

Knowledge, attitude and practice of finishing and polishing of composite restoration among dental students

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Abstract

INTRODUCTION: Composite restoration/composite filling is a tooth colored plastic and glass mixture used to restore decayed/carious teeth. The aim of this study is to evaluate the knowledge, attitude and practice of finishing and polishing of composite restoration among dental students.

MATERIALS AND METHOD: A questionnaire of 10 questions was created and entered in the online survey creator 'Google Forms' and shared among each student of about 100 individually and data were collected subject to statistical analysis using SPSS software. Statistical tests used were descriptive statistics and Chi square tests. P value less than 0.05 was considered statistically significant.

RESULT: Results of this study suggest that dental students were having more knowledge, awareness and practice of finishing and polishing of composite restoration among dental students

CONCLUSION: From the study it is concluded that the participants have adequate knowledge, attitude and practice about finishing and polishing the composite restoration except 1st yrs who lack practice and attitude

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KEYWORDS: micro-mechanically polymeric or resin matrix, Composite restorative material

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INTRODUCTION:

Composite restoration/composite filling is a tooth colored plastic and glass mixture used to restore decayed/carious teeth.

Composite are also used for cosmetic improvements of the smile by changing the color of teeth or reshaping disfigured teeth (Sheriff *et al.*, 2020)

Composite restorative material consist of a continuous polymeric or resin matrix in which a filler is dispersed (Moura *et al.*, 2011)

The move towards minimal intervention has been made possible by great improvement in restorative materials, which make it possible for a motivated practitioner to achieve a good result in a realistic amount of clinical time. composite filling can be closely matched to the colour of the existing teeth. composite micro-mechanically bond to tooth structure (Vichi, Ferrari and Davidson, 2004) and this strengthens the tooth's structure and restore its original physical integrity (Peutzfeldt, Jaeggi and Lussi, 2014).

Less healthy teeth need to be removed for a composite restoration procedure.

The common disadvantage of composite is shrinkage which might cause secondary caries (Baroudi *et al.*, 2015).

Composite filling may not last as long as amalgam filling under the presence of chewing and composite filling may chip off the tooth and longevity of the restoration and esthetics mainly depends upon the proper finishing and polishing of the restoration (Bottenberg *et al.*, 2009) and fillers determines in some of the properties of the composite like reinforcement, reduction of polymerization shrinkage (Baseren, 2004), Reduction in thermal expansion and contraction and in control of the workability/viscosity and decreased water sorption which leads to softening of composite (Kroezee *et al.*, 1990) and leading to abrasive wear and staining and even breaking of composite (Li *et al.*, 2012).

Usually composite are classified into macro fillers, small fillers, midfillers, minifillers, microfillers, nanofiller where the filler has to be selected less than 100nm for avoiding the reduction in mechanical properties, depth of cure and translucency of composite which lead to clinical failure (Şen, Göller and İşsever, 2002) and usually microfilled composite are more polishable than the hybrid composite but has less mechanical properties (Liebenberg, 1996) due

to the bond between the composite particle and clinically cured matrix is relatively weak so it should not be used in stress bearing areas and whereas hybrid composites are polishable (AlQarni *et al.*, 2013) and are better in mechanical properties and esthetics (Liebenberg, 1996) and can be used in high stress sites like incisal edges and small non contact occlusal cavities (Schwendicke *et al.*, 2016) and nanohybrid composite is not much stronger than hybrid composite and not widely used since it is developmental stage (Janus *et al.*, 2010). Our team has extensive knowledge and research experience that has translate into high quality publications (Dinesh *et al.*, 2013; Krishnan and Lakshmi, 2013; Muthukrishnan and Warnakulasuriya, 2018; Sekar *et al.*, 2019; Gomathi *et al.*, 2020) (Sathivel *et al.*, 2008; Panda *et al.*, 2014; Govindaraju, Neelakantan and Gutmann, 2017; Johnson *et al.*, 2020; Saraswathi *et al.*, 2020). The aim of this study is to evaluate the knowledge, awareness and practice of finishing and polishing of composite restoration among dental students for the aim to improve their clinical effectiveness and handling of the composite in ease and making it to integrate firmly through the tooth structure and improves the knowledge of the students where to use the composite and where not in use in maxillary and mandibular teeth

MATERIALS AND METHOD:

Study design:

A cross sectional study was conducted through an online survey from February to April 2021 among dental students.

Study subjects: A simple random sampling was used to select the study participants of 100 dental students

Inclusion criteria: All the dental students who were willing to participate were included.

Ethical considerations: Returning the filled questionnaire was considered as implicit consent as a part of the survey. Ethical approval for the study was obtained from the Institutional Review Board (IRB), Saveetha Dental College. Study methods: Self administered questionnaire of close-ended questions was prepared and it was distributed among dental students from February to April 2021 through the online survey "google forms". The collected data were checked regularly for clarity, competence, consistency, accuracy and validity. Demographic details were also included in the questionnaire.

Statistical analysis: Data was analysed with SPSS version (26.0). Descriptive statistics as percent were calculated to summarise qualitative data. Chi square test was used to analyze and The confidence level was 95% and statistical significance $p < 0.05$. Finally, the result was presented by using bar charts, pie charts and percentage tables.

Result:

Composite resins are currently the most popular of all tooth coloured restorative materials, which have completely replaced silicate cement and acrylic resin as esthetic restorative material (Güler *et al.*, 2009). Among 100 population 25% were male and 75% were female (fig 1). Among 100 population .9.82% were 1st yrs, 19.64% were 2nd yrs, 19.64% were third yrs, 23.21% were fourth years and 16.96% were Interns (fig 2). Among 100 population 87% of respondents answered yes and 13% of respondents answered no (fig 3). Among 100 population 92% of them answered yes, 8% of them answered No

(fig 4). Among 100 population 89% of them answered yes and 11% of them answered no (fig 5). Among 100 population 40% of them have answered Burs, 51% of them answered polishing kits and 9% of them answered none of the above (fig 6). Among 100 population 91% of them answered yes and 9% of them answered no (fig 7). Among 100 population 49% of them answered secondary caries, 16% of them answered gingival inflammation and 20% of them answered surface staining 15% of them answered all of the above (fig 8). Among 100 population 40% of them answered Immediate finishing and polishing 22% of them answered Immediate finishing and delayed polishing, 24% of them answered delayed finishing and polishing and 14% of them answered I don't do finishing and polishing (fig 9). Among 100 population 14% of them answered bisco dental, 3% of them answered coltene, 16% of them answered DMG America, 4% of them answered DMP dental, 25% of them answered Ivoclar vivadent, 16% of them answered ker, 10% of them answered Tokuyama Dental America And 12% of them answered SDI (North America).

Among 100 population 55% of them answered shofu, 17% of them answered Toboom, 11% of them answered ultra dent jiffy, 17% of them answered NMD composite (fig 10) and

Among 100 population 81% of them answered yes and 19% of them answered no (fig 11)

From the results obtained by questionnaire many are aware about the finishing and polishing of composite restoration and the study was within limited amount of the students within the premises of saveetha dental college and hospital among the male and female. Female have responded more correctly than male and to ascertain the result of the study and knowledge of the dental students larger number of sample size is taken into consideration for increasing the significance of the study and to get the precise result.

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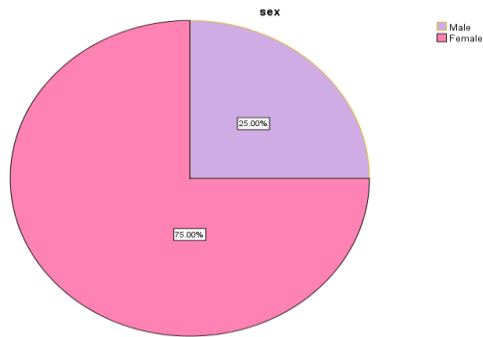


FIGURE 1:Pie Chart showing the percentage distribution of gender of dental student.25% were male and 75% were female

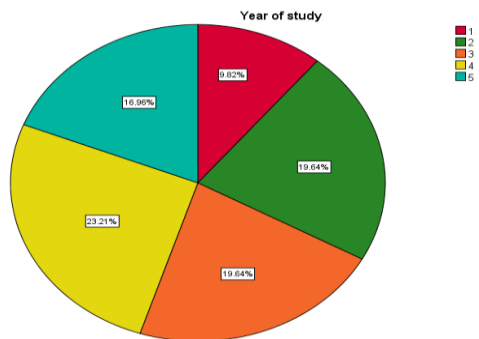


Figure 2: Pie Chart showing the percentage distribution of year of study of the dental students.9.82% were 1st yrs,19.64 % were 2nd yrs,19.64% were third yrs,23.21% were fourth years and 16.96% were Interns

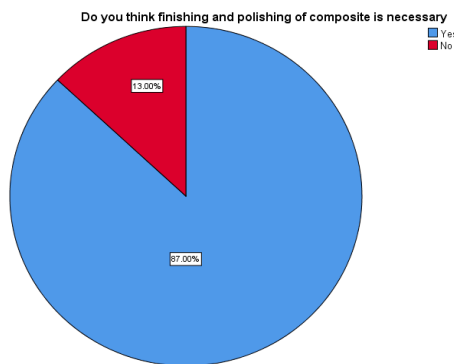


Figure 3:pie chart showing the percentage distribution for the question Do you think finishing and polishing of composite is necessary 87% of respondents answered yes and 13% of respondents answered no

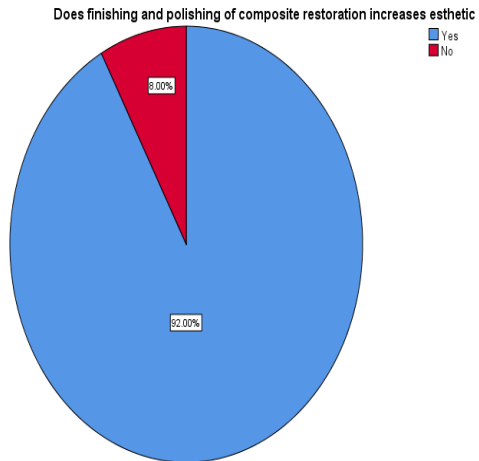


Figure 4:pie chart showing percentage distribution for the question Does finishing and polishing of composite restoration increases esthetics.92% of them answered yes,8% of them answered No

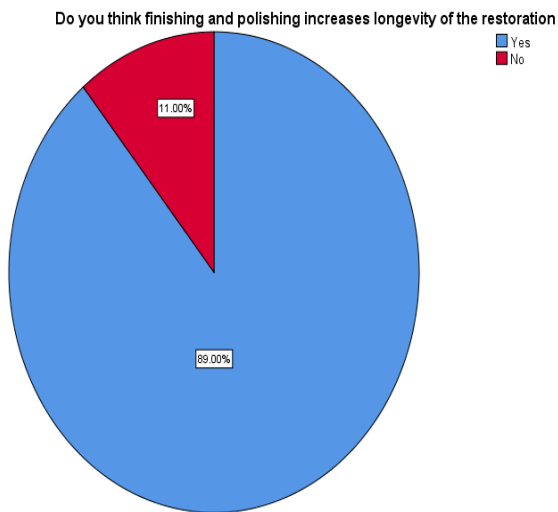


Figure 5: piechart showing the percentage distribution of do you think finishing and polishing increases longevity of the restoration.89% of them answered yes and 11% of them answered no

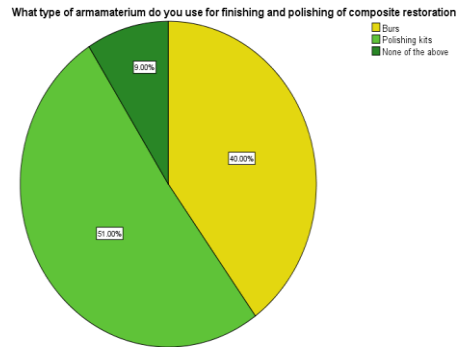


Figure 6:pie chart showing the percentage distribution of what type of armamentarium Do you use for finishing and polishing of composite restoration.40% of them have answered Burs,51% of them answered polishing kits and 9% of them answered none of the above

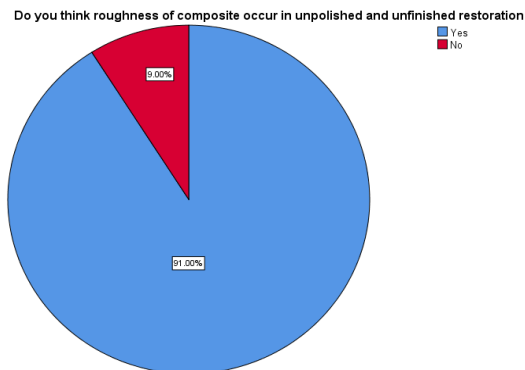


Figure 7:Pie Chart showing the percentage distribution of Do you think roughness of composite occur in unpolished and unfinished restorations 91% of them had answered yes and 9% of them had answered no

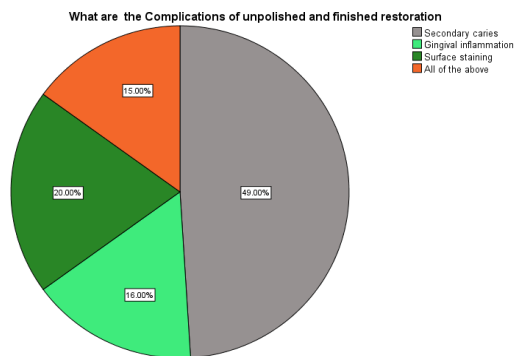


Figure 8:piechart showing the percentage distribution of what are the complication of unpolished and unfinished restoration.49% of them answered secondary caries,16% of them answered gingival inflammation and 20% of them answered surface staining
15% of them answered all of the above

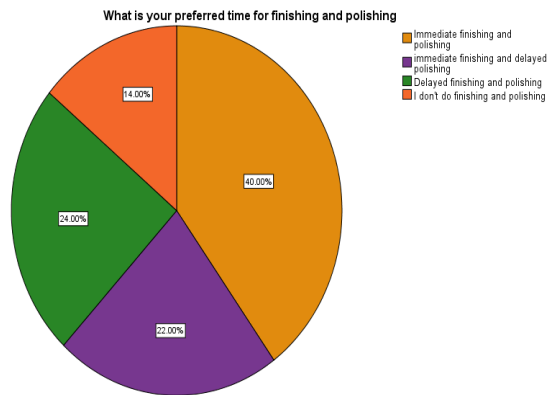


Figure 9:piechart showing percentage distribution of preferred time for finishing and polishing.40% of them answered Immediate finishing and polishing
22% of them answered Immediate finishing and delayed polishing,24% of them answered delayed finishing and polishing and 14% of them answered I don't do finishing and polishing

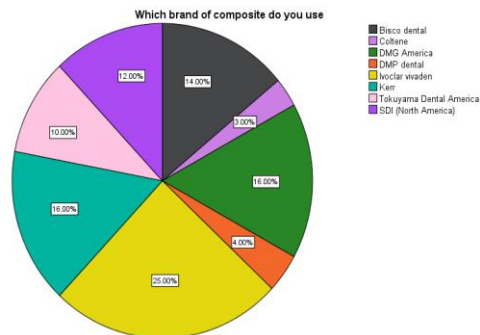


Figure 10:piechart showing the percentage distribution of which brand of composite do you use. 14% of them answered bisco dental,3% of them answered coltene,16% of them answered DMG America,4% of them answered DMP dental,25% of them answered Ivoclar vivadent,16% of them answered Ker,10% of them answered Tokuyama Dental America
And 12% of them answered SDI (North America)

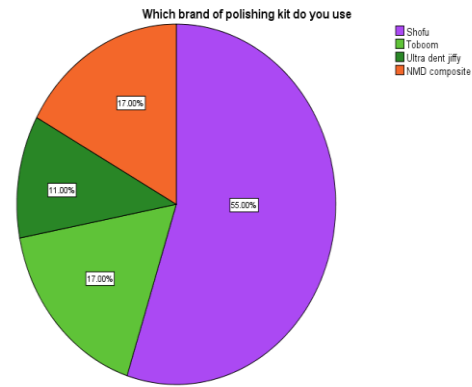


Figure 11: pie chart showing the percentage distribution of brand of polishing kit do you use.55% of them answered shofu,17% of them answered Toboom,11% of them answered ultra dent jiffy,17% of them answered NMD composite

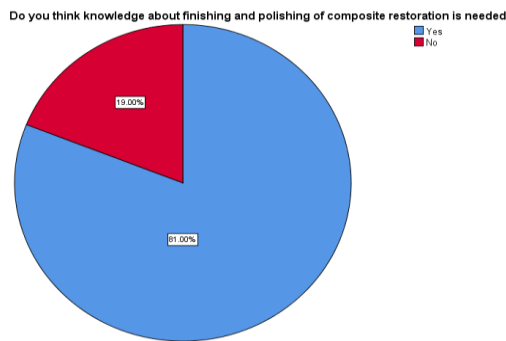


Figure 12: pie chart showing the percentage distribution of knowledge about finishing and polishing of composite restoration is needed.81% of them answered yes and 19% of them answered no

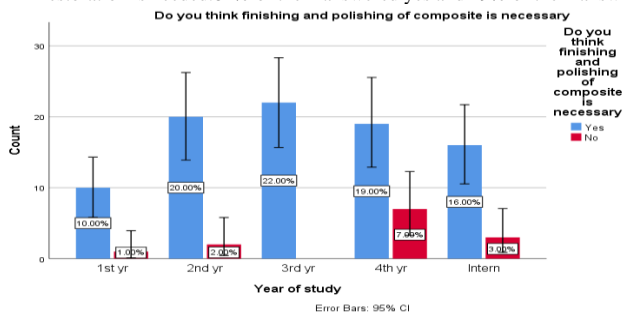


Figure 13:bar graph represents the association between year of study and finishing and polishing of composite id necessary,p=0.081 which is statistically insignificant

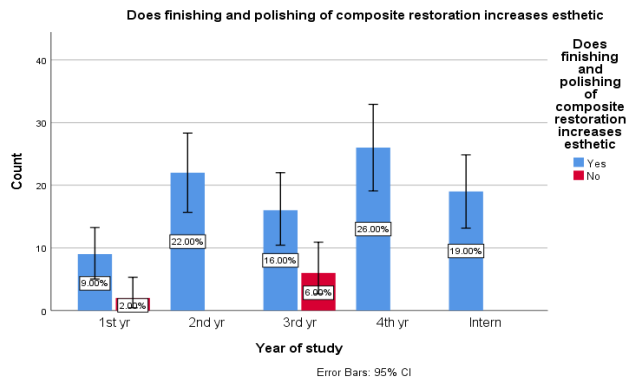


Figure 14:bar graph represents the association between year of study and finishing and polishing of composite increases esthetics,p=0.001 which is statistically insignificant

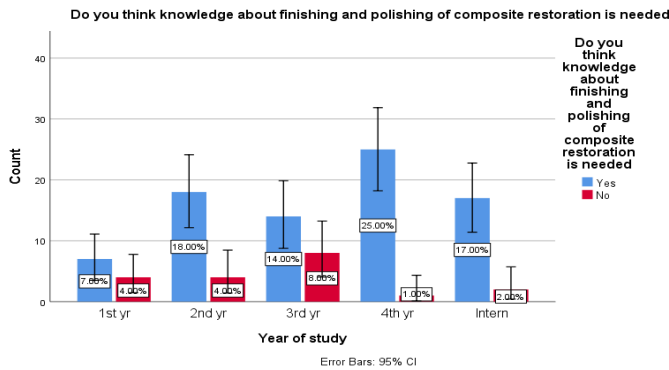


Figure 15:Bar graph represent the association between the year of study and knowledge about finishing and polishing of the composite is needed,p=0.024 which is statistically insignificant

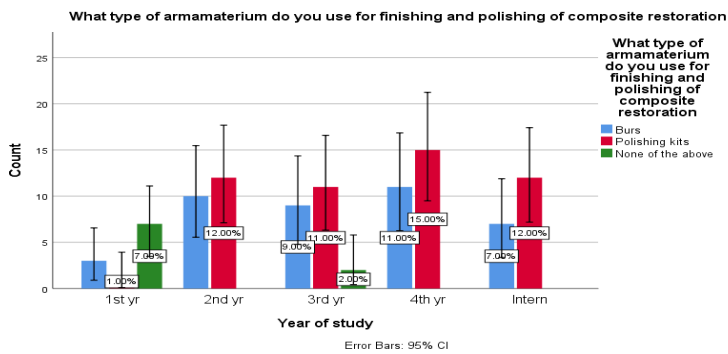


Figure 16: Bar graph represent the association between year of study and type of armamentarium do you use for finishing and polishing of composite restoration,p=0 which is statistically insignificant

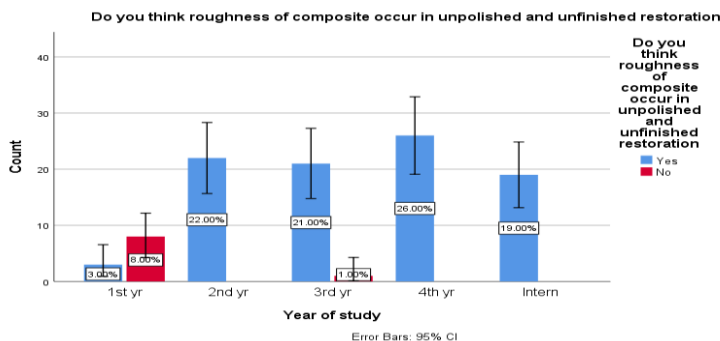


Figure 17: bar graph showing the association between year of study and roughness of composite occur in unpolished and unfinished restoration,p=0 which is statistically insignificant

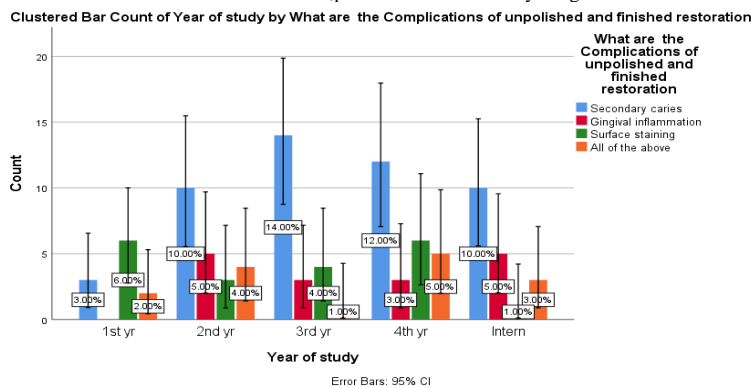


Figure 18: bar graph showing association between year of study and complication of unpolished and finished restoration,p=0.129 which is statistically insignificant

DISCUSSION:

The success of composite depends on various clinical factors like operating field,type of composite and bonding system,different designs of the tooth preparation,methods of filling the cavity(incremental/bulk),time and type of finishing and polishing of the composite restoration and the previous study made by Mohammed Ali Aiqarni participants were responded 109(62.6%) responded polishing paste and surface sealant is required for the composite polishing and 106(61.3%) responded that polishing paste and surface sealant doesn't required for composite polishing(AIQarni *et al.*, 2013) which oppose our study where we never concentrated about polishing sealant and surface sealant and on previous study done on importance of polishing composite restoration where 23% of males and 42% of females are aware that finishing and polishing prevents the adherence of dental biofilms,tobacco and food lodgement and food colorants to stick on the composite surface which correlates our study and previous study they concluded that survival rate of composite resin after finishing and polishing are found to be 91.7% at 5 years and 82.2% at 10 years(Sajad, Shafia and Sharma, 2018) which supports our study and our study fulfill the knowledge gap that the students lack in the finishing and polishing of the composite restorations and tells them the effectiveness of

finishing and polishing of composite restoration in clinical practice. The limitation of the study here is there is no knowledge, awareness and practice created about the surface sealant and polishing paste and the large number of population of dental students need to be surveyed.

Conclusion:

Within the limitation of the study we concluded that the participants have adequate knowledge, attitude and practice about finishing and polishing the composite restoration except 1st yrs who lack practice and attitude

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