


EVALUATION OF TEACHING LOW INTENSITY LASER IN PERSPECTIVE DENTIST

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The present study was carried out at the Faculty of Medical and Health Sciences of Juiz de Fora - MG.

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ABSTRACT

Search knowledge dentist front surgeon to low intensity laser through a questionnaire. They were selected randomly in the city of Juiz de Fora and region 91 Dental Surgeons of Minas Gerais. These employees were sent during the months from July to October 2013, a standard form printed with questions about laser education assessment of low intensity. Of the 91 participants, 42 (46.2%) were female and 49 (53.8%) were male. Fifty-seven (62.6%) had dental public institution of higher education; 32 (35.2%) attended a private institution and 2 (2.2%) did not report this data. Eighty-nine dentists reported the time of graduation, and this varied with a minimum of 1 year and a maximum of 38 years of training, the average being 11 years and this is the standard deviation of 10.7. The age of these professionals is on average thirty-five years, ranging from twenty-two years to sixty-five years of age and the standard deviation of this is 10.8. The distribution according to academic title was: 35 dentists (38.5%) had a degree in dentistry; 13 (14.3%) were specialists; 14 (15.4%) had master's and 4 (4.4%) doctorate. 25 (27.5%) did not report the academic title. The most relevant mentioned specialties were general practitioner, endodontics and implantology. We can conclude that the Juiz de Fora dentist - MG and region makes little use of laser therapy and this is mainly due to little knowledge acquired at the undergraduate and graduate education.

Keywords: Laser, dentistry, teaching



INTRODUCTION:

The laser, acronym for light amplification by stimulated emission of radiation, is an electromagnetic radiation with its own characteristics that differs from ordinary light, having a unique wavelength, coherence in space and time, collimatedly carrying high concentrations of energy (CAVALCANTI TM.; ALMEIDA BARROS RQ. et al., 2011), (CASTILHO FILHO T., 2003).

As a general form, lasers can be classified into: high power lasers or surgical lasers or HILT (high intensity laser treatment), indicated for cutting, coagulation, cauterization and ablation; and low power lasers or therapeutic lasers or LIL (low intensity light) with a power density of 10 mW / Cm². This has the purpose of the photobiomodulation, thus, it is used to prevent irreversible cellular damage, accelerating scarring processes, being also indicated as analgesic, anti-inflammatory and anti-edematous (CAVALCANTI TM.; ALMEIDA BARROS RQ. et al., 2011), (CASTILHO FILHO T., 2003), (LI X.; ZHU L. et al., 2013), (ARAÚJO GS., 2008). Moderate Intensity Light (MIL) in the range of 0.1 - 1.0 W / cm², can also be used for the photobiomodulation if the irradiation time is short and does not cause damage to organelles and cells. Both MIL and LIL are used for low intensity laser therapy (LI X.; ZHU L. et al., 2013).

The incorporation of less invasive methods in order to minimize pain and discomfort during and after the interventions has been a trend in dentistry. In this sense, LIL has shown beneficial effects of analgesia to irradiated tissues and in order to explain the analgesic therapeutic properties of LIL, several mechanisms of action have been proposed (CAVALCANTI TM.; ALMEIDA BARROS RQ. et al., 2011).

Experts say the laser has great potential for use in all dental specialties, despite being a relatively new technique. Searched by patients who want a less invasive technique, it has proved to be a very attractive tool (HENRIQUES ACG.; CAZAL C. et al., 2010).

However, to work with Laser, the professional must first know the physical characteristics of this radiation, the various active media that belong to the lasers, the interaction with the biological tissue, the dosimetry and, finally, learn to handle the device to define a successful application in living tissue (DEDERICH DN.; BUSHICK RD., 2004)

This study aims to evaluate the teaching of low intensity laser from the perspective of the dental surgeons.

MATERIALS AND METHODS:

This research was approved by the Research Ethics Committee of the Faculty of Medical and Health Sciences of Juiz de Fora by process no. 370.307.

A group of 91 dental surgeons from the state of Minas Gerais were randomly selected in the city of Juiz de Fora and region. These professionals received, from July to October 2013, a standard printed form with questions about:

- a) professional profile: sex, graduation from public or private college, time elapsed from graduation, academic degree, workplace (municipality and institution) and activity (general practitioner or specialty);
- b) your opinion regarding the teaching of Low Intensity Lasers during the undergraduate course and in the dental specialty done (excellent, good, regular or unsatisfactory);

The factor analysis was used to produce measurements and interpret the constructs for the questionnaire data. Two factors were found corresponding to the questionnaire data, namely Evaluation of the diffusion of the professional's academic knowledge about the Low Intensity

Laser that corresponds to the questions "What is your opinion regarding the teaching of low intensity lasers during the undergraduate course?" and "What is your opinion regarding the teaching of low-intensity lasers during the postgraduate course (updating, specialty, master or doctorate)?" and Professional's commitment to acquire knowledge in Low Intensity Laser that corresponds to the questions "How have you done an individual search in allied literature (in books) or in critical literature (indexed articles) about low intensity laser?" and "Perform a selfassessment regarding your knowledge of low intensity laser."

The qualitative variables, such as gender and graduation, were described using percentages. The quantitative variables, such as age and graduation time, were described using means, minimum, maximum and standard deviation. In order to cross quantitative variables (factors) with qualitative variables, the Student t test was used to correlate quantitative variables among them, Pearson and Spearman's correlation coefficient was used, which was adopted in the case of a quantitative variable with an ordinal, such as graduation. The level of significance was set at 5% ($p < 0.05$).

RESULTS:

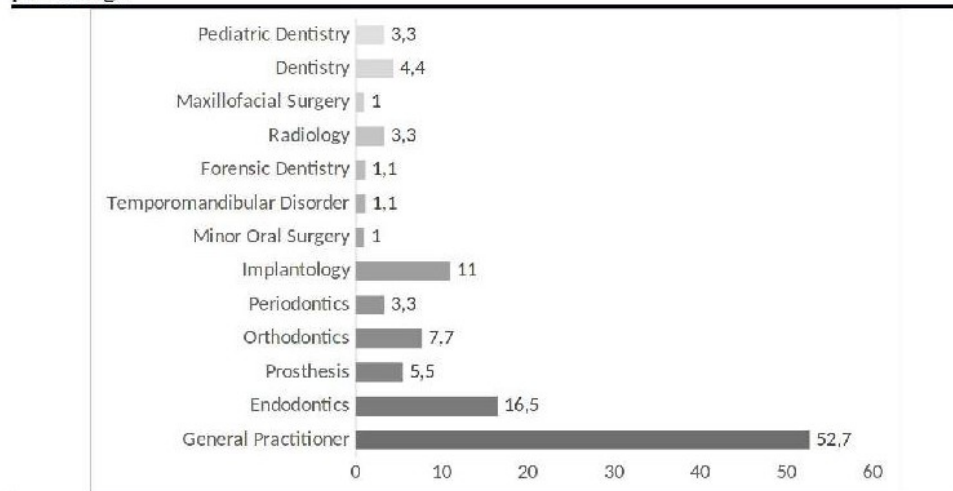
The 91 questionnaires delivered to 91 dental surgeons (100%) were completed. Professional profile:

Of the 91 participants, 42 (46.2%) were female and 49 (53.8%) were male. Fifty-seven (62.6%) studied dentistry at a public higher education institution; 32 (35.2%) attended a private institution and 2 (2.2%) did not report this data. Eighty-nine dental surgeons reported their graduation time, which varied with a minimum of 1 year and a maximum of 38 years of training, with an average of 11 years and its standard deviation is 10.7. The average age of these professionals is thirty-five years, ranging from twenty-two to sixty-five years old and the standard deviation of this is 10.8.

The distribution according to academic degree was: 35 dental surgeons (38.5%) had a degree in dentistry; 13 (14.3%) were specialists; 14 (15.4%) had a master's degree and 4 (4.4%) had a doctorate. 25 (27.5%) did not report their academic degrees.

The 13 most relevant areas of activity mentioned are expressed as a percentage in Graph1.

Graph1 - Areas of activities performed by the evaluated dental surgeons, expressed as a percentage



From the workplace, 64 professionals (70.3%) declared to work in a private place, 2 (2.2%) work in a public place and 22 (24.2%) declared to work in a public and private place. Three professionals (3.3%) did not respond.

Evaluation of the diffusion of the professional's academic knowledge about the Low Intensity Laser and the professional's commitment to acquire knowledge in Low Intensity Laser:

The factor Evaluation of the diffusion of the professional's academic knowledge about the Low Intensity Laser and The professional's commitment to acquire knowledge in the Low Intensity Laser explains 38.7% and 38.3% of the total variance. These were extracted by a multidimensional model with Varimax rotation; the first factor measuring the opinion about the quality of the teaching of Low Intensity Laser in undergraduate and graduate courses, and the second evaluates the search for personal knowledge in Low Laser Intensity.

Evaluation of the diffusion of the professional's academic knowledge about the Low Intensity Laser:

Regarding the evaluation of academic knowledge, 8 dental surgeons (8.8%) considered the teaching of Low Intensity Laser excellent during graduation, 16 (17.6%) considered it good, 133 (14.3%) considered it regular, 48 (52.7%) considered it unsatisfactory. Six professionals (6.6%) did not answer the question.

The teaching of Low Intensity Laser in graduate studies was rated as excellent by 11 professionals (12.1%), 23 (25.3%) rated it as good, regular by 16 professionals (17.6%) and unsatisfactory by 33 (36.3%). Eight professionals (8.8%) did not answer the question. Professional's commitment to acquire knowledge in Low Intensity Laser:

Asked if they had already conducted an individual search in allied and critical literature on Low Intensity Laser, 2 professionals (2.2%) rated the search as excellent, 31 (34.1%) as good, 31 (34.1%) considered it regular and 21 (23.1%) professionals said it was unsatisfactory. Six (6.6%) professionals did not answer the question.

Only 1 dental surgeon (1.1%) rated his current knowledge of Low Intensity Laser as excellent, 14 (15.4%) as good, 43 (47.3%) as regular and 29 (31.9%) as unsatisfactory. Four professionals (4.4%) did not answer the question.

The list of the place of graduation, whether public or private, and the evaluation factor of the diffusion of the academic knowledge of the professional about the Low Intensity Laser:

When doing the Spearman's correlation, a positive and significant association was observed between the place of graduation, being it public or private and Evaluation of the diffusion of the professional's academic knowledge about the Low Intensity Laser. The correlation can be seen in table 1.

When performing the comparison using the t test, which measured the professional's ability to assess the quality of teaching at undergraduate and graduate levels, it showed that the professional at the private institution (n = 26) tends to have better capacity than that at the public institution (n = 52), even though there was a greater number of professionals who declared they had training in a public institution. The comparison is shown in table 2.

Table 1 - Spearman's correlation showing a positive and significant association between the place of graduation, whether public or private and *Evaluation of the diffusion of the professional's academic knowledge about the Low Intensity Laser*:

		Local graduation
Local graduation	Spearman's correlation coefficient	1,000
	p-value	.
	N	89
<i>Evaluation of the diffusion of the professional's academic knowledge about the Low Intensity Laser</i>	Spearman's correlation coefficient	0,291
	p-value	0,010
	N	78

Table 2 - Comparison by t test, where it was observed that private institutions tend to report better *Evaluation of the diffusion of the academic knowledge of the professional about the Low Intensity Laser*:

	Local graduation	N	Means	Standard deviation	p-value
<i>Evaluation of the diffusion of the professional's academic knowledge about the Low Intensity Laser</i>	Public	52	-0,1830	0,93185	0,011
	Private	26	0,4233	1,02163	
<i>Professional's commitment to acquire knowledge in Low Intensity Laser</i>	Public	52	0,0230	1,04692	0,802

DISCUSSION:

Low intensity lasers are used as therapeutic agents associated with conventional treatment, showing analgesic, anti-inflammatory and tissue repair properties. Before determining a laser application protocol, it is necessary to know its mechanisms of action in the tissues (SCHINDL A .; SCHINDL M. et al., 2000). There is a learning curve for using the dental laser during which the clinician develops the technique and confidence with the appropriate instrument (MYERS TD .; SULEWSKI JG. et al., 2004).

The laser has great potential for use in all specialties of dentistry, and despite being a relatively new technique (HENRIQUES ACG .; CAZAL C. et al., 2010) patients see the dental surgeons who use it as trained professionals to perform procedures with high technology which will result in greater comfort, greater predictability and high quality (WEINER GP., 2004).

In this work, a positive association was found between the place of graduation (public or private) and Evaluation of the diffusion of the professional's academic knowledge about the Laser. Even though the number of professionals who declared to be trained in a public institution is greater, the cognitive gain in relation to the laser in the private institution tends to be better than in the public institution. A study proposed that the best way to expand and introduce the knowledge obtained through the laser is during the undergraduate course in Dentistry (CAVALCANTI BNI .; ALMEIDA IMR. et al., 2001). For this, the teaching of this technology would be important in two phases: the first could occur both during each specialty benefited by this type of technology, and during a discipline specifically created for this purpose, regarding theoretical teaching; and the second phase of teaching on the practical application of the laser, so that students could apply in different procedures and be able to establish treatment plans (CAVALCANTI BNI .; ALMEIDA IMR. et al., 2001).

No scientific evidence was found that reports the relationship between the age and time of the dental surgeon's graduation with laser therapy.

There is no perfect laser device because of the limitations of tissue composition and the physics of light interaction, and such as all dental materials and instruments, the practitioner must use clinical experience, receive adequate training, become very familiar with the instruction manual to proceed with their practice (Coluzzi DJ., 2005).

CONCLUSION:

We can conclude that the dental surgeon in Juiz de Fora - MG and region makes little use of laser therapy and this is mainly due to the little knowledge acquired in undergraduate and graduate courses.

The present study did not observe a relationship between age or time since graduation with the use of lasers, therefore, both professionals who have recently graduated and those who have graduated longer practice and indicate laser therapy in a similar way.

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