

The environmental theme in nurses' qualification curriculum in a middle-sized Brazilian city: convergences and divergences

O tema ambiental no currículo de formação de enfermeiros em uma cidade brasileira de médio porte: convergências e divergências

El tema medioambiental en el currículo de calificación de enfermería en una ciudad brasileña de tamaño medio: convergencias y divergências

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Abstract

One of the goals of nursing is health promotion, and because of that, the study of the environment, standing for the relationship between the professional and society, must be fully incorporated into nurses' qualifications. This study aimed to analyze the insertion of environmental issues into a nursing degree in a middle-sized Brazilian city from the point of view of the different actors involved: professors, students, and coordinators. The study had a mixed-methods design. Data collection was done through a documentary analysis of political teaching projects; questionnaires to nursing students; and semi-structured interviews with coordinators and professors of Higher Education Institutions of the city. The quantitative data analysis was done through statistical methods and the Scott-Knott Test; the qualitative data analysis was done through the content analysis proposed by Bardin. The results demonstrate a lack of proper handling of environmental issues, with the work only involving the specific

environmental subjects that are the most prominent. Although environmental issues are only inserted at random into the teaching, the students still understand the importance of environmental knowledge as it applies to the technical subjects of the nursing degree.

Keywords: Nursing; Environmental issues; Curriculum.

Resumo

Um dos objetivos da enfermagem é a promoção da saúde e, por isso, o estudo do meio ambiente, defendendo a relação entre o profissional e a sociedade, deve ser plenamente incorporado às qualificações dos enfermeiros. Este estudo teve como objetivo analisar a inserção de questões ambientais em um curso de enfermagem em uma cidade brasileira de médio porte, do ponto de vista dos diferentes atores envolvidos: professores, alunos e coordenadores. O estudo teve um desenho de métodos mistos. A coleta de dados foi realizada através de uma análise documental de projetos político pedagógicos; questionários para estudantes de enfermagem; e entrevistas semiestruturadas com coordenadores e professores das instituições de ensino superior da cidade. A análise quantitativa dos dados foi realizada por métodos estatísticos e pelo teste de Scott – Knott; a análise qualitativa dos dados foi realizada através da análise de conteúdo proposta por Bardin. Os resultados demonstram a falta de tratamento adequado das questões ambientais, sendo o trabalho envolvendo apenas os assuntos ambientais diretos os mais incidentes. Embora as questões ambientais sejam inseridas apenas em momentos pontuais no ensino, os alunos entendem a importância da articulação ambiental nas disciplinas técnicas do curso de Enfermagem.

Palavras chave: Enfermagem; Questões ambientais; Currículo.

Resumen

Uno de los objetivos de la enfermería es la promoción de la salud, y por eso, el estudio del medio ambiente, que defiende la relación entre el profesional y la sociedad, debe incorporarse a las calificaciones de las enfermeras. Este estudio tuvo como objetivo analizar la inserción de los problemas ambientales en una titulación de enfermería en una ciudad brasileña de tamaño medio desde el punto de vista de los diferentes actores involucrados: profesores, estudiantes y coordinadores. El estudio se ha basado en una investigación de métodos mixtos. La recolección de datos se realizó a través de un análisis documental de proyectos de enseñanza política; cuestionarios a estudiantes de enfermería; y entrevistas semiestruturadas con coordinadores y profesores de instituciones de educación superior de la ciudad. El análisis de datos cuantitativos se realizó mediante métodos estadísticos y la prueba Scott – Knott; El

análisis de datos cualitativos se realizó a través del análisis de contenido propuesto por Bardin. Los resultados demuestran la falta de un manejo adecuado de los problemas ambientales, y el trabajo solo involucra los temas ambientales específicos que son más destacados. Aunque los problemas ambientales solo se insertan al azar en la enseñanza, los estudiantes aún entienden la importancia del conocimiento ambiental tal como se aplica a las materias técnicas del grado de enfermería.

Palabras clave: Enfermería; Cuestiones ambientales; Plan de estudios.

1 Introduction

Due to the increasing environmental degradation of the planet, issues related to the consequences of nuclear accidents, climate change, the extinction of animals and plants are becoming increasingly present in people's everyday reality. All of these things make clear that a change in the human relationship with nature and the environment is mandatory (Baur & Haase, 2015).

Transformations of society require changes in educational approaches, especially the treatment of environmental issues at the vocational training level. Future professionals need to be qualified and capable of solving increasingly complex situations, not only in terms of the economic aspects of the profession, but also in terms of environmentally appropriate solutions.

Environmental issues need to be integrated into higher education since it can have a real impact on future professionals, altering their behavior and encouraging the spread of information (Mintz & Tal, 2014). With this in mind, the challenge of sustainability and the insertion of discussion of environmental issues into universities' courses were studied in several countries (Sterling & Witham, 2008; Barthes, et al., 2012; Peres, et al., 2016; Xiong, et al., 2013; Widener, et al., 2016).

Some studies handle emerging environmental issues, such as climate change and its impacts and how the university could contribute to the mitigation and adaptation process (Leal Filho, et al., 2018; Hess & Collins, 2018).

In the Higher Education qualification, nursing has a major presence and involves an intrinsic responsibility for environmental issues. It corresponds to the second biggest Brazilian professional category, being preceded by metallurgy. According to the National Students Development Exam (ENADE), in 2016, 35,713 nurses graduated. In the same year, there were 722 Higher Education Institutions (HEIs) that offered the course in the whole

country.

The nursing qualification covers environmental issues in terms of preservation and conservation actions that will improve people's quality of life and reduce diseases resulting from environmental disorders.

By analyzing the literature on nursing and the environmental education guidelines, we observed that there are few publications in this field, especially considering the high number of nursing professionals. The research is mainly focused on the following approaches: health professionals' and students' views on the interface between health and the environment (Camponogara, et al., 2013); nursing professors' perceptions of environmental teaching and its relationship with the nursing qualification, highlighting the gaps in the reductionist approaches (Peres, et al., 2015; Viero, et al., 2012) or more specific themes, as climate change and nursing duties (Barna, et al., 2012).

Law 9.795 of 1999, which establishes the National Environmental Education Policy (PNEA), institutes the transdisciplinary character of Environmental Education regarding formal education institutions; it is added to school subjects but not addressed as its own specific subject. (Brasil, 1999).

Resolution CNE/CES n°2, of 15 June 2012, which established the National Curricular Guidelines for Environmental Teaching, ratified the Law n° 9.795/1999 regarding the universality of this theme in formal education (Brasil, 2012). Bearing this in mind for nurses' qualifications, an analysis of how the educational regulations are being implemented and received by the social actors involved in the teaching–learning process is necessary.

So far, the studies mostly discuss, if only in an indirect way, the need to insert this theme into the nursing qualification (Goodman, 2011) and the perceptions of people involved in the teaching–learning process (Peres, et al., 2015); there is a gap in the scope of the discussion in terms of the educational regulations, professors' and coordinators' point of view, as well as students' views and perceptions in other words, the point of view of all those actually involved in the process.

For this reason, the goal of this article is to analyze the insertion of environmental issues into the nursing degree in a middle-sized Brazilian city from the point of view of the different actors involved: professors, students, and coordinators. Convergences and divergences will be presented here through official documents and speeches.

2. Metodologia

2.1. Study Area

The chosen city has four HEIs that offer a higher degree in nursing and here are labeled HEI 1, HEI 2, HEI 3, and HEI 4. The authorization for data collection was obtained from HEIs 1, IES 2, and IES 3. In HEI 4, only secondary data coming from the program website were used.

2.2. Study Design

This study had a mixed-methods design. A summary of the research methodology is represented in Table 1. The sample was composed of the total number of students enrolled in the last two semesters in the HEIs that authorized the research (n = 46); and of all coordinators (n = 3). Out of 17 nursing professors working at the three HEIs that authorized the data collection, 15 agreed to participate in the research (n = 15). For textual organization purposes, the 15 professors interviewed are designated P1, P2 ... P15; and the three coordinators as C1, C2, and C3.

Table 1. Summary of the methodological aspects of the study.

Mixed-methods research		
Study design	Qualitative	Quantitative
	Study case	
Goal	Compare the provisions in official documents with the pedagogical reality, identifying obstacles and practices.	Understand how environmental issues are approached in nurses' qualification and students' perceptions.
Participants	15 professors and three coordinators	46 students
Data collection	Pedagogical projects Semi-structured interviews	Questionnaires
Data analysis	Bardin's Content Analysis	Descriptive Statistics Scott-Knott Test

A documentary analysis of the Teaching Projects of Nursing Degrees in the HEIs involved in the research was done. Courses' curricula were analyzed by their content and number of subjects with the environmental thematic approach.. In the next step semi-structured interviews were done with 15 nursing professors and three course coordinators, on how the environmental issues are approached in the nursing qualification and what could be improved. The interviews were audio-recorded and afterwards transcribed by the researcher for the completion of the Content Analysis (Bardin,2009). The Content Analysis technique outlined by Bardin (2009) is divided into three phases:

1) Pre-analysis phase: organization of the collected documents and materials. This phase is divided into the following steps:

a) Floating Reading: corresponds to the moment of knowledge of the text and the

establishment of contact with the collected documents.

b) Choice of documents: consists of the indication of the material to be analyzed.

c) Formulation of hypotheses and objectives: moment of outlining the information.

d) Referencing of indexes and elaboration of indicators: step performed by clipping texts in the analyzed documents.

2) Exploration of the material with the definition of categories and the identification of the registration units. The registration units, also called meaning units, correspond to the content segment to be analyzed, being considered the base unit in order to carry out the categorization and the frequency count. This stage is characterized as the phase of analytical description corresponding to the corpus submitted to the in-depth study, being guided by hypotheses and theoretical references. Therefore, in this stage, the codification, classification and categorization of the research corpus takes place.

3) Treatment of results, inference and interpretation. Condensation and the due emphasis of information for analysis occur here, considering the moment of intuition, reflective and critical analysis (BARDIN, 2009).

For the quantitative study, semi-structured questionnaires about the environmental perceptions of 46 students in the last two terms of a nursing degree were applied. The statistical analysis consisted of frequency gathering (%) of answers per question and, in relation to the level of importance of subjects that could better explore the environmental issues, averages and standard errors were obtained, with these averages compared through variance analysis and the Scott–Knott test, adopting the 5% significance level.

The Scott–Knott test was used to group the subjects' averages by the students as the most important in terms of the approach to environmental issues. The app used was the Statistics and Genetics Analysis System (SAEG, version 9.1).

2.3. Selection Criteria

For the research participation the following selection criteria were used: a) students: must be over 18 and have been enrolled in the last two terms of the course without any temporary or permanent disease that might interfere with their mental faculties; b) professors and coordinators: have a degree in nursing and at least six months of experience in the position.

2.4. Ethical Considerations

According to Resolution n°466/2012, the research was approved by the Positivo

University Ethics Committee through Decision 2.658.282/CAAE 86325018.3.0000.0093, and the data collection was done from May to August 2018, all participants having signed the free and clarified consent term.

3. Results and Discussion

Fifteen nursing professors participated in this study, 11 of them female. The average age of the interviewed professors was 47 and the length of experience in higher education teaching of eight of the 11 participants is more than 10 years. These professors' qualifications are diverse and mostly related to Intensive Care and Labor Nursing. Sixty percent have a master's degree and 40% have completed a specialization course; none of them have a PhD degree.

Regarding the coordinators, two of the ones interviewed have more than four years of experience as coordinators and more than 10 years of experience in higher education teaching. From this interviews with the 15 professors and three coordinators, the following analysis categories were highlighted: "The teaching reality of the environmental approach to the nursing qualification"; and "Struggles and successful experiences in environmental education."

3.1. The teaching reality of the environmental approach to the Nursing qualification

Brazil has a strong legal framework for the insertion of environmental issues into formal education (Brasil, 2009; Brasil,2012) so all courses should incorporate the environmental theme into academic qualifications, encouraging dialogue between different knowledge areas and stimulating students and professors to know and research the environmental reality in which they are living (Bernardes & Prieto,2010).

The pedagogical reality discussed here refers to how the environmental approach works in practice and not only in terms of recommendations or educational guidelines.

For eight of the professors interviewed, nursing practice has an explicit relationship with the environmental issue; three professors reported that this situation can be implicit or explicit, and for four professors this relationship does not exist. Such data require attention, because the professors' awareness of the relationship between nursing and the environment directly impacts knowledge transmission to students.

For the coordinators, this relationship is explicit, and is materialized in some course subjects: Thematic Workshops I and II and Collective Health (HEI 2); and Embryology, Parasitology; Genetics, Pharmacology and technical subjects (HEI 3).

When questioned about the relationship of the subjects they teach with the environmental theme, 14 professors answered that all subjects go together, and one professor reported that there is no connection. Although most professors assert the relationship of their subjects to environmental issues, in practice they still recognize only a slight connection, according to the collected data.

During the interview on the main environmental themes present in their subjects, some still resist; others, although they teach many subjects, mentioned only one example, or generic ones (Table 2).

Table 2. Practical transferability of environmental issues in the researched institutions.

SUBJECT	ENVIRONMENTAL THEMES
Collective Health	Link to health programs and activities in the community; unsafe housing areas/landfills; trash and recycling collection; health education for disease prevention; clean water and sewage
Epidemiology	Epidemiological research activities in the community
Assistance systematization in nursing	Ethics, socioeconomic issues, political factors, and sustainability
Home Care	Waste management
Intensive Care	Waste management
Women's Health	Cleaning, orientation, and residue
Operation Room and Sterilized Material Department	Flows and work processes; waste management; biological material disposal; chemical sterilized materials disposal; emissions resulting from chemical sterilization.
Children's Health and Pediatric/Neonata	Ethics, socioeconomic issues, political factors, and sustainability
I Nursing	
Nursing Care	Ethics, socioeconomic issues, political factors, and sustainability
Internships	Therapeutic, labor environment; waste management of health services; environmental issues related to disease prevention regarding public health.
Mental Health	Therapeutic environment

There is a contradiction between the professors' statement that all subjects incorporate environmental issues and Table 2, in view of the number of subjects offered in the course and the low number mentioned by the professors. Hence, we could observe that although they know about the need for this connection, in practice it is still discreet, or in some cases nonexistent.

By analyzing the specific subjects incorporating environmental issues at the four HEIs involved in the research, we observed a certain hegemony in the approach to environmental

subjects, even if this also occurs in an interdisciplinary way. However, of the 27 subjects identified, 11 are optional or elective.

The current pattern of higher education, most of the time, disassociates knowledge of basic areas and clinical areas and adopts evaluation systems that involve the accumulation of technical information, straying away from meaningful learning. In the educational guideline documents, the explanation of the theme is successful, but in practice the reality shows a very different scenario. According to P8:

All subjects are connected, right? But unfortunately, interdisciplinarity or transdisciplinarity does not occur in an effective way in all institutions. They are closed subjects that do not go together, which is not a real practice. The reality is all of them together, we all know it. I have 37 years of nursing experience and I have been noticing it in teaching projects; they talk about interdisciplinarity, but only in theory; in practice it does not happen (P8).

Interdisciplinarity stands as an important guideline for the achievement of environmental education in the university. This is of major significance because of its social, economic, and environmental interactions.

According to the Graduation Courses Curriculum Guidelines (Brasil,2001) it is mandatory to connect theoretical and practical activities in all formation processes in an integrated and interdisciplinary way. Regarding the theoretical–practical connection, P2 highlighted an important example:

When we talk about Collective Health, beyond the laws, we end up talking about health programs ... and these programs are linked to the community. Because collective health is a whole and the community is a whole and so the community has a very strong bond with the environment (P2).

In these first approaches to the reality of teaching through the analysis of the content and interviews with teachers and coordinators, the difficulty of assimilating certain intrinsic themes of nursing into the environmental curriculum was observed.

A detailed analysis of professors' qualifications showed that higher education professors mainly graduated in technical fields and not in education. As a result, the teaching approach was focused on power and teaching centralization and we observed resistance to new approaches (Dickson & Ladefoged, 2015). This was also a problem spotted by P2 the

lack of “a deep pedagogical look at environmental issues.” This coordinator associated this weakness with the extremely technical qualifications of nursing professors.

It is important to highlight that environmental education promotes a renovation of the curriculum and professors’ and students’ work (Moroye & Ingman, 2018). However, the main difficulty with the effective implementation of environmental education is the great chance of not being able to escape from the tendency of “banking education” that exists in Brazil (Bernardes & Prieto, 2010).

Studies show some causes for the delay in updating the educational curriculum to reflect sustainability and environmental issues; overloaded curricula; and a perception that sustainability is an irrelevant subject for the student, although some state that this knowledge can be connected to any field (Blewitt & Cullingford, 2004; Winter & Cotton, 2010).

One professor perception involved in this study believed that the delay in updating the curriculum is because of institutional resistance. However, for the coordinators, it happens because of a lack of flexibility and teaching proficiency. It is important that disciplinary boundaries be flexible and the integration of students’ knowledge and expertise be promoted; this is difficult so demands persistence to achieve the desired results (Howlett, et al., 2016).

3.2. Struggles and successful experiences in Environmental Education

Except for one, all remaining professors reported difficulties in incorporating environmental themes into the nursing qualification curriculum. Among the main struggles were the academic organization and its institutional inflexibility, professors’ lack of knowledge or interest in issues connected to the environment, and the traditional hegemonic methodology used. Moreover, the learning spaces were also complicating factors.

I miss an adequate environment to develop the practices regarding environmental health and the collective preparation. It is very important to develop activities like these not only in the classroom, but also in different learning places. (P13)

According to P9, one of the biggest problems in Brazil is the culture of taking care of only the external client (patient) and not considering the internal client (nurses and nursing students) in health services.

In Brazil, we do not work for an internal customer, the staff and students; we work only for the external customer. The internal client nobody sees, nobody listens to, so nobody is concerned with providing

ideal conditions, only what is satisfactory so that s/he can do adequate work. (P9)

The nurses' work environment is shared with the nursing students, so the impacts of this shared environment in times of crisis are experienced by students and professors.

I supervise and coordinate the internships. In general, our practice works according to the hospital routines. If the hospital controls any routine function, for example, waste management, noise control, the therapeutic environment issue, I mean the whole process... When the hospital has a routine, the student can participate in all the processes; when it is inexistent, which happens most of the time, the hospital sometimes let us add in some content based on our college practice. But it is not easy. (P10)

The difficulties are specific not only to the educational field, but also to research, another essential field that helps maintain the university. These difficulties are seen in the lack of openings for research in institutions and health offices. Such difficulty can be identified in the following interview extract:

When one of our students started researching the prevention of arboviruses, they did not want to give her the information on epidemiology, because she was just a nursing student so had nothing to do with the process. (C3)

It is extremely frustrating for a student researcher to not find support for his/her investigations. Through these reports we can consider the barriers to interdisciplinary working as a difficulty to be overcome, in order to allow further development of research and support critical skills and environmental analysis in working professionals' qualifications.

Another difficulty noted by C3 refers to extending the environmental approach to subjects that have no direct correlation with environmental issues. This difficulty was not identified by C2, who stated that the environmental commitment itself is not difficult. According to him:

The worst thing is professors' view regarding in the relevance of the environment to professional work. It is much more of an understanding and teaching practice issue. The professor has full autonomy and responsibility for this viewpoint. (C2)

A dichotomy was observed in terms of the difficulty reported by professors and coordinators. For some professors the environmental commitment is made more difficult because of institutional inflexibility. For C2, the main difficulty is professors' views and performance. Such a fact reminds us of the need for reflection on the dialogue between professionals involved in higher education teaching. Professors mentioned the necessity of matching theory with practice, as nursing practice is directly connected to environmental issues.

The way environmental education is done differs significantly among the four HEIs. In HEI 1 it is done through health education and partnerships with health offices for social responsibility projects.

In HEI 2, all professors stated that environmental education is not done and what happens (when it happens) are only theoretical approximations in a study case format. By analyzing the Pedagogical Policy Project of this institution, two specific subjects on the environment were identified. According to the professors, the incorporation of these subjects occurred in a punctual way.

In HEI 3, environmental education is approached directly through specific subjects, as well as indirectly through other subjects and through extension and integrated projects. HEI 4 also has a specific subject with an environmental approach and extension projects have been developed in the vicinity of the institution. The projects have a direct relationship with the environmental work and are developed in the community context to address the local reality.

The university extension supplies essential academic experience and is presented as a strategic place to promote integrated practices in various knowledge fields, contributing to the realization of multidisciplinary and an improvement of community and student contact, promoting good citizenship and helping to shape reflective and critical people (Assis, et al., 2015).

Among the interviewed coordinators, one said that they have been achieving positive results in terms of the insertion of environmental issues through one subject that works with the Problem-Based Learning (PBL) methodology. The biggest challenge is continuity, and for this it is necessary to consider the professor's qualification. It is necessary to support professors' continuing professional development outside of work (in terms of resources and planning time) so that they have the necessary motivation to update their knowledge and skills.

Another interesting experience presented by C3 refers to the implementation of environmental discussions involving local problematics to stimulate critical awareness of global environmental problems.

For this coordinator it is crucial to address the environmental problems facing the city. Involvement with the environment is fundamental to how people understand nature. Education should promote reflective moments and contact with the local environment (Soulé, 1997).

C3's opinions corroborated those of a professor from the same HEI, who reported that promoting Integrated Projects involving the community and environmental issues can help nursing graduates develop better environmental awareness.

I have done an integrated activity in epidemiology so that they could do an epidemiologic profile of their families or of their street in any community. For this epidemiologic profile I delineated that besides the diseases, I wanted the environmental issues. So, they performed the work where they lived, on the water they drank, if it came from a pit, if it was sewage or sump... They have done an environmental profile and then the disease one.

Because the city has a strong agrarian economy (sugar plantations), it suffers from recurrent burning of sugarcane, which directly impacts the air quality and causes respiratory diseases in more vulnerable populations (Castro & Ribeiro, 2017). Besides the air problems, the city, despite presenting a rich water portfolio in terms of both water bodies and groundwater, still has locations where there is no water supply (Pezarino, 2010). For this reason, the water collection of water table in the city is common. Shallow pits are drilled, leaving the population exposed to various contamination risks.

The integration of theory and practice can be done in two general ways: a link between the university and the community and the use of the campus as a learning laboratory (Wiek, et al., 2014). It was observed in HEI 3 that the activities in the community are done in a way to include a discussion of environmental issues in community health promotion, which leads to the formation of environmental criticism.

The professor assumes an important role in teaching improvement processes, and their training is essential to understand methodological changes alongside societal changes (Callahan & Dopico, 2016)

It was observed in the researched city that the coordinators are present and demonstrate concern regarding the handling of environmental issues in the course. That

situation is in stark contrast to the one presented in another study (Ávila, et al., 2017) which noted that leaders' and managers' provisions regarding environmental issues inside universities is generally absent or lacking support, so the initiatives tend to fail because of a lack of investment and administrative support. Therefore, support from HEI managers and even from partner hospitals (i.e., through internships) is also an important tool.

The global appeal of environmental education can be stifled by educational policies that limit the curriculum (Sharpe & Breunig, 2009). From, this perspective, not only research projects but also their extensions are important tools adopted by universities. Moreover, full university approaches, connecting different functions such as teaching, research, campus operations, and strategies directed at engaging community participation, have been noted as essential for the incorporation of sustainability in HEIs' plans (Lozano, et al., 2015; Sterling, 2013).

Universities play a potential leadership role, allowing communities to develop more sustainable ways to live and work. In terms of collaborative patterns and environmental impacts, the community provides an environmental learning context and can play a central role in students' learning (Shiel, et al., 2016).

3.3. Environmental issues in the nursing qualification curriculum: graduates' perceptions versus the pedagogical reality

Among the 46 participating students, 36 (78.3%) were female and 10 (21.7%) were male, with an average age of 29 years old.

When questioned on the number of subjects that addressed environmental issues, 67.4% of students stated that only one subject during the course involved environmental issues in its approach.

Regarding the incorporation of environmental issues into course subjects, students assigned a score based on the integration level between the subjects and the environmental theme. According to the results, 41.3% of students consider the integration of subjects with the environmental theme very poor or poor and only 4.3% think there is a very successful integration. An average integration was spotted by 41.3% of participants. Adding the percentages of students that label the integration as between very poor and average, the total comes to 82.6% (approximately 37 students).

The students also assigned an importance level for the basic subjects of the nursing degree that could better address environmental issues. Through a Likert scale, where 1 represents no importance and 5 is the maximum importance level, the students listed the most

important subjects for the environmental approach. To analyze statistical parameters, the Scott–Knott test was used.

Table 3. Importance level assigned by nursing students to subjects that could better explore environmental issues, listing the basic subject and its statistical parameters.

Subjects	Significance Level					Statistical Parameter	
	Not or very low	Low	Average	High	Very high or indispensable	Average	Standard error
a) Portuguese	45.7%	23.9%	10.9%	6.5%	13.0%	2.17	0.21
b) Human Anatomy	8.7%	21.7%	34.8%	15.2%	19.6%	3.15	0.18
c) Nursing History	21.7%	17.4%	34.8%	8.7%	17.4%	2.83	0.20
d) Cellular Biology	6.5%	4.3%	10.9%	52.2%	26.1%	3.87	0.16
e) Genetics	13.0%	13.0%	21.7%	32.6%	19.6%	3.33	0.19
f) Microbiology and immunology	8.7%	2.2%	13.0%	32.6%	43.5%	4.00	0.18
g) Ethics	17.4%	21.7%	17.4%	13.0%	30.4%	3.17	0.22
h) Public Health	0.0%	6.5%	10.9%	15.2%	67.4%	4.43	0.14
i) Epidemiology	2.2%	4.3%	6.5%	17.4%	69.6%	4.48	0.14
j) Pharmacology	21.7%	10.9%	19.6%	13.0%	34.8%	3.28	0.23
k) Professional Law	26.1%	23.9%	21.7%	6.5%	21.7%	2.74	0.22
l) Parasitology	0.0%	4.3%	13.0%	21.7%	60.9%	4.39	0.13
m) Scientific Methodology	37.0%	21.7%	17.4%	8.7%	15.2%	2.43	0.21
n) Assistance Systematization	10.9%	8.7%	17.4%	26.1%	37.0%	3.70	0.20
o) Hospital Nursing	10.9%	2.2%	8.7%	30.4%	47.8%	4.02	0.19
p) Education in Nursing	10.9%	2.2%	21.7%	21.7%	43.5%	3.85	0.19

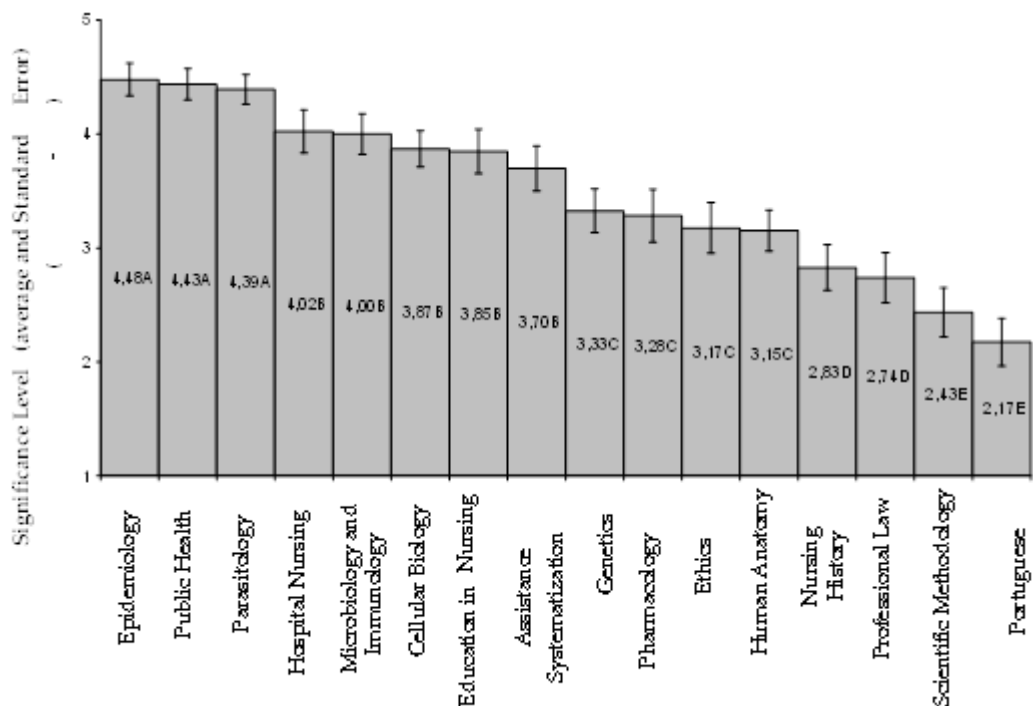


Figure 1. Importance levels of subjects that could better explore environmental issues. Averages followed by the same letter do not differ statistically at a 5% significance level, as assessed by the Scott–Knott Test.

It was observed that average importance was assigned to the subjects of Human Anatomy and Nursing History; in terms of a high level of importance, the subjects Cellular Biology, Genetics and Microbiology and Immunology stood out. The high importance level ones stood out in the subjects Public Health and Epidemiology.

While performing the Scott–Knott test, the subjects were classified into five distinct groups. Epidemiology, Public Health, and Parasitology (group A) presented the highest level of importance regarding environmental issues. Subjects that can be highly adapted, such as Hospital Nursing and Nursing Education (group B); and Genetics (group C), were present in the intermediate importance groups.

An interesting fact is that, although students have this perception, in practice the results showed that interdisciplinary environmental work and projects are not necessarily limited to the subjects mentioned above and do not conform to the educational recommendations.

The slow approval of educational curricula for sustainability in universities has been, in part, attributed to academics' perceptions that the theme has little relevance to some subjects (Christie, et al., 2015). This has been a big problem in the educational field: the replication of information and concepts that were learned some time ago, and now are no longer relevant.

Despite the incorporation of the environmental theme in Brazilian HEIs not being as widespread or successful as that in European (Leal Filho, 2010) or American universities (Barlett & Chase, 2013) there are some interesting examples to explore as the successful experiences that can be observed in this case.

4. Conclusions

Through interviews held with coordinators, it was identified that environmental education is done in distinct ways at the HEIs researched. HEI 1 was more focused on the insertion of the issue in community action; HEI 2 had a more theoretical approach and used extension projects; for HEI 3 the approach is more indirect, focused on active learning

methodologies.

Law no. 9.795/1999 recommends approaching environmental education from an interdisciplinary perspective, with no obligations to implement a specific subject into basic or higher education. Even without this obligation, all HEIs involved in the study listed specific environmental subjects in their curricula.

Although most nursing courses can involve the environment, there was a contradiction in terms of professors' belief that all subjects are connected to environmental issues and the results of the present study. When questioned on the main environmental issues related to their subjects, some professors showed resistance; others, despite teaching various subjects, mentioned only one example, or generic examples. Hence, it is observed that although the need for this connection is known, in practice it is still lacking, or in some cases, nonexistent.

The main struggles in environmental education include institutional resistance, teaching professionals not appreciating the importance of working with this theme, the culture of hospital management and health services in which students are inserted in internships, and the traditional methodologies used in the course.

The work environment was also presented as a complicating factor in the work of environmental issues, leading to a debate about how Brazilian culture only takes care of the external client (the patient) and ignores concerns related to the internal client (nurses and nursing students) in health services.

Among the successful ventures in this area are extension projects; links with the community and health offices raising issues related to local environmental problems; the encouragement of research, characterized by incentives to include environmental issues; and the methodology approach PBL, which involves situations in communities.

University extension was presented as one of the main ways of incorporating environmental work in nursing degrees in the researched city. In a general way, extension contributes to academic knowledge spreading; however, it must be done in accordance with the research teaching, because it is necessary to connect the teaching–research–extension triad for the success of educational institutions.

Through research with graduate students, we confirmed the hegemony of the approach to environmental issues through specific subjects about the environment and at specific moments in the nursing degree. Although students' qualification process occurred mostly in this way, they could envision the importance and the connection of environmental issues in different basic subjects in the course.

The research in the Nursing field involving environmental issues also appears to be

fragmented, possibly because of a theoretical–practical approach to this question during the qualification process. According to the data collected, the problem of a lack of interest or few research possibilities is justified by the current social culture, which disassociates the professional work of the nurse from the environmental approach.

The results indicate that is necessary to be guided by methodologies that direct critical thought to the environment in the nursing qualification. It is indispensable that the university offer their future professionals possibilities to engage in environmental education beyond a superficial level, so that there can be deep debate on this theme.

Such conditions should foster the insertion of environmental activities, practices, and monitoring mechanisms. In Brazil, these regulations already exist, but it is necessary to discuss practical ways to implement and evaluate them continually.

This research portrays the reality of the nursing qualification in a middle-sized Brazilian city.

The first and perhaps most important contribution of this study is the investigation of the applicability of legal recommendations in the educational field. Different scenarios can be analyzed from the involved actors' perspectives. A great complement to this study would be an analysis of the insertion of environmental issues in the qualification of different health professionals.

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