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Adherence to nursing biosafety measures in the intensive care unit: systematic review

ABSTRACT | Objective: To highlight the determining factors for adherence to biosafety measures by the Nursing team in the Intensive Care Unit. Method: Systematic review study, using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) instrument. The search was carried out from articles published from 2004 to 2019, due to the difficulty of finding publications in a shorter period on the theme of this study. Results: Knowledge and promotion and prevention actions, such as hand washing and the use of Personal Protective Equipment, in addition to physical resources, are determining factors for adherence to biosafety measures in the ICU. Conclusion: Biosafety measures guarantee patient safety, and, therefore, it is important that professionals are trained regularly to prevent difficulties and failures in adherence to biosafety measures, which can put the patient and the nursing professional at risk.

Keywords: Nursing; Containment of Biohazards; Intensive Care Units.

RESUMEN | Objetivo: Resaltar los determinantes de la adherencia a las medidas de bioseguridad por parte del equipo de Enfermería de la Unidad de Cuidados Intensivos. Método: Estudio de revisión sistemática, utilizando el instrumento Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). La búsqueda se realizó a partir de artículos publicados de 2004 a 2019, debido a la dificultad de encontrar publicaciones en un período más corto sobre la temática de este estudio. Resultados: El conocimiento y las acciones de promoción y prevención, como el lavado de manos y el uso de Equipos de Protección Personal, además de los recursos físicos, son factores determinantes para el cumplimiento de las medidas de bioseguridad en la UCI. Conclusión: Las medidas de bioseguridad garantizan la seguridad del paciente, por lo que es importante que los profesionales se capaciten periódicamente para prevenir dificultades y fallas en la adherencia a las medidas de bioseguridad, que pueden poner en riesgo al paciente y al profesional de enfermería.

Palabras claves: Enfermería; Contención de Riesgos Biológicos; Unidades de Cuidados Intensivos.

RESUMO | Objetivo: Evidenciar os fatores determinantes para adesão das medidas de biossegurança pela equipe de Enfermagem na Unidade de Terapia Intensiva. Método: Estudo de revisão sistemática, que usou o instrumento Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). A busca foi realizada a partir de artigos publicados no período de 2004 a 2019, por dificuldade de encontrar publicações em menor período acerca da temática deste estudo. Resultados: O conhecimento e as ações de promoção e prevenção, como a lavagem de mãos e o uso de Equipamento de Proteção Individual, além de recursos físicos, são fatores determinantes para adesão às medidas de biossegurança na UTI. Conclusão: As medidas de biossegurança garantem a segurança do paciente, e, por isso, é importante que os profissionais sejam capacitados regularmente para prevenir dificuldades e falhas de adesão com as medidas de biossegurança o que pode colocar em risco o paciente e o profissional da enfermagem.

Palavras-chaves: Enfermagem; Contenção de Riscos Biológicos; Unidades de Terapia Intensiva.

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INTRODUCTION

Nursing practice is marked by the exposure of physical, chemical and biological risks, which place professionals on the pillar about the importance of biosafety measures. Such measures are characterized by standard precautionary actions that are directly linked to the prevention, control, reduction or elimination of occupational risks to which professionals are exposed.⁽¹⁾

The role of nurses in the implementation of NR 32 aims to influen-

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ce and enable their collaborators to provide quality health care and to promote health promotion, recovery, assistance, research and teaching at any level of complexity.⁽²⁾

In the context of the Intensive Care Unit (ICU), biosafety measures are essential to the life and health of patients, regardless of their diagnosis, in addition to the protection and guarantee of the professional's physical integrity in this critical environment.⁽³⁾

In nursing, hand hygiene with soap and water, alcoholic friction and the use of respiratory protection mask, glasses, procedure and sterile gloves, lab coat, apron, cloak and cap are biosafety measures routinely performed in the exercise of the profession.⁽⁴⁻⁵⁾ Although relatively simple and of low cost, such measures still represent a challenge in adherence among professionals, requiring further studies that justify the determining factors for these failures.⁽²⁾

A study carried out in a teaching hospital showed that hospital infections in critical units, such as the ICU, have significant rates of nosocomial infection, when compared to other sectors of the hospital.⁵ Results like this are not widely publicized, although there is an estimate that hospital infections, and around 17 million people a year, are contaminated worldwide.⁽⁶⁾

This finding illustrates a health problem that puts patient safety at risk and can be triggered by non-adherence to a biosafety measure, especially in critical environments such as the ICU, where more complex procedures are performed.⁽⁵⁾

The Ministry of Labour instituted, in Brazil, Regulatory Norm no. 32 (NR 32) which aims to establish guidelines and implementations for health establishments in relation to the protection and safety of workers and health professionals, and by Regulatory Norm no. 06 (NR 06) aimed at the use of Individual Protective Equipment (PPE), aimed at protecting the integrity of workers and

preventing occupational diseases. These implementations include preventive measures with a low and effective cost, but they are not widely used by professionals. An example is the difficulty in using Personal Protective Equipment (PPE).⁽²⁾

According to Pereira et al⁽⁴⁾, Nursing professionals have knowledge about biosafety measures, but this does not imply satisfactory adherence, as it can cause the spread of microorganisms, which causes suffering to the patient for making treatment difficult in the ICU, in addition to causing a burden on the health system.⁽⁷⁾

For this reason, attention to biosafety issues needs to be highlighted in the literature as it portrays risks that are often irreparable through situations that could be prevented. Thus, this study aimed to know the determining factors for adherence to biosafety measures by the Nursing team in the ICU.

METHOD

It is a systematic review, which is classified as a secondary study, aiming to work from other research of primary origin. It is important to highlight that this study was carried out clearly, using systematic and explicit methods in the review.⁽⁴⁻⁸⁻⁹⁾ However, it is necessary to systematize the entire process. Thus, the present study used the instrument Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), guaranteeing the veracity in the research.⁽⁴⁻⁸⁻⁹⁾

Initially, the search started from an authenticity criterion, in which the "PICOS" strategy was established: "P" (patients): Nursing professionals of both sexes who work in the ICU; "I" (intervention): practice that is necessary in order to reduce the risks of contamination and accidents at work based on NR 32 (6); "C" (control): actions that go against regulatory standards for biosafety; "O" (outcomes): adverse events; e "S" (study design): exploratory randomized and

observational clinical trials (cross-sectional, cohort and case-control). In view of this, the guiding question formed by the research was the following: "What factors determine adherence to biosafety practices in the ICU?"⁽⁴⁻⁸⁾

Subsequently, a search was made in the databases of Latin American and Caribbean Literature in Health Sciences (LILACS), Scientific Electronic Library Online (SciELO), Bibliographic Index Español en Ciencias de la Salud (IBECs), Medical Literature Analysis and Retrieval System Online (MEDLINE) and Nursing Databases (BDENF), through the following descriptors available in the Health Sciences Descriptors (DeCS): Nursing, Biosafety and Intensive Care Units.

The second stage started from the search for studies in the period of the last five years, from 2014 to 2019. However, as there was a shortage of studies, the search was expanded with articles published in the period from 2004 to 2019. Were adopted as inclusion criteria, articles in Portuguese, interest in what the data would reveal in Brazil, texts available in full, in addition to original qualitative and quantitative articles that justified the reasons for adhering to biosafety measures in the ICU Nursing team.

Articles not available online were excluded, with publications that did not refer to the search period and thematic focused on the perception and knowledge of nursing professionals in biological safety practices in the ICU.

Data collection occurred by selecting the articles that met the objective of this study, from reading each article in its entirety, to verify whether they would answer the question of this systematic literature review. Then, a spreadsheet with authors, year of publication, methodological design, adherence factors and results was built (Table 1). The construction of this database was intended to provide support for the fourth and fifth stages of the systematic review: critical analysis and discussion of the data found.

Another point to be considered is

how the data were extracted - which had three reviewers (A. C. M., K. P. and B. E. F) -, in which the published articles were removed and the articles were evaluated by title and abstracts. Subsequently, the selected articles were read in full, with critical discussion and the opinion of each reviewer. Finally, articles that had some disagreement from the reviewers, with regard to inclusion or exclusion, had to be reread for further evaluation and consensus.

Regarding the variables, the following articles were extracted for analysis (Figure 1): (1) author, year of publication and country of publication; (2) adherence factors in relation to biosafety; (3) non-adherence measures; and (4) main results.

As this is a systematic review of the literature, this study did not present the need for appreciation and approval by the Research Ethics Committee, since the data do not need ethical confidentiality.

RESULTS

Altogether nine articles were found in the search for descriptive data. Then, there was the removal of duplicates, which

were excluded by title or abstract, leaving five articles that were evaluated in their titles and abstracts. Using the eligibility criteria, only three articles were selected in full (Figure 1), including one on quantitative cross-sectional cohort and two on exploratory research with a qualitative approach to the data (Table 1).

Thus, the first study by Llapa-Rodriguez et al (2) aimed to evaluate the recommendations of biosafety with nursing professionals in the ICU. Using a quantitative, descriptive and cross-sectional approach, it was possible to list that nursing professionals have knowledge about biosafety, but this does not guarantee compliance with the technical standards defined for professionals due to unavailability in the unit, thus generating slovenly with the use of PPE. The study showed learning about biosafety procedures and actions to promote and prevent occupational safety, such as, for example, knowledge about hand washing and use of PPE, favoring adherence to biosafety measures in the ICU.

In Correa and Donato(10), an exploratory, descriptive study with a qualitative approach, we sought to describe the actions taken by the Nursing team du-

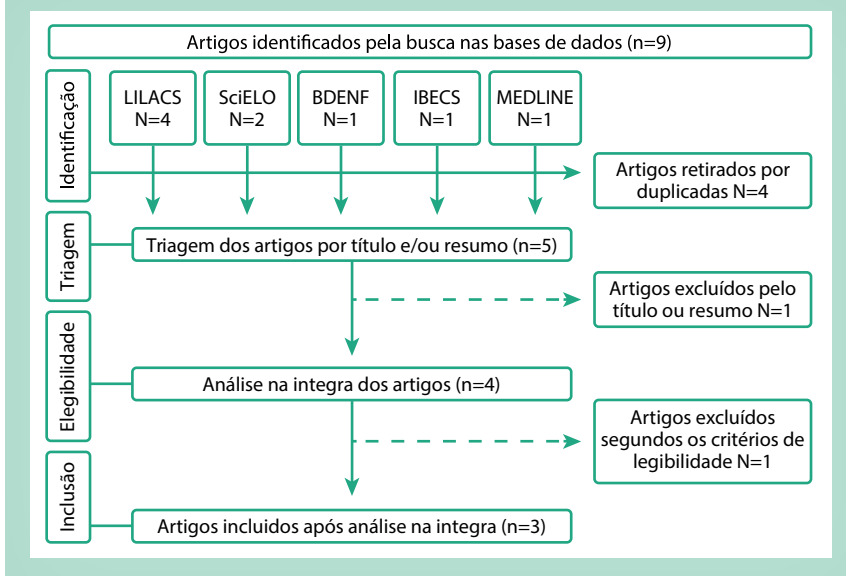
ring the ICU care process so that it was possible to identify the effectiveness of biosafety measures during assistance. In addition, the possibilities of implementation in the team of biosafety measures during assistance were analyzed. This study made it possible to reflect on the need to promote permanent education for employees, in addition to actions to promote and prevent occupational safety and implement "good practices", making it possible to achieve a work environment with less risk of occupational accidents. For the authors, investing in physical resources in the ICUs and expanding the professionals' knowledge, such as, for example, the importance of hand hygiene with soap and water and knowledge about the use of PPE, have repercussions on the adherence of these measures.

Thus, also the study by Brand and Fontana, (11) aimed at investigating the knowledge and practices of the Nursing team on biosafety in the ICU, as well as identifying situations of biological risk to which the worker is exposed, and adherence to NR 32. Using a qualitative approach, the descriptive study made it possible to reflect on the norms and responsible for promoting the biosafety of the sectors, even though there is still a complete adherence of the institutions. In this sense, the services provided by the responsible organs are used more in a supervisory way than in an educational and / or emancipatory way, offering continuing education so that there are assertive forms of adherence to biosafety measures.

DISCUSSION

In the studies listed for this systematic review, it was possible to show that knowledge about biosafety procedures, promotion and prevention actions on work safety, adequate physical resources in the ICUs, the training of professionals to expand technical and scientific knowledge and also, the educational actions developed by the responsible sectors

Figure 1 - Selection of articles by search strategy in the databases.



are determining factors for adherence to biosafety measures in the ICU.

The data available in the literature are still scarce and limited in order to allow the identification of the best measures to establish the most appropriate way to guarantee the NR 32 recommendations, being a regulatory standard that establishes the basic guidelines for the implementation of measures to protect the safety and health of workers in health services. And, although it has been a topic discussed for some decades, it is still evident the lack of adherence in health teams that also consider overwork, stress, lack of equipment and even the physical structure of the work environment.

Regarding the adherence to biosafety measures in health teams, we emphasize the use of the continuing education tool, which is a device created by Freire. ⁽¹²⁾ This resource allows professionals to list factors of their professional and personal life in the practice of their care, creating more associations between their work and their knowledge and establishing, in a critical way, the importance of performing biosafety measures. ⁽¹³⁾

Establishing a connection with continuing education, it is important to take a critical look at continuing education, which is highlighted in the studies by Silva et al ⁽¹⁴⁾ because this is presented as a demand listed in the articles studied. Continuing education allows to adopt measures to enjoy the learning opportunities of professionals and in education, it allows to guide and promote processes of problematization of the work process. ⁽¹⁵⁾ There is a lack of knowledge even during undergraduate studies on biosafety terminology, in addition to which, depending on the institution, small changes may occur that vary according to the philosophy of the work.

Thus, it is necessary to deepen the theme and think about the applicability of these measures in institutions as an educational form, reaching all professionals, since the educational measures mentioned in the articles are the most



Given this, thinking about the other is reflecting that the human being needs comprehensive and dynamic care, going beyond physical contact. There is also a need to have a safe space and sensitized people to take care of it in a way that makes it possible to minimize the damage.



efficient. However, planning ways to achieve these goals goes beyond infrastructure investment needs. The physical structure approached in relation to the ICU is a highly complex place, which admits patients with severe potential. Even so, biosafety measures in these environments are still flaws, such as, for example, the lack of alcohol gel dispensers and sinks for hand hygiene of professionals, making it difficult to comply with NR 32. ⁽²⁾

According to the Ministry of Health, RDC 50 of Resolution No. 7 of February 2010 is established by ANVISA, which aims to plan, program, prepare and evaluate the physical projects and structures of the ICU. ⁽¹⁶⁾

Given this, thinking about the other is reflecting that the human being needs comprehensive and dynamic care, going beyond physical contact. There is also a need to have a safe space and sensitized people to take care of it in a way that makes it possible to minimize the damage.

It is important to highlight, within the theme of adherence to biosafety measures, patient safety. This movement of empathy with others to be cared for, also highlights the importance of patient safety, which is notoriously linked to the NR of biosafety, since, performing it mutually, it is possible to establish effective ways of caring for safety, reducing accidents both with patients and with the health team. ⁽¹⁷⁾ However, an aspect mentioned in the studies is the non-use of individual equipment, a crucial factor to comply with biosafety measures. The use of equipment is one of the most emphasized by the participants in the articles listed, since the use of PPE allows physical barriers, preventing accidents and transversal infections. ⁽¹⁷⁾ Linked to the equipment, the importance of hand washing and the use of the lab coat were emphasized - these two "items" must comply with NR 32 in order to avoid contamination. ⁽¹¹⁾

A study carried out by Vasconcelos et al.⁽¹⁸⁾ shows that hand washing is the most effective and cheapest way to avoid cross contamination. In addition, it prevents infections that can affect the professional himself. The authors point out that the non-hand washing, as highlighted in the studies, is often justified by time and work overload. Finding ways to value these actions is a way of making the use of these tools more visible. The research carried out by Brand and Fontana⁽¹¹⁾ showed that, when there is dialogue and dynamics between the team, there is also an improvement in relation to the fact that it is necessary to follow the biosafety guidelines.

This study considers as a limitation the difficulty of available publications that evidence investigations that deepen the view of Nursing professionals

on the factors that facilitate and contribute to adherence to biosafety measures in the ICU. Although it followed a methodological rigor, the study does not allow associations, as it is a qualitative research.

CONCLUSION

The ICU is a critical environment that demands attention, due to the clinical complexity of the patients, in addition to the diversity of invasive procedures performed by the entire nursing team. Despite the scarcity of publications carried out on the subject, it is clear that the main determining factors for adherence are the biosafety measures in the Intensive Care Unit (ICU), such as the knowledge of nursing professionals and the actions of

prevention and promotions such as, for example, hand hygiene and the use of Personal Protective Equipment (PPE), in addition to improving structures and physical resources. In other words, to enable a work environment with less risk of occupational accidents and to promote continuing education so that there are assertive ways of adhering to biosafety measures, enabling biosafety measures and implementations by the nursing team and promoting patient safety. These factors are crucial for the patient's safety to be carried out efficiently, since it allows the development of the safety aspects of the worker and also the way of providing care. Therefore, it is suggested to conduct more research in the area, emphasizing the importance of the perspective of the nursing professional. 🐦

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