

Knowledge Awareness and Practice of Different Temporization Techniques Used for Dental Implants - A Survey

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Abstract: *When a patient loses his anterior teeth, there is psychological and emotional distress seen in the patient. Replacing the missing tooth has been a long term success in the field of prosthodontics. Dental implants have a vital role in fixedly replacing the missing tooth. The average lifespan and expectancy for a dental implant prosthesis and restoration may be of high expectation. The healing phase of the implant is critical, and when a patient gets a dental implant in anterior teeth, the waiting period also plays an important role. Fabrication of provisional restorations or temporization is an essential procedure in fixed prosthodontics. Fabricating the provisional restoration or immediately loading the implant after the placement comes as a challenge for prosthodontics to restore the function and esthetics. The choice of the temporary restoration may vary from patient to patient and is possible only when an individual has adequate knowledge about the different techniques and the best provisionalization techniques. Immediate loading protocols for dental implants have many advantages by reducing the time, promotes gingival healing and mainly helps in the psychological satisfaction of the patient. Hence this study aims to analyze the knowledge, awareness and practice among dental practitioners and students regarding the provisionalization technique and the method used during the dental implant placement..*

Keywords: Esthetics, Fixed Prosthesis, Dental Implants, Immediate Loading, Temporization Techniques

I. INTRODUCTION

Dental implants have emerged as a very predictable treatment for missing teeth (1). However in developing countries, limited numbers of people opt for dental implants as a treatment modality in these countries due to the expensive procedure. Currently successful implant therapy is measured in terms of both functional and psychosocial acceptance by patients. Awareness, knowledge and practice about dental implants is increasing among patients of various age groups. The dental implants heals by the process of osseointegration and takes place for several months (2). The outcome predictability of dental implants is quite challenging and it's purely based on the bone implant contact. A well osseointegrated dental implants have to be loaded as delayed loading or immediate loading (3). For an immediate loading there are protocols to be followed, the primary stability of the implant should be adequate in order not to lose the dental implant (4). Esthetic concerns of the patient are at most important and the implants which are immediately loaded have a greater advantage as well. Nowadays there is an increase in the demand for esthetics when the patient is completely edentulous or partially edentulous For all these reasons immediate loading protocol has been introduced in the field of dentistry (5). Immediate loading is defined as involving the placement of a restoration within 48 hours of implant placement (6). It can be applied if sufficient primary stability is achieved for single tooth restoration. An immediate loading of a prosthetic superstructure over the dental implants placed, either during the day of surgery or 1-2 days after the surgery as per patients convenience (7). There are many studies which have shown success in immediate loading. One way of giving provisionalization is through loading the implant immediately, there are many ways of giving a temporarization for dental implants in the literature (8). They can be either removable or semifixed, or fixed provisionalization. The Major requirements for a precisely fitting implant is proper treatment planning and clinical

procedures. The traditional technique involves fabricating a removable partial denture, or flipper, to replace the missing tooth (9). Another technique for temporisation consists of utilizing an abutment that is covered with a cylindrical acrylic material (10). The preparation of a plastic abutment can transfer micro-vibrations and treat the implant body. Provisional restoration establishment for the time being, pending a permanent restoration. It is a fixed (or) removable prosthesis designed to protect, enhance, Esthetic stabilization or function for a limited period, after which it is replaced by a definitive prosthesis (11). The advantages of giving any type of provisionalization is not only the patient's psychological factor but also helps in healing of the soft tissue and to achieve a better contour. Temporary restorations should be able to establish occlusal function by establishment of maxilla-mandibular region (12). It should possess inherent strength to bear minimal occlusal forces. The temporization techniques utilized may be direct or indirect depending on the complexity of the case, esthetic requirements, length of time for which provisional restoration is needed. Materials used for temporization include methacrylate resins, acrylate composite. Each of these materials provide superior esthetics compared with other materials. When flexural strength is important, bis acryl resins might be preferable to meth acetylates (13). Choosing materials with fine particle size increases the ability to polish the cured material, Improving Smoothness (14). The choice of the temporary restoration may vary from patient to patient. This is possible only when an individual has adequate knowledge about the different techniques and the best provisionalization techniques (15). Immediate loading protocols for dental implants have a lot of advantages by reducing the time, promotes gingival healing and mainly helps in psychological satisfaction of the patient (16). Previously our department has published extensive research on various aspects of prosthetic dentistry (17–27), this vast research experience has inspired us to research about this study which aims to analyze the knowledge, awareness and practice among dental practitioners and students regarding the provisionalization technique and the method used during the dental implant placement.

II. MATERIALS AND METHODS

The study setting was through an online survey among dental students and professionals. The online survey is time saving and a majority of the population can be covered. There were two hundred and sixteen participants involved in this online survey. The simple random sampling was done as a sampling method. The questionnaire consisting of seventeen questions were posted for an online survey using google forms. The validity of the questionnaire was cross verified by experts. The data were extracted and tabulated in MS Excel sheets. The data obtained were subjected to statistical analysis using SPSS software. The descriptive data obtained were plotted in bar graphs. The statistical test used for analysis was correlation analysis done by Chi Square test using SPSS software. Age, Gender, Sex were considered as independent variables.

III. RESULTS

A total of two hundred and sixteen participants participated in the Survey where 55.45% were between the age group of 17-25 years and 44.55% were above 25 years (figure 1). Out of these 53.08% were undergraduates and 46.92% were Postgraduates (figure 2). In this survey, most of them 58.29% have not placed dental implants and 41.71% have placed dental implants (figure 3). 65.4% chose to give fixed temporisation and 34.60% chose to give removable temporisation after dental implant placement (Figure 4). 76.78% of the participants say that they don't provide temporary crowns for all the dental implants placed and 23.22% opt to provide temporary crowns for all the dental implants (figure 5). 56.40% of the participants said that they will provide temporisation for upper anterior region, 30.81% preferred to give temporisation for lower anterior and 12.80% of participants preferred to give temporisation for lower posterior region (figure 6). 61.14% of participants preferred removable partial acrylic denture and 38.86% of participants preferred Essix appliance (figure 7). 61.61% of participants were not aware of providing immediate temporisation and 38.39% were aware of immediate temporisation (figure 8). Among the participants, 58.29% have done stage II dental implant procedure and 41.71% have not done Stage II dental implant procedures (figure 9). 48.82% of the participants felt that aesthetic and gingival contour will be improved after temporisation, whereas 17.54% and 33.65% felt that only gingival contour and aesthetic will improve respectively (figure 10).

Most of the participants (59.72%) are aware that temporisation for dental implants is done immediately after dental implant placement, whereas 33.18% say early loading and 7.109% say delayed loading (figure 11). Most of the fixed

appliance preferred was arch wire supported Pontic (33.65%), Cast metal Framework (11.85%) and resin bonded Pontic (54.50%) (figure 12). 65.40% are aware that primary stability is more important and plays an important role in giving temporisation whereas 34.60% are not aware (figure 13). The materials of choice for providing temporisation were CAD CAM temps (29.86%), Resin 26.07%, and Prottemp (44.08%) (figure 14). Most of the participants are aware that screw retained is preferred as mode of retention 52.61%, 33.65% preferred cement retained, and 13.74% as both (figure 15).

In this study correlation have been done between the participants who have done stage II dental implant restoration and some parameters like type of temporisation method, choice of removable appliance used, immediate temporisation, temporisation as a choice for all implants, preferred site for temporisation, choice of tooth fixed supported pontic, time of providing temporisation, advantages of temporisation, role of primary stability, mode of retention and material of choice which are depicted in the bar graphs (figure 16-24).

IV. DISCUSSION

Nowadays, the demand for temporization from the patient is increasing. Likewise immediate implants placement has also been popular which reduces the time, cost, appointment for the patient (28). Most importantly when a patient walks out of the clinic with a tooth, it plays a vital role in the socialization as well as the emotional hit of the patient. In our present study, 52.7 % of the practitioners or undergraduates have placed implants and have adequate knowledge regarding the techniques used for temporization for a dental implant (29).

However the success of the dental implants, immediate loading or delayed loading depends on various factors and the skills of the dental surgeon and prosthodontist. The high success rate of dental implants in conventional methods of loading is seen even during an immediate loading protocol. There are several factors which have to be discussed before giving a provisionalization for an implant (30).

There are various methods of option like removable, fixed provisionalization. The method of which is chosen depends upon the clinical condition of the patient. Initially the bone width has to be sufficient enough to hold the soft tissue as well as to avoid grafting procedure . The primary stability is a key for long term success in dental implantology. Inadequate stability will lead to failure of the dental implant. Depending upon the stability of the implant even an immediate loading can be planned (31). According to this study, most of the practitioners have been restoring dental implants and choose fixed options as a choice for temporization.

The next factor for achieving a good primary stability is choosing a wider diameter implant. Few authors have suggested placing larger diameter implants in case of planning for an immediate loading for that restoration (32). Few suggest placing a wider diameter for an immediate placement, however, there will be risk of failures associated with it. Temporization is a standard procedure used to create provisional restorations that are required in the short or medium-term (33). Provisional restorations are frequently needed in preparation for more permanent restorations like dental implants, crowns, and bridges. The Essix Appliance is used to maintain a previous orthodontic result or to simply prevent undesirable movement of the teeth (34). The upper retainers are most often Essix Appliances – clear plastic shells that cover the teeth. In previous articles and with our present study majority of the population were discussed to give temporary crowns only after the dental implants because they have the primary stability to withstand dental implants (35).

Thus temporisation is required for better soft tissue healing and avoiding stage II procedures and most of the postgraduates and undergraduates are aware of the importance of providing the temporisation of dental implants. This survey was circulated on a small population and if done on a large population, the results would differ. A clinical trial would have given a better understanding on the use of Temporisation techniques.

In our present study, most of them are practicing fixed temporization over removable. Essix appliance is a removable appliance of choice in removable temporization (36). Most of them, temporize only the anterior implant than the posterior and choose screw retained restoration over cement retained. Based on the analysis, awareness and practice for provisionalization for the practitioners is quite adequate.

The present study has limitations, such as the population included in the survey was short and is in a specific population. Furthermore studies can be conducted so that we can conserve our needs and can plan to coexist. Many

similar surveys can be conducted to see different options among different sets of population and their level of awareness.

V. CONCLUSION

From this survey, it is evident that most of the undergraduates and postgraduates are aware of the importance of providing temporisation for dental implants. Screw retained crowns are most preferred and protemp was the material of choice to provide temporization. However more clinical training and hands-on sessions have to be provided for better understanding of the importance of soft tissue healing around dental implants.

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GRAPHS

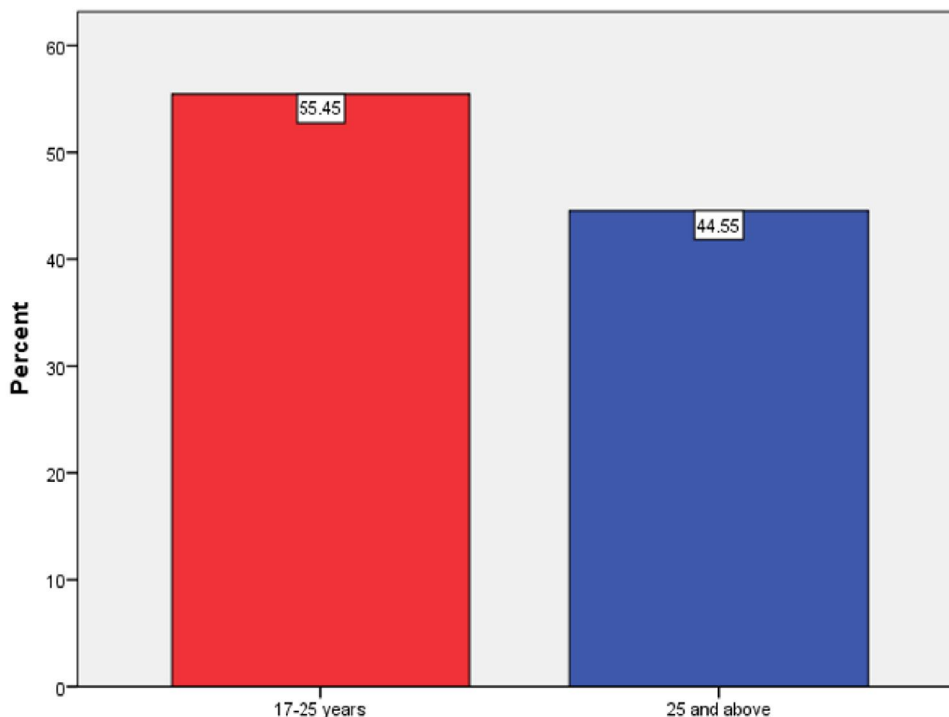


FIGURE 1: This bar graph shows the age scale of the respondents were 55.45 % of them between the 17-25 age group, 44.55% of the participants were above 25 years of age group. X axis represents the age and Y axis represents the percentage of responses.

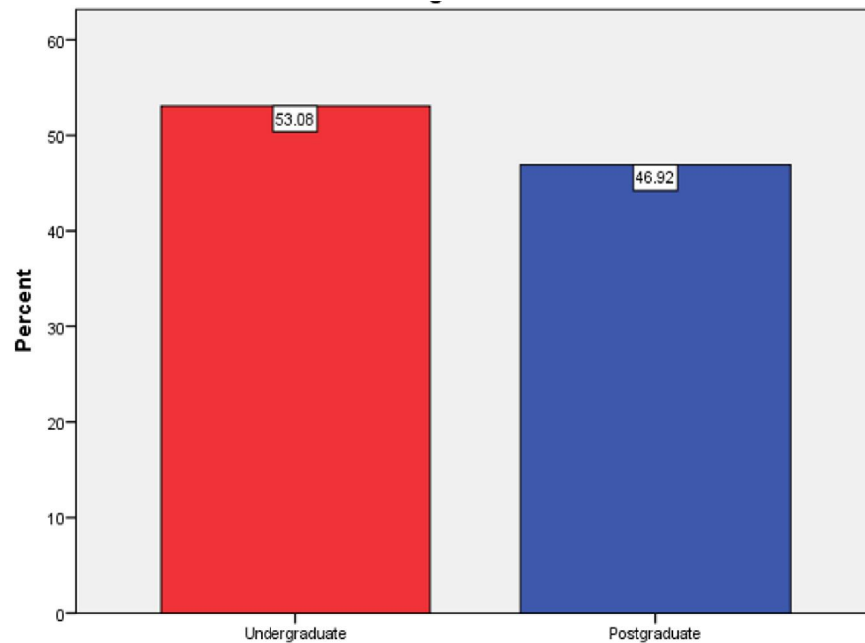


FIGURE 2: This bar graph shows the level of education of participants, 53.08% of them were undergraduates and 46.92% of the participants of the postgraduate. X axis represents level of education and Y axis represents the percentage of responses.

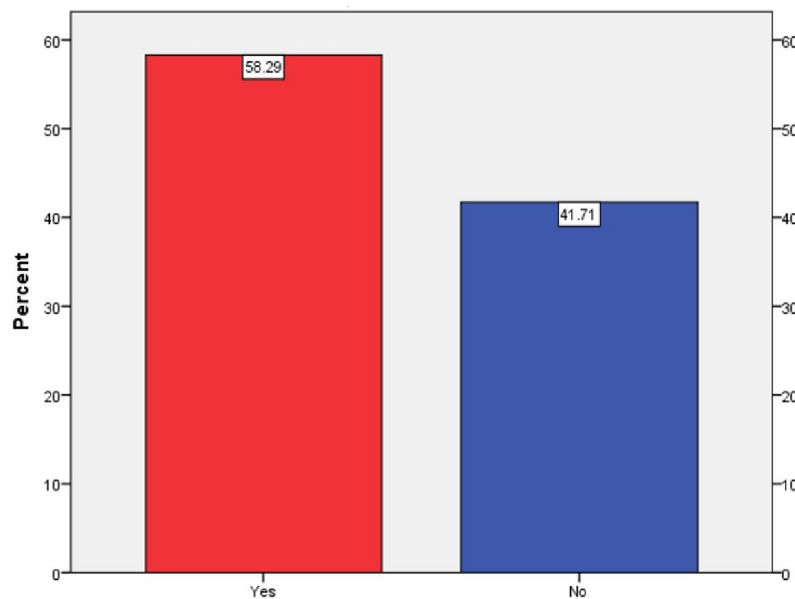


FIGURE 3: This bar graph shows 58.29% of the respondents who have placed dental placements and 41.71 % have not placed dental implants. X axis represents the implant placement and Y axis represents the percentage of responses.

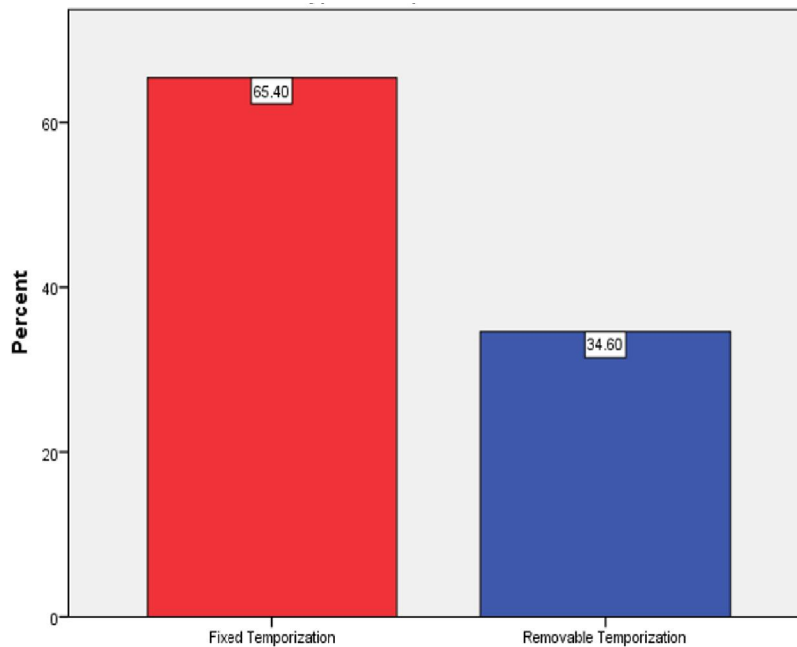


FIGURE 4: This bar graph shows the type of temporization used by the participants were 65.40% used fixed temporization and 34.60% used removable temporization. X axis represents the type of temporization and Y axis represents the percentage of responses.

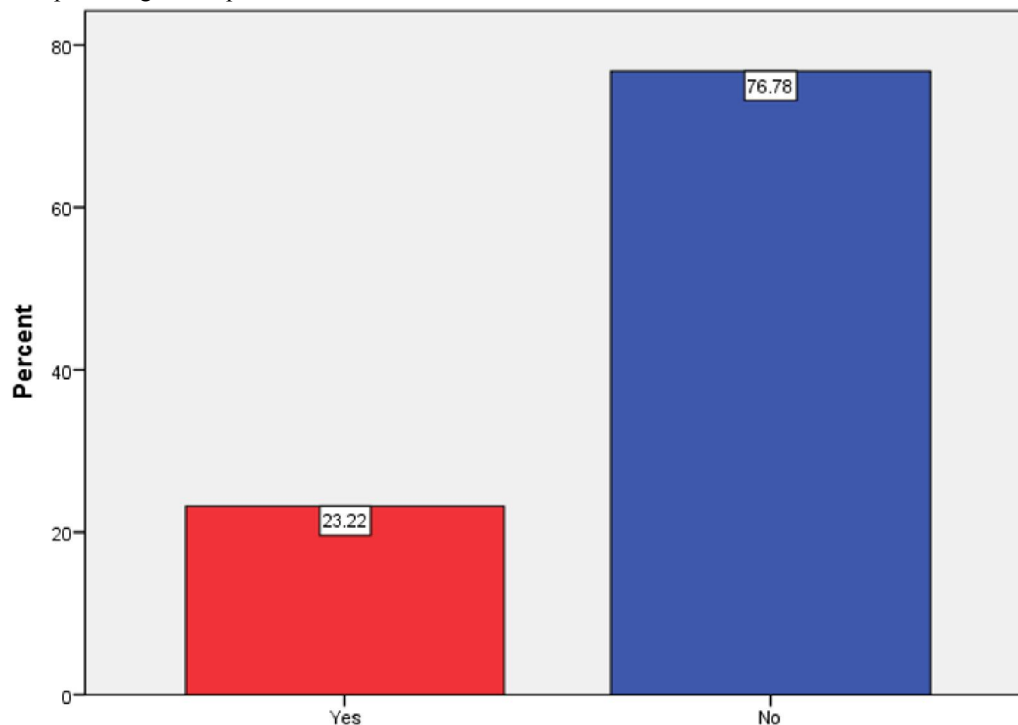


FIGURE 5: This bar graph shows that 76.78% of the participants don't give temporization for the implants placed and 23.22% do temporization. X axis represents the response for providing temps for all implants and Y axis represents the percentage of responses.

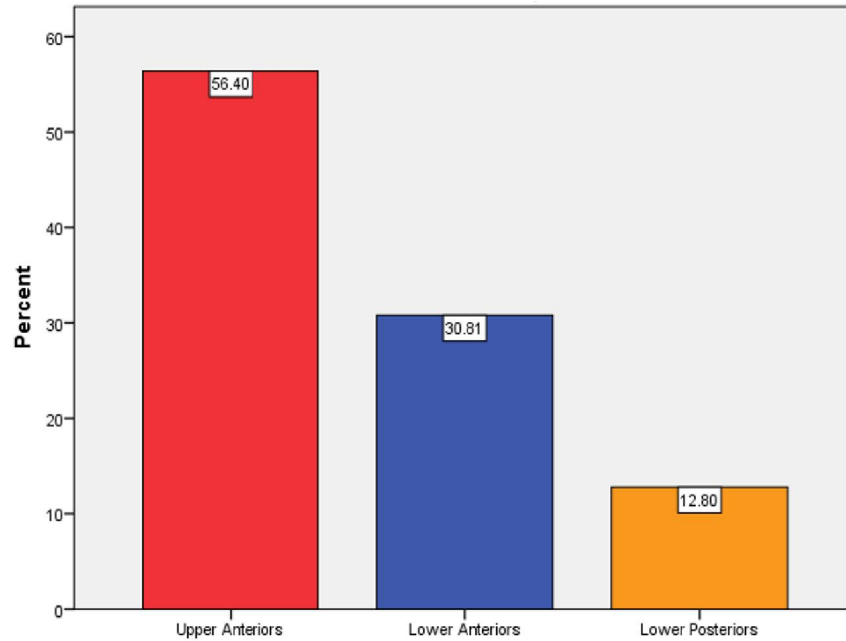


FIGURE 6: This bar graph shows preferred sites for Temporization given by the participants. 56.40% preferred for upper anteriors, 30.81% of the participants preferred for lower anteriors and 12.80% of the participants preferred for lower posteriors. X axis represents the preferred site for Temporization and Y axis represents the percentage of responses.

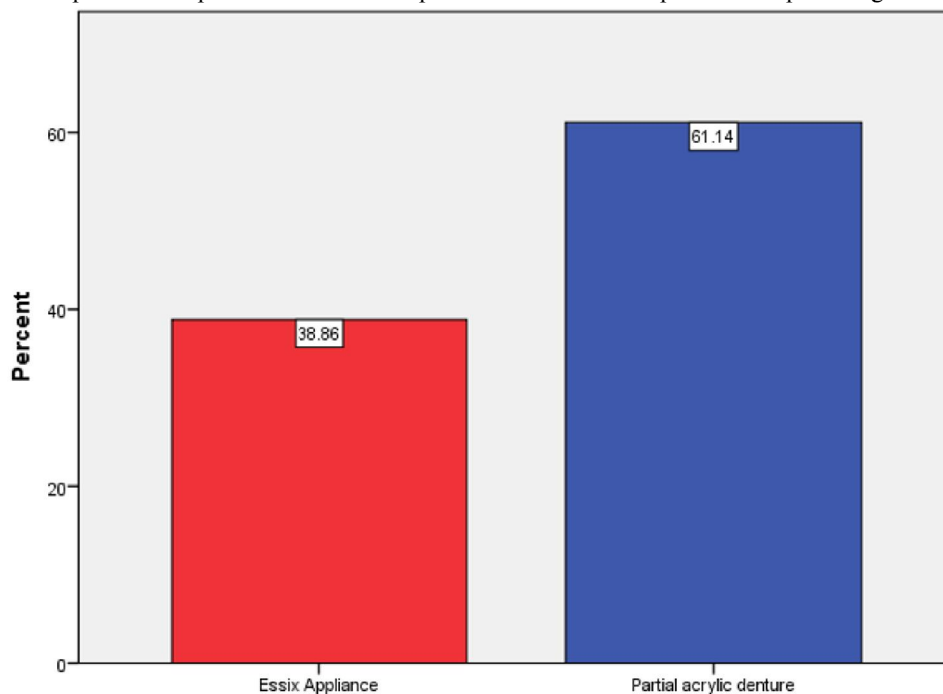


FIGURE 7: This bar graph shows the removable type of appliance used as a temporization for dental implants. 38.86% of the participants choose to give Essix appliances, 61.14% of the participants choose to give partial acrylic denture. X axis represents the removable type of appliance and Y axis represents the percentage of responses.

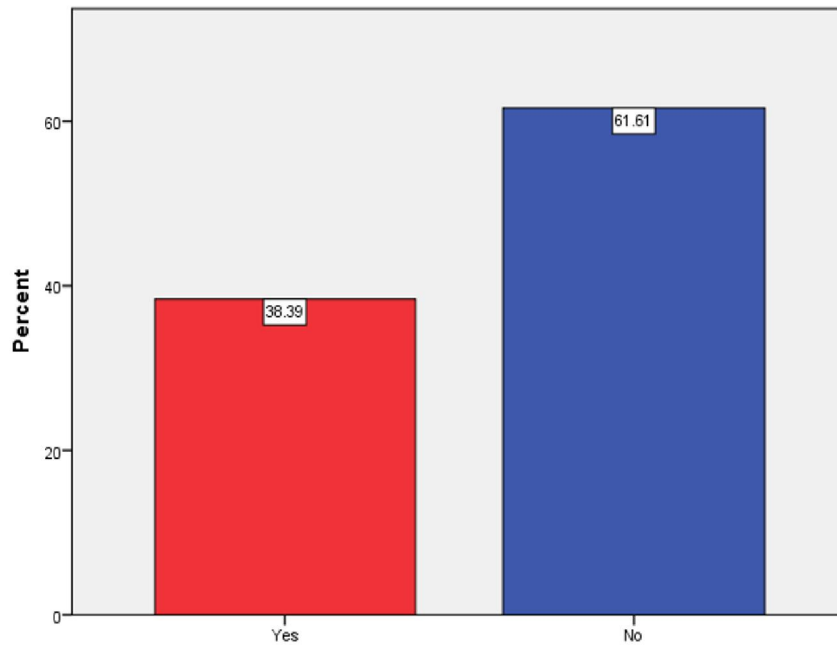


FIGURE 8: This bar graph shows that 38.39% of participants agreed to do temporization immediately and 61.61% did not agree. X axis represents the temporization and Y axis represents the percentage of responses.

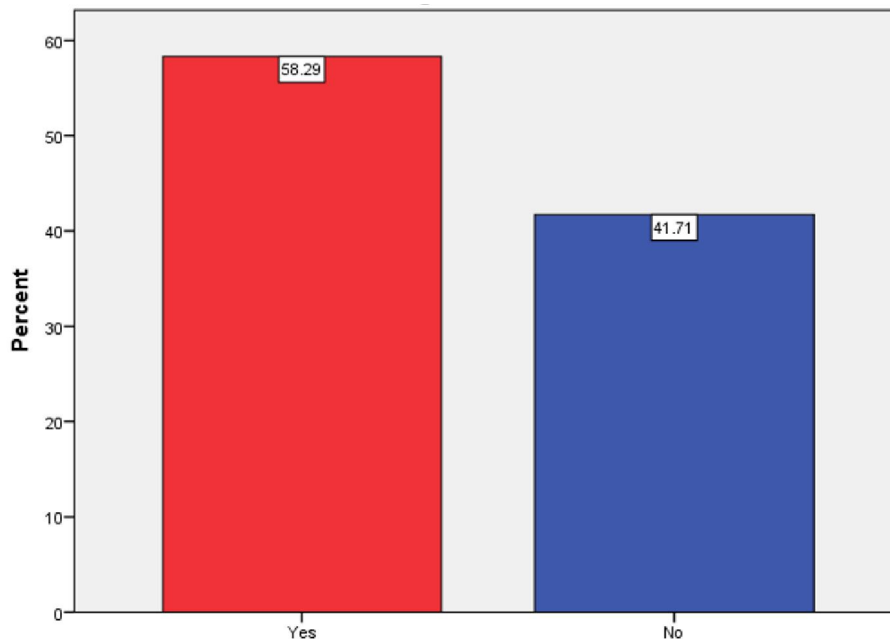


FIGURE 9: This bar graph shows that 58.29 % of participants have performed Stage II and 41.71% have not performed Stage II. X axis represents the dentist who have performed Stage 2 and Y axis represents the percentage of responses.

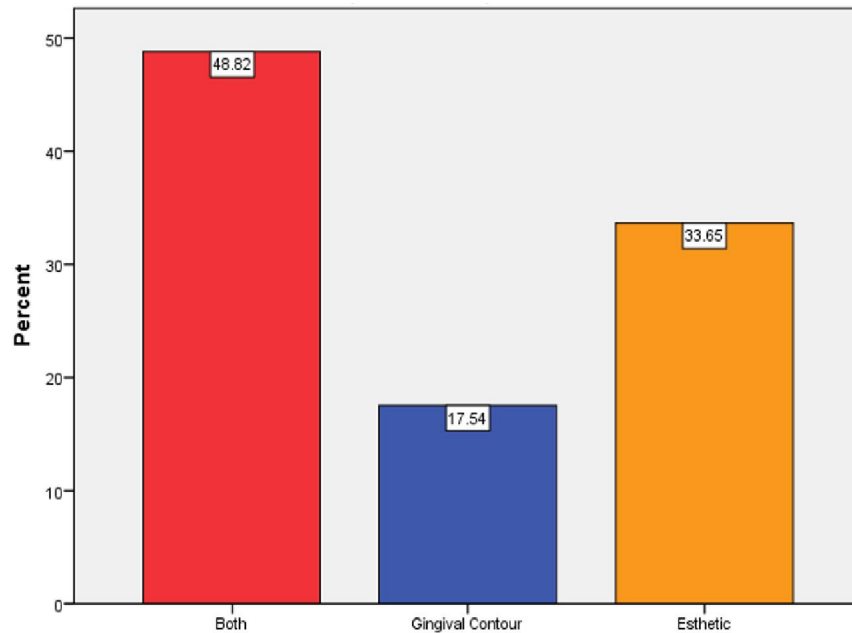


FIGURE 10: This bar graph shows the awareness of participants in providing temporization for dental implants. 33.65 % are aware that esthetics will improve, 17.54% are aware that gingival contour will improve and 48.82% are aware that both esthetics and gingival contour will improve. X axis represents the advantage of doing temporization and Y axis represents the percentage of responses.

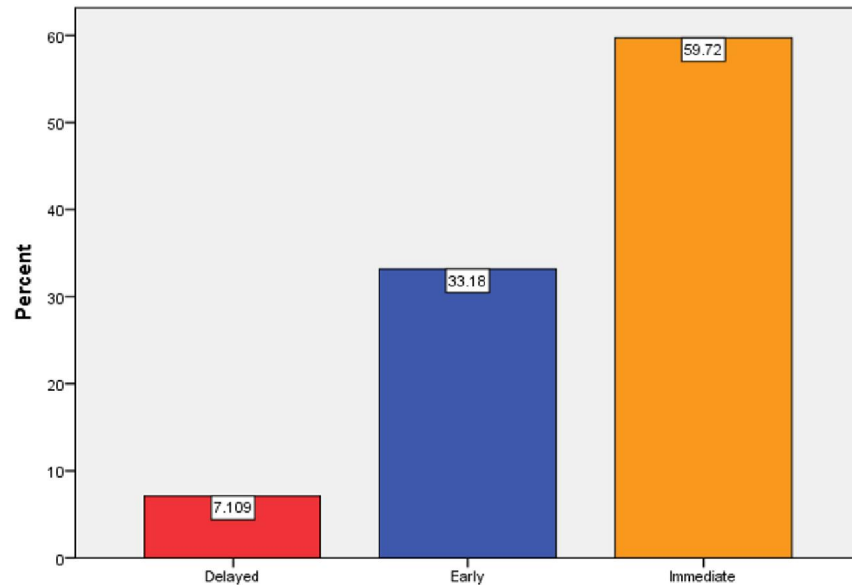


FIGURE 11: This bar graph shows the awareness of duration of giving temporization among the participants. 7.109% of the participants agreed for delayed loading, 33.18% of the participants agreed for early loading and 59.72% of the participants agreed for immediate loading. X axis represents the time period for providing temporization and the Y axis represents the percentage of responses.

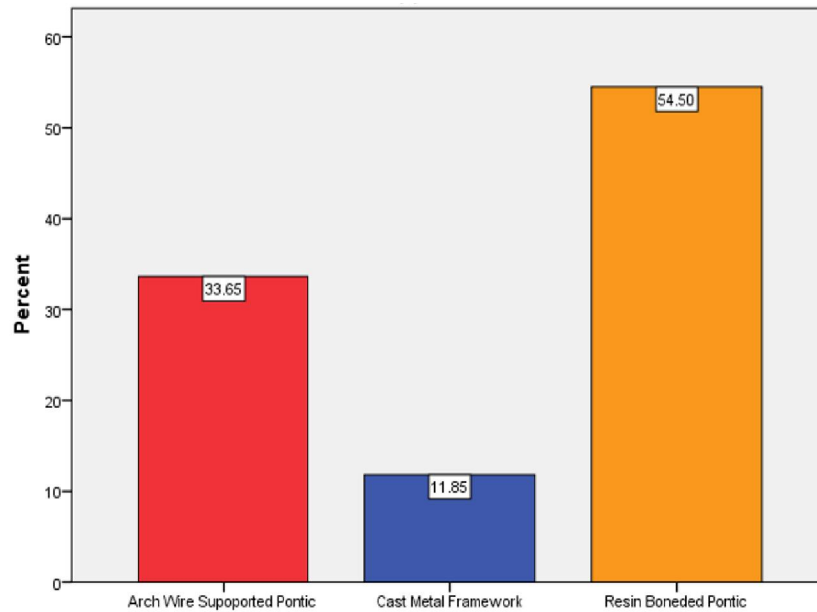


FIGURE 12: This bar graph shows the type of fixed appliance of choice for temporization by the participants. 33.65% chose arch wire supported pontic, 11.85% of the participants chose cast metal framework, 54.50% chose resin bonded pontic. X axis represents choice for fixed supported pontic and Y axis represents the percentage of responses.

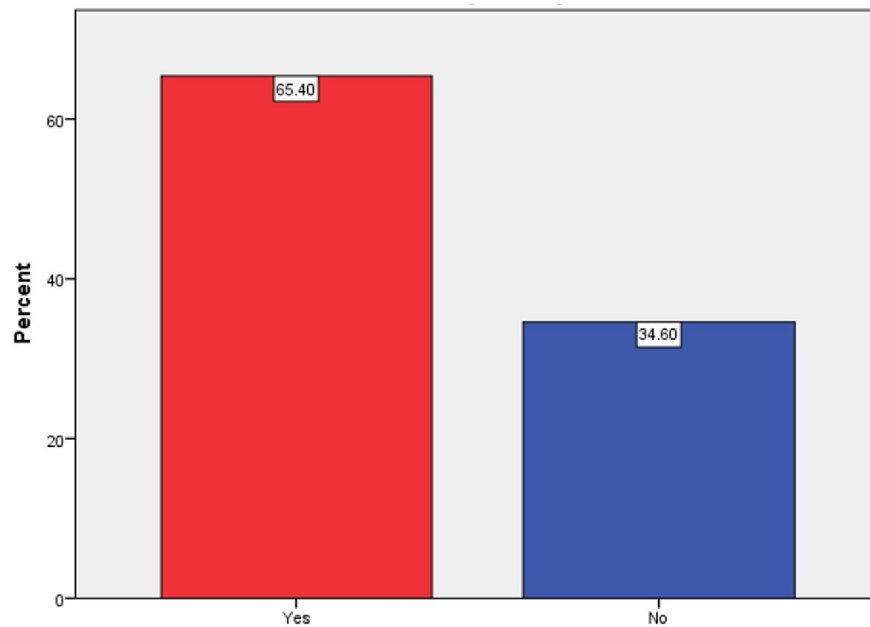


FIGURE 13: This bar graph shows awareness in the role of primary stability during the temporization of dental implants. 65.40 are aware of primary stability and 34.60 of the participants were not aware. X axis represents the role of primary stability and Y axis represents the percentage of responses.

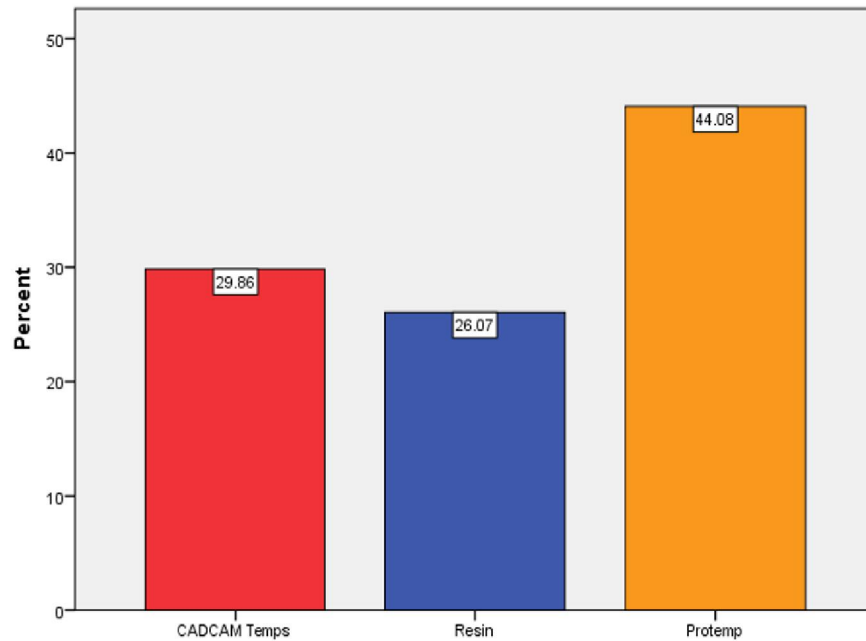


FIGURE 14: This bar graph shows the awareness of material of choice used during temporization of dental implants. 29.86% opted for CAD CAM temps, 26.07% opted for Resin, and 44.08% opted for protemp. X axis represents material of choice and Y axis represents the percentage of responses.

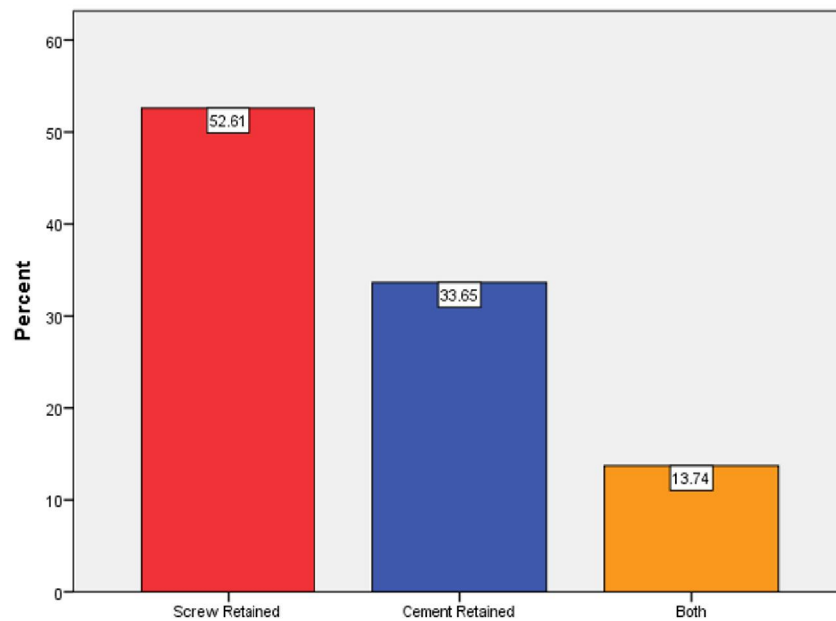


FIGURE 15: The bar graph shows the awareness of mode of retention used for temporization of dental implants. 52.61% are aware of Screw retained crowns, 33.65% of the participants are aware of cement retained crowns and 13.74% of the participants agreed both types of crowns used as the mode of retention. X axis represents the mode of retention used and Y axis represents the percentage of responses.

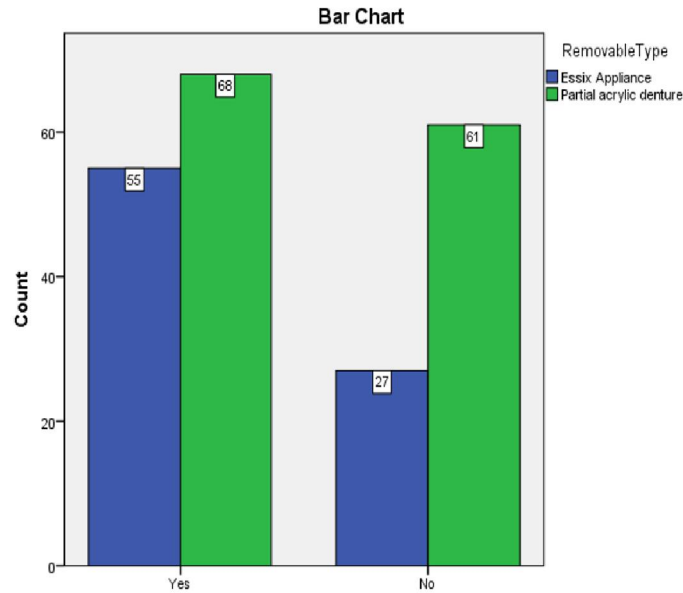


FIGURE 16: The bar graph represents the association between the participants who have performed stage II procedures and the choice of removable type of appliance among the respondents. X axis represents the participants who have done stage II and Y axis represents the type of removable appliance used for temporization. Blue colour denotes Essix appliance and Green denotes removable partial denture. Majority of the respondents who had done stage 2 procedure preferred partial acrylic denture. (Chi square test: p value = 0.027 - which is statistically significant).

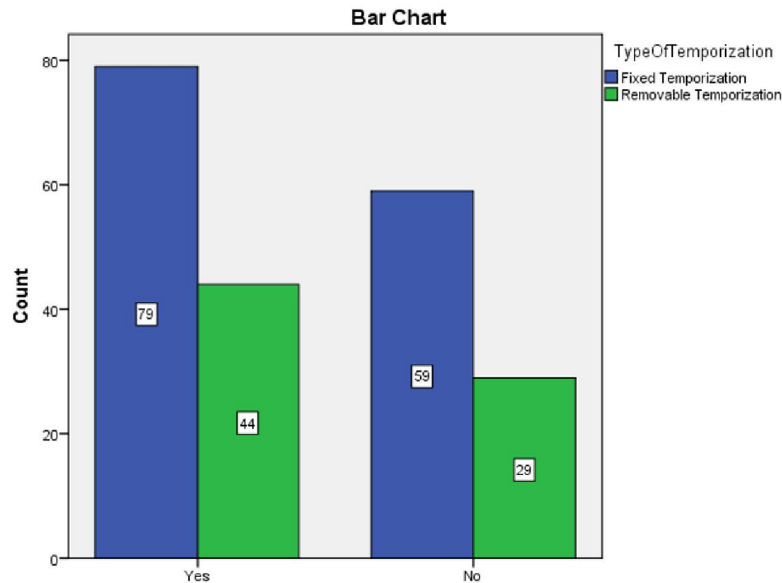


FIGURE 17: The bar graph represents the association between the participants who have performed stage II procedures and the choice type of temporization preferred among the respondents. X axis represents the stage II procedure and Y axis represents percentage of responses. Blue colour denotes Fixed temporization as an option and Green denotes removable temporization as an option. Majority of the respondents who had done stage 2 procedure preferred fixed temporization as an option. (Chi square test, p value = 0.392 statistically not significant)

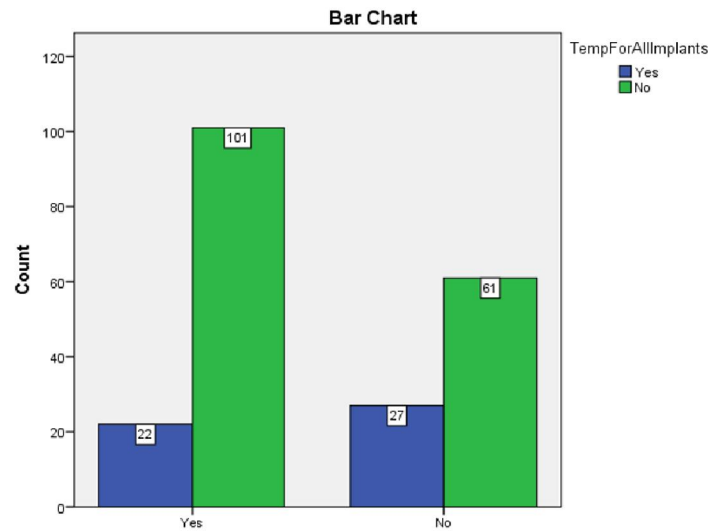


FIGURE 18: The bar graph represents the association between the participants who have performed stage II procedures and the choice of performing temporization for all the dental implants being placed among the respondents. X axis represents the stage II procedure and Y axis represents percentage of responses. Blue colour denotes respondents prefer temporization for all the implants placed and Green denotes respondents don't prefer temporization for all implants . Majority of the respondents who had done stage 2 procedure prefer not to provide temporization for all the dental implants placed. (Chi square test, p value = 0.023 statistically significant)

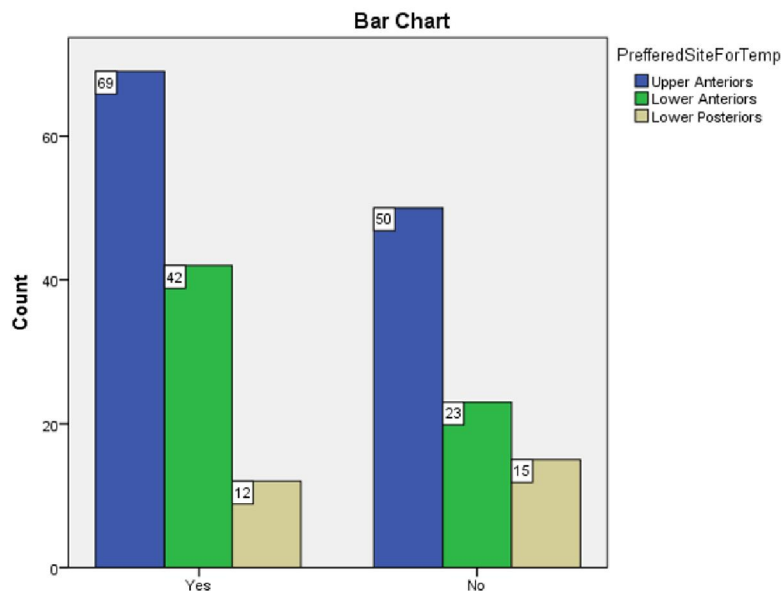


FIGURE 19: The bar graph represents the association between the participants who have performed stage II procedures and the preferred site for performing temporization among the respondents. X axis represents the stage II procedure and Y axis represents percentage of responses. Blue colour denotes upper anterior, Green denotes lower anteriors and yellow denotes lower posterior. Majority of the respondents who had done stage 2 procedure prefer upper anterior as a site for providing temporization than other sites. (Chi square test, p value = 0.202 statistically not significant)

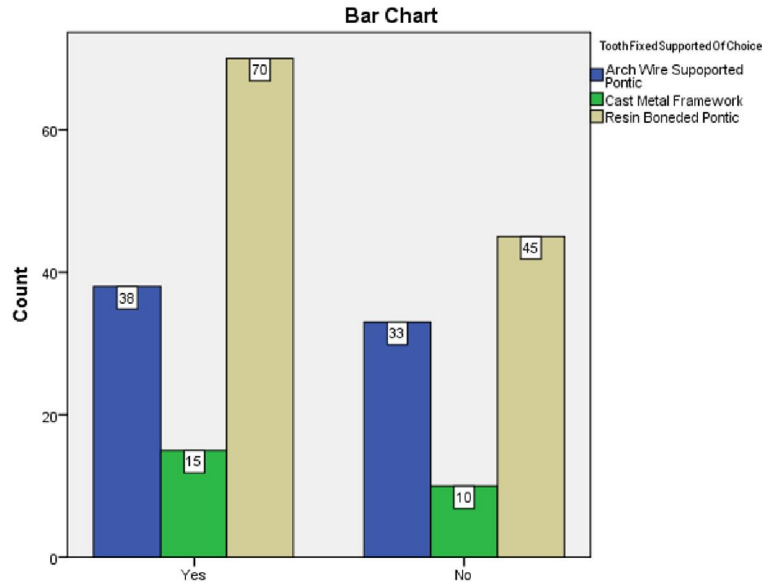


FIGURE 20: The bar graph represents the association between the participants who have performed stage II procedures and the preferred tooth fixed supported pontic as a choice among the respondents. X axis represents the stage II procedure and Y axis represents percentage of responses. Blue colour denotes arch wire supported pontic, Green denotes cast metal framework and yellow denotes resin bonded pontic. Majority of the respondents who had done stage 2 procedure prefer resin bonded pontic over arch wire and cast metal framework. (Chi square test, p value = 0.604 statistically not significant)

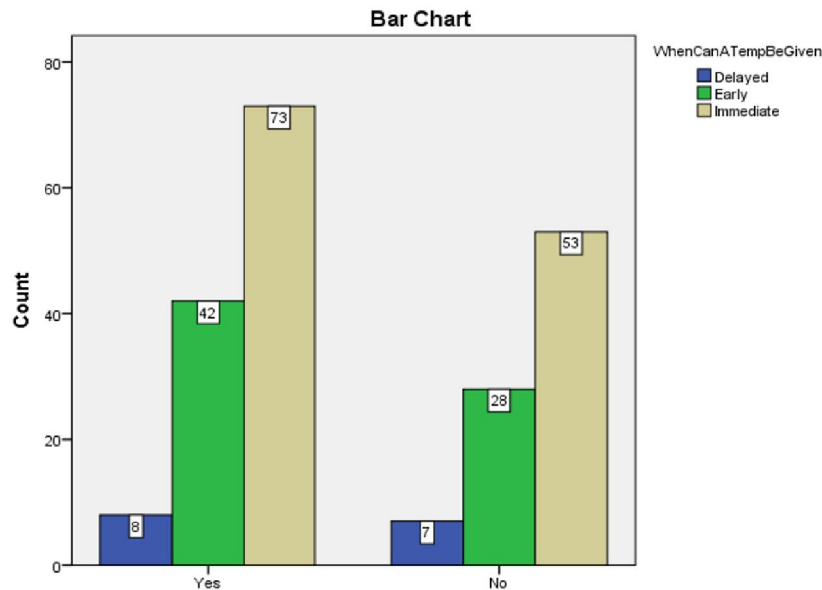


FIGURE 21: The bar graph represents the association between the participants who have performed stage II procedures and the time of temporization done among the respondents. X axis represents the stage II procedure and Y axis represents percentage of responses. Blue colour denotes delayed loading, Green denotes early loading and yellow denotes immediate loading. Majority of the respondents who had done stage 2 procedure preferred immediate temporization than early and delayed. (Chi square test, p value = 0.886 statistically not significant)

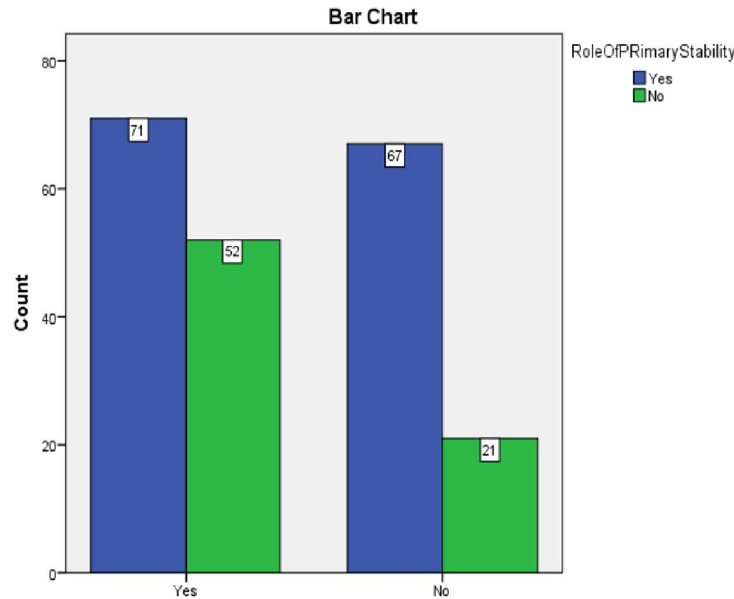


FIGURE 22: The bar graph represents the association between the participants who have performed stage II procedures and the role of primary stability among the respondents. X axis represents the stage II procedure and Y axis represents percentage of responses. Blue colour denotes primary stability is important for temporization, Green denotes primary stability is not important for temporization. Majority of the respondents are aware that primary stability is important . (Chi square test, p value = 0.004 statistically significant)

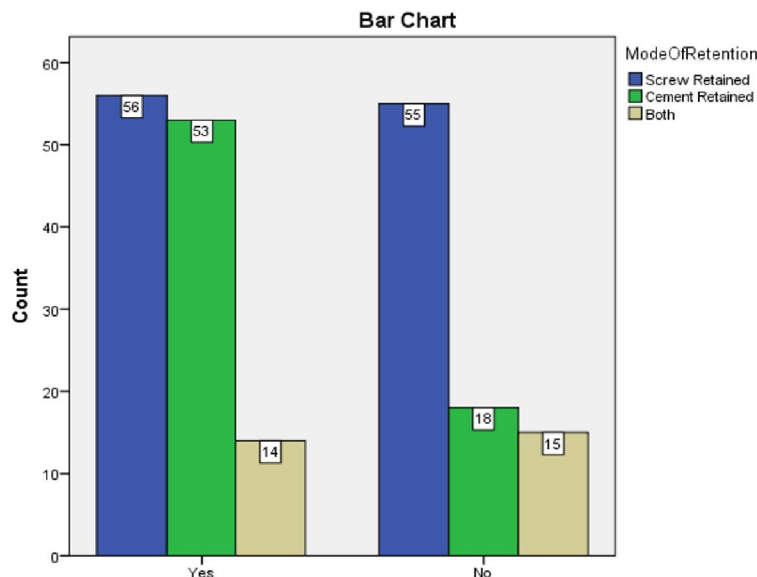


FIGURE 23: The bar graph represents the association between the participants who have performed stage II procedures and the mode of retention preferred among the respondents. X axis represents the stage II procedure and Y axis represents percentage of responses. Blue colour screw retained, Green denotes cement retained and yellow denotes both. Majority of the respondents who had done stage 2 procedure preferred screw retained restoration as a mode of retention than cement retained. (Chi square test, p value = 0.003 statistically significant)

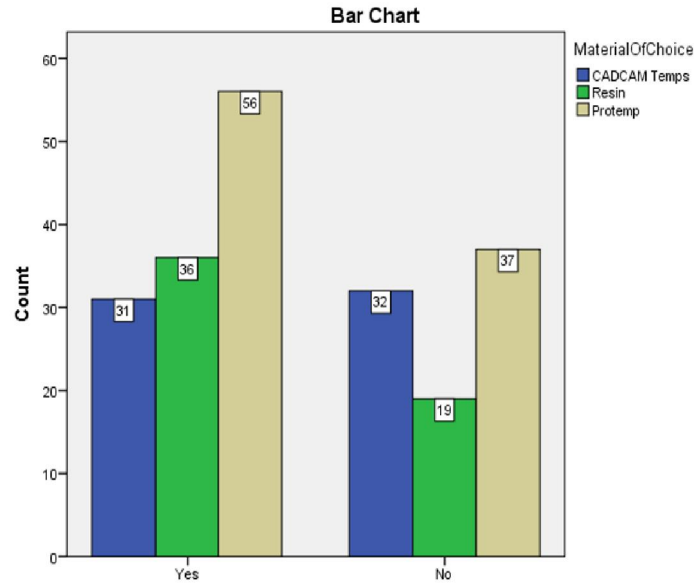


FIGURE 24: The bar graph represents the association between the participants who have performed stage II procedures and material of choice preferred for temporization among the respondents. X axis represents the stage II procedure and Y axis represents percentage of responses. Blue colour denotes CAD CAM temps, Green denotes Resin and yellow denotes Protemp. Majority of the respondents who had done stage 2 procedure preferred the use of Protemp as the material of choice than CAD CAM temp resin. (Chi square test, p value = 0.003 statistically significant)