ORIGINAL ARTICLE

AWARENESS OF DENTAL SURGEONS ABOUT THE EFFECTS OF PLAQUE AND CALCULUS ON PERIODONTIUM ACCORDING TO LATEST RESEARCH

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ABSTRACT

The objective of this study was to access the level of awareness among dental surgeons about the effects of plaque and calculus on periodontium according to the latest published work. This article will also discuss the methods to improve the level of awareness in dental doctors and the quality of periodontal treatment provided to the patients.

It was a cross sectional observational study consisting of 200 questionnaires which were distributed among the dental surgeons in colleges of Islamabad and Rawalpindi. The categories of dental surgeons involved were house surgeons, residents and general practitioners. Participants were asked to solve a specifically designed questionnaire. Questions were ask about dental deposits i.e. plaque and calculus, their role in gingivitis and periodontitis and maintenance of oral hygiene. Participants were asked to encircle one or more than one option.

Results showed that 64.5% dental surgeons believed that calculus is the cause of periodontal diseases and only 33.5% said that it is the plaque which is main cause for periodontal diseases. 64.5% said that periodontitis cannot be cured in the presence of calculus, however 30.5% said that it can be cured in the presence of calculus as long as there is no plaque.Among dental surgeons 85.1% believed that calculus can be completely removed with ultrasonic scaling however 18.5% believed that 100% calculus cannot be removed even after professional ultrasonic scaling. 94.5% believed that calculus deposits are barrier in the maintenance of oral hygiene and 5.5% believed that it is not. It was concluded that the level of awareness was not good in 54.5% dental surgeons

In order to improve the level of awareness institutes should provide with all the recent research based journals and articles to the doctors. Dental surgeons should do research themselves and Institutes should provide an environment that promotes their research. This approach will improve the quality of health education which in turn will influence the quality of treatment for the patients.

Key Words: *Periodontology, oral hygiene, calculus, plaque, periodontitis.*

INTRODUCTION

Gingival and periodontal diseases have afflicted humans since the dawn of history but scientists have been studying about them since 1700's. The earliest historical records dealing with medical topics reveal an awareness of periodontal disease and the need for treatment. The most comprehensive studies of the natural history of periodontal disease to date were carried out by Loe et al in Sri Lanka and Norway.[1] On a clean tooth first of all pellicle is formed. Pellicle is initial form of plaque formation and it consists of salivary component, crevicular fluids, bacterial byproducts, tissue cell products and debris. It functions as protective barrier and provides a substrate on which bacteria accumulate to form plaque. Plaque consists of microbial biofilm growing on dental pellicle. It is the prime etiological agent of periodontitis. Calculus consists of mineralized bacterial plaque that forms on tooth surfaces. Calculus and systemic diseases were frequently postulated as causes of periodontal disorders.[2,3] The aim of the study was to access the level of awareness among surgeons of different designations regarding the effect of plaque and calculus effect on periodontium according to latest research and advancements in periodontology.

METHODOLOGY

This study was carried out in four tertiary care teaching hospitals in Islamabad and Rawalpindi. House surgeons, trainees and graded practitioners of these institutions were included in the study. A verbal consent was obtained from all participants. Each participant was given a self-administered, multiple choice type questionnaire to solve. The questionnaire was developed to assess the knowledge of awareness of

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Received for Publication: June 17, 2015
Revised: July 1, 2015
Approved: August 2, 2015

dental deposits such as calculus/plaque and their effects on periodontium in dental surgeons. The questionnaire had 7 questions and participants were asked to encircle one or more than one option. The data thus collected were compiled and analyzed using SPSS version 16 and interpreted.

In order to summaries the awareness level; responses were graded from 0-7 based on the correct responses. The participants securing 0-3, 4-5, 6-7, marks were graded as having poor, fair and good respectively. Results were expressed in terms of percentage.

RESULTS

Data were collected from 200 dental surgeons including house officers, residents, graded practitioners and consultants having mean age of 28.31± 5.38 years. The level of awareness was recorded as good fair or poor.

In the present study questions were asked regarding dental deposits and which deposit is most harmful to the periodontal tissues. Among dental surgeons 64.5% encircled that calculus is the cause of periodontal diseases (house officers 80%, Residents 50%, GP's 60%) and only 33.5% said that it is the plaque which is main cause for periodontal diseases (house officers 20%, residents 45%, GP's 40%). 64.5% (house officers 75%, 50% residents, 80% GP's) said that periodontitis cannot be cured in the presence of calculus however 30.5% (15% house officers, 50% residents and 20% GP's) said that it can be cured in the presence of calculus as long as there is no plaque. 85.1% dental surgeons believed that calculus is completely removed after professional ultrasonic scaling however 18.5% believed that 100% calculus is not removed even after professional ultrasonic scaling. 94.5% believed that calculus deposits are barrier in the maintenance of oral hygiene and 5.5% believed that it is not.

TABLE 1: AWARENESS

	No. of participants frequency (n)	Percentage	Valid percent
Poor	109	54.5	54.5
Fair	49	24.5	24.5
Good	42	21.0	21.0
Total	200	100.0	100.0

TABLE 2-A: CAUSE OF PERIODONTAL DISEASE

	Calculus	Plaque	Not sure
House officers	80%	20%	
Residents	50%	50%	5%
GP's	60%	40%	

TABLE 2-B: CAUSE OF PERIODONTAL DISEASE

Cumulative percentage	
Plaque	Calculus
38.5%	64.5%

TABLE 3-A: PERIODONTITIS CAN BE CURED IN THE PRESENCE OF CALCULUS BUT NO PLAQUE

	Yes	No
House officers	15%	75%
Residents	50%	50%
GP's	20%	80%

TABLE 3-B: CUMULATIVE PERCENTAGE

Yes	No
54.5%	30.5%

DISCUSSION

In the past much emphasis has been placed on the removal of all calculus deposits to maintain periodontal health but now it is widely accepted that mechanical biofilm removal is the cornerstone of periodontal health. A review of the evidence has shown that calculus is the result of disease and not its cause and periodontal healing occurs in the presence of calculus as long as the overlying bacterial biofilm is removed.[4] Calculus is thus an inert material and its formation could perhaps be regarded as a protective mechanism because it represents the calcification of potentially pathogenic biofilm.

Therefore optimal biofilm control by the patient and in the absence of subgingival calculus removal healing of the periodontal lesion can take place along with gingival shrinkage which exposes the previous subgingival calculus. In the past, it was considered that complete calculus removal is important for disease control, but such emphasis is misplaced and the focus should instead be on biofilm disruption by both patients and operators. Many studies have shown that complete calculus removal is rare if ever achieved.[5]

One review showed that, even after 12-15 minutes of treatment per tooth, 63% of root surfaces still harbored residual calculus. In other words, plaque removal is more important than calculus removal. Calculus deposits are not a barrier in the maintenance of oral hygiene but the removal of calculus is necessary for better access to the subgingival biofilm and for aesthetics.

Host susceptibility also plays an important role in the development and progression of periodontitis, can influence the immune system and can also alter the oral health behaviors.[6] In our hospitals house officers

and residents are the main backbone of a clinical setup. House officers are newly graduated dental surgeons and are groomed for the onerous task of specializing in different fields in the country's tertiary health institutions.

House officers are influenced by their teachers and also the institute highlighting the impact of the influence of teachers and the theoretical/clinical setup of institute. There are various studies conducted within and outside the country to highlight the factors influencing the quality of health care for the patients regarding house officers and residents.[7] House officers and residents should be well aware of all latest knowledge and procedures because it is their knowledge and clinical work that is affecting the quality of treatment for the patients and on large scale affecting the patient well being structure (health seeking behavior and health service utilization) in Pakistan.[8] Institutes should provide a setup that provides journals and articles on latest research and promotes clinically oriented research programs. A holistic approach of health education, awareness and patient support is critically important to a patient's long-term outcome and quality of treatment.

CONCLUSION

Based on the study it was concluded that the level of awareness was not good in majority of dental surgeons. To improve the level of awareness institutes should provide a setup and environment that promotes the access to latest journals and books for the doctors and students. Dental surgeons should be eager to read latest journals and practice accordingly. This approach will largely influence the quality of treatment for the patients.

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