

KNOWLEDGE ATTITUDE AND PRACTICE OF LASER TOOTH PREPARATION AMONG DENTAL STUDENTS - A QUESTIONNAIRE SURVEY

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ABSTRACT:

Introduction: LASER is an acronym that stands for 'Light Amplification by Stimulated Emission of Radiation.' Since the first use in dentistry by Miaman in 1960, the laser has seen a wide variety of hard and soft tissue applications. Laser technology for hard tissue application and soft tissue surgery is highly refined, having evolved over many decades to the present, and further advancements are possible. Additional applications for laser-based photochemical reactions, especially for targeting specific cells, pathogens, or molecules, hold great promise. Aim of this study was to analyse knowledge, attitude and practice of laser tooth preparation among dental students.

Materials and Methods:

Cross-sectional type of study conducted among the dental students comprising 150 subjects. Closed ended questionnaires consisting of 15 questions were framed and responses were collected in Google forms and analysed using SPSS software. The results were tabulated. Descriptive statistics and inferential statistics with Chi square analysis was done using SPSS software

Results: Male and female population were equally aware that the laser was used in dental practice. Chi square test was done P value 0.526 (>0.05) which is statistically not significant.

Conclusion: According to the findings of this study, around 78.22% of dental students were aware of the lasers used in dentistry, and 73.25% have practiced laser dentistry. More than 50% of the dental students were aware that lasers are used for composite curing, enamel etching, and removal of caries.

The survey concluded that awareness on laser tooth preparations among dental students is quite good.

Keywords: Awareness, laser tooth preparation, innovative technology, novel method, composite

INTRODUCTION:

New research and technology is now moving into all fields of dental practice and has modified the conventional practices that enable students and professionals to have the expertise they need. (1) Dental lasers are one of the most important advances in contemporary dentistry. Lasers were brought into the world of dentistry in the 1960s, which would help to overcome the drawbacks of conventional methods. (2) Laser technology is now widely used, in diagnostic, preventive, restorative, and endodontic dentistry. Lasers have some benefits, such as low pressure and noise during cavity preparation and minimal to no need for local anesthesia relative to traditional handpieces (3). Any of the features of laser-treated dental tissue include coarse microscopic surfaces without demineralization, open dentinal tubules without frosting, and dentin surface sterilization. The lasers have traditionally been categorized according to the physical construction of the laser. (e.g. gas, liquid, solid state or semiconductor diode), the form of medium undergoing lasing (e.g. Erbium: Yttrium Aluminum Garnet) (Er: YAG) (2,4) and the degree of damage to the skin or eyes.

In hard tissue applications, the laser is used for the avoidance, bleaching, remediation and healing of caries, tooth preparation, dental hypersensitivity, growth modulation and diagnostic purposes. In soft tissue use, laser is used for incision, excision, ablation, wound regeneration, removal of hyperplastic tissue to the uncovering of damaged or partially erupted teeth, photodynamic treatment for malignancies, photostimulation of herpetic lesion (5). In soft tissue use, laser is used for incision, excision, ablation, wound regeneration, removal of hyperplastic tissue to the uncovering of damaged or partially erupted teeth, photodynamic treatment for malignancies, photostimulation of herpetic lesion. (6) Use of the laser proved to be an effective tool to increase efficiency, specificity, ease, and cost and comfort of the dental treatment

Laser usage has proven to be an efficient method to improve the performance, precision, ease and cost and comfort of dental treatment.(7)Our team has extensive knowledge and research experience that has translate into high quality publications(8–17),(18–21)(Rohit Singh and Ezhilarasan 2020; Ezhilarasan 2020; Romera et al. 2018; Raj R et al. 2020),(22–26)(27)

Thus, The aim of this study was to assess knowledge, attitude and practise of laser among dentists. In view of the increasing availability of new technology in dental practices, the need for further education and training to determine the standard of education and laser expertise in dentistry among dentists was identified.

MATERIALS AND METHOD:

This cross sectional survey was conducted with the self prepared questionnaire comprising a sample size of 100. The validity of the questionnaire was established by surveying dentistal students who were part of the study population and met the inclusion and exclusion criteria.The questionnaire was prepared with 15 questions comprising details about the knowledge And practice of laser tooth preparation. The responses are recorded using the online platform Google forms and were analysed using statistical software SPSS version 2.0 .Independent t-test was used for comparison between the gender and KAP of the students. Independent variable were sex, knowledge,education. The dependent variables are age. Chart Analysis was carried out with the responses recorded in the software and results were represented in a pie chart.

Inclusion criteria:

The participants should be dental students.

Exclusion criteria:

Students who were not available to take the survey.

Students who were not willing to participate.

Dentists who had completed the period of study.

RESULTS

The present study has observed responses from a total of 150 participants of which 58.2%, 41.58% were female and male respectively, comprising distribution of age groups ,21.78% were 18 above , 36.63% were 18-25 age group, and 41.58% were 25 above respectively (Table 1). Further, the percentage of people who practiced laser dentistry were 73.27% and 26.73% did not, and 78.22% of people were aware of lasers used in dental practice and 21.78% were not aware (figure 1) The percentage of people who agreed with lasers for removal of caries were 16.83% , who did not were 15.84% and people who reported maybe 67.33% (figure 2) also the total number of people who agreed lasers to be used for composite curing were 78.22% and 21.78% disagreed. The percentage of people who reported that laser helps in enamel etching was 52.48% and those who did not were 47.52%. Further, 75.25% reported that lasers cause damage to eyes and skin whereas 24.75% did not (figure 3).Also, 24.75% of them were aware of diode laser type , 53.47% were aware of Er:Cr:YSGG, and 21.78% were aware of Er:YAG (figure 4). The percentage of people who felt that laser helps in diagnosis of pulp vitality, were 51.5% agreed, 48.5% did not. 57.43% were aware that laser lessens the need for local anaesthesia, 28.71% did not and 13.86% were not that sure (figure 5). The percentage of people aware that the laser arrests bleeding was 48.51% and 51.49% did not.

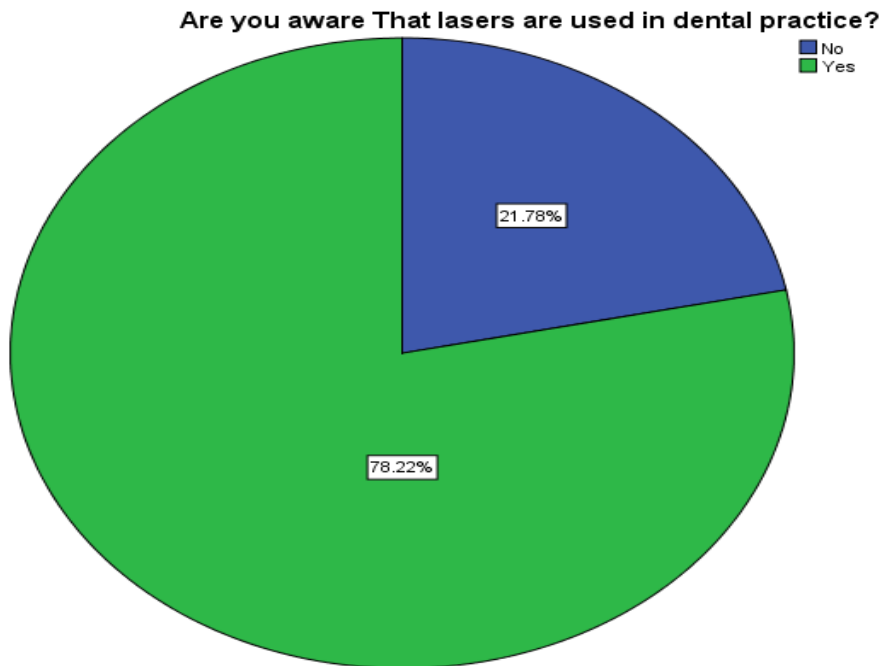


FIGURE 1 : The pie chart represents that 78.22% of people were aware of lasers used in dental practice and 21.78% were not aware .

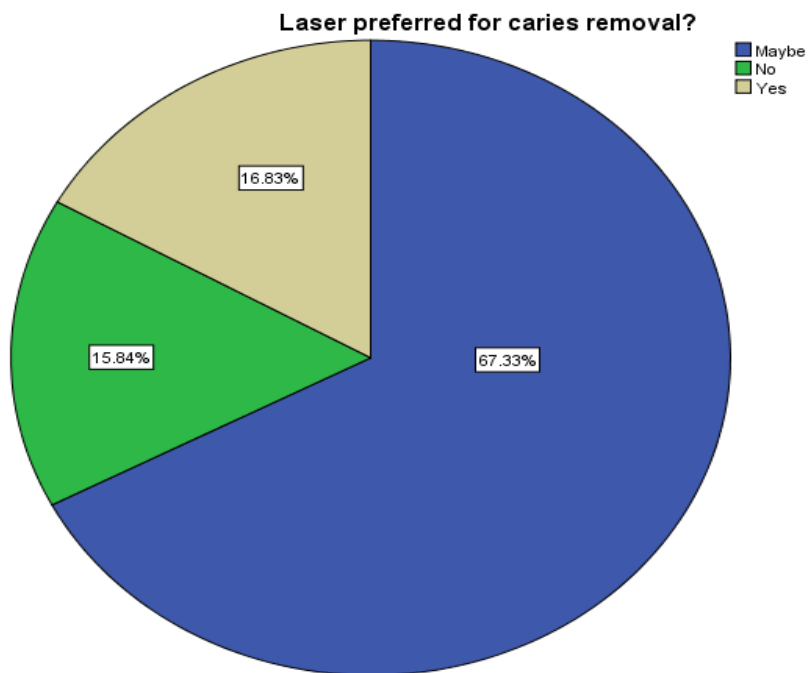


FIGURE 2 : The pie chart represents the percentage of people who agreed lasers for removal of caries were 16.83% , who did not were 15.84% and people who reported maybe 67.33%.

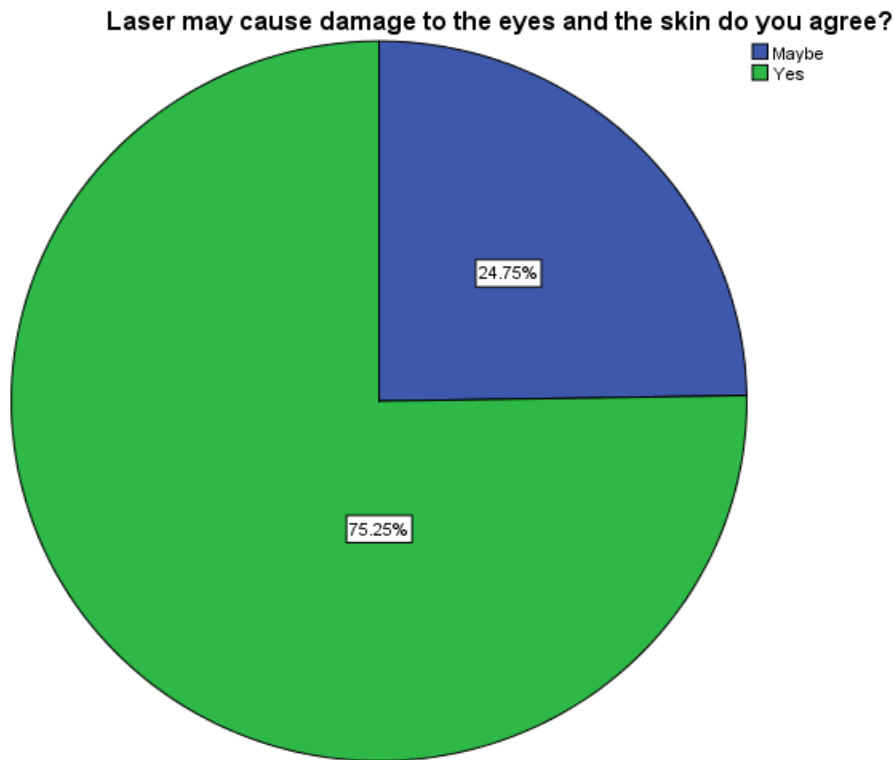


FIGURE 3: The pie chart represents the percentage of people who reported that lasers cause damage to eyes and skin are 75.25% whereas 24.75% did not .

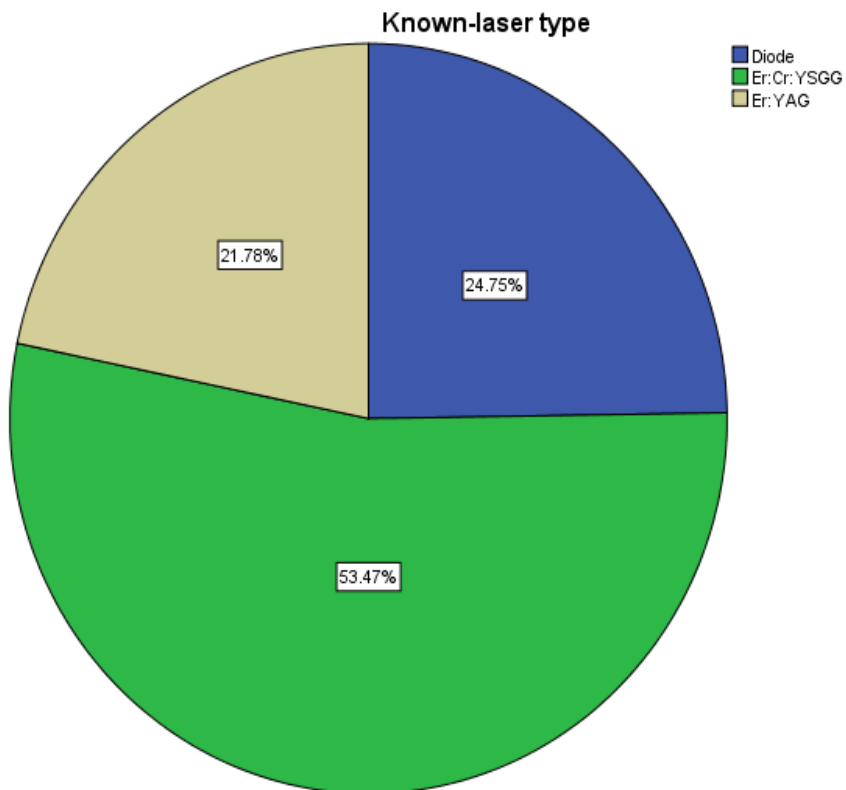


FIGURE 4: The pie chart shows that 24.75% of them were aware of diode laser type , 53.47% were aware of Er:Cr:YSGG, and 21.78% were aware of Er:YAG.

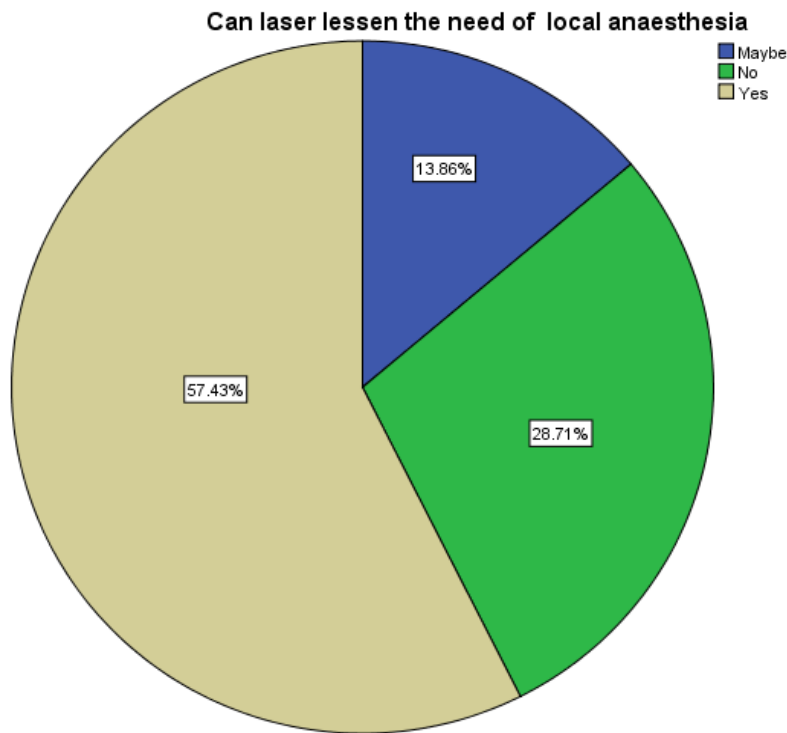


FIGURE 5: The pie chart represents the percentage of people aware of laser lessens the need local anaesthesia were 57.43% , 28.71% did not and 13.86% were not that sure

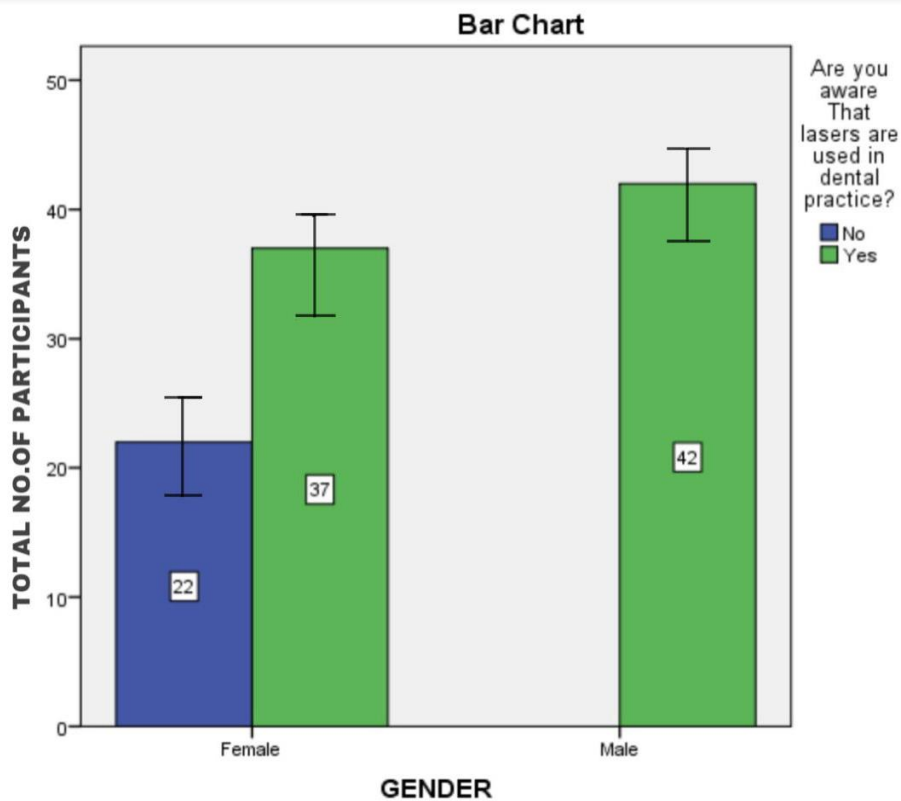


FIGURE 6: Bar chart showing the association between gender and awareness on the lasers used in dental practice. X axis represents the gender and Y axis represents the total number of participants. Green represents yes, blue color represents no. Male and female population were equally aware that the laser was used in dental practice. Chi square test was done P value 0.526 (>0.05) which is statistically not significant.

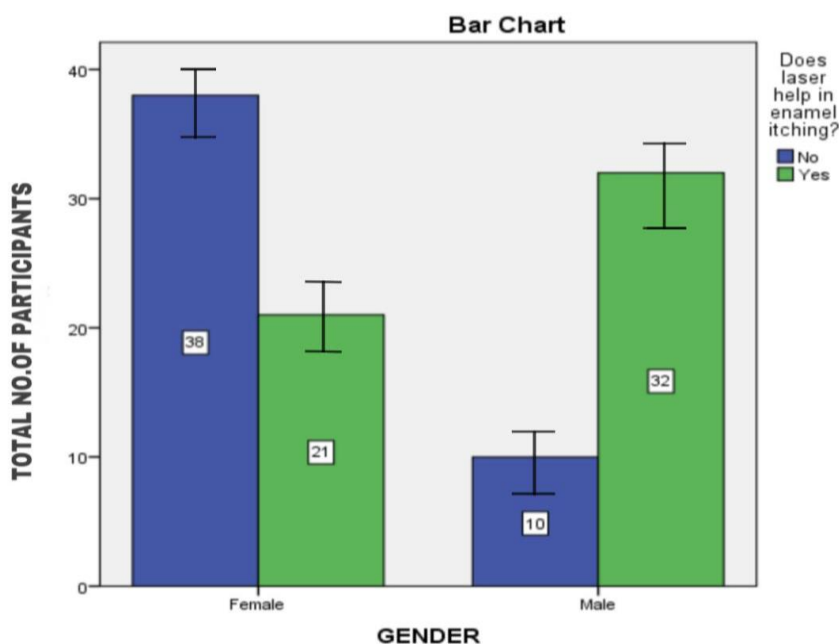


FIGURE 7: Bar chart showing the association between gender and awareness of the laser if it helps in enamel etching. X axis represents the gender and Y axis represents the total number of participants. Green represents yes, blue color represents no. Majority of the female dental students were aware of the laser application in enamel etching. However, the influence of gender on awareness could not be established. Chi square test was done P value 0.526 (>0.05) which is statistically not significant.

S.No	QUESTIONS	CHOICES	RESPONSES
1.	Gender	Female Male	58.2% 41.58%
2.	Age	18 above 18-25 25 above	21.78% 36.63% 41.58%
3.	Have you practiced laser dentistry?	Yes No	73.27% 26.73%
4.	Are you aware of lasers used in dental practice?	Yes No	78.22% 21.78%
5.	Can lasers be used for removal caries ?	Yes No maybe	16.83% 15.84% 67.33%
6.	Can lasers be used for composite curing?	Yes No Maybe	78.22% 21.78%
7.	Can a laser help in enamel etching ?	Yes No	52.48% 47.52%

8.	Can lasers cause damage to skin and eye ?	Yes No	75.25% 24.75%
9.	Are you aware of diode laser type ?	Diode laser Er:Cr:YSGG Er:YAG	24.75% 53.47% 21.78%
10.	Can lasers help in diagnosis of pulp vitality?	Yes No	51.5% 48.5%
11.	Are you aware that laser lessens need local anesthesia?	Yes No Not sure	57.43% 21.78% 13.86%
12.	Are you aware that lasers arrest bleeding?	Yes No	48.51% 51.49%
13.	Do you have enough knowledge on lasers?	Yes No	63.37% 36.63%
14.	Are you aware that lasers prevent swelling?	Yes No	61.39% 38.17%
15.	Can lasers be used for prevention of caries ?	Yes No	47.52% 52.48%

DISCUSSION:

Adequate education, appropriate practice and adequate expertise are required to make use of various dental technologies. Dental college education is the most valuable source of technical expertise for dental students, who rely on and depend on the information they receive from dental colleges.(28)This study provides a general view about dental laser education and knowledge among final year dental students. Most dental students know the term “laser”however, this survey generally assesses some basic knowledge of dental students regarding the uses of lasers in dentistry. Thus in our study , a total of 58.42% of females and 41.58% of male respondents participated , further divided based on age distribution 18above , 18-25 and 25 above were 21.78%,36.63% and 41.58% respectively which stands similar to the study done by Ebrahim et al (29)

Further, 78.2% of the respondents were aware of laser treatments, while 73.27% practiced laser dentistry which stands consistent to the study done by Walsh et al (30)

The application of lasers in removing caries, used for composite curing, helps in enamel etching, preventing the caries reported 16.83%,78.22%,52.48%,52.48% contrary to the study done by Verma et al (31). From the study done by Takamori et al, (32) 53.47% of the respondents were aware of known laser type Er.Cr.YSGG respectively also 48.51% of respondents reported that laser help in diagnosis of pulp vitality which shows similarity in relevance to our study (33) Literature review shows that many laser applications in dentistry were unfamiliar to dentists until they were recently published in the literature and demonstrated their efficacy.(34) The majority of dentists were unaware of the applications of laser in operative dentistry, such as dentin desensitization. Less bleeding is the most well-known benefit of laser among dentists, which may be attributed to general education awareness about lasers in dentistry.(35) Many dentists are aware of the hemostasis impact on dental tissues, perhaps as a result of education about the use of lasers in periodontics(36). Lasers have many benefits in the field of dentistry. Lack of expertise and understanding should not lead to its inadequate clinical practise. Laser education should be given during their college research programs in order to expand its use in the field of dentistry.

The limitations of the study is that participants may have shown under or over report on KAP for laser tooth preparation, and the study is carried through online means. The study population is also precise and has to be circulated in large numbers. The future score is the population size that has to be discussed and worked on for better results and the limitations cited should be explored and sorted out.

CONCLUSION:

According to the findings of this study, around 78.22% of dental students were aware of the lasers used in dentistry, and 73.25% have practiced laser dentistry. More than 50% of the dental students were aware that lasers are used for composite curing, enamel etching, and removal of caries.

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CONFLICT OF INTEREST: None to declare.

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