

# Occupational health: an experience in a dentistry undergraduate program

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**Abstract** Occupational health is an essential area in human life and stands among the priority areas of work in Public Health. The National Curriculum Guidelines approach this theme in Public Health modules, as happens with Dentistry undergraduate programs. This report aims to describe the experience of applying a pedagogical strategy on the theme of occupational health in the dentistry undergraduate program of a university in Northeastern Brazil. It is characterized as an experience report based on activities conducted in small groups of students during practical classes, by professors of the Community Oral Health module. All practical activities are supervised by the professor and evaluated according to previously established criteria, culminating in an assigned production, which results in the grading. The first practical class consists in interviewing a worker and taking their occupational history with the intent of reflecting on their work processes and working environment. The second practical class consists in a presentation of the risk map as a product of the occupational history, followed by group discussion mediated by the professors. In this way, the activities in the Community Oral Health IV module addressing "occupational health" use active and dynamic methodologies, thus contributing to the students' learning on this theme, which is relevant to current labor issues in the country.

**Descriptors:** Public Health. Public Health. Occupational Health. Education, Higher.

## Salud ocupacional: una experiencia en la carrera de Odontología

**Resumen** La salud de los trabajadores es un área esencial en la vida humana, siendo una de las áreas priorizadas en la Salud Pública. Las Directrices Curriculares Nacionales abordan este contenido en los módulos de Salud Pública, incluidos los cursos de Odontología. El objetivo es describir la experiencia de aplicación de la estrategia pedagógica con el tema de la salud del trabajador en la carrera de Odontología de una universidad del nordeste de Brasil. Se caracteriza por ser un relato de experiencia basado en actividades realizadas en pequeños grupos de estudiantes durante clases prácticas, por docentes del módulo de Salud Bucal Pública. Todas las actividades prácticas son supervisadas por profesores, son evaluadas según criterios previamente establecidos y culminan con una producción indicada, dando como resultado una calificación. La primera clase práctica consiste en la realización de una entrevista a un trabajador, una anamnesis ocupacional, con el fin de reflexionar sobre su proceso de trabajo y entorno laboral. La segunda clase práctica es la presentación del mapa de riesgos como producto de la anamnesis ocupacional, seguida de una discusión en asamblea con la mediación de los docentes. De esta manera, las actividades del módulo de Salud Bucal Colectiva IV sobre "salud de los trabajadores" utilizan metodologías activas y dinámicas, que contribuyen al aprendizaje de los estudiantes sobre el tema relevante para la actualidad laboral en el país.

**Descriptores:** Salud Pública. Salud del Trabajador. Educación Superior.

## Saúde do trabalhador: uma experiência na graduação em Odontologia

**Resumo** A saúde do trabalhador é uma área essencial na vida do ser humano, sendo uma das áreas priorizadas na Saúde Pública. As Diretrizes Curriculares Nacionais abordam este conteúdo nos módulos de Saúde Coletiva, incluindo os cursos de Odontologia. O objetivo é descrever a experiência da aplicação da estratégia pedagógica com a temática saúde do trabalhador em um curso de graduação em Odontologia de uma universidade no nordeste brasileiro. Caracteriza-se por ser um relato de experiência a partir das atividades vivenciadas em pequenos grupos de alunos durante as aulas práticas, por docentes do módulo de Saúde Bucal Coletiva. Todas as atividades práticas são supervisionadas pelos

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docentes, são avaliadas de acordo com critérios estabelecidos previamente e culminam com uma produção indicada, resultando em uma nota. A primeira aula prática é a realização de uma entrevista com um trabalhador, uma anamnese ocupacional, a fim de refletir sobre seu processo de trabalho e ambiente laboral. A segunda aula prática é a apresentação do mapa de risco como produto da anamnese ocupacional, seguida de discussão em assembleia com a mediação dos docentes. Desta forma, as atividades do módulo Saúde Bucal Coletiva IV sobre “saúde do trabalhador” utilizam metodologias ativas e dinâmicas, que contribuem para a aprendizagem dos alunos quanto à temática que se mostra pertinente à atualidade trabalhista no País.

**Descritores:** Saúde Pública. Saúde do Trabalhador. Educação Superior.

## INTRODUCTION

Occupational health is the area of Public Health aimed at studying and engaging in production-consumption relations and the health-disease process of individuals, particularly the workers<sup>1</sup>. Work is an essential condition of life for human beings, which poses several risks to the workers' health<sup>2</sup>.

With that in mind, promotion, prevention, recovery, and rehabilitation interventions must reorganize the production processes in order to render them health promoters. Such reorganization must be planned, executed and evaluated by health professionals<sup>2</sup>. In Brazil, Occupational health constitutes an area of activity in the Unified Health System (SUS). Nevertheless, a study indicates that the knowledge arising from this field has not yet become institutionalized within the SUS and remains in a peripheral position<sup>1</sup>.

Studies by Souza, Braga and Rozemberg (2017)<sup>3</sup> highlight the need for training the teams at the Occupational Health Reference Centers (Cerest) as the most significant “critical node” for the wholesome development of the National Network for Comprehensive Occupational Health Care (Renast), and the demand for professionals trained in this area in the country, which may point to a lack of training processes at the local level in the area of occupational health.

The development of content regarding occupational health is still incipient in undergraduate programs in Brazil, despite being stated in the National Curriculum Guidelines. Graduates from these programs must identify and intervene in health-disease situations relevant to the Brazilian epidemiological profile<sup>4</sup>.

In this sense, the election of content related to Occupational Health in the undergraduate curricula, agreed with and developed by the program committees, is essential for the training of dental surgeons. The current National Curriculum Guidelines of the Ministry of Education for Dental Schools establishes in Chapter III “On Specific Competences”, Section 11, Subsection III, that the dental surgeon is accountable for developing actions for health promotion, prevention, rehabilitation, maintenance and surveillance, at an individual and collective level, recognizing the association between oral health and the individual's systemic status.

This professional, in addition to experiencing the impacts of the world of work on their health-illness process, has the mission of providing assistance to people who, in some way, are workers. Occupational health is in a continuous construction process<sup>6,7</sup>, and must therefore be part of the curricula of dentistry undergraduate programs.

In these programs, occupational health has been more focused on risk management issues, ergonomics and patient safety, and does not involve the student in the conceptual aspects and historical contextualization of occupational health, laws, and labor rights and duties. Such situation is more prone to graduating dental surgeons with a clinical care-providing profile, lacking critical thinking and reflections on labor and social security rights and duties<sup>8</sup>.

Thus, this report aims to describe the experience of applying a pedagogical strategy on the theme of occupational health in the dentistry undergraduate program of a university in Northeastern Brazil.

## EXPERIENCE REPORT

This article is characterized as an experience report based on activities involving practical lessons carried out by professors in *Saúde Bucal Coletiva III* (SBC III, a module on community oral health) in the University of Fortaleza

(UNIFOR) Dentistry Program.

UNIFOR is a higher education institution that, by 2024, offered 40 undergraduate programs. The institution is the only private university in the state of Ceará to offer dentistry programs based on active methodologies in its theory and practical lessons, in which the students engage actively in their teaching-learning process.

In 2005, the dentistry curriculum matrix was redesigned from the subject-centered boundaries to an integrated curriculum featuring modular units, in which the former courses on clinical specialties were replaced by integrated curriculum modules according to the patients' complexity profile<sup>9</sup>.

In 2012, UNIFOR started a curriculum renewal process which encompassed eight undergraduate programs of its Health Sciences Center and led to the adoption of the integrated curriculum approach, in which the organizational axes consist in modules that are common to health professionals training and modules designated for each program<sup>10</sup>.

The dentistry program at UNIFOR provides its students attending community oral health courses with theory and practical experiences that meet the needs for competences, skills and attitudes of a holistic, ethical and humanistic professional. Community oral health is an area that spans several semesters (the third, fourth, fifth, sixth, and seventh) of the curriculum matrix, with general competence to work in a multidisciplinary health team in promotion, prevention, diagnosis, intervention, surveillance, and management of community oral health, in a variety of scenarios, based on the principles of ethics and citizenship, and in defense of the Unified Health System (SUS), with a view to comprehensive care, empowerment and social transformation.

The Community Oral Health III (SBC III) module is part of the Community Health axis of the Dentistry program at the University of Fortaleza, in a logical and didactic sequence of the Community Oral Health (SBC) axis. SBC I addresses oral health epidemiology and the prevention system as its main theme; II discusses health education and primary health care and III deals with health surveillance and health financing. The transversal axes include ethics, bioethics and health planning.

The SBC III module addresses the concepts and practices of Health Surveillance, one of the most important areas in the SUS, which seeks, through health promotion and prevention actions, to identify, reduce or avoid health risks. Discussion on ethics and citizenship introduces the module with a broad reflection on the expanded concept of health, and encourages the student to improve critical thinking regarding the social determinants of health. It presents a unit concerning Human Resources in Dentistry, the legislation that regulates the profession of oral health assistants and technicians, dental prosthesis technicians, and the regulations of dental surgeons as well. Furthermore, it aims to discuss these professions' legal requirements for practice, and the rights and duties of each one.

This module's general competence is to propose solutions to the community's main problems, taking as reference the environmental health, the SUS fields of activity, health surveillance, and human resources in oral health. Its specific objectives are: to critically debate ethics and citizenship concerning human and user rights; identify the risks that workers in a variety of sectors are exposed to, relating human illness to environment and workplace aspects; identify the different fields of activity in the SUS, through the study of epidemiological, sanitary, environmental, and occupation health surveillance, contextualizing them with the epidemic process and health information systems; comprehend the specialty Occupational Dentistry, its responsibilities and interfaces with other professions, relating it to public policies for health protection and illness prevention; be aware of different fields of professional practice within the dental job market, identifying the work systems in oral health, understanding the duties of dental surgeons and their assistants, in addition to their regulation; and use the concept of Ethics and Bioethics within the scope of health surveillance and integrated working between dental surgeons and their assistants.

SBC III offers various types of methodological strategies and pedagogical activities, such as documentary discussions, problematization case studies, seminars, evidence-based directed studies, conversation circles with guests, computer laboratory practical activities addressing health information systems, podcast production, taking occupational history and building risk maps.

The search for active methodologies, innovative procedures and practices in the field of education is increasingly

evident. These strategies are easily accessible, adaptable and simple to implement in the classroom. Furthermore, they make it easier for the teaching-learning process to produce in-depth knowledge, collaborative engagement, appreciation of differences and alignment of common objectives, among other aspects, thus favoring creative participation focused on pedagogical goals<sup>11</sup>.

The module has the occupational health as one of its focuses, which is transversally distributed, but there are three leading moments on this theme for Dentistry students. There are two practical sessions, and a theory class that takes place between those. As a pedagogical proposal for the teaching-learning process, the module offers an approach to identify forms of work, their production processes and their connections with workers' health.

In the first practical class, the theme of occupational health is introduced through the "occupational history", whose learning objective is to identify workplace environment risks. The class is divided into pairs and a worker on the University campus is randomly selected for each pair to visit. The activity involves an interview with the worker and direct observation of the interviewee's work environment conditions.

This practical class seeks to problematize occupational health along with. Problematization is a way to introduce innovative models because, when the student interacts with the systematized culture in an active way, as an actor in the knowledge construction process, significant learning college students occurs. It is a methodology with great pedagogical potential for preparing the future professional and citizen as required for a society which undergoes rapid transformations and requires agile and decisive resolutions to real-world problems<sup>12</sup>.

The professors divide the pairs according to the worker and location: general services assistant, security officer in outdoor spaces, security officer at campus buildings, street vendor, secretary, campus store attendant, store manager, academic library employee, carpenter, oral health technician/assistant, nursing technician, among other professions available on campus.

While approaching the worker, the students explain the activity and its learning objectives and ask if the worker is interested in participating, in addition to recording and photographing the practice. The pair only begins the activity after the worker's consent.

The pairs observe the hazards which their interviewee is exposed to, in relation to their work process, taking Figure 1 as a reference.

Also at that moment, the students observe the work environment conditions and try to identify the risks these workers are possibly exposed to. The interview is based on a brief script in which some general guiding questions are listed, aimed at guiding the knowledge process. Each pair of students was able to add questions to the interview script (Figure 2). They are advised to observe the interviewees' work environment in order to identify some risks that are not mentioned by the workers.

The interview provides the students with the experience of occupational health surveillance at the departmental unit in which the pair of students conduct the interview and on-site observation. Occupational health surveillance is based on a process of mapping, characterizing and evaluating the distribution of work-related illnesses and injuries, thus favoring the development of preventive strategies, carrying out actions to promote and prevent workers' health, in addition to actively searching for workers affected by and work-related illnesses and injuries. The latter is extremely important for notification, assistance and monitoring<sup>2</sup>.

After conducting the interviews, the students return to the classroom and make a presentation on the interviewee and the selected work environment. The worker's identification is kept confidential. Shortly after that activity, the professors reflect on occupational health based on the reality observed by the students.

Chemical Hazards	Physical Hazards	Biological Hazards	Organizational (ergonomic) and Psychosocial Hazards	Accidents/ Mechanical Hazards
Dusts	Noises	Viruses and Bacteria	Physically demanding work	Physical arrangement Layout
Gases	Vibration	Funghi	Heavy lifting and material handling	Machinery, equipment and tools
Fumes	Ionizing and non-ionizing radiation	Bacilli	Postures	Electricity
Mists	Cold and heat	Parasites	Long work hours and night shift	Fire and explosion
Vapors	Humidity	Insects	Repetitive and monotonous activities	Materials storage and handling
Liquids	Abnormal Pressures	Ophidia	Attention and responsibility	Buildings
-	-	-	Conflicted workplace relationships	-
-	-	-	Dissatisfaction/ frustration	-
-	-	-	Harassment	-
Color: Red	Color: Green	Color: Brown	Color: Yellow	Color: Blue

**Figure 1.** Classification of workplace hazards.

Source: Adapted from Brasil (1978)<sup>13</sup>.

#### Interview script:

1. How many employees does the company/industry have?
2. What are the main activities carried out in that workplace?
3. What are the most frequent health conditions?
4. Which health conditions result in absence from work?
5. Which activities does the institution carry out to reduce health conditions?
6. Which conditions or situations were observed that could be regarded as unhealthy? Classify them according to the occupational risks.
7. Can the place visited be regarded as a health-compromising environment?

**Figure 2.** Interview script.

On the second occasion, the students approach the theme through a theory class that takes place on a different day and always after the practical class. The module's coordinating professor carries out a discussion class on Occupational Health, addressing conceptual and historical issues, the National Policy for Workers in the Unified Health System, the role of the dental surgeon in occupational health, working as an illness-related process, hazards classification, occupational risks, labor regulatory standards (called NRs), labor and social security laws. Contents on biological hazards and ergonomic risk management, and NR n° 32 in detail are covered in another module of the clinical dental sciences axis.

The third moment takes place in the practical class entitled "Presentation of risk maps", which aims to identify work-related risks and their relationship with occupational health. In this class, students learn how to prepare a risk map as a product of the "occupational history" class and, using a Power Point® software, the pairs present their risk maps according to the assessment conducted.














For the risk mapping, the pairs rely on visiting the hazardous workplace and interviewing the worker, as well as analyzing the environments and processes carried out by the worker(s). The pairs are instructed to list the occupational risks present in the work process and in the interviewee's work environment, and point out the factors that cause such

occupational risks, relating them to the working conditions.

Afterwards, each pair will use their computers to depict the risks through circles (small, medium and large), color-coded according to the occupational risk classification. Consulting Figure 1 is helpful while preparing the map. Students are informed that the higher a risk is ranked, the larger its respective circle will be. Since this activity is aimed at college programs, the assessment is restricted to quantitative risk. The professors advise that, in a working context, more than one occupational risk may be found.

The working context is a situational arrangement within the work environment, which involves economic, legal and social aspects of work. This context is the interaction between the worker's working process and their work environment. Some assessments made by the students show, in a veiled manner, forms of physical or mental illness and reduced work capacity, in addition to other negative implications. These factors are related to inappropriate working conditions such as insufficient or inadequate personal protective equipment and materials<sup>14</sup>.

The activity script presents the risk map model (Figure 3). Despite the model suggestion, the professors encourage students to be creative and innovative while preparing and presenting the maps. The pairs present the risk maps and, after each presentation, the team of professors hold relevant discussions.

Identification of the Workplace Department			
Identify the departmental unit under analysis (if suitable)			
	Physical hazards: report the ones that were identified. Cite the designated area where the risk is present.		
	Chemical hazards: report the ones that were identified. Cite the designated area where the risk is present.		
	Biological hazards: report the ones that were identified. Cite the designated area where the risk is present.		
	Ergonomic hazards: report the ones that were identified. Cite the designated area where the risk is present.		
	Accident hazards: report the ones that were identified. Cite the designated area where the risk is present.		
<b>Functions:</b>	List the occupations present:	Nº of exposed workers:	Cite the number of workers in the department:
<b>Legend</b>	 Physical Hazard	 Low risk	
	 Chemical Hazard	 Medium risk	
	 Biological Hazard	 High risk	
	 Ergonomic Hazard		
	 Accident Hazard		

**Figure 3.** Occupational risk mapping model.

Source: Adapted from Mattos (1993)<sup>15</sup>.



Evaluating criteria for the two practical activities are defined by the professors and published on the first day of class. For the occupational history, the criteria are: punctuality, personal presentation and attire, focused attention on the activity, conducting the interview, discussing the closure of the activity and planning the risk mapping. In the presentation of the risk maps, they are: punctuality, personal presentation and attire, focused attention on the activity, presentation of the risk map, discussion and association with the occupational history, and attention during the other pairs' presentations.

In the cognitive domain, the following are evaluated: association, contextualization and use of the theoretical framework during practical activities. Linking theory and practice is recommended by the National Curriculum Guidelines for the Dentistry Undergraduate Program, established by the Higher Education Chamber of the National Education Council in 2002, updated in 2021. It is recommended that this evaluative criterion be present in the pedagogical project, which should also be a student-centered approach, with learners as active agents, and supported by the professor as a facilitator and mediator of the teaching-learning process<sup>5,16</sup>.

In the affective domain, the following are assessed: commitment, involvement, motivation, interest, good temper, enthusiasm, respect for others, intragroup relationships, teamwork, relationships with the professionals, employees, colleagues and the community; student interaction and integration; capacity for creativity, initiative and leadership, self-criticism, student growth and evolution during the activities, and acceptance of criticism and suggestions.

Assessment of student performance occupies a relevant space in the set of pedagogical practices applied to the teaching-learning process, and criteria are required to quantify and materialize this evaluation<sup>17</sup>.

By experiencing the said activities addressing the theme of occupational health, students were able to understand the influence of working on human health, through the correlation of the numerous occupational risks observed as determinants and/or influencing factors of the workers' health-disease process. There are operational difficulties such as weather conditions (being difficult to conduct an interview on rainy days) and workers' refusal to the interview due to fear of employer retaliation. In the teaching-learning process, students sometimes refused to move around campus, among other situations.

## FINAL CONSIDERATIONS

The SBC III activities addressing "occupational health" use active and dynamic methodologies, thus contributing to the students' learning on this theme, which is relevant to current labor issues in the country.

Furthermore, they enable the exchange of experiences between participating students, professors and workers, which enrich the student's critical and reflective thinking. Intersectorality, multiprofessionalism and interprofessional work are present in practical activities, which enabled a broad view of the issue of occupational health surveillance. Intersectorality favors a single vision of the health area, but involves several other areas such as education, infrastructure and social action, among others.

Interprofessionality and multiprofessionalism, essential in health services, foster teamwork within a collaborative process through legitimate and effective relationship practices in favor of common results, aimed at offering healthcare with quality, comprehensiveness and significance.

Critical and dialogue-based learning processes are fundamental strategies since they enable reflective autonomy in the face of real-world challenges. For the student, such pedagogical strategies favor bringing them closer to reality, making them reflect and offering a more holistic view of the health issue, giving the college student the opportunity to experience beyond the world of dental care.

These activities in SBC IV contribute significantly to the students in the cognitive, affective and relational aspects within the context of competencies, through knowledge, skills and attitudes, as recommended by the Dentistry National Curriculum Guidelines.

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