

# Mapping bioethics teaching in Brazilian dental schools

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## Abstract

A descriptive, exploratory, and cross-sectional study was conducted to evaluate the inclusion of bioethics in the curricula of Brazilian dental schools. Data collected between December 2021 and January 2022 from the websites of the 430 institutions that disclosed information about the program, underwent exploratory analysis to obtain descriptive statistics of categorical and continuous variables. Results showed that the introductory description of 245 courses (57%) referred to humanistic, critical and reflective education, and/or emphasized the presence of a bioethics discipline. Of the 345 curricula (80.2%) available, 139 (40.3%) had disciplines with “bioethics” on their name, taught mainly in the first two years (69%). Thus, although the National Curriculum Guidelines for Undergraduate Dentistry postulate an education based on ethical/bioethical principles, less than half of the curriculums evaluated included a bioethics discipline.

**Keywords:** Teaching. Bioethics. Dentistry.

## Resumo

### Mapeando o ensino da bioética nos cursos de odontologia brasileiros

Por meio de estudo descritivo, exploratório e transversal, objetivou-se avaliar a inserção da disciplina bioética na matriz curricular de cursos de odontologia brasileiros. Com dados coletados entre dezembro de 2021 e janeiro de 2022 nos sites das 430 instituições que divulgavam informações sobre o curso, realizou-se análise exploratória visando obter estatísticas descritivas de variáveis categóricas e contínuas. Os resultados apontaram que a descrição introdutória de 245 cursos (57%) fazia referência à formação humanista, crítica e reflexiva, e/ou enfatizava a presença de disciplina de bioética. Além disso, 345 cursos (80,2%) disponibilizavam as matrizes curriculares e em 139 (40,3%) destas havia disciplinas com a nomenclatura “bioética”, ministradas principalmente nos dois primeiros anos (69%). Conclui-se que, apesar de as Diretrizes Curriculares Nacionais do Curso de Graduação em Odontologia orientarem para uma formação com condutas pautadas nos princípios éticos/bioéticos, em menos da metade das matrizes curriculares avaliadas constava disciplina de bioética.

**Palavras-chave:** Ensino. Bioética. Odontologia.

## Resumen

### Mapeo de la enseñanza de la bioética en las carreras de odontología en Brasil

Desde un estudio descriptivo, exploratorio y transversal, se evaluó la inclusión de la asignatura de la bioética en el plan de estudios de Odontología en Brasil. Se recopilaron los datos entre diciembre de 2021 y enero de 2022 en la página web de 430 instituciones, y se aplicó un análisis exploratorio para obtener estadísticos descriptivos de variables categóricas y continuas. Los resultados mostraron que 245 carreras (57%) describían la formación humanista, crítica y reflexiva, y/o señalaba la presencia de la asignatura de bioética. Además, 345 carreras (80,2%) ponían a disposición sus planes de estudio, y 139 (40,3%) de estas presentaban asignaturas con el nombre “bioética”, que eran impartidas en los dos primeros años del curso (69%). Aunque las Directrices Curriculares Nacional de la Licenciatura en Odontología preconizan la formación basada en principios éticos/bioéticos, menos de la mitad de los planes de estudio contaba con una asignatura de bioética.

**Palabras clave:** Enseñanza. Bioética. Odontología.

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*Education is much more than purely training the learner in the performance of skills*<sup>1</sup>.

When philosopher and educator Paulo Freire wrote this phrase, he was not referring specifically to dentistry training, but the inference is pertinent when considering the meanings of the word “dexterity,” according to the *Michaelis Dictionary*:

1) *Quality of those who are skillful, especially with their hands;* 2) *Ability to perform fast and accurate movements, agility*<sup>2</sup>.

Such inference becomes even more pertinent when one considers that, despite being historically recognized for its quality<sup>3</sup>, the technician teaching model that informs dental technical training fails to encompass a comprehensive and humanized treatment<sup>4</sup>.

Paulo Freire’s educational proposal was to enable learners to build a critical and reflective identity before a world full of inequalities<sup>5</sup>. This concern is also central in the National Curricular Guidelines (DCN) for dentistry programs, published in 2002.

The 2002 DCN established a generalist, humanistic, critical, and reflective training of the dental surgeon, based on ethical and bioethical principles to seek solutions for society’s problems<sup>6</sup>. This same proposal is reiterated by the 2021 DCN<sup>7</sup>. But how to combine such a training to the already recognized technical excellency?

According to Neves, Araújo, and Rego<sup>8</sup>, this would require understanding the university as a place of permanent exercise of ethics, critical discussion of conflicts, advisement for the future, and transmission not only of knowledge, but also of value judgments to students. In fact, the inclusion of ethics teaching and moral formation of students have been pointed out as essential in undergraduate dentistry<sup>9,10</sup>.

Bioethics has been assuming an increasingly key role in contemplating such ethical and humanistic education<sup>11</sup>, as it proposes to integrate science and humanity into a reflective unit<sup>12</sup>. Thus, bioethics exerts a transformative role onto the students’ moral and ethical development during training<sup>4</sup> by providing *a sense of unconditional respect for human rights*<sup>11</sup>. Moreover, bioethics

teaching provides students with a more comprehensive view on the practical application of ethics<sup>13</sup>, becoming therefore essential to consolidate it as a discipline during graduation<sup>8</sup>.

Given this scenario, and the recognized importance of bioethics, this study sought to evaluate the inclusion of a bioethics discipline into the course curriculum of undergraduate dentistry programs in Brazil. Moreover, it seeks to analyze the discipline course load, what its syllabus include—when available—, and references made to bioethics and humanistic education its introductory description and in the political-pedagogical project (PPP).

## Method

This is a descriptive, exploratory, and cross-sectional study. Descriptive due to its main objective: to describe the characteristics of a group or population<sup>14</sup>, in this case, of public and private Brazilian dentistry programs. This type of study allows researchers to observe, record, analyze, classify, and interpret the data, but not interfere with them<sup>15</sup>.

And exploratory because its study object is still little addressed, thus aiming *to provide greater familiarity with the problem, to make it more explicit or to create hypotheses*<sup>14</sup>.

Such a design is justified by our interest in evaluating how the inclusion and teaching of a bioethics discipline has taken place in dentistry program curricula in Brazil.

First, a search was conducted in the System for Higher Education Regulation (e-MEC), which identified 446 undergraduate dentistry programs currently operational in Brazil, and provided the following information: institutions that offered a dentistry program; contact details (e-mail, website, telephone, address) of each institution; start date of the program; quality indexes; periodicity; time of completion; minimum course load; administrative category; name of the program coordinator; and number of authorized annual openings.

Subsequently, for writing this article, we conducted an online search on the website of each institution, to seek further information: introductory description of the program; course

curriculum; offering of a bioethics discipline; offering of other disciplines with the word “ethics” in the title; offering of other disciplines with the terms “legal dentistry,” “legislation,” or “deontology” in its title; course load of the disciplines; year of the course in which they were taught; PPP; and syllabus. Data collection took place between December 2021 and January 2022.

Data were processed and analyzed using Epi Info 7.2. Descriptive statistics of these indicators was obtained by means of exploratory analysis. Categorical variables were presented by absolute and relative frequencies. Continuous variables were presented by mean, median, standard deviation, and interquartile range.

The research was conducted in compliance with resolutions 466/2012<sup>16</sup> and 510/2016<sup>17</sup>, from the National Health Council/Ministry of Health (CNS/MS). The project was approved by the Research Ethics Committee (EPC) of the National School of Public Health Sergio Arouca (ENSP), Oswaldo Cruz Foundation (Fiocruz). Since data are public and available on the websites of the Ministry of Education and Higher Education Institutions, informed consent was not necessary at this stage of the research.

## Results

Of the 446 dentistry schools currently operational in Brazil, the search conducted identified information about 430 (96.4%).

We first read the introductory text of the 430 programs retrieved, of which 245 (57%) made reference to a humanistic, critical, reflective education and/or emphasized the presence of a bioethics discipline on its syllabus.

Among the dentistry schools analyzed (n=430), 345 (80.2%) had their course curriculum available on the website, and only 139 (40.3%) offered disciplines with the name “bioethics.” Of these, 32 disciplines had “bioethics” on its title and 107 featured the word “bioethics” alongside other terms, such as: “ethics,” “professional ethics,” “deontology,” “biosafety,” “citizenship,” “human rights,” “legislation,” “Health,” “collective health,” “patient safety,” “safety in dental practice,” “dentistry,” “legal dentistry,” “professional guidance,” “emergency

in health,” “environment,” “management,” “humanization,” “philosophy and cariology.”

Of the 139 courses that had a bioethics discipline in their course curriculum, 119 indicated the year in which they were offered, mostly in the first two years of the program (69.0%) (Table 1). As for the course load of such disciplines, 118 dentistry schools had them available on their website and ranged from 15 to 120 hours, with a mean of 54.7 hours and a standard deviation of 22.6 hours.

Only 97 dentistry programs had their PPP available for consultation. Of these, 79 made references to bioethics in their text, and only 35 mentioned humanistic-based content and/or bioethics itself as a transversal axis in the project.

**Table 1.** Characteristics of the bioethics discipline offered in Brazilian undergraduate dentistry programs, 2022

Variables	N	%
<b>Introductory text: reference to bioethics and humanistic/critical/reflective training</b>		
No	185	43.0%
Yes	245	57.0%
<b>Course curriculum available on the website</b>		
No	85	19.8%
Yes	345	80.2%
<b>Presence of a bioethics discipline</b>		
No	206	47.9%
Yes	139	32.3%
No information	85	19.8%
<b>Year in which it is offered</b>		
1st year	46	38.7%
2nd year	36	30.3%
3rd year	20	16.8%
4th year	12	10.0%
5th year	5	4.2%
<b>PPP available</b>		
No	333	77.4%
Yes	97	22.6%

continues...

**Table 1.** Continuation

Variables	N	%
PPP with reference to bioethics		
No	18	4.2%
Yes	79	18.4%
No PPP available	333	77.4%

PPP: political-pedagogical project

Of the 139 bioethics disciplines available, 83.5% were offered by private institutions and 16.5% by public institutions, finding justified by the fact that most of the 430 programs (86.5%) analyzed are offered by private institutions. In analyzing separately this percentage in institutions of the same legal nature, we observed that a bioethics discipline was included in 31.2% of the private programs and in 39.6% of the public programs (Table 2).

**Table 2.** Relation between the existence of a bioethics discipline, disciplines with the terms “ethics,” “legal dentistry,” “legislation,” and “deontology,” and legal nature of Brazilian undergraduate dentistry programs, 2022

Variables	Total	Has a bioethics discipline		
		No N(%)	Yes N(%)	No information N(%)
<b>Legal nature</b>				
Private	372 (86.5%)	182 (48.9%)	116 (31.2%)	74 (19.9%)
Public	58 (13.5%)	24 (41.4%)	23 (39.6%)	11 (18.9%)
<b>Another discipline with the term “ethics”</b>				
No	208 (48.4%)	106 (51%)	102 (49.0%)	0 (0.0%)
Yes	137 (31.9%)	100 (73.0%)	37 (27.0%)	0 (0.0%)
No information	85 (19.7%)	0 (0.0%)	0 (0.0%)	85 (100%)
<b>Another discipline with the terms “legal dentistry,” “legislation,” or “deontology”</b>				
No	73 (17.0%)	28 (38.4%)	45 (61.6%)	0 (0.0%)
Yes	272 (63.3%)	178 (65.4%)	94 (34.6%)	0 (0.0%)
No information	85 (19.7%)	0 (0.0%)	0 (0.0%)	85 (100%)

Of the 345 course curriculum available, 137 had disciplines with the name “ethics” (separate from the term “bioethics”) in their title. Of these, 37 (27%) were offered alongside the bioethics discipline in the same program.

We also identified, in the course curriculum available, 272 disciplines including the terms “deontology,” “legal dentistry,” “legislation,” or “ethics” in their title (without the term “bioethics”). Of these 272 courses, only 94 also included a bioethics discipline. As for the year in which these compulsory disciplines were offered, 59.4% were taught in the last two years of the

course, 36% in the fourth year, and 23.4% in the fifth year (Table 2).

Of the 430 programs identified, only 42 had the syllabus of the “bioethics” disciplines available in their website. In one of these disciplines, despite the title “legal dentistry and bioethics,” the syllabus made no references to bioethical content. When analyzing all the 42 syllabuses available, we categorized the most addresses bioethical topics according to their frequency of appearance (Table 3).

Importantly, the topics “ethical and legal aspects of the profession” and “dentistry code of ethics” were covered in 20 of the 42 available syllabuses.



**Table 3.** Topics covered in the bioethics syllabuses of Brazilian dentistry programs, 2022

Topics covered	Number of syllabuses that covered them
Research-related ethical/bioethical aspects	27
Principlism	11
Origin and/or history of bioethics	10
Professional-patients, -team, or -society relations	8
Study of bioethics, unspecified	7
Conceptualization and/or definition of bioethics	6
Importance and elaboration of the informed consent form	6
Study/reflection on bioethical dilemmas and decision making	5
Relationship between bioethics and dentistry	5
Bioethics related to ethnic-racial and gender issues	5
Bioethics related to the beginning and end of life	4
Evolution of bioethics	3
Bioethics related to environmental issues	3
Public/collective health and bioethics	3
Bioethics and health sciences	2
Research ethics committees	2
Bioethics and transplants	2
Privacy and confidentiality	2
Explanatory models of bioethics	1
Bioethical statements and guidelines	1
The study of people in the universe of bioethics	1
Main theories on ethics and bioethics	1
Different paradigms of bioethics	1
Perspectives of bioethics	1
The foundations of bioethics	1
Morality and people's behavior before society	1

## Discussion

Among the 430 schools with information on dentistry programs in their websites, 345 (80.2%) had their course curriculum available. We found no information regarding disciplines offered by undergraduate dentistry research programs in the state of São Paulo<sup>11</sup> and in Latin American and Caribbean medicine courses<sup>18</sup>, which constitutes a limiting factor, as it hinders evaluating the presence of a bioethics discipline in all operational courses.

Of the 345 course curriculum available, only 139 (40.3%) offered disciplines with the name “bioethics” in their title. This number already represents an increase in relation to a previous nationwide study, which identified that, of the 182 dentistry schools then operational, only 31.3% had a bioethics discipline in their curriculum<sup>19,20</sup>. It also represents a much higher percentage than that found by a study conducted in dentistry schools of the state of São Paulo, which pointed out that, at the time of the research, only 8.8% of the institutions offered a bioethics discipline in their course curriculum<sup>11</sup>.

However, considering the importance attributed by several authors to bioethics teaching in professional training, both for dentistry<sup>11,19,20</sup>, nursing<sup>21</sup> and medicine<sup>8,22,23</sup>, the presence of bioethics in 40.3% of the curricula still represents a small percentage, which may compromise the training of future professionals.

We also highlight the discrepancy between the introductory text and the course curriculum, since 245 (57%) curricula referenced a humanistic, critical, reflective education, but only 139 (40.3%) offered a bioethics discipline. Ethics teaching must actually be present in the course curriculum, and not simply cited by institutions as the desired profile for their graduates<sup>11</sup>.

According to Neves, Araújo, and Rego, *one of the greatest current challenges of bioethics is precisely its strengthening as a field of knowledge and academic discipline*<sup>8</sup>. The authors draw attention to the importance of including this discipline in the curriculum, considering that graduation is a favorable time for the moral education of students. During undergraduate studies, bioethical discussions broadens the students' awareness of the importance of respecting patient rights when exercising health care practices<sup>24</sup>.

Of the 139 programs that offered a bioethics discipline, 36 presented the name “bioethics” associated with the terms “legal dentistry,” “deontology,” “ethics,” or “legislation” in its title. We also found disciplines with bioethical content linked to normative guidelines in medical courses<sup>8</sup>. Institutions must distinguish between bioethics and normative disciplines<sup>8</sup>, because despite being complementary, they have different purposes concerning professional training<sup>25</sup>.

Moreover, we identified 272 disciplines of a specifically normative nature in the course curriculum available, with the names “deontology,” “legal dentistry,” “legislation,” and “ethics.” Despite the 2002 DCN for dentistry programs<sup>6</sup>, only 94 of these 272 courses also offered a bioethics discipline in their course curriculum. The remaining 178 curricula included only normative disciplines, a higher number than the 139 courses with bioethics disciplines in their curricula.

Previous studies<sup>9,10,26</sup> have already described the predominance of deontological ethics in health courses, with some authors considering its teaching insufficient for the ethical education of students<sup>8,22,27,28</sup>.

Only 119 programs informed the year in which bioethics disciplines were offered, with most (69%) being taught in the first two years—38.7% in the first and 30.3% in the second year. Only 4.2% of the courses offered such the discipline in the last year, differing from a previous nationwide study which highlighted that most institutions offered the subject in the first (28.6%) or, preferably, in the last year of the course (33.9%)<sup>20</sup>.

Our findings are in line with what is described in the literature, since authors argue that the best time to include bioethics disciplines would be at the beginning of the course<sup>8,11,20</sup>.

Among the schools that presented bioethics in their course curriculum, 83.5% were private and 16.5% were public. This finding contrasts with that described in a previous study, which pointed out that, according to the curricula available in the websites at that time, 54.3% of bioethics disciplines were offered by public institutions<sup>20</sup>.

Currently, the majority (86.5%) of the 430 courses analyzed are private. But when analyzing the percentage of bioethics disciplines by institutions of the same legal nature separately,

we found a higher percentage (39.6%) in public institutions than in private ones (31.2%).

Only 42 programs had the bioethics discipline syllabus available in their website. In analyzing their texts, the mainly addressed topics identified were “research-related ethical/bioethical aspects,” followed by “principlism,” “origin and/or history of bioethics,” and “Professional-patients, -team, or -society relations.”

Previous nationwide studies found that the main topics taught in dentistry programs referred to “bioethical conflicts,” regarding issues such as cloning, abortion, organ transplantation, and care of HIV patients, followed by the “history of bioethics” and the “fundamentals, principles, and bioethical models”<sup>20</sup>. Medical courses most often cover “introduction to bioethics and principles of bioethics,” “physician-patient relations,” “research (experimentation) on human beings,” “abortion,” and “euthanasia”<sup>8</sup>.

The most addressed topic—present in 27 of the available syllabuses—was “research-related ethical/bioethical aspects.” Such concern regarding scientific research and its implications on living beings was one of the main aspects responsible for the emergence of bioethics<sup>29</sup>, for many were the atrocities already committed in the name of scientific advancement<sup>30-34</sup>. One cannot but emphasize, for students, the dangers of scientific research devoid of limits<sup>35</sup>, which may explain why research ethics is a prominent topic within these syllabuses.

Interestingly, the topic “study/reflection on bioethical dilemmas and decision making” was covered by only five syllabuses. A previous study conducted with dental surgeons working in Primary Health Care pointed out that ethical problems are a daily occurrence in their practice, highlighting their lack of preparation to address such issues<sup>36</sup>.

In this regard, it is worrisome to note that this topic remains little addressed in the syllabuses analyzed. For health professionals, knowing whether they made the most appropriate decision for their patients is a real concern<sup>37</sup>, and bioethics plays a fundamental role in helping students to address ethical conflicts and make decisions<sup>4,29,37</sup>.

Only 97 courses had their PPP available on the website, of which only 79 referenced “bioethics” in their text. Such unavailability does not occur only in

dentistry programs and has already been described by a study conducted in Brazilian nursing schools<sup>38</sup>.

Built from the articulation of coordinators, professors, and students, the PPP is subject to review and modification<sup>39</sup>. If one considers that bioethics is recognized by professors and students as an important discipline<sup>23</sup>, schools can restructure their PPP to include the subject and adapt to the humanistic education that most describe as a desired profile in their introductory text.

Moreover, of the 79 courses that covered bioethics in the PPP, only 35 mentioned the transversality of teaching bioethics, ethics, and/or citizenship and human rights. We analyzed this reference by looking for bioethical content in the syllabus of different disciplines offered during the course. In other cases, they were cited in the PPP itself, for example:

*Already in the first semesters, topics and issues related to ethics and bioethics are discussed. These contents will be addressed transversally throughout the course, both theoretically and practically.*

*Ethics, citizenship, cultural plurality, and ecology are adopted as transversal axes to be developed by all professors in their teaching-learning practices.*

*The curriculum proposes to contemplate ethics and humanism in all teaching/learning activities.*

Different authors have been arguing about the importance of transversally addressing bioethical contents during graduation<sup>9,21,40-44</sup>. Although this article has already discussed the importance of implementing bioethics and strengthening it as a discipline, for Musse and collaborators<sup>11</sup> teaching bioethics in isolation is incompatible, and it must appear throughout graduation. This reasoning is corroborated by Rego, Gomes, and Siqueira-Batista<sup>41</sup>, who state that it is unreasonable for the ethical

education of students to be the sole responsibility of one professor—or a small group of professors.

Moreover, institutions must provide students with a proximity to bioethical content throughout their training and allow them to experience moral issues. Bioethics education is thus made possible by repeated experiences<sup>45</sup> and students developed a sensitivity toward subjective aspects of the professional-patient relationship<sup>24</sup>.

### Final considerations

Despite the impossibility of analyzing the presence of a bioethics discipline in all Brazilian dentistry programs due to data unavailability, we were able to compare our findings with previous studies, pointing to an increase in the percentage of programs that offer the discipline. However, the offering of this discipline by only 40.3% of the available curricula analyzed represents a very low percentage, especially considering that the 2002 DCN for dentistry programs already established the adequacy of schools—and their curricula—to a humanistic, critical, and reflective education, with conducts based on ethical/bioethical principles.

This percentage even contradicts what is described by the educational institutions themselves in their introductory texts to the respective dentistry programs, insofar as 57% of them make reference to a humanistic, critical, and reflective educational profile, and/or highlight bioethics in their courses.

We therefore recommend the actual implementation of bioethics as a discipline in all Brazilian undergraduate dentistry programs. Moreover, since we used dynamic data, further studies should be conducted to monitor such inclusion.

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Renata Maria Colodette contributed to the study conception and design; analysis and interpretation of the results. Andréia Patrícia Gomes contributed to the critical review of the manuscript. All authors approved the final version submitted to the journal.

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