ORIGINAL ARTICLE

Knowledge, attitude, and practice survey on the use of stamp technique for the management of Class I caries in molars among undergraduate students in dental schools

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ABSTRACT

Stamp technique is a recently developed technique that involves of creating an index which records the occlusal anatomy of posterior teeth before cavity preparation. This technique is beneficial in cases where the caries is involving the occlusal surface with little or no damage to the occlusal anatomy or the marginal ridges. The aim of the study is to assess the knowledge and practice on the use of stamp technique for the management of Class 1 caries in molars among undergraduate students. A questionnaire-based study was conducted among 100 dental students in Saveetha Dental College. The questionnaire contained 17 questions that were circulated through Google Forms and received dichotomous responses. The data were collected as an ordinal variable and the collected data were analyzed using SPSS software, and Chi-square test and descriptive analysis were done. This study shows that almost 37% of the respondents were interns and final-year students, 62% of them felt carving would be easier to attain the proper occlusal morphology, 55% of them prefer both flowable and packable composites, and 63% felt stamp technique would be technique sensitive. There was a significant association between the year of study and difficulties faced in occlusal stamp technique ($P = 0.014 < 0.05$). Undergraduate students were moderately aware of the stamp technique in composite restorations. More detailed knowledge on composite finishing and polishing should be emphasized in the undergraduate curriculum.

Key words: Composite filling, occlusal anatomy, stamp technique

INTRODUCTION

The search for providing esthetic results in dentistry has become increasingly demanding even in the posterior teeth. Dental caries mostly involves the occlusal surface of the posteriors. Recently, the manufactures are focusing on the development of composites that meet both the needs of the operator and patient.[1,2]

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However, composites still today face minor drawbacks. It involves multiple steps, technique sensitive and time-consuming, and further needs excellent operator skills to achieve an excellent esthetic and functional outcome.[3,4] It required more time to complete restoration with composite when compared to amalgam.[5] This is the main reason for using stamp technique as an alternative placement technique for composite restoration.

Manually crafting an esthetic restoration requires operators' knowledge of the occlusal anatomy and excellent skills. One of the newer techniques for creating an excellent blend of both function and esthetics is the "stamp technique." This new technique consists of fabricating an index which records the occlusal anatomy of posterior teeth before cavity preparation.[6,7] This technique is beneficial in cases where the caries is involving the occlusal surface with little or no damage to the occlusal anatomy or the marginal ridges.[8] Thus, the obtained occlusal index is then pressed against the final composite increment before curing to achieve a positive replica of the preoperative anatomy.

This technique involves taking an impression of the occlusal surface with a wash technique or two-step impression to record all the details including the occlusal pits and fissures. In these specific cases, where the occlusal surface is intact, the stamp technique is fast and easy to use.[6]

Our team has extensive knowledge and research experience that has translated into high-quality publications.[9-27] The aim of the study was to assess the knowledge and practice on the use of stamp technique for the management of Class 1 caries in molars among undergraduate students.

MATERIALS AND METHODS

A sample size of hundred UG students participated in the cross-sectional study; an observational online study was conducted. The questionnaire was constructed in Google Forms with dichotomous responses and multiple-choice questions. The study setting and approval was the Institutional Review Board of Saveetha University (IHEC/SDC/ENDO/21/029). The questionnaire contains 17 questions based on knowledge of the stamp technique for Class 1 caries in molars, and finally, the data were collected and entered in Excel. Data were analyzed with the SPSS version (22.0). Descriptive statistics as number and percentage were calculated to summarize qualitative data. Chi-square test was used to analyze and compare the education level of students and their knowledge, attitude, and practice on stamp technique for Class 1 caries on molars. The confidence level was 95%, and the statistical significance $P < 0.05$ was considered statistically significant. Finally, the results were represented by using pie charts and frequency tables.

RESULTS

In our study, Figure 1 depicts the percentage distribution of year of study. Of which 26% were 3rd-year students and 37% were final-year students and the rest 37% were interns.

Table 1 represents the sociodemographic data And also facilitates the depiction of percentage distribution of awareness of occlusal stamp, nearly 56% answered that they were aware of this occlusal stamp technique while 18% answered that they were not aware of occlusal stamp and the rest 26% answered maybe.

Figure 2 depicts the percentage distribution of the type of composite used in which 28% answered flowable and nearly 17% answered that it is packable and the rest 55% answered that it is both

Figure 3 depicts the percentage distribution of difficulties faced during occlusal stamp technique where near 52% answered that the major difficulty during occlusal stamp technique is that it is time-consuming and 20% answered that it is difficult due to saliva contamination and nearly 17% answered that it is difficult due to its technique sensitive While rest 11% were unable to mimic the occlusal morphology.

DISCUSSION

In a study done by Newman *et al*., the use of occlusal stamp technique was shown that it avoids the primary occlusal trauma and leads to a functional restoration and its correct occlusal anatomy.[28] Alshehadat et al. mentioned that they obtained a good fossa relationship in minimal time with opposing dentition and also mentioned that this stamp technique is used in busy dental practices.[3] Figure 4 shows

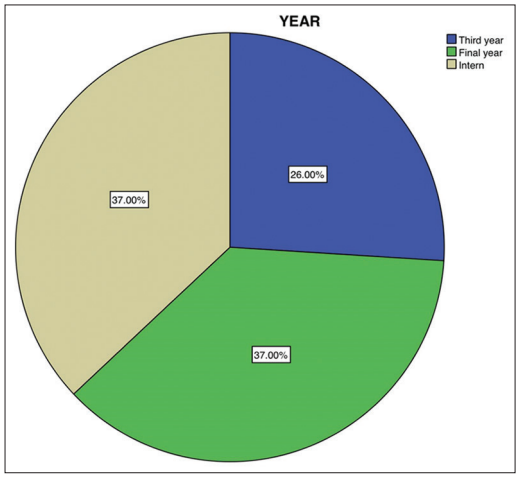

Figure 1: Pie chart representing the percentage distribution of year of study of participants where 26% were 3rd-year students (blue) and 37% were final-year students (green) and the rest 37% were interns (beige)

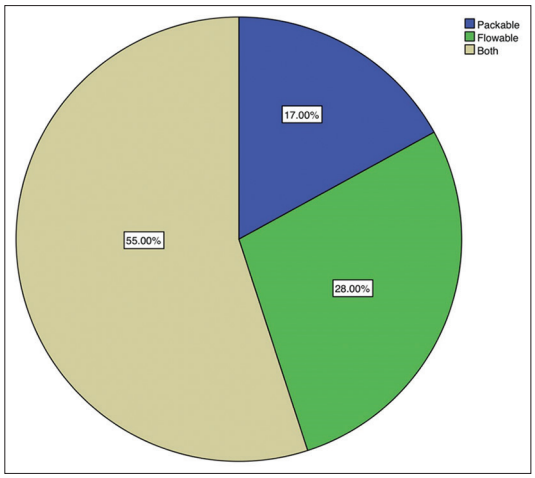

Figure 2: Pie chart representing the percentage distribution of the type of composite used where 28% answered that it is flowable (green) and nearly 17% answered that it is packable (blue) and the rest 55% answered that it is both flowable and packable (beige)

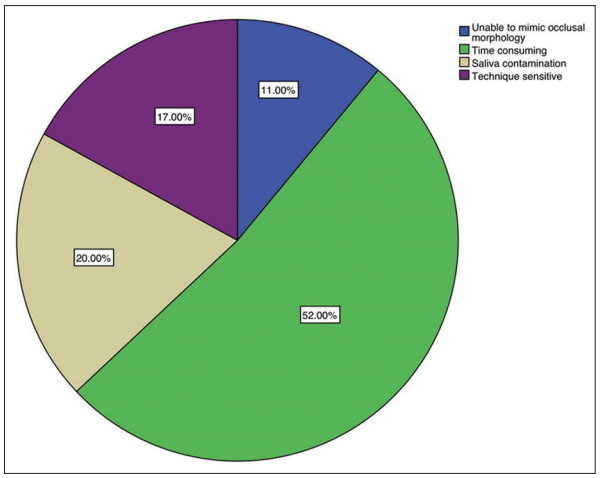

Figure 3: Pie chart representing the percentage distribution of difficulties faced during occlusal stamp technique. Fifty-two percent answered that the major difficulty during occlusal stamp technique is that it is time-consuming (green), 20% answered that it is difficult due to saliva contamination (beige), 17% answered that it is difficult due to its technique sensitivity (purple), while the rest 11% were unable to mimic the occlusal morphology (blue)

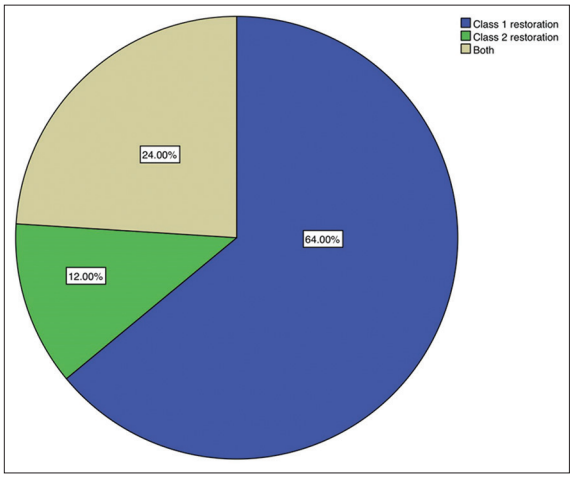

Figure 4: Pie chart representing the percentage distribution of the usage on the occlusal stamp technique. Sixty-four percent answered that its use for Class 1 restoration (blue), 12% answered that it is used for Class 2 restoration (green), while the rest 24% answered that it is used for both Class 1 and Class 2 restorations (beige)

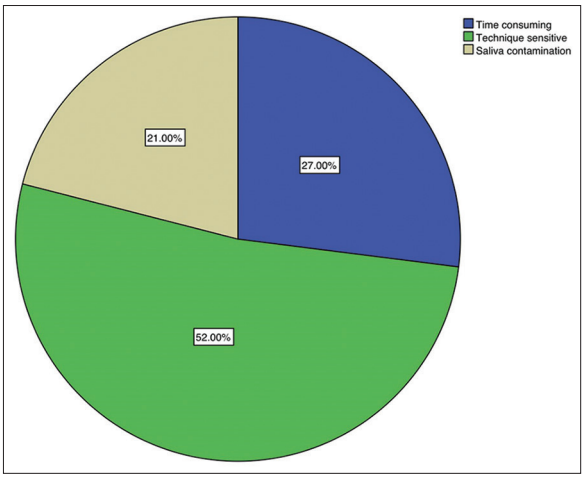

Figure 5: Pie chart representing the percentage distribution of the factor that limits the usage of stamp technique where nearly 27% answered that the occlusal stamp technique is a time-consuming procedure (blue) while 52% answered that sensitivity (green) is a major factor and the rest 21% answered that the major factor is saliva contamination (beige)

the percentage distribution on the usage of occlusal stamp technique where 64% answered that it is used for Class 1 restoration and 12% felt it is used for class 2 and 24% felt it can be used for both. Figure 5 indicates the percentage distribution of difficulties faced during occlusal stamp technique where nearly 52% respondents answered that the major difficulty during occlusal stamp technique is that it is time-consuming and 20% answered that it is difficult due to saliva contamination and nearly 17% answered that it is difficult dur to its technique senstive while the rest 11% were unable to mimic the occlusal morphology. The results of this study were in contrast to Tambake et al. who has shown the advantages of stamp technique to be accurate in reproducing the occlusal anatomy and to be less time-consuming.[29] These results indicate that the respondents of all groups required much knowledge and awareness on the usage of stamp technique in regular clinical practice. When asked about the choice of the material used for stamp technique nearly 15% answered that they used silicone material, while 19% answered that packable composite material and 66% answered that flowable composite material is used for sta mp technique. When asked about the separating medium used during stamp procedure 35% answered that the separating medium is Vaseline while nearly 65% answered bonding agent as the separating medium when asked about the

Table 1: Showing responses of the questionnaire.

Questions	Responses	Percentage
1) Year of study?		
Third year	26	26%
final year	37	37%
intern year	37	37%
2) Do you feel occlusion is important??		
Yes	69	69%
No	12	12%
Maybe	19	19%
3) How can you attain occlusion in composite restoration?		
Carving	62	62%
Finishing and polishing	19	19%
Stamp technique	19	19%
4) Are you aware of occlusal stamp technique?		
Yes	56	56%
No	18	18%
May be	26	26%
5) What type of composite do you prefer for class 1 restoration?		
Packable	17	17%
Flowable	28	28%
Both	55	55%
6) Is stamp technique procedure sensitive?		
Yes	55	55%
No	15	15%
May be	30	30%
7) What are the difficulties that you face while restoring a class 1 cavity with composite?		
Unable to mimic occlusal	11	11%
morphology	52	52%
Time consuming	20	20%
Saliva contamination	17	17%
Technique sensitive		
8) Is stamp technique better than conventional method?		
Yes	19	19%
No	34	34%
May be	47	47%
9) What material can be used for stamp technique?		
Silicone	15	15%
Flowable	66	66%
Packable	19	19%
10) Separating medium used for stamp technique ?		
Bonding agent	65	65%
Vaseline	35	35%
11) How much time do you consume in finishing and polishing a posterior composite restoration done using conventional technique		
Less than 5 min	19	19%
5 to 10 min	64	64%
More than 10 min	17	17
12) Do you think stamp method can Replicate the exact occlusal morphology?		
Yes	20	20%
No	14	14%
Maybe	66	66%
13) Disadvantages of using stamp technique?		
Time consuming	19	19%
Technique sensitive	63	63%
Can't be done over large lesi	18	18%

Contd...

14) Occlusal stamp technique can be used for?		
Class 1 restoration	64	64%
Class 2 restoration	12	12%
Both	24	24%
15) What factor do you think that limits then usage of stamp technique?		
Time consuming	27	27%
Technique sensitive	52	52%
Saliva contamination	21	21%
16) Can it be used on patients with attrition		
Yes	13	13%
No	54	54%
Maybe	33	33%
17) Do you prefer stamp technique?		
Yes	24	24%
No	28	28%
Maybe	48	48%

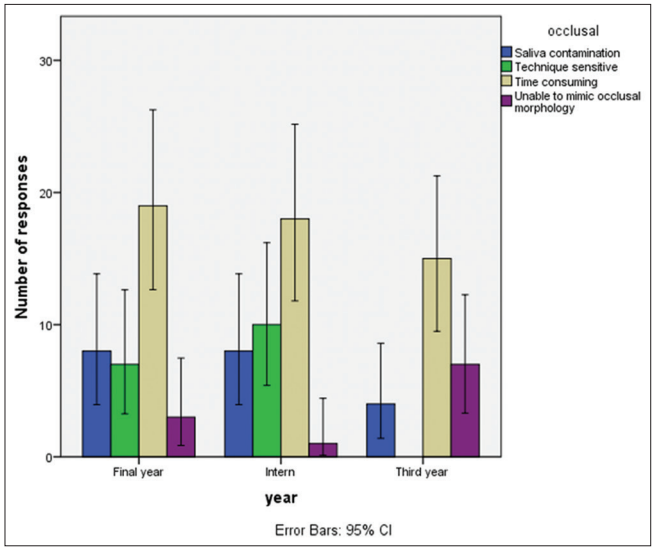

Figure 6: Bar diagram representing the association between the year of study and the difficulties faced during occlusal stamp technique. X-axis denotes year of study; Y-axis denotes percentage of responses. Blue denotes unable to mimic occlusal morphology, green denotes time-consuming, beige denotes saliva contamination, and purple denotes technique sensitivity. Majority of them found the procedure time-consuming in all the groups. This association was statistically significant (Chi-square test; $P = 0.014 > 0.05$ - statistically significant). CI: Confidence interval

awareness on replicating the exact occlusal morphology where nearly 20% answered that occlusal stamp technique can exactly replicate the occlusal morphology while 14% answered that it does not replicate the occlusal morphology and the rest 66% answered that it may replicate the exact occlusal morphology. The results of the study were in accordance to a Mary *et al*. who stated that less time is required to recreate the occlusal anatomy using stamp technique this also decreases chairside time and material consumption.[30-33]

According to the figure 6 the correlation between years of study and difficulties that are faced in restoring composite. X-axis denotes the year of study; Y-axis denotes difficulties faced in composite restoration. From this, we infer that majority of the final-year students, 3rd-year students, and interns felt it is a time-consuming procedure. *P* value showed 0.014 which is statistically significant. The limitations of the study include limited geographical limitation and sample size. The future scope is to increase the sample size with a vast geographical limitation and increase awareness and knowledge of other aspects in stamp technique in treating Class 1 molars in the undergraduate curriculum.

CONCLUSION

Stamp technique is a rarely used technique which is more advantageous in managing Class 1 caries in molars when compared to other methods, and undergraduate students were moderately aware of the stamp technique in composite restorations. More detailed knowledge on stamp technique in treating Class 1 cases should be emphasized in the undergraduate curriculum.

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Conflicts of interest

There are no conflicts of interest.

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