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Awareness On Current Status of Basal Implants Among Dental Students

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ABSTRACT

Background: Basal implantology also known as bicortical implantology or just cortical implantology is a modern implantology system which utilizes the basal cortical portion of the jaw bones for retention of the dental implants, which are uniquely designed to be accommodated in the basal cortical bone areas

Aim: The aim of this study is to evaluate the awareness of current status on basal implants among dental students.

Materials and methods : A survey with the aid of specially designed questionnaires was made anonymously, in order to assess the awareness of basal implants among dental students.The responses were then collected and subjected to statistical analysis using SPSS Software (Version 23). Frequency distribution and percentage were calculated.

Results : Results from this study reveals that 64% of them were postgraduates and 35% were undergraduates. 50% of postgraduates were aware about basal implants. Only 36% of the postgraduates knew that basal implants are a completely new method of dental rehabilitation that does not require bone replacement even in the worst cases.29% of postgraduates knew that installation of quick loading basal implants can cost less than traditional implantation due to the shortened volume of treatment stages. 36% of the postgraduates marked disk form is the common type of basal implants.

Conclusion :The overall awareness of undergraduates and postgraduates regarding basal implants needs to be improved, given the tendency of dental students to engage in implant dentistry.The study should be done on a large scale to get baseline data pertaining to knowledge and awareness to the dental students.

Keywords: Dental implants, Information sources, Knowledge, Bicortical Implantology, Innovative technology

INTRODUCTION

Rehabilitation of partially and completely edentulous patients with implant-supported prosthesis has become a widely accepted treatment choice[1].Dental implants, when placed in the basal bone, can be immediately loaded with teeth, as this bone is very strong, never gets resorbed throughout the life, and forms the stress-bearing part of our skeleton[2,3]. Basal implants are also known as bicortical implants or just cortical implants. It is a modern implant which utilizes the basal cortical portion of the jaw bones for retention of the dental implants which are uniquely designed to be accommodated in the basal cortical bone areas[4].

There are two types of basal implants, namely BOI and basal cortical screw (BCS) implants. The BCS has been developed up to 12 mm diameter and can be inserted immediately into the extraction socket. Lateral basal implants are the type of implants that are placed in the lateral aspect of the jawbone and are confined to the cortical bone structures, and the load transmission is mainly transferred to the horizontal implant segments[5]. Basal implants engage the highly dense cortical bone which has least propensity for resorption for implant retention. These implants are incomparable and designed for gaining anchorage from the basal cortical bone. The present time basal implant has an advanced design, surgical protocol and is a prosthetic favourable system.

Due to these properties several practitioners around the world include basal implantology in their practices and so far these implants have given very desirable results[6].
Crestal implantology is the most common implant standard these days where the implants are placed in the crestal alveoli of the jaw bone, and load transmission occurs in vertical direction from their surfaces. They are available in the form of cover screws, cylinders, and blade implants.Immediate loading is a major advantage of basal implants. The prosthesis can be fixed within 72 h of implant surgery. This is time saving when compared to cases of conventional implant placements which require bone augmentation or grafting as a total of 1 year or 6 months is needed for treatment completion with a need for interim prosthesis[7]. Many prosthetic options have been made available for replacing missing teeth, including fixed, removable (acrylic and metallic dentures), and implant-supported prostheses[8]. The choice between the different options depends on many factors such as the patient's age, gender, medical condition, occupation, socioeconomic status, number and position of missing teeth, condition of the remaining teeth, opposing dentition, quality and quantity of residual bone, dentist and technician expertise, and patient preference.Fixed prostheses and removable dentures have been the traditional methods for replacing missing teeth[9].
However, in cases of severe ridge resorption, these methods have many drawbacks, such as loss of retention, instability, difficulty in mastication, speech problems, and patient discomfort—all issues that negatively impact patient satisfaction[10]. With recent advances in dentistry, implants are now considered the gold standard treatment for replacing missing teeth. Many implant systems have been developed and distributed in the dental market, one of which is the basal implant. In this system, the implant is anchored to the basal/cortical bone which is useful in cases of severe alveolar ridge resorption, when bone grafting is prohibited due to the patient's general medical condition and when a more conservative treatment with lower cost is needed[11]. The BCS implant is a special type of basal implant, consisting of one piece that is inserted through a crestal approach, just like the other endo-osseous implants and then anchored deeply inside the basal bone through its horizontal plates[12].Our team has extensive knowledge and research experience that has translate into high quality publications [13–29].The aim of this study is to evaluate the awareness of current status on basal implants.

MATERIALS AND METHODS

The present study was a questionnaire based study. A 9-item questionnaire (Table 1) was formulated and circulated among 100 undergraduate and postgraduate dental students of a private dental college. The responses were then collected and subjected to statistical analysis using SPSS Software (Version 23). Frequency distribution and percentage were calculated.

Table 1: Questionnaire to assess the knowledge and awareness on current status of basal implants among dental students

S.No	Questions	Options
1	Qualification	❖ Undergraduate ❖ Postgraduate
2	Are you aware of basal implants?	❖ Yes ❖ No
3	Do you know that basal implants are a completely new method of dental rehabilitation that does not require bone replacement even in the worst cases?	❖ Yes ❖ No
4	Did you know that basal implants are made of a biocompatible titanium alloy?	❖ Yes ❖ No ❖ Don't know
5	Do you know that They are one-piece implants (implant and abutment are monolithically connected)?	❖ Yes ❖ No
6	Did you know that basal implant utilizes the basal – cortical portion of the jaw bones for retention of the dental implants which are uniquely designed to be accommodated in the basal – cortical bone areas?	❖ Yes ❖ No

7	Did you know that Patients can get fixed teeth in 3-5 days through Quick loading basal implants that can be placed immediately after extraction of teeth during a single visit	❖ Yes ❖ No
8	Did you know that Immediate loading basal implants are suitable for almost all patients, including those that smoke, have diabetes, and have no roots?	❖ Yes ❖ No
9	Did you know that Installation of quick loading basal implants can cost less than traditional implantation due to the shortened volume of treatment stages?	❖ Yes ❖ No
10	Do you know which type of basal implant is commonly used?	❖ Screw form ❖ Disk form ❖ Plate form

RESULTS AND DISCUSSION

The present study was to evaluate the awareness of current status on basal implants among dental students. A total of 100 dental students participated in the survey.

In the present study, 64% of them were postgraduates and 35% were undergraduates(Figure 1). 50% of postgraduates were aware about basal implants (Figure 2). Only 36% of the postgraduates knew that basal implants are a completely new method of dental rehabilitation that does not require bone replacement even in the worst cases(Figure 3). 30% of them knew that basal implants are made of a biocompatible titanium alloy(Figure 4) and 36% of the postgraduates knew that it is a one-piece implant(Figure 5). 42% of the postgraduates knew that the basal implant utilizes the basal – cortical portion of the jaw bones for retention of the dental implants which are uniquely designed to be accommodated in the basal – cortical bone areas(Figure 6). 30% of the postgraduates agreed that patients can get fixed teeth in 3-5 days through quick loading basal implants that can be placed immediately after extraction of teeth during a single visit(Figure 7). 42% of the postgraduates knew that immediate loading basal implants are suitable for almost all patients, including those that smoke, have diabetes,and have no roots(Figure 8). 29% of postgraduates knew that installation of quick loading basal implants can cost less than traditional implantation due to the shortened volume of treatment stages(Figure 9). 36% of the postgraduates marked disk form is the common type of basal implants(Figure 10).The perspective and outlook of dental students about basal implants are less known. So our study was done to assess the awareness of basal implants among dental students. Several studies have been conducted to show the patients' awareness about implants in different countries. Chawdhary et al.[30] reported that the level of awareness on basal implants among postgraduates was 23.24% in 2010. Zimmer et al. in 1992 [31] demonstrated a high awareness rate as well as general positive attitude toward basal implants.In a study done in Turkey [32] showed that undergraduate students in Istanbul have limited awareness about basal implants in accordance with our study. In another study, only 33% of postgraduates had heard of basal implants. In contrary in a study done on Malaysian dental students 76% of postgraduates were aware of basal implants. [12] A study done by Balsi et al.,32% of postgraduates were aware about basal implants. This is in agreement with Satpathy et al.[33] Mukatash et al.[34] and Ravi Kumar et al.[35] all of which stated that postgraduates are more aware than undergraduates. This evidently indicates the lack of awareness in undergraduates and the governing bodies regarding taking necessary steps for creating awareness amongst the undergraduates.

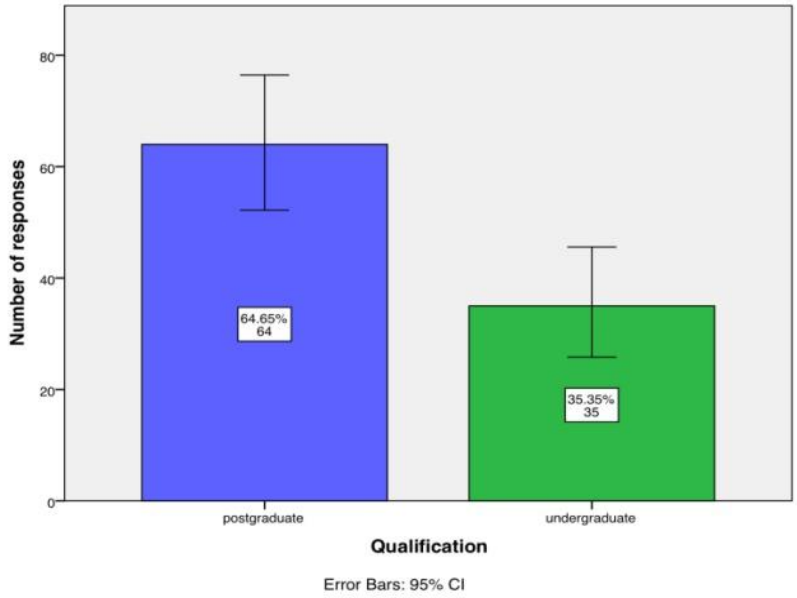

Figure 1: Bar graph representing the participation of students in the study.About 64% of them are postgraduates and 35% of them are undergraduates.

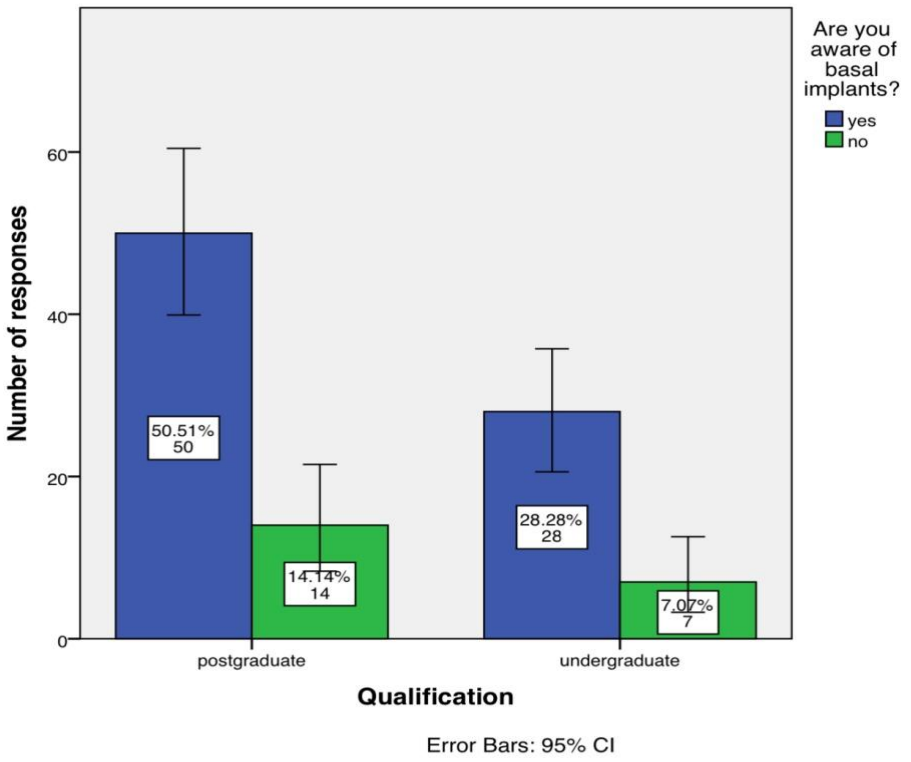

Figure 2: Bar graph representing the student's response about awareness of basal implants. About 50% of the postgraduates were aware about the Basal implants and only 28% of the undergraduates were aware about it. On the chi-square test, P value= 0.001 which is statistically significant.p<0.05

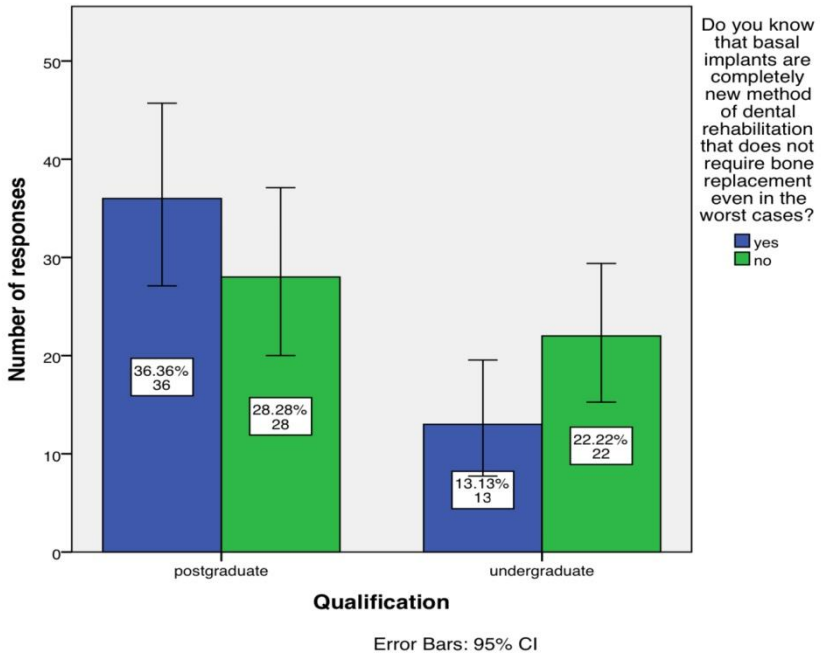

Figure 3: Bar graph representing the student's response that basal implants are a completely new method of dental rehabilitation that does not require bone replacement even in the worst cases. About 36 % of the postgraduates agreed and only 13% of the undergraduates agreed about it. It was found to be statistically not significant,Chi square test, P =0.137(p>0.05).

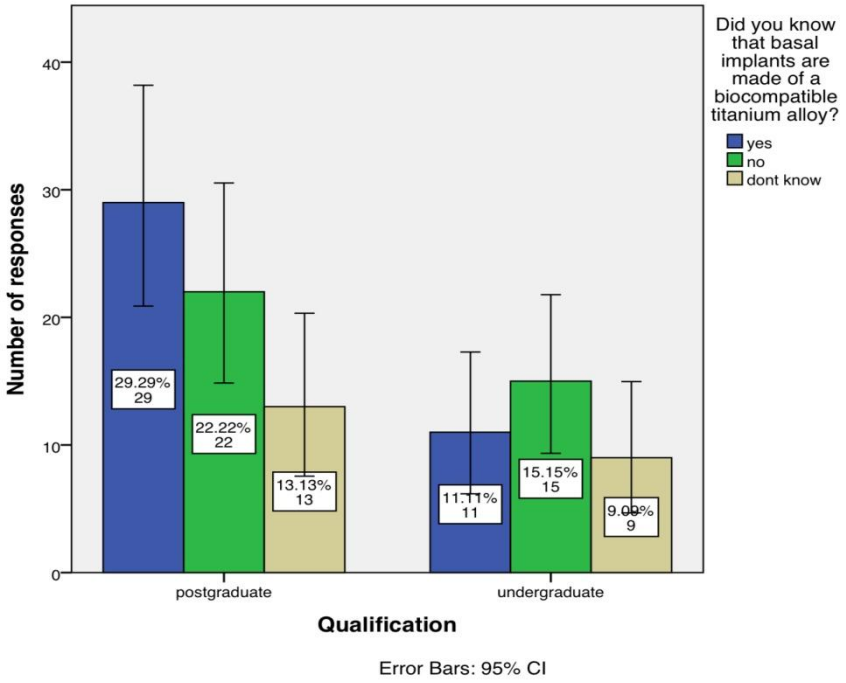

Figure 4: Bar graph representing the student's response that basal implants are made of a biocompatible titanium alloy. About 29% of the postgraduates knew that basal implants are made of biocompatible titanium alloy and 15% of the undergraduates did not know about it. On the chi-square test, P value= 0.001 which is statistically significant(p<0.05).

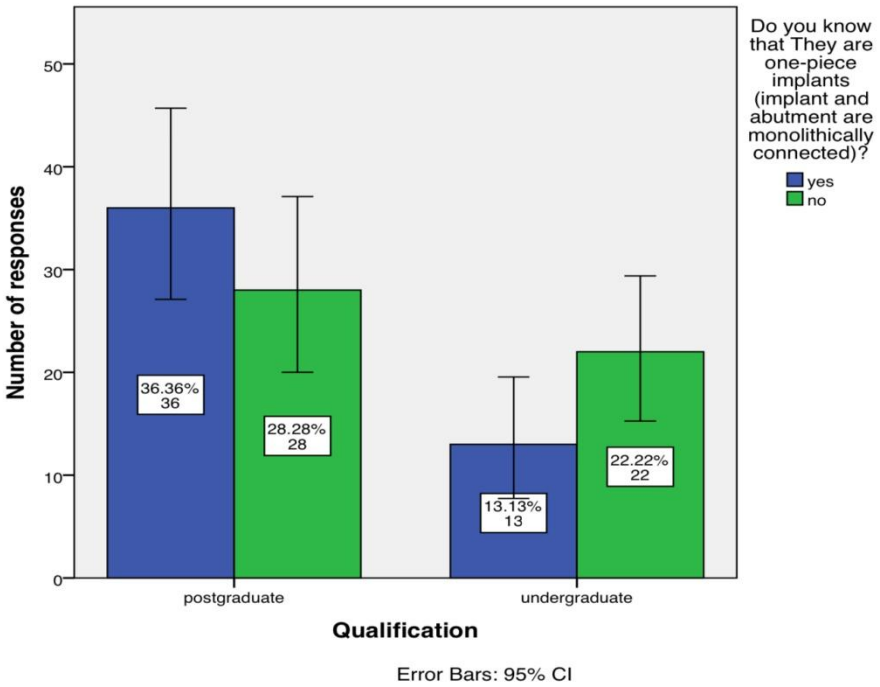

Figure 5: Bar graph representing the student's response that basal implants are one-piece implants. About 36% of the postgraduates knew that basal implants are one piece implants and 22% of the undergraduates did not know that basal implants are single piece implants.On the chi-square test, P value= 0.423 which is statistically not significant(p>0.05).

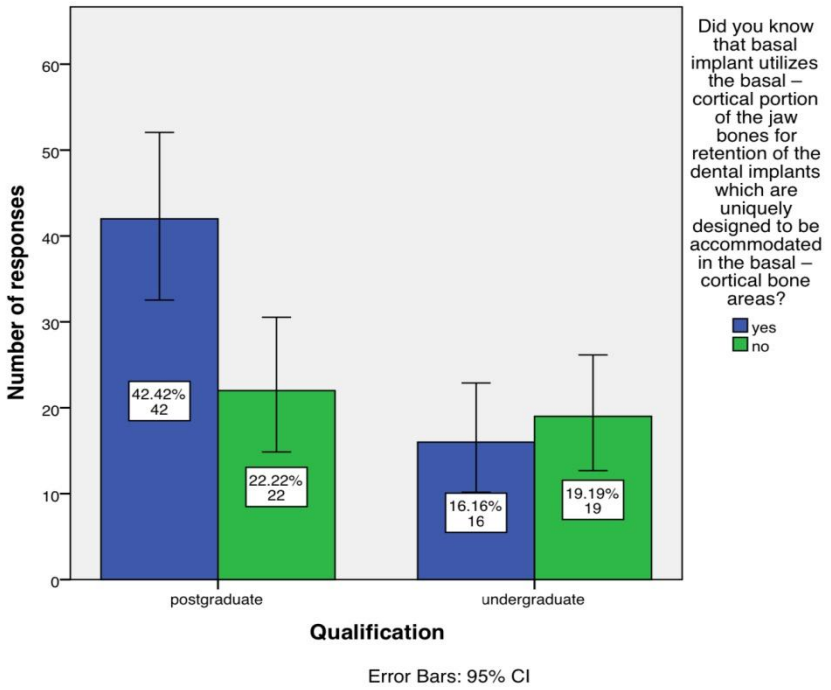

Figure 6: Bar graph representing the student's response that the basal implant utilizes the basal – cortical portion of the jaw bones for retention of the dental implants which are uniquely designed to be accommodated in the basal – cortical bone areas. About 42% of the postgraduates knew that basal implants utilizes the basal – cortical portion of the jaw bones for retention of the dental implants and 19% of the undergraduates did not know about it. On the chi-square test, P value= 0.326 which is statistically not significant(p>0.05).

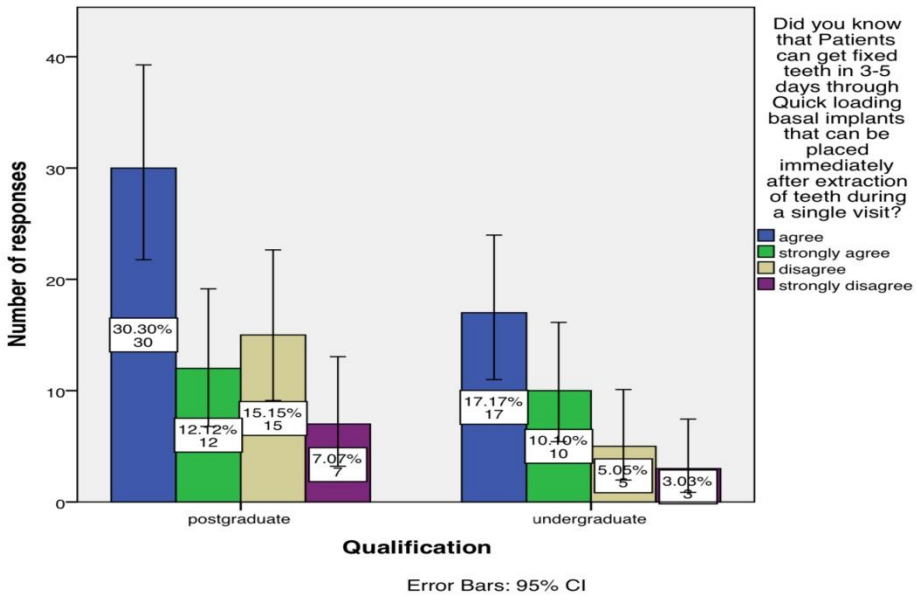

Figure 7:Bar graph representing the student's response and the patients can get fixed teeth in 3-5 days through quick loading basal implants that can be placed immediately after extraction of teeth during a single visit . About 30% of the postgraduates agreed that basal implants patients can get fixed teeth in 3-5 days through quick loading basal implants that can be placed immediately after extraction of teeth during a single visit and only 17% of the undergraduates agreed to it. On the chi-square test, P value= 0.001 which is statistically significant(p<0.05).

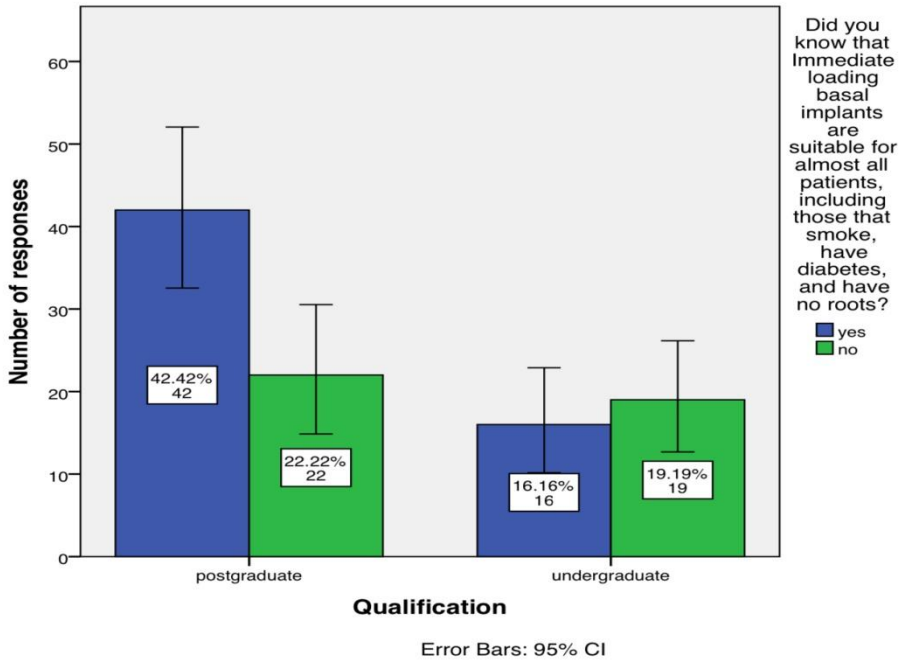

Figure 8: Bar graph representing the student's response and that immediate loading basal implants are suitable for almost all patients, including those that smoke, have diabetes,and have no roots . About 42% of the postgraduates knew that basal implants are suitable for almost all patients, including those that smoke, have diabetes,and have no roots and 19% of the undergraduates did not know about it. On the chi-square test, P value= 0.126 which is statistically not significant(p>0.05).

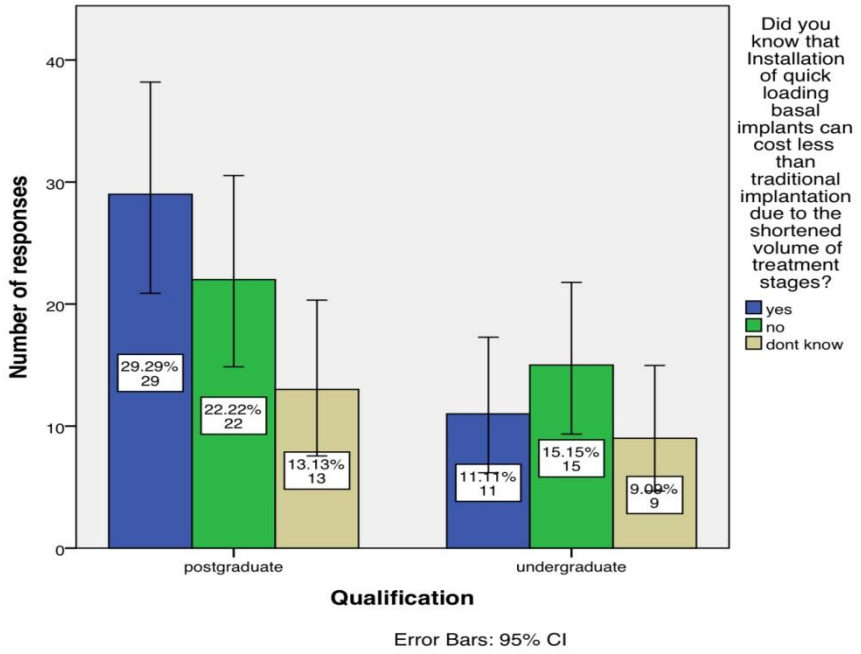

Figure 9: Bar graph representing the student's response and that installation of quick loading basal implants can cost less than traditional implantation due to the shortened volume of treatment stages . About 29% of the postgraduates knew that basal implants can cost less than traditional implantation due to the shortened volume of treatment stages and 15% of the undergraduates did not know about it. On the chi-square test, P value= 0.001 which is statistically significant(p<0.05).

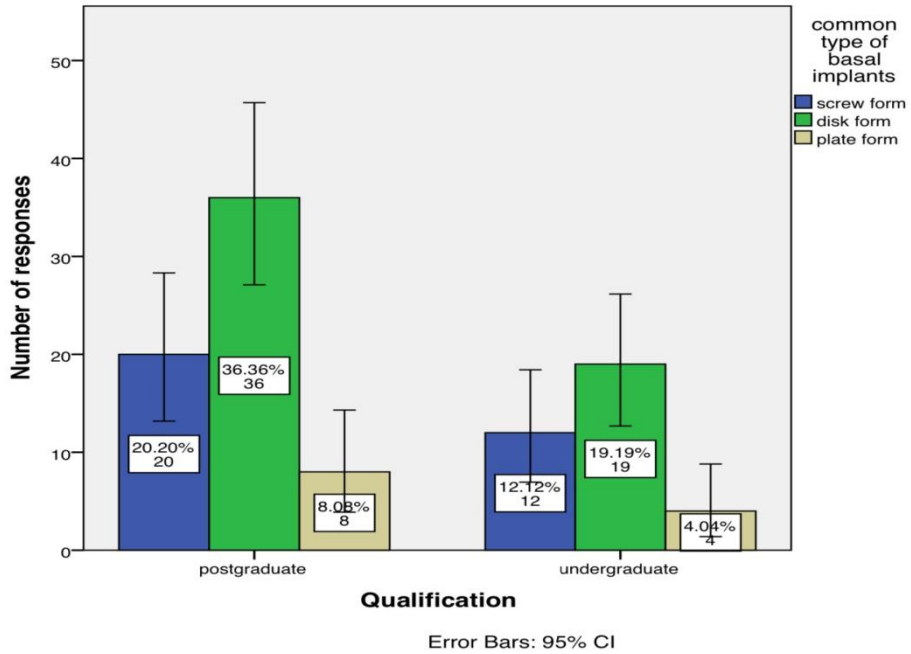

Figure 10: Bar graph representing the student's response and the common type of basal implants. About 36% of the postgraduates knew that disk form of basal implants are the most common type and 19% of the undergraduates knew that disk form is the most common type of basal implants.On the chi-square test, P value= 0.001 which is statistically significant(p<0.05)

Dr. Jean-Marc Julliet created and used the first single-piece implant in 1972. Because no uniform cutting tools are available for this implant, it is quite difficult to utilise. Dr. Gerard Scortecci, a French dentist, devised an improved basal implant system with matching cutting instruments in the mid-1980s. He developed disc implants with the help of a group of dental surgeons. Based on the disk-implant systems, a team of German dentists has created additional implant kinds and more appropriate instruments since the mid-1990s. As a result of these efforts, the contemporary basal osseointegrated implant, also known as lateral basal implants, was established.
Bicortical implantology is another name for basal implantology. It is a new implantology method that uses the basal cortical section of the jaw bones to hold dental implants that are specifically engineered to fit in the basal cortical bone regions. The basal bone supplies high-quality cortical bone for the retention of these cutting-edge implants. Because basal implantology incorporates the use of orthopaedic surgery guidelines, the basal implants are also referred to as "orthopaedic implants" to distinguish them from the more commonly used term "dental implant."
Bone resorption and infection are less likely in basal bone. It is thick, corticalized, and provides good implant support. The crestal alveolar bone, which is of lower quality and more prone to resorption, is where traditional implants are inserted. Because of its thick structure, the basal bone is less prone to bone resorption. Implants that are supported by the basal bone provide a good and long-term option for tooth loss. Simultaneously , the cortical bone's load-bearing capacity are many times greater than that of the spongious bone.

CONCLUSION

The overall awareness of undergraduates and postgraduates regarding basal implants needs to be improved, given the tendency of dental students to engage in implant dentistry. Both postgraduates and undergraduates considered basal implants to be less costly than traditional implants, easier to place, and requiring lesser bone support.

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Conflicts Of Interest

There are no conflicts of interest.

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- Mahendra Enterprises

Ethical Clearance

It is taken from “Saveetha Institute Human Ethical Committee” (Ethical Approval Number-SDC/SIHEC/2020/DIASDATA/0619-0320)

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