



## ATTITUDE AMONG PRIVATE DENTAL PRACTITIONERS ABOUT PERIODONTAL PROBE USAGE (WILLIAMS PROBE), AWARENESS ABOUT BACTEREMIA DUE TO PROBING : A CROSS SECTIONAL SURVEY

### Dental Science

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### ABSTRACT

Periodontitis is demarcated as an inflammatory disease of the associate tissues of the teeth caused by particular microorganisms or groups of specific microbes, causing progressive destruction of the periodontal ligament and alveolar bone with pocket formation, recession, or both. Periodontal infections should be diagnosed early, but early recognition by the general dental practitioners are practically very low and the condition needs to be improved much. Patient with untreated periodontitis are at a greater risk of bacteraemia due to periodontal probing, if not patient is under the cover of specific antibiotics. So, it has become mandatory to utilise appropriate instruments and prophylactic drugs in the management of systemic and periodontal health of patient.

**AIM AND OBJECTIVES:** To assess the attitude and practice of periodontal probe as a diagnostic tool among the dental clinical practitioners and the awareness about risk of bacteraemia due to probing, South Tamil Nadu- A cross-sectional survey.

**MATERIALS AND METHODS:** A survey was undertaken from 200 registered general dentists in a questionnaire form. Questionnaire contains ten questions, distributed during the month of July to December 2018. Convenient sampling method was carried out.

**RESULTS:** 76% of dentists were using dental explorer for diagnosis of periodontal diseases. 10% of the dentists are using Williams probe for diagnosis of periodontal diseases. Only 5% of practitioners were aware of the bacteraemia while probing and need to use of antibiotics.

**CONCLUSION:** Lack of attitude and practice of periodontal probe usage for diagnosis of periodontal disease among dental practitioners in South Tamil Nadu.

### KEYWORDS

William's probe, Periodontal probe, Bacteremia, Periodontal disease

### INTRODUCTION

Periodontal disease is a pathological inflammatory condition of supporting tissues and bone surrounding the teeth. Periodontal pocket is defined as the pathologically deepening of gingival sulcus. The pathogenesis of pocket formation is induced by bacterial invasion into gingival sulcus which triggers the inflammatory response unleashing a complex cascade of events aimed at destroying and removing bacteria, necrotic cells and deleterious agents. In an attempt to restore health, the host cells such as neutrophils, macrophages, epithelial cells and others produce proteinases, cytokines and prostaglandins that can damage collagen. As consequence of loss of collagen apical cells of junctional epithelium proliferates along the root, then PMNs invade coronal end of the junctional epithelium. When the relative volume of PMNs reaches approximately 60% of junctional epithelium, the tissue loses cohesiveness and detaches from the tooth surface which results in pocket formation. Finally, anaerobic organisms tend to colonize the subgingival plaque (spirochetes and motile rods) to form periodontal pocket formation. The contents of pocket are microorganism, bacterial products (enzymes and endotoxins), GCF, remnants of food, salivary mucin, desquamated epithelial cells, leukocytes and purulent exudates. Williams probe is a dental instrument used to assess the periodontal pocket depth. Standardized force used for penetration of probe is 25gms (0.75N)<sup>1</sup>. In WHO, periodontal disease and dental caries are one of the two significant global burdens of oral disease. Periodontitis is now recognised as sixth most prevalent disease of mankind. Periodontitis is a chronic inflammatory disease of bacterial aetiology that affects the supporting tissues around the teeth. The host has an important role in susceptibility to the disease. In the early stages of periodontitis, some patients are not aware of any problems. However, as the disease progresses, patients may report with signs and symptoms like swollen gums, bleeding gums, receding gums, loose teeth, drifting teeth, bad breath and toothache. If not treated in severe condition, it can result in both loss of teeth and function which can

negatively impact a patient's quality of life.<sup>2,3</sup>

Periodontitis acts as a potential source of infection and also considered as a separate risk factor for cardiovascular disease, cerebrovascular disease, peripheral arterial disease, respiratory disease and low birth weight.<sup>4</sup> Lanning et al study highlighted the need for consistent use of acceptable the practice guidelines and greater consensus-building opportunities to reduce variations in diagnosis.<sup>5</sup> Diagnosis of periodontal disease is not straight forward since it requires specific diagnostic tools and knowledge. The parameters include probing pocket depths, bleeding on probing, clinical attachment levels, plaque index and radiographs for assessing alveolar bone levels.<sup>6</sup> The pivotal role of dentists is to increase the lifespan of dentition by means of prevention and thorough treatment. The field of periodontology is rising to the various aspects extending from fresher advancements in diagnosis, treatment interventions, the use of regenerative procedures and growth factors in various periodontal disease.<sup>7</sup>

In India, we have specific diagnostic tools and advancement treatment for periodontal disease, since epidemiological research indicates that periodontal diseases are a global pandemic and evidence shows a prevalence of 50%–100% in geographically diverse Indian subcontinent. The WHO reports that 15%–30% tooth loss is found in adults.<sup>8</sup> Keeping in this mind, an assessment is necessary to find if the dental practitioners strictly follow a periodontal treatment protocol during general practise. In this study, we planned to conduct a questionnaire survey to assess the practice of periodontal probe usage and about preventive antibiotics for diagnosis of periodontal treatment in dental clinic practitioners, South Tamil Nadu.

### MATERIALS AND METHODS

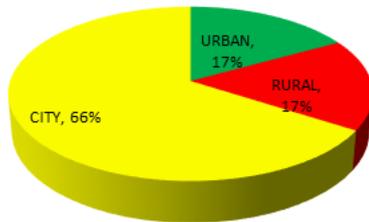
A cross-sectional survey was undertaken for 200 qualified general dentists in South Tamil Nadu. The ethical clearance was obtained from

the institutional review board, Best dental science college, Madurai. Informed consent was obtained from all the study subjects. The study population includes 200 qualified dentists in South Tamil Nadu during the month of July to December 2018. Convenient sampling method was carried out throughout the survey.

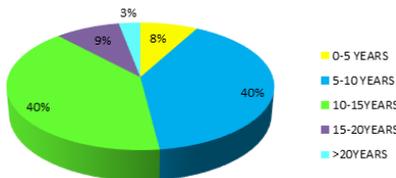
The questionnaire was prepared in English, taking into consideration the appropriateness of the content, level of sophistication of language, sequence and data is recorded. The questions were prepared in such a way that it was simple, clear, relevant and easy to understand, using minimum of words and space. The initial translation of the questionnaire was done by a bilingual speaker who is an expertise in the local language (Tamil). Back translation in to English was done by an expertise bilingual English speaker, who was not involved in the previous translation stage (back translation method). The questionnaire was tested for face validity by a panel of "experts" and modified in accordance with their recommendations to ensure comprehensive ability. A pilot study was carried out with 15 subjects in order to test items understandability and content validity. The internal consistency was assessed by Cronbach's  $\alpha$ . The results of the pilot study showed a good consistency with  $\alpha$  values higher than 0.9. The prepared questionnaire in English was filled by the participants. The questionnaire contained demographic data which includes name, age, gender, address. Descriptive data analysis was done using SPSS version 20.0 software

**RESULTS**

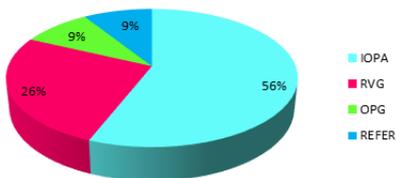
**Fig.1: Place Of Dental Practice**



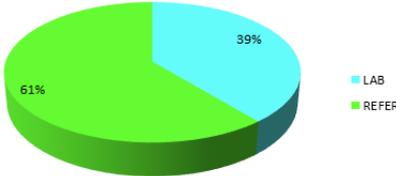
**Fig.2: Years Of Dental Practice**



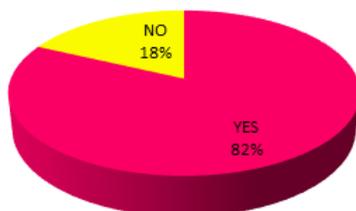
**Fig.3: Radiograph Chosen During Dental Practice**



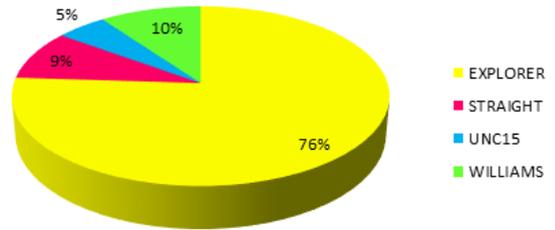
**Fig.4: Blood Investigations**



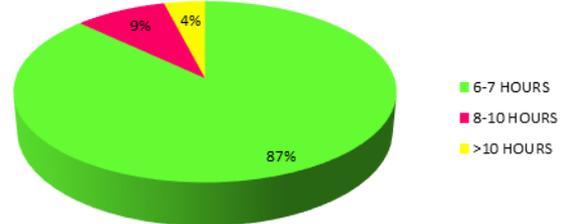
**Fig.5: Use Of Dental Probe During Dental Practice**



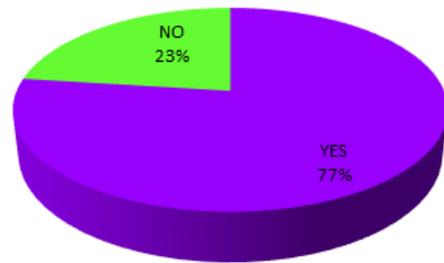
**Fig.6: Kind Of Usage Of Dental Probe During Dental Practice**



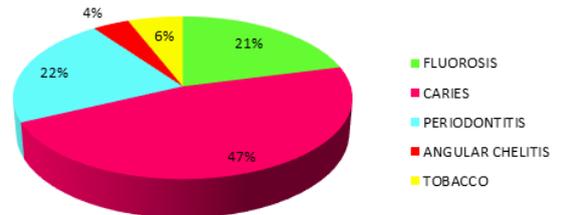
**Fig.7: Hours Of Dental Practice**



**Fig.8: Dental Staff**



**Fig.9: Endemic Cases**



**Fig.10: Antibiotic Usage Before Measuring Periodontal Pocket Depth**

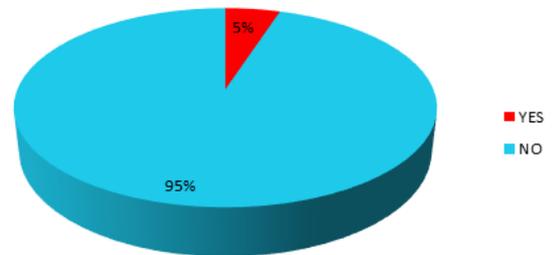


Fig.1 shows that in Madurai, 66%, 17%, 17% of the dentists are practicing in city, urban and rural area respectively. Fig.2 shows that 40% of the dentists are practicing a dental practice between 5-15 years. 9% of the dentists are practising 15-20 years. 8% of the dentist are practising 0-5 years. 3% of the dentists are practicing less than 20 years. Fig.3 shows that 56%, 26% and 9% of the dentists are choosing IOPA, RVG, OPG radiograph respectively during dental practice. Fig.4 shows that 61% dentists referred outside for blood investigations. 39% of dentists had laboratory material within the clinic. Fig.5 shows that 82% of dentists are using periodontal probe and 18% of dentists are not using periodontal probe for diagnosis during dental practice. Fig.6 shows that 76%, 10%, 9% and 5% of dentists are using dental explorer, Williams probe, straight probe and UNC 15 respectively for diagnosis of periodontal diseases. Fig.7 shows that 87% of the dentists are practicing 6-7 hours a day. 9% of the dentists are practicing 8-10 hours a day. 4% of the dentists are practicing less than 10 hours a day. Fig.8 shows that 77% of the dental clinic have dental staffs and 23% of the

dental clinic do not have dental staffs. Fig.9 reported that endemic cases in Madurai, 47% dental caries,22% periodontal disease,21%dental fluorosis,6% tobacco usage,4% angular cheilitis. Fig.10 shows that 95% dentists not prescribing antibiotics before measuring periodontal pocket depth.

## DISCUSSION

This questionnaire survey was aimed at general dentists, assessing the attitude and practice of periodontal probe usage during their dental practice in South Tamil Nadu. Chronic periodontitis is an inflammatory process that affects the protective and supportive tissues around the teeth. It is characterized by loss of periodontal attachment and bone resorption, eventually resulting in tooth mobility and loss. Usually it is slowly progressing and painless. Patients neglect this condition for long time, as a result the attachment loss increases and worsen the condition. The attitude of the dental practitioners for using dental probe plays an important role in this context.

Periodontitis is demarcated as an inflammatory disease of the associate tissues of the teeth caused by specific microorganisms or groups of specific microbes, causing progressive destruction of the periodontal ligament and alveolar bone with pocket formation, recession, or both. The usual scenario in the general dental clinics is that patients are less frequently reported with periodontal complaint initially, but does not show symptoms unless reached at advanced stages of destruction. Periodontal infections should be diagnosed early but early recognition of the general dental practitioners are practically very low and the condition needs to be improved much. Therefore, it is very important to examine, evaluate and diagnose the problems of the periodontium and guide the patients appropriately. The basic periodontal examination of all teeth should be made mandatory.

In this survey, maximum number of dentists chosen IOPA radiographs as investigative tools. Maximum dentists have referred patients outside for blood investigations. The previous study McFall et al,<sup>12</sup>determined that most private practice patient records (except radiographs) were deficient in diagnostic information that periodontal status could not be established. It should be self-evident that management necessitates a definitive diagnosis, i.e., a disease cannot be sufficiently treated unless first diagnosed.

In this survey, maximum number of dental caries, periodontal disease and dental fluorosis were affected in south Tamil Nadu. Even though periodontal disease is more, the percentage of assessing periodontal status is still lesser. The reason may be using of defective diagnostic tool, because maximum usage of dental explorer to detect dental caries and not periodontal diseases. Madurai is also known for an endemic fluorosis area. The previous study by Swapnil Suresh Jadhav et al.,<sup>9</sup> study highlights that most general practitioners still refer for the treatment of periodontal pockets, 32% each for bleeding gums, and gingival recession, followed by mobile teeth, gingival enlargements, and periodontal abscess.

In this survey, maximum number of dental clinics have dental staffs. Dental staffs must be trained for AAP guidelines of diagnosis of periodontal disease. Dental staffs must know about the importance of probing for diagnosing periodontal status. Probing is a gold standard of periodontal assessment. It used to accurately to locate, assess and measure sulcus and pocket depth. Periodontal probe is classified as 1<sup>st</sup> generation probe as conventional probe, 2<sup>nd</sup> generation pressure sensitive probe, 3<sup>rd</sup> generation computerized probe, 4<sup>th</sup> generation probe uses 3D technology, 5<sup>th</sup> generation probe utilizes ultrasound waves.

The previous literature Larry A. Sweeting et al.<sup>10</sup>, highlights that modified version of the American Academy of Periodontology (AAP) proposed guidelines for a comprehensive periodontal examination. However, with respect to a functional Periodontal treatment protocol (PTP) for the general dental practice, only the following principal diagnostic criteria can be addressed: age, PD, CAL, BOP, tooth mobility, furcation involvement, and percentage of radiographic bone loss. It must be emphasized that these criteria represent the minimal parameters for determining a periodontal diagnosis. There are many other important risks and modifying factors that will impact development and progression of disease and all such factors must be taken into consideration when establishing a definitive diagnosis and a diagnosis-driven treatment plan.

In this survey, lack of usage of prophylactic antibiotics before

measuring periodontal pocket depth is emphasised. The blood stream is sterile under normal conditions and hence any dental treatment which involves bleeding may result in bacteraemia.<sup>20</sup> All the periodontal treatment should be carried out only under antibiotics prophylaxis. Chlorhexidine mouth rinses are recommended before all periodontal treatment because they significantly reduce the presence of bacteria on mucosal surface.

The previous literature Anoop Kapoor et al.,<sup>22</sup> concluded that the periodontal disease status and the antimicrobial regimen must be determined carefully to succeed with antimicrobial periodontal therapy. Unless antimicrobial agents against periodontal disease are used intelligently, we may soon face a new breed of oral microorganisms with heightened defenses that will ensure the survival of the species, allows for greater pathogenicity and transfer of genetic material coding for increased virulence and antibiotic resistance to other oral and non-oral microorganisms.

## Limitations and Recommendations

The strength of this study is of large sample size. The limitation of this study is that we have not specified about the dental speciality. The recommendation for further research is that, all dentists (general/speciality) must attend the CDE program of periodontology. Dentist must strictly follow a diagnostic protocol for periodontal disease.

## CONCLUSION

The survey was carried out from a period of Jan 2018- Nov 2018. The survey programme was dealt in very friendly manner. The dentist who all participated were co-operative enough to mention the probe they were using. There was lack of knowledge, attitude and practice of periodontal probe usage for diagnosis of periodontal disease in dental clinic at South Tamilnadu. However finally, this questionnaire programme might evoke an awareness to use periodontal William's probe in everyday practice and usage of antibiotics prophylaxis before starting any periodontal procedures.

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