

Perception of dentistry students about organ donation and human teeth bank

Percepção de acadêmicos de odontologia sobre doação de órgãos e banco de dentes humanos

Percepción de los estudiantes de odontología sobre la donación de órganos y el banco de dientes humanos

RESUMO

Objetivo: Identificar por meio um questionário aplicado aos alunos de graduação de Odontologia de uma universidade da Cidade de São Paulo sobre a origem dos dentes obtidos para utilização no treinamento pré-clínico. **Método:** Trata-se de um estudo de natureza exploratória e descritiva, de cunho qualitativo e quantitativo realizado no período de agosto a dezembro de 2018, a amostra foi composta por 2404 entrevistados, a pesquisa foi submetida ao Comitê de Ética e Pesquisa, conforme a Resolução 510/16. **Resultados:** Apenas 40% conhece o valor legal do dente extraído como órgão, cerca de 46% dos alunos obtiveram dentes por compra e o restante obteve de forma gratuita em clínicas odontológicas ou colegas veteranos. **Conclusão:** Mediante os resultados, conclui-se que há necessidade de divulgação das atividades dos bancos de dentes humanos não apenas no meio acadêmico, mas para toda a população a fim de conscientizar a comunidade acadêmica e coibir o comércio ilegal.

DESCRITORES: Dente; Ensino; Bioética; Legislação; Banco de Dentes Humanos.

ABSTRACT

Objective: Identify, through a questionnaire applied to undergraduate Dentistry students at a university in the City of São Paulo, the origin of teeth obtained for use in preclinical training. **Method:** This is an exploratory and descriptive study, of a qualitative and quantitative nature, carried out from August to December 2018, the sample consisted of 2404 respondents, the research was submitted to the Ethics and Research Committee, according to the Resolution 510/16. **Results:** Only 40% know the legal value of the extracted tooth as an organ, about 46% of the students obtained teeth by purchase and the rest obtained them free of charge at dental clinics or veteran colleagues. **Conclusion:** Through the results, it is concluded that there is a need to publicize the activities of human teeth banks not only in academia, but for the entire population in order to raise awareness of the academic community and curb illegal trade.

DESCRIPTORS: Tooth; Teaching; Bioethics; Legislation; Bank of Human Teeth.

RESUMEN

Objetivo: Identificar, a través de un cuestionario aplicado a estudiantes de graduación en Odontología de una universidad del Municipio de São Paulo, el origen de los dientes obtenidos para uso en la formación preclínica. **Método:** Se trata de un estudio exploratorio y descriptivo, de carácter cualitativo y cuantitativo, realizado de agosto a diciembre de 2018, la muestra estuvo conformada por 2404 encuestados, la investigación fue sometida al Comité de Ética e Investigación, según Resolución 510/16. **Resultados:** Solo el 40% conoce el valor legal del dente extraído como órgano, alrededor del 46% de los estudiantes obtuvieron los dientes por compra y el resto los obtuvo gratis en clínicas dentales o colegas veteranos. **Conclusión:** A través de los resultados se concluye que existe la necesidad de dar a conocer las actividades de los bancos de dientes humanos no solo en la academia, sino a toda la población con el fin de concientizar a la comunidad académica y frenar el comercio ilegal.

DESCRIPTORES: Diente; Enseñando; Bioética; Legislación; Banco de dientes humanos.

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INTRODUCTION

The use of human teeth in undergraduate courses is a fact that deserves close attention from teachers and Higher Education Institutions involved, as it is known that they can contribute to the development of the illegal trade in teeth, as well as to the practice of crimes against the corpse (when teeth are removed from cemeteries). Many students also seek teeth extracted in professional offices, where donations are not always made or registered in accordance with regulations, which makes their use in research difficult, in addition to being completely unethical.

One of the most important aspects involving the ethical and legal obtaining of teeth, for academic purposes, is related to their origin from private collections or Human Tooth Banks.⁷

Faced with the possibility of establishing Human Tooth Banks (HTBs) in Dentistry faculties, as an attempt to solve the problem of tooth trade, it is necessary to begin ethical reflections on donation and the destination to be given to the donated dental element. It is known that maintaining mechanisms such as the Tooth Bank in the Faculty of Dentistry represents the best way to comply with current legislation and regulations regarding the use of parts of the human body for educational purposes.¹

The removal of a dental organ is still a common act in dental offices and dental schools and its donation has occurred spontaneously and, often, without proper referral. The tooth is a human organ and must be treated as

such. There are legal aspects involving your donation and applications and Dentistry professionals must be aware of their obligations and the risks that incorrect treatment can entail.¹

The organization and functionality of a Human Tooth Bank (HTB) in Dental Schools has become fundamental and evident due to the need for these teeth for pre-clinical laboratory activities, since the Human Teeth Biobank is responsible for assisting research related to scientific initiation, master's thesis, doctoral thesis and other work developed by research groups or individual research.

Scientific research in the different disciplines of Dentistry, which promotes the development of new therapies and techniques and proves the effectiveness of the most diverse dental materials, are often conditioned to the use of natural teeth for their development, as the dental element is an "essential substrate" for carrying out some work.¹

The ethical and legal path to using human teeth, whether in research, clinical or laboratory procedures, needs to be in the mindset of all professionals, students and teachers, opinion makers. This topic should be discussed transversally in professional training courses.²

Tooth Banks have shown an ethical way to control the uses and abuses of academic practices still practiced today.³

There are other advantages of creating a Human Teeth Bank, such as, for example, raising awareness among academics, researchers, teachers, dental surgeons and the general population regarding the importance of organ donation and the biosafe use of teeth by

students and teachers during teaching activities.¹

The teeth that arrive at a Human Tooth Bank have an uncertain origin and, therefore, must undergo a sterilization process so that they can be handled safely.

There are situations in which there are no acceptable substitutes for human teeth when learning the technique in the laboratory or in research.⁴ However, the importance of keeping the tooth sterile must be highlighted, as it is a source of microorganisms for humans, which can cause infectious diseases.⁵ A student or researcher who uses an extracted tooth for educational or research purposes will certainly be exposed to potential health hazards.⁵ Disinfection and sterilization processes are constant and fundamental practices for dental practice and, therefore, cannot be disregarded in the routine use of human teeth by undergraduate students.

Therefore, the objective of the present work was to evaluate awareness from a bioethical, social and legal perspective regarding the origin of teeth used for pre-clinical laboratory training by students of the Dentistry course at a University of São Paulo.

METHODS

This is an exploratory and descriptive study, of a qualitative and quantitative nature, carried out from August to December 2018, the sample was composed of 2404 students from the undergraduate Dentistry course at Universidade Nove de Julho, the research was submitted to the Ethics and



Research Committee, in accordance with Resolution 510/16, evaluated and approved under CAAE number: 60871616.2.0000.5511 and all researched subjects authorized their participation in the investigation by reading and accepting the ICF.

As inclusion criteria, we had undergraduate students enrolled in the dentistry course at Universidade Nove de Julho, between the 1st and 8th semester. Exclusion criteria include: students taking a course other than dentistry, non-enrolled students, already graduated students.

The research subjects responded to a questionnaire completely voluntarily, without the possibility of identification, maintaining the volunteer's confidentiality. All questions were answered by the researcher before the individual participated in the research. The collaborating individual had the right to withdraw from participating in the research at any time, without any penalty. The information provided by the participant was confidential and known only to the researchers.

A self-administered online questionnaire with direct answers was created, consisting of 20 closed questions. After applying the questionnaires, the results were tabulated and subjected to qualitative descriptive and quantitative statistical analysis analyzing the absolute and percentage distributions of responses to each question.

RESULTS

Regarding the profile of users in the undergraduate student group, the results showed that 77.49% (1863) were female and 22.51% (541) were male; As for age group, 46% (1103) were between 17 and 22 years old, 30.4% (729) between 23 and 29 years old, 13.84% (334) between 30 and 34 and 6.59% (158) between 35 and 39 years old, 2.21% (53) between 40 and 49 years old and 0.96% (23) over 50 years old.

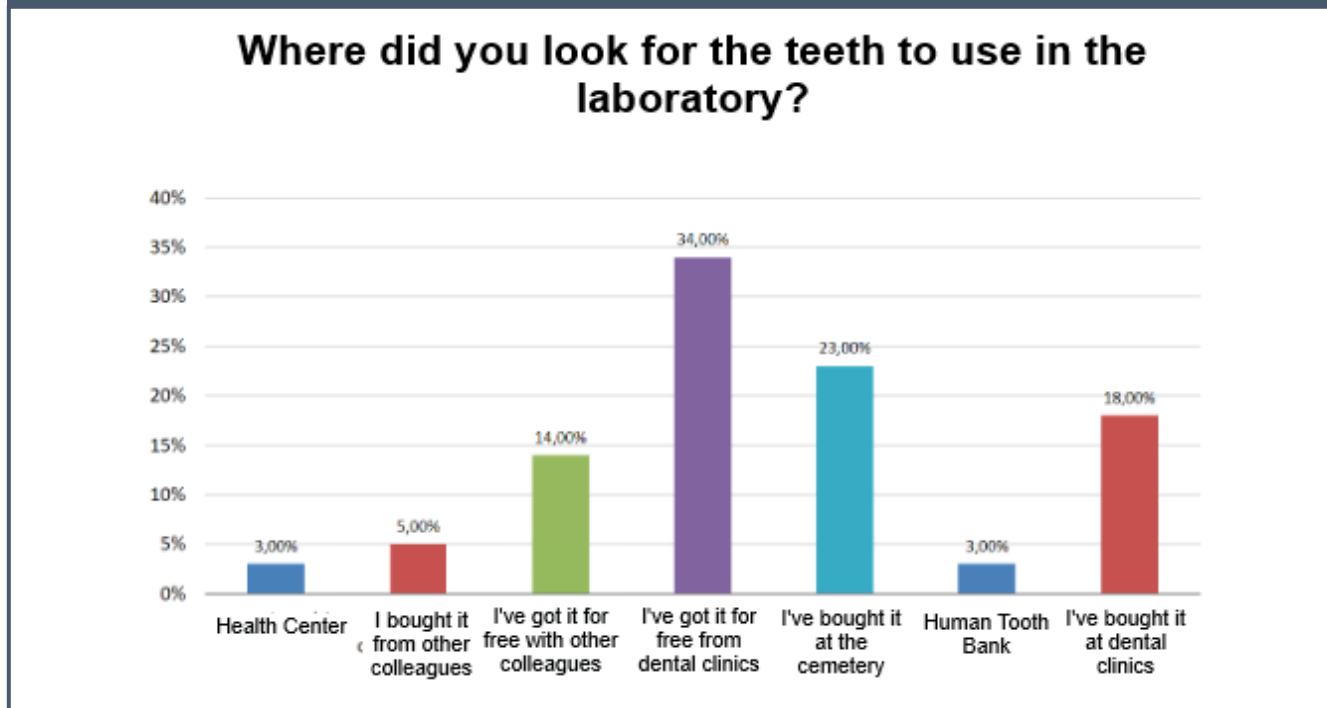
Table 1 brings together information

Table 1. Distribution of responses from undergraduate Dentistry students, 2020

QUESTION	YES	NO
Do you consider the extracted human tooth to be an organ?	87,16%	12,84%
Do you know about the existence of human tooth banks?	73,97%	26,03%
Do you know the purpose of a human tooth bank?	58,01%	41,99%
Do you know how a human tooth bank works?	26,81%	73,19%
Do you know the legal value of an extracted tooth as a non-vital organ?	39,99%	60,01%
Are you aware that the storage of human teeth in private collections (offices, clinics or homes) is prohibited?	60,85%	39,15%
Do you know that the commercialization of human teeth is subject to a prison sentence of 3 to 8 years under Law 9434/97?	61,19%	38,81%
Would you donate a tooth you extracted during your internship to be stored in a human tooth bank?	85,87%	14,13%
Would you participate in a campaign to encourage the donation of extracted teeth to a human tooth bank?	77,58%	22,42%
Did you know that teeth can transmit infectious diseases?	78,94%	21,06%
Did you know that teeth must be sterilized before being used in the laboratory?	68,32%	31,68%
Have you ever had difficulty obtaining teeth to use in your undergraduate laboratory?	70,25%	29,75%

Source: Author, 2020.

Figure 1: Distribution of responses from undergraduate Dentistry students regarding how to obtain human teeth for use in laboratory activities, 2020



Source: Author, 2020.

about the knowledge and use of HTB by undergraduate students.

According to the responses obtained through the questionnaire, 21% of respondents reported that they did not know that teeth can transmit infectious diseases and 31.68% reported that they did not know that teeth should have been sterilized before use (Table 1).

According to Figure 1, 70% of students reported that they had difficulty obtaining teeth to use in the undergraduate laboratory, with 14% receiving them for free from other colleagues and 34% receiving them free of charge from dental clinics.

DISCUSSION

According to the results of this work, we can estimate that approximately 4000 teeth were used per semester in pre-clinical laboratory disciplines at the university in question.

Obtaining dental elements can be

carried out in different ways, most of which are carried out in private clinics, health centers, hospitals, and dental school clinics, always with the donor's permission. However, even today, some elements are obtained illicitly, through sale in popular clinics or through the desecration of tombs and corpses with subsequent sale in cemeteries, which is considered a crime under Brazilian legislation. Tooth trading was still a reality in the halls of the Dentistry school, as it was reported by 46% of the students interviewed in this survey.

Previous work has already highlighted the existence of the sale of dental organs among Dentistry students, with rates ranging from 1.2% to 70%^{6,7,8}.

In a study carried out to verify the knowledge of professionals, academics and lay people about HTB, despite more than 90% of the population in the dental field considering the tooth as an organ, only 3% sought out a HTB to acquire teeth for pre-clinical

activities; the most cited sources of collection of extracted teeth were: private clinics, private collections of friends or relatives, and cemeteries.⁹

On June 30, 1997, the new Transplant Law (decree no. 2,434) was sanctioned. This decree demonstrates the effort to regulate the use of tissues and organs for hospital and scientific purposes.¹⁰

The use of human teeth in research without due legitimization of their donation and the trade in teeth are considered crimes according to federal law 9434 of 02/04/1997¹¹, which states in its Article 6 that "The post-mortem removal of tissues, organs or parts of the body of people is prohibited..." and in its Article 15, it establishes a prison sentence of 3 to 8 years and a fine for anyone who "...buy or sell tissues, organs or parts of the human body" or "...promote, mediate, facilitate or obtain any advantage from the transaction".

Furthermore, article 210 of Chap-

ter II of the Penal Code makes it clear that “violating or desecrating a grave or funeral urn” results in a sentence of 1 to 3 years in prison.¹² The Civil Code, in its Introduction Law, emphasizes, in Article 3, that “No one excuses himself from complying with the law, claiming that he does not know it”.¹³

Dentistry students' awareness of the ethical and legal implications involving the use of human teeth must occur formally and gradually during their undergraduate development, as students' ethical awareness, as well as the structuring of Human Tooth Banks, contributes to the reduction of trade in dental elements.¹⁴

This way, when natural dental elements are requested, the student will have theoretical training to avoid committing ethical infractions and failing to comply with Brazilian legislation. Combining Forensic Dentistry with

the strengthening of Human Tooth Banks is the best way to adapt the use of dental elements necessary for professional training, within ethical and legal requirements, in addition to providing a biologically safer use of teeth.

There is no doubt that knowledge of the ethical and legal implications regarding the use of human organs in learning practices is a fundamental component for raising awareness among students participating in laboratory disciplines that use human teeth in pre-clinical activities. Therefore, it is necessary that information and ethical reflections on the subject be addressed from the first semesters of the course, before students enter laboratory disciplines.

In parallel, the training of teachers responsible for laboratory disciplines regarding the need to certify the origin of teeth was also fundamental in reducing the use of improperly obtained tee-

th. It is likely that partial or total replacement of extracted human teeth with non-human teeth in research and with artificial teeth for laboratory training will be the solution to ethical issues. As an evolution, from 2019 onwards, the disciplines of Endodontics, Prosthetics and Dentistry began to use exclusively artificial teeth, completely eliminating the use of human teeth in pre-clinical activities.

CONCLUSION

The results suggest that academics have difficulties in adopting measures for the use and acquisition of dental organs. There is a need to publicize the activities of human tooth banks not only in academia, but to the entire population in order to raise awareness among the academic community and curb illegal trade.

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