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Preference of Finish Line in FPD among Dental Students

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Abstract

Background
Tooth preparation for fixed prosthesis is a common procedure in clinical practice, which all general dentists should perform correctly. However, it could be difficult to obtain always a predictable result, especially for dental students or young doctors: they could make mistakes in their learning curve leading to inadequate results. Tooth preparation should have specific geometrical characteristics to provide necessary retention and resistance to the vertical and lateral forces acting on the restoration. There are various materials are available for fixed partial denture. Restoration of teeth is possible only if sufficient space is created for the application of thickness of restorative material required to replace the missing tooth

Aim
The aim of this studythe preference of finish line configurations fixed partial dentures among dental students.

Materials and Methods
200 dental students were randomly selected for the current study. The student included were who studying undergraduate(third year, final year and intern). Other year students were excluded from the study. A questionnaire of 10 questions were framed and were given to fill using a online survey platform to each of the students. The data was obtained and was statistically analysed

Results
The results were analysed and represented the significant values

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Conclusion
Thus from the present study we were able to find the more preferable finish line configuration that the dental students prefer applying in their dental restorative procedure which was equi-gingival shoulder finish line configuration

Key words: preference, finish line, fixed partial denture, partial edentulism

Introduction

Over centuries, various materials and extraordinary methods were attempted to replace the missing natural teeth. Initially, with the use of pivots, replacement crowns were made from bone, ivory, animal teeth, and sound natural tooth crowns. These natural substances gradually were replaced by porcelain. Porcelain, which was introduced into dental field in the year 1789 revolutionised the dental restorations by fixed prosthesis. With the advancements in ceramics over the last couple of decades, aesthetics was improved, the number of tooth fractures associated with combined crown-post restorations was reduced, impingement on soft tissue was lessened. In addition, the clinical procedures are less painful to the patient and less fatiguing to the General dental practitioners with the modernisation of dental armamentarium. The purpose of a fixed prosthodontic therapy may vary from the restoration of a single tooth to the rehabilitation of the complete occlusion. A single tooth can be fully restored both functionally and aesthetically. A missing tooth can be replaced by a fixed prosthesis, increasing patient masticatory competence and maintaining or improving dental arches function, often elevating patient‘s self-image

Tooth preparation should have specific geometrical characteristics to provide necessary retention and resistance to the vertical and lateral forces acting on the restoration. The most important element of retention is the presence of two opposing vertical surfaces. The axial walls of the preparation should taper slightly to allow the cementation of the artificial crown. The more parallel are the axial walls the greater is the retention. The longer is the preparation the greater is the retention. Teeth with larger diameter need a greater length to prevent dislodgement. Proper occlusal and axial reductions are essentials to provide enough space, allowing a good functional morphology and structural durability. However, it is impossible to obtain parallel surfaces without producing undercuts. However, it could be difficult to obtain always a predictable result, especially for dental students or young doctors: they could make mistakes in their learning curve leading to inadequate results. Many components in tooth reduction include buccal and lingual reduction, proximal reduction, occlusal reduction and proper finish line. Proper angulation of the bur during tooth reduction is important to ensure adequate amount of tooth structure remaining. Adequate tooth structure should be remaining for tooth to support the prosthesis. If not the tooth is subjected to fracture as the tooth is not able to distribute the occlusal forces in a proper manner. Proper margins mean a proper finish line which is very important. Different type finish line is given for different type of restoration. Different finish lines include chamfer finish line, shoulder finish line, shoulder with bevel finish line, sloping shoulder finish line, knife edge or feather finish line. Based on the position of the finish line to the gingiva the finish line can be supra-gingival, equi-gingival finish line and sub-gingival finish line. Each type of finish line has its own advantage and disadvantage. The preference of finish line configuration is based on the position of tooth to be prepared and the clinician’s choice. So this study aims at accessing the preference of finish line configurations

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among dental students.

Materials and Methods

In the present study 200 undergraduate students studying in dental college were selected. A questionnaire of 10 questions were framed and was circulated among the 200 dental students using an online survey platform(courtesy: SurveyMonkey). The results were collected and computed in excel format and was cross verified for any errors. Then the data was processed and transferred to SPSS software following which statistical analysis was done and analysed(courtesy:IBM SPSS Statistics for Windows, Version 23.0, Armonk, NY: IBM Corp. Released 2015).

Results

The Normality tests Kolmogorov-Smirnov and Shapiro-Wilks tests results reveal that all variables follow Normal distribution. Therefore, to analyse the data parametric method is applied. The standard deviation, mean and the frequency was analysed.

Chart-1 showing the year of study of the students

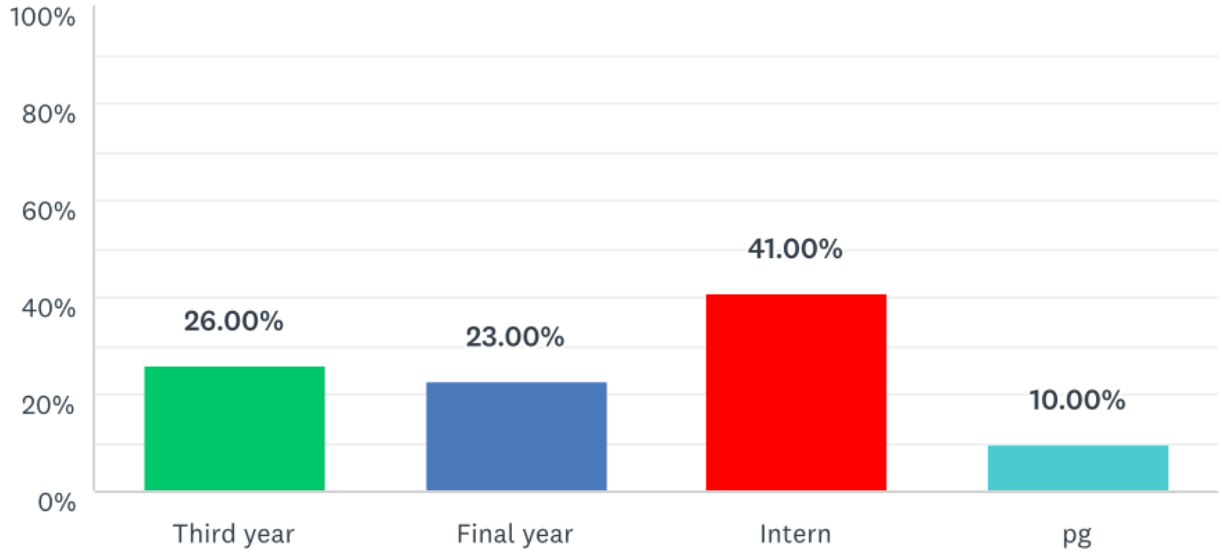

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Chart-2 showing most preferred fixed partial denture according to students

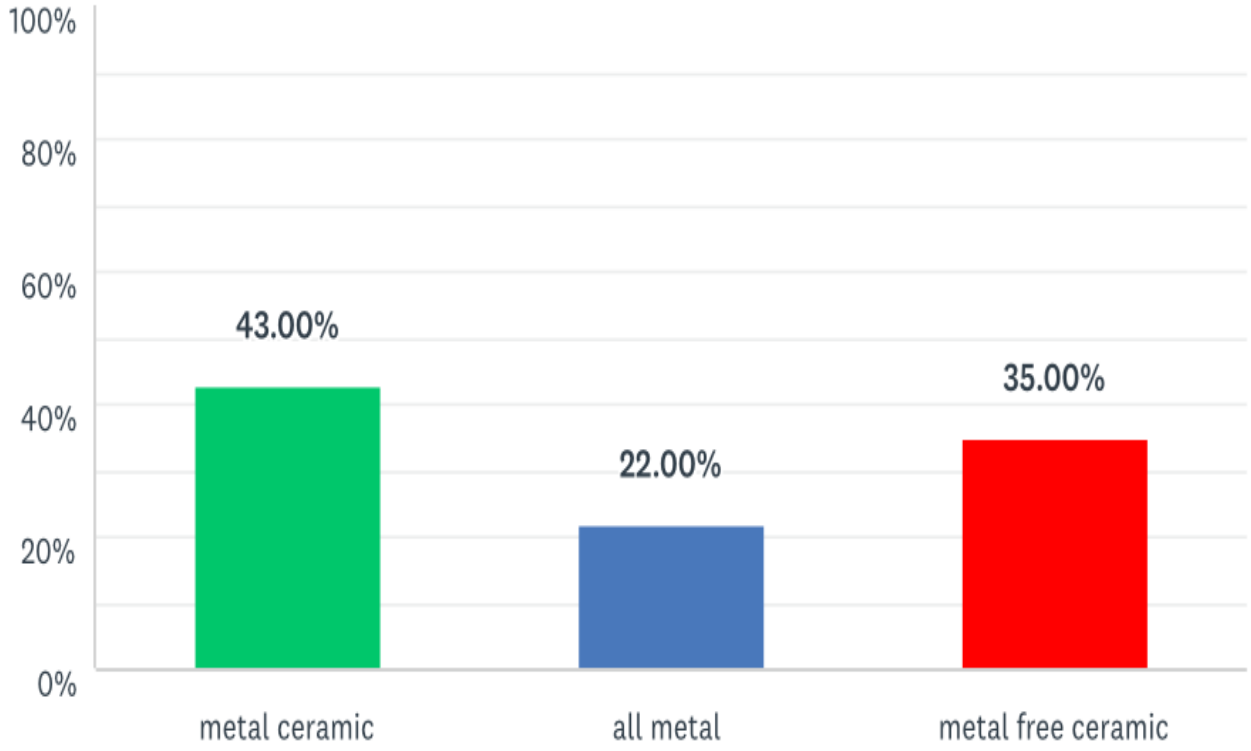

Chart-3 showing the response to the question finish line comes under which principles of tooth preparation

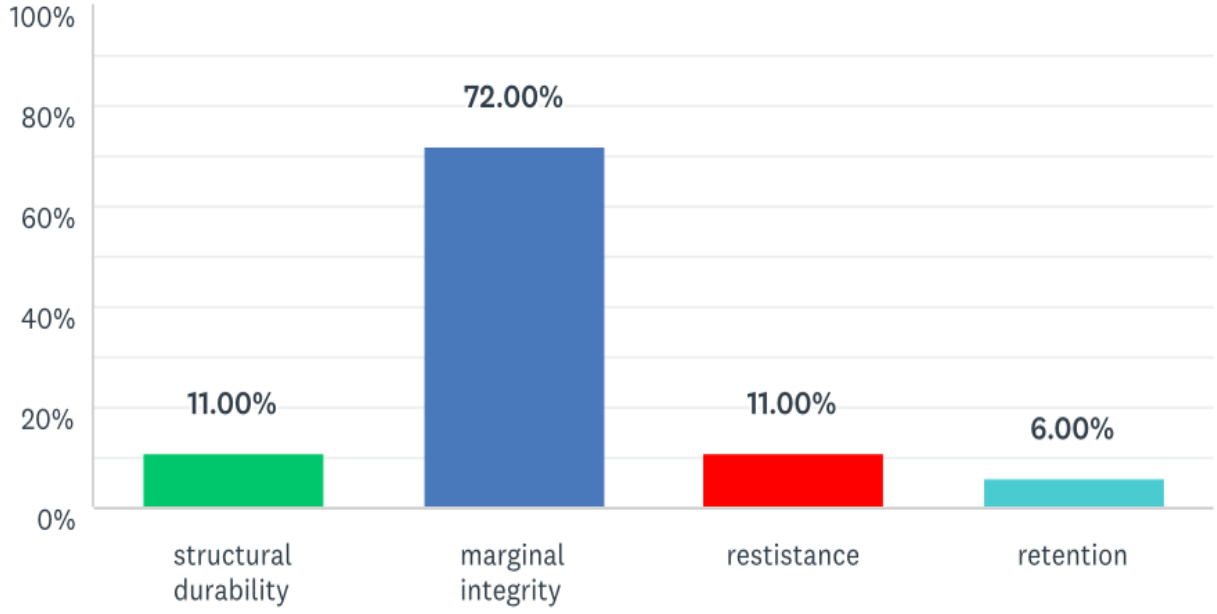

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Chart-4 showing students responce for what type of finish line given for an all-ceramic FPD

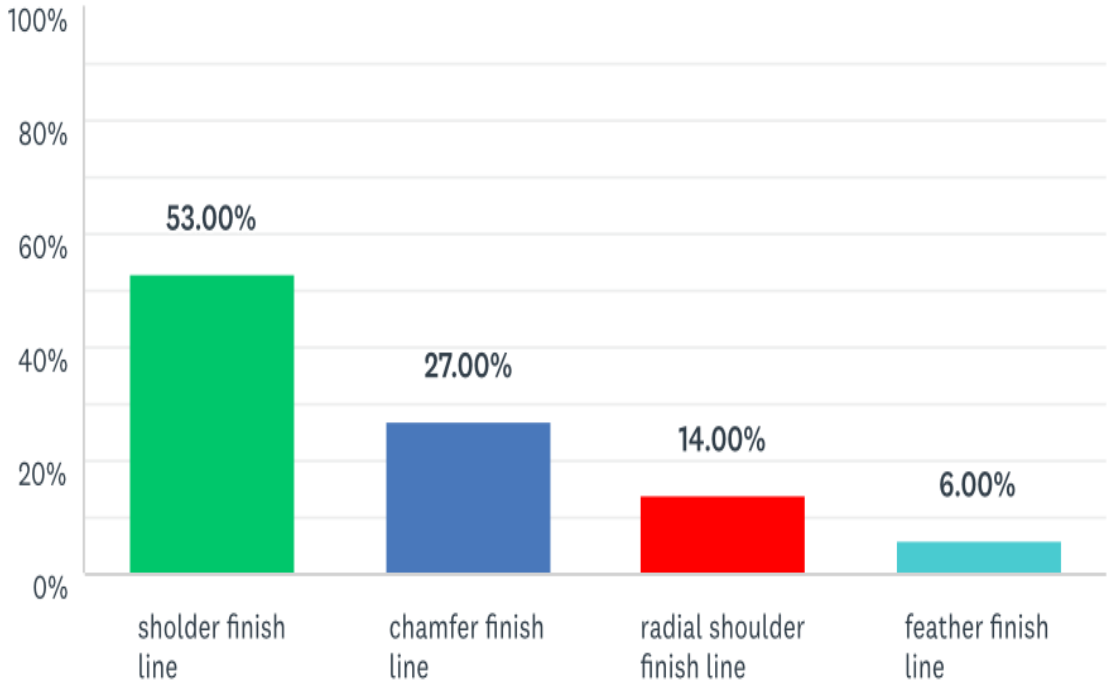

Chart-5 showing students response to which finish line have more unsupported enamel

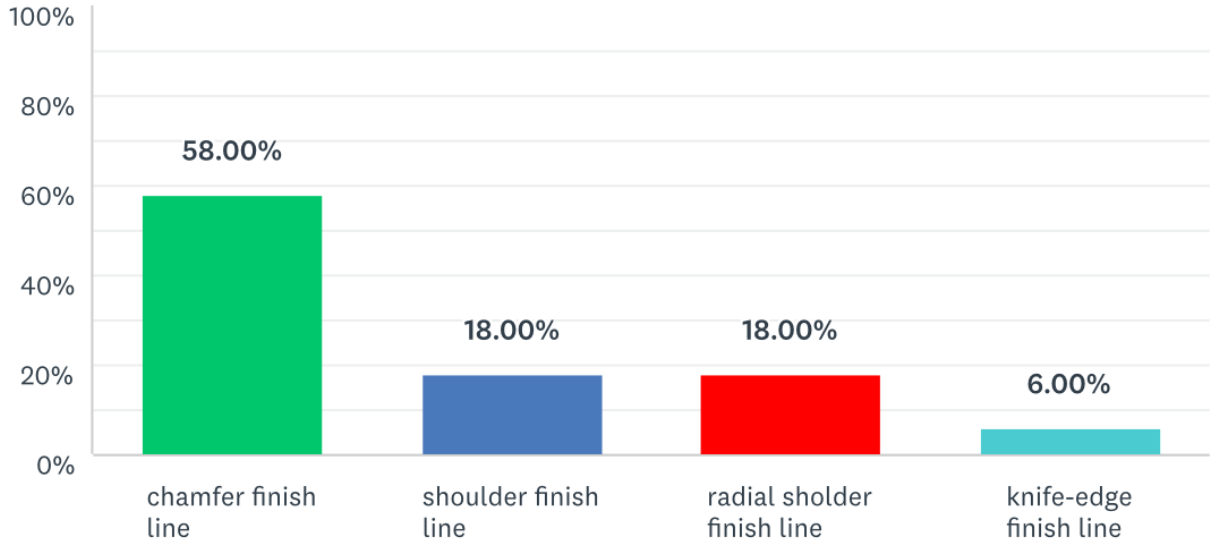

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Chart 6 showing students responce right angle of the shoulder finish line makes to the long-axis of tooth

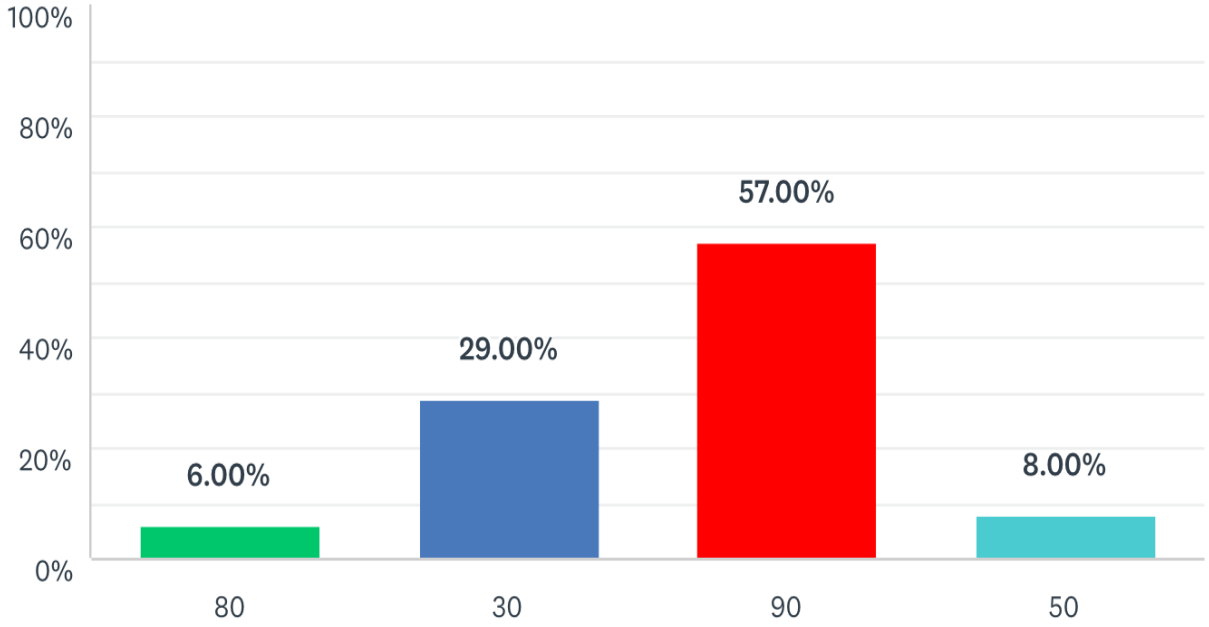

Chart 7 showing students response to which finish line configuration may produce postoperative gingival enlargement

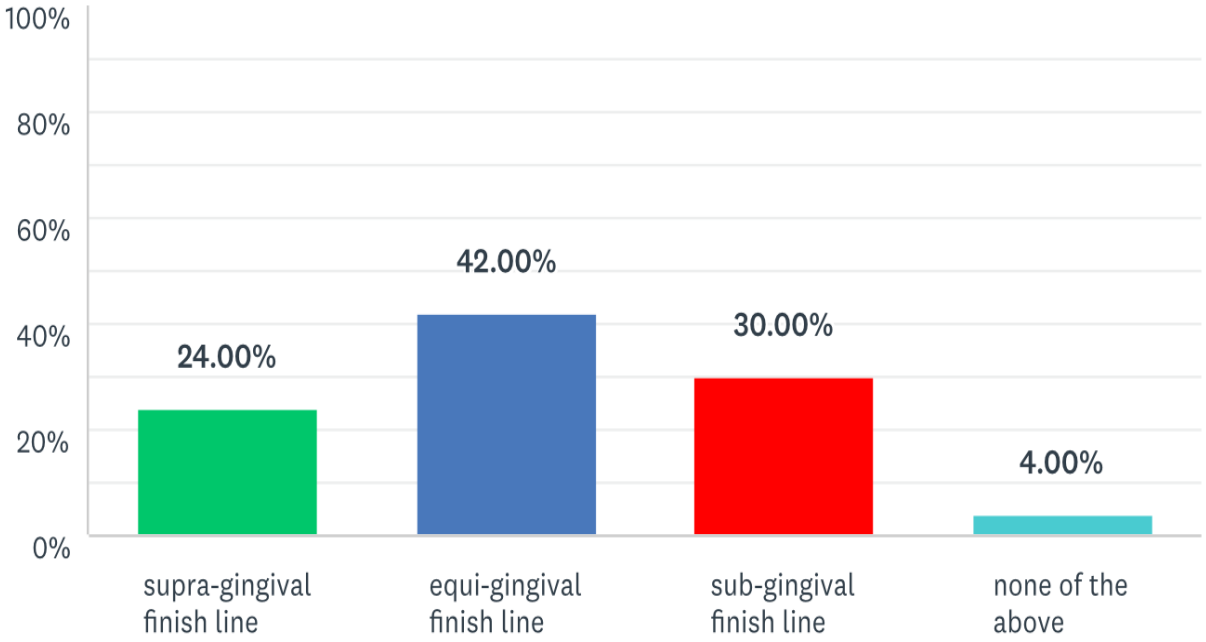

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Chart 8 showing students preference of finish line configuration(based of position of finish line to level of gingiva

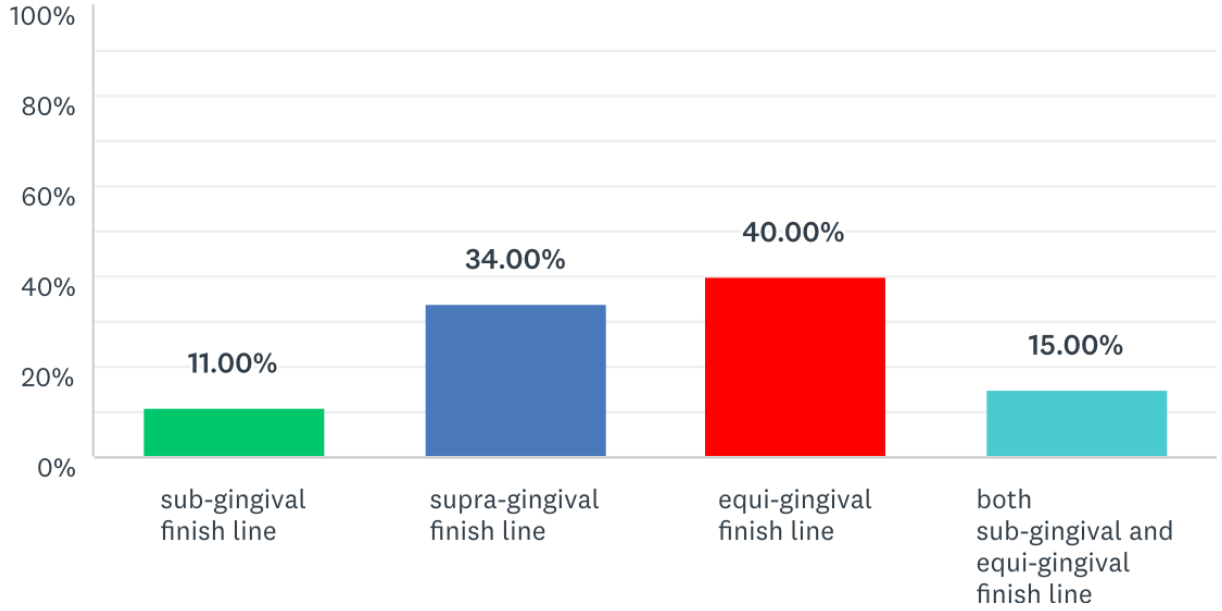

Chart 9 showing students preference of finish line configuration(based on type)

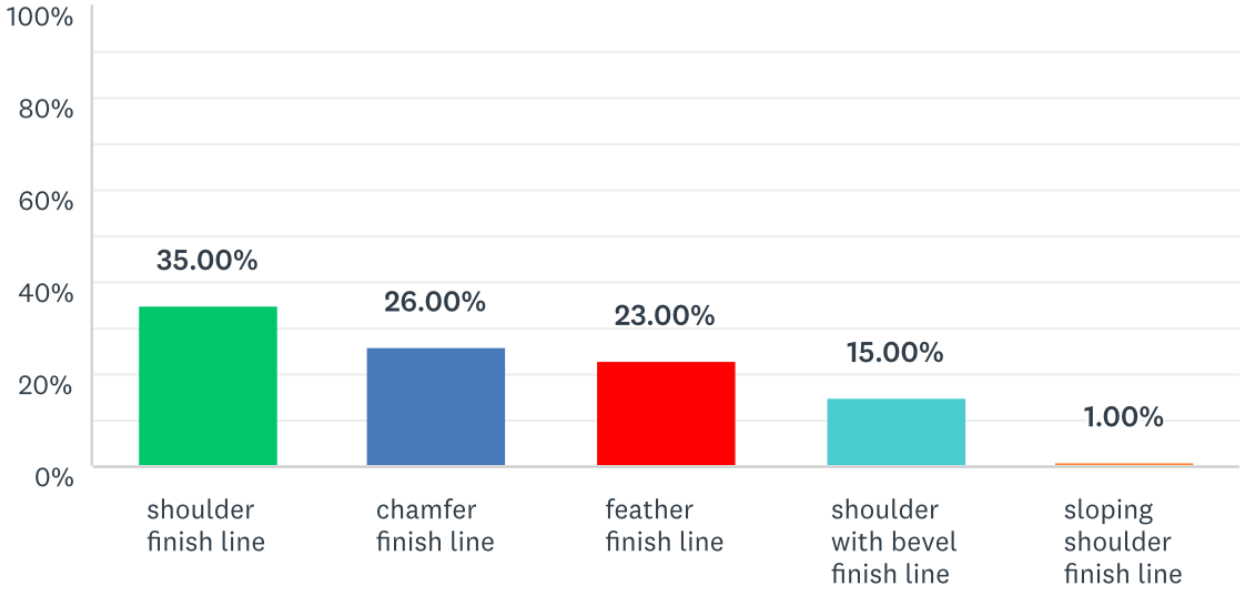

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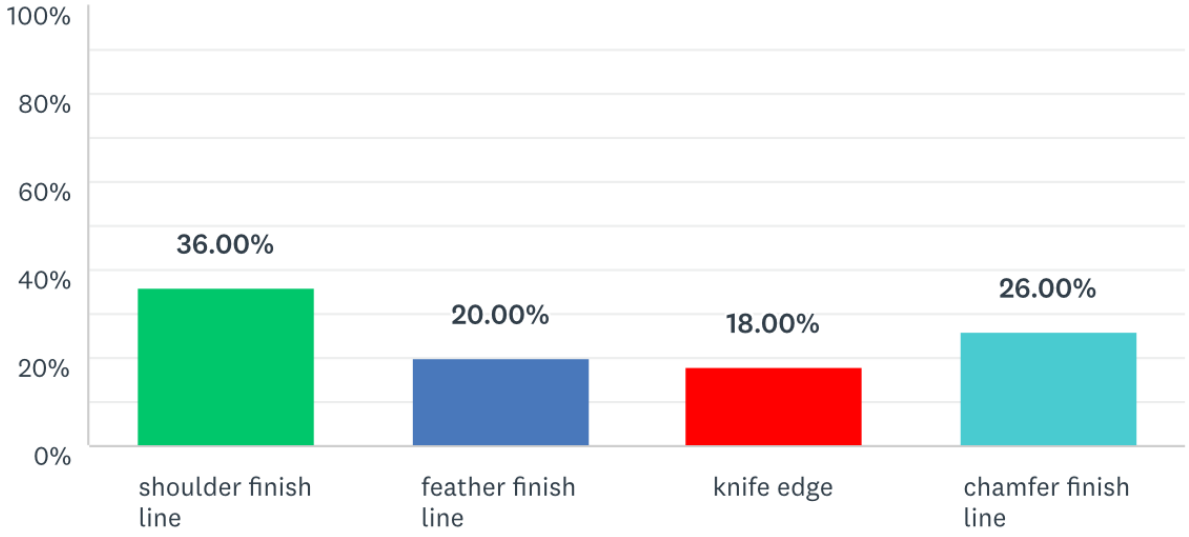
Chart 10 showing students responce to finish line have marginal width greater than 0.3mm



Discussion

Over the past years, where the function and aesthetics of the restoration have got more and important. Different types of materials, the ways to tooth preparation have been employed by the manufactory and the clinicians. The materials have been improved by a very quite margins. Introduction of ceramics had a turning point in aesthetics of the restoration. Further in ceramics different composition have been employed for further improvement of the quality of the restoration like E-max restoration which has high amount lithium di-silicate in it which is exclusively for anterior teeth where aesthetics is very important. Tooth preparation should have specific geometrical characteristics to provide necessary retention and resistance to the vertical and lateral forces acting on the restoration. Preparing the tooth structure also plays a vital role in the quality of restoration. If the tooth preparation is not proper it lead to formation of inadequate tooth structure, undercuts, improper margins which will eventually affect the quality of the restoration that the professional is doing in his clinical practice.

In the present study a questionnaire based study has been done. This study aimed at accessing the preference of dental professionals about what finish line configuration do they prefer the most in their clinical practice and other general fixed prosthodontics questions were included in the study. About the material of choice according to the students 43% of the preferred metal ceramic followed by metal free ceramic at 35% and all metal prosthesis was least considered(chart 2). Next question was a knowledge based question the finish line configuration comes under what principle of tooth preparation and 72% of them answered marginal integrity(chart 3). About 53% of students responded that they give shoulder finish line for an all-ceramic FPD (chart 4) and 58% of them agrees that there is more unsupported enamel in a chamfer finish line configuration than any other finish line configuration(chart 5). Then the students were asked about the angle of shoulder finish line forming with the tooth structure which 57% of them answered 90^0 degrees(chart 6). Post-operative complication of any restoration is important to know how will we can avoid those. So the students were asked which of the finish line configuration cause post-operative gingival enlargement and 30% of them asked it was sub-gingival finish line configuration(chart 7). Based on

the position of finish line to level of gingiva the students mostly preferred equi-gingival finish line (40%) and least preferred sub-gingival finish line[11%](chart 8). Based on the type of the finish line shoulder finish line configuration was the most preferred[35%] and sloping sholder was least preferred of 1%(chart 9).

Based on the average assessment and evaluation of answers given by the working dental students , it can be categorised that out of 100% , 85 % of students are aware of finish line placement and their indications and 15% of students were unaware of finish line. The study by Sonia K Makhija, also shows a high prevalence of use of ceramic crowns compared to metal-based crowns. These results are in contrast to a study from about 30 years ago which reported a higher selection rate of PFM crowns (55% of Swiss and 56% of Canadian dentists) and metal crowns (17% of Swiss and 35% of Canadian dentists) than porcelain jacket crowns (1% of Swiss and 2% of Canadian dentists)

This study does have certain limitations, and conclusions should consider these issues. This study relied on questionnaire information rather than direct observation of procedures; therefore, the inferences made are based on responses from this questionnaire. Additionally, the response rate was very good, but it is possible that non- respondents would have reported different behaviour.

Conclusion

Thus from the present study we were able to find the more preferable finish line configuration that the dental students prefer applying in their dental restorative procedure which was equi-gingival shoulder finish line configuration. Further as a future goal this study will be done based on direct clinical evaluation among clinical dental students which will provide a much better view of the preference of finish line configuration among the dental students across different places.

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