Awareness of periodontal disease and its management among medical faculty in Guntur district: A questionnaire-based study

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Abstract:
Aim: The aim of this study was to assess the awareness of periodontal disease, its influence on general health, and attitude toward periodontal disease management among medical faculty in Guntur district.

Materials and Methods: In this cross-sectional study, 150 medical faculty members from different specialties in Guntur district were included in the study. A self-administered questionnaire was prepared based on knowledge, attitude, and practice surveys to assess the awareness of periodontal disease and its management.

Results: Majority of the study participants (82%) had a previous dental visit. Only 31.3% believed that plaque is the major cause for periodontal disease. 56.7% responded that the relation between periodontal disease and systemic diseases is bidirectional. Only 39.3% were aware that periodontal disease is a risk factor for preterm low-birth weight infants. 52.6% of the medical faculty thought that scaling causes loss of enamel. 54.7% were aware that light amplification by stimulated emission of radiation is used in the periodontal treatment. Medical professionals who visited specialist in their previous dental visit obtained mean periodontal score (5.35 ± 1.686) greater than those who had visited general dentist and the difference is statistically significant (0.024).

Conclusion: This study clearly demonstrates that medical practitioners had fair knowledge about various aspects of periodontal disease. This was particularly evident among those who have had a previous visit to a dentist. It was also found that young professionals with limited experience in the profession had better knowledge.

Key words: Awareness, medical faculty, periodontal disease

INTRODUCTION

Oral health is an important and integral part of general health. The impact of oral health-related problems, with special emphasis to periodontal health, has been well documented in scientific literature. Periodontal disease is a predominantly Gram-positive infection which is inflammatory in nature. It is initiated by plaque biofilm resulting in gingivitis, which may progress to periodontitis and eventually tooth loss if left untreated. Periodontal disease is known to have bilateral associations with various systemic diseases such as diabetes mellitus, cardiovascular disease, hypertension, and poor pregnancy outcomes.

Gram-positive infection is a predominant cause of periodontal disease with the potential vascular dissemination of these microorganisms and their toxins such as lipopolysaccharides through sulcular epithelium reaches systemic circulation and induces major vascular response. This host response can offer explanatory mechanism for the interaction between periodontal inflammation and variety of systemic diseases.

Although the distinction between the two terms “medical professionals” and “dentists” is rather vague with the terms not being mutually exclusive, the intention of usage of “medical professionals” in this study was to refer to those teaching and practicing medicine. Since patients are more likely to seek oral health care from medical professionals than from dentists, the purpose of the study is to assess the awareness...
of periodontal disease, its influence on general health, and attitude toward periodontal disease management among medical professionals in Guntur district.

MATERIALS AND METHODS

This cross-sectional study was conducted among 150 teaching medical professionals of different branches in different medical institutes in Guntur district. All the three medical institutions in Guntur district of Andhra Pradesh were included in the study. All the faculties who were present on the days of collection of data and who were willing to participate were included in the study. The response rate was 60.08%. The study protocol was approved by the Institutional Ethical Committee.

A self-administered, close-ended questionnaire comprising 16 questions was distributed in respective colleges and collected on the next day. The questionnaires comprising variegated aspects of periodontal diseases such as etiology, systemic influences, oral hygiene measures, and various treatment approaches.

Questionnaires employed in the previous studies\(^7,\)\(^15\) were taken as a reference for mounting the current questionnaire. However, the present questionnaire differs from the previous questionnaires in that the questionnaire has been tested for content validity ensuring inclusion of all relevant domains together with emphasis on item relevance in each domain where the experts in the field involved in rating the relevance of each item on a modified 4-point Likert scale ranging from “not relevant” to “highly relevant”. Content validity was assessed using content validity index (CVI), both at item level (I-CVI) and scale level (S-CVI). All the questions were rated as “quite relevant” or “highly relevant” by the raters. I-CVI was found to be >0.83, and the S-CVI was found to be 0.964 indicating good validity. The questionnaire was employed in subjects to know the knowledge, attitude, and awareness of medical faculty toward periodontal diseases. Of the 16 questions in the self-administered questionnaire employed in this study, 10 (3–12) were knowledge questions. Periodontal knowledge score for each participant was calculated based on their responses for these ten questions. The possible knowledge score obtained by a participant ranges from 0 to 10. The questionnaire employed in the study was illustrated in Table 1.

Statistical analysis

The analysis was done by descriptive analysis as percentage/proportions. Chi-square test was done to test the responses to various knowledge questions based on previous dental visit. Independent samples’ t-test was done to evaluate the mean periodontal knowledge scores based on previous dental visit and qualification of care provider.

RESULTS

One-hundred and fifty participants completed the questionnaire. After checking for adequacy/completeness of responses, the data were subjected to analysis. Majority of the study participants (82%) had a previous dental visit. Of those who had a previous dental visit, 78% sought care from a specialist dental practitioner, while 22% sought care from a general dental practitioner. 62% of the participants rightly acknowledged the specialty for gum diseases as periodontology [Figure 1].

Descriptive statistics for various items in the questionnaire were provided in Table 2. More than half (51.3%) of the study participants opined that food debris is the major cause for periodontal disease, while only 31.3% believed plaque to be the major cause. Significant difference was found in this regard between those who had a previous dental visit and those who never had a dental visit \( (P = 0.003) \) [Table 3]. Sixty percent of the participants believed that smoking has an effect on periodontal disease and treatment outcome to a great extent. 52.6% of the medical faculty opined that scaling causes loss of enamel. The bidirectional relation between periodontal and systemic diseases was known to 56.7% of respondents, and 31.3% opined that it is the periodontal disease which could lead to systemic diseases. However, 46% of the medical faculty admitted that they rarely or never screen their patients for periodontal disease. The frequency of screening for periodontal disease was not significantly higher among medical faculty with knowledge about the bidirectional relationship between periodontal and systemic diseases \( (P = 0.187) \). 75.3% responded that they insist pregnant women for oral health checkup, and significant differences were found in this respect based on the knowledge of the participants regarding relationship between preterm low-birth weight and periodontal disease \( (P = 0.014) \). Thirty percent of the faculty responded that they would refer a patient for oral health checkup in case of severe bleeding gums. The overall mean knowledge score of the study participants was found to be 5.26 ± 1.586.

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DISCUSSION

Periodontitis is a multifactorial disease caused by interaction between bacterial infections and host response to bacterial challenges. It is estimated that more than 500 bacterial species are capable of colonizing the mouth of an adult.
Medical professionals should have knowledge about periodontal disease as they were the first person to encounter oral problems in patients while practicing[16] and recent studies revealed the association between periodontal diseases and systemic diseases such as diabetes, coronary heart disease, and preterm low-birth weight infants.

Considering the aforementioned effects of poor oral health in general and periodontal health in specific on the general health of an individual and the consequent impact on the quality of life of that individual, medical professionals need to develop a deeper understanding of the etiopathogenesis of the periodontal disease and various options available in

### Table 1: Questionnaire employed in the study

| Question | Options |
|----------|---------|
| 1. Have you ever been to a dentist for treatment? | Yes/no |
| 2. If yes, who was your dental care provider? | (a) General dental practitioner (b) Specialist |
| 3. Specialty/specialist dealing with gum diseases is? | Prosthodontics/prosthodontist Oral pathology/oral pathologist Periodontology/periodontist Oral and maxillofacial surgery/oral and maxillofacial surgeon Public health dentistry/public health dentist Orthodontics/orthodontist Endodontics/endodontist Pedodontics/pedodontist Oral and maxillofacial radiology/oral and maxillofacial radiologist Do not know |
| 4. Primary etiology for periodontal disease? | (a) Plaque (b) Food debris (c) Poor nutrition (d) Do not know |
| 5. Do you think that mouth is the only source for bad breath? | Yes/no/do not know |
| 6. Relationship between systemic and periodontal disease? | (a) Periodontal diseases lead to systemic diseases (b) Systemic diseases lead to periodontal diseases (c) Two-way relationship (d) Do not know |
| 7. Do you think that diabetes is a risk factor for periodontal disease? | Yes/no/do not know |
| 8. Are you aware that gingival enlargements can be caused by certain drugs? | Yes/no/do not know |
| 9. Do you think that periodontal diseases alter the levels of systemic inflammatory markers? | Yes/no/do not know |
| 10. Do you think periodontal disease is a risk factor for preterm low-birth weight infants? | Yes/no/do not know |
| 11. Scaling causes loss of enamel | (a) Completely agree (b) Agree (c) Do not know (d) Disagree (e) Completely disagree |
| 12. Are you aware that LASERs are used for the treatment of periodontal disease? | Yes/no/do not know |
| 13. To what extent does smoking influence periodontal health and treatment outcome? | (a) To a great extent (b) To certain extent (c) No influence at all |
| 14. Do you screen your patients for periodontal disease? | (a) Very often (b) Often (c) Rarely (d) Never |
| 15. Do you insist pregnant women for oral health checkup? | Yes/no |
| 16. If patient complains of severe bleeding gums and gingival changes are observed, you refer the patient to? | (a) General dental practitioner (b) Specialist |

LASER – Light amplification by stimulated emission of radiation

### Table 2: Descriptive statistics for various items in the questionnaire

| Question | Yes, n (%) | No, n (%) | Don’t know, n (%) |
|----------|------------|-----------|------------------|
| Previous dental visit | 123 (82) | 27 (18) | Not available |
| Mouth is the only source for bad breath | 18 (12) | 130 (86.7) | 2 (1.3) |
| Diabetes is risk factor for periodontal disease | 133 (88.7) | 10 (6.7) | 7 (4.7) |
| Certain drugs cause gingival enlargement | 133 (88.7) | 13 (8.7) | 4 (2.7) |
| Periodontal disease alter the systemic inflammatory marker levels | 114 (76) | 26 (17.3) | 10 (6.7) |
| Periodontal disease is risk factor for preterm low birth weight infants | 59 (39.3) | 52 (34.7) | 39 (26) |
| Awareness on laser use in the treatment of periodontal disease | 82 (54.7) | 37 (24.7) | 31 (20.7) |
| Insistence on pregnant oral health checkup | 112 (74.7) | 38 (25.3) | Not available |
| Referral in case of severe bleeding gums | 45 (30) | 105 (70) | Not available |
the treatment of the condition.[7,15,17] This need becomes much more significant in the Indian context, given the cultural and economical situations that prevail in the nation. Despite sincere efforts from the government, Dental Council of India, by encouraging every dental institution in the country to setup rural satellite clinics[18] with an intention to increase the utilization of dental services in these populations and campaigning about the importance of oral health, there has not been any improvement in the oral health status of the country’s population.[7,18] 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.

In the present study, 56.7% of the medical professionals were aware of the bidirectional relationship between systemic and periodontal diseases was 24%, 11%, and 20%, respectively. A study conducted by Jaiswal et al. in Karnataka revealed that only 6.67% of the medical interns rated their knowledge about the relationship between periodontal and systemic diseases as good.[21] Contrastingly, better awareness than that observed in the current study in this regard was observed in studies conducted by Sawai et al.[22] and Umezudike et al.[19] where the awareness was more. 88.7% of the professionals responded that diabetes is a risk factor for periodontal disease which is in accordance with a study conducted by Pralhad and Thomas among medical professionals in Karnataka.[15] This awareness was found to be low among medical doctors and interns in Pakistan.[7,18] Fifty-nine of the medical professionals 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 similar results with 61.29% of the participants being aware.[28] However, 82% of the medical professionals were aware of this association in another study conducted among medical professionals in Karnataka,[15] while the awareness was as low as 3% among medical interns in a study conducted by Gur and Majra.[17] 75.3% 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.[23] While misconceptions about routine dental treatments are common among general public, it was surprising to know that 52.6% of the medical professionals in the present study believed that scaling causes loss of enamel. Almost similar results were obtained in studies conducted in Karnataka, Chennai, and Pakistan, with the values being 42%, 35%, and 43%, respectively.[7,15,24] The adverse effects of smoking on

### Table 3: Distribution of responses to various knowledge questions based on previous dental visit

| Relation between periodontal disease and systemic diseases | Previous dental visit |  |  |
|-----------------------------------------------------------|-----------------------|---|---|
| Periodontal to systemic disease                           | Yes, n (%)            | 39 (31.7) | 8 (29.6) | 0.361 |
|                                                           | No, n (%)             | 5 (4.1) | 2 (7.4) |
| Systemic diseases to periodontal diseases                 |                        | 11 (8.9) | 0 |
| Two-way relationship                                      |                        | 68 (55.3) | 17 (6.3) |
| Do not know                                               |                        | 5 (4.1) | 2 (7.4) |
| Scaling causes loss of enamel                             |                        | 61 (49.6) | 38 (31.7) |
| Agree                                                     |                        | 44 (35.8) | 6 (22.2) |
| Do not know                                               |                        | 15 (12.1) | 1 (3.7) |
| Primary etiology for periodontal disease                  |                        | 11 (8.9) | 3 (11.1) |
| Plaque                                                    |                        | 44 (35.8) | 3 (11.1) |
| Food debris                                               |                        | 59 (48) | 18 (66.7) |
| Nutrition                                                 |                        | 5 (4.1) | 5 (18) |
| Do not know                                               |                        | 15 (12.1) | 1 (3.7) |

Chi-square test (P≤0.05)

### Table 4: Differences in mean periodontal knowledge scores based on previous dental visit and qualification of care provider

| Variable                              | Previous dental visit | n (%) | Mean periodontal knowledge score | SE mean | P |
|---------------------------------------|-----------------------|-------|----------------------------------|---------|---|
|                                      | Yes                   | 123 (82) | 1 (36.7) | 0.003 |
|                                      | No                    | 27 (18) | 5 (14.6) | 0.327 |
|                                      | General dental practitioner | 27 (22) | 44 (35.8) | 6 (22.2) |
|                                      | Specialist            | 96 (78) | 11 (8.9) | 2 (7.4) |

Independent samples t-test; (P≤0.05). SE – Standard error

### Table 5: Correlation between mean periodontal knowledge score and sociodemographic variables

| Variable                              | Pearson’s correlation coefficient | P |
|---------------------------------------|----------------------------------|---|
| Age                                   | -0.34                            | 0.07 |
| Time spent in medical field           | -0.53                            | 0.034 |
| Income                                | 0.012                            | 0.13 |

Pearson’s correlation test. (P≤0.05 considered significant)
periodontal health were known to 60% of the participants in the current study which is less than that observed in a study among medical professionals in Karnataka.[15]

54.7% of the study participants were aware of the use of light amplification by stimulated emission of radiations in treatment of periodontal disease, which is similar to that found in the study by Pralhad and Thomas.[15] Forty-six percent of the study participants admitted that they rarely or never screen their patients for periodontal disease. The mean periodontal knowledge score of the participants was 5.26 ± 1.586, suggesting that medical professionals on an average were aware of slightly higher than 50% of the questions posed.

Limitations
The study was conducted in one area only, so that the results cannot be applied over national level, and the questionnaire used in the study contains close-ended questions so the assessment of knowledge might get affected. Furthermore, the descriptive nature of this study does not allow drawing of causal inferences. Although it was observed in the study that medical professionals who have had a previous dental visit at a specialty practitioner showed better periodontal knowledge levels, the confounding effect of other variables such as age of the practitioners, accessibility to dental services cannot be ignored in understanding this finding. The association between dental visit at a specialty practitioner and periodontal knowledge was not acclaimed to be causal.

Recommendations
It is recommended 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. Surveys like this would help a long way not only in identifying the medical professionals with improvable oral health knowledge but also to focus on those areas of oral health where there is a lack of optimum knowledge.

CONCLUSION
This study clearly demonstrates that medical practitioners had fair knowledge about various aspects of periodontal disease. This was particularly evident among those who have had a previous visit to a dentist. It was also found that young professionals with limited experience in the profession had better knowledge which could be indicative of the growing importance to oral health in medical curriculum in recent times.

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Conflicts of interest
There are no conflicts of interest.

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