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ABSTRACT

Introduction: The goal of endodontic and restorative therapy is to restore the normal function and occlusion of the tooth and to maintain the stability of the dental arch. The restoration of endodontically treated teeth has many problems due to loss of tooth structure by caries, trauma, fracture, previous restoration and endodontic therapy, all of which reduces the fracture resistance of the tooth. A post and core is a restoration consisting of a post that fills a prepared root canal and a core inserted into pulp chamber that establishes the proper coronal tooth preparation.

Aim: The aim of this study is to assess the awareness of undergraduate students and postgraduate students on restoration of endodontically treated teeth with post and core.

Materials and methods: In this study, an online survey was conducted among the dental students in which totally 100 students comprising both undergraduate and postgraduate took part. The survey consisted of 10 questions related to the restoration of endodontically treated teeth with post and core apart from their basic details. The responses were tabulated in excel and the data was imported to SPSS software and statistical analysis was done by chi square test.

Results: It was seen that overall post graduates had more awareness on post and core, than undergraduate. It was seen in this study that overall postgraduates have more awareness on post and core, than undergraduate. 16% of the postgraduate students and 63% of the undergraduate students think that all endodontically treated teeth must receive a post, but it was statistically not significant (p value = 0.049).

Conclusion: Results of this study reflect the high knowledge of undergraduates over postgraduates about post and core use in endodontically treated tooth. This survey was used to evaluate the clinical experience of restoring endodontically treated teeth by undergraduates and postgraduates for continuous improvement of teaching and learning and curriculum development.

Keywords: Post, core, endodontically treated, crown, innovative technology

INTRODUCTION

Root canal treatment causes alterations in tooth morphology (1) along with changes in the biological properties of the tooth (2). It is a well known fact that a pulpless tooth is considered to have a higher risk of fracture than vital teeth (3). The treatment options for endodontically treated teeth vary from a minimal filling to an indirect post and core. A post and core is a restoration consisting of a post that fills a prepared root canal and a core inserted into pulp chamber that establishes the proper coronal tooth preparation (4,5).

A post and core is used to build endodontically treated teeth (ETT) which in turn preserve the masticatory function and esthetic appearance of the tooth, which cannot be achieved by using conventional restorations. The type of materials used in the fabrication of posts affect the fracture resistance of ETTs (6). The material that is used for post fabrication must be biocompatible, bonded to the tooth and have mechanical properties similar to those of dentin (7)(8). Surveys on the restorative management of endodontically treated tooth have investigated clinicians' knowledge of certain treatment aspects (9,10)(11). Restorative dentists must follow certain protocols to enhance the overall survival rate of ETT (12,13).

Assessing the knowledge and awareness of undergraduates and postgraduates in restoring ETT with post and core is crucial for reducing failure rates and ensuring a high standard of care for patients. Subsequently, establishing a plan to raise the awareness and understanding of undergraduates and postgraduates is necessary for providing an acceptable quality of dental treatment that benefits society. Surveys on the restorative management of endodontically treated teeth have investigated clinicians' knowledge of treatment aspects with post and core(14,15). In this study, a survey was conducted to assess the knowledge awareness among undergraduate and postgraduate dental students in using post and core in endodontically treated teeth. Our team has extensive knowledge and research experience that has translated into high quality publications(16),(17–32)

MATERIALS AND METHODS

The research was based on a cross-sectional study in the form of questionnaires distributed by an online survey link to all undergraduates and postgraduates. Questionnaire consisted of 10 questions. Ethical approval was obtained from the scientific research committee at College Detailed information about the study, as well as its purpose and techniques, was also included. No participants were excluded based on gender or other socio-demographic criteria. A total of 100 students including undergraduate and postgraduate students participated in this survey. The responses were tabulated in excel and were then imported to SPSS software by IBM. then, descriptive statistics were computed. Chi-square test was done. The chi-square test was used to compare the data and check for the distribution at 0.05 level of significance for effect of statistical significance. Results were analysed graphically, for both frequency distribution and statistical significance.

RESULTS

It was seen in this study that overall postgraduates have more awareness on post and core, than undergraduate. 16% of the postgraduate students and 63% of the undergraduate students think that all endodontically treated teeth must receive a post, whereas 11% of the postgraduates mostly use PMF as the crown material.

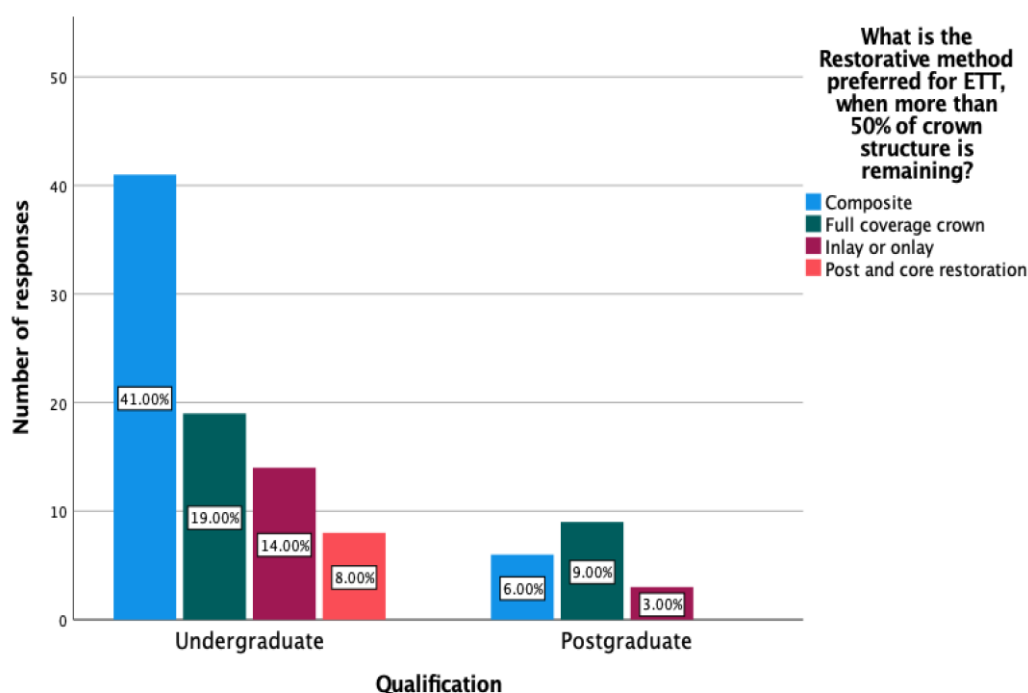


Figure 1: Bar graph represents the responses given by undergraduates and postgraduates dental students when asked about which restorative material is preferred for ETT when more than 50% of the crown structure is remaining. X-axis represents the qualification of the dental students and Y-axis represents their number of responses where blue colour denotes composite, green colour denotes full coverage crown, brown colour denotes inlay or onlay and orange colour denotes post and core restoration. Chi-square test was done and association was found to be statistically not significant (p value= 0.149), proving there is no statistical association.

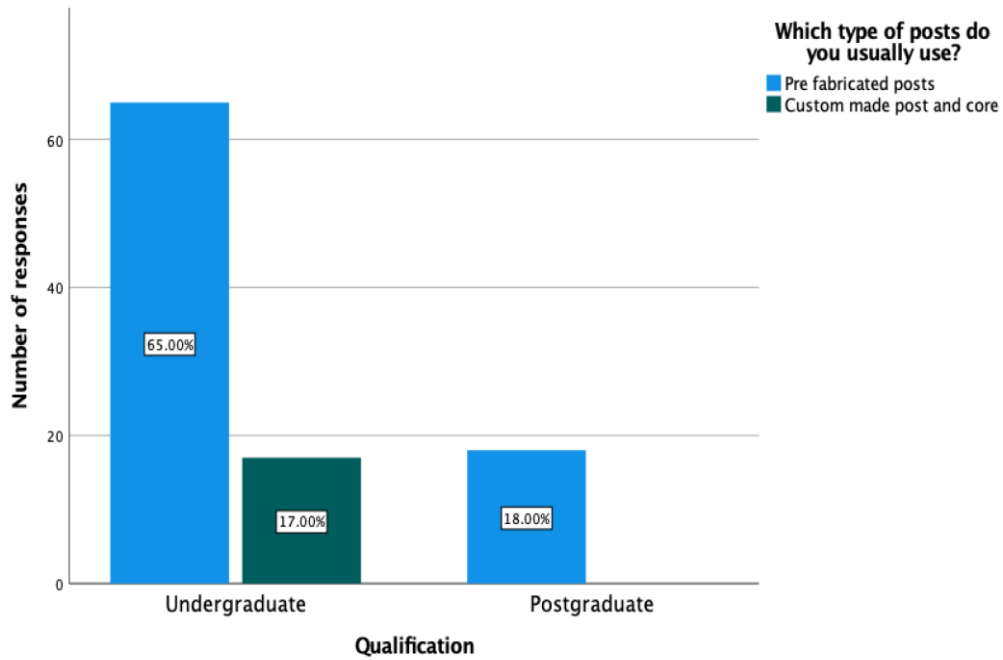


Figure 2: Bar graph represents the responses given by undergraduates and postgraduates dental students when asked about which type of posts they usually use. X-axis represents the qualification of the dental students and Y-axis represents their responses where blue colour denotes custom made post and core and green colour denotes prefabricated posts. Chi-square test was done and association was found to be statistically not significant ($p < 0.005$), proving there is no statistical association.

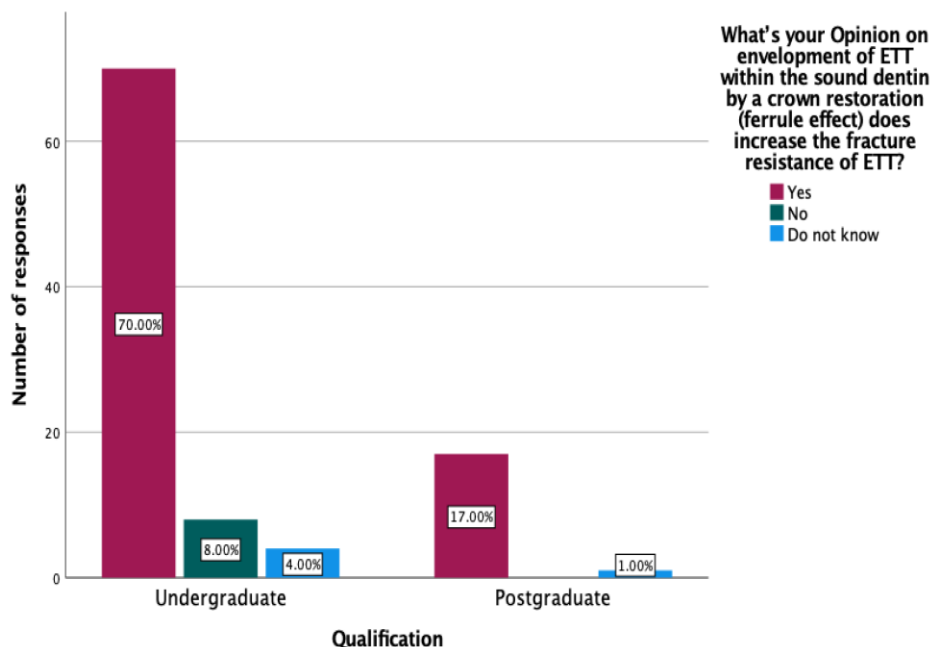


Figure 3: Bar graph represents the responses given by undergraduates and postgraduates dental students when asked about their opinion on envelopment of ETT within the sound dentin by a crown restoration (ferrule effect) does it increase the fracture resistance of ETT. X-axis represents the qualification of the dental students and Y-axis represents their responses where blue colour denotes do not know, green colour denotes no purple colour denotes yes. Chi-square test was done and association was found to be statistically not significant ($p < 0.005$), proving there is no statistical association.

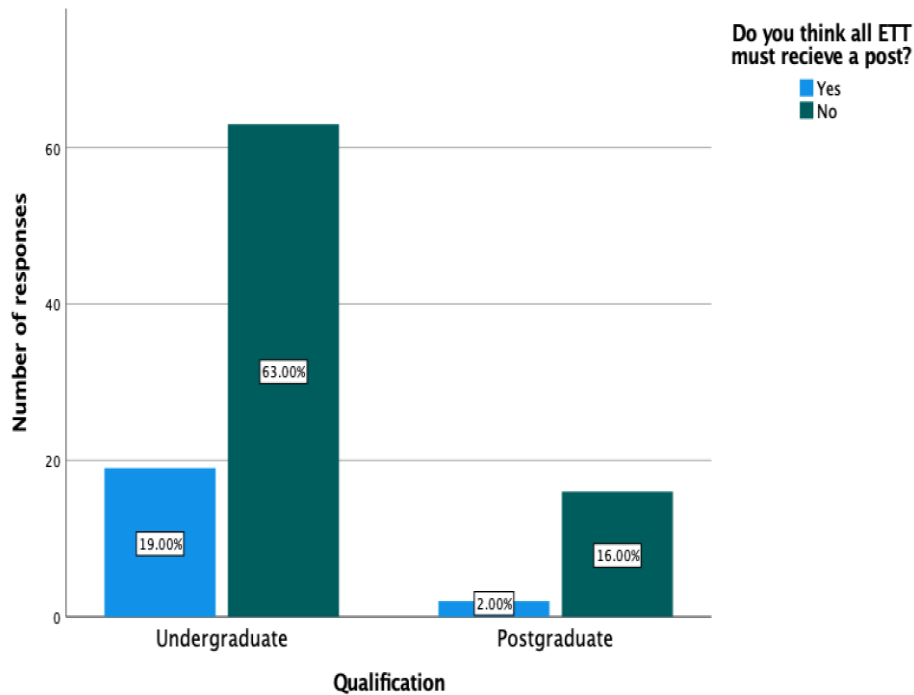


Figure 4: Bar graph represents the responses given by undergraduates and postgraduates dental students when asked whether they think all ETT must receive a post. X-axis represents the qualification of the dental students and Y-axis represents their responses where blue colour denotes yes and green colour denotes no. Chi-square test was done and association was found to be statistically not significant (p value=0.049), proving there is no statistical association.

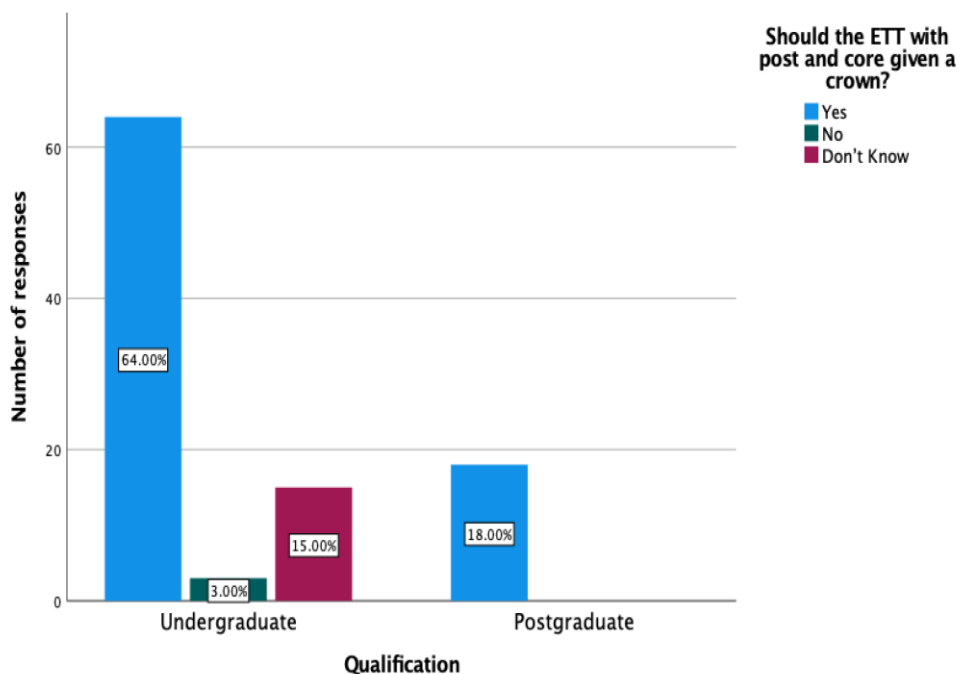


Figure 5: Bar graph represents the responses given by undergraduates and postgraduates dental students when asked whether ETT with post and core must receive a crown. X-axis represents the qualification of the dental students and Y-axis represents their responses where blue colour denotes do not know, green colour denotes no and purple colour denotes yes. Chi-square test was done and association was found to be statistically not significant (p value=2.565), proving there is no statistical association.

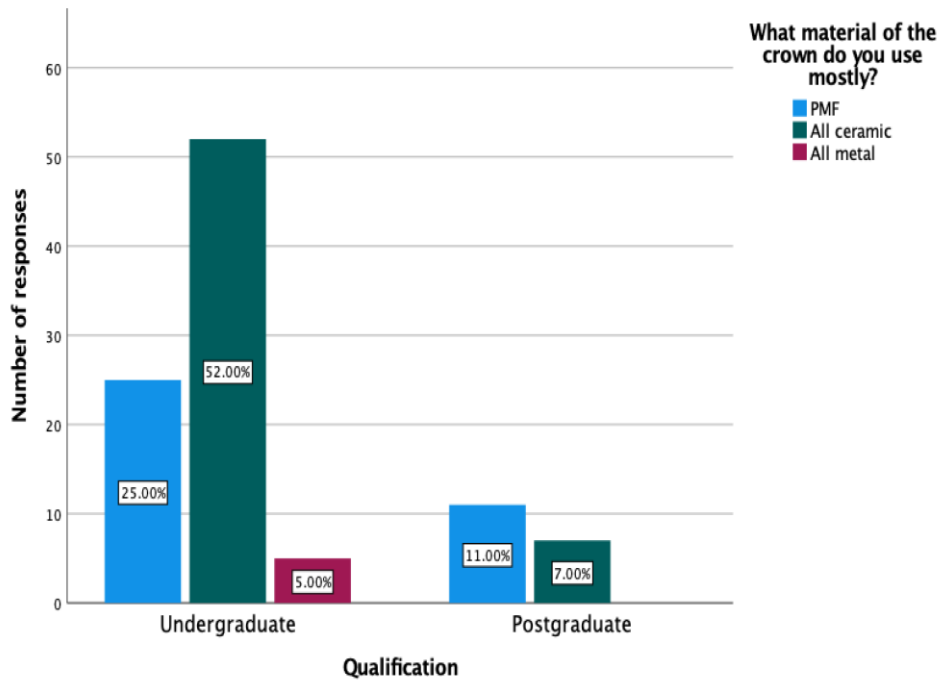


Figure 6: Bar graph represents the responses given by undergraduates and postgraduates dental students when asked what material of crown they use mostly. X-axis represents the qualification of the dental students and Y-axis represents their responses where blue colour denotes all ceramic ,green colour denotes all metal and purple colour denotes PMF.Chi-square test was done and association was found to be statistically not significant(p value=0.127),proving there is no statistical association.

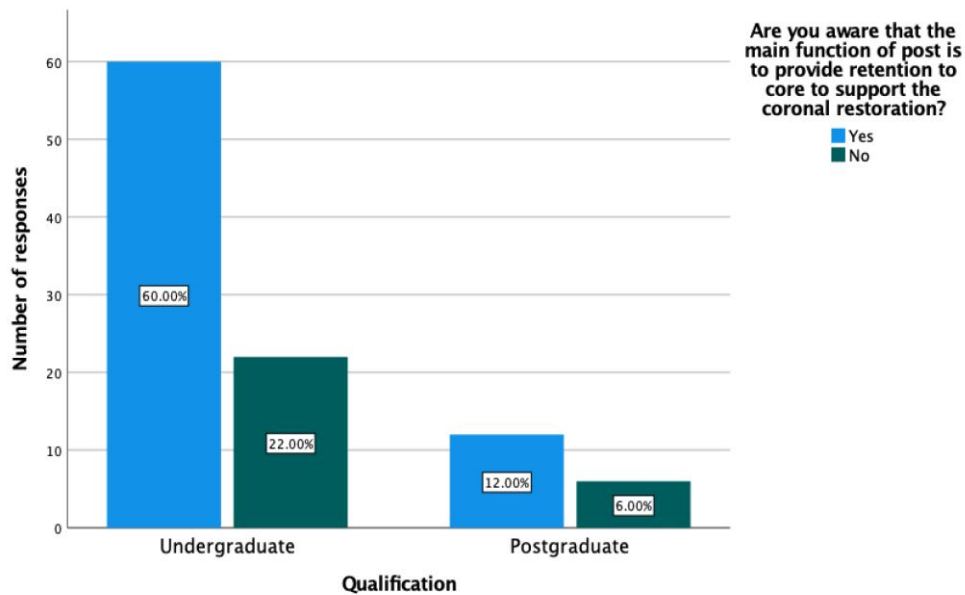


Figure 7: Bar graph represents the responses given by undergraduates and postgraduates dental students when asked if they are aware that the main function of the post is to provide retention to core to support the coronal restoration. X-axis represents the qualification of the dental students and Y-axis represents their responses where blue colour denotes no and green colour denotes yes.Chi-square test was done and association was found to be statistically not significant(p value=1.632),proving there is no statistical association.

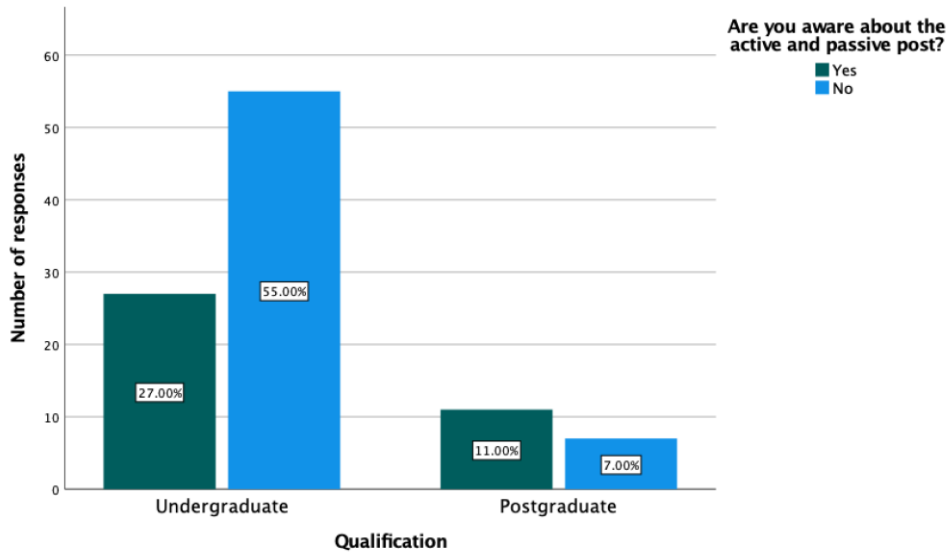


Figure 8: Bar graph represents the responses given by undergraduates and postgraduates dental students when asked if they are aware about active and passive post. X-axis represents the qualification of the dental students and Y-axis represents their responses where blue colour denotes no and green colour denotes yes. Chi-square test was done and association was found to be statistically not significant (p value=0.097).

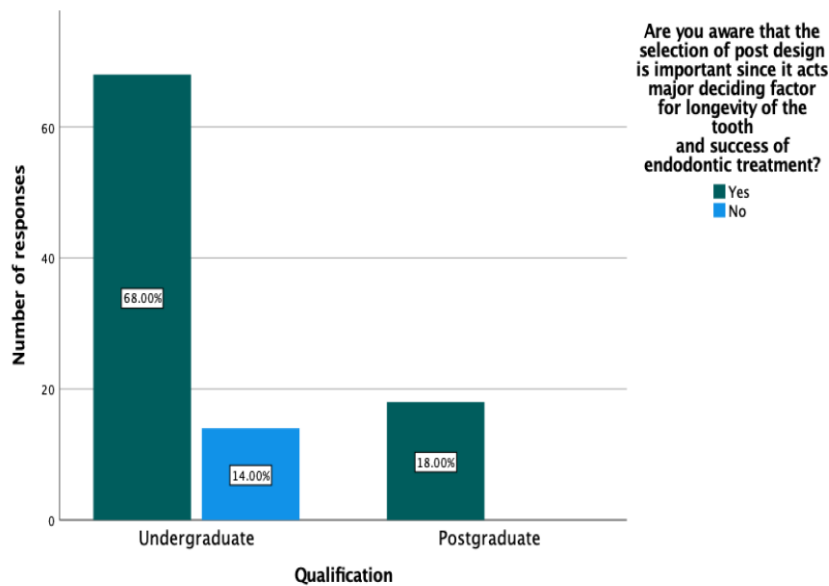


Figure 9: Bar graph represents the responses given by undergraduates and postgraduates dental students when asked if they are aware that the selection of post design is important since it acts as a major deciding factor for longevity of the tooth and success of endodontic treatment. X-axis represents the qualification of the dental students and Y-axis represents their responses where blue colour denotes no and green colour denotes yes. Chi-square test was done and association was found to be statistically significant (p value=0.002), proving there is statistical association.

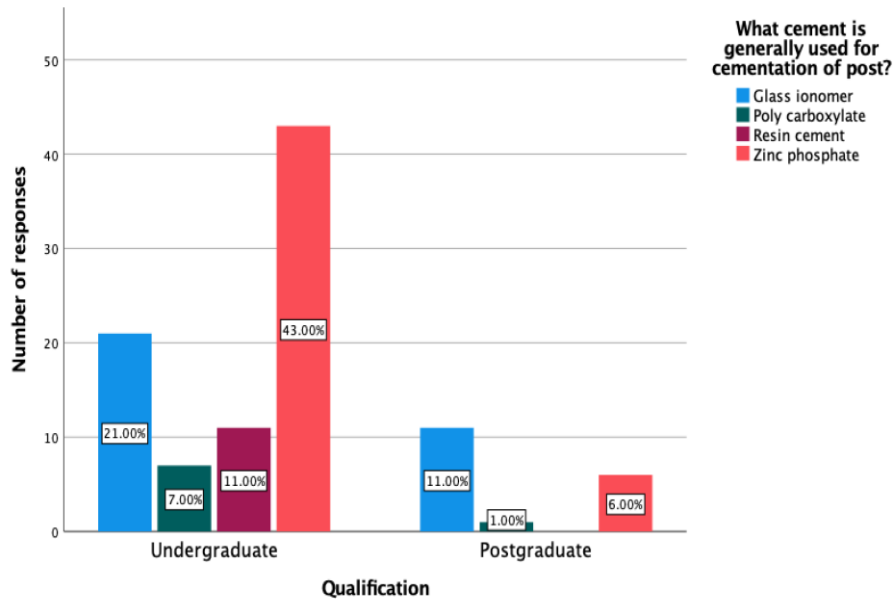


Figure 10: Bar graph represents the responses given by undergraduates and postgraduates dental students when asked what cement is generally used for cementation of post. X-axis represents the qualification of the dental students and Y-axis represents their responses where blue colour denotes glass ionomer cement, green colour denotes poly carboxylate cement, purple denotes resin cement and orange denotes zinc phosphate. Chi-square test was done and association was found to be statistically significant (p value=0.000), proving there is statistical association.

This study was conducted to assess the awareness of dental undergraduate and postgraduate students toward management of endodontically treated teeth with post and core. Restoration of endodontically treated teeth with post and core is essential, and a dental professional should keep all factors in mind before restoration of endodontically treated teeth with post and core.(4).

In this study, the study participants included both undergraduate and postgraduate students. In the study conducted by Alenzi A *et al.*(11)44.82% of dental professionals were of the age range 23–65 years. Among all study participants, most of them were males (61.95%). Similar results were seen in the studies conducted by Akbar I;(33)in both studies, post graduates had more awareness than undergraduates. While in some other studies undergraduates were more aware than postgraduates, which is contrary to this study. In a study by Baba *et al.*;(34) postgraduate study participants were more than undergraduate dental students similar to this study.(11)

In this study, most dental undergraduates and postgraduate students prefer full coverage crown to restoring the grossly decayed endodontically treated teeth. In a study, a majority of the study participants preferred composite restorative material for restoring endodontically treated teeth. This may be because of the fact that an unrestored tooth requiring endodontic treatment for the most part did not need a post and core rebuilding as its characteristic quality is as yet present. Teeth are dealt with sufficiently by the situation of filling material in the root channel using glass ionomer, reinforced composite, and fortified circular amalgam(35).

Appropriate prosthodontic treatment after endodontic work is the life-saving procedure for the tooth. The dental treatment in an endodontically treated tooth is not complete if prosthodontic ally not treated, and it saves the tooth and thereby improves the shelf-life of the tooth; the latest technology further aids the same, and hence, the need of the hour was to explore the knowledge, attitude, and practice of various dental students and how they manage these teeth. There is an urgent need for various programs for the dentists to improve their knowledge regarding the same and preventing further complications of endodontically treated teeth.

CONCLUSION

Results of this study reflect the high knowledge of undergraduates over postgraduates about post and core use in endodontically treated tooth. This survey was used to evaluate the clinical experience of restoring endodontically treated teeth by undergraduates and postgraduates for continuous improvement of teaching and learning and curriculum development.

Author Contribution

1st author did the whole study and involved in finishing manuscript

2nd and third authors guided throughout the study and revised the manuscript.

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Conflict of interest

None to declare.

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