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RESEARCH

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## Nursing Professionals' Perspective on Occupational Risks and Work Accidents in The Sterilization and Materials Processing Center

Visão dos Profissionais de Enfermagem Quanto aos Riscos Ocupacionais e Acidentes de Trabalho na Central de Material e Esterilização

Visión de los Profesionales de Enfermería Cuanto a los Riesgos Ocupacionales y Accidentes Ocupacionales en la Central de Material Esterilización

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### ABSTRACT

**Objective:** The research's main goal has been to explore the nursing professionals' perspective on occupational risks and work accidents in the Sterilization and Materials Processing Centers (SMPC). **Methods:** It is a qualitative exploratory study performed at a reference hospital in the State of *Piauí*, with 12 nursing professionals. Data were collected in May of 2017; a semi-structured interview script was used, and data analysis was performed by the Discourse of the Collective Subject. **Result:** Three themes emerged: Risks present in the work environment; The Nursing Team's view on accidents at SMPC and Assistance to injured professionals. **Conclusion:** Participants were aware that activities in this unit require the adequate use of Personal Protective Equipment (PPE) to protect them from occupational risks and accidents, however, the continuing education process needs to be valued and periodically effective for greater security and valorization of the team and improve the work process.

**Descriptors:** Occupational Risks, Occupational Accidents, Worker's Health, Nursing.

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## RESUMO

**Objetivo:** Explorar a visão dos profissionais de enfermagem quanto aos riscos ocupacionais e acidentes ocupacionais na Central de Material Esterilização.

**Método:** estudo qualitativo exploratório realizado em um hospital de referência do estado do Piauí, com 12 profissionais de enfermagem. Os dados foram coletados no mês de maio de 2017, utilizou-se um roteiro de entrevista semi-estruturada e a análise dos dados foi realizada pelo Discurso do Sujeito Coletivo. **Resultado:** Emergiram três temas: Riscos presentes no ambiente de trabalho; A visão da Equipe de Enfermagem sobre os acidentes na CME e Assistência prestada aos profissionais acidentados. **Conclusão:** percebeu-se que os participantes estão cientes de que as atividades nesta unidade requerem o uso adequado de equipamento de proteção individual para protegê-los dos riscos e acidentes de trabalho, no entanto o processo de educação continuada precisa ser valorizado e periodicamente efetivado para maior segurança e valorização da equipe e melhorar do processo de trabalho.

**Descritores:** Riscos Ocupacionais, Acidentes de Trabalho, Saúde do trabalhador, Enfermagem.

## RESUMEN

**Objetivo:** Explorar la visión de los profesionales de enfermería en cuanto a los riesgos ocupacionales y accidentes ocupacionales en la Central de Material Esterilización. **Método:** estudio cualitativo exploratorio realizado en un hospital de referencia del estado de Piauí, con 12 profesionales de enfermería. Los datos fueron recolectados en el mes de mayo de 2017, se utilizó un guión de entrevista semiestructurada y el análisis de los datos fue realizado por el Discurso del Sujeto Colectivo. **Resultado:** emergieron tres temas: Riesgos presentes en el ambiente de trabajo; La visión del equipo de enfermería sobre los accidentes en la CME y la asistencia a los profesionales acidentados. **Conclusión:** se percibió que los participantes son conscientes de que las actividades en esta unidad requieren el uso adecuado de equipo de protección individual para protegerlos de los riesgos y accidentes de trabajo, sin embargo el proceso de educación continuada necesita ser valorado y periódicamente efectuado para mayor seguridad y valoración del equipo y mejorar el proceso de trabajo.

**Descriptorios:** Riesgos Laborales, Accidentes de Trabajo, Salud Laboral, Enfermería.

## INTRODUCTION

The work carried out by the nursing team professionals aims at promoting the health and well-being of their peers, but countless times, some determinant factors that may cause harm to the health of these professionals are not taken into account, during their care practices, which are exposed to accidents and occupational risks, such as physical, chemical, biological, ergonomic and psychosocial.<sup>1</sup>

The Sterilization and Materials Processing Centers (SMPC) is the environment where the procedures of treatment of the dental-medical-hospital articles are performed. Health professionals working at the SMPC must combat hospital infections through the death or microbial reduction of microorganisms in the medical articles. It is up to the nurses who operate the SMPC to be committed to the quality of their work, and to be able to develop skills concerning the modernization of the production process and the recognition of human resources, and also, to be constantly learning in the face of newly installed technologies.<sup>2</sup>

The operation of the SMPC is centralized, where hospital medical articles are organized, sterilized, distributed and monitored qualitatively and quantitatively. Until 1940, the SMPC was decentralized and the responsibility for organizing and sterilizing the articles was with everyone who used them; From 1950 onwards, it became semi-centralized and the articles were prepared by each unit and later taken to a single place for sterilization purposes. Everything that has happened throughout the history of sterilization has contributed and currently contributes, with new technologies and research, proper processing in hospital environments, to ensure the safety of all staff and the patient. With all the innovations, there was the need to concentrate the SMPC, and with the accompaniment of a trained nurse.<sup>3</sup>

Occupational accidents and risks are present in the daily life of the SMPC, the area responsible for cleaning and processing medical articles and instruments. The SMPC controls, cleans, prepares, sterilizes and distributes hospital medical supplies, and is considered an unhealthy environment within hospitals due to the specific practices of processing the resulting articles or products, particularly clinical and surgical interventions, and that make nursing professionals more vulnerable to occupational accidents.<sup>4</sup>

Occupational accidents at work can be either susceptible or unpredictable. Some even cause health damage, whether permanent or temporary, depending on the work risks that the nursing professional is exposed to during the exercise of their profession.<sup>5</sup>

Among the occupational accidents raised in national surveys, sharp piercing injuries and autoclave burns were the most representative in the institutions. The risk of fire, contact with chemical and biological substances, noise exposure, physical exertion and sharp piercing injuries, as well as the risk of falling materials, posture discomfort and work overload are factors that contribute to the appearance of health damage, such as varicose veins, eye problems, low back pain, sleep disorder and spinal injuries, among others.<sup>1</sup>

Careful handling of sharp piercing articles is critical to avoid accidents. However, the institution is responsible for the applicability of biosafety in the activities of SMPC workers through the adequacy of human and material resources, provision of Personal Protective Equipment (PPE), encouragement of permanent education, adoption of hygiene and safety measures in the workplace.<sup>6</sup>

The study of these occurrences allows an evaluation of the relations between man and the environment where they exercise their activities, balance, and deterioration, improving the technical-scientific knowledge and allowing the planning and the evaluation of the actions directed to the workers. Even accidents or incidents that did not culminate in injury or illness, but which had the potential to do so, as well as the occurrence of unexpected and undesirable events, should be included in this analysis so that these situations do not recur.<sup>7</sup>

Considering the abovementioned considerations, the present study has the guiding question: What is the view of nursing professionals regarding the occupational risks and accidents in a SMPC? The objective is to explore SMPC professionals' view of occupational risks and work accidents that occur at the Center of Material and Sterilization.

## METHODS

This is a descriptive study with an exploratory qualitative approach that was carried out at the SMPC of a referral Hospital in the State of Piauí.

The total number of professionals who make up the SMPC nursing team are 73 employees (8 nurses and 65 nursing technicians/assistants). Inclusion criteria: professionals active for two years in effective professional practice, of both sexes, over 18 years old, working in the morning and afternoon shifts. Nursing professionals on sick leave, vacation time and less than two years of service, were excluded from the study. From a total of 73, only 12 nursing team professionals participated in the research, being three (3) nurses, six (6) nursing technicians, and three (3) nursing assistants.

For data collection, at first an individual invitation was made to the SMPC nursing professionals to participate in this investigation voluntarily and after acceptance, the interview was conducted individually in a reserved area of the unit. The technique used in this study was interview, involving two people in a "face to face" situation, in which one of them asks questions and the other answers, and are characterized because they are related to the phenomenon to be investigated.<sup>8</sup>

The instrument for data collection was built by the researchers, consisting of a semi-structured interview script. The interviews were held in May 2017, individually, in a comfortable place at the employees' rest and or in the nursing room, coordinated by the SMPC, they were recorded and then transcribed in full. The transcription was performed by the researchers themselves and for the treatment of speech, we used three methodological figures of the Discourse of the Collective Subject (DCS): Key Expressions (KE); the Central Ideas (CI) and the Discourse of the Collective Subject (DCS).

This study was conducted in compliance with all principles of National Health Council Resolution No. 466 of December 12<sup>th</sup>, 2012, which deals with research involving human subjects.<sup>10</sup> The study was approved by the Research Ethics Committee of the proposing institution, according to the No. 2,036,832, as well as the authorization of the co-participant institution, according to the No. 2,082,025.

## RESULTS AND DISCUSSION

Twelve (12) nursing team professionals, both sexes,

participated in the study, being 03 nursing assistants, 06 nursing technicians, and 03 nurses, with an average of 35 years old of service time and 30 hours workweek and most work overtime. Regarding the age range, varied from 53 to 67 years old, with schooling level prevailing the high school totaling 09 professionals (six technicians and three nursing assistants), of these respondents, there was a higher predominance of married (seven) and one widower and one single); brown ethnicity (nine brown and one white).

Given the findings in the interviews emerged the following central themes and ideas that together, build the Discourse of the Collective Subject: Risks in the workplace; The Nursing Team's view on accidents at the SMPC; Assistance provided to injured professionals.

### 1. Theme: Risks in the Workplace

#### Central Ideas:

- Risk
- No use of PPEs
- Chemical risk
- Biological risk
- Physical risk
- Knowledge of risk
- Protection

*Risk is what we all run because we have to deal with this material, we sure have gloves, but the gloves rip or puncture and still when we do not use personal protective equipment. We are constantly exposed to risks such as chemical, biological and physical risks. As for chemical: when using corrosive solutions to wash some material a carelessness occurs and the solution goes towards the eyes and we are not wearing glasses or using barrier protection. As for biological: materials that come contaminated from the Intensive Care Unit (ICU), the fear is much greater. Physical: Problems related to temperature change, because when handling an autoclave, the temperature is too high and then enter a room where the temperature is low. We have to protect ourselves to the maximum, as we will usually deal with highly contaminated materials, from patients who are in contact isolations, patients with resistant bacteria, so we have to use our PPEs protection and still be very careful. Therefore, we do know the risks, but we are not always aware of them. Working at the Sterilization and Materials Processing Center is much safer these days, as more Personal Protective Equipment has emerged, some changes have been made to improve protection at the SMPC, guidance on working there and the need to study the risks thoroughly was necessary.*

### 2. Theme: The Nursing Team's view on accidents at SMPC

#### Central Ideas:

- Responsibility
- Knowledge of what is an accident
- Risk situation

It is understood that from the moment you do not take seriously what you are doing, you have no responsibility for it. Careful handling of material at SMPC is essential, as work accidents are here, such as cutting, falling, needle sticking, contamination, the risk of falling tweezers even when you are wearing footwear, you get hurt because the tweezers have a sharp part or a hammer that is a heavy material or an abdominal retractor, it can happen by the case or carelessness.

### 3. Theme: Assistance to injured professionals

#### Central Ideas:

- Orientation
- Doctors and Nurses
- Hospital Infection Control Committees (HICC) and worker's health
- Exams
- Experience and awareness to improve prevention

*The assistance is well organized, the guidelines are provided by the doctor and nurse professionals, both in the Hospital Infection Control Committees (HICC) and in the worker's health. The guidelines are about the conduct to be done immediately and the examination routines that will be done over the months and the psychological support itself that everything is being routed in the best way. The experience of an accident sufferer further enhances individual and collective prevention because our colleagues are also subject to the same risks.*

Among the themes elucidated through the Discourse of the Collective Subject, the first addresses the risks present in the workplace of nursing professionals in the context of the SMPC.

Understanding SMPC as a hospital unit that provides indirect patient care, as a complex environment that favors the exposure of workers to risks. The professional is exposed to work in contact with organic fluids, heat and chemicals arising from chemical and thermal disinfection and sterilization processes, in a confined environment, under monotonous and/or exhaustive routines and not infrequently insufficient in material and human resources.<sup>1</sup>

Professionals demonstrate knowledge that they are exposed to risks and describe some situations in which they are more susceptible such as the non-use of Personal Protective Equipment, either due to the lack of knowledge or to the negligence with the equipment itself.

The use of Personal Protective Equipment (PPE) and Collective Protection Equipment (CPE) minimizes occupational risks and accidents promoting health quality and lower exposure to contact with pathogens present in materials containing body fluids. Continuing education should be routine, following the regulatory standard six (NR-06)

the employer provides the PPE, but the employee must use it correctly and become responsible for the conservation and any changes must be communicated to the employer.<sup>7</sup>

The nursing professionals in this study portray three types of risks, biological, chemical and physical, as the most present in the context of a SMPC, how they could happen and how changes over time have been occurring to improve the safety of health professionals in this context.

Potential risks to healthcare professionals may be physical: heat, cold, noise, vibration, abnormal pressures, ionizing and non-ionizing radiation, humidity; chemical risks: substances, compounds or products that may invade the body, whether via the air - in the form of dust, fumes, mists, fogs, gases or vapors - or which, due to the nature of the exposure, they may have contact with the skin or being absorbed by ingestion; biological risks: they are bacteria, fungi, bacilli, parasites, protozoa, viruses, among others; Ergonomic risks: physical and organizational factors that affect the comfort of professional activity and, consequently, the psychophysiological characteristics of the worker.<sup>12</sup>

These risks can also be classified as primaries, secondary and tertiary, whose potential harm to the worker will depend on compliance with the relevant legislation and knowledge and attention of the professional in the development of their activities, including tolerance limits.<sup>12</sup>

SMPC workers follow a fast pace of work, with physical and mental demands, exposed to chemical, physical and biological risks, and work in a small physical space and with the heat of autoclaves. All of these factors generate stress, anxiety, and fear, compromising not only your health but also the quality of service.

The second theme is about the nursing team's view on accidents at the SMPC. The central ideas of this theme were: responsibility, knowledge of what is an accident and risk situations.

The act or effect of seeing is a brain function that allows the individual to organize and interpret the outside world. However, depending on whether or not information from memory can be used in the field of practice of nursing professionals of the SMPC, when the professional holds this type of knowledge and uses it to their advantage, but sometimes is left out because of the lack information update and even professional negligence.<sup>13</sup>

In the nursing team's view, the work in the SMPC environment is complex and requires, in addition to rigorous attention, a lot of responsibility. SMPC is considered to be one of the sectors within the hospital setting in which the specific practices of processing the resulting articles or products, particularly clinical and surgical interventions, bring nursing professionals closer and more vulnerable to occupational accidents.<sup>1</sup>

The occupational accidents reported by the professionals were: a cut, a fall, a needle stick, contamination by biological material, an injury related to the lack of PPE, among others, happen if the professional does not strictly follow

safety standards and/or undermine the importance of PPE and CPE within any health facility, especially the SMPC.

A technical support unit, whose activities are to receive, separate, wash, disinfect and sterilize materials and clothing, as well as make microbiological control and validity of the sterilization period of processed articles, store and distribute these materials, ensuring the protection and safety of the operators and patients, presents risks of accidents, inherent to professionals working in this sector. However, they can be avoided and/or minimized.<sup>14</sup>

Occupational accidents have a major economic impact due to the loss of skilled labor due to occupational injuries, as well as irreparable damage to the hospital's image. Organizations must inform and train staff to follow appropriate measures to maintain safety in their industry. The Internal Commission for the Prevention of Accidents - ICPA is responsible for the notification of occupational accidents that occurred with all hospital staff.<sup>12</sup>

The third theme concerns the assistance provided to injured professionals, highlights as central ideas: guidance, medical and nursing professionals, HICC and worker's health, exams, and experience and awareness to improve prevention.

It is observed that the employees feel safe about the assistance provided by the institution after the work accident, as the institution maintains preventive measures and health education actions, guiding and educating its professionals about the best work practice and assistance to the injured worker.

An occupational accident prevention program only becomes effective when nursing professionals themselves become multipliers of awareness of risk factors and put into practice the methods that guide prevention.<sup>15</sup>

## CONCLUSIONS

In this study, it was found that SMPC professionals are generally aware that the activity in this unit requires the proper use of PPE to protect them from occupational risks and work accidents. Exposure to occupational risks, such as heat and sharps accidents, was frequently cited by participants and exposure may be linked to the fact that they do not know and do not use PPE properly during the work process.

The implementation of improvements to foster the quality of life at work should be a priority of the SMPC unit where workers are located and managers, such as awareness of consumer units in the delivery of material to be sterilized and investments in air conditioning, to favor comfort and control. Satisfied workers tend to perform their activities with more attention, hospitality, and cordiality, which contributes to humanization in relationships. It cannot be neglected, because the quality of the work that permeates the user's safety is also derived from the materials correctly processed in the SMPC.

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