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RESEARCH ARTICLE

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THE NURSE AND ITS DAILY ACTIONS IN THE PRACTICE OF A MATERIAL AND STERILIZATION CENTER

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ABSTRACT

The Material and Sterilization Center (MSC) is a technical support unit whose mission is to guarantee the processing of health products (PHP), with safety and quality in sufficient quantities to meet the needs of the service, as well as the safe attendance to the customer. patient. We aim to report the experience of nurses' daily actions in the practice of a MSC class II of a public hospital in the city of Fortaleza. It is an exploratory, descriptive, narrative research of the type of experience report, which has the purpose of describing the work developed by nurses in a MSC class II. The MSC where the internship practice was carried out has a team of 45 nursing technicians, the dimension being based on the size of the institution. This work made it possible to recognize the skills, abilities and attitudes of nurses in an MSC, given their daily actions in the areas of reception, cleaning, disinfection, preparation, sterilization, storage and distribution. It has been understood that all processing steps are very important and that one impacts the other positively or negatively. Therefore, the importance of the actions of supervision and continuous training of the nursing team in the face of PHP processing. The performance of this professional is increasingly relevant in the work processes of the MSC, mainly because of its role in the management of the processes, with a view to preventing infections related to health care (HAI), and thereby ensuring patient safety.

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INTRODUCTION

The Material and Sterilization Center (MSC) is a technical support unit whose mission is to guarantee the processing of health products (PHP), with safety and quality in sufficient quantities to meet the needs of the service, as well as the safe attendance to the customer. patient. It is the unit responsible for receiving, cleaning, disinfecting, preparing, sterilizing, storing and distributing PHP to consumer units (Associação Brasileira de Enfermeiros de Centro Cirúrgico, 2017). MSC, among its regulations as requirements of good practices for the processing of health products, is classified in class I and II. Class I MSC is one that processes non-critical, semi-critical and non-complex conformation PHP, and such structures require only technical barriers for their functionality.

Thus, class II performs all the processing performed in class I, as well as the PHP of complex conformation, and in this MSC category, its structures must have adequate technical and physical barriers (Associação Brasileira de Enfermeiros de Centro Cirúrgico, 2017; Ministério da Saúde, 2012). In this way, the MSC in hospital units is classified as class II, and as a result, the PHP are more complex and require different views regarding processing in their different areas, such as reception and cleaning of the others. In order to make surgical procedures less invasive and traumatic, the conformation of surgical materials, over time, has evolved instrument design, making them more complex (Ministério da Saúde, 2012; Carvalho, 2015). Since cleaning is the fundamental step in the processing of PHP, thus raising the need to ensure a thorough cleaning process that presents safe results and that aims at

optimizing work processes, being for the effectiveness of the disinfection process and or sterilization, the PHP must carefully undergo a systematically adequate cleaning process, either manually or automatically, in order to ensure the removal of organic and inorganic residues (Associação Brasileira de Enfermeiros de Centro Cirúrgico, 2017; Carvalho, 2015). In the preparation stage, which consists of a thorough inspection of the cleanliness and functionality of the materials, it is one of the critical points for a material to be reused, since the existence of micro residual dirt can prevent the penetration of the sterilizing or disinfectant agent in the health product. Thus, when considering that the PHP is clean, they must be packed to ensure the maintenance of sterility to the end user (Freitas, 2020). When it comes to the sterilization process, we currently have two methods available, namely the physical and the gaseous physicochemical. Considering primarily the physical methods, we highlight the saturated steam under pressure, which is the basis of moist heat and the gamma ray that is produced from the radiation emitted by the element cobalt 60. Regarding the gaseous physico-chemical methods, we highlight the steam at low temperature formaldehyde, plasma hydrogen peroxide vapor and ethylene oxide (Freitas, 2020; Ouriques, 2013). In this way, we can understand that the sterilization process requires a lot of safety and rigor in the face of the precautions to be taken since the validation of the sterilizing chamber, the assembly of the load and the control of the monitoring of physical parameters by using chemical and biological indicators (Graziano, 2011; Sanchez *et al.*, 2018). After processing the PHP, they will be stored in a specific location of the MSC known as the storage and distribution area, in order to restrict the traffic of people, minimizing the risk of contamination by a related event, and to facilitate their distribution to the units. consumers (Nascimento *et al.* 2018). At the MSC, the nurse is responsible for managing the work team and its activities, evaluating and participating in all the steps inherent to the process of cleaning, disinfecting, preparing, sterilizing, storing and distributing the PHP. As well as the dimensioning of professionals, and also contributing to actions to prevent and control adverse events, guide the units using the service, implement good practices for the processing of PHP, as well as standardize the use of products, materials and equipment (Ouriques, 2013; Madeira, 2015). It also works in conjunction with infection control, in order to plan and validate the stages of processing the PHP, striving to reduce the rates of infection related to health care (HAI). The skills of the professional nurse in the MSC, despite being clear in the literature, however, are often unknown in the eyes of their own professional colleagues, as well as to other professionals who work in the different areas of health care establishments and to recognize this reality (Associação Paulista de Epidemiologia e Controle de Infecção Relacionada à Assistência à Saúde, 2020; Moriya, 2016). We aim to report the experience of nurses' daily actions in the practice of a MSC class II of a public hospital in the city of Fortaleza.

METHODS

It is an exploratory, descriptive, narrative research of the type of experience report, which has the purpose of describing the work developed by nurses in a MSC class II. The experience report deals with a scientific and methodological production that reflects on the description of professional experiences that contribute in the area of teaching, research, assistance and extension (Santos, 2018). The host institution of the study is a

large public hospital, located in the northeast region, located in the capital Fortaleza-Ceará, which has 541 hospital beds, and performs, on average, 520 surgeries per month and processes around 33,749 products for health monthly, considering the demand for hospital admissions and anesthetic-surgical interventions. This study emerged from the activities developed in the discipline "Supervised Practice", from the Lato Sensu Postgraduate Course "Operating Room Nursing", from a private university center in the state of Ceará, whose program addresses the possibility of the graduate students experiencing the procedures performed in a MSC. The discipline "Supervised Practice" has a workload of 30 hours and seeks to combine theory with practice. It is noteworthy that the activities proposed by the discipline move between management actions and nursing care practices, showing the interfaces of these educational practices present in this report.

As this is an experience report, there was no application of the Free and Informed Consent Term, however, prior authorization from the hospital's management was requested for the curricular internship. In addition, no data will be released to identify the hospital or the professionals who work there, as recommended by Resolution No. 466/2012, of the National Health Council (CNS).

RESULTS

The MSC where the internship practice was carried out has a team of 45 nursing technicians, the dimension being based on the size of the institution. The team also includes 10 nurses, who perform their activities exclusively in this sector. Of the nurses, one is responsible for the nursing management of the entire unit, and the others exercise supervisory and assistance functions in view of the work demands together with the technical nursing professionals. The nurse manager is responsible for administrative management, cost and people. In addition, it also carries out a training and development program for nursing staff, advising on appropriate practices, as well as guiding other professionals on the care with transport and storage of materials after use. Assistance nurses from MSC, on the other hand, are responsible for participating in periodic meetings of the Hospital Infection Control Service (SCIH), acting in the planning and validation of processes related to PHP and in the analysis of the quality of the water used from rinsing to reverse osmosis. of autoclaves. They are also at the forefront of conducting a Multiprofessional Committee for the Processing of Materials and Equipment (CMPME). It is emphasized that nurses encourage the conscious use of personal protective equipment (PPE) during the reception and cleaning of PHP, seeking to avoid accidents at work. It is noteworthy that, the nurses assisting with the unit manager, standardized as PPE, nitrile or non-slip rubber gloves, goggles, waterproof apron, hat, closed shoes for exclusive use, disposable mask with visor and private clothing. Also noting that for the preparation, sterilization and storage sub-areas, only private clothing, closed shoes for exclusive use, mask and cap will be necessary. In relation to the relevant supplies for cleaning the PHP and equipment, the nurse manager, together with the other assisting nurses, recommended an inventory at the beginning of each shift, supervised and oriented the activities to be developed by the nursing technicians assigned to the reception subarea. and cleanliness. Such activities performed by the nursing team, especially regarding the availability and validity of the detergents used in cleaning, avoiding possible failures and / or

adverse events in the process. Thus, the health care nurse standardized the concentration, dilution and validity of enzymatic detergents and high-level chemical disinfectants. These guidelines are available in the sector for employees to view, seeking to comply with regulations and recommendations of good health practices. Regarding the preparation of health products, nurses standardized the use of some packaging for packaging, aiming to meet the primary functions of the wrappers and allow the sterilization of the contents, keep them sterilized until they are used and allow the aseptic removal of the material, protecting it from possible adversities. Since, such barriers for it to be considered ideal, it should have, at least, characteristics such as allowing the penetration and removal of the sterilizing agent, providing a barrier against microorganisms and their vehicles, resisting tearing, abrasion and perforations, allowing efficient sealing, being non-toxic, odorless and do not release dyes or particles, when possible, have a chemical impregnated process indicator, easy handling and appropriate to the chosen sterilization method. Regarding the preparation subarea, the assisting nurse manages the processing of the PHP according to the consumption demand. Activities that are performed directly by the nursing technician team monitored and assisted by the nurse on duty. This process is organized from the inspection, conditioning and packaging of the PHP, in a standardized and adequately safe manner.

After the preparation stage, sterilization occurs according to the determination of the process to be submitted to the PHP. In this way, the health care nurse standardizes which processes the PHP must go through, emphasizing that all recommendations are respected, always seeking to meet the current evidence. Regarding the handling of the autoclave and the responsibility of nursing technicians previously scheduled under the direct supervision of the nurse. Thus, the choice of method, cycle and assembly of the autoclave load also has standardization in view of the needs of the service, and / or current recommendations regarding sterilization processes. Regarding the qualification of equipment, weekly and annual preventive maintenance was standardized. However, washers, thermo-disinfectors and ultrasound have protocols for validation through weekly tests. However, the sterilizing chambers, in turn, have daily validation through the evaluation of the physical parameters of the machine, and their chemical and biological indicators performed daily, before the first sterilizing load of the day. Such processes are validated by the assisting nurse through the interpretation of the tests, thus guaranteeing their effectiveness in sterilization and safety for the patient. After that, the information is recorded and archived for traceability purposes in the event of possible adverse events. The assisting nurse also performs the quarterly inventory of the quantity of PHP; the request for replacement of materials, equipment and instruments; and validating their quality. One of the most frequent process failures on admission is the entry of surgical boxes with missing items. The MSC nurse manager also builds management, process, institutional and care indicators.

DISCUSSION

The analysis of the results highlights the variety of activities that integrate the areas of reception and cleaning, preparation, sterilization, storage and distribution of the MSC, which requires from the nursing team greater interaction and effective

communication so that a safe sequence of the process occurs. With regard to the activities developed at the MSC, they are structured according to the work processes of the different sub-areas of the unit. In this way, communication and interpersonal relationships in the face of the routine actions of the MSC nursing team, the nurse exercises the role of leader of the work team in order to motivate and provide a safe environment for carrying out care practices (Freitas *et al.*, 2020; Ouriques, 2013). It was perceived the importance of the exclusive role of nurses in the MSC unit in the supervision and assistance of daily activities, in the standardization of products and work procedures, as well as in the elaboration of protocols and guidance of employees, which contributes to the adequate practice in all stages of PHP processing, infection control and, consequently, providing safe care to users (Graziano, 2011; Sanchez, 2018). Regarding the PHP flow, the importance of alignment through protocols is evident (Ministério da Saúde, 2012; Sanchez, 2018). It is well known that the participation of nurses in committees, gains strength that impacts changes to improve work actions in the MSC. Such proposals ensure that all strategies arising from discussions and debates with the senior management of the hospital service favor the improvement of the work of the nursing team in relation to occupational risk, since the MSC unit presents several possibilities for the occurrence of work accidents (Associação Brasileira de Enfermeiros de Centro Cirúrgico, 2017; Nascimento *et al.* 2008).

Even so, it was found that the implementation of physical and technical barriers are favorable points for the development of the team's work. Regarding the standardization of PPE, the study carried out at the hospital level that mentions among the main accidents at work reported in the unit are those related to the employee's inattention, among these splashes of high-level disinfectants in the eyes, sharps and burns (Graziano, 2011; Madeira, 2015; Associação Paulista de Epidemiologia e Controle de Infecção Relacionada à Assistência à Saúde, 2010). Similarity was found between the PPE referenced in studies and those used in the daily practice of the sector, the focus of the report, showing concern with the prevention and health promotion of the unit's nursing professionals. With regard to the management of inputs used in the reception and cleaning area, standardization is essential, so that there are no breaks in the sequence due to lack or incorrect dilution⁽⁹⁾. The management of these items in the hospital under study was standardized by the nurse manager, with approval from the Multiprofessional Committee. Regarding PHP cleaning, the legislation recommends that they be previously disassembled, whenever possible (Associação Brasileira de Enfermeiros de Centro Cirúrgico, Recuperação Anestésica e Centro de Material e Esterilização, 2017; Associação Paulista de Epidemiologia e Controle de Infecção Relacionada à Assistência à Saúde, 2010; Association of perioperative Registered Nurses, 2013; Gil, 2013). After cleaning and rinsing, PHP should be periodically sent for steam-permeable lubrication, as indicated by current legislation, which deals with the need to complement manual cleaning (Associação Paulista de Epidemiologia e Controle de Infecção Relacionada à Assistência à Saúde). The Association of periOperative Registered Nurses (AORN) also recommends the use of equipment for cleaning and reinforces that they have advantages over manual cleaning, by reducing biological and ergonomic risks. However, it was observed, in the MSC where the internship was carried out, compliance with the current legal recommendations, as well as the availability of an

ultrasonic washer. As for the tests necessary to release the equipment for use, they must include the evaluation of the temperature and time parameters, in comparison to the data obtained in the qualification (Carvalho, 2015; Associação Paulista de Epidemiologia e Controle de Infecção Relacionada à Assistência à Saúde, 2010; Association of perioperative Registered Nurses. Recommended practices for sterilization In: Association of perioperative Registered Nurses, 2013). In terms of preparation, it is considered as a clean area of the MSC, where the activities of identification, inspection, selection, conditioning and packaging of the products to be disinfected or sterilized are carried out (Carvalho, 2015). This whole process is in line with the practices carried out in the hospital in which the report was inspired, diverging only the flow related to PHP, which only those who will be sterilized are referred to the preparation subarea, and the others only reach this area after passing by high-level disinfection to be placed in wrappings and stored for use as semi-critical materials. In the preparation area, all PHP after the initial packaging stage, are packed in special wrappers for each process, and inside each package are placed class 5 chemical indicators and the package identification is fixed to test tape to ensure that it has passed through autoclaving. Such measures follow protocols implemented by the nurse manager based on recommendations and studies in the area. Therefore, the unit must have good lighting conditions and have furniture that provides functionality and comfort to employees (Gil, 2013). Sterilization, also considered to be a clean area, is intended for the installation of different equipment used to sterilize the various PHP, classified as thermoresistant or thermosensitive, either by physical or physical-chemical gas methods. I also emphasize that ensuring that PHP is really sterile is paramount to the service. And not that it just went through the sterilization process. For this reason, in the experience of the report we were able to prove that during the internship at the MSC, it was observed that, all the sterilization processes carried out in the period, the autoclaves were validated daily by their physical parameters by means of chemical and biological indicators by the assisting nurses (Freitas *et al.*, 2020; Graziano, 2011; Nascimento *et al.* 2018). Regarding the storage and distribution of PHP, the hospital's MSC still has a manual traceability system, however the assisting nurses and manager show interest in computerizing the system to better meet the demands of consumer units. In this area, the flow of people is controlled and they wear private clothes, also wearing a hat and mask. All PHP are organized by specialty and processing time, although the validity time is related to the quality and completeness of the packaging. Based on the literature, this area must be closed, with restricted control of entry and exit of people, air renewal system, room temperature between 18 and 22° C and relative humidity between 35 and 70% (Associação Brasileira de Enfermeiros de Centro Cirúrgico, Recuperação Anestésica e Centro de Material e Esterilização, 2017; Carvalho, 2015; Moriya, 2016). In view of the numerous competencies of the MSC nurse, he is also responsible for the training and development of the nursing team, with regard to the skills with handling the equipment, the selection of PHP that can be processed and its quality after exposure. Regarding management regarding the quantity of PHP, there is a lack of studies in the literature that theoretically support the complexity of the activities carried out in the area, considered the heart of health services.

Final considerations: This work made it possible to recognize the skills, abilities and attitudes of nurses in an MSC, given

their daily actions in the areas of reception, cleaning, disinfection, preparation, sterilization, storage and distribution. It has been understood that all processing steps are very important and that one impacts the other positively or negatively. Therefore, the importance of the actions of supervision and continuous training of the nursing team in the face of PHP processing. The performance of this professional is increasingly relevant in the work processes of the MSC, mainly because of its role in the management of the processes, with a view to preventing infections related to health care (HAI), and thereby ensuring patient safety.

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