

# Awareness of Periodontal Medicine among Medical Students at a Tertiary Care Center

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## ABSTRACT

**Introduction:** Tissue destruction of supporting periodontal tissues is mediated by an overreactive immune inflammatory response to bacteria in the subgingival environment. Tissue destruction in periodontitis occurs by the stimulatory action of pro inflammatory cytokines and proteolytic enzymes released by neutrophils, macrophages, and the action of bone resorption mediators, all of which are being regulated by B and T cells. Periodontitis act as a focus of infection and bacteria metastases through blood stream to various vital organs like heart, lungs, joints and amniotic fluid.

**Objective:** To assess the awareness of periodontal medicine among medical students at a tertiary care center in Kathmandu.

**Methods:** A total of 115 subjects were taken for the present study. Data was collected using a questionnaire which included questions used to assess the knowledge about periodontal diseases and its possible effects on systemic conditions.

**Results:** Out of the total participants, 58 (50.4%) said that periodontal disease was not related to coronary heart diseases. Only 14 (12.2%) had an idea about the association of pre-term birth and periodontitis. While 86 (74.8%) knew the impact of diabetes on periodontium, only 34 (29.6%) said that there was an association between periodontitis and hospital acquired pneumonia.

**Conclusion:** Knowledge about the association of periodontal disease with various systemic conditions is not satisfactory among the various medical students of this hospital.

**Keywords:** Awareness; medical students; periodontal medicine; periodontitis.

## INTRODUCTION

Periodontitis is an inflammatory disease of supporting tissues of teeth caused by specific microorganisms or groups of specific microorganisms, resulting in progressive destruction of the periodontal ligament and alveolar bone.<sup>1</sup> It is predominantly gram-negative infection resulting in severe inflammation, with potential vascular dissemination of microorganisms and their products such as lipopolysaccharides (LPS) throughout body.<sup>2</sup> Periodontitis act as focus of infection and bacteria metastases through blood stream to various vital organs like heart, lungs, joints, and amniotic fluid.<sup>3</sup> Subgingival microbiota and their products in patients with periodontitis have access to periodontal tissues and to circulation via sulcular epithelium, which is

frequently ulcerated.<sup>2</sup> Blood leukocytes and plasma levels of C-reactive protein, which is a sensitive marker of systemic inflammation, are also found to be in higher levels in patients with periodontitis.<sup>4,5</sup>

Term 'periodontal medicine,' first suggested by Offenbacher (1996), as broad term for rapidly emerging branch of Periodontology that focuses on establishing strong relationship between periodontal health/disease and systemic health/disease.<sup>6</sup>

Many medical students are unaware of oral diseases and potential infection within oral cavity and its influence on systemic diseases.<sup>2</sup> Therefore, present study was conducted to assess awareness of periodontal medicine among medical students at a tertiary care center.

## METHODS

A cross-sectional descriptive study based on questionnaire survey was carried out among medical students at a tertiary care center in Kathmandu from February to May 2018. Ethical clearance was obtained from Nepal Medical College - Institutional Research Committee (NMC-IRC) and only those respondents who provided consent were included in the study.

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The total Bachelor of Medicine and Bachelor of Surgery (MBBS) students, interns and postgraduate students during the time of the study was 327. From that, 30% was taken as sample size which brought a total of 99 participants and 15% was added to this, in case there were participants who did not fill the forms completely so 115 was taken as sample size. A simple random sampling was done comprising of 43 MBBS students, 42 interns, and 30 postgraduates. Those who were eligible by education and willing to participate in the study were included. The questionnaire comprised of two parts, the first part containing the demographic profile and the second including the questions associated with various dental terminologies, screening for periodontal diseases, and understanding of periodontal medicine and dental referrals. A pretest was conducted to test for reliability of the questionnaire and Cronbach's alpha was calculated and questions with a score of 0.6 was only included in the study. The data analysis was done using SPSS version 17.

### RESULTS

Out of the total 115 participants, everyone in the study replied that they have heard about the term gingivitis and 91 (79.1%) said that they have heard about the term periodontitis. Regarding knowledge on periodontal disease, only 10 (8.7%) felt that they had a good knowledge on periodontal disease (Figure 1).

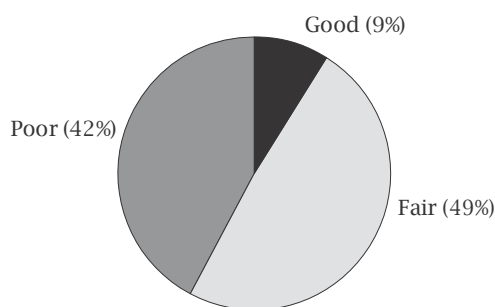


Figure1: Knowledge of medical students on periodontal disease.

Regarding their knowledge of periodontal medicine, the awareness of the association of coronary heart disease with periodontitis was shown by 58 (50.4%) of the participants (Figure 2). Diabetics to be at a higher risk for gingival inflammation was shown positive by 86 (74.8%) as contrast to periodontal disease as a potential risk factor for pre-term birth which was shown positive by only 14 (12.2%) (Figure 2). Association of periodontal disease and hospital acquired pneumonia was shown positive by 34 (29.6%) of the participants (Figure 2).

About 58 (50.4%) of the participants never screened their patient for periodontal diseases (Table 1). Only 22 (19.1%) often referred their patient for dental care and only 16 (13.9%) often referred their patient for oral prophylaxis (Table 1).

Regarding the effect of drugs like Nifedipine on gingiva, 15 (13.0%) thought drugs like calcium channel blockers doesn't have any effect on gingiva and only 32 (27.8%) knew that there could be possible gingival enlargement due to such drugs (Table 2).

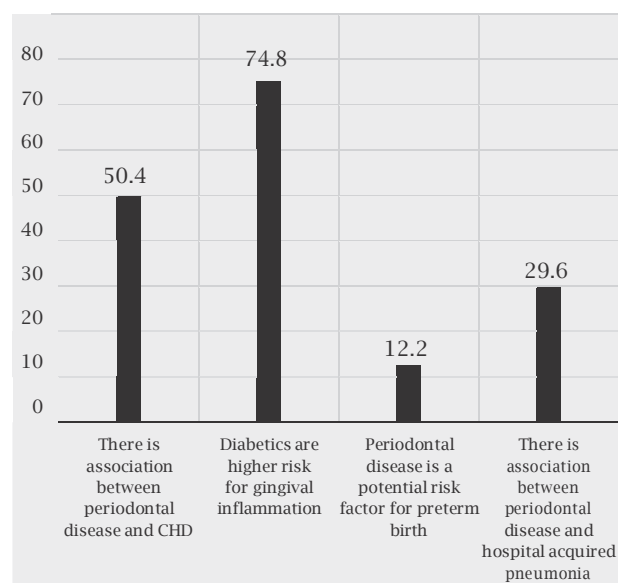


Figure 2: Knowledge on periodontal medicine.

Table 1: Referred/screened patient for periodontal disease, n (%).

	Often (%)	Sometimes (%)	Never (%)	Total
Referred patient to the dentist for evaluation/ care.	22 (19.1%)	54 (46.9%)	39 (33.9%)	115 100%
Referred patient for oral prophylaxis	16 (13.9%)	49 (42.6%)	50 (43.4%)	115 100%
Screened patients for periodontal disease	15 (13.0%)	42 (36.5%)	58 (50.4%)	115 100%

Table 2: Knowledge of medical students on effect of calcium channel blockers like Nifedipine on gingiva, n (%).

	Frequency (%)
Cause gingival inflammation	27 (23.4%)
Cause periodontitis	41 (35.6%)
Cause gingival enlargement	32 (27.8%)
Doesn't have any effect	15 (13.0%)
Total	115 (100%)

## DISCUSSION

Periodontal pathogens and their products can enter the bloodstream, causing systemic effects and contribute to systemic diseases. On the basis of this mechanism, chronic periodontitis has been suggested as a risk factor for cardiovascular diseases associated with atherosclerosis, bacterial endocarditis, diabetes mellitus, respiratory disease, preterm delivery, rheumatoid arthritis, etc.<sup>7</sup>

In the present study, 115 (100%) of responders have heard about gingivitis and 91 (79.1%) had heard about periodontitis. A similar study done on medical doctors showed that 100% of the responders had heard about gingivitis and periodontitis.<sup>8</sup> It could be due to the fixed dental postings in the hospital, that they were aware of the different common dental terminologies and diseases.

In a study done in Saudi Arabia, 48.8% never screened their patient for periodontal disease<sup>9</sup> which was in concordance to our study in which 50.4% of the medical students never screened for periodontal diseases. Another similar study showed that 25% never screened their patients for periodontal disease.<sup>10</sup> This shows that the medical interns, postgraduate students and medical students in our study are still unaware of the necessity of the dental treatment and the possible link between the two.

Regarding the knowledge about the association of diabetes with periodontal diseases, around 74.7% responded positively, probably because chronic periodontitis is regarded as the 6th complication of diabetes mellitus.<sup>2</sup> In a study done among the medical interns to assess the extent of awareness of periodontal disease in diabetic patients, 68% were not aware whether diabetic patients could develop periodontal disease and around half of the medical interns could not specify periodontal manifestations that diabetic patients could present with.<sup>11</sup> Another study showed that 70% of the doctors had heard of the association between diabetes and oral health.<sup>12</sup> Yet another literature showed that 79.5% of the doctors knew that a diabetic patient could have multiple abscesses in the mouth.<sup>13</sup>

Studies have found that patients with periodontal disease have a 1.5 to 2.0 fold greater risk of incurring fatal cardiovascular disease than patients without periodontal disease.<sup>14</sup> In a similar study, 51.7% of the subjects were aware that periodontal disease is a risk factor for coronary heart disease<sup>15</sup> which was in concordance to our study where 50.4% said they were positive about the association. Another

study also revealed that 46% of the responders were aware of the association of periodontal disease and coronary heart disease.<sup>8</sup> The responders in the present study could be more aware of the association of periodontitis with coronary heart disease as there are more referral of cardiac patients for physicians' consultation before most of the dental procedures.

A study done by Offenbacher et al. showed that 12.1% of the subjects were aware that periodontal disease can affect pregnancy outcomes<sup>16</sup> which was in concordance to our study where 14.1% gave affirmative answer. Another study by Bhavya et al. showed 38% of the responders were positive about association of periodontal disease and pregnancy outcome.<sup>8</sup> Due to the increase in the sex hormones like progesterone and estrogen, there are gingival changes seen in pregnancy like pregnancy induced gingival enlargements and pregnancy tumor.

A study was done by Wazir et al. in the Terai region of Nepal, in which 200 primipara mothers were included with a mean age of 23.96 years. Periodontal parameters were assessed using the community periodontal index (CPI), which showed that birth weight of the babies was regressed against CPI. Periodontitis was significantly associated with decrease in birth weight of the babies. This study highlights the urgent need of educating the pregnant women in Nepal.<sup>17</sup>

A study was done by Lubon et al. among pregnant and recently-delivered women in Sarlahi, Nepal. Some women used a toothbrush and toothpaste at least once a day to clean their teeth, but many reported the traditional use of a branch of a local shrub or tree as their teeth cleaning instrument. The participants did not report changes in teeth cleaning routines during pregnancy. And there were mixed views on the association between good oral hygiene during pregnancy and healthy birth outcomes.<sup>18</sup>

In response to whether periodontal disease can affect bacterial pneumonia, 34 (29.5%) in the present study gave positive answer, in disagreement to the study by Anandakumar et al. in which 42.9% of the responders said that there is an association.<sup>19</sup> The literature in another study have analyzed similar results in which 35% agreed that there is an association between periodontal disease and hospital acquired pneumonia.<sup>8</sup>

Regarding the effect of drugs like Nifedipine on gingiva, 15 (13.0%) of the responders said that it doesn't have any effect on gingiva whereas only 32 (27.8%) said that it can cause gingival enlargement. One literature showed that 53.3% of the responders were positive that anti-hypertensive drugs

can cause gingival enlargement<sup>19</sup> which was much higher than the present study. Gingival enlargements, if not treated can lead Periodontitis in which there will be alveolar bone loss, eventually leading to mobility of teeth, so knowledge in this regard is very important. When the medical doctors do not have enough knowledge on periodontal medicine, patients are not referred to dental hospital, hence affecting the patients' general health.

## CONCLUSION

Knowledge about the association of periodontal disease with various systemic conditions among medical doctors in this

tertiary care seem to be moderate. Within the limitations of the study, this study suggests a higher necessity for the medical schools to have additional knowledge about oral/ periodontal health. Various strategies that can be implemented to achieve this goal like regular referral of patients for oral and periodontal health, counselling at the outpatient counter which would improve the future efforts of physicians' in contributing to the oral health. Both the dental and medical professionals should go hand in hand to give quality care.

Conflict of Interest: None

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