IJBPAS, July, 2021, 10(7): 2520-2535

ISSN: 2277–4998

International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

AWARENESS AND PERCEPTIONS OF PERIODONTAL DISEASE AND TREATMENT OPTIONS AMONG MEDICAL PROFESSIONALS - A QUESTIONNAIRE BASED STUDY

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Received 5th Aug. 2020; Revised 24th Sept. 2020; Accepted 25th Oct. 2020; Available online 1st July 2021

https://doi.org/10.31032/IJBPAS/2021/10.7.5775

ABSTRACT

Introduction

The awareness of the growing associations between periodontal disease and systemic conditions and the advances in periodontal surgical therapy need to be emphasized, more so among the medical professionals. Studies addressing the awareness level about periodontics among other healthcare providers like medical professionals are very few. The present survey is therefore planned to explore the awareness and perception of periodontal disease and the various advanced treatment options among medical professionals to emphasize the importance of periodontal disease and knowledge of treatment procedures in order to encourage maintenance of periodontal health.

Materials and methods

A cross-sectional survey based study was conducted using an online self-structured, pre-tested, close-ended questionnaire. The survey targeted 500 medical professionals including students, faculty and practitioners in the western region of Saudi Arabia.

Chi-square test was used to confirm the difference in proportions and a probability of 95% was considered as statistically significant ($p<0.05$).

Results:

A large percentage of the participants were graduates (50%) with nearly equal undergraduates and postgraduates. Chi-square tests revealed statistically significant differences between the undergraduates, graduates and postgraduates ($p<0.05$) with regard to most of the responses, with very few responses being not significant ($p>0.05$).

Conclusion:

Overall, the knowledge and awareness of postgraduate medical professionals with regard to periodontal disease and advanced surgical therapy were better than graduates and undergraduates. It is essential to enhance the same for a better interdisciplinary approach in dealing with patients with periodontal conditions.

Keywords: Periodontal disease, systemic disease, medical professionals, knowledge, awareness, periodontal surgery

INTRODUCTION

Periodontal disease is one of the most common inflammatory diseases in adults. In 2010, 3.9 billion people worldwide were reported to have periodontal disease **[1]**. To date, many studies have demonstrated that periodontitis is a risk factor for many systemic conditions **[2]**. The periodontal disease process is initiated with gingivitis, in which the inflammation is solely confined within the gingival architecture. In the absence of dental intervention at this stage, the inflammatory lesion extends further towards the periodontal ligament and surrounding alveolar bone, resulting in periodontitis. Consequentially, there is destruction of the attachment apparatus of the teeth and resorption of circumferential alveolar bone followed by halitosis, tooth mobility, enlarged or receded, erythematous, bleeding gums, etc **[3]**. Many recent studies explore the interrelationship between oral health, inflammation, and systemic disease **[4]**. Oral microbiota can cause oral inflammation but may also directly contribute to systemic inflammation, increasing inflammation through the release of toxins or leakage of microbial products into the bloodstream. The association between oral inflammation and systemic

inflammation is fundamental to understanding the detrimental effects of oral inflammation on several organ systems and the ability of oral disease to increase the risk of developing non-oral disease **[1]**. A chronic oral infection such as periodontitis is a constant potential source of infection and has been considered as a separate risk factor for cardiovascular diseases, cerebrovascular diseases, peripheral arterial disease, respiratory diseases, and low birth weight **[5]**. Physicians should work as active players in oral health promotion by early diagnosis of gingivitis and periodontitis and patient referral to dental care **[2]**. Medical professionals should have knowledge about periodontal disease and treatment options as they are the first persons to encounter oral problems in patients while practicing and revealed the association between periodontal diseases and systemic diseases such as diabetes, coronary heart disease, and preterm low-birth weight infants **[3]**. 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 studying, teaching and practicing medicine. Since patients are more likely to seek general health care from medical professionals than oral health 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 Saudi Arabia.

AIMS

Aims: to assess the knowledge, awareness, and perceptions of medical professionals about various periodontal conditions and their association with systemic conditions, and treatment options available and management of such conditions.

OBJECTIVES

The main objectives of the following study is to provide answers and clarify the following questions and points

1- Bridge the gap of awareness among the medical professionals towards periodontal disease.

2- Provide an insight into the possible systemic-periodontal interactions to ensure optimum healthcare to the patients and enhance their quality of life by following a holistic multidisciplinary approach to patient care.

3- Enrich the knowledge of medical professionals of the various novel treatment and preventive options for periodontal disease management.

4- Do medical professionals understand the importance of diagnosis and treatment of periodontal disease?

5- Do medical professionals recognize the positive influence periodontal treatment can have on systemic health?

6- Will the consideration of periodontal health aid in providing holistic patient care and thus better a patient's quality of life?

MATERIAL AND METHODS

The quantitative analysis method used in this study is purely descriptive KAP study. KAP study stands for knowledge, awareness and perception. In order to assess these factors we need to understand the variables that may influence them. Variables such as age, gender, education, profession, and work setting contribute in summarizing and visualizing the data of these categorical variables and then further attempt to draw conclusions off them to best serve this study purpose **[6]**. This study involved 500 persons which included medical professionals, medical students, medical interns, general practitioners, specialists, consultants and academic faculty, working in governmental or private hospitals, clinics, and institutes. The sample included all personnel from undergraduate, graduate, to post graduate level; of both genders aged from 18 to 65 years old. We carried out a descriptive cross-sectional study (Questionnaire based survey) among these medical personnel based in Saudi Arabia for one year. To collect data, Google documents were used as a platform to create an online self-administered questionnaire survey. Responses were secured using a "Cloud" database where the data was automatically sorted, scaled and scored by custom Excel formulas **[7]**. To check the validity of the survey, we started with pilot survey which was distributed to ten of the participants. After taking their feedback, we re-wrote and modified the actual survey. The final questionnaire consisted of thirty-nine close-ended multiple-choice questions divided over five sections; which included participant's Consent, demographic data, awareness of periodontal diseases, perception of periodontal treatment, and lastly awareness about periodontal treatment. Yes or No questions were given to measure the knowledge of the participants with 'I am not aware' option to avoid bias. Other questions contained answers that were selected and modified based on the common knowledge of the participants.

Researchers downloaded real-time questionnaire responses in multiple formats (e.g. excel) which was then analyzed with a statistical software of choice **[7]**.

The data collected was entered into MS Excel spreadsheet and analyzed through the statistical package for the social sciences software V20. The responses were compiled, computed and analyzed for agreement or otherwise between and within the groups. Chi-square test was used to

confirm the difference in proportions and a probability of 95% was considered as statistically significant ($p<0.05$).

RESULTS

The survey population consisted of 516 participants with nearly equal number of males and females. Of these, the 26-25 year Old age group contributed majorly (54.7%) followed by the age group 18-25 years (30.4%) and then the age group between 36-45 years (10.7%) with least participation from the 46-55 years age group (3.7%) and less than 1% contribution from the age group 56 years and above. Majority of the participants were graduates (50%) whereas undergraduate students and postgraduates comprised of 26% and 24% respectively.

Majority of the survey participants were general practitioners (45%) followed by students (27.8%) and specialists (13.6%). Consultants (7.6%) and faculty (6.2%) constituted a very small proportion.

A vast majority of the participants worked in a hospital (59.1%) followed by 25% working in an institute and 15.9% working in clinics. 61.4% worked in a private set-up and 33.3% belonged to the government set-up and a small minority (5.2%) worked in a semi private set up **(Table 1)**.

Majority of the graduates (67.19%) knew that periodontal disease is the same as gum disease whereas nearly 56% of the postgraduates and 35% of undergraduates seemed to know about it. These findings were statistically significant ($p<0.001$).

Additionally, nearly all participants knew about halitosis as bad breath with 57% undergraduates, 53% graduates and 78% postgraduates whereas a small number thought that it was foul taste which included 6% undergraduates, 5% graduates and 8% postgraduates. The differences in these responses were also statistically significant ($p<0.001$) **(Table 2)**.

Most of the medical graduates (67.19%) were aware that periodontal disease is caused by plaque as compared to postgraduates (48.39%) and undergraduates (40%). A small proportion of undergraduates (5.15%) and graduates (2.73%) felt that periodontal disease is hereditary whereas 18% of postgraduates thought the same. Nearly 17% of undergraduates and postgraduates thought that periodontal diseases are caused by deficiency of vitamin C whereas 10% of the graduates felt so. These findings were statistically significant ($p<0.001$).

66% of the graduates felt that periodontal disease is genetically determined as against 51% of the postgraduates and 25% of the undergraduates, which was again statistically significant ($p<0.001$).

Interestingly, nearly 80% of the medical graduates and 75% of the postgraduates knew about the association between diabetes and periodontal disease whereas

only 47% of undergraduates seemed to know about it. This was again statistically significant ($p<0.001$). Additionally, 68.36% of graduates and 61.29% of postgraduates were aware of the association between periodontal disease and adverse outcome of pregnancy whereas only 34% of the undergraduates were aware of the same, which was again statistically significant ($p<0.005$). About 80% of postgraduates and 82% graduates were aware of the association between smoking and periodontal disease and about 65% of the undergraduate population seemed to be aware of the same which was also statistically significant ($p<0.001$). On the other hand, the percentage of graduates being aware of association between cardiovascular system and periodontal disease was 53%, followed by postgraduates (36%) and undergraduate students (24%) which was again statistically significant ($p<0.001$). The percentage of Graduates (45%) and postgraduates (44%) knowing about the association between bleeding/swollen gums and pregnancy were nearly similar, but not so with the undergraduates (27.21%). However, this association was also found to be statistically significant ($p<0.005$). On the other hand, the percentage of medical professionals being aware of bleeding/swollen gums and certain drugs were over 50%, with undergraduates accounting for nearly 54%, graduates 57% and post graduates 51% and these were not statistically significant ($p>0.05$). However, although over 50% of graduates (51%) and postgraduates (57%); and nearly 45% of undergraduates were aware of the association between bleeding/swollen gums and plaque, these were not statistically significant ($p>0.05$).

A moderate number of undergraduates (54%) and postgraduates (53%) believed that it was possible to prevent periodontal diseases whereas a greater number of graduates (61%) believed so and these were again statistically significant ($p<0.001$).

On the other hand, a large number of graduates (84%) and postgraduates (74%) felt that it was possible to treat periodontal disease whereas slightly lower number of undergraduates (65%) felt so and this was also statistically significant.

A large number of postgraduates (58%) felt that periodontal treatment is painful whereas just over 40% of undergraduates and graduates felt so and these values were also statistically significant ($p<0.001$). So also, nearly 78% of the graduates felt that bleeding gums is a serious condition, whereas 54% of undergraduates and 45% of postgraduates felt so. These comparisons were also statistically significant ($p<0.001$).

Of the treatment options, most of the postgraduates believed scaling is the best treatment option (40%), while 23% felt

home remedies work better, 17% felt tooth brushing was best and a very small percentage (2%) felt coagulants would help. On the other hand, nearly 45% of the graduates felt scaling is the best treatment, followed by18% who felt tooth brushing was best, 16% who felt home remedies were better and less than 10% who felt coagulants work well for bleeding gums. With undergraduates, the percentage of participants who felt coagulants (20%); scaling (21%), and tooth brushing (19%) were nearly similar, but only a small percentage felt home remedies (10%) were a better option for bleeding gums. Chi-square tests revealed statistically significant differences among them ($p<0.001$).

53% of the graduates and nearly equal number of undergraduates (46%) and postgraduates (44%) felt that foul odour is a serious condition and chi-square tests show statistical significance ($p<0.005$). For the treatment options for foul odour, 31% of the postgraduates felt that mouthwashes is the best, 27% felt scaling is the best option, 20% felt toothbrushing is best and a very small percentage (8%) felt mouth freshners were the best option for treatment of foul odour. On the other hand, 37% of the graduates felt scaling is best followed by mouthwashes (27%), toothbrushing (14%) and mouth freshners (13%). With regard to undergraduates, scaling (23%) was the best option followed by mouthwashes (21%), and toothbrushing (16%) and a small percentage (9%) felt mouth freshners are the best. Chi-square tests show statistical significance ($p<0.001$)

Majority of the graduates (64%) felt scaling can cause removal of enamel followed by 38% of postgraduates who felt so and 23% of undergraduates felt the same; which were again statistically significant ($p<0001$).

A very small percentage of undergraduates (5%), graduates (2.73%) and postgraduates (3.2%) felt that they need to visit their dentist every 2-3months, whereas a large number of graduates (66%), undergraduates (47%) and postgraduates (36%) felt the need to visit every 6months. Lastly, nearly same percentage of undergraduates (26%) and graduates (27%) felt the need to visit the dentist every 12 months but a larger proportion of postgraduates (39%) felt so. Chi-square tests revealed these values to be statistically significant ($p<0.001$) **(Table 3)**.

Nearly 70% of the graduates were aware about surgical periodontal therapy for gummy smile as against 59% of postgraduates and 34% of undergraduates and these values were statistically significant ($p<0.001$). On the other hand, higher number of postgraduates (52%) were aware about surgical periodontal therapy for darkened gums compared to undergraduates (43%) and graduates (38%); which was again statistically

significant($p<0.05$). On the contrary, there were no statistically significant differences between the awareness of undergraduates (43%), graduates (40%) and postgraduates (62%) ($p<0.05$).

With regard to LASER therapy, over 40% of the postgraduates were aware of its application in the treatment of gummy smile, darkened and swollen gums whereas just a little over 10% of the graduates and 19-30% of the undergraduates were aware of the same; which was again statistically significant ($p<0.001$).

With respect to surgical periodontal procedures, a good majority of postgraduates seemed to be aware of periodontal plastic surgery (32%) and that receeded gums can be treated restored by the procedure (33%). Additionally, over 20% of the postgraduates were aware that tissues destroyed can be regenerated by bone grafts (27%); platelet rich plasma/fibrin (22%) and alloderm is also used in periodontal plastic surgery (21%). Almost similar to that were the responses of the undergraduates, where 26% felt that bone grafts may be used for regeneration, 20% felt platelet rich plasma/ fibrin may be used and about 14% knew about application of alloderm in periodontal plastic surgery. On the other hand, the percentage of graduates being aware of tissue regeneration by bone grafts (12%) and platelet rich plasma/fibrin (8%) was comparatively lesser as also their awareness of the application of alloderm (9%). Interestingly, these were statistically significant ($p<0.01$).

The awareness about implants as a permanent replacement option for lost teeth was quite high among graduates (69%) followed by postgraduates (58%) and then undergraduates (56%) which was again statistically significant ($p<0.05$) **(Table 4)**.

Table 1: Descriptive statistics

	Frequency (n=516)	Percentage (%)
Gender		
Female	**255**	**49.4**
Male	**261**	**50.6**
Age Group		
Between 18-25	**157**	**30.4**
Between 26-35	**282**	**54.7**
Between 36-45	**55**	**10.7**
Between 46-55	**19**	**3.7**
Between 56 and above	**3**	**0.6**
Qualification		
Undergraduate	**136**	**26.4**
Graduate	**256**	**49.6**
Postgraduate	**124**	**24**
Designation		
Student	**141**	**27.8**
Consultant	**39**	**7.6**
Faculty	**32**	**6.2**
General Practitioner	**232**	**45**
Specialist	**70**	**13.6**

Workplace		
Clinic	**82**	**15.9**
Hospital	**305**	**59.1**
Institute	**129**	**25**
Work Setting		
Government	**172**	**33.3**
Private	**317**	**61.4**
Semiprivate	**27**	**5.2**

Table 2 : Knowledge about some Periodontal terms

Knowledge	Undergraduate (n = 136)	Graduate (n = 256)	Post graduate (n = 124)	χ^2 / p value
Periodontal disease is the same as gum disease	**47 (34.56)**	**172 (67.19)**	**69(55.65)**	**40.960/ 0.000**
Halitosis is bad breath	**77 (56.62)**	**136 (53.13%)**	**97 (78.2)**	**31.254/ 0.000**
Halitosis is Foul taste	**8 (5.88)**	**12 (4.69)**	**10 (8.06)**	

#Percentage given in bracket

Table 3 : Knowledge based questions

Knowledge	Undergraduate (n = 136)	Graduate (n = 256)	Post graduate (n = 124)	χ^2 / p value
Periodontal disease is caused by Plaque	**54 (39.71)**	**172(67.19)**	**60(48.39)**	**61.71/0.000**
Periodontal disease is caused by Hereditary	**7(5.15)**	**7(2.73)**	**22(17.74)**	
Periodontal disease is caused by Vitamin C Deficiency	**23(16.91)**	**25(9.77)**	**21(16.94)**	
Periodontal diseases are genetically determined	**34(25)**	**169(66.02)**	**63(50.81)**	**65.331/0.000**
Aware of the association between diabetes and periodontal disease	**64(47.06)**	**204(79.69)**	**93(75)**	**46.966/0.000**
Aware of the association between periodontal disease and adverse outcome of pregnancy	**46(33.82)**	**175(68.36)**	**76(61.29)**	**44.295/0.000**
Aware of the association between smoking and periodontal disease	**88(64.71)**	**211(82.42)**	**99(79.84)**	**16.482/0.000**
Aware of the association between cardiovascular system and periodontal disease	**32(23.53)**	**136(53.13)**	**45(36.29)**	**33.770/0.000**
Aware of the association between bleeding/ swollen gums and pregnancy	**37(27.21)**	**116(45.31)**	**54(43.55)**	**12.921/0.002**
Aware of the association between bleeding /swollen gums and certain drugs	**73(53.68)**	**145(56.64)**	**63(50.81)**	**1.192/0.551**
it is possible to prevent periodontal diseases	**73(53.68)**	**155(60.55)**	**66(53.23)**	**29.594/0.000**
possible to treat periodontal diseases	**88(64.71)**	**92(35.94)**	**216(174.19)**	**36.833/0.000**
do you think the treatment is painful	**58(42.65)**	**105(41.02)**	**72(58.06)**	**33.595/ 0.000**
bleeding from the gums is a serious condition	**74(54.41)**	**199(77.73)**	**56(45.16)**	**57.022/0.000**
Coagulants (Medications) is the best treatment option for bleeding gums	**27(19.85)**	**25(9.77)**	**2(1.61)**	**63.087/0.000**
Home remedies (salt&water,clove oil, etc)	**29(21.32)**	**41(16.02)**	**29(23.39)**	
Scaling (professional teeth cleaning) is the best treatment	**28(20.59)**	**115(44.92)**	**50(40.32)**	

option for bleeding gums				
Tooth brushing is the best treatment option for bleeding gums	**26(19.12)**	**46(17.97)**	**21(16.94)**	
foul odour (bad smell) is a serious condition	**62(45.59)**	**136(53.13)**	**55(44.35)**	**16.568/0.002**
Mouth freshners/mints is the best treatment option for foul odour	**12(8.82)**	**34(13.28)**	**10(8.06)**	
Mouthwashes is the best treatment option for foul odour	**28(20.59)**	**68(26.56)**	**38(30.65)**	**47.34/0.000**
Scaling (professional teeth cleaning) is the best treatment option for foul odour	**31(22.79)**	**95(37.11)**	**34(27.42)**	
Tooth brushing is the best treatment option for foul odour	**22 (16.17)**	**36(14.06)**	**25(20.16)**	
Scaling can cause the removal of enamel	**31(22.79)**	**163(63.67)**	**47(37.90)**	**73.086/0.000**
Visit your dentist in every 2-3 months	**7(5.15)**	**7(2.73)**	**4(37.90)**	
Visit your dentist in every 6 months	**64(47.06)**	**169(66.02)**	**45(36.29)**	**50.874/0.000**
Visit your dentist in every 12 months	**36(26.47)**	**69(26.95)**	**48(38.71)**	

#Percentage given in bracket

Table 4 : Awareness on Advanced Periodontal surgical therapy

	Undergraduate (n = 136)	**Graduate (n = 256)**	**Post graduate (n = 124)**	**χ^2 / p value**
aware about surgical periodontal therapy for gummy smile	**46(33.82)**	**180(70.31)**	**73(58.87)**	**48.584/0.000**
aware about surgical periodontal therapy for darkened gums	**59(43.38)**	**96(37.50)**	**65(52.42)**	**7.645/0.022**
aware about surgical periodontal therapy for swollen (enlarged) gums	**58(42.65)**	**103(40.23)**	**64(51.61)**	**4.467/0.107**
LASER therapy for the treatment of gummy smile	**32(23.53)**	**35(13.67)**	**57(45.97)**	**47.752/0.000**
LASER therapy for the treatment of darkened gums	**42(30.88)**	**32(12.50)**	**51(41.13)**	**41.759/0.000**
LASER therapy for the treatment of swollen (enlarged) gums	**26(19.12)**	**29(11.33)**	**55(44.35)**	**54.857/0.000**
Aware about periodontal plastic surgery	**42 (30.88)**	**33(12.89)**	**40(32.26)**	**25.970/0.000**
Aware that exposed roots/receded gums can be restored by periodontal plastic surgery	**25(18.38)**	**33(12.89)**	**41(33.06)**	**22.004/0.000**
Tissues destroyed by disease can be regenerated by bone grafts and periodontal plastic surgery	**36(26.47)**	**31(12.11)**	**34(27.42)**	**18.018/0.000**
Tissues destroyed by disease can be regenerated by platelet-rich plasma/fibrin (PRP/PRF)	**27(19.85)**	**21(8.20)**	**27(21.77)**	**16.590/0.000**
Commonly used in medical practice is used in periodontal plastic surgery	**19(13.97)**	**24(9.38)**	**26(20.97)**	**9.749/0.008**
Aware about implants as a permanent replacement option for lost teeth	**76(55.88)**	**176(68.75)**	**72(58.06)**	**7.855/0.020**

#Percentage given in bracket

 # Percentage is calculated among each group (undergraduate alone...)

DISCUSSION

The periodontal systemic liaison is complex and literature is abundant with numerous evidences in this regard **[1]**. Periodontists the world over are working tirelessly along these lines but what is lacking is a coordinated exercise with the medical fraternity. To ensure optimum healthcare for the patient, it is imperative that the medical professionals understand the underlying implications of various systemic conditions on the periodontal tissues and work alongside the periodontist in this regard. But for this to happen, it is of utmost importance that we first assess the knowledge and awareness of the medical practitioners with regard to the various aspects of periodontal diseases and their systemic associations. In addition, knowledge and awareness of their perceptions of advanced periodontal surgical options and implants as a permanent tooth replacement option also needed to be assessed **[6]**. To a large extent, it can be safely assumed that knowledge and awareness may vary depending on the educational status, hence it was decided to compare the responses across the different levels of professional expertise and educational status.

It was attempted to target medical professionals across various genres, i.e. undergraduates, graduates and postgraduates as well as based on designation and work place as these factors play an important role in determining their knowledge and awareness. Accordingly, our study comprised of a major percentage of graduates and nearly half but equal numbers of undergraduates and postgraduates. Majority were again students, followed by specialists and a small number included consultants, faculties and general practitioners. About 60% of the participants worked in a hospital setup, 25% in an institute and 16% in clinics. These demographic factors play an important role in determining what an individual learns and perceives. Peer group discussions and social activity contribute to a persons knowledge base and also influence his/her perceptions **[8]**.

Our study showed that most of the graduates and postgraduates knew about the periodontal terms of periodontitis and halitosis, whereas the number of undergraduate students knowing about it was less than 50%. This was in accordance with the findings of Prahlad **[6]** who also observed the same. Having an idea about the terms used is benefical in communication and ease of understanding among the dental and medical professionals.

With regard to the knowledge of periodontal disease, most of the participants knew that periodontal disease was caused by plaque whereas a small number of them

believed it was hereditary and some thought it was due to vitamin C deficiency. It is important to understand that only aggressive forms of periodontal disease may be hereditary and vitamin C deficiency only contributes to the severity of disease but does not cause periodontal disease, which is always caused by dental plaque alone **[9]**. More than half of the graduates and postgraduates responded that periodontal disease may be genetically determined as is evidenced in literature **[10, 11]**.

Interestingly, most of the graduates and postgraduates also knew about the association between periodontal diseases and diabetes **[12-14]** adverse outcome of pregnancy **[15]**, and smoking **[16]** which additionally also included undergraduates. However, other than the graduates, a very small percentage of undergraduates and postgraduates were aware of the association between periodontal disease and cardiovascular system **[17]**. This is particularly relevant from periodontal standpoint as knowledge of this association would benefit the patient in a big way, both in terms of management and prevention.

With regard to swollen gums, most of the graduates and postgraduates were aware of the association with pregnancy, and along with most undergraduate students, were also aware of the association with drugs **[18]** and tartar/plaque **[19]**. This is again beneficial as pregnant women regularly visit their gynaecologists and regular monitoring of their periodontal status may help maintain the oral health of these women. Most of the participants correctly felt that it is possible to treat and prevent periodontal diseases while over half of the postgraduates felt that the treatment is painful compared to the undergraduates and graduates. Dental treatment itself is a phobia for most patients and in a general scenario, most tend to generalize it and are unable to differentiate painful experiences of one type of treatment from another. Majority of the graduates felt that bleeding gums is a serious condition and correctly knew that scaling is the best treatment option for it, as also a good number of postgraduates. Although, more than 50% of the undergraduates felt so but they were divided on opinions about the best option between coagulants, home remedies, scaling and toothbrushing **[20]**.

Most of the participants felt foul odour is a serious condition with majority of postgraduates believing mouthwashes as the best treatment option as against majority of graduates believing scaling as the best option. Mouthwashes serve to mask the foul odour rather than treat, whereas scaling is in fact the best treatment method **[21]**. Careful scaling followed by gentle polishing can protect the enamel without causing any permanent damage

[22]. A good number of graduates believed some amount of enamel may be removed during scaling which is not the usual scenario.

There were divided opinions on the frequency of dental visits with most of the participants varying between 6 &12 months. This indicates that although they are aware of the gum problems, the urge or the need for treatment is often underestimated which has also been reported in other studies where only 10% of dentists and 27% of physicians received a regular oral health check-up from a dentist **[23]**. It was reported that those who utilized the dental care facility did so only when they had problems.

Although regular visits to your dentist depends on your oral condition, it is recommended to have a regular check up every 3-6months **[24]**.

Regarding awareness of periodontal therapy, a good number of graduates and postgraduates were aware of surgical therapy for gummy smile, whereas most postgraduates knew about surgical therapy for darkened gums as well as swollen gums when compared to undergraduates and graduates.

Regarding awareness of LASER therapy, again it was majority of the postgraduates who knew about it compared to undergraduates and graduates. So also with regard to advanced surgical procedure, awareness of periodontal plastic surgery, restoration of receding gums by plastic surgery, and knowledge about tissue regeneration by bone grafts, platelet rich plasma/fibrin and use of alloderm in periodontal plastic surgery , it was the postgraduates who seemed to be more aware compared to the undergraduates and graduates. However, the awareness of undergraduates with respect to periodontal plastic surgery and knowledge about tissue regeneration by bone grafts and Platelet rich plasma/fibrin was better than that of graduates. These findings strongly suggest that level of education does affect knowledge and awareness of advanced periodontal surgical procedures.

Dental implants are a popular choice for tooth replacement and therefore, it was not surprising to find the awareness of all the participants with regard to implants was impressively high.

LIMITATIONS

Although postgraduate medical professionals appeared to be more in tune with advanced periodontal surgical procedures and periodontal disease per se, the study lacked sub categorizing them into their sub specialities' as this would help in channelizing the various perio-systemic conditions under their respective medical departments based on speciality.

CONCLUSION

Overall, with regard to perceptions of periodontal disease, the graduates and postgraduates seemed more knowledgeable. However, postgraduates seemed to be more aware about advanced surgical options followed by undergraduates. The idea behind carrying out this project was to change the trend and endeavor to enhance the knowledge, perceptions and awareness of medical professionals so as to establish a cohesive unit between them and the periodontist to ensure optimal oral healthcare and our survey suggests that this should commence as part of undergraduate curriculum of medicine.

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