

# Assessment of Exposure, Application and Conventional Methodologies in Implant Treatment by Dental Practitioners

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**Abstract:** ***Background:** Implant as a specialty of rehabilitative dentistry has become an integral part of treatment amongst the increasing number of dentists across the world. Thus, the aim of this study was to assess the application of recent advances and conventional methodologies in implant treatment by the practitioners in and around Bangalore. **Materials and Methods:** A web-based questionnaire comprising of 14 questions were designed to know the most accepted implant systems, laser practice in treatment of peri-implantitis and various questions related to implant practice. **Results:** Most of the practitioners have been practicing implants from past one year placing an average of 0-20 implants in a year. Peri-implantitis is treated non-surgically by many of them and application of laser is considerably less. **Conclusion:** The study gives us the fair idea about the knowledge, exposure, treatment success or failure rate and also the extend of laser assistance.*

**Keywords:** Implant, laser, periimplantitis

## 1. Introduction

Tooth loss is a very common setback in dentistry. In the contemporary era, the use of implant concept has become a widespread and predictable treatment modality for the restoration of missing teeth.(1,2). The most universal cause of teeth loss is periodontitis, and other causes include dental caries, trauma, developmental disorders and genetic disorders.(3) The use of dental implants to restore the loss of teeth has amplified in the last 30 years.(4) Prior to dental implants, dentures and bridges were used, but dental implants have become an accepted resolution due to high success rate and predictability of the process, as well as its relatively less complications.(3,5)

The aim of modern dentistry is to rehabilitate normal contour, function, comfort, esthetics, speech and wellbeing, regardless of the atrophy, disease or damage of the stomatognathicsystem.(6) To parents and practitioners alike, tooth extraction has been relegated to be the last resort when all other possible options fall short.(6) However, recent trends in implantology have made inroads in this epoch archetype. A practitioners notice is now being drawn towards providing tooth substitutes, often touted as equal or even superior to natural teeth, and many operators have moved swiftly to accept implant dentistry as the new standard of care, so much so that rapidity of this swing has actually become a cause of concern.(7) Implants are essentially diverse from natural teeth in that they do not decay, have no dental pulps to function as early indicators of disease and have no periodontal membrane.(8) The factors involved in the decision making process concerning whether a tooth should be given endodontic treatment or be extracted and replaced by an implant concern the patient, the tooth and periodontium and treatment associated considerations.(6)

Chelotti and Valentine stated that splints are used to immobilize the injured teeth which by immobilization have better repair conditions. They affirmed that the majorly used splinting devices are mouth guards, dental braces and splints made with composite resins.(9) The aims of splinting implant restorations are to the better distribution of applied forces to the implants, to lessen the transfer of nonaxial load to the bone implant interface and to maximize the bone surface area. The resistant and retentive principles of implant restorations are other reasons of restoration splinting.(10)

Since dental implants are secured only by osseointegration, they are more susceptible to infections. This arises because without the existence of periodontal sensory mechanisms, including proprioception, pain perception is absent when periodontal diseases, including periimplantitis arise and undermining shape bone resorption occurs.(11) Peri-implantitis is a site specific contagious disease that cause an inflammatory progression in soft tissues, and bone loss around an osseointegrated implant in function. The etiology of the implant infection is accustomed by the status of the tissue surrounding the implant, implant design, degree of roughness, exterior morphology, and unwarranted mechanical load.(12) Two entities are described within the theory of peri-implant disease: peri-implant mucositis and peri-implantitis.(13) Bio film and bacteria on the surface of implant plays a crucial role in manifestation of peri-implantitis.(13) The management of peri-implantitis is aimed at infection and bacterial controls. The non surgical approach involves the mechanical surface debridement using carbon or titanium curettes, laser light, and antibiotics whereas surgical approach involves implantoplasty, raising mucoperiosteal flap and elimination of peri-inflammatory granulation tissue followed by surface.(12)

Till Date there is no actual data about the attitude of practitioner towards treatment of implant practice. So, according to the knowledge of the authors, this study is performed to understand the attitude and awareness about peri-implantitis of practitioners and its treatment in and around Bangalore.

## 2. Materials and Methods

A web-based questionnaire consisting of 14 questions were designed using Google forms were included in the study. The main objectives of our survey were-

- To know the most accepted techniques and materials used by dentist across Bangalore.
- To know whether dentists had similar positive opinion regarding the splinting of tooth.
- To assess laser practice in treatment of peri-implantitis among the practitioners.
- To assess the follow up protocol followed by practitioners.
- To assess the implant failure rate among the practitioners.

A total of 200 dental practitioners practicing implantology were selected and evaluated based on the questionnaire titled-“Natural Tooth or Implant- Risks and Benefits ratio” across Bangalore, India. The study was assessed and evaluated in Raja Rajeswari Dental College and Hospital. The following questions were included in the questionnaire-

Q.1 Since how many years have you been practicing Implantology?

Q.1 a) Approximately how many implants do you place per year?

Q.2 When do you use implant as a treatment modality?

Q.3 When do you suggest extraction of natural tooth for placement of an implant?

Q.4 Will you suggest splinting of natural tooth to extraction?

Q.4 a) Have many years can you suggest splinting of natural tooth to extraction and placement of implant?

Q.5 Have you ever treated grade 3 mobile teeth with intracoronal splinting and bone grafts?

Q.6 Will you suggest a patient to go full mouth scaling before implant treatment?

Q.6 a) Which system of implants do you prefer using the most?

Q.7 In which area of mouth do you place maximum implants?

Q.8 What diameter of implants do you usually place?

Q.9 Do you perform both surgical and prosthetic work by yourself?

Q.9 a) If no, which of the following implant work do you do by yourself?

Q.10 How many implant failures have you experienced in your practice?

Q.11 How do you treat Peri-Implantitis?

Q.12 Do you use laser in treatment of Peri-Implantitis?

Q.13 Are you using LASER ASSISTED PERI-IMPLANTITIS (LAPIP) Treatment protocol?

Q.14 How often do you call an implant patient for a follow up visit?

## 3. Statistical Analysis

Statistical analysis was performed using Chi square goodness fit test. The test was used to compare questionnaire responses in each group, and p value (<0.05) considered to be statistically significant.

## 4. Results

Gender wise distribution of study participants included 49% females and 51% males. (Fig.1) Qualification of study participants included 34% BDS degree holders, 21% implant diploma holders and 45% MDS degree holders. (Fig.2) Experience in number of years for practicing implantology varied from 1- 10 years with 51% practitioners for less than one year, 26.5% practitioners for about 3 years, 9% practitioners for 5 years and 13.5% practitioners for about 10 years. (Table-1) Implants placed by practitioners per year were 0-20 in number by 48.5%, 20-50 by 10.5%, 50-100 implants by 39.5% and >100 implants by 1.5%. (Table-1) Implant as a treatment modality for distal extension area was preferred by 15% practitioners, implant supported FPD preferred by 12.5%, for anterior aesthetic area by 34% and as first priority by 38.5%. (Table-1) Tooth indicated for extraction included 6.0%, 10.5%, 46% for Grade I, Grade II, Grade III mobility respectively. (Table-1) 23% of the participants had chosen for splinting of natural tooth to extraction, 40% of the participants agreed for either splinting or extraction depending on the clinical condition and 37% of the participants had chosen for extraction rather than splinting. (Table-2) 37.5% of the participants have suggested 0-1 year, 14.5% for 1-2 years and 8.5% for 2-4 years of splinting of natural tooth to extraction and placement of implant. (Table-2) Treatment of grade 3 mobile teeth with intracoronal splinting and bone grafts were done by 23% of the participants and 96.5% suggested to go for a full mouth scaling prior implant placement. (Table-2) The most preferred implant system used by practitioners are NOBEL BIOCARE, followed by EQUINOX, MIS, OSSTEM, MYRAID, DENTIUM, STRAWMAN, etc. According to the practitioners maximum numbers of implants are placed in the posterior region followed by anterior and the bicuspid area. (Table-2) The most widely used diameter of implant usually placed is 3-4 mm, the next preferred diameter is 4-5 mm. (Fig.3) Both surgical and the prosthetic work is done by 73.5% of the practitioners themselves. (Fig.4) The number of implant failures experienced by 75.5% of the practitioners were less than 5%, for 22.5% it was 5-25%, for 1% it was 25-50% and for 1% it was <50%. (Fig.5) The treatment of peri-implantitis was done non surgically by 53% and surgically by 47% of the practitioners. (Table-3) Laser as an adjunct in the treatment of peri-implantitis was used by only 45% and laser assisted peri-implantitis protocol (LAPIP) was practiced by only 34% of the practitioners. (Table-3) Follow up visit of an implant patient is done every 6 months by 83%, once in a year by 25%, once in two years by 2.5% and >2 years by 2% of the practitioner. (Table-3)

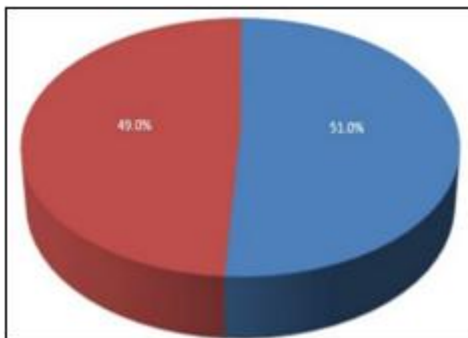


Figure 1: Genderwise distribution of study participants

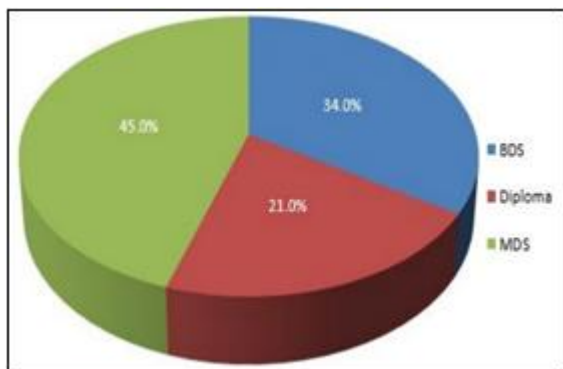


Figure 2: Distribution of study participants based on their qualification.

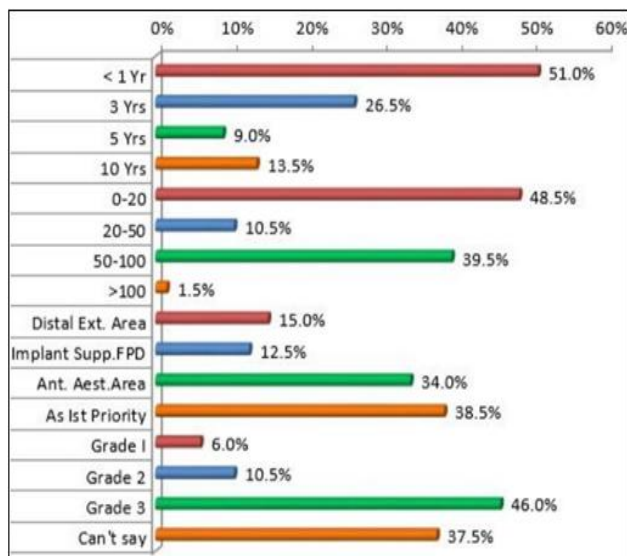


Table 1: Distribution of responses of question no.1-3 among the study participants

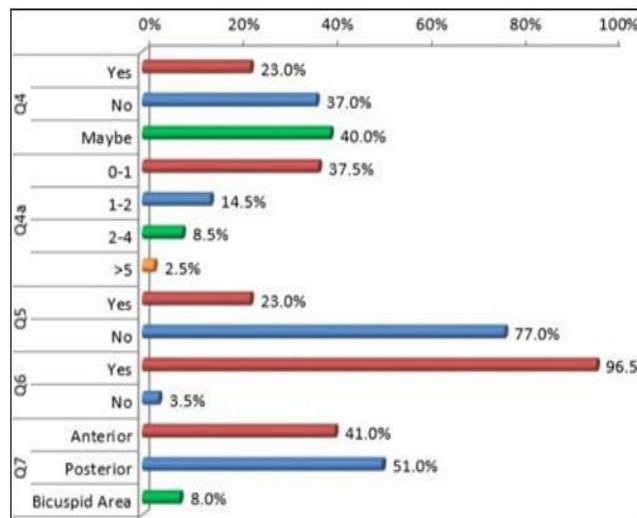


Table 2: Distribution of responses of question no.4-7 among the study participants

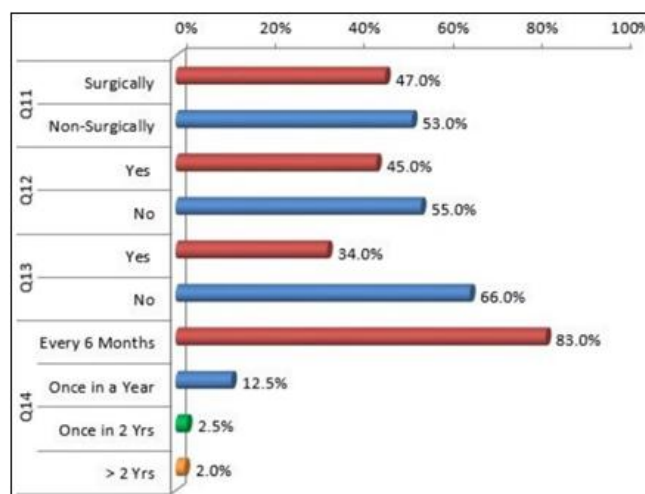


Table 3: Distribution of responses of question no.11-14 among the study participants

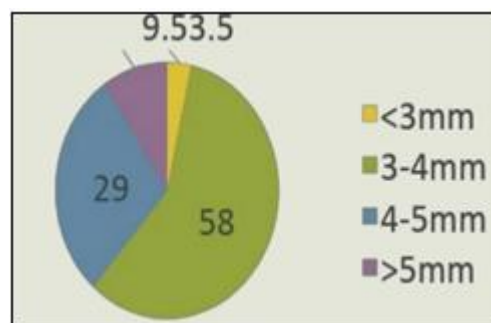


Figure 3: Distribution of most common use of implant diameters used by practitioners.

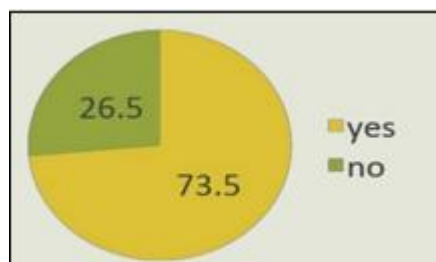
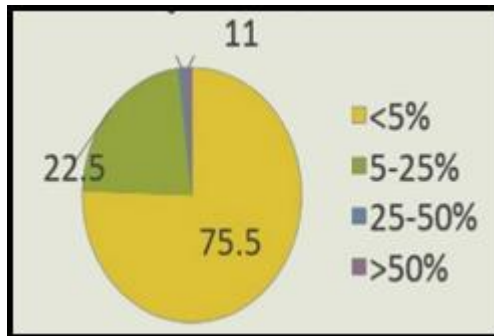


Figure 4: Distribution of surgical and prosthetic work performed by the dentist themselves.





**Figure 5:** Distribution of implant failure rate experienced by the dentists in practice

## 5. Discussion

Implant therapy has become a fundamental approach for today's daily dental practice. Appropriate knowledge of diagnostic and therapeutic options with dental implant therapy is therefore mandatory for general dental practitioners.

In this study most of the practitioners have been placing an average of 0-20 implants in a year and have been considering implant as a reliable treatment option in a case of Grade III mobile tooth. Splinting of natural tooth is not extensively used by many and is preferred to be done mostly for 0-1 years. Emphasis has been given on full mouth scaling before implant placement. In this study follow up visit of an implant patient was done every 6 months by most of the practitioners whereas in another study the mean follow up visit was up to 4.2 years.(14) They also evaluated that of the 920 implants for which complete data record were available, 64 were classified as failures when excessive bone loss was excluded and 172 implants when excessive bone loss was included in the analysis.(14) According to our study the most widely used diameter of implant usually placed is 3-4 mm whereas in another study it was concluded that for clinical applications physicians select implant diameter depending on the patient's bone quantity and quality to yield optimal stability and to prohibit over instrumentation.(15) Ivanoff et al concluded from animal studies that larger diameter implants are more stable in removal torque tests, can resist larger vertical loads and that they may be more useful in the clinical setting since there is a larger contact area with cortical bone.(16) In our study treatment of peri-implantitis was done non surgically by most practitioners and LAPIP was practiced by only 34% of them. Although peri-implantitis has been commonly treated with systemic administration of antibiotics, the success has been limited due to resistant strains of bacteria and ineffective antibiotic dosage.(17) Dental lasers have become popular for sterilization and cleaning of implant surfaces.(28) It is believed that the decontamination of the implant is caused by the physical properties of the laser energy and its interaction with tissues due to reflection, scattering, transmission, absorption and slight temperature elevation.(17,19) In our study surgical work is done by 16% of the practitioners themselves. Similar results were observed in surveying nearly 7000 members of the American Academy of Facial Esthetics which resulted in about 20% the members surgically placing and restoring dental implants.(20) The reasons were that the surgical

procedure is difficult, expensive equipment, requirement of CT scan or CB unit to surgically place dental implant, expensive and long procedure of training.(20) Both surgical and the prosthetic work is done by 73.5% of the practitioners themselves. General practitioner should have the ability to maintain these implants and recognize associated pathologies present. In case of periimplantitis the dental practitioner should be knowledgeable regarding suitable interventions.(21) In our study LAPIP was practiced by 34% of the practitioners. Similarly a case of peri-implantitis was treated by LAPIP in a 44 year old female.(22)

In another study erbium:yttrium-aluminium-garnet laser was used to sterilize implant surfaces without damaging them. Likewise the carbon dioxide laser can also disinfect implant surfaces and enhance the bone to implant contact around previously infected sites.(23)

## 6. Conclusion

This study gives us the assessment about the attitude of practitioners to implement implant in their daily clinical practice and about the experiences, exposure, treatment, success rate and the extend of laser assistance used to minimize the implant failure. This study also gives us a fair idea to understand the attitude and awareness about peri-implantitis amongst clinicians and its treatment in and around Bangalore.

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