, only 10.5% of them answered yes, 74.3% & 15.2% of them reported no and not sure respectively [Figure 2].

Related to bidirectional relationship between periodontal disease and systemic diseases 69.5% of participants were aware of the fact that certain systemic diseases can lead to periodontal disease. 21% & 9.5% were reported no and not sure respectively. Only 6.7% of study subjects reported as yes 78.1% and 15.2% responded as no and not sure respectively on the awareness regarding can periodontal disease lead to certain systemic disease [Figure 3].

On the referral of their patient to periodontist or dentist, only 23% of them referred sometimes and 77% never referred their patient to periodontist or dentist [Figure 4].

94.3% of them totally agreed for the inclusion of topics on oral examination and diagnosis in medical curriculum, only 1% and 4.8% of them reported disagree and not sure respectively [Figure 5].

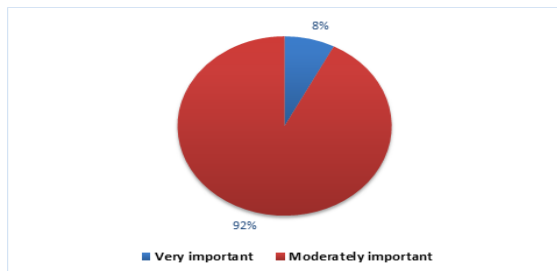


Figure 1: Awareness on importance of Oral Health on Systemic Health.

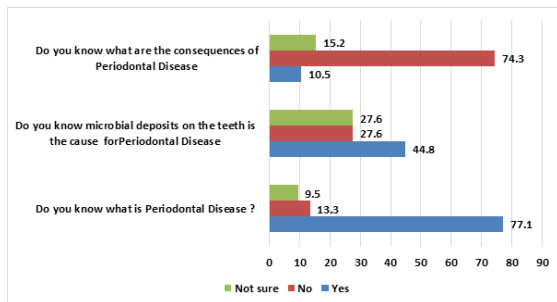


Figure 2: Awareness on Periodontal disease, cause & consequences.

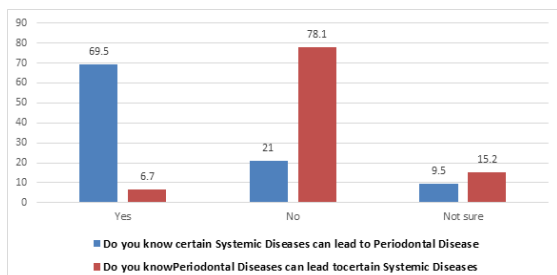


Figure 3: Awareness on Bidirectional relationship between Periodontal disease and systemic disease

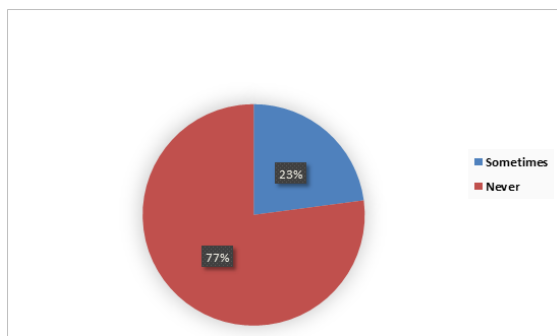


Figure 4: Attitude of Medical graduates in referring their patients to Dentist/ Periodontist

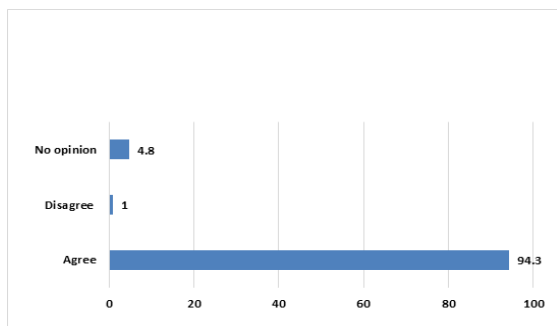


Figure 5: Regarding the inclusion of topics on Oral examination and Diagnosis in Medical curriculum

## DISCUSSION

The World Health Organization (WHO) defined health in its broader sense in its 1948 constitution as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity. The present study was based on the fact that medical doctors form a main group as primary health care providers and their awareness on the impact of periodontal disease on the systemic health is of utmost important, because there is a substantial amount of literature available on the bidirectional relationship between periodontal disease and systemic diseases that means periodontal disease could be one of the risk factor for many systemic diseases and large number of systemic diseases were also considered as a risk factor for periodontal disease.<sup>[9]</sup>

In our study 92% of the study participants were reported that it is very important to have a good oral health to have a good systemic health. In a previous study about 94% of medical and 80% of ayurveda students were aware that bad oral hygiene can cause adverse effects on general health, our finding on the awareness of the periodontal disease in the study population was found to be 44%. In an another study 80% of the study group were aware of the fact that plaque is the cause for periodontal disease.<sup>[11]</sup>

Only 6.7% our study subjects were aware of the influence of periodontal disease on systemic diseases. In a similar study 11% of the participants were aware on the systemic effects of periodontal disease among medical interns.<sup>[5]</sup>

As periodontal disease is very prevalent in India, it is very important to diagnose periodontal disease at its early stage there by to prevent the associated morbidity and mortality. Medical Healthcare professionals can act as a good source of knowledge providers to general public. Physicians receiving oral health related training will be capable of providing not only emergency care but also able to provide comprehensive counselling related to the cause of dental problems, methods of prevention, treatment and general health related issues.<sup>[12]</sup>

## CONCLUSION

The medical graduates and interns were aware of the fact that oral health is very important to achieve a good systemic health. They were not completely aware of the bidirectional relationship between periodontal disease and systemic diseases and also not adequately trained regarding the oral examination and diagnosis of oral and periodontal diseases. Now the time has come to connect medical science and dental science further by including the necessary dental topics on oral examination, diagnosis and periodontal medicine in

medical curriculum in order to provide a comprehensive health care for the public.

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## **REFERENCES**

1. Newman MG, Carranza FA, Takei H, Klokkevoold PR, editors. 10th ed. USA: Elsevier Health Sciences; 2006. Carranzas clinical Periodontology book. 312-313
2. National Oral Health Survey and Flouride Mapping: Dental Council of India. New Delhi: Dental Council of India; 2004. [Last accessed on 2010 Mar 10].
3. Igari K, Kudo T, Toyofuku T, Inoue Y, Iwai T. Association between periodontitis and the development of systemic diseases. *Oral Biol Dent* 2014; 2: 4.
4. Loos BG. Systemic markers of inflammation in periodontitis. *Journal of Periodontol* 2005;76:2106-2115.
5. Arpita Gur, JP Majra. Awareness regarding the systemic effects of periodontal disease among medical interns in India. *J Global Infect Dis* 2011;3:123-127.
7. CLZ Veira, B Caramelli .A review on the history of dentistry and medicine relationship: could the mouth finally return to the body? *Oral diseases* 2009;15:538- 546.
8. Paquette DW, Madianos P, Offenbacher S, Beck JD, Williams RC. The concept of “risk” and the emerging discipline of periodontal medicine. *The journal of contemporary dental practice* 1999;1:9-15.
9. Surya J. Prasanna .Causal relationship between periodontitis and chronic obstructive pulmonary disease. *Journal of Indian Society Periodontology* 2011;15:359–365.
10. Dr Shwetha M, Dr Shruthi D Prasad et al. Awareness of the Relationship between The Periodontal Health and Systemic Diseases Among Medical Practitioners: A Randomised Questionnaire Study. *Indian Journal of Applied Research* 2016;4:253-256.
11. Mundoor Manjunath, Dayakar, Jitendra Kumar et al A survey about awareness of periodontal health among the students of professional colleges in Dakshina Kannada District. *Journal of Indian society of Periodontology* 2016;20:67-71.
12. Swati Pralhad, Betsy Thomas. Periodontal awareness in different healthcare professionals: A questionnaire survey. *Journal of Education and Ethics in Dentistry* 2011;1:64-67.
13. Leonard A. Cohen. Expanding the Physician’s Role in Addressing the Oral health of Adults. *American Journal of Public Health* 2013;103:408-413.

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