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Knowledge Attitude and Practice Survey on The Various Impression Techniques for Custom Made Post Among Specialist and Dental Practitioners

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ABSTRACT

Introduction: A post and core crown is a form of dental restoration used when there isn't enough healthy tooth tissue left to support a traditional crown. A post is cemented into a prepared root canal to hold a core repair and the final crown in place. The advantage of putting a post into a root canal is that the crown is more likely to remain in place.

Materials and method: A well-structured questionnaire comprising 13 questions covering the socio-demographic information, knowledge, attitude, perception was framed, administered and circulated to college students through an online survey link. The sample size was 100 undergraduate students and postgraduate students. The questions were carefully studied and the corresponding answers were marked by the participants.

Result: Survey on the various impression techniques for custom made post's gave the result as 53% of the population wall between the age group of 25-30 years, 27% of the population between the age group of 20-25 years and the rest were about 30 years. Among the total population 59% preferred composite resin 30% preferred GIC where the rest preferred amalgam as the core foundation. Chi square test shows p value as 0.037 ($p < 0.05$). Hence it is statistically significant.

Conclusion: In conclusion, it was evident that the majority of the participants were aware of the impression materials used and practiced it in their daily practice. Most of them stated the use of a prefabricated post system made of composite resin or ceramic materials necessitates root canal preparation to the post's size and shape. And most of the practitioners preferred composite resin as core foundation.

Keyword: *core, Eco friendly, impression technique, root, innovative technology, post, root canal*

1. INTRODUCTION

When there isn't enough good tooth tissue remaining to support a conventional crown, a post and core crown is the dental restoration of choice. To hold a core repair and the final crown in place, a post is cemented into a root canal that has been prepared.[1] The benefit of inserting a post into a root canal is that the likelihood of the crown remaining in place is increased. However, there are disadvantages: there is a chance of perforation during the preparation for the post space; a post may also increase the risk of a tooth breaking; it makes it much more difficult to perform orthograde root canal therapy; and, finally, it is extremely harmful and requires the removal of unnecessary tooth tissue.[2,3]

Custom-made posts are most often found in canals with a non-circular cross section or extreme taper. Root weakening and perforation can result from enlarging canals to a pre-formed post. [4]Fixed prosthodontic clinicians strive for easy fabrication and precise fitting of custom-made posts. The bead-brush technique for fabricating the resin pattern in vivo can waste time and effort. Fabrication of custom-made posts is encouraged and streamlined using the resin injection technique. [5]This is accomplished by employing a distribution tip and gun designed for 3M ESPE Vitremer glass ionomer restorative material

(3M ESPE dental products, D-82229 Seefeld, Germany) (Figure 1). The resin is mixed and loaded into the delivery tip, and the resin is injected into the post space using the gun.[6]

The earliest post systems used to successfully recover endodontically treated teeth were custom fabricated post systems made of casting metal. Custom post-and-cores have long been regarded as the gold standard for restoring structurally damaged endodontically treated teeth.[5] They are an essential treatment modality in modern dental practise, are common among dentists, and have been considered the gold standard for restoring structurally compromised endodontically treated teeth.[7]

In the direct technique, a prefabricated plastic "burnout" post is inserted into the post space to make a resin design, which is then built up with resin to the right dimensions.

After being detached from the tooth structure, the pattern post and center are transported to the dental laboratory. The technician can repeat the post and core using metal alloys or zirconium. [8]

In the indirect procedure, an impression of the gingiva, surrounding teeth, and post room is taken. The appropriate post is then created in the dental laboratory using the impression. To capture the post space, a fluid impression substance will be placed inside the root canal using a specialized file called a Lentulo file carrier.

It is challenging to form a firm conclusion concerning these procedures because of the conflicting findings of several investigations. Although some tests found no appreciable difference in fracture resistance between the placement of several posts vs a single fibre post or cast metal post, it appears that the multiple-post approach results in a more favorable fracture pattern.[9] Our team has extensive knowledge and research experience that has translated into high quality publications[10–19][20–29]

Hence the aim of study was to evaluate the various impression techniques for custom made posts

2. MATERIALS AND METHOD:

College students were provided with nine well-structured questionnaires covering socio-demographic information, knowledge, attitudes, and perceptions. These questionnaires were designed, managed, and distributed via online survey links. A simple random sampling method was applied, selecting 100 undergraduate and graduate students. The questions were carefully reviewed, and appropriate answers were selected by the participants.

The data was collected, organized in Excel sheets, and analyzed statistically using SPSS software. Descriptive statistics were performed, and a chi-square test was used to compare responses. Each output variable was recorded as ordinal data and represented through pie charts. The independent variable consisted of college students, while the dependent variables included knowledge, attitude, practice, and perception.

S.No	QUESTIONNAIRE
1.	Are you a general practitioner or a specialist in the endodontic field?
2.	How many years of experience do you have?
3.	How do you treat post and core cases?
4.	What is the treatment of choice if more than 50% of the crown is absent ?
5.	Do you prefer pre fabricated or custom made post?
6.	If you had chosen pre fabricated post, what is your pre fabricated post choice?
7.	What is your preferred core foundation?
8.	What do you feel is the downfall of post treatments?
9.	What is the survival rate of postendodontic restorations of your choice?

Table 1: Questionnaire issued for the survey

3. RESULTS

Survey on the various impression techniques for custom made post's gave the result as (Figure 1) 53% of the population wall between the age group of 25-30 years, 27% of the population between the age group of 20-25 years and the rest were about 30 years. (Figure 2) Among the total population 56% were male and 44% were female. 57% of all the population were endodontists whereas 43% were general practitioners. (Figure 3) 71% of the respondents felt that wire reinforcement was necessary for elastomeric impressions whereas 29% do not agree. (Figure 4) 72% of the population placed the post with zinc phosphate, whereas the rest with GIC.

(Figure 5) Among the total population 58% felt that dislodgement of post, 20% felt that infection whereas the rest felt that fractured post was one reason for the downfall of post treatment. (Figure 6) Correlation analysis was done between gender and the material used to place the posts. 44% of the males and 26% of females preferred zinc phosphate, whereas 18% of females and 11% of males preferred GIC. (Figure 7) Correlation analysis was done between gender and the necessity of wire reinforcement. 35.64% of males and females felt that it was necessary, whereas 19% of males and 9% of females did not find it necessary.

4. DISCUSSION

The survey findings reflect variations in knowledge, attitudes, and practice between dental practitioners and specialists regarding impression techniques for custom-made posts. Although a small number of practitioners demonstrate proficiency in advanced techniques, variations in material use and procedural technique reflect a need for standardized guidelines and further training. Another study reported that the use of prefabricated or custom posts was proven to have a significant impact on the survival of pulpless repaired premolars over the course of a three-year experiment. This donation was more successful for DT Light Posts than Stick Posts. Regardless of the restorative approach, protecting at least one coronal wall significantly decreased the failure rate.[30]

The device was constructed using a metal base and three parallel guideposts, according to a previous study done by the author. The acrylic resin trays were attached to the individual metal plates with additional acrylic resin before the system was installed. The custom tray was filled to the level determined by the three spacers on each post, and the master die, which was fastened to a metal plate, was then dropped into it.[31]

This research supports the use of polyether for totally edentulous multi-implant experiences, according to another study. The stiffness of polyether prevents the sensory coping from unintentionally shifting within the implant impression. However, it is more challenging to remove the impression from inside the mouth after using polyether to create an impression of a partially edentulous arch.[32]

In a prior study, it was found that the fracture strength of root-filled teeth without a post was comparable to that of teeth with a post when coronal structure was present. Ferrule root reinforcement can prevent endodontically treated teeth from breaking by balancing and more evenly spreading the pressures caused by the post, according to the results of a prior study.[33]

Another study stated that the person cast post-restored roots had higher fracture strength than prefabricated post-restored roots with composite resin core or composite resin. Since no root fractures were observed in the technique using prefabricated posts and composite resin with or without remaining coronal structure or composite resin with coronal, this technique is acceptable. [34]

5. LIMITATIONS AND FUTURE SCOPE:

Although the study was conducted by following the protocols there are certain limitations in this study like less sample size, this is an online survey which may lead to respondents bias, error in sampling and selection of respondents, survey fatigue.. This survey will help in assessing the knowledge and creating awareness about the various impression techniques for custom made posts, and also to understand the choice of material for the core foundation to place the posts.

6. CONCLUSION

On surveying, most of them stated the use of a prefabricated post system made of composite resin or ceramic materials necessitates root canal preparation to the post's size and shape. And most of the practitioners preferred composite resin as core foundation. Many used zinc phosphate to place the posts. In conclusion it was evident that the majority of the participants were aware of the impression materials used and practiced it in their daily practice.

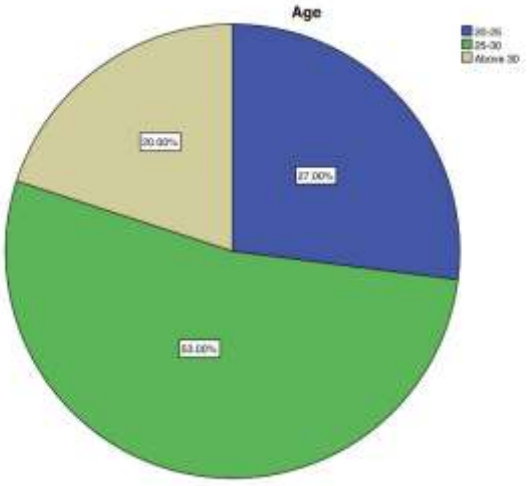

Figure 1: Pie chart showing the percentage distribution of responses on age 53% 25-30 years (green) 27%-20-25 years (blue) 20%- above30 years (beige)

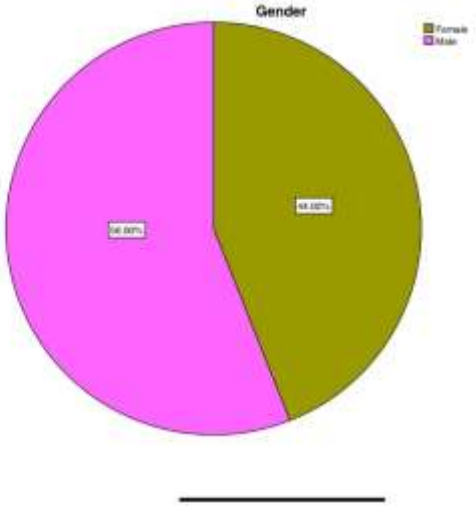

Figure 2: Pie chart showing the percentage distribution of responses on gender , 56%- male(pink), 44%- female(brown).

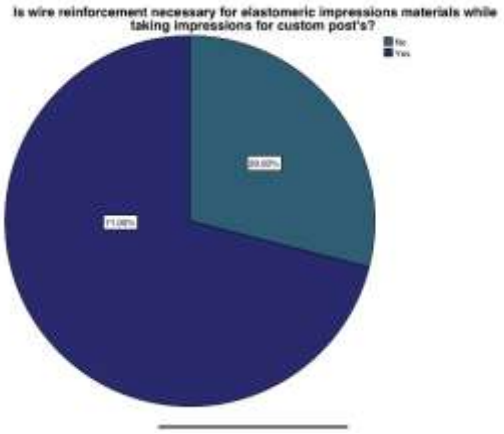

Figure 3: Pie chart showing the percentage distribution of responses on the necessity of wire reinforcement , 71%- yes (dark blue), 29%- no (blue)

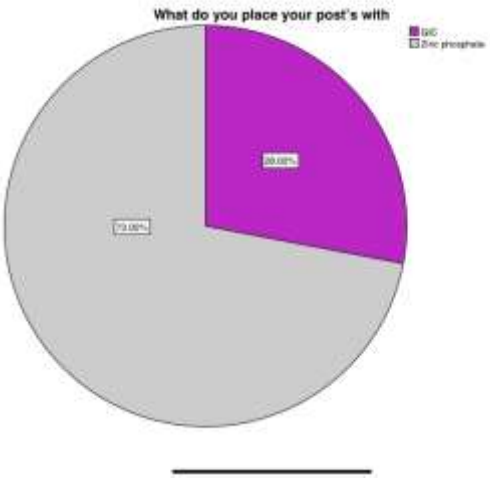

Figure 4: Pie chart showing the percentage distribution of responses on materials used for posts placement, 72% - zinc phosphate (grey), 28%- GIC (pink).

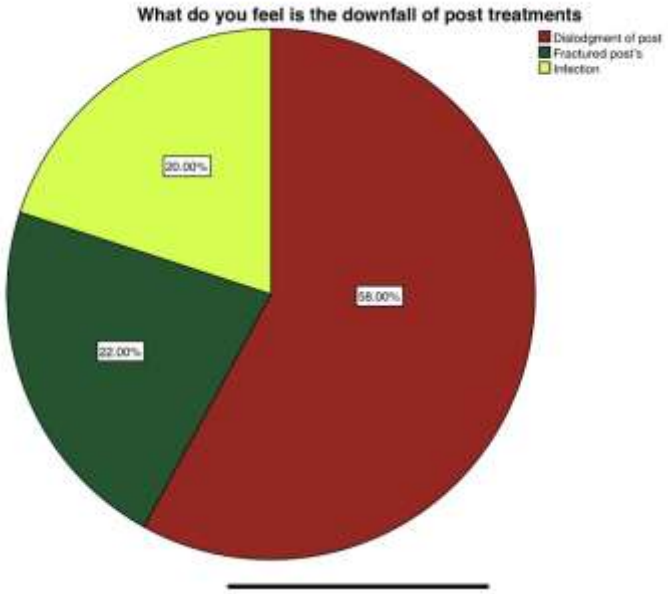

Figure 5: Pie chart showing the percentage distribution of responses reasons for the downfall of treatment, 58%- dislodgement of posts (red), 22%- fractured posts (green), 20%- infection (yellow).

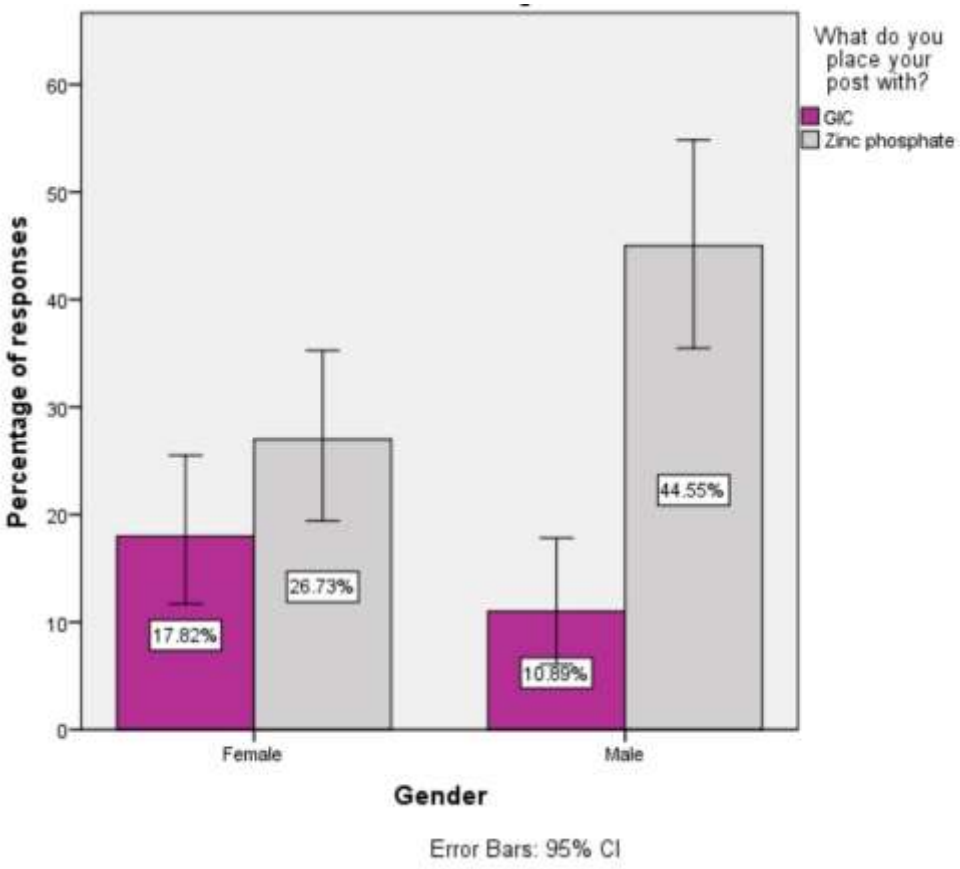

Figure 6: The bar graph represents the association between the gender and the material used to place the posts with. X axis represents the gender and Y axis represents the material. Pink denotes GIC, grey denotes zinc phosphate. Zinc phosphate was more commonly preferred by males whereas females preferred GIC. Chi square test shows p value as 0.037 (p< 0.05). Hence it is statistically significant.

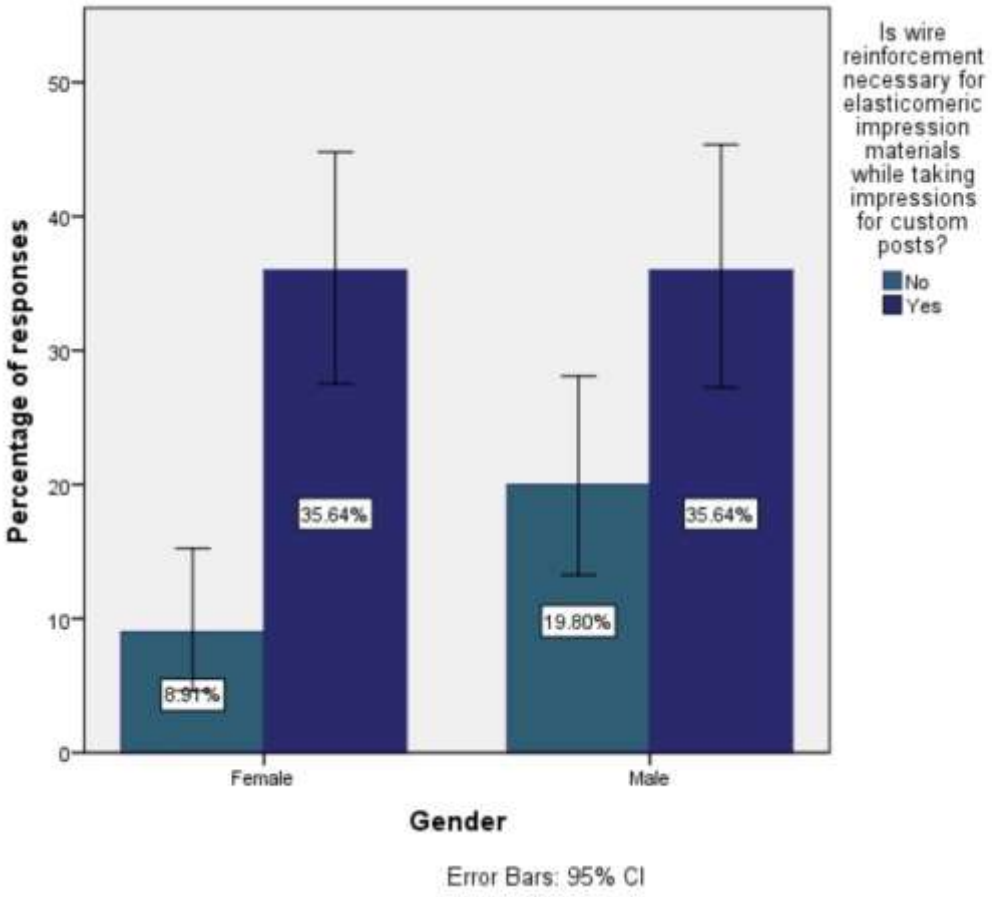

Figure 7: The bar graph represents the association between the gender and the necessity of wire reinforcement. X axis represents the gender and Y axis represents the necessity of wire reinforcement. Blue denotes no, dark blue denotes yes. 35.6% of Males and females felt that wire reinforcement was necessary. Chi square test shows p value as 0.095 (p>0.05). Hence it is statistically insignificant.

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CONFLICT OF INTEREST:

The author declares no conflict of interest in the present study.

AUTHOR CONTRIBUTION:

All authors had equal contribution in conducting the study and drafting the manuscript.

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