

***Biosafety in the practice of dental-hospital articles processing****Biossegurança na prática de processamento de artigos odonto-hospitalares**Bioseguridad en la práctica de procesamiento de artículos odonto-hospitalarios*Ivonizete Pires Ribeiro¹, Daiane Monique de Sá Martins¹, Maria Alíres Vieira de Moraes¹, Mitra Mobin², Iraci de Melo Salmito Noletto³

1. Centro Universitário UNINOVAFAPÍ, Departamento de Enfermagem, Teresina, Piauí, Brasil.

2. Centro Universitário UNINOVAFAPÍ, Departamento de Odontologia e Biomedicina, Teresina, Piauí, Brasil.

3. Centro Universitário UNINOVAFAPÍ, Departamento de Odontologia, Teresina, Piauí, Brasil.

ABSTRACT

Objective: To identify the use of biosafety measures in the processing of dental and hospital articles by dental academics. **Method:** A descriptive study carried out at a Higher Education Institution from February to March of the year 2018. Data collection was done using an observation instrument and a questionnaire, and for the analyzes, descriptive statistics and the Subject's Discourse Collective. Opinion nº 137012. **Results:** 46 students participated in the study. The importance of correct processing is knowledge of academics and they see the processing of items such as an action of great significance in patient safety, professional and the institution involved in the teaching of care for oral health, and a procedure to reduce cases of infections. **Conclusion:** The measures are related to the use of personal protective equipment and to the processing of articles (cleaning and disinfection) based on institutional manuals.

Descriptors: Containment of Biological Risks; Health services; Infection Control.

RESUMO

Objetivo: Identificar a utilização de medidas de biossegurança no processamento de artigos odonto-hospitalares por acadêmicos de odontologia. **Método:** Estudo descritivo realizado em uma Instituição de Ensino Superior no período de fevereiro a março do ano de 2018. Para a coleta de dados utilizou-se um instrumento de observação e um questionário, e para as análises, estatísticas descritivas e o Discurso do Sujeito Coletivo. **Resultados:** Participaram do estudo 46 acadêmicos. A relevância do processamento correto é de conhecimento dos acadêmicos e eles veem o processamento dos artigos como uma ação de extrema significância na segurança do paciente, do profissional e para a própria instituição envolvida no ensino dos cuidados a saúde bucal, sendo um procedimento para reduzir os casos de infecções. **Conclusão:** As medidas estão relacionadas ao uso de equipamento de proteção individual e aos processamentos de artigos (limpeza e desinfecção) baseados em manuais institucionais.

Descritores: Contenção de Riscos Biológicos; Serviços de Saúde; Controle de Infecções.

RESUMÉN

Objetivo: Identificar la utilización de medidas de bioseguridad en el procesamiento de artículos odonto-hospitalarios por académicos de odontología. **Método:** Estudio descriptivo realizado en una Institución de Enseñanza Superior en el período de febrero a marzo del año 2018. Para la recolección de datos se utilizó un instrumento de observación y un cuestionario, y para los análisis, estadísticas descriptivas y el Discurso del Sujeto colectiva. **Resultados:** Participaron del estudio 46 académicos. La relevancia del procesamiento correcto es de conocimiento de los académicos y ellos ven el procesamiento de los artículos como una acción de extrema significancia en la seguridad del paciente, del profesional y para la propia institución involucrada en la enseñanza de los cuidados a la salud bucal, siendo un procedimiento para reducir los riesgos casos de infecciones. **Conclusión:** Las medidas están relacionadas con el uso de equipo de protección individual y los procesos de artículos (limpieza y desinfección) basados en manuales institucionales.

Descriptores: Contención de Riesgos Biológicos; Servicios de Salud; Control de Infecciones.

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INTRODUCTION

In recent years, patient safety has become a highly discussed issue within the health area, the quality of care.¹ Regarding the activities developed by the Material and Sterilization Center (MSC) these activities interfere with the final product during the care, as the MSC is responsible for the processing of all the products used in the assistance and, any failure in the flow of these activities can compromise the sterility of the products and, consequently, increase the risk of infections in all procedures performed on the patients (dressing, surgery).²

In addition to patient-related risks, MSC practitioners, too, are exposed to occupational hazards. The adoption of biosecurity measures is necessary for professionals and health sectors exposed to these risks. Biosafety is of a multidisciplinary, doctrinal, normative nature, of reducing behaviors and eliminating risk that acts through the adoption of priorities and strategies.³ According to the Technical Committee on Biosafety Fiocruz: "biosafety is the set of actions aimed at prevention, minimization or elimination of risks inherent in the activities of research, production, teaching, technological development and provision of services (...)".⁴

With regard to the processing of medical-dental-hospital articles, MSC carries out everything from cleaning, inspection and selection (integrity, functionality and packaging of sterile barrier) to the distribution of these sterilized products to the units that will consume these instrumental.⁵ According to Collegial Board Resolution 15 of March 2012, these practices

provide quality care and security for both the users and the professionals involved.⁶⁻⁷

The training of professionals aware of the relevance of biosafety measures in the work process is an important point that has been addressed in undergraduate courses. In the course of dentistry, education in biosafety and cross-infection control is fundamental for training based on protocols and routines, especially when it is considered that dental schools work with a considerable number of patients, professionals and academics in the same physical space, in the dental clinic, which has repercussions in a greater difficulty in the control of the infections in these environment.⁸⁻

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The objective of this study was to identify the use of biosafety measures in the processing of dental articles by dental students in a higher education institution.

METHODS

This is a descriptive study carried out in a Clinical School of a Higher Education Institution, located in the city of Teresina, State of Piauí, Brazil. The study period was from February to March 2018.

Students of the dentistry course participated in the study. The sample consisted of 46 dental students who were enrolled in the 7th, 8th and 9th periods. Inclusion criteria: be regularly enrolled in the Undergraduate course in dentistry; to be studying the discipline of practices in the School Clinic of the Integrated Health Center (CIS) and; available during the data collection period. Exclusion criteria: academics on maternity leave, temporary

absence or absence due to illness during data collection.

In order to reach the proposed objectives, a non-participant observation instrument was used for data collection, where the authors observed the students in their practices at the school clinic. The observation of the conditions of processing (cleaning and disinfection) of the articles was carried out from Monday to Friday, from 11 am to 12 noon (MSC practice hours). The instrument used for the observation of the academics was based on the guidelines of the National Agency of Sanitary Surveillance Manual "Dental Services: Prevention and Control of Risks" of 2006.¹¹

We used also a two-part questionnaire: Part I consists of participant data, Part II with two open questions (What personal protective equipment that you use in the processing of dental and hospital How important is biosafety

RESULTS

A total of 46 dental students were studied, of which 80% were female, with a mean age of 23 years (minimum of 20 and maximum of 29 years). 41.30% of the students were in the 8th period, 30,40% were in the 9th period and 28,30% were the 7th period of the dentistry course.

Table 01: Processing conditions (cleaning and disinfection of articles), n = 46, Teresina, Piauí, Brazil.

Observation	Results	N	%
Do you clean and disinfect countertops, walls and floors with chemicals?	Yes	31	67.4%
	No	15	32.6%
Do you clean all dental articles before being disinfected and / or sterilized?	Yes	46	100.0%
	No	0	0.0%
Does it immerse the articles to be washed in aqueous solution of detergent with	Yes	38	82.6%

for the academic training of the dental surgeon?).

For the analysis of the quantitative data, descriptive statistics were used and the Collective Subject Discourse (CSD) was used to analyze the qualitative data. The construction of the DSC is a qualitative model of representing the thought of a collectivity, adding in a discourse-synthesis the discursive contents of a similar sense emitted by different people.¹²

In this study, the CSD results were presented in a thematic category that was followed by their respective central ideas (CI), sequenced by selected excerpts from the verbal material from the individual testimonials that best described their content and discussion.

The study considered the ethical and legal aspects of Resolution 466/12 of the National Health Council, being approved with the opinion nº 137012.

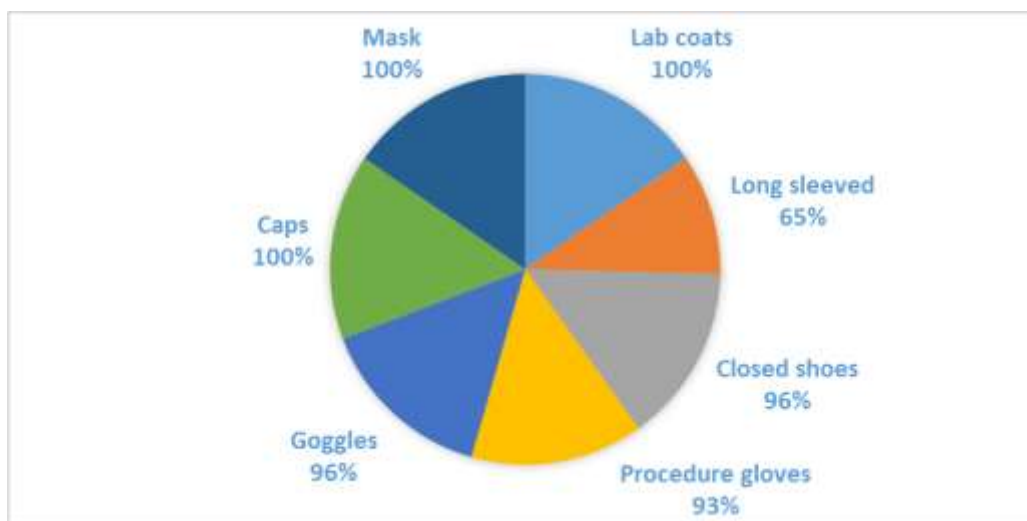
Regarding the conditions of processing conditions (cleaning and disinfection of articles), all the observations obtained a value greater than 50% of agreement with the guidelines required by the manual used, with 67% being the lowest concordance value (Table 01).

neutral or enzymatic pH in a closed container?	No	8	17.4%
Does the preparation of the solution and the residence time of the immersed article follow the manufacturer's instructions?	Yes	40	87.0%
	No	6	13.0%
Do you clean and disinfect equipment with chemicals?	Yes	43	93.5%
	No	3	6.5%
Do you clean and disinfect the moldings before casting and sending them to the denture laboratory?	Yes	38	82.6%
	No	8	17.4%
In manual cleaning, is friction carried out with non-abrasive accessories that do not release particles?	Yes	44	95.7%
	No	2	4.3%

Regarding the use of Personal Protective Equipment (PPE) in the processing of odonto-hospital articles, seven equipment were highlighted. 100% of academics wear a lab coat,

mask and cap, 96% wear goggles and closed shoes, 93% wear procedure gloves, and 65% wear long-sleeved (Graph 01).

Graph 01: Use of personal protective equipment in the processing of odonto-hospital articles. Teresina, Piauí, Brazil.



Faced with the findings in the interviews on the importance of biosafety in academic formation the following central ideas and key expressions emerged that together, constructed the Discourse of the Collective Subject.

Central Idea (CI): The importance of Biosafety in the training of academics of the Dentistry Course.

Key-words:

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- Biosafety
- Contamination
- Cross infection
- To prevent
- Safety
- Process
- Dental Articles
- Cleaning
- Disinfection

Discourse of the Collective Subject:

Biosafety in Dentistry is the union of procedures adapted to the office with the purpose of giving protection and safety to the patient, the professional/student and the team involved in oral health care. There are pre-established rules and regulations that reduce biological risks in functions where the professional/student is exposed to organic material such as blood, saliva and waste. Knowledge about the importance of Biosafety from academia suggests the prevention of accidents and better dental practices. (A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19, A21, A22, A23, A24, A25, A26, A27, A28, A29, A30, A31, A32, A33, A34, A35, A36, A37, A38, A39, A40, A41, A42, A43, A44, A45, A46, A47, A48, A49).

DISCUSSION

The activities carried out at MSC should ensure safety for users of health services, as well as for workers involved in reprocessing of articles. Within the clinical environment, health professionals are exposed to the risks of

infection through several pathways, one of them being through indirect contact with microorganisms present in instrumental devices. Therefore, it is essential to the sector the quality of each step in the processing of the articles in order to reduce risks by means of norms and routines for the standardization of the work process.¹³⁻¹⁴

Regarding the stages of processing (cleaning and disinfection) of the articles, the nurse professional is responsible for the safety in the sterilization process within the MSC, but in places where the processing is fractioned, the nurse is entrusted with the supervision of each of the steps. In view of this, it should ascertain the suitability of the professionals involved in the process for the defined functions, granting the subsidies to the completion of the steps.¹⁵

Regarding the cleaning and disinfection of the benches, walls and floors, it was observed that 67.4% of the students performed this routine. Regarding the cleaning of all dental articles before being disinfected and/or sterilized, 100.0% of the undergraduates observed were cleaned. In the control of infections, the disinfection and/or sterilization of the materials is essential, as it acts square the chain of propagation of the microorganisms. Disinfection refers to the use of efficient physical or chemical processes in the elimination of all pathogenic microorganisms other than sporulates, although sterilization, however, expresses its effectiveness against spores. It is emphasized that when using chemical methods, the substances have both broad bacterial fighting power, have low toxicity and are compatible with the areas that will be

decontaminated. In this perspective, the health professional should be able to know the properties, mechanisms of action, advantages and disadvantages of each substance to use them correctly.¹⁶

A study carried out with dental academics of the Federal University of Paraná, aimed to investigate the application and knowledge of biosafety norms among academics in two moments of professional formation. The study noted that there was knowledge about the risk of cross-infection within the dental environment, however, some academics neglected basic prevention procedures such as disinfection which is a process that eliminates most of the microorganisms from inanimate objects.¹⁷ These data corroborate with the present study, because of all the observations that obtained a lower percentage was referring to cleaning and disinfection of countertops, walls and floors with chemicals.

In the present study, with respect to immersion of detergent articles with neutral or enzymatic pH, 82.6% of the students performed the immersion. Regarding the preparation of the solution and the residence time of the immersed article, 87% of the graduates observed followed the manufacturer's instructions. Regarding these results it is important to highlight that the product to be used will depend on its action, the characteristics of use, its compatibility with the article and the quality of the water to be used. The Collegiate Board Resolution No. 55, dated November 27, 2012, from ANVISA only determines that the pH range of the pure solution and the dilution of light use should be informed on the detergent label, therefore,

there is no determination of a specific pH for these products.¹⁸⁻¹⁹

About the accomplishment of the cleaning and disinfection of the equipment with chemical products, 93,5% of the academicians realize this practice. 82.6% had cleaning and disinfecting before casting molding plaster and forwarding to the laboratory prostheses and 97% had manual cleaning and friction with accessories and non-abrasive particles that do not release.

Alcohol is one of the most commonly used disinfectants in health services. At concentrations of 70% or 77%, alcohol can enter the interior of the microorganism and dehydrate its proteins, but it can not dehydrate the cell wall. In this way, it exerts fungicidal, virucidal and bactericidal activity, but has no Sporicidal activities. In dentistry, in addition to alcohol, peracetic acid is used, which has the capacity to provide denaturation of the proteins and presents virucidal, bactericidal, fungicidal and escorcidal action.²⁰⁻²² As for manual cleaning and fiction with non-abrasive accessories, a considerable percentage of students follow the RDC recommendations no. 150.⁷

An international study emphasized that the application of safety guidelines and preventive measures in various contexts is an important part of the training of professionals. The key to a safe working environment is knowledge of the routes of transmission of infectious agents and the application of biosafety principles to reduce risk.²³

Regarding the use of PPE in the processing of odonto-hospital articles, a study carried out in Pará, Goggles was one of the least

used PPE, although its frequency of use has increased in recent years, negligence is still present and this is serious because infected droplets can reach and injure the cornea and the ocular mucosa. Regarding the other PPE: gloves, cap, mask and lab coat, the research obtained approximate values to those found in the present study.¹⁷

A study carried out in New York, with third and fourth year dentistry students assigned to the care clinic, aimed to analyze students' adherence to infection control policies. The use of PPE was almost universal, however, only a minority of students did not demonstrate protocol violations, most violations involved inadequate use of PPE, ie the importance of proper use, too, must be taken into account and not only its adherence.²⁴

Regarding the discourse of the collective subject, scholars describe the concept and importance of biosafety in dentistry and the need to deepen the subject in student training in order to qualify the assistance provided by future dentists. An evaluation of the biosafety of students at the MSC in Brasília showed that the use of PPE and a good anamnesis are the initial preventive biosafety measures aimed at avoiding personal, patient and environmental contamination.

It is understood that the practice sediments and reinforces what has been assimilated in theory, however, the clinical environment does not always ensure that academics are 100% committed to the application of standards and biosafety routines, since most courses offer disciplines on the thematic in the early years of graduation and

some of the knowledge is lost over time. Therefore, it is imperative that in addition to teaching biosafety theory in the initial years of undergraduate studies, this topic should be present in other disciplines taught throughout the undergraduate course. In addition, throughout clinical practice, teachers should observe whether students are respecting the aseptic chain of the environment and following the biosafety protocol.²⁵

The study presents as a limitation the method used that makes it impossible for the academic follow-up during the academic years, which would allow to evaluate changes in knowledge and attitudes.

Biosecurity measures are of fundamental importance in health services, are essential precautions both for the control of infections and safety of professionals and users as for the promotion of health awareness. The present study leaves its contribution to public health regarding the training of professionals aware of their role in reducing the health risks of all those who will directly or indirectly be agents of attention in health services.

CONCLUSION

The use of biosafety measures by dental academics is related to the use of personal protective equipment and to the processing of articles (cleaning and disinfection) based on Ministry of Health manuals, since it was observed that more than 50% of the practices in accordance with the guidelines required by Ministry of Health manuals.

The present study allows a reflection on the training of health professionals on the

importance of biosafety in health services. Patient and professional safety should be priorities for the graduation logo. It is highlighted the need to investigate if adherence to PPE and its correct use.

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CONFLICTS OF INTEREST

The authors declare that no have conflicts of interest.

AVAILABILITY OF DATA

Available upon request to the authors.

FUDING SOURCE

University center UNINOVAFAPI.

CORRESPONDENCE

Ivonizete Pires Ribeiro

Address: Rua Vitorino Orthiges Fernandes, 6123 - Uruguai, Teresina - PI, 64073-505

Telephone: (86) 9981-7701

Email: ivonizeteribeiro@gmail.com