

Ethical aspects of teeth obtained by odontology graduates

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Resumo

O objetivo do presente trabalho foi avaliar a procedência dos dentes utilizados em uma perspectiva ética e legal pelos alunos do curso de Odontologia da Universidade do Sul de Santa Catarina – Unisul. Foram empregados dois questionários com perguntas relacionadas à temática, um direcionado aos professores e outro aos alunos. Os resultados mostraram que existe comércio ilegal de dentes entre os estudantes do curso de Odontologia, pois 11% dos discentes entrevistados afirmaram já ter comprado dentes em algum momento de sua vida acadêmica, sendo o fornecedor mais citado o colega de faculdade. O trabalho mostrou que são utilizados em torno de 688 dentes por semestre, divididos entre cinco disciplinas pré-laboratoriais; dentre essas, nenhuma relata de maneira formal as implicações éticas e legais do uso de dentes humanos.

Palavras-chave: Dente. Ensino. Bioética. Legislação.

Resumen

Análisis ético de la obtención de dientes utilizados por estudiantes de una graduación en Odontología

El objetivo de este estudio fue evaluar los méritos de los dientes utilizados en una perspectiva ética y jurídica para los estudiantes de Odontología de la Universidad del Sur de Santa Catarina – Unisul. Se emplearon dos cuestionarios con preguntas relacionadas con el tema, uno a los profesores y otro a los estudiantes. Los resultados mostraron que existe un comercio ilegal de dientes entre los estudiantes de odontología, ya que el 11% de los estudiantes encuestados dijeron que ya habían comprado los dientes en algún momento de su vida académica, siendo citada empresa el compañero de la universidad. El estudio mostró que se utilizan alrededor de 688 dientes por semestre, dividido entre cinco disciplinas pre-laboratorio, entre ellos, no hay informes de implicaciones formalmente legales y éticas de la utilización de los dientes humanos.

Palabras-clave: Diente. Enseñanza. Bioética. Legislación.

Abstract

Ethical aspects of teeth obtained by odontology graduates

The objective of this study was to evaluate the merits of the teeth used in an ethical and legal perspective for students of Dentistry, University of Southern Santa Catarina – Unisul. Two questionnaires were employed, one applied to the professors and another to the students with questions concerning the subject. The results showed that there is illegal trade of teeth among students of Dentistry from Unisul, because 11% of respondents affirmed they had bought teeth at some point in their academic life, in which the most mentioned provider was a college classmate. This work presented that around 688 teeth are used per semester divided into five pre-laboratory disciplines; among these, none reports formally legal and ethical implications of using human teeth.

Key words: Tooth. Teaching. Bioethics. Legislation.

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The human tooth is a valuable teaching tool in Dentistry courses because it is through it that students have their first contact with practical techniques and materials in many preclinical laboratory disciplines¹⁻⁶. The students feel safer for clinical practice when they obtain prior training in human teeth, although before legal, ethical and biosecurity issues equally accept training resin teeth⁴.

They are also employed as a source of the most diverse types of dental area research, since no material is able to play so well the physico-chemical and morphological features as the dental element itself⁷⁻⁹. A Dentistry school can spend three to four thousand teeth per semester, divided into research activities and for educational purposes².

Teeth, when handled improperly, have a great potential of infection. A protocol for disinfection, sterilization and storage for safe use of the dental organ is necessary^{3,10,11}. The law number 9,434, dated of 4 February 1997, which provides for the removal of organs, tissues and human body parts for transplant and treatment purposes, and about other matters, considers as a crime in its article 15 the trade in organs, with imprisonment from three to eight years and a penalty¹². Article 6 says that it is a contravention removing, *post-mortem*, organs, tissues and parts of the human body of unidentified people. Article 210 of the Penal Code also provides for penalty of one to three years of jail for those who violate graves¹³.

The Dental Code of Ethics, in its Chapter XVII, warns that it is an ethical infringement the non-compliance of the rules of the competent body and the legislation on health research¹⁴. It complements indicating that it is also forbidden to violate the legislation regulating the use of body for study and/or exercises of surgical techniques, as well as regulating the transplants of *post-mortem* organs and tissues and from "own living body".

CNS resolution 466/12 is based on several international documents that guide the ethics in research involving human beings¹⁵. With the creation of research ethics committees, the origin of teeth used in analyses had to be specified for the approval, because the committees do not allow research using human teeth with unknown or illegal origin¹⁶. This fact makes, obligatorily, the dental elements used in research currently comply with the legal and ethical requirements, i.e., they must be accompanied by informed consent (TCLE) to donation, and the vast majority originates from banks of human teeth⁸⁻⁹.

However, teeth used by undergraduates in most educational institutions have no legal origin^{3,5,6}. The number of banks of human teeth in Brazilian colleges is still small. Most teachers just give the list of dental elements necessary for the discipline, and it is up to the student obtaining the teeth⁵. As a large portion of students does not receive guidance on the ethical and legal implications of the dental organ acquisition and teachers don't question the origin of these elements, students end up getting teeth in an illegal and non-ethical way, usually by purchasing them in cemeteries, private clinics and even from their own colleagues, keeping the human material trafficking^{1-6,17}.

Material and method

This work has been evaluated and approved by the Research Ethics Committee (CEP/Unisul) and all the surveyed subjects authorized their participation in research by reading and signing the TCLE. The data were collected from two questionnaires with closed questions: one aimed at the undergraduate and the other directed to teachers responsible for the subjects of the dentistry course of Unisul. Forty-five teachers responsible for the disciplines of the above-mentioned course were invited to participate in the study, as well as the 182 enrolled students, and when a student was taking disciplines of different stages, it was considered the less advanced semester.

After the detailed presentation of the work, in which the subject, objective, methodology, risk and the care taken to preserve the anonymity and the clarification of any questions about the research were addressed, the subjects received the questionnaire and the TCLE. The documents were collected in separated urns, ensuring the anonymity of the participants.

After the application of the questionnaires, the results were tabulated and submitted to descriptive statistical analysis. The number of teeth used per semester was calculated by multiplying the average number of classes (20 students) by the average amount of dental elements requested to students per discipline. The application of the questionnaire took place ten days before the end of the second academic semester of 2010.

Results

182 students participated in the research between the first and ninth semester. The distribution

of students by the phase is shown in the Chart 1. Among the surveyed students, 89% reported they have never purchased teeth, and these were obtained through concessions. The donation by a well-known dentist was cited by 72% of the participating students, 35% received dental organs from colleagues, 20% obtained the elements through health stations, 17% in popular clinics and 15% obtained teeth in cemeteries.

Among the surveyed students, 11% reported they have ever bought human teeth. The purchase of dental elements from colleagues was pointed out by 4.7% of students, as cemeteries (2.1%), dental prosthesis technician (1.5%), well-known dentist (1.2%), popular clinics (1%) and illegal dentist (0.5%).

Decontamination of dental element was reported by 63.2% of surveyed students, with the immersion in different sodium hypochlorite solutions as the most cited one (22.5%). The submersion in hydrogen peroxide was mentioned by 19.8% and immersion in alcohol at 70° was pointed out by 17% of consulted students. There were also reported washing with soap and water (11%), boil in water (10%), submersion in water with sodium bicarbonate (9%), exposure to sunlight (5.7%) and autoclaving (5%).

Although 19.2% of total participants have declared they receive some guidance on the ethical and legal implications of obtaining and using of the dental element, this number ranged between 0% of students in the first semester and 93% of ninth phase, as shown in the Chart 1.

Forty-one disciplines represented by their responsible teachers participated in this study. Among the surveyed subjects, five (12.2%) require human teeth to laboratory activities. The number of requested elements, as indicated in Chart 2, ranges from 2 to 14. All disciplines that require dental organs to students have declared to guide them regarding the ethical and legal issues involved; however, such information is informally imparted. The students are still instructed to get the elements along the human teeth bank, city councils, college clinics and well-known professionals.

Among the surveyed disciplines that do not require human teeth, five also declared they guide students on the ethical and legal issues involved in the use of dental elements, but this guidance takes place informally. Only in one of them students receive classroom curricular information regarding ethical and legal implications involved.

Chart 1. Distribution of students per semester and index of students who received ethical and legal guidelines regarding use of extracted teeth

Semester	Number of students	% who received ethical and legal guidance on the use of human teeth
1	15	0%
2	22	9%
3	14	14%
4	28	25%
5	20	30%
6	27	63%
7	14	29%
8	28	11%
9	14	93%
Total (average)	182 (20,22)	19,2%

Source: elaborated by the authors, 2013.

Chart 2. Number of teeth required per discipline and number used per semester

Discipline	Number of teeth required per student	Teeth used per semester
A	2	40,44
B	3	60,66
C	4	80,88
D	11	222,42
E	14	283,08
Total		687,48

Source: elaborated by the authors, 2013.

Discussion

The use of natural teeth is still a reality in the laboratory disciplines. Although this research has not explored the reason for the use of dental elements, studies indicate that no artificial model is able to reproduce with as much fidelity to the characteristics of the dental element^{7-9, 18}, added to the fact that the relevant training on natural teeth makes the student more confident for practice in patients⁴.

According to the results of this work, we can estimate that approximately 688 teeth are used per

semester in the laboratory disciplines in the university in question. Carvalho ² estimated that a dentistry school uses around 3,000-4,000 dental elements per semester between research and teaching activities. This difference in the results is due to the fact that, in this study, the teeth used in research were not counted. Trade in teeth is still a reality in the halls of the school of Dentistry of Unisul, as was reported by 11% of respondents. Previous works has already indicated the existence of the dental organ sale amongst academics of the dentistry course, with rates ranging from 1.2% in recent publication ⁶ and 40%-70% in older publications ^{3,5}. The awareness of students, as well as the structuring of the human teeth banks, seems to have contributed to the decrease in the trade of dental elements.

Except the students of the sixth and ninth semester, which claimed they have received guidelines regarding the ethical and legal implications of the use of human teeth, representing, respectively, 63% and 93% of respondents, in any other class the index stayed above 50%, although this subject has been approached by eleven (27%) of the interviewed subjects. However, they are mostly in an informal way. In just one discipline, without clinical practice, the subject is handled formally and geared almost exclusively to the ethical-legal aspects in dentistry.

The dental student awareness about the ethical and legal implications involving the use of human teeth must occur formally and gradually during his development at graduation. Thus, at the moment in which natural dental elements are requested, students will have theoretical training in order not to commit ethical violations and breach the Brazilian legislation. Combining the Legal Dentistry to the strengthening of the banks of human teeth is the best way to make the use of necessary dental elements on professional training suitable, within the ethical and legal requirements, in addition to providing the biologically safer use of teeth.

Besides all the technical learning, the dentistry students must also be introduced to all the social, cultural and ethical issues involved in the exercise of their profession. The dental surgeon treats people, not simply teeth. However, according to work published by Amorim and collaborators ¹⁹, the teaching of dentistry at graduation in Brazil is predominantly technical and healing.

The use of human teeth by undergraduate students of Dentistry is another face of the complex Brazilian social and cultural reality, because citizens of lower social classes have less access to information and technical advances in dentistry, besides not being aware of the value of the dental organ, and they are, therefore, more vulnerable to mutilating practices and illegal tooth donation ¹⁵. Thus, a significant amount of teeth used in the teaching of dentistry comes from the socially disadvantaged ones ²⁰⁻²¹, who are fruits of a vicious social circle. It is up to the professionals involved to be aware of these factors in due process of obtaining consent for avoiding exploitation and violation of the dignity of teeth donors.

Final considerations

The results of this study reveal the existence of teeth trade among students of a graduate course in dentistry at a university in Brazil. They also reveal that teachers do not require certification of the origin of teeth, so that most elements used do not meet the ethical, legal and biosecurity requirements for the use of human organs. Moreover, according to most interviewed students, the information about the legal and ethical implications of using human teeth formally occurs only in the ninth semester of graduation, when a discipline that exclusively addresses the theme is taught.

Undoubtedly, knowledge of ethical and legal implications regarding the use of human organs in practical learning is a key component to the awareness of students participating in laboratory disciplines using human teeth in pre-clinical activities. For this reason, it is necessary that the information and ethical reflections on the subject are addressed since the first half of the course, before students start to learn the laboratory disciplines.

In parallel, the training of teachers responsible for laboratory discipline on the need for certification of origin of the teeth is also fundamental to reducing the use of teeth improperly obtained. Finally, the creation and strengthening of human teeth banks would also contribute to students and teachers to have access to teeth that meet ethical and legal requirements, since collection and distribution of human teeth within ethical, legal and biosecurity standards are functions of the teeth banks.

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Participation of the authors

Elaine Fernandes Felipe: wording of the article and critical review, approval of the version to be published. Greise Mezzari Borges da Costa: literature review, data collection, analysis and interpretation of data. Nilton Jank Júnior: literature review and data tabulation. Jorge Alexandre da Costa: data collection, wording of the article, critical review and approval of the version to be published.



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