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Highlights

- Prosthodontic Treatment Options
- Strategies to Manage Dental Anxiety
- Medical and Non-Medical Graduates
- Evaluation of Bicortical Screw Implants

Discovering Thoughts, Inventing Future

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Immediate Functional Loading - Evaluation of Bi-Cortical Screw Implants

By Dunkudu Nikhil, Gaddipati Rajasekhar, G.V.S. Sudhakar, Ramishetty Sudhir & Beeram Ratna Kumari

Abstract- Bi-cortical screw implant (BCS) also known as strategic implant, is contemporary implantology system which is uniquely made to utilize the cortical bone of jaws. The aim of the study was to analyze osseo-fixed immediately loaded basal implants and also to determine patient satisfaction. Not even a single patient was rejected neither for “lack of the bone” (all kinds of bone atrophy and trauma to the jaw which damages not only the teeth but also the alveolar bone) nor for “many diseases are carried”. All the patients were immediately restored with interim prosthesis within three hours and replaced with functional loading fixed prosthesis within seven days after bending up to 15 degrees of Implant abutment. Basal Cortical Screw (BCS) implant is a definitive option for the rehabilitation of missing teeth of patients regardless of the available alveolar bone without additional augmentation (grafts) procedures. Immediate functional loading using Osseo-fixed BCS implants shows a high implant survival rate without any infection; 'Peri-implantitis' and have a positive impact on oral health and highly increased patient satisfaction.

Keywords: immediate functional loading, Bi-cortical screw implant (BCS), Osseo-fixation, basal implantology, bendable implants.

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Immediate Functional Loading - Evaluation of Bi-Cortical Screw Implants

Dunkudu Nikhil [α], Gaddipati Rajasekhar [σ], G.V.S. Sudhakar [ρ], Ramishetty Sudhir [ω] & Beeram Ratna Kumari [¥]

Abstract- Bi-cortical screw implant (BCS) also known as strategic implant, is contemporary implantology system which is uniquely made to utilize the cortical bone of jaws. The aim of the study was to analyze osseo-fixed immediately loaded basal implants and also to determine patient satisfaction. Not even a single patient was rejected neither for "lack of the bone" (all kinds of bone atrophy and trauma to the jaw which damages not only the teeth but also the alveolar bone) nor for "many diseases are carried". All the patients were immediately restored with interim prosthesis within three hours and replaced with functional loading fixed prosthesis within seven days after bending up to 15 degrees of Implant abutment. Basal Cortical Screw (BCS) implant is a definitive option for the rehabilitation of missing teeth of patients regardless of the available alveolar bone without additional augmentation (grafts) procedures. Immediate functional loading using Osseo-fixed BCS implants shows a high implant survival rate without any infection; 'Peri-implantitis' and have a positive impact on oral health and highly increased patient satisfaction.

Keywords: immediate functional loading, Bi-cortical screw implant (BCS), Osseo-fixation, basal implantology, bendable implants.

I. Introduction

Bi-cortical screw implant also known as strategic implant is a contemporary implantology system that is uniquely made to utilize the cortical bone of jaws for the retention of dental implants[1].

Nowadays, patients desire to eliminate waiting periods and multiple appointments, discomfort associated with basic dental implantology. Bi-cortical screw implants provide fixed prosthesis in a short duration of time within seven days of implant placement and avoid healing periods associated with conventional implantology.

The theory behind the Strategic implants (bi-cortical implantology) is similar to the treatment concepts performed during osteosynthesis, maxillofacial traumatology, and Orthopedic surgery. The Bi-cortical screw (BCS) implants are placed cortically, and the process to initiate this anchorage has been referred to as Osseo-fixation. Secondary Osseointegration occurs through the vertical shaft of the implants, and is expected to happen in any case later[2].

As BCS implants gain anchorage by utilizing the cortical bone of the Mandible, wall of the Sinus, Nasal floor and the tubero-pterygoid region[3] (Figure.2&3), a thorough knowledge of maxillofacial anatomy is needed for implant placement. These anatomic structures facilitate placement of BCS implants regardless of the type of alveolar bone, because they do not require any bone graft and bone augmentation procedures.

The success of the BCS implants depends on the macro-mechanic anchorage (Osseo-fixation) in the 2nd or 3rd cortical and secondary stability come after Osseointegration.

Bending areas in the vertical shaft of bi-cortical screw implants was first introduced by Dr. Stefan Idhe. Bending of implants can align abutment in the desired direction for placement of prosthesis and also exhibits more even stress dissemination along the implant shaft region than a machine-angulated implant abutment. Therefore, bendable abutment of BCS implants resists masticatory forces greater than pre angulated or straight implant abutment[4].

II. Type of Basal Implants

1. BOI (Basal Osseo-Integrated Implant) *(Figure.1)*
2. BCS (Bi-Cortical Screw Implant) *(Figure.1)*

These two types of basal implants can be differentiated by not only having self cutting threads in BCS, but also by the way how they are placed. Immediate functional loading on single- piece implants had gained demand and accepted treatment option for fixed restorations of missing teeth[5].

These uniquely designed BCS implants have self-cutting threads, the smooth surface vertical shaft of BCS implants create a non-infectable connection with the prosthesis and prevent peri-implantitis.

BCS implants have proven to be successful for patients even in lack of alveolar bone (limiting treatment) so there is no rejection in treatment of implant placement in such patients.

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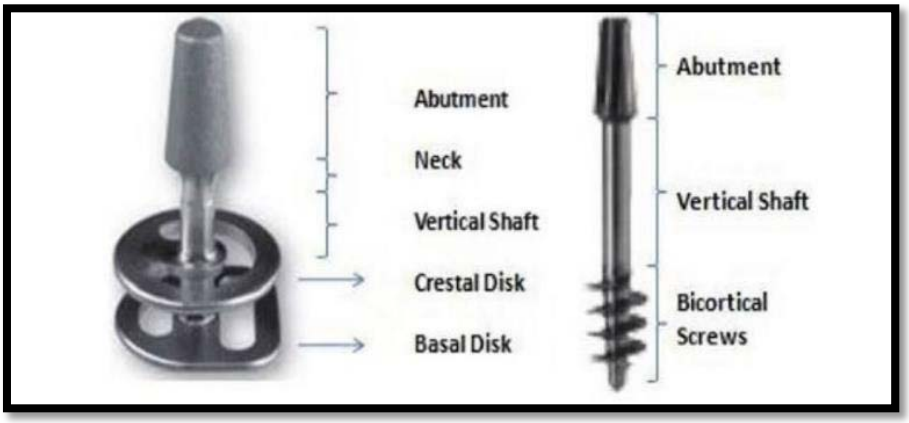


Figure 1: Schematic overview of types of basal implants

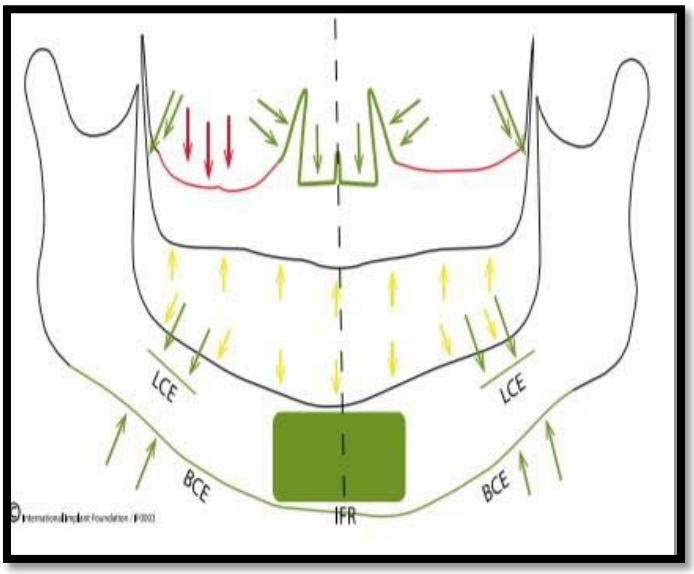


Figure 2: Schematic overview on the corticals for anchorage in the maxilla and mandible
Yellow: 1st cortical, Green arrows in mandible mark 2nd cortical.

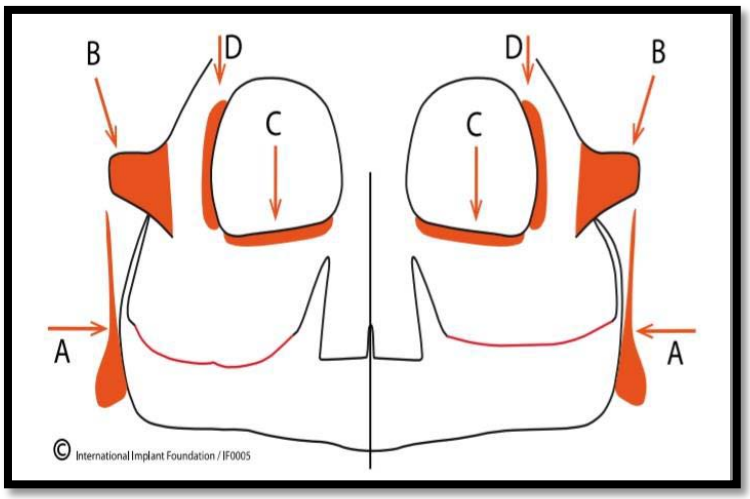


Figure 3: Schematic overview on cortical in the midface available for oral implant anchorage. Red: 3rd cortical A: Pterygoid plate of the sphenoid bone. B: Body of the zygomatic bone. C: Infra-orbital rim. These areas are used in cases with defects in the midface. D: Lateral vestibular rim of the orbital: This region may be used for epithesis anchorage, especially for eye replacement

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III. Aim of the Study

The study was aimed to analyze clinically and radiographically for six months of Osseo-fixed immediately loaded basal implants and also to determine the patient satisfaction for these basal cortical screw implants.

IV. Materials and Methods

A prospective cohort study was conducted on fifteen basal Bi-Cortical Screw Implants placed in ten adult patients in the department of oral and maxillofacial surgery, Mamata Dental College and Hospital, Khammam, Telangana between 2019-2020. Ethical clearance was obtained and all patients were informed about the implant placement procedure, and informed consent was taken from patients participating in the study.

a) Inclusion and Exclusion Criteria

Not even a single patient was rejected neither for "lack of the bone" (i.e.) All kinds of bone atrophy and trauma to the jaw, which damages not only the teeth but also the alveolar bone nor for "any diseases (i.e, the untreated periodontal disease, especially in people with diabetics will resorb the available bone and hypertension) that they carried." Expect patients on current Radiotherapy (or) chemotherapy and IV-bisphosphonate treatment.

b) Surgical Technique

BCS implants have a different surgical technique that is easy and simple to execute. Under all aseptic conditions, implants were placed in the extraction sockets and edentulous bone site (depending on implant site needed). Using a pilot pathfinder drill and a manual drill, a controlled osteotomy was prepared till second cortical bone was reached which was adequate for Osseo-fixation of implant. The implants were then placed in place, where the abutment threads were parallelized through bending up to 15 degrees of implant abutment.

c) Post-operative criteria for evaluation of basal cortical Screw implants

1. Evaluation of the time duration to give prosthesis.
2. Pain -Visual along the scale (1-10).
3. Primary implant stability /mobility of Implant-Absent/present (A/P). *
4. Infection/periapical radiolucency- Absent/present (A/P). *
5. Radiographic successful Implant- IOPA, orthopantomogram (OPG).
6. Patient Satisfaction-Grade (1 to 4).

The following observations were drawn on x-rays

- The radiographic observation for formation of the bone sockets containing implants.
- The marginal bone levels of the implants were measured mesial and distal on the IOPA.
- Place of insertion in the target cortical (i.e, second Cortical) on orthopantomogram.

d) Results

Results have been described in Table 1-2 and Graphs 1-6.

All patients were clinically and radiographically followed-up for six months. In a total of 15 Bi-cortical screw implants 14 of 3.6mm and 1 of 4.6 mm in diameter with 6 of 20mm, 1 of 12mm, 4 of 17mm, 3 of 23mm in length were placed in mandible and maxilla. (Table 1)

Interim prosthesis was restored in all the patients immediately within three hours post-operatively with only 3 implants were restored after 24 hours and replaced with functional loading fixed prosthesis within seven days after Implant placement.

The loading time varied between patients due to their unavailability at certain times with a mean variation of 10 days with a standard deviation (SD) of 7.36 days. (Graph1).

The pain had maximum pain on day one (mean value of 1) and decreased significantly finally no pain (mean value of 0) follow-up period with Friedman's test of P-value 0.0, which is statistically not significant (NS). (Graph 2)

Primary stability and periapical radiolucency had been absent in 15 of 15 implants placed during the study period. (Table 2)

Around the region of self-cutting threads of implant radiolucency was not seen. The bone loss is seen around the vertical shaft of the BCS implants but is insignificant as there is no role for Osseo-Integration in basal implantology as it is Osseo-fixed. Near to 100 percent bone formation was established around the vertical shaft at the end of six months follow-up (Graph 3).

The dual process of healing around the BCS Implant by Osseo-Integration happening in any case later (a process that takes part approximately after weeks) the mean marginal bone loss around the implants is measured at the end of six months after implant placement with the mean value 0.04mm on mesial and 0.05mm distal side of Implant of P-value 0.164 (NS) and 0.290 (NS) on mesial and distally which statistical not significant (NS) indicating no 'peri-implantitis' by using ANOVA one-way test of statistical analysis. (Graph 4,5).

Overall, patient's satisfaction with implant placement was good and satisfied with the mean value 1.10 and standard deviation (SD) of 0.32 (Graph 6).

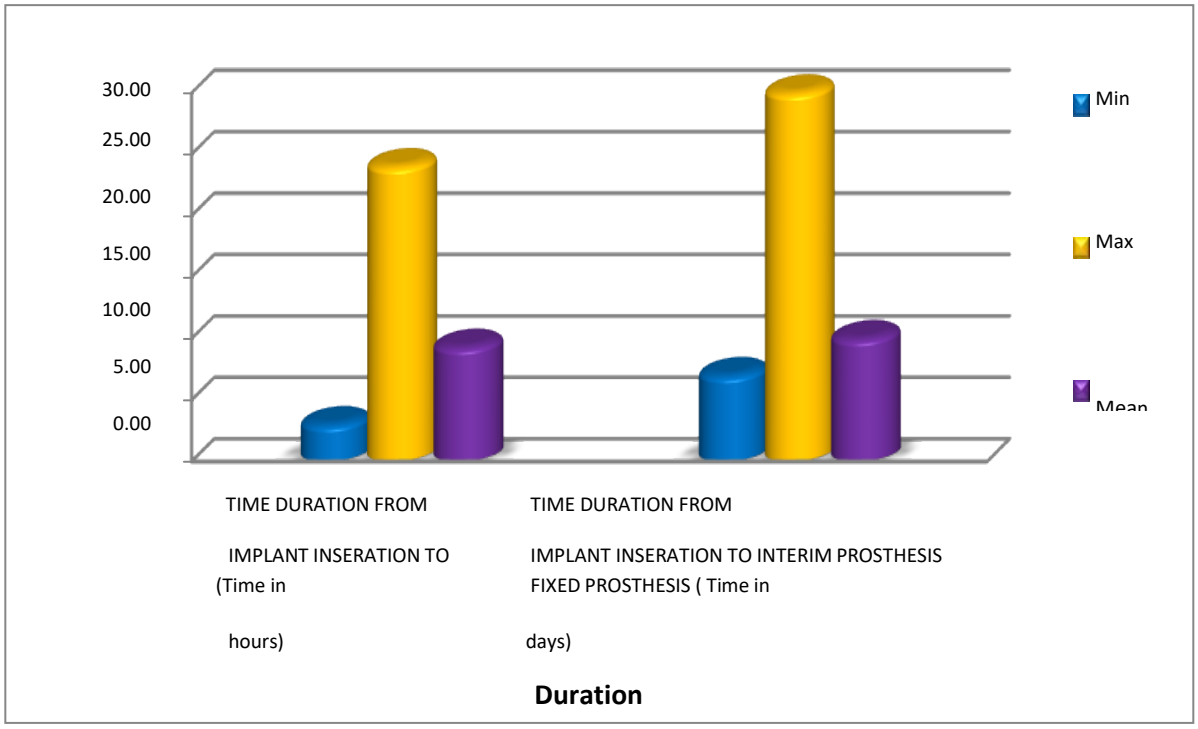
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Table 1: Place of Osseo-fixation of implants placed within this study

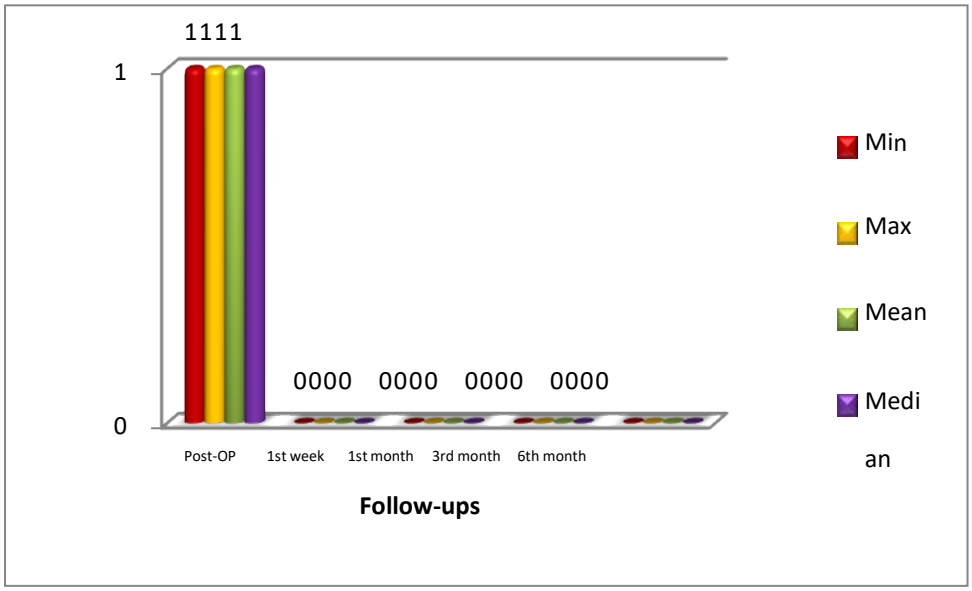
Place of Osseo-fixation in the second cortical	Implants(n) %
Nasal floor	9 (60%)
Palatine bone and wall of sinus	1 (6.6%)
Mandible interforaminal anchorage	5 (33.3%)

Table 2: Postoperative follow-up

Parameters	Absent/Present	Implants(n) %
Primary stability/mobility of implant	Absent	15 (100%)
Infection/periapical radiolucency	Absent	15 (100%)

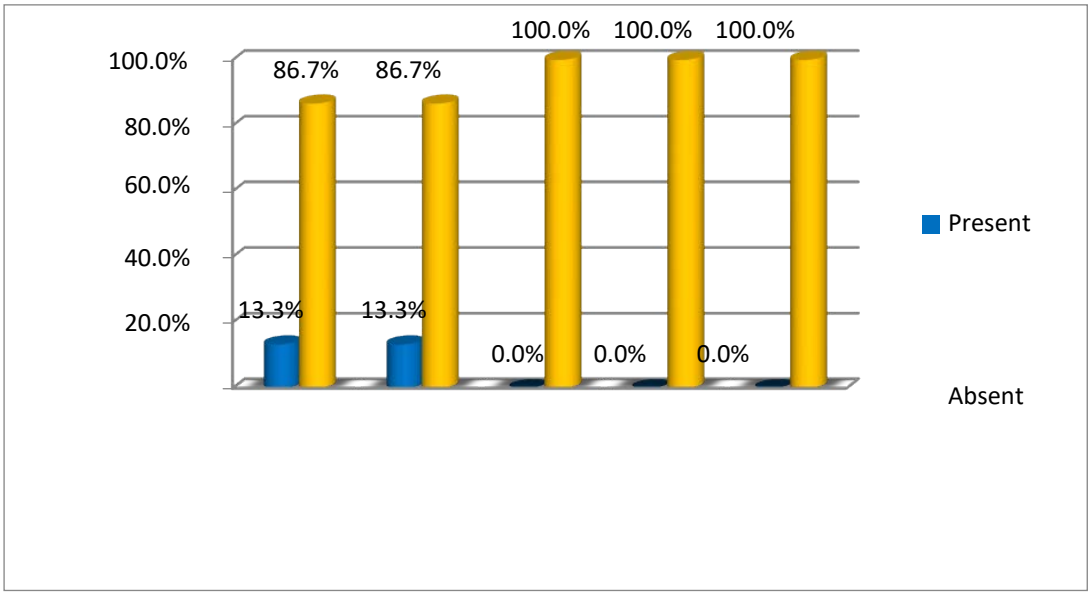


Graph 1: Duration of prosthesis restored.

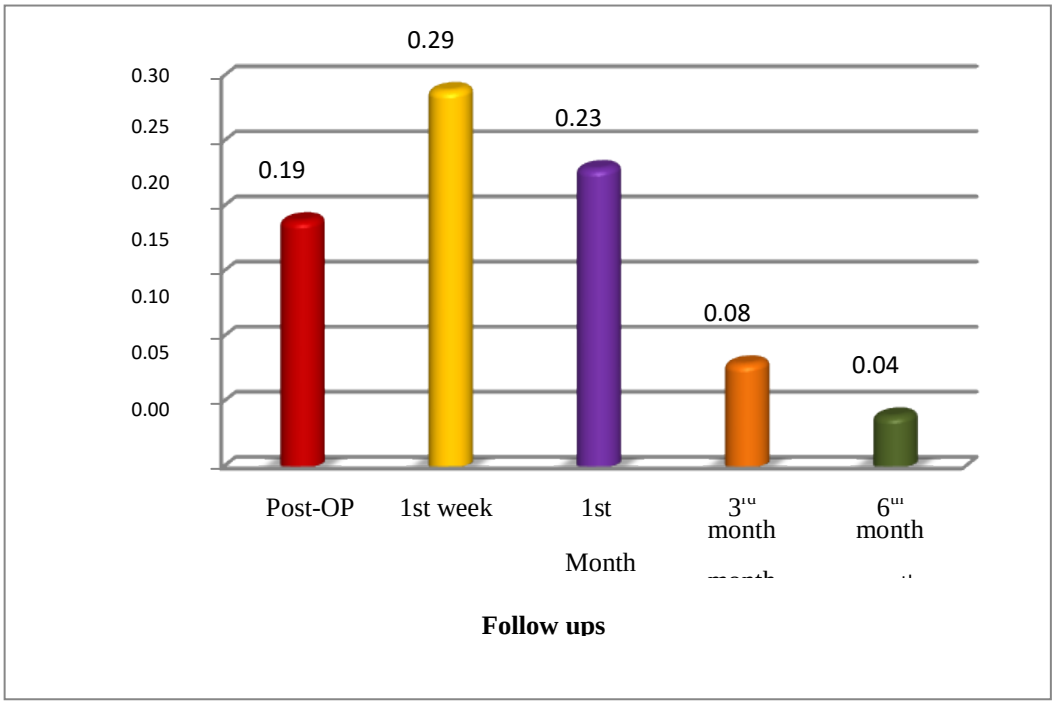


Graph 2: Pain (VAS) score at different periods of follow ups

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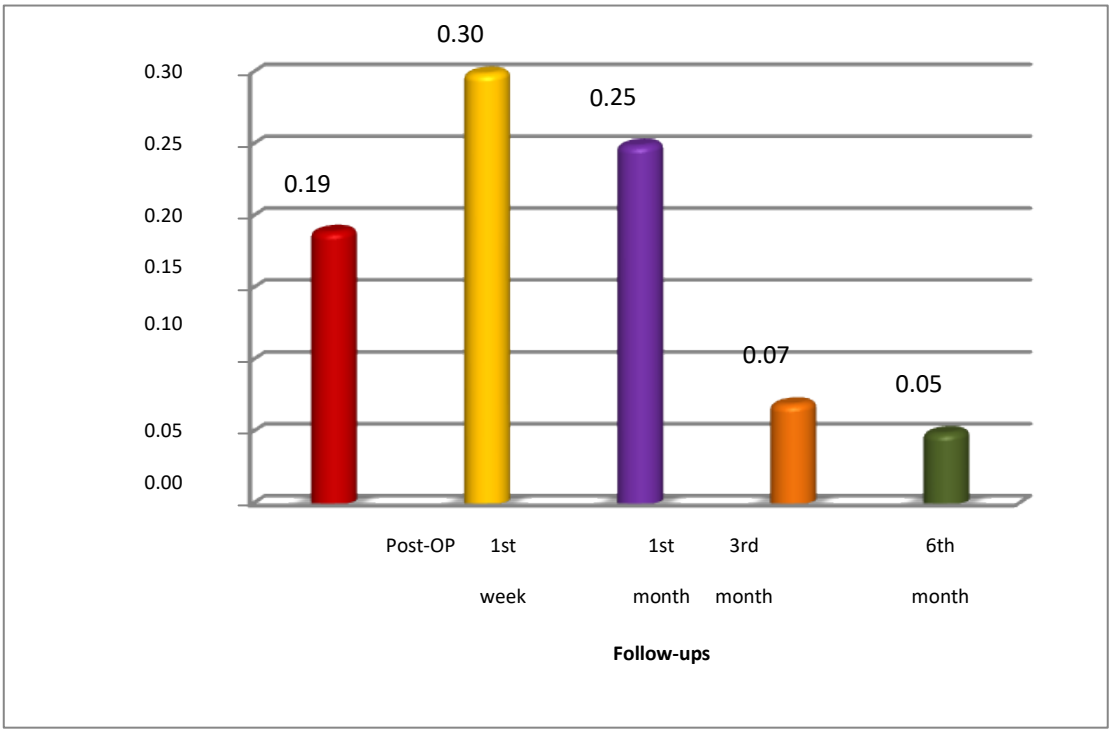


Graph 3: Peri-implant radiolucency

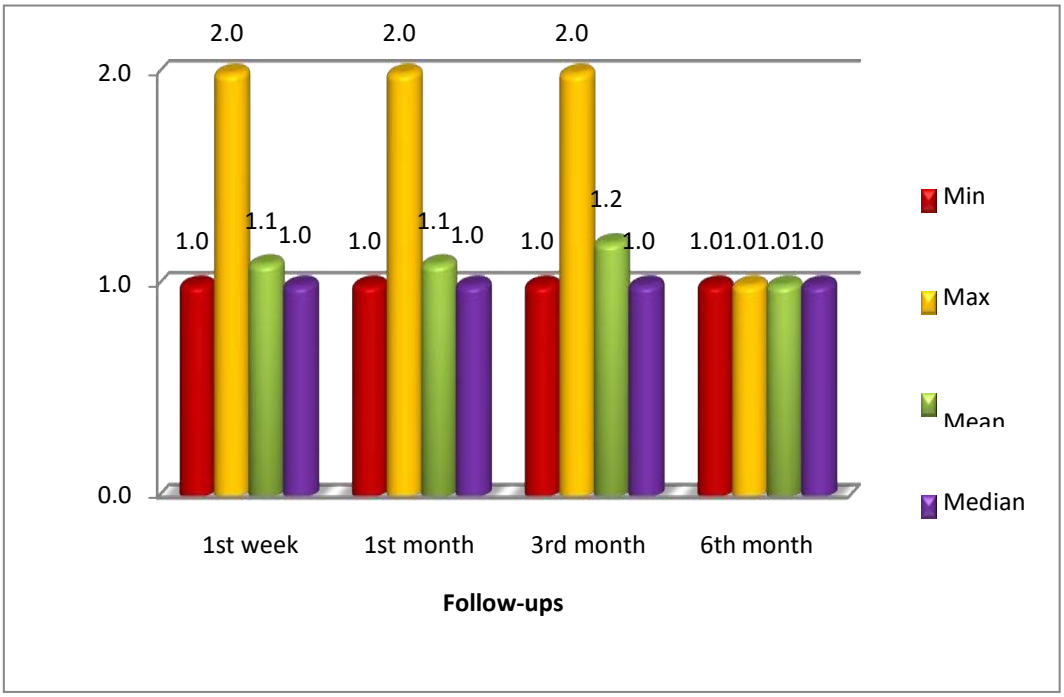


Graph 4: Marginal bone levels (in mm) at Mesial side

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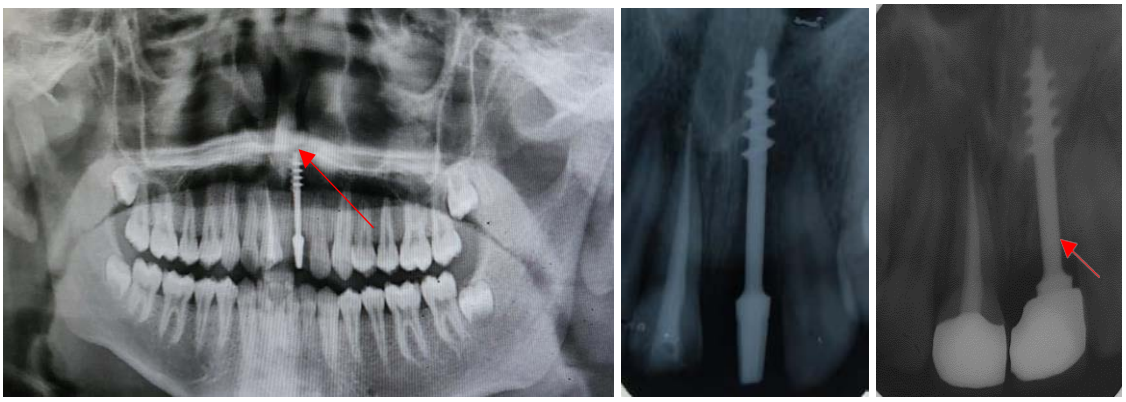
Graph 5: Marginal bone levels (in mm) at Distal side



Graph 6: Patient satisfaction at follow ups

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ON X -RAYS



Target cortical fixation of BCS implant (OPG)

Formation of bone after 6 months (IOPA)

V. Discussion

Over the past decades, two different techniques were developed regarding the implantology (i.e, conventional dental implantology and Bicortical-basal Implantology both techniques) work on different principles by Osseo-Integration and later by Osseo-fixation in a stable cortical bone[6].

Cortical Implantology, similar to the concepts of orthopedics and traumatology principles used in fracture treatment with the plates and screws are bi-cortical engagement with screws and immediate splinting of screws with plate and early functional mobilization. Similar in cortical Implantology BCS implants are engaged in cortical bones. They are splinted with immediate loaded fixed prosthesis. In our study, according to these concepts, Basal screw implants are immediately loaded with fixed prosthesis within seven days of Implant placement, save time and cost considerably[7].

In conventional implantology, the amount of alveolar bone height and width is essential. In Bicortical implantology availability of cortical bone 2nd cortical is important where Implant is Osseo-fixed[4].

Neither patient selection was made regarding the available alveolar bone height and width at all it must be pointed out, that all patients were treated due to “lack of the bone”, nor were any, additional augmentation surgical procedures performed.

In our present study, surgical procedure was invasive not associated with post-operative swelling and healing was rapid and often additional surgical risks and complications were reduced.

The two factors that establish the success of immediately functional loaded implants is the proper Osseo-fixation into the cortical bone with good implant primary stability and prevention of overloading at the interface of the bone-implant during six months of the bone healing[8].

Clinically lack of mobility implant does not always coincide with bone-implant interface. However, when clinically noticed, lack of implant mobility usually means that at least implant portion is direct contact (Osseo-fixed) with bone, although the percentage of bone contact cannot be specified[9].

In the present study, nearly 100% of bone levels were attained at the end of the follow-up period. This increased bone levels is due to the special dual process of healing around the BCS Implants by Osseo-Integration.

Grandi et al, concluded that if high primary stability is present during the implant placement immediately functional loading implants had the same success rate with delayed loading[10].

In the present study, there was no mobility of implants during the follow-up period, and primary stability achieved was similar to the study done by Ihde and Palka on BCS implants which had no mobility after two years follow-up.

Specific conventional implant surfaces are assumed to be better than other in the concept of Osseo- Integration as the assumption that some specific implant surface works better than polished smooth surface Titanium is not justified by science[6].

Similarly, specific implant surface has no importance for the faster Osseo-Integration of the implant. Hence BCS implants are immediately functional loaded with prosthesis utilizing cortical for Osseo-fixation in the concept of the Bicortical-basal implantology instead of waiting towards Osseo-Integration.

BCS Implants have an advantage is associated with thin and smooth polished implant surface makes it effectively difficult for bacterial establishment and migration along the implant portion in 2nd cortical. The mechanical masticatory forces hit the bone away from the crestal bone (i.e, 1st cortical the zone of bacterial attack). Such implants show no pockets around the mucosal penetration areas, nor has predictable vertical bone loss ever been described for these Implant designs[11].

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The present study results were also in accordance with the study conducted by Aleksandra Lazarov (2019), where in the study period of 12-57 months and 5100 implants were placed, proclaim that signs of peri-implantitis was not establish around BCS Implants at all[12].

The BCS Implants appear to be resistant and avoid 'peri-implantitis' most prevalent problem related to two-piece implantology and foremost to implant failure.

Basal Cortical Screw (BCS) implants, is a definitive option for the rehabilitation of missing teeth of patients with regardless of the available alveolar bone without additional augmentation (grafts) procedures. Immediate functional loading using Osseo-fixed BCS implants shows a high implant survival rate without any infection, 'Peri-implantitis' and have a positive impact on oral health and highly increase patient satisfaction.

Hence it can be concluded that however the conventional implantology contraindications for implant placement do not apply for Bi-cortical Screw basal implantology.

Advantage of study

1. Rehabilitation of missing tooth within minimal time frame with fixed prosthesis.
2. Minimal cost (no graft's) with Osseo-fixed cortically by simple surgical technique.

Limitation of the study

Longer follow-up and further studies including an increased number of patients, are needed to assess the long-term success of BCS Implants.

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Strategies to Manage Dental Anxiety

By Dhara Parikh & Ritul Patel

Introduction- Dental anxiety is a psychological and physiological response to an extreme fear of dental treatments, the use of clinical instruments, and even the general dental clinic atmosphere. It affects the oral health of patients as they miss or delay dental appointments, which can exacerbate diseases (Yildirim 2016; Mihaela, Lyndsay 2016). Hmud & Walsh, 2007 demonstrates the same fact through statistical evidence, reporting a prevalence of between 5 and 20%, with a recent estimate of 6-15% globally, of patients who avoid dental care because of high levels of dental anxiety and dental phobia. It evokes physical, cognitive, emotional, and behavioral responses in an individual (Deva Priya, 2016). Moreover, patients with elevated anxiety have negative feelings and thoughts, sleep disturbance, increased use of medication, a greater tendency towards socialization, impaired social and occupational functioning relative to patients without dental anxiety (Gordona, Heimberga, Tellezb, & Ismail, 2013).

Keywords: *dental anxiety, management approaches, dental fear, oral health.*

GJMR-J Classification: *NLMC Code: W 275*



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Strategies to Manage Dental Anxiety

A Review of Literature

Dhara Parikh [α] & Ritul Patel [σ]

Keywords: dental anxiety, management approaches, dental fear, oral health.

I. Introduction

Dental anxiety is a psychological and physiological response to an extreme fear of dental treatments, the use of clinical instruments, and even the general dental clinic atmosphere. It affects the oral health of patients as they miss or delay dental appointments, which can exacerbate diseases (Yildirim 2016; Mihaela, Lyndsay 2016). Hmud & Walsh, 2007 demonstrates the same fact through statistical evidence, reporting a prevalence of between 5 and 20%, with a recent estimate of 6-15% globally, of patients who avoid dental care because of high levels of dental anxiety and dental phobia. It evokes physical, cognitive, emotional, and behavioral responses in an individual (Deva Priya, 2016). Moreover, patients with elevated anxiety have negative feelings and thoughts, sleep disturbance, increased use of medication, a greater tendency towards socialization, impaired social and occupational functioning relative to patients without dental anxiety (Gordona, Heimberga, Tellezb, & Ismail, 2013).

The consequences of dental anxiety also include bad breath, cavities, and periodontal disease. In one study, dentally anxious individuals had eight to nine decayed teeth compared to only one or two in the general population (Gordon, Sartory, & Jöhren, 2013). Having decayed or missing teeth has a strong negative impact on self-esteem (Kaur et al., 2017) and because periodontal disease is associated with cardiovascular disease, diabetes, stroke, and premature birth, he adds, the fear of going to the dentist can ultimately even be life-threatening" (American psychological association, 2016).

From a dentist's perspective, "the dentist needs to know about the patient's possible dental fear before the first procedure to be able to choose the best way to deal with the patient" (Jaakkola 2009). The dentists can become anxious when dealing with these patients because individuals with dental anxiety are more difficult to control, and, consequently, dental treatment procedures take a long time (Ilguy et al., 2005). As a result, it negatively affects outcomes and may give rise to occupational stress (Mihaela, 2014). Therefore, it is challenging to treat patients with dental anxiety.

Thus, it is important to understand the management modalities to relieve dental anxiety. This literature review will briefly discuss etiologies of dental anxiety, factors that impact dental anxiety, and measurement scales for dental anxiety before discussing the different management strategies for this condition.

II. Etiology of Dental Anxiety

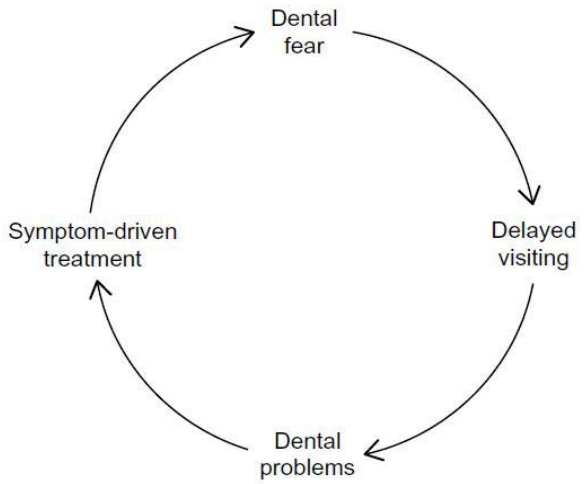


Figure 1: Vicious cycle of dental fear.

Note: Reproduced from Deva Priya Appukuttan (2016).

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Previous studies have examined potential etiologies for dental anxiety in adults. The significance of knowing these causes is that it will lead to determining which approach should be taken to manage it. There are various etiologies ranging from previous traumatic experiences, especially in childhood (conditioning experiences), environmental factors like vicarious learning from anxious family members or peers, genetic causes, individual personality characteristics such as neuroticism and self-consciousness, lack of understanding, exposure to frightening portrayals of dentists in the media, the coping style of the individual, perception of body image, and the vulnerable position of lying back in a dental chair (Yildirim 2016; Locker 1996 & Deva Priya 2017).

Dental anxiety itself can also worsen underlying anxiety. Fig 1 shows the vicious cycle of dental anxiety, which describes that extremely anxious patients rarely visit dental clinics. They only visit when there is an emergency such as trauma to teeth, exacerbation of dental condition, pain due to delayed appointments etc. As a result, poor oral health increases dental anxiety even more (Deva priya 2017 & Armfield 2016).

a) Factors associated with Dental anxiety

The level of dental anxiety may be affected by age, gender, education level, and socio-economic status (Jaakkola et al., 2016).Women have more dental fear than men (Yildirim et al., 2017). Recent studies have shown that dental fear is more common among younger adults than older individuals. Severe dental fear is more common among patients with low education and those who are single, than among those with higher education and in a relationship (Hagglin et al., 2000). It would be expected that being female, having a low income, and having a low perception of one's oral health status would be linked with higher levels of dental anxiety (Yildirim 2017 & Haumud 2007). Some studies say that people with low education have more anxiety while others say that people with higher education levels show more anxiety. However, age and gender are the most determining factors of Dental anxiety.

b) Determining the level of Dental anxiety

The presence of anxiety is noticed at the initial visit of a patient. However, to individualize the treatment protocol for the anxious patient, a more objective determination is necessary. Objective analysis can be done by questionnaires such as: Corah's Dental Anxiety Scale (CDAS), Modified Dental Anxiety Scale (MDAS), Spielberger State–Trait Anxiety Inventory, Kleinknecht et al's Dental Fear Survey (DFS). Previous studies show that among all the scales DFS, MDAS and CDAS are the most acceptable and reliable scales.

Table 1: Anxiety measuring scales, note: reproduced from (Deva Priya, Yildirim, Mihaela 2016)

CDAS	MDAS	DFS
4 questions	5 questions	20 questions
1 to 5 scores (non-anxious to extremely anxious)	1 to 5 scores (non-anxious to extremely anxious)	5 response options
Possible scores 4-20, after 15 phobic	Possible scores 5-25, 19 is the cut off for extremely anxious	Possible scores 20 to 100. ≥60 is the cut off for high anxiety

Deva Priya (2016) says that according to these questions, anxiety level can be categorized as mild anxiety/moderate anxiety/high anxiety/phobic. The significance of knowing this level helps determine the approach for the specific patient.

c) Management strategies of Dental anxiety

Approaches are broadly categorized as psychotherapeutic approaches and pharmacological approaches. Strategy is based on the dentist's expertise, level of patient's anxiety, Patient's characteristics, and clinical situation (Yildirim 2016, Armfield & Heaton 2013).

Psychotherapeutic approaches: Psychotherapeutic approaches are listed in table 2. They are either behaviorally oriented or cognitively oriented. All these approaches are effective for mild to moderate levels of dental anxiety (deva Priya 2016; Gordon 2013; lawlicki 1991 & Lydsny 2004). Cognitively oriented approaches include cognitive behavior therapy (CBT). (Henry W. Fields, Bernard Machen & Marilyn Murphy, 1984) have conducted primary research on the acceptability of the behavioral approach. As per his research, acceptability of behavioral approach depends on its need during the time of the treatment based on the urgency of it. However, these techniques are effective in positively reinforcing the patient for the long-term.

Table 2: Psychotherapeutic strategies, note: reproduced from (Deva Priya, Yildirim, Mihaela 2016)

Psychotherapeutic Approaches
Communication skills, rapport, and trust building: iatro sedative technique
Relaxation techniques: deep breathing, muscle relaxation
Brief relaxation or functional relaxation therapy
Autogenic relaxation
Ost's applied relaxation technique
Deep relaxation or diaphragmatic breathing
Relaxation response
Guided imagery
Biofeedback
Hypnotherapy
Acupuncture
Distraction
Enhancing control

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"Tell-show-do", signaling
Systematic desensitization or exposure therapy
Positive reinforcement
Cognitive therapy
Cognitive behavioral therapy (CBT)

This literature review will focus on the following behavioral and cognitive psychotherapeutic management modalities that have proven to be most effective and can be performed without advanced technical equipment: relaxation, distraction, communication and environment, acupuncture, and cognitive behavioral therapy.

Patients with mild level dental anxiety

1) Communication and Environment

The communicative ability provides the first impression of the provider to the patient. Deva Priya (2016) states that there should be a two way, non-judgmental, composed, and calm communication between a doctor and a patient. As mentioned in the table, 'iatrosedative technique' is a process of communication between a dental practitioner and the patient that creates a bond of understanding, trust, and confidence (JM Armfield & LJ Heaton, 2013). This technique mainly involves a systemic approach to make the patient feel calm and comfortable by the dental practitioner's behavior, attitude, and communicative stance (JM Armfield & LJ Heaton, 2013).

2) Deep breathing and muscle relaxation

When a patient is physically relaxed, it is difficult to make them psychologically anxious (Deva Priya, 2016). When patients enter the clinic, the doctor should first communicate amicably to make them relaxed. Raghad Hmud & Laurence Walsh, 2007 and Deva Priya 2016 similarly emphasize that Jacobsen's progressive muscular relaxation technique is most acceptable and effective. It involves tensing specific muscle groups for 5–7 seconds, followed by 20 seconds of relaxation. The method can be demonstrated at the bedside and should be practiced and rehearsed by the patient at home. Other relaxation methods include Ost's applied relaxation technique, functional relaxation, the rapid-relaxation technique, autogenic relaxation, and relaxation response (Deva Priya 2016).

3) Guided imagery

Guided imagery has been defined as a directed, deliberate daydream that uses all the senses to create a focused state of relaxation and a sense of physical and emotional well-being. It is a mind–body exercise in which patients are taught to develop a mental image of a pleasant, tranquil experience that consciously guides their attention to achieve relaxation. There are generally three stages to guided imagery: relaxation, visualization, and positive suggestion (Deva Priya et al., 2016). To make the patient visualize the place or the object of their selection, the doctor should make the script or sound or smell according to it to make the patient feel relaxed and in an imagery phase. This method is effective in anxious pediatric patients as children enjoy hearing stories.

4) Distraction and Acupuncture

Distraction techniques have been found to be as effective as relaxation-based techniques, and superior to no intervention. Audio-taped distractions are more effective than video-taped, possibly since they allow children to close their eyes and hence avoid the feared stimulus (T. Newton, K. Asimakopoulou, B. Daly, S. Scambler and S. Scott5 Essential 2012). Distraction by background peaceful music is an effective approach according to this author's experience.

Acupuncture is a technique in which a disease is treated by inserting needles at various points on the body, known as acupuncture points. It has been reported that acupuncture is effective in treating dental problems such as anxiety, temporomandibular dysfunction syndrome, pain, and Sjögren's syndrome. It is an inexpensive treatment modality that requires special training before it can be incorporated into practice. Reports on the use of auricular acupuncture for treating chronic and acute anxiety have shown promising results (Deva Priya 2016).

5) Tell-show-do

This technique is useful for children and adults as well. First, show the instrument or material which is being used. Showing a visual model of the procedure or the videos to the patients helps in increasing patient's confidence and ensures the feeling of safety and security in them (Deva Priya 2016).

Patients with moderate level of Dental anxiety

Cognitive behavior therapy

Cognitive behavior therapy (CBT) is an example of brief psychological therapy. T newton (2012) states that, "It is a synthesis of behavior therapy and cognitive therapy and uses both behavior modification techniques and cognitive restructuring procedures to change the behavior of the patient. CBT includes learning relaxation skills, conducting mini-experiments and systematic desensitization (constructing a hierarchy of situations that elicit varying and increasing degrees of anxiety or fear and then progressing through the hierarchy in a relaxed, non-anxious manner)" (T. Newton, K. Asimakopoulou, B. Daly, S. Scambler and S. Scott5 Essential 2012). Mihaela Dumitrachea, Valentina Neacsub & Ionela, 2014 conducted a study to measure CBT's efficacy with 47 patients of a private dental clinic. They concluded that the possibility of getting a substantial reduction in dental anxiety level is high with the sessions of cognitive reconstruction.

Patients with high-level of Dental anxiety

Pharmacological approach

It includes conscious sedation and general anesthesia. Pharmacological approaches to the

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management of patients with dental phobia are well established, including relative analgesia, conscious sedation, and general anesthesia (T. Newton, K. Asimakopoulou, B. Daly, S. Scambler and S. Scott5 Essential 2012). There is an ongoing need for such services when individuals delay treatment to the point where they are in severe pain or have otherwise compromised their oral health. However, in general, pharmacological approaches are less acceptable in the management of dental fear when compared to psychological techniques by individuals with extreme dental fear and members of the public(T. Newton, K. Asimakopoulou, B. Daly, S. Scambler and S. Scott5 Essential 2012).

III. Conclusion

Despite advances in dental equipment in contemporary dentistry, anxiety associated with dental practice and fear of pain related to dentistry remain common. 73% to 79% of individuals have at least some dental anxieties (Yildirim, 2017). Patients with low to moderate anxiety can be treated by behavior therapies as studies have shown its effects. Patients should be encouraged to maintain good oral health to prevent them from going to a vicious cycle of anxiety. However, a highly anxious patient needs a conventional sedation method. Moreover, past childhood experience impacts a lot in developing anxiety in adulthood. It is recommended for a Dentist to be incredibly careful while treating child patients so that they do not develop anxiety due to traumatic or fearful experience. Thus, managing anxiety will help dentists to perform successful treatment and for an anxious person to maintain good oral health.

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Finite Element Method and Applications in Dentistry- A Review

By Kratika Mishra, Amit Bhardwaj, Anuj Bhardwaj, Shivani Bhardwaj & Anvay Mishra

Index Institute of Dental Science

Abstract- A method for numerical stress analysis with multiple advantages of being applicable to solids of irregular geometry that contain heterogeneous material properties is finite element method. This analysis provides with quantitative data that can extend the understanding of physiologic reactions that occur within the dentoalveolar complex.

Keywords: *biomechanical forces, finite element analysis, stress, strain.*

GJMR-J Classification: *NLMC Code: WU 300*



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Finite Element Method and Applications in Dentistry– A Review

Kratika Mishra [α], Amit Bhardwaj [σ], Anuj Bhardwaj [ρ], Shivani Bhardwaj [ω] & Anvay Mishra [¥]

Abstract- **A method for numerical stress analysis with multiple advantages of being applicable to solids of irregular geometry that contain heterogeneous material properties is finite element method. This analysis provides with quantitative data that can extend the understanding of physiologic reactions that occur within the dentoalveolar complex.**

Keywords: biomechanical forces, finite element analysis, stress, strain.

I. Introduction

The stress and strain that are induced by the various orthodontic forces need to be studied precisely for studying craniofacial orthodontics. To have a better understanding of these forces, various techniques were being applied. The engineers and mathematicians argued for several decades to come up with a solution that was mathematically precise as well as physically possible. The closest approach that met the arguments of both the worlds was Finite Element Method in 1943 which was introduced by R. Courant who utilised Ritz method of numerical analysis and minimization of variation calculus to obtain approximate solutions to vibration systems.[1] The method was first used in 1956 for aircraft structural problems analysis. Later on, within a decade, the potentialities of the method for the solution of various types of engineering and applied science problems were recognized (Rao, 1982)2.Meanwhile in 1956, Turner MJ et al. published a paper thereby establishing a broader definition of numerical analysis. The paper centered on the "stiffness and deflection of complex structures"3 It was introduced in implant dentistry in 1976 by Weinstein. Application of this technique in micro computers, pre and post processors and for analysis of large structural system was in 1980's and 1990's [4].

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The periodontium tissue is made up of periodontal ligament fibres, the root surface of the teeth and the alveolar bone. The various forces that exert stress on the periodontal ligament fibres cause the teeth to move. [5]. There are numerous reactions that take place at cellular level to make the teeth move. For getting the desired results using the orthodontic forces, there is a need to consider various other mechanical phenomena such as the stress strain relation and the force vectors. To get precise understanding of this, Finite Element Methods are being popularly used, since the models produced from this method closely resemble the actual structures.

II. Applications

a) FEM and Biomechanics

The field of biomechanics finds the usage of finite element modeling in analysing the following three: (i) Skeleton Analysis, (ii) Orthopaedic and Orthodontic Appliance Design (iii) Tissue Growth, Remodelling and Degeneration.

b) FEM and orthodontics

Another application of FEM can be in solving the problem of stress strain levels that are induced in the internal structures. Since, various complex structures can be simulated using the models produced by FEM, it becomes the best method for precisely modelling the tooth and periodontium in a 3-dimensional coordinate system.[6]

c) FEM and implants

This analysis is used to study the stress patterns in various implant components and also in the peri-implant bone. Demenko et al[7] suggested to select the implant size, giving importance to its load bearing capacity in one of the finite element analysis study. The long term results of mandibular implant supported overdentures suggest that loss of osseointegration without signs of infection was more common than peri-implantitis.[8]

d) FEM and Post and Core restorations

FEM simulations have been pivotal in significantly improving the mechanical stability. They have also led to an increase in the long term success of post and core-restorations. Liu et al [9] suggested that for teeth with limited coronal dentin at the loading location, as maxillary premolars with large-scale tissue loss it was

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crucial to lower the oblique forces by reducing the lateral occlusal contact area and by preventing contact on the top of the facial cusp, thus protecting the remaining dentin from fracture.

III. Discussion

FEM technique is used to obtain a solution to a complex mechanical problem by dividing the problem domain into a collection of much smaller and simpler domains (elements) in which the field variables can be interpolated with the use of shape function. The use of finite element method allows studying a single tooth, a set of teeth, or even the relationship between maxillary and mandibular dental arches on a more solid and precise biomechanical basis than other methods such as photoelastic models and strain gauges. So with this methodology it is possible to have quantitative and qualitative representations of dental and Mandibular biomechanics to evaluate displacements, strains and stresses, which may occur in biomechanical structures.[12]

Bujtar et al[10] estimated the stress distribution in the human mandible at three different life stages by FEA. It was observed that highest stress levels in the mandibular neck in an edentulous mandible of a 67 year old patient was attributed to bone stiffness. Tuna et al [11] simulated PDL as a contact model between the tooth and alveolar bone instead of a solid meshed FE model with poor geometric morphology or very dense mesh. It was proposed that this model saves time and pre/post processing workforce, increases the accuracy and adds to the smoothness of interface stress distributions as well. So its success depends on the accuracy in simulating the geometry and surface structure of the implant, the material characteristics of the implant and jawbone, the loading and support conditions as well as the biomechanical implant jaw bone interface.

IV. Conclusion

FEM is analytical tool for calculating stresses and strains within mechanically loaded structures. It is a non-invasive technique and a contemporary research tool for orthodontist. The finite element analysis (FEA) is significant research tool for biomechanical analyses in biological research and has many futuristic advantages. This ultimate method for modeling complex structures and analyzing their mechanical properties is promising and opens the new research perspectives in near future.

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Knowledge of Midwives about Dental Health Education and Recommendations for Pregnant Women in Makassar City. Indonesia

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Material and Method: Studies are observed by cross-sectional study designs. The midwife sample came from midwives working in 15 health centers, 10 hospitals and 6 maternity hospitals in Makassar, resulting in a total sample of 173 midwives.

Result: Average age = 32.29 years and average length of work as a midwife = 8.77 years. The percentage of midwives who recommend when to visit the dentist for a 1-year-old baby is 56.6%, the percentage of midwives who provide information about periodontal disease in pregnant women as much as 82%.

Keywords: *midwife, dental health education, pregnant woman.*

GJMR-J Classification: *NLMC Code: WU 29*



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Knowledge of Midwives about Dental Health Education and Recommendations for Pregnant Women in Makassar City. Indonesia

Burhanuddin Daeng Pasiga α, Rasmidar Samad σ & Rini Pratiwi ρ

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Result: Average age = 32.29 years and average length of work as a midwife = 8.77 years. The percentage of midwives who recommend when to visit the dentist for a 1-year-old baby is 56.6%, the percentage of midwives who provide information about periodontal disease in pregnant women as much as 82%. The percentage of correct answers to questions about dental and oral health was 64.2%. There is a significant association between midwife knowledge of dental health issues based on age group and work experiencei.e. dental care issues during pregnancy, the time of first visit for the baby to the dentist and knowing when the tooth brush for the baby begins ($p<0.05$).

Conclusion: Midwives' knowledge of dental health and midwives provide recommendations to pregnant women about the importance of low dental care.

Keywords: midwife, dental health education, pregnant woman.

I. Introduction

Sofar, health workers, especially midwives, rarely provide information about the importance of oral health services to pregnant women or caused by pregnant women who have clear signs of oral disease, usually do not seek or receive dental care [1]. For in many cases, both pregnant women and health workers do not understand that oral healthcare is an important component of a healthy pregnancy [2, 3, 4].

During pregnancy, changes in the oral cavity associated with hormonal changes, changes in diet, changes in behavior and various complaints such as cravings, nausea, vomiting [5, 6, 7]. Pregnant women become very vulnerable to gingival disease and periodontal disease due to the habit of ignoring dental, and oral hygiene. Changes in pregnancy to have an impact on the quality of life of pregnant women [7].

Poor maternal health is associated with an increased risk of pretermbirth and low birth weight babies, especially among women from lower socioeconomic backgrounds [8].

Pregnant women are a group that needs special attention with about their oral health and the health of their prospective babies. It is important for pregnant women to be aware of maintaining oral health during pregnancy for themselves and the fetus to prevent disease mouth that can affect pregnancy [9].

Based on the Basic Health Research (Riskesdas) in 2018, the prevalence of dental and oral health problems in Indonesia was 57.6%, up from the 2013 reportof 25.9%, one of which is South Sulawesi Province, which is equal to 70%. Residents who experience dental and oral health problems, of course, include pregnant women [10]. Dental care services for midwives in the implementation are based on guidelines issued by the Government through the Ministry of Health of the Republic of Indonesia [11].

In line with this, improving dental and oral health and health promotion can reduce oral diseases. This is also in line with the goals of the Millennium Development Goals (MDGs) in point 5, they improve and improve the health of the teeth and mouth of pregnant women, because poor dental and oral health for pregnant women can affect the fetus such as premature babies and low birth weight in addition to the health of the baby's teeth and mouth [12].

Therefore, taking preventive measures to improve the oral health of pregnant women by telling them about maintaining the oral health of pregnant women and their children's oral hygiene can reduce susceptibility to dental caries. Good maternal oral health can protect the health and quality of life of pregnant women in general; added, it will minimize the risk of their babies experiencing early dental caries through reducing transmission of maternal cariogenic bacteria [13].

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There is also much discussion about the role of antenatal care providers, which are closely related to the role of midwives in promoting maternal oral health. The close relationship between providers of antenatal care and pregnant women provides an opportunity to motivate and change the practice of oral health for pregnant women [13]. Therefore, it is internationally recommended that all antenatal care providers offer oral healtheducation, assessment, and referral to pregnant women to carry out dental examinations early in their pregnancy. Based on the background above, the authors are interested in the knowledge of midwives in promoting dental health for pregnant women in Makassar City. Indonesia

II. Materials and Methods

1. Types and Design of Research

This study was a descriptive observational study with a cross-sectional study design.

2. Determination of Research Locations

Before the determination of the research location, the permit application given by the Makassar City Health Office had received ethical approval from the Faculty of Dentistry, Hasanuddin University. The total sample was 173 midwives. The sample is a midwife who works at the Community Health Center, hospital and maternity hospital in the city of Makassar. The selection of Community Health Centers is based on the sub-district area, 1 District Health Center is chosen so that there are 15 Community Health Centers. The location of the hospital, and maternity hospital was randomly determined so that ten hospitals and six maternity hospitals were obtained.

3. Assessment criteria

a. Assessment of midwife recommendations regarding dental and oral health

These assessment criteria are for midwife recommendations for pregnant women and infants regarding dental health with seven questions. The assessment for the essay question is done with the answer Yes: a value of 1; No: value of 2

b. Assessment of midwife's knowledge and its relationship to dental and oral health

The assessment criteria for knowledge of midwives used in this study are in by the assessment criteria carried out by George et al [3][12]. Knowledge of midwives is assessed by presenting 10 questions related to oral and dental health for pregnant women The correct answer is given a valueof 1, while the value 2 is for the wrong answer (Table1).

Table 1: Questionnaire for midwife knowledge about oral and dental health

No.	Question	True	False
1.	Is bad breath a sign of poor oral health (Right)		
2.	Does a mother who suffers from gum inflammation before pregnancy feel better during pregnancy (wrong)		
3.	Do mothers who experience morning sickness should be encouraged to brush their teeth immediately after vomiting (wrong)		
4.	Is it safe to undergo dental treatment during pregnancy (correct)		
5.	Can the mother transmit the bacteria that causes dental caries to her baby (right)		
6.	Whether before the baby's teeth appear, parents must be instructed to clean the baby's gums with wet washcloth after eating and before going to bed (correct)		
7.	Generally, the gums tend to bleed during pregnancy (right)		
8.	Are babies who have healthy teeth not important because the baby's teeth will be replaced (wrong)		
9.	Whether giving a sweet snack only at mealtime is a good way to prevent cavities in children (correct)		
10.	Do parents have to use the same spoon to taste and feed their children (wrong)		

III. Result

The average age of midwives is 32.29 years, with the highest percentage of age <40 years (83.2%), while the average working life is 8.77 years and the most with working period < 15 years is 85.5%. Employment status is 69.5% as a permanent worker in public health centers, hospitals or maternity hospitals (Table 2).

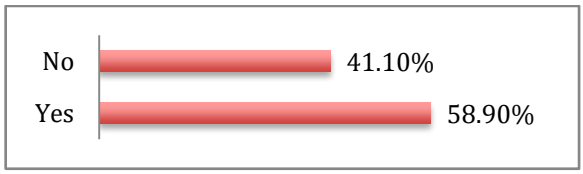
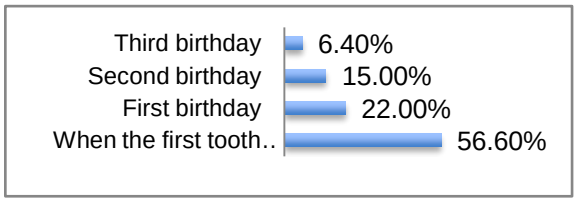
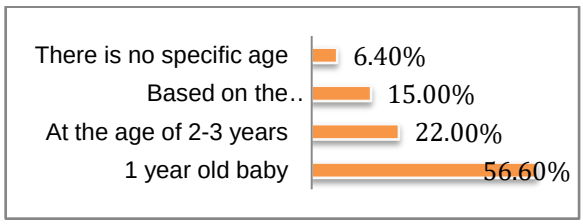
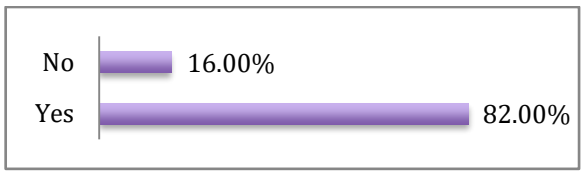
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Table 2: Characteristics of research respondents based on age, work experience and employment status

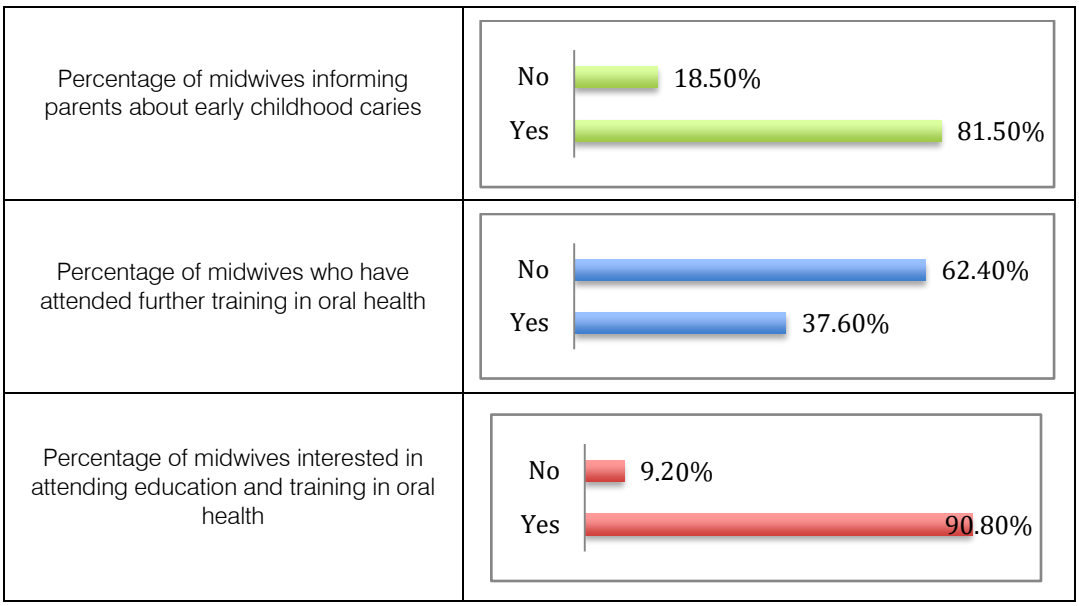
Karakteristik		n	%	Mean	SD
Age	< 40 years	144	83,2	32.29	8,48
	≥ 40 years	29	16,8		
Experience	< 15 years	148	85,5	8,77	6,90
	≥ 15 years	25	14,5		
Employment status	Personal Practice	2	1,2		
	Employed	120	69,4		
	Volunteer	25	14,5		
	education and training	3	1,7		
	Personal and Employed Practices	23	13,3		
Total		173	100,0		

The Percentage of Midwives recommends to pregnant women about dental care during pregnancy by 58.9% and recommend the time of the baby's visit to the dentist at the age of 1 infant year as much as 56.6%, The percentage of midwives who provide information about periodontal disease to pregnant women is 82%, the percentage of midwives who had attended further training in dental and oral health was 37.6 and respondents wanted or interested in training on dental health issues by 90.8% (Table 3).

Table 3: Percentage of midwife recommendations for dental health for pregnant women

Recomendations	Result
Percentage of midwife recommendations about dental care during pregnancy	
Percentage of midwife's recommendations about when to brush teeth should be done on infants	
Percentage of midwife recommendations about when to visit the dentist for infants	
Percentage of midwives who provide information about periodontal disease in pregnant women	

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The percentage of knowledge midwives answered that bad breath was a sign of oral health by 90.8%. Still, the but the knowledge of brushing teeth immediately after vomiting for pregnant women answered correctly only 35.8%.The mother's knowledge about transmitting bacteria that originated from the mother and caused dental caries in babies was answered by 48.6%,, and the correct answer percentage of 40.5% who gave sweet snacks only while eating was a good way to prevent cavities in the child. Overall, the average correct answer of ten questions is 64.12% (Table 4).

Table 4: Percentage of answers to questions regarding midwife's knowledge about dental and oral health

No.	Question	True %	False %
1.	Is bad breath a sign of poor oral health (Right)	90,8	9,2
2.	Does a mother who suffers from gum inflammation before pregnancy feel better during pregnancy (wrong)	76,9	22,5
3.	Do mothers who experience morning sickness should be encouraged to brush their teeth immediately after vomiting (wrong)	35,8	63,6
4.	Is it safe to undergo dental treatment during pregnancy (correct)	63,6	36,4
5.	Can the mother transmit the bacteria that causes dental caries to her baby (right)	48,6	51,4
6.	Whether before the baby's teeth appear, parents must be instructed to clean the baby's gums with wet washcloth after eating and before going to bed (correct)	65,9	34,1
7.	Generally, the gums tend to bleed during pregnancy (right)	85,0	15,0
8.	Are babies who have healthy teeth not important because the baby's teeth will be replaced (wrong)	69,4	30,6
9.	Whether giving a sweet snack only at mealtime is a good way to prevent cavities in children (correct)	40,5	59,5
10.	Do parents have to use the same spoon to taste and feed their children (wrong)	64,7	35,3
	Mean	64,12	35,76

Dental care recommendations during pregnancy about the time of first dental care in a child, when you recommend started brushing the child's teeth to pregnant women obtained there is a significant association with the age group and the length of time working as a midwife where $p<0.05$ (Table 5).

IV. Discussion

The physiological condition of a pregnant woman will naturally undergo very substantial changes, including hormonal changes [14, 15]. These changes can affect the microbiological conditions of normal flora in the oral cavity. Thus, it can increase susceptibility to caries, periodontitis, xerostomia, and teeth erosion due

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to vomiting, which is more common during pregnancy [2, 3].

Poor oral and dental health during pregnancy can cause perinatal complications, such as low birth weight and premature birth and poor oral health in children [8] [16]. Thus, midwives must have adequate knowledge about oral health due to their close relationship with pregnant women. This knowledge will later become a topic to provide education and recommendations to pregnant women regarding their oral health [17].

In this study, midwives recommend several things, including dental care during pregnancy. The results of this study that midwives recommend dental care during pregnancy (58.9%), recommendations for treatment of periodontal diseases (82%). Percentage recommendations of midwives informing parents about early childhood caries (81.5%). Midwives' recommendations on when to brush the baby's teeth as much as 56.6%.The results of this study are no different from the results of research conducted in Germany [17], Sidney [13], which states that midwives more often recommend dental and oral care for pregnant women. Maternal behavior during pregnancy can contribute to developing children's oral health. Thus, interventions in early pregnancy can modify behavior and outcomes for both mother and child. This recommendation is important because it relates to the duties of midwives who often communicate with pregnant women, so midwives play an important role in providing dental health education earlier than a dentist. Knowledge of pregnant women about contamination with infants can cause transmission of bacteria from mother to her baby, especially bacterial infection Helicobacter pylori, streptococcal mutants, through vertical or horizontal transmission [18, 19, 20].

The importance of midwife knowledge about oral health because midwives are one of the health workers who are in direct contact with pregnant women and can provide information about oral health for pregnant women themselves and for their babies. This is in accordance with guidelines for the maintenance of dental and oral health of pregnant women and toddlers for health workers especially Midwives that midwifery service providers are encouraged to integrate dental and oral health into pregnancy services [21] [22] [23].

Research conducted in Germany in 2015 also shows the same results as this study that brushing and dental care for babies begins when the first teeth begin to grow. However, ideally, baby dental care should start when the baby is 2-3 years old. Thisshowsthatthereisstill a lack of midwife knowledge about the timeof dental care for babies. Percentage of answers to questions about midwife knowledge about oral health of ten questions with an average correct answer of 64.12%. This means that there are still many midwives who do not know about dental and oral health knowledge for pregnant women. The health policy issued a guide book for pregnant women by the Ministry of Health of the Republic of Indonesia [11].Such is the case in Australia that the oral health program initiated by Midwives is mainly for low-income families because it addresses many of the obstacles that exist for dental care [4].

V. Conclusion

Midwives' knowledge of dental health is still low and midwives' ability to provide recommendations to pregnant women about the importance of low dental care. Need to increase knowledge about dental health for midwives through workshops.

Financial Support: None.

Conflict of Interest: The authors declare no conflicts of interest.

Data Availability: The data used to support the findings of this study can be made available upon reques to the corresponding author.

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Knowledge towards COVID-19 among Medical and Non-Medical Graduates and Postgraduates of Telangana State-A Questionnaire Study

By Dr. Velpula Nagalaxmi, Dr. Aditi Ramesh & Dr. Nooli Bindu Priyanka Patel

Abstract- Coronavirus disease (COVID-19) is a public health emergency of international concern. Due to its alarming spread across the globe, many countries have imposed drastic lockdown. To mitigate the overburdening of the country's health system, public knowledge regarding the effective control measures towards COVID-19 and their ability to delineate right information from the prevailing myths/misinformation plays pivotal role. Hence the present cross-sectional study is undertaken to assess the knowledge of non-medical and medical, graduates and postgraduates of Telangana state. 17 questions evaluating demographic variables, knowledge and awareness towards COVID-19 were included in the questionnaire and circulated through the electronic mode. Data was collected from 504 participants and their Knowledge score was assessed and statistically analysed. The knowledge of Postgraduates is higher than the graduates and the knowledge of participants belonging to Medical field is higher than Non-Medical graduates with P value of <0.001 which is statistically significant.

Keywords: *COVID-19, graduates, knowledge, medical, non-medical, postgraduates, telangana state.*

GJMR-J Classification: *NLMC Code: WU 29*



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Knowledge towards COVID-19 among Medical and Non-Medical Graduates and Postgraduates of Telangana State-A Questionnaire Study

Dr. Velpula Nagalaxmi [α], Dr. Aditi Ramesh [σ] & Dr. Nooli Bindu Priyanka Patel [ρ]

Abstract- Coronavirus disease (COVID-19) is a public health emergency of international concern. Due to its alarming spread across the globe, many countries have imposed drastic lockdown. To mitigate the overburdening of the country's health system, public knowledge regarding the effective control measures towards COVID-19 and their ability to delineate right information from the prevailing myths/misinformation plays pivotal role. Hence the present cross-sectional study is undertaken to assess the knowledge of non-medical and medical, graduates and postgraduates of Telangana state. 17 questions evaluating demographic variables, knowledge and awareness towards COVID-19 were included in the questionnaire and circulated through the electronic mode. Data was collected from 504 participants and their Knowledge score was assessed and statistically analysed. The knowledge of Postgraduates is higher than the graduates and the knowledge of participants belonging to Medical field is higher than Non-Medical graduates with P value of <0.001 which is statistically significant.

Keywords: COVID-19, graduates, knowledge, medical, non-medical, postgraduates, telangana state.

I. Introduction

Coronaviruses are a large family of enveloped RNA viruses that mostly infect birds and mammals, with humans being particularly vulnerable to infection and transmission of the virus.[1] The previous outbreaks of coronaviruses such as Severe Acute Respiratory Syndrome-Coronavirus (SARS-CoV) and Middle East Respiratory Syndrome-Coronavirus (MERS-CoV) show similarities to the novel coronavirus.[2] Coronavirus disease 2019 (COVID-19) outbreak, caused by the new coronavirus strain SARSCoV-2, has become a serious public health concern worldwide.[3] The outbreak was first revealed in Wuhan city, in the Hubei Province of China, in late December 2019.[4] The severity of COVID-19 had been underestimated until the national health commission classified it as a B type infectious disease and took actions to fight against this disease on 20 January 2020.[5] Additionally, the World Health Organization (WHO) declared the COVID-19 outbreak a public health emergency of international concern on 30 January 2020.[6] The outbreak soon spread to the whole country, reached beyond the border, and eventually, the World Health Organization (WHO) declared the outbreak a pandemic on March 11, 2020.[8,9.] Lockdown measures were perceived as necessary to control the spread of the virus as rapid human-to-human transmission occurred and much about the virus remained unknown.[10] Due to the obscurity of this novel virus, there has been a lot of confusion and misunderstanding about the virus, how it can spread and the necessary precautions that should be taken to prevent infection. This becomes increasingly challenging with the vast amount of misinformation and disinformation shared on social media that is clouding people's understanding of COVID-19.[11,12.] To halt the spread of covid-19, public adherence towards infection control measures is much expected and their knowledge and practices towards this infection is the key to mitigate the outbreak, hence the present study is undertaken to assess the knowledge of non-medical and medical graduates and postgraduates of Telangana state.

II. Materials and Methods

The survey was prepared in the form of an online questionnaire (google form) and was circulated among medical and non-medical graduates and postgraduates of Telangana state. The self-administered questionnaire consists of 17 questions based on knowledge and awareness related to COVID-19 disease which were adapted from Coronavirus disease (COVID-19) advice for the public: Myth busters (By WHO).The main instrument to collect data was an online questionnaire using Google forms and it is available at: https://forms.gle/KZwNYLoRChbwzT2c7. A standardized general description about the survey was given in the WhatsApp message before the link was provided to both English and Telugu versions of the questionnaire. so as to ensure linguistic and conceptual equivalence.

Convenient sampling method was used for data collection, and the distribution of responses was presented as frequencies and percentages. Sub-groups were classified on the basis of gender, age (<25, 25-35, 36-45, and >45 years), educational qualification (Medical/Non-Medical-Graduate/Postgraduate). Data was tabulated in excel, we analyzed the data from about

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504 participants using SPSS (Statistical Package for Social Sciences) 25.0. Descriptive statistics and Student's t test were performed. Confidence interval was set at 95%. P value < 0.05 was considered statistically significant. Knowledge score was computed for questions 1 to 16. Knowledge score was computed, Correct answer was coded as 3, Don't know as 2 and Wrong answer as 1. A participant can score a minimum of 16 points and maximum of 48 points based on his/her responses. Finally in the 17th question, the source of the individuals' information about COVID-19 was recorded.

III. Results

A total of 504 individuals from the state of Telangana, India, responded to the survey. The majority of the responders were from the age group of 25-35 years, which is about 54.6%, followed by <25 years which is about 27.2%. Among all the responders, 58.1% were females, 41.9% were males and 51% were from medical field and 49% were from non-medical field and 57.5% were graduates and 42.5% were postgraduates.

a) The comparison of knowledge scores between Males and Females

The mean knowledge score among females (37.58±5.52), which is slightly higher than the mean knowledge score of males (37.17±5.99), with the p value of 0.42, which is not statistically significant (Figure 1), (Table1).

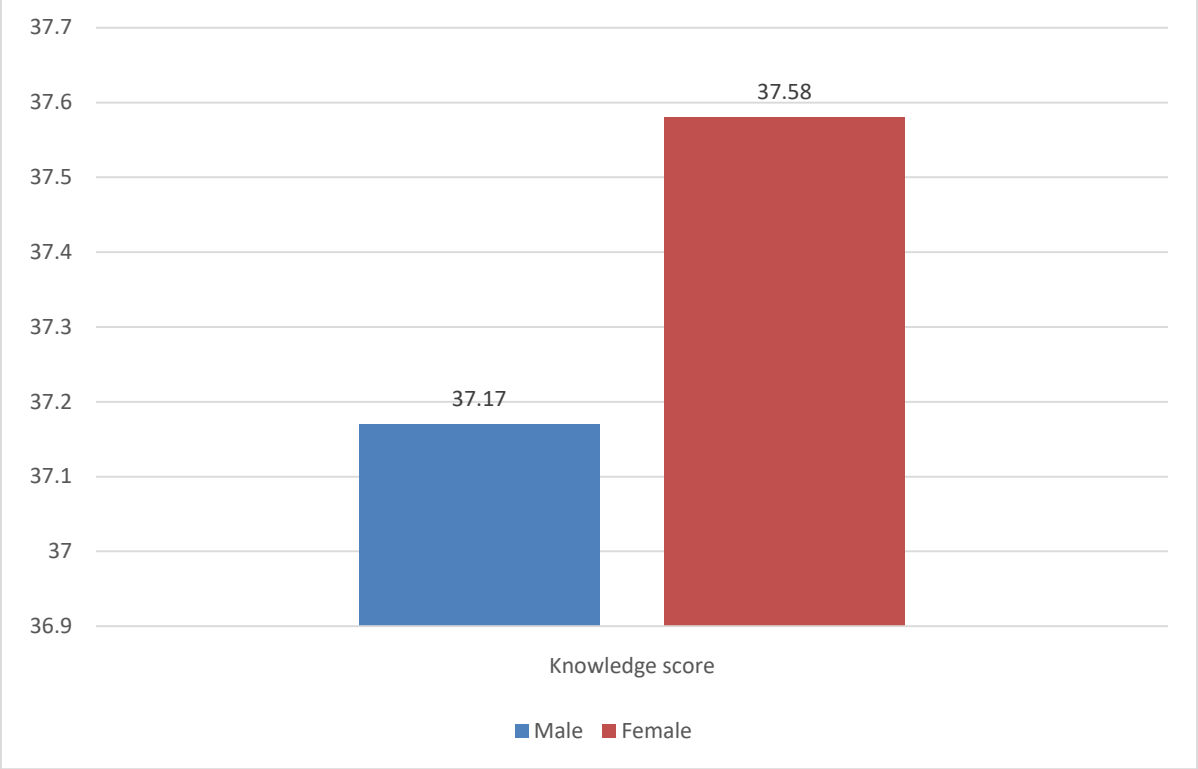


Fig. 1: Graph shows the comparison of knowledge scores between Males and Females

Table 1: Shows the comparison of knowledge scores between Males and Females

Variable	Male		Female		t	P value
	Mean	SD	Mean	SD		
Knowledge score	37.17	5.99	37.58	5.52	-0.808	0.42

b) Comparison of knowledge score of participants of Medical and Non-Medical field regarding COVID-19

The mean knowledge score among participants of medical field (38.87±5.50), which is higher than the mean knowledge score among participants of non-medical field (35.89±5.57) with the p value < 0.001, which is statistically significant (Figure 2), (Table2)

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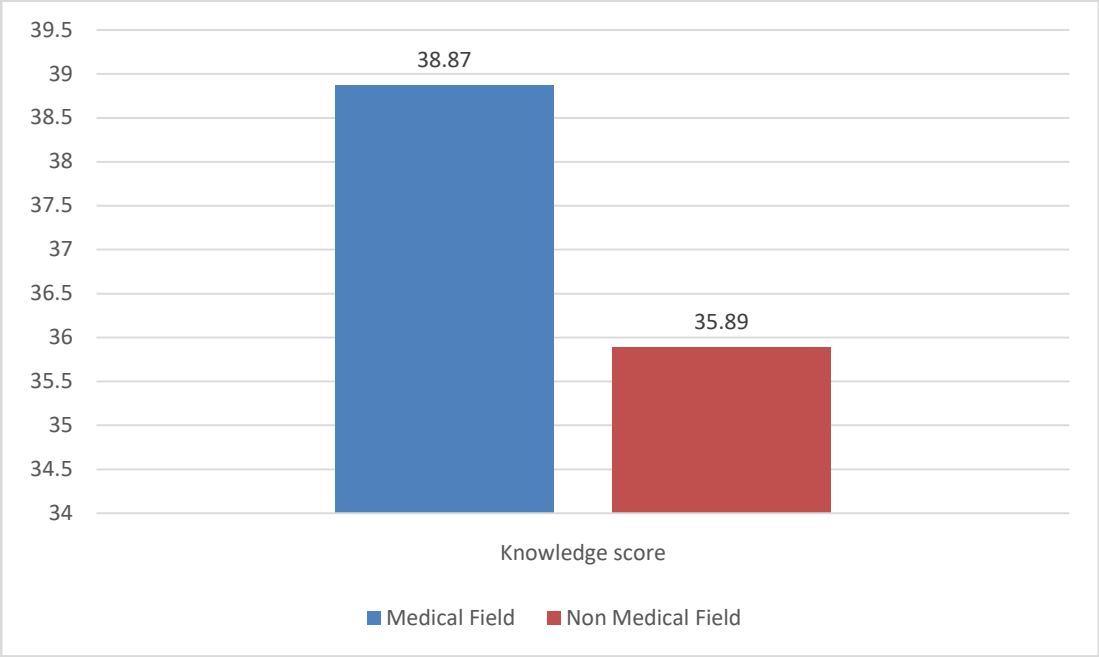


Fig.2: Graph shows the comparison of knowledge scores between participants of Medical and Non-Medical fields

Table 2: Shows the comparison of knowledge scores between participants of Medical and Non-Medical fields

Variable	Medical Field		Non-Medical Field		t	P value
	Mean	SD	Mean	SD		
Knowledge score	38.87	5.50	35.89	5.57	6.04	<0.001*

c) *Comparison of knowledge score of graduates and postgraduates of Medical field regarding COVID-19*

The mean knowledge score among postgraduates of medical field (39.65±5.79), which is slightly higher than the mean knowledge score among graduates of medical field (38.29±5.22) with the p value of 0.05, which is not statistically significant (Figure 3), (Table3).

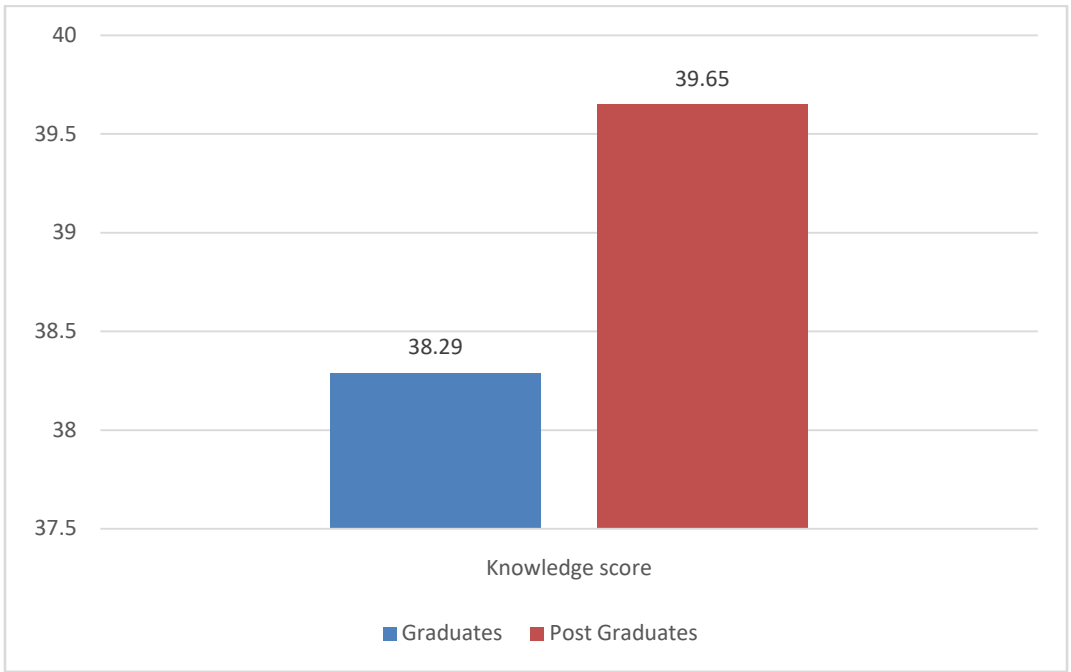


Fig.3: Graph shows the comparison of knowledge scores between Graduates and Postgraduates of Medical field

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Table 3: Shows the comparison of knowledge scores between Graduates and Postgraduates of Medical field

Variable	Graduates			Postgraduates			t	P value
	N	Mean	SD	N	Mean	SD		
Knowledge score	148	38.29	5.22	109	39.65	5.79	-1.97	0.05

d) Comparison of knowledge score of graduates and postgraduates of Non-Medical field regarding COVID-19

The mean knowledge score among postgraduates of non-medical field (36.21±5.75), which is slightly higher than the mean knowledge score among graduates of non-medical field (35.65±5.43) with the p value of 0.44, which is not statistically significant (Figure 4), (Table 4).

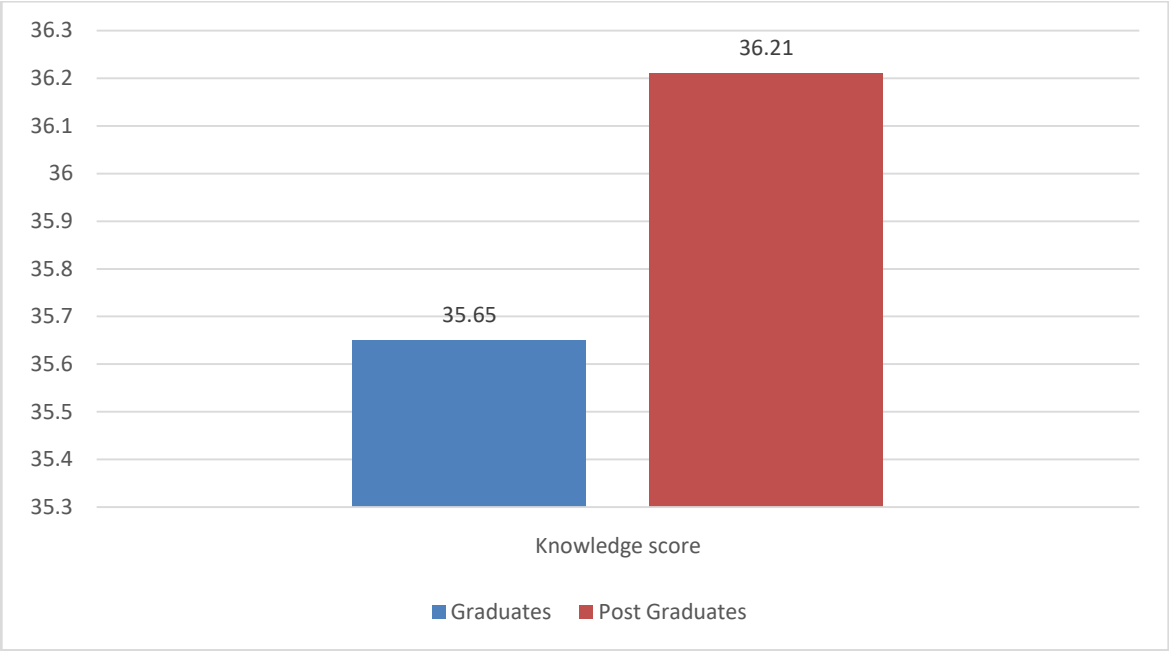


Fig. 4: Graph shows the comparison of knowledge scores between Graduates and Postgraduates of Non-Medical field

Table 4: Shows the comparison of knowledge scores between Graduates and Postgraduates of Non-Medical field

Variable	Graduates			Postgraduates			t	P value
	N	Mean	SD	N	Mean	SD		
Knowledge Score	142	35.65	5.43308	105	36.21	5.75409	-0.773	0.44

IV. Discussion

Although health authorities have been consistently disseminating correct information regarding COVID-19 since the inception of the disease, there has also been an upsurge in false and inaccurate information. The overload of information/opinions without scientific basis may have caused confusion and difficulty ascertaining correct information. The novelty COVID-19, along with its uncertainties, make it critical for health authorities to plan appropriate strategies to prepare and manage the public.[12] WHO reports that the best measure to prevent and slow down the transmission of COVID-19 is to precisely and widely inform the public about the disease, the causes, mode of transmission, and simple prevention methods.[13] The primary step to fight any disease which is pandemic in nature is to evaluate and improve the knowledge and preventive practices about the disease among the public.

The present study evaluated the knowledge score of graduates and postgraduates of Telangana state, the participants expressed poor knowledge (38.3%) regarding the fact that being able to hold breath for 10 seconds or more without coughing or feeling discomfort does not mean that we are free from the coronavirus disease (COVID-19) or any other lung disease. This finding is in accordance with the study conducted by G. Narayana et al.[14] in which only 37.9% of the participants expressed that breath holding test is not a right test to diagnose COVID-19. In the present study 58.9% of respondents agreed the fact that COVID-19 virus cannot be transmitted in areas with hot and humid climates, this fact was accepted by 57.8% of the

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participants in the study conducted by G. Narayana et al.[14] 60.9% of the participants of the present study rightly perceived the fact that Cold weather and snow cannot kill the new coronavirus. 66.5% of the participants of the present study rightly answered that Taking a hot bath will not kill the new coronavirus inside the cells. This finding of the study is in line with the findings of the study conducted by G. Narayana et al.[14] in which 64.9% of the participants acknowledged that hot bath cannot protect the person from COVID-19. 48% of the participants of the present study agreed the fact that Inhalation of steam cannot kill new coronavirus inside the cells and 52% of the participants of the present study rightly perceived that regularly rinsing the nose with saline will not help prevent infection with the new coronavirus. 77.4% of the participants of the present study agreed the fact that COVID-19 virus infection could not only affect older age group and patients with co-morbidities but affects any age group. 65.7% of the participants of the present study rightly perceived that hand dryers are not effective in killing the new coronavirus. This finding is in accordance with the finding of the study conducted by G. Narayana et al.[14] who reported that 65.5% of the study participants accepted that hand dryers are not effective in killing virus. Only 38.3% of the participants of the present study agreed the fact that ultraviolet disinfection lamp cannot kill the new coronavirus.60.1% of the participants of the present study rightly reported that Thermal scanners are ineffective in detecting people infected with the new coronavirus.78.6% of the participants of the present study rightly accepted that fact that People without any symptoms of COVID-19 can also shed the virus and infect the people nearby. Only 34.1% of the participants of the present study rightly acknowledged that Individuals with symptoms of COVID-19 virus infection, with history of travel from effected regions are not considered as positive cases.54.6% of the participants of the present study rightly agreed that antibiotics are ineffective in preventing and treating the new coronavirus. This finding is in accordance with the finding of the study conducted by Narayana et al.[14]in which 60.9% agreed that antibiotics are not effective against COVID-19. 73.4% of the participants of present study agreed that there are no specific medicines to prevent or treat the new coronavirus. This finding of the study is in agreement with the study conducted by Narayana et al.[14]in which 75.4% rightly perceived that there is no medication available to treat COVID-19. 68.1% of the participants of the study accepted that we cannot self-treat for COVID-19 by taking Chloroquine or Hydroxychloroquine.61.3% of the participants of the present study rightly agreed the fact that vaccines against pneumonia cannot protect against the new coronavirus.All the above discussed facts are cited from-Coronavirus disease (COVID-19) advice for the public: Mythbusters.[15]

In the present study the knowledge score of postgraduates is slightly higher than the knowledge score of graduates which is in accordance with the study conducted by G. Narayana et al.[14] in which they found a positive correlation between higher education level and high knowledge scores. The knowledge score of participants of Medical field is higher than the knowledge score of participants of Non-Medical field which is in accordance with the study conducted by G. Narayana et al.[14] in which they concluded that Respondents belong to the health care profession have high knowledge and perception scores than non-healthcare profession and also in accordance with the study conducted by Defar A et al.[16] who observed that Being a health professional was associated with better knowledge about COVID-19.

In the present study the knowledge score of females is slightly higher than the knowledge score of males towards COVID-19. These findings are also in agreement with the study conducted by Erfani A et al.[17] on Knowledge, attitude and practice towards the novel coronavirus (COVID-19) outbreak-a population-based survey in Iran and concluded that a significant correlation exists between female gender, higher age, and higher education with knowledge, attitude, and practice towards COVID-19. In the present study the knowledge score of both medical and non-medical postgraduates is slightly higher than the knowledge score of graduates respectively. This finding of the present study is in agreement with the study conducted by Zhong B-L et al.[18] in Chinese residents and concluded that there is a significant positive association between education levels and COVID-19 knowledge scores.

V. Conclusion

The result of the present study displayed a significant correlation between female gender, higher education and pursuing medical profession with higher knowledge levels towards COVID-19 and also revealed that there still exists a larger percentage of population who strongly believe in myths/misinformation that are prevailing in the social media which indeed is misleading/misguiding people regarding control measures, practices and treatment of COVID-19. Information from social media serves as a double edged sword as it serves to disseminate facts as well as myths. The findings of the study are useful for public health policy-makers and health workers to identify target populations for COVID-19 prevention, control and health education.

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Prosthodontic Treatment Options in Implant Dentistry- A Review Article

By Rahul Keyur Shah

Abstract- The rehabilitation of patients with dental implants can be a challenging and meticulous procedure. Due to the anatomic variations in different patients a standardized treatment approach cannot be followed. From the initial diagnosis itself the practioner must plan the case bearing the eventual end in mind in order to provide the patient with a prosthesis that serves both purposes of functionality as well as esthetics. This article aims to highlight certain parameters such as available bone, bone densities, remaining ridge heights, tooth proportions, number of implants and the positions that the teeth would assume that would dictate the type of prosthetic options available to the patient. It would further aid the clinician to decide a stepwise treatment approach and in turn help in communication with the dental laboratory as well as the patient.

GJMR-J Classification: NLMC Code: WU 500



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Prosthodontic Treatment Options in Implant Dentistry- A Review Article

Rahul Keyur Shah

Abstract- The rehabilitation of patients with dental implants can be a challenging and meticulous procedure. Due to the anatomic variations in different patients, a standardized treatment approach cannot be followed. From the initial diagnosis itself, the practitioner must plan the case bearing the eventual end in mind to provide the patient with a prosthesis that serves both purposes of functionality as well as esthetics. This article aims to highlight certain parameters such as available bone, bone densities, remaining ridge heights, tooth proportions, number of implants, and the positions that the teeth would assume that would dictate the type of prosthetic options available to the patient. It would further aid the clinician to decide a stepwise treatment approach and in turn help in communication with the dental laboratory as well as the patient.

I. Introduction

The management of a patient with complete or partial edentulism can pose an arduous task to a clinician if a stepwise and organized treatment plan is not followed. Some of the important considerations and challenges include the anatomy of the maxilla and mandible, the pattern of bone resorption, quality of available bone for implants, development of pontic form, the role of the arches in speech, and perception of esthetics. Different clinical scenarios dictate different prosthetic options which can be broadly classified as fixed and removable options which will be described in this article.

II. Prosthetic Options in Implant Dentistry

Implant dentistry is unique because additional foundation units may be created for a desired prosthodontic result. Thus, a range of treatment options is available to most partially and completely edentulous patients. In the past, greater emphasis has been placed on the bone available for implant insertion which determines the position and number of implants and consequently, final prosthesis design.[1]

Classification of patients is needed not only for diagnostic purposes but also to facilitate treatment planning, patient education, and professional communication among different specialists.[2]

Misch has classified the different types of implant prostheses available for patients while Simon and Raigrodski have specifically classified the types of residual ridge deficiencies and addressed the need for use of gingival prosthesis.[3]In 1989, Misch proposed five prosthetic options FP-1, FP-2, FP-3, RP-4 and RP-5 [Table 1].

Table 1: Mischs Classification of Implant Prosthesis

Type	Definition
FP-1	FP which replaces only the crown and appears like a natural tooth
FP-2	FP which replaces the crown and a portion of the root Crown contour appears normal in the occlusal half but is elongated or hypercontoured in the gingival half
FP-3	FP which replaces missing crowns and gingival color and portion of the edentulous site
RP-4	RP which is mainly an overdenture completely supported by implants
RP-5	RP which is an overdenture supported by both soft tissue and implant

FP=Fixed prosthesis, RP=Removable prosthesis

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III. Available Bone

The quality and quality of the available bone have an important role to play in determining the number of implants that can be placed in a patient as well as the esthetic appeal that the prosthesis will eventually assume. To reap the maximum benefits of implant dentistry, it is important to treatment plan with the end in mind. A thorough patient history must be recorded and a treatment plan must be formulated with the help of diagnostic aids, such as models, wax-ups, and guides. Radiographs of the concerned areas must be taken to determine the implant positions and numbers. Misch and Judy (1985) gave a classification system for the available bone with treatment options for all categories.[4]

FP-1 restorations: For ideal implant placement and natural esthetic appearance of final prosthesis require Division A bone

FP-2 or FP-3 restorations: These prosthetic options may be considered depending on the amount of bone loss and lip positions for Division B and C bone.

RP-4 or RP-5 restorations: These conditions may require osteoplasty considering interarch space to accommodate denture teeth for Division C bone.

IV. Bone Density

Besides its external architecture, bone also has an internal architecture represented by its density. The strength of the bone supporting the endosteal implant is directly related to its density. The density of the bone must hence be accounted for as an important factor to be considered. The anterior mandible has greater bone density than the anterior maxilla. The posterior mandible has poorer bone density than the anterior mandible. The poorest bone density exists in the posterior maxilla and is associated with dramatic failure rates.[5]

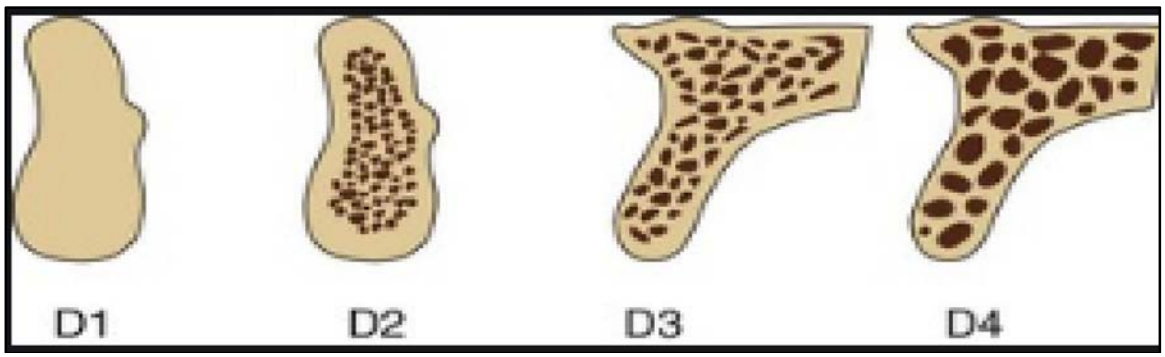


Fig. 1: Mischs Classification of Different Bone Densities

V. Number and Position of Implants

Depending on the diagnostic models, radiographic aids, and maxillomandibular relationship of the patient the ideal number of implants and the position that they would assume can be determined. The number of implants used to support a completely implant-supported restoration in the edentulous mandible usually ranges from 5 to 9 in the mandible, with at least four of these implants inserted between the mental foramina. A greater implant number in the completely edentulous maxilla is indicated to compensate for the less dense bone and more unfavorable biomechanics and ranges from 6 to 10. At least two or three of these implants should be placed in the pre-maxilla, depending on the arch shape and other force factors.[6]Other factors such as arch form, whether round, U, V, or tapered must be accounted for to achieve the best force distribution and have a good AP (anteroposterior spread) of the implants.



Fig. 2: U, V, U-V tapered arch forms all requiring different number of implants for rehbilitation

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VI. Abutment Postion

An implant placed in an improper position can compromise the final results in terms of esthetics, biomechanics, and maintenance. The most compromising position for an implant is too facial because no prosthetic ' "trick" exists to mask it, resulting in compromised esthetics, phonetics, lip position, and function. The per mucosal position of the implant abutment is of particular importance for FP-1 prostheses. The ideal position is directly under the incisal edge position of the anterior natural tooth and under the central fossa of posterior natural teeth to be replaced.[7]

VII. Parafuctional Habits

Any aberrant habit that the patient has must be accounted for at the stage of the initial treatment planning process. Habits such as bruxism and clenching must be noted and corrective measures must be taken before the inception of any treatment. Anti-anxiolytic drugs, psychological counseling, and habit-breaking appliances can be provided to the patient. During the treatment planning of the final prosthesis, care must be taken to provide an implant-protected Occlusal scheme. This scheme aims to minimize force on the implants, distribute forces over a larger surface area, and protect the implants from aberrant forces caused by parafunctional habits. Certain measures such as maintaining light-centric contacts, having a mutually protected occlusal scheme must be noted.

VIII. Esthetic Considerations

Depending on the available bone, maxillomandibular relationship the esthetic requirements of the patient can be fulfilled. Based on the resorption pattern of the patient an FP1, FP2, FP3, or else an RP4, RP5 prosthesis can be fabricated, where only the crown and where the gingival tissue is also replaced respectively. The esthetics can be further enhanced based on the material used.

Porcelain Fused To Metal-The main problem encountered with this restoration is related to the added bulk of metal used in the substructure to keep porcelain to its ideal 2 mm thickness.

Hybrid prosthesis- An alternative option in such situations is the hybrid prosthesis. Because acrylic acts as an intermediary between the porcelain teeth and metal substructure, the impact force during dynamic occlusal loading also may be reduced. Hence, hybrid prostheses are indicated for implant restoration in large crown height spaces as a general rule.[8]



Fig. 3: PFM Vs Hybrid Prosthesis after Full Mouth Implant Therapy

IX. Conclusion

Implants have become the treatment of choice in many, if not most, situations when missing teeth require replacement. In the current years, the field of implant dentistry has gained a large amount of popularity. With proper evaluation, diagnosis, and treatment planning partial as well as complete edentulism can be well managed using implant therapy and shows a lot of promise for the future.

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Acknowledgments

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Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11'", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

a) A title which should be relevant to the theme of the paper.
b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
d) An introduction, giving fundamental background objectives.
e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
f) Results which should be presented concisely by well-designed tables and figures.
g) Suitable statistical data should also be given.
h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
j) There should be brief acknowledgments.
k) There ought to be references in the conventional format. Global Journals recommends APA format.

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The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.



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Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, “What words would a source have to include to be truly valuable in a research paper?” Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

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Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

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Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

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Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.

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Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

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Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

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1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of medical research then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

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6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

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12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

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23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

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- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
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- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

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An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

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Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.



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Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

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Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."

Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

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Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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