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ORIGINAL ARTICLE

Dental laser education and knowledge among final year dental students at King Saud University in Riyadh, Saudi Arabia

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KEYWORDS

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Abstract *Aim of the study:* To assess the educational level and the knowledge of the final year dental students at King Saud University regarding the uses of laser in Dentistry.
Materials and methods: This cross-sectional, descriptive study was carried out at the College of Dentistry, King Saud University in Riyadh. A questionnaire was designed and answered by 94 final year dental students. The questionnaire consisted of 2 parts. First part was about dental laser education and the second one was about the knowledge of dental laser applications. The second part was subsectioned to 6 sections. Each section consisted of several items related to the uses of laser in 5 different dental specialties in addition to a section in laser protection. The analysis was performed by scoring 2 for a correct response, 0 for don't know response and −2 for an incorrect response. Students' knowledge scores were calculated and transferred to a scale ranged between 2 and −2. Score of $\geqslant 1$ was considered as sufficient knowledge, while score of < 1 was considered as insufficient knowledge. Descriptive statistics of different items were assessed and analyzed using SPSS program.
Results: Most of the dental student (91.5%) reported that they did not have enough dental laser education. In general, the majority (76%) of dental students had insufficient knowledge regarding the uses of laser in Dentistry. Students' knowledge of the uses of dental laser in Oral Surgery and Operative Dentistry was better than their knowledge in Periodontic, Pediatric Dentistry/Orthodontic and Endodontic.

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Conclusion: Dental students at King Saud University had inadequate laser education and insufficient knowledge regarding the uses of laser in different specialties in Dentistry. More education about dental laser should be added to the curriculum of undergraduate program.

1. Introduction

New science and technologies are already making their way into all aspects of dental practice and have changed the traditional approaches, which require that students and practitioners receive the necessary knowledge.[1] Dental laser is one of the most significant developments in modern dentistry. Lasers were introduced into the field of Dentistry in 1960s, with the hope of overcoming some of the drawbacks posed by the conventional methods of dental procedures.[2] Conventional methods of cavity preparation with low and high speed handpieces involve noise, uncomfortable vibrations and stress for patients.[3] These disadvantages have led to a search for new techniques as possible alternatives for dental hard and soft tissue removal.[3] Different laser devices and different wavelengths opened up various treatment options for diverse indications. Laser Dentistry is not assigned to a one particular field, and as a result the arch was extended from Conservative Dentistry over the Oral and Facial Surgery throughout Pediatric Dentistry. In addition to its uses in hard tissue preparation (bone and tooth preparation) and soft tissue surgery, laser treatment in combination with composite or glass ionomer restorations, or in the treatment of hypersensitive teeth are examples of different application areas.[4–6] Furthermore, laser is important in canal disinfection and in behavior management in Pediatric Dentistry.[7,8] In order to practice laser safely and effectively in different disciplines of Dentistry, it is essential to have a good knowledge of laser physics, laser operation, different types of laser and which type of laser is appropriate for each case.

In view of the increasing availability of new technologies in dental practices and the need for more education and training, this survey was conducted to assess the educational level and knowledge of the uses of laser in Dentistry among the final year dental students in College of Dentistry, King Saud University.

2. Materials and methods

Approval of the study was obtained from the Ethical Committee of the College of Dentistry Research Center at King Saud University (Reg. No. F0095). This cross-sectional, descriptive study was carried out at the College of Dentistry, King Saud University in Riyadh. A self-administered questionnaire consisting of 2 main parts was designed and administered voluntarily to all final year dental students (110 female and male students) at the end of their final year (2011/2012). The questionnaire was generated after extensive literature review of the dental laser types and common applications of laser in different dental specialties. The questionnaire was reviewed for content, clarity, bias, and the questions' adequacy to the study objective by a senior faculty. The first part of the questionnaire consisted of 10 items regarding the students' dental laser education and training. The second part consisted of 34 items in 6 sections. Each section contained several items related to the uses of laser in 5 different dental specialties [Oral Surgery (8 items), Endodontic (4 items), Periodontic (4 items), Operative Dentistry (10 items) and Pediatric Dentistry/Orthodontic (4 items), in addition to some items in laser protection (4 items)]. The data were entered and analyzed using Statistical Package for Social Sciences 16 software (SPSS Inc., Chicago, Ill). Descriptive statistics [frequency, percentage, mean, standard deviation (SD)] of different items were assessed.

2.1. Scoring system

In the second part of the questionnaire, there were 34 items, each item having true, don't know and false options. The analysis was performed by scoring 2 for a correct response, 0 for don't know response and −2 for an incorrect response. Score calculation was performed according to the following equation:

$$\frac{(2X \text{ No. of responses}) + (0X \text{ No. of dont know responses}) + (-2X \text{ No. of responses})}{\text{Total No. of items}}$$

The scores of each student were added together giving a total overall knowledge score which could range between 68 and −68. Then the total overall score of each student was divided by the number of the items (34 items) and was transferred to a scale ranges between 2 and −2. The same procedure was applied separately for each specialty section [(total score in Oral Surgery/8 items),(total score in Endodontic/4 items), (total score in Periodontic/4 items),(total score in Operative Dentistry/10 items), (total score in Pediatric Dentistry/Orthodontic/4 items),(total score in laser protection/4 items)]. The mean of the students' scores was calculated to assess the level of their overall knowledge and their knowledge in each specialty. Score of $\geqslant 1$ was considered as a cut point for the sufficient knowledge as it equals to 50% or more correct knowledge. Score of < 1 which equals to less than 50% was considered as insufficient knowledge as it towards no or incorrect knowledge.

3. Results

Ninety four dental students (38 female students and 56 male students) returned the questionnaires with a response rate of 85.5%. Table 1 shows that about 87% of the respondents know what is laser. Only 8.5% of them thought that they had enough education about dental laser. About 11.7% had practiced dental procedures with dental laser outside the college. Most of the dental students has the interest in dental laser and would like to have more theoretical and practical education in this area (Table 1). In addition, the majority sought after special dental laser course in their undergraduate curriculum. Table 1 also shows that their dental laser knowledge obtained mainly in Periodontic, Operative Dentistry and Oral Surgery undergraduate courses. The most known laser types among them were Co_2 and diode lasers (Table 1).

Regarding dental students' laser knowledge, Table 2 shows the students' responses of each item in each section and the mean score of each section. The best score was obtained in