Research Article

JRAD Journal of Research and Advancement in Dentistry

J Res Adv Dent 2021;11:2:155-163.

Evaluation of Awareness of Periodontal Disease and its Management Among Post-Graduate Medical Practitioners in Gujarat: A Questionnaire Based Study

Heena Narsinghani[1*] Bela Dave[2] Viral Thakker[3] Kuldeepsinh Jadeja[4] Kandarp Raj[5] Mahendra Katariya[6]

[1]PG Student, Department of Periodontology, AMC Dental College, Ahmedabad, Gujarat, India.
[2]Professor and Head, Department of Periodontology, AMC Dental College, Ahmedabad, Gujarat, India.
[3]Reader, Department of Periodontology, AMC Dental College, Ahmedabad, Gujarat, India.
[4]PG Student, Department of Periodontology, AMC Dental College, Ahmedabad, Gujarat, India.
[5]PG Student, Department of Periodontology, AMC Dental College, Ahmedabad, Gujarat, India.
[6]PG Student, Department of Periodontology, AMC Dental College, Ahmedabad, Gujarat, India.

ABSTRACT

Background: The aim of this study was to assess the awareness of periodontal disease, its influence on general health, and attitude towards periodontal disease management among Post Graduate medical practitioners in Gujarat state.

Materials and Methods: In this cross-sectional study, 260 Post Graduate medical practitioners from different specialties in Gujarat state were included. A self-administered questionnaire was prepared based on knowledge, attitude, and practice surveys to assess the awareness of periodontal disease and its management.

Results: Overall 62% of Post Graduate Medical Practitioners were aware about various periodontal diseases. 51% Post Graduate Medical Practitioners believed that there is a influence of systemic health on disease. 86% believed that LASERs are used in the treatment of periodontal disease.

Conclusion: It is found that Post Graduate medical practitioners in Gujarat had fair amount of knowledge about periodontal disease and its management.

Keywords: Awareness, Post Graduate medical practitioners, periodontal disease.

INTRODUCTION

The adult human body consist of 10^{13} somatic cells & 10^{14} normal or commensal microbes. These commensal bacteria reside on the surface of the teeth and/or prosthetic implants within complete ecosystems termed “biofilms” and they reside on the surface of the mucosa epithelia that line the oral cavity, respiratory tract, esophagus, GI tract & urinary tract. Under all variety of conditions, some of these microorganisms become opportunistic and are associated with local or systemic infections, such as hemophilia influenza, streptococcus pneumonia, Neisseria meningitis and staphylococcus aureus infection.[1] The oral microbial ecosystem is remarkably dynamic and is extremely sensitive to the potential insults that confront the human hosts throughout their lifespan. Over the past decade, a growing body of scientific evidence suggests an exquisite association between oral infection (viruses, bacteria, yeast) and systemic diseases (e.g.: atherosclerosis, cardiovascular disease, cerebrovascular disease, prematurity low birth weight and pulmonary diseases and

Received: Oct. 5, 2020: **Accepted**: Dec. 3, 2020
***Correspondence Dr. Srividhya.**
Department of Prosthodontics, Maharaja Ganga Singh Dental College & Research Centre, Sri Ganganagar, Rajasthan, India.
Email: Not Disclosed

pISSN 2278-0076
eISSN 2321-9270

disorders) also, between systemic diseases (e.g.: - arthritis, diabetes, HIV infection, osteoporosis) dental, craniofacial diseases and disorders. [1]

Transmissible and opportunistic microorganisms are responsible for periodontal diseases. The microbial induced infection releases toxins and presents a substantial infectious burden to the entire body that evokes localized tissue response, cytokines & other inflammatory mediators which enters the vascular circulation and may activate a systemic response. [1]

Nested in a complex infection of host susceptibility, external exposures and life style behaviors, the management of health and disease will require interdisciplinary education, strategies and health care delivery.[1]As it is observed patients are more likely to seek advice for all health care from medical professionals than from dentists, the purpose of the study was to assess the awareness of periodontal disease, its influence on general health and attitude towards periodontal disease management among post graduate medical practitioners in Gujarat state.

AIM AND OBJECTIVE

The purpose of this study was to evaluate awareness of periodontal disease, its influence on general health, and attitude towards periodontal disease, management of periodontal disease amongst Post-Graduate medical practitioners in Gujarat.

MATERIALS AND METHODS

This cross-sectional study was conducted among 260 Post Graduate medical practitioners of different branches in Gujarat state. A self-administered, close-ended questionnaire of 21 questions comprising varied aspects of periodontal diseases with time frame of 20 mins was handed over to the participants. The study protocol was approved by the Institutional Ethical Committee, AMC Dental College, Khokhara, Ahmedabad.

The questionnaire employed in the study is described below

Participant Questionnaire

Instruction:

Please fill all the information to best of your knowledge

Kindly (√) whichever option is applicable.

PERSONAL INFORMATION QUESTIONS

- Name of participant:_____
- Age_____ Sex_____
- E-mail: _____
- Degree with Speciality:_____
- Starting time: ___ Ending time:___

Table 1: Questionnaire

1) Have you ever been to a dentist for treatment?
2) If yes who was your dental care provider
3) Do you think of the speciality/ specialist dealing with gum disease?
4) Primary etiology for periodontal disease
5) Relationship between systemic and periodontal disease
6) Do you think that diabetes is a risk factor for periodontal disease?
7) Do you think that gingival enlargements can be caused by certain drugs?
8) Do you think that periodontal diseases can alter the levels of systemic inflammatory markers?
9) Do you think periodontal disease is a risk factor for preterm low birth weight infants?
10) Do you think that LASERs are used for treatment of periodontal disease?
11) To what extent does smoking influence periodontal health and treatment outcome?
12) Do you think that stress and periodontal diseases are related?
13) Do you think that initial acquisition of mutants streptococci by infants is from their mothers?

14) Do you think that periodontal infections may directly contribute to pathogenesis of atherosclerosis and thromboembolic events?
15) Do you think that periodontal disease and aspiration pneumonia are related?
16) Do you think that periodontal inflammation may lead to worsening of Alzheimer's disease?
17) Do you think that periodontal pathogens might be an additional risk factor for the development/progression of non-alcoholic steatohepatitis (NASH)?
18) Do you think that obesity and periodontal disease are related?
19) Do you screen your patients for periodontal disease?
20) Do you insist pregnant women for oral health checkup?
21) If patient complains of severe bleeding gums and gingival changes are observed, you refer the patient to

Criteria:

All the registered Post-Graduate medical Practitioners were included without gender and speciality bias. The participants who do not give written consent were excluded from the study.

Statistical analysis

For each question, independent percentage was calculated to determine the frequency of the responses. To identify the variable factor affecting the responses, multivariate logistic regression analysis test was used.

RESULTS

Two hundred and sixty participants completed the questionnaire. After checking for adequacy/completeness of responses, the data was subjected to analysis. Majority of the study participants (84%) had a previous dental visit. Of those who had a previous dental visit, 67% sought care from general dental practitioner, while 33% sought care from specialist dental practitioner [chart 1]. 40% of the participants rightly acknowledged the speciality for gum disease as Periodontology [chart 2]. Descriptive statistics for various items in the questionnaire are provided in [Table 2]. More than half (60%) of the study participants opined that food debris is the major cause for periodontal disease, while only 30% believed plaque to be the major cause [chart 3]. The bidirectional relation between periodontal and systemic diseases was known to 42% of respondents, and 25 % opined that it is the periodontal disease which could lead to systemic disease [chart4]. However, 50% of the post graduate practitioners admitted that they rarely screen their patients for periodontal disease [chart7]. 86% of the participants were aware that LASERs are used for treatment of periodontal disease [chart5]. 45% of participants believed that smoking has an effect on periodontal health and treatment outcome to a certain extent [chart 6]. 60% of the participants responded that they would refer a patient for oral health checkup to the specialist when patient complains of severe bleeding gums and/or gingival changes are observed [chart8].

Table 2: Descriptive statistics for various items in the questionnaire

Question	Yes (%)	No (%)
Have you ever been to a dentist for treatment?	84	16
Do you think that diabetes is a risk factor for periodontal disease?	51	49
Are you aware that gingival enlargements can be caused by certain drugs?	41	59
Do you think that periodontal diseases can alter the levels of systemic inflammatory markers?	32	68
Do you think periodontal disease is a risk factor for preterm low birth weight infants?	30	70
Are you aware that stress and periodontal diseases are related?	42	58

Are you aware that initial acquisition of mutants streptococci by infants is from their mothers?	30	70
Are you aware that periodontal infections may directly contribute to pathogenesis of atherosclerosis and thromboembolic events?	29	71
Are you aware that periodontal disease and aspiration pneumonia are related?	30	70
Are you aware that periodontal inflammation may lead to worsening of Alzheimer's disease?	25	75
Are you aware that periodontal pathogens might be an additional risk factor for the development/progression of nonalcoholicsteatohepatitis (NASH)?	22	78
Are you aware that obesity and periodontal disease are related?	32	68
Do you insist pregnant women for oral health checkup?	72	28

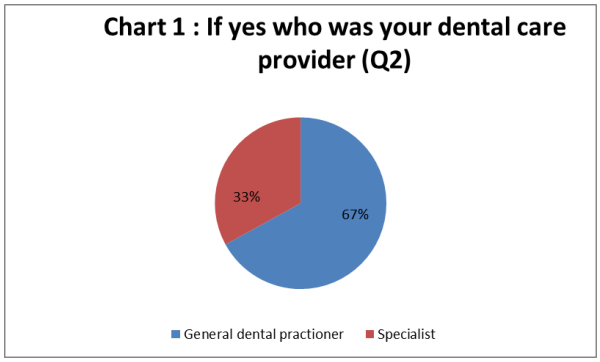

Fig 1: If yes who was your dental care provider.

Fig 2: Are you aware of the specialty/ specialist dealing with gum disease? (Q3).

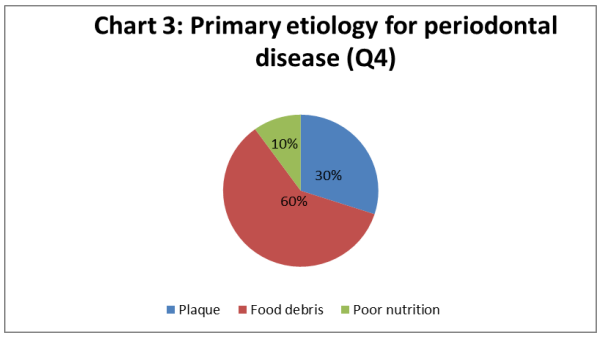

Fig 3: Primary aetiology for periodontal disease (Q4)

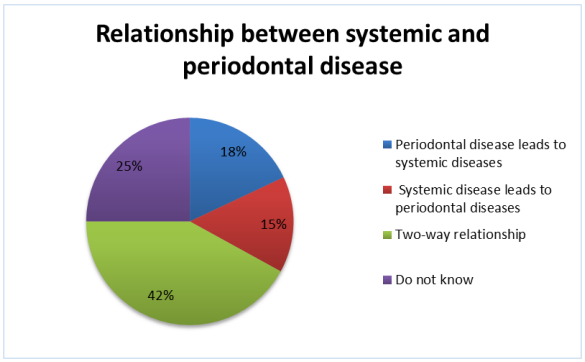

Fig 4: Relationship between systemic and periodontal disease.

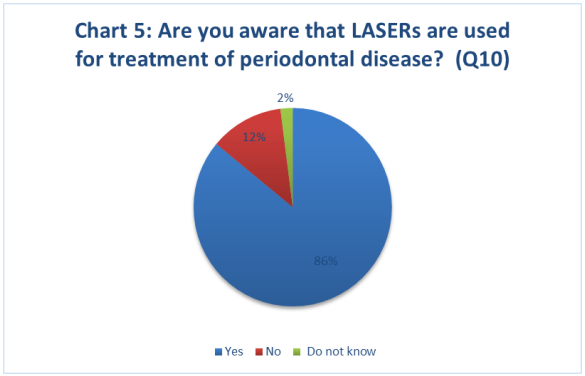

Fig 5: Are you aware that LASERs are used for treatment of periodontal disease? (Q10).

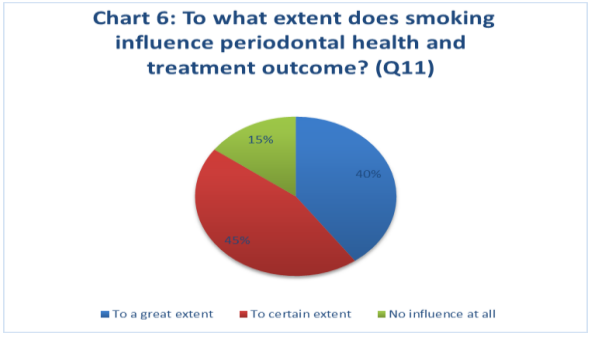

Fig 6: To what extent does smoking influence periodontal health and treatment outcome? (Q11)

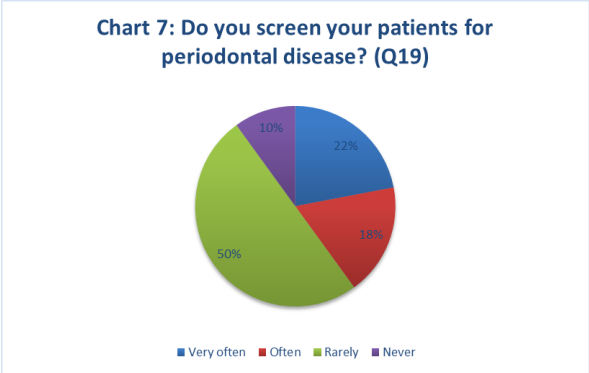

Fig 7: Do you screen your patients for periodontal disease? (Q19).

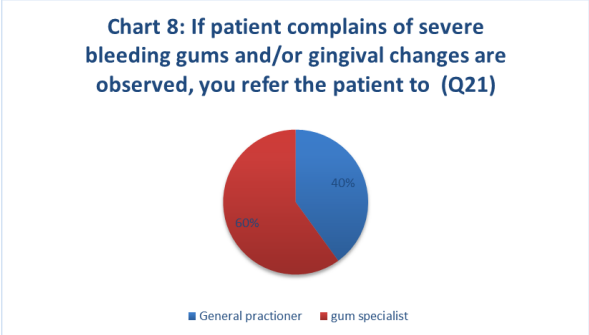

Fig 8: If patient complains of severe bleeding gums and/or gingival changes are observed, you refer the patient to (Q21).

DISCUSSION

In the last 50 years, considerable progress has been made in understanding the etiology and pathogenesis of periodontal diseases and their interactions with the host. The evolution of this understanding has occurred in three phases: the enteropathogenic (or host-parasite), the risk factor, and the periodontal-systemic diseases . [2]

Since the 1990s, multiple epidemiologic, experimental, and interventional studies have evidenced how periodontitis may also impact systemic health. In fact, periodontitis has been independently associated with the majority of chronic noncommunicable diseases of aging and premature mortality.[3] According to the National Centre for Health Statistics of the Centers for Disease Control and Prevention, the seven leading causes of death in the USA in 2019 were heart disease, cancer, unintentional injuries, chronic lower respiratory disease, stroke/cerebrovascular diseases, Alzheimer's disease, and diabetes, influenza and pneumonia, kidney disease, and suicide.[4] All of these, except for unintentional injuries and suicide are chronic diseases which have been associated with periodontitis.

The evidence supporting the associations between periodontal and systemic diseases was reviewed in 2012 by a panel of experts from the USA and Europe, who focused on the most studied associations (diabetes, pregnancy complications, and cardiovascular diseases).[5-7] These experts concluded that periodontitis contributes to the bacterial burden resulting in a significant systemic inflammatory response, which is likely to act as a contributing factor in the pathophysiology of diabetes, pregnancy complications, and cardiovascular diseases.[5-7]

So, Medical professionals should have knowledge about periodontal disease as they are the first person to encounter oral problems in patients while practicing [10] Considering the aforementioned effects of poor oral health on the over all health of an individual and the consequent impact on the quality of life, medical professionals need to develop a deeper understanding of the etiopathogenesis of the periodontal disease and various options available in the treatment of the same .[8,9,11]

People continue to neglect oral health, but seek medical care as required. However, it is not realized that often poor periodontal health can be a cause for the deteriorating systemic health of the individuals. It is in such instances that medical professionals' knowledge about the relationship between periodontal health and general health comes to the rescue of the patient.[17]

In the present study, 42% of post graduate medical practitioners were aware of the bidirectional relationship between systemic and periodontal disease. These results differ with previous studies conducted by Shah et al. [8], Gur and Majra[11] and Nasir et al. [14] where the awareness on bidirectional relationship between systemic and periodontal disease was 24%, 11% and 20% respectively. Contrastingly, better awareness than that observed in the current study in this regard was observed in studies conducted by Sawai et al [15], R Dhulipalla et al. [17] This awareness was found to be low among medical doctors and interns in Pakistan [8, 12]. 51% of the participants in the present study responded that diabetes is a risk factor for periodontal disease

which is in accordance with a study conducted by Prahlad and Thomas among medical practitioners in Karnataka [9].

Thirty percent of the medical practitioners in the present study were aware that periodontal disease causes preterm low-birth weight. A study conducted by Patil *et al*. among gynecologists in Karnataka produced results with 61.29% of the participants being aware.[16] However, 82% of the medical professionals were aware of this association in another study conducted among medical professionals in Karnataka,[9] while the awareness was as low as 3% among medical interns in a study conducted by Gur and Majra.[11] 72% of the participants in the present study reported that they insist pregnant women to have oral health checkup, while only 17.74% of gynecologists reported insisting pregnant women to have oral health checkup.[16]

Only 41% of the participants were aware that gingival enlargement can be caused by certain drugs.Studies have shown that drug-induced gingival overgrowth is more commonly seen in male children and adolescents with a more prevalent location in the anterior gingival tissue. Genetic heterogeneity also plays a vital role, and the extent and degree of overgrowth depend on the drug. Phenytoin, cyclosporin, and nifedipine are the most common causes of gingival overgrowth, and phenytoin has the highest prevalence of all. It is estimated that 50% of adults treated with phenytoin experience gingival enlargement, 30% with cyclosporin, and 20% with nifedipine [18]

32% of participants think that periodontal diseases can alter the levels of systemic inflammatory markers. The current state of knowledge supports a key pathogenic role for non-resolving chronic inflammation triggered by the dysbiotic changes in the subgingival biofilm. The systemic translocation of these local immune responses, as well as some of the pathobionts, to distant organs, together with the presence of common genetic factors favouring a hyper-inflammatory response, may help explain the complex associations between periodontitis and other comorbidities such as cardiovascular disease, diabetes and rheumatoid arthritis [19].

42% of the participants were aware that stress and periodontal disease are related. Earlier studies done by Moss et al. [20] found out that the psychological measures taken can be one of the environmental factors in adult periodontitis. Similarly, Croucher et al. [21] and Axtelius et al. [22] found psychological stress factors to be an important determinant for periodontitis. Recently, Refulio et al. [23] showed a strong relationship between emotional depression, level of anxiety, and the risk of having periodontitis.Some of the Indian studies done by Goyal et al. (2011)[24] have also concluded stress to be a contributing factor in periodontal disease showing a positive correlation between stress and periodontitis. Similarly, Mannem and Chava[25] found stress to be an important risk factor for periodontal disease. Shende AS et al. [26] only concluded in his study that there is no association between stress and periodontal disease, and future longitudinal studies directed at larger population, might yield conclusive results.

30% of the participants were aware that initial acquisition of mutants streptococci by infants is from their mothers Existing evidence reveals that in Early Oral Infection the main route of transmission of Streptococcus mutans is mother-child saliva contacts and that initial acquisition takes place during a specific period of time denominated "Window of Infectivity" that lapses between 6 and 30 months of the child's life, with a higher risk between 18 and 30 months of age. [27]

30% of the participants were aware that periodontal disease and aspiration pneumonia are related. poor oral hygiene is a major risk factor for aspiration pneumonia in older adults [28]

22% of participants were aware that periodontal pathogens might be an additional risk factor for the development/progression of non-alcoholic steatohepatitis (NASH). *P. gingivalis* infection was noted at a significantly high frequency in NASH patients. [29]

32% of the participants in the present study opined that they are aware that obesity and periodontal disease are related. Proinflammatory cytokines may play a crucial role in the close relationship among periodontitis, obesity and chronic disease. In fact association may be multidirectional as described in fig 1 [30]

Earlier studies done by Moss et al.[2] found out that the psychological measures taken can be one of the environmental factors in adult periodontitis. Similarly, Croucher etal.[14] and Axteliusetal.[15] found psychological stress factors to be an important determinant for periodontitis. Recently, Refulioetal.[4] showed a strong relationship between emotional depression, level of anxiety, and the risk of having chronic periodontitis. Earlier studies done by Moss etal.[2] found out that the psychological measures taken can be one of the environmental factors in adult periodontitis. Similarly, Croucher etal.[14] and Axteliusetal.[15] found psychological stress factors to be an important determinant for periodontitis. Recently, Refulioetal. [4] showed a strong relationship between emotional depression, level of anxiety, and the risk of having chronic periodontitis.

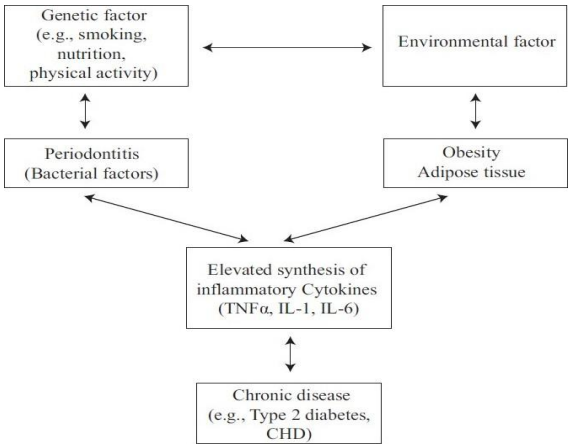

Fig 1[30]. Multidirectional relationship

In the present study 86% of participants responded that LASERs are used in periodontal treatment. Similar results were seen in study done by R Dhulipalla where 82% participants were aware that LASERs are used in periodontal treatment.[17] Laser controls bleeding, is minimally invasive and minimizes risk of bacterial infection. While 45% of participants in the present study were aware that smoking and periodontitis are related to a certain extent. Smokers exhibited decrease in several proinflammatory cytokines and chemokines and certain regulators of T cells and NK cells. This reflects the immunosuppressant effects of smoking which may contribute to an enhanced susceptibility to periodontitis. [31]

Psychosocial factors lead to changes in the oral habits and in behavioral responses of the host, such as poor hygiene, smoking, and the host's responses to the environmental determinants, such as stress.[12] Stress can be best understood as part of a complex and dynamic system of transactions between individuals and their environment. It is a part of the human condition that is present universally, but to varying degrees, and has different effects on individuals.[13] Earlier studies done by Moss etal.[2] found out that the psychological measures taken can be one of the environmental factors in adult periodontitis. Similarly, Croucher etal.[14] and Axteliusetal.[15] found psychological stress factors to be an important determinant for periodontitis. Recently, Refulioetal.[4] showed a strong relationship between emotional depression, level of anxiety, and the risk of having chronic periodontitis

LIMITATIONS

The close-ended questionnaire might had affected the assessment of knowledge with less number of participants.

Recommendations

It is recommended from this survey that continuing medical education programs should be conducted for medical professionals in an attempt to update their knowledge about the periodontal and systemic disease correlation and other aspects relating to treatment modalities in oral health care. It is also important to identify that a proactive approach at the national level must be adopted to increase among the medical professionals, the knowledge about oral health and its importance.

CONCLUSION

It is found that Post Graduate medical practitioners in Gujarat had fair amount of knowledge about periodontal disease its management.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

REFERENCES

1. Louis F. Rose, Robert J. Genco, D. Walter Cohen (2000). Periodontal Medicine. University of Michigan. BC Decker.

2. Robert J. Genco, Mariano Sanz. Clinical and public health implications of periodontal and systemic diseases: An overview. Periodontology 2000. 2020;83:7–13.

3. Söder B, Jin LJ, Klinge B, Söder PO. Periodontitis and premature death: a 16-year longitudinal study in a Swedish urban population. J Periodontal Res. 2007;42(4):361-366.

4. Murphy SL, Xu J, Kochanek MA. Deaths: final data for 2010. Nat Vital Stat Rep. 2013;61:1-11.

5.Tonetti MS, Van, . Dyke TE and on behalf of working group 1 of the joint EFP/AAP workshop. Periodontitis and atherosclerotic cardiovascular disease: consensus report of the Joint EFP/AAP Workshop on Periodontitis and Systemic Diseases. J Clin Periodontol. 2013;40(Suppl. 14):S24-S29.

6. Chapple ILC, Genco R, on behalf of working group 2 of the joint EFP/AAPworkshop. Diabetes and periodontal diseases: consensus report of the Joint EFP/AAP Workshop on Periodontitis and Systemic Diseases. J Clin Periodontol. 2013;40(Suppl. 14):S106-S112.

7. Sanz M, Kornman K, on behalf of working group 3 of the joint EFP/AAPworkshop. Periodontitis and adverse pregnancy outcomes: consensus report of the JointEFP/AAP Workshop on Periodontitis and Systemic Diseases. J Clin Periodontol. 2013;40(Suppl. 14):S164-S169.

8. Shah MN, Anwar S, Khalil A, Akhtar S. Periodontal disease awareness among medical doctors. JKCD. 2013;4:34–7.

9. Pralhad S, Thomas B. Periodontal awareness in different healthcare professionals: A questionnaire survey. J Educ Ethics Dent. 2011;1:64–7.

10. Priti MG, Rajhans NS, Sheikh NS, Moolya NN, Mhaske N, Gutte ND. Periodontal diseases & treatment from perspective of medical professionals: A survey study. Int J Med Res Health Sci. 2015;4:193–6.

11. Gur A, Majra J. Awareness regarding the systemic effects of periodontal disease among medical interns in India. J Glob Infect Dis. 2011;3:123–7.

12. Dental Council of India. Revised BDS Course Regulations. 2007.

13. Chandra A, Yadav OP, Narula S, Dutta A. Epidemiology of periodontal diseases in Indian population since last decade. J Int Soc Prev Community Dent. 2016;6:91–6.

14. Nasir N, Ali S, Ullah U. Extent of awareness regarding systemic effects of periodontal disease among medical interns. Ann Pak Inst Med Sci. 2013;9:188–90.

15. Sawai MA, Bhardwaj A, Daing A, Jafra Z, Sultan N. Knowledge and attitude of medical practitioners towards periodontal diseases in New Delhi: A questionnaire based study. Ann ApplBiosci. 2015;2:121–6.

16. Patil SN, Kalburgi NB, Koregol AC, Warad SB, Patil S, Ugale MS. Female sex hormones and periodontal health-awareness among gynecologists - A questionnaire survey. Saudi Dent J. 2012;24:99–104.

17. Dhulipalla R, Marella Y, Keerthana AJ, Pillutla HP, Chintagunta C, Polepalle T. Awareness of periodontal disease and its management among medical faculty in Guntur district: A questionnaire-based study. J Indian Soc Periodontol 2016;20:525-30

18. Doufexi A, Mina M, Ioannidou E. Gingival overgrowth in children: epidemiology, pathogenesis, and complications. A literature review. J Periodontol. 2005 Jan;76(1):3-10.

19. Bruno G. Loos , Thomas E. Van Dyke. The role of inflammation and genetics in periodontal disease. Periodontology 2000. 2020;83:26–39.

20. Moss ME, Beck JD, Kaplan BH, Offenbacher S, Weintraub JA, Koch GG, et al. Exploratory case-control analysis of psychosocial factors and adult periodontitis. J Periodontol 1996;67 10 Suppl: 1060-9

21. Croucher R, Marcenes WS, Torres MC, Hughes F, SheihamA. The relationship between life-events and periodontitis.A case-control study. J Clin Periodontol 1997;24:39-43.

22. Axtelius B, Söderfeldt B, Nilsson A, Edwardsson S, Attström R. Therapy-resistant periodontitis.

Psychosocial characteristics.J Clin Periodontol 1998;25:482-91

23. Refulio Z, Rocafuerte M, de la Rosa M, Mendoza G, Chambrone L. Association among stress, salivary cortisol levels, and chronic periodontitis. J Periodontal Implant Sci 2013;43:96-100.

24. Goyal S, Jajoo S, Nagappa G, Rao G. Estimation of relationship between psychosocial stress and periodontal status using serum cortisol level: A clinico-biochemical study. Indian J Dent Res 2011;22:6-9

25. Mannem S, Chava VK. The effect of stress on periodontitis: A clinicobiochemical study. JIndian Soc Periodontol 2012;16:365-9.

26. Shende AS, Bhatsange AG, Waghmare AS, Shiggaon LB, Mehetre VN, Meshram EP. Determining the association between stress and periodontal disease: A pilot study. J Int Clin Dent Res Organ 2016;8:111-4.

27. Fabiana et al. Early acquisition of Streptococcus mutans for children Acta odontológicalatinoamericana:AOL , February 2005:18(2):69-74

28. Margaret et al Geriatric Oral Health and Pneumonia Risk , invited article aging and infectious diseases CID 2005:40 (15 June)

29. Yoneda M et al. Involvement of a periodontal pathogen, *Porphyromonasgingivalis* on the pathogenesis of non-alcoholic fatty liver disease,BMC Gastroenterol. 2012; 12: 16.

30. Pischon N, Heng N, Bernimoulin JP, Kleber BM, Willich SN, Pischon T. Obesity, inflammation, and periodontal disease. J Dent Res 2007;86;400-9.

31. Tymkiw KD et al. Influence of smoking on gingival crevicular fluid cytokines in severe chronic periodontitis. J Clin Periodontol. 2011 Mar;38(3):219-228.