







HEALTH CARE PRODUCT DISINFECTION PROCESS: CONCEPTIONS AND PRACTICES OF THE NURSING TEAM

PROCESSO DE DESINFECÇÃO DE PRODUTOS PARA SAÚDE: CONCEPÇÕES E PRÁTICAS DA EQUIPE DE ENFERMAGEM

PROCESO DE DESINFECCIÓN DE PRODUCTOS DE SALUD: CONCEPCIONES Y PRÁCTICAS DEL EQUIPO DE ENFERMERÍA

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ABSTRACT

Objective: to identify the conceptions and practices of Nursing teams on chemical disinfection of health products (PPS) in a Material and Sterilization Center (MSC). **Methodology:** this is a qualitative, descriptive research. The information was collected in September 2019, with the Nursing team that works in a hospital MSC located in the interior of the state of Rio Grande do Sul. For data collection, semi-structured interviews and structured observation were used. The analysis of the results was carried out using the thematic content analysis method. **Results:** participants did not report the need for separation between the area for disinfection and the contaminated area. It was observed that, despite professionals reporting that they use personal protective equipment in their practices, even with availability, there is low adherence at all recommended times. As for the procedure used for PPS disinfection, both correct and incorrect execution were contacted. **Final considerations:** it was concluded that the conceptions and practices of the Nursing team at the MSC regarding the chemical disinfection process need to be revised, due to incomplete adherence to the correct execution of the processing. This process is directly related to the Nursing team, and it lacks encouragement to review standard operating procedures, as well as institutional support in the search for permanent theoretical-scientific knowledge to redirect work processes and improve the results necessary for practical execution.

Keywords: Disinfection; Nursing, Team; Infection Control.

RESUMO

Objetivo: identificar as concepções e práticas das equipes de Enfermagem sobre desinfecção química de produtos para a saúde (PPS) em um Centro de Material e Esterilização (CME). **Metodologia:** trata-se de pesquisa de abordagem qualitativa, descritiva. As informações foram coletadas em setembro de 2019, com a equipe de Enfermagem que atua em um CME hospitalar localizado no interior do estado do Rio Grande do Sul. Para a coleta de dados utilizaram-se entrevista semiestruturada e observação estruturada. A análise dos resultados deu-se pelo método de análise de conteúdo temática. **Resultados:** os participantes não informaram a necessidade de separação entre a área para desinfecção e a área contaminada. Observou-se que, apesar dos profissionais relatarem que utilizam os equipamentos de proteção individual em suas práticas, mesmo com a disponibilidade, há baixa adesão em todos os momentos recomendados. Quanto ao procedimento usado para desinfecção dos PPS, contactou-se tanto a execução correta quanto a incorreta. **Considerações finais:** concluiu-se que as concepções e as práticas da equipe de Enfermagem do CME acerca do processo de desinfecção química precisam ser revistas, devido à adesão incompleta na execução correta do processamento. Esse processo está diretamente relacionado à equipe de Enfermagem e esta carece de estímulo para a revisão dos procedimentos operacionais padrão, bem como o apoio institucional na busca de conhecimento teórico-científico permanente para redirecionar os processos de trabalho e melhorar os resultados necessários para a execução prática.

Palavras-chave: Desinfecção; Equipe de Enfermagem; Controle de Infecções.

RESUMEN

Objetivo: identificar las concepciones y prácticas de los equipos de enfermería sobre desinfección química de productos de salud (PPS) en un Centro de Material y Esterilización (CME). **Metodología:** se trata de una investigación descriptiva cualitativa. La información fue recolectada en septiembre de 2019, con el equipo de enfermería que trabaja en un CME hospitalario ubicado en el interior del estado de Rio Grande do Sul. Para la recolección de datos se utilizaron entrevistas semiestructuradas y observación estructurada. El análisis de los resultados se realizó mediante el método de análisis de contenido temático. **Resultados:** los participantes no informaron la necesidad de separación entre el área de desinfección y el área contaminada. Se observó que, a pesar de que los profesionales informan que utilizan equipos de protección personal en sus prácticas, incluso con disponibilidad, existe una baja adherencia en todos los momentos recomendados. En cuanto al procedimiento utilizado para la desinfección de PPS, se contactó tanto con la ejecución correcta como con la incorrecta. **Consideraciones finales:** se concluyó que es necesario revisar las concepciones y prácticas del personal de enfermería de la CME con respecto al proceso de desinfección química, debido al cumplimiento incompleto de la correcta ejecución del procesamiento.

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Este proceso está directamente relacionado con el equipo de enfermería y carece de estímulo para revisar los procedimientos operativos estándar, así como de apoyo institucional en la búsqueda de conocimientos teórico-científicos permanentes para reorientar los procesos de trabajo y mejorar los resultados necesarios para la implementación práctica.

Palabras clave: Desinfección; Grupo de Enfermería; Control de Infecciones.

INTRODUCTION

The Material and Sterilization Center (MSC) is extremely important for health institutions, as it is the sector to which health products (PPS) that need processing are destined, according to the Resolution of the Collegiate Board (*Resolução da Diretoria Colegiada-RDC*) in the 15, of March 15, 2012, from the National Health Surveillance Agency (*Agência Nacional de Vigilância Sanitária-ANVISA*), which provides for good practice requirements for the processing of PPS.¹ The other units of a hospital service depend on the MSC, as the sector provides materials clean, disinfected and/or sterilized for use in patient care.

Despite its relevance in health services, this sector is generally not a priority in administrative decisions regarding the allocation of resources and, historically, it is a second option for workers who, for various reasons, cannot work in patient care.² These behaviors Institutions lead to reflection, as it is a sector responsible for processes that can prevent infections related to health care and increase the safety of patients who access the health service. Therefore, professionals working at the MSC must be aware of their tasks and engaged in the work they will provide.

In the last decade, with the advent of the RDC, the MSCs experienced significant changes in their structures and processes, until the achievement of their autonomy and recognition within institutional organization charts, which increased the demand and, consequently, the quality of PPS processing for care units, such as clinical, surgical and intensive care units.^{2,3} With innovations, technological advances and health education in the training of professionals, the MSCs began to organize themselves better and receive more qualified professionals to work in them.

In the meantime, these changes required new standardizations. The RDC No. 15 guides institutions as to the good practices necessary for PPS processing and also classifies MSCs into two classes: class I, “those that perform the processing of non-critical, semi-critical and critical non-complex conformation, liable PPS processing”; and class

II, the unit that “performs the processing of non-critical, semi-critical and critical PPS of complex and non-complex conformation, capable of processing”.¹ The aforementioned resolution also provides for the place of cleaning, preparation, disinfection or sterilization, which they can be in the health service itself or in outsourced companies. ANVISA, in turn, proposes that each of the steps mentioned follow a standard operating procedure, disclosed and accessible to everyone involved in the process.¹

Among the activities developed in a MSC, the disinfection of materials is a process that eliminates most microorganisms present in PPS, except bacterial spores. It is recommended for semi-critical products, which are defined as those that come into contact with intact colonized mucosa or non-intact skin.¹

Disinfection can be carried out by a variety of methods. They are physical, which acts through thermal action; chemical, which performs its function through chemical disinfectants; and physical chemical, which combines chemical agents and physical measurements in its own equipment.⁴ The method is defined by the institution based on the cost of the process and the PPS that will be disposed of. Although it is recommended as a last option, manual chemical disinfection is used recurrently in hospital institutions.⁴ It is a complex process, in which any interference can cause the loss of its effectiveness.⁵

The level of disinfection is classified by the ability of the disinfectant to penetrate the cell membrane and destroy the metabolism of certain pathogenic microorganisms.⁴ It is divided into high level disinfection, which eliminates some spores, vegetative bacteria, viruses, and fungi; intermediate level, which kills vegetative microorganisms; and low level, acting mainly on vegetative bacteria with little action on other pathogens.¹

Failures in the disinfection process can result in healthcare-related infections (HAIs), which increase treatment costs, impact the patient’s biopsychosocial status, and increase their chances of mortality.⁶ This statement highlights the importance of research on processing appropriate, the perception of employees who perform the task and the possible consequences of execution related to patient safety. HAIs are predisposed to occur whenever care procedures are unsafe, whether in direct care to the user or indirectly through support services. Thus, cleaning, disinfection and/or sterilization of articles are predisposing factors to these infections, if inadequate. In any of these steps, inefficiency or ineffectiveness favors the formation of biofilm, an organizational form of bacteria that structure themselves into colonies and adhere to the processed material, compromising the process.⁷

Based on these considerations, the following question was asked: what knowledge does the Nursing team have about the PPS disinfection process? Is the disinfection technique properly developed? The study is pertinent, as an evaluation of the PPS disinfection process allows gaps in processing to be discovered, with the realization of proposals for improvements in professional practices, contributing to the prevention of HAIs, reducing the risk of other adverse events occurring and promoting patient safety. With the above, the study aims to identify the conceptions and practices of Nursing teams on chemical disinfection of PPS in a MSC.

METHODOLOGY

The research has a qualitative, descriptive approach and took place in September 2019 in a MSC of a hospital located in the interior of the state of *Rio Grande do Sul*.⁸ All 17 (100%) Nursing staff professionals working in the MSC agreed to participate in the study. The sample was chosen intentionally. The study had as inclusion criteria being a professional from the Nursing team, having a formal relationship with the institution and acting in the disinfection process at some point in their work shift at the MSC. And as exclusion criteria: professionals on sick leave of any nature or on vacation during the period of data collection.

For data collection, semi-structured interviews and structured observation were used.⁸ The interview was individual, carried out at the participants' workplace, through visits to the MSC at an agreed time between the researcher and the researched institution, in the morning shifts, afternoon and night, in order to absorb the professionals' conceptions about the PPS disinfection process. A script was used to collect sociodemographic and professional data from the participants, which considered gender, age, marital status, professional training, length of experience in Nursing and in the institution, work shift, length of professional practice, length of experience in the function and in the institution and existence of another employment relationship.

Also, semi-structured questions were asked consisting of topics such as participation in continuing education on PPS processing, recognition of the existence of documents that guide the implementation of the chemical disinfection process in the institution, description of the chemical disinfection process, use/disposition of equipment of individual protection and recognition of the physical structure in which the PPS transit. These questions were adapted from the content of RDC No. 15, of

March 15, 2012.¹ The interviews were digitally recorded, with the permission of the interviewees, and transcribed in full for the analysis, according to the thematic content analysis method.

The RDC No. 15, together with the Practice Guidelines in Surgical Nursing and PPS Processing, more specifically the items of organizational conditions, infrastructure, worker safety and health and chemical disinfection, supported the instrument for structured observation regarding the investigation, in a way to associate the responses arising from the perspective of the participants and the researcher.^{1,4} The observation consists of immersing in the studied reality to advance knowledge, and in this case an instrument was used to guide what should be observed, time and record.⁸ A observation was made through visits to the MSC, during the 16th, 17th, 23rd and 24th of September, in the three shifts (morning, afternoon and evening). Seven observations were carried out, starting with each new disinfection process. It was decided to carry out the observation within the aforementioned period (16, 17, 23 and 24), since the purpose of the technique was solely to complement the data collected by the interview. Therefore, due to the workers' time off, it was not possible to observe all those who participated in the interview. It is believed, however, that the observational data were of significant importance for researchers to complement the results more reliably.

The observations were recorded and sequentially numbered in an instrument created by the authors based on the processing of PPS described in RDC No. 15, of March 15, 2012.¹ Thus, based on what the aforementioned RDC describes, the instrument was created with all items referred to in the document and with yes and no alternatives so that the observation could take place in a systematic way, with the aim of not having lost information. Following a script, the researchers, upon observation, noted whether the PPS processing was in compliance or non-compliance with the aforementioned resolution. It is valid to state that the simple observation was not neglected, that is, in the face of any violation observed, it was also noted, with the aim of later complementing the results and discussions.

The transcription and organization of the reports obtained through the interview and the observation record constituted the ordering of the data. From the floating reading, the *corpus* of the analysis is constituted. From the exploration of this material, the codification was processed, with the cutting of the registration units, and, in view of the enumeration, classification and aggregation of this information, the categories were elaborated

by semantic analogy, which were grouped by themes⁹, namely: institutional questions about the MSC chemical disinfection process and chemical disinfection process. In view of the specificities of the second category, it was decided to extend it into subcategories, which were entitled: Nursing care with pre-processing PPS, Nursing care with PPS in exposure to disinfectant and post-processing Nursing care PPS.

The ethical and scientific requirements recommended for research involving human beings were ensured, in accordance with Resolution 466/2012 of the National Health Council, which provides for guidelines and regulatory standards for research involving human beings.¹⁰ The project was approved by the Research Ethics Committee of the *Universidade Regional Integrada do Alto Uruguai e das Missões - Santo Ângelo Campus*, on June 4, 2019.

The Informed Consent Form was drawn up for the research participants, which clarifies about free participation, preservation of anonymity and respect for the freedom to not participate in the research. Anonymity was guaranteed through the use of pseudonyms for identification, and it was ensured that participation would not have any influence on the employment relationship involved in the research, as well as any coercive initiative.

For the presentation of the results, codes were assigned to name the different study participants, in order to ensure the confidentiality of the information provided. Thus, they were identified as participant 1 (P1), participant 2 (P2), and so on. The co-participating institution was asked to sign the research science statement.

RESULTS AND DISCUSSION

Seventeen professionals participated in the study, being 16 Nursing technicians and one nurse, 94.1% were female (n=16), 58.8% were aged between 18 and 35 years (n=10), 70.6% worked in Nursing between one year and five years (n=12) and 52.9% had worked in the institution for more than six years (n=9).

Institutional questions about the MSC chemical disinfection process

Some factors associated with the chemical disinfection process developed by the MSC are defined by the hospital institution, thus becoming extrinsic to the professionals' decisions, such as the establishment of the physical structure, the encouragement of permanent health education and the provision of personal protection equipment (PPE). Therefore, the institution is responsible for

these aspects, and it becomes the professional's responsibility to pay attention to the care of the physical structure, participation in educational activities and the use of PPE.

Regarding the physical structure, during observation it was found that, unlike what is recommended by current legislation, the space for chemical disinfection is installed in the dirty area of the MSC and allows for the crossing of processes. Figure 1 shows the physical plan¹ of the chemical disinfection area of this establishment.

When the professionals were asked if they considered the physical structure of the disinfection room to be adequate, most replied that it was not, however, when we complemented the question with the reason that led them to think that way, few reported the main divergence:

Because there has to be a room just for disinfection, right? and there it is together with the disinfection and washing of material from the surgical center and the care units together (P1).

[...] when we learned, right? there would have to be a separate disinfection room, it should not be together [...] (P3).

Many brought as a reason for this inadequacy only the lack of physical space for the accommodation of PPS:

I think it is small [...] because of the increase in the hospital, I think it is small (P5).

Disinfection should have more space, I think, because we only have one sink [...] and even to dry, in short, it should be a bigger space (P11).

The proper flow for the sector must be unidirectional, always from the dirty area to the clean area. In the dirty area, at least one reception and cleaning room. In the clean area, a preparation and sterilization room; a room for chemical disinfection, when convenient; area for sterilization monitoring; a room for the storage and distribution of sterilized materials (the physical plant was designed by an academic of the 6th semester of the undergraduate course in Civil Engineering, at the request of the authors of the article, to facilitate the understanding and visibility of the physical space in which it is made reference). Keeping the disinfection process close to the first area allows the interception of materials at different stages of the process and their contamination to occur.

¹ Physical plan designed by a 6th semester student of the Civil Engineering Undergraduate Course, at the request of the article's authors, to facilitate the understanding and visibility of the physical space to which reference is made.

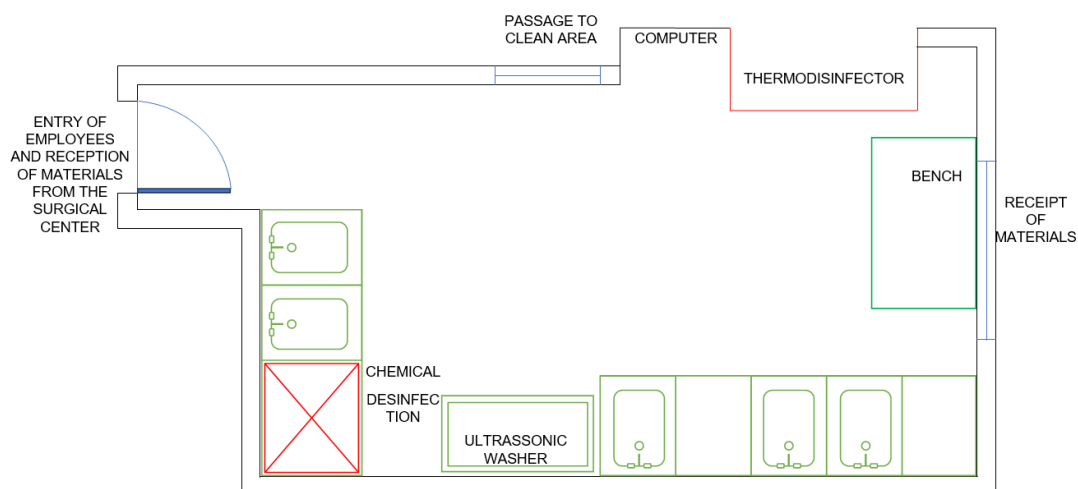


Figure 1 - Physical plant of the chemical disinfection area
Source: Reginaldo (2019)

Research participants did not report the need to separate the area for disinfection from the contaminated area. At this point, the need for a restructuring in the physical structure of the hospital sector is highlighted, as well as the timely provision of knowledge for the Nursing team of the MSC regarding the current legislation, in order to insert it in the decision-making process before the change takes effect.

It was possible to identify another critical point related to the flow break, when professionals from the clean area moved through the dirty area of the MSC, and this situation occurred when professionals came to the MSC to deliver contaminated materials. It is necessary, to avoid cross-contamination, that professionals remain in their areas and access by external people is restricted.²

As seen, Nursing professionals working in MSC are exposed to environmental risks, inhalation of toxic agents or unprotected contact. In the area of disinfection, attention must be doubled, due to frequent exposure. In one study, professionals from a MSC reported that adopting the use of PPE is important, as exposure to biological risk is continuous.¹¹ In the study in question, respondents also recognize this risk, as seen in the following statements:

I use all of them [PPEs], because I am a little afraid that something might happen (P10).

We have to wear the mask because of the smells of the products, the eye [gestures at the glasses] so as not to jump out and the apron so as not to get on the skin (P3).

To develop chemical disinfection activities, the professional must use some PPEs, such as goggles, mask, rubber gloves with long barrels, waterproof apron, long sleeves and waterproof shoes, and the chemical can cause toxicity to professionals.^{1,4} It was observed that, although professionals reported that they used PPEs in their practices, even with availability, use did not occur at all times. The use of a long-sleeved waterproof apron was not verified at any time, and in other situations, masks and goggles were also not used. The only PPE used in all observations was the long-barreled rubber glove.

Another survey showed that some MSC professionals do not frequently use PPEs or use them inappropriately, recognize their negligence and sometimes consider their use unnecessary.¹² It is important that the responsible invest in awareness of the benefits and safety that PPE bring, through the qualification of the team based on current legislation.¹³ Actions to promote the use of PPE reinforce the valuation of work, the maintenance of self-care and safety at work. Nurses should always seek to be informed and willing to encourage good practices to their team and an important tool they have is permanent health education.

In this sense, it is important to awaken in professionals the interest in the continuous search for information about professional performance at the MSC, as they, during their training, do not receive as many stimuli in relation to this area.¹⁴ The importance of carrying out constant training for the professionals is notable. professionals working in the MSC, with the aim of qualifying the work.¹⁴

Because, in this sector, the nurse can act as coordinator, advisor and supervisor of the process, and it is in relation to these attributes that it is necessary to seek updates to maintain the rectified processes and the prevention of failures.

Another way to promote learning actions and raise awareness of all topics is ongoing health education, which is encouraged by the Ministry of Health, as it is a strategy for the training and development of workers.¹⁵ These activities have as main conducts valuing the worker and work in health, encouraging educational practices in the workplace through active and critical methodologies, and valuing human dimensions.¹⁵

Continuing health education is triggered by the way in which educational processes will be conducted, allowing the worker to take the lead, his effective participation, favoring his autonomy and enabling a critical position on his daily life. In this scenario, he can become co-manager of his activity, as he brings to the discussion his difficulties to collectively try to solve. Continuing health education has the potential to transform work and its relationships. Using methodologies that lead the worker to actively socialize experiences, it can be a place for reflexive action and, fundamentally, propositional and committed to competent action, based on their inquiries, their daily critical nodes. It is inferred from the interviewees' statements that there is a doubt whether there is permanent education or continuing education, focused only on technical skills.

Thus, we receive instructions from the leader, the nurse. He often goes back there and explains or even if we say "oh, I have doubts about the process", he helps us [...] (P11).

In the sector itself, we have a lot of training, these things. It is the part [about] disinfection [...] how to do the whole process (P7).

In addition to the continuing health education activities promoted by the team nurse, according to reports, representatives also take advantage of updates from suppliers to promote these actions:

The last [update] a couple of months ago, a representative of the company from which we bought the products came, right, then she did a training, update (P1).

Continuing health education is an ally to recompose training practices in all areas, and in the MSC it can be used with a view to improving the interconnection

between theory and practice so that the processing of PPS is not only defined, but consolidated through education.¹⁶ Continuing education enables a change of focus to help improve the worker in a manager who is a partner in his work, giving time and voice to his needs, while promoting knowledge, which comes from scientific knowledge. and the experiences of those who experience the work.

Chemical disinfection process: Nursing care with PPS pre-processing, exposure to disinfectant, and PPS post-processing

The activities developed at the MSC are indirectly related to customers, but the processes carried out in this sector will at some point be part of the assistance provided. For the processing of PPS, the main focus of work in Nursing should be considered: care.

Nursing care with PPS pre-processing

In order for PPS to undergo the chemical disinfection process, it is necessary to previously clean, a fundamental step, when the barrier (waste) that prevents the action of the disinfecting agent is removed.⁴ Thus, chemical disinfection precedes the rinse, to removing the enzymatic detergent used in cleaning.^{4,5} The chemical disinfection process was described during the interview by the participants, with the steps already highlighted, but not unanimously, being resumed:

The material arrives, dirty, right? then we separate them, wash them with water, then if the materials go to the hypochlorite, it is soapy water, then they are dried and go to the hypochlorite [...] (P1).

[...] we wash one by one. It depends on the material, we pass the air and water, like the extenders. And then we soak it in the hypochlorite (P17).

[...] then I dry it a little and then put it in the hypo (hypochlorite) (P13).

As represented in the statements, it was identified that the drying of materials was not carried out completely. Failure to do so can compromise the chemical disinfection process, as if they are wet at the time of exposure to the disinfectant, it will be diluted and the chemical may lose its effectiveness.^{4,5}

In the step after cleaning and drying, the products must undergo visual inspection, with an eight-fold magnifying glass. And this inspection can help to validate the cleaning.^{1,17} Visual inspection was not performed, as the lens used for this purpose is in the clean area.

To ensure the quality of this process, it is essential to carry out concentration monitoring tests of the disinfectant chemical at the beginning of each journey, which must be kept for five years, as provided for in current legislation.¹ In the researched MSC, no monitoring tests, because, according to those responsible, the solution is changed twice a day or when there is turbidity in the preparation. As directed by the product manufacturer (0.5% sodium hypochlorite), it would have a 24-hour stability.

When the disinfectant solution was changed, the product dilution process took place in an automated way, which provides some security, since the correct amounts will be dosed. Before receiving the disinfectant solution, the organizer, in which the PPS will be stored during the process, is cleaned with soap and water, and rinsed and dried. The only divergence from this topic was the identification of the solution change, which was not performed as recommended, with the labeling date of preparation, product batch, time and name of the professional who made the change, which may become a confounding factor during the work routine, as the team did not record the change of chemical solution.⁴ Furthermore, it is believed that the lack of record of this practice can lead to process error and a possible adverse event for the patient.

Nursing care with PPS in exposure to disinfectant

As for the procedure used for PPS disinfection, both correct and incorrect execution were observed. The injection of disinfectant substance in cannulates to fill the lumen was not observed. This practice, when performed, allows the agent to contact the PPS surface and achieve its objective; otherwise, the microbial load will be maintained in these areas, resulting in biofilm formation and possibly the occurrence of adverse events.⁷

During chemical disinfection, the material must be completely immersed, and all its structures must be filled. After the time of exposure to the chemical, defined by the manufacturer, the PPS must be removed and abundant rinsing with treated water will be carried out.^{4,5}

Another important topic at this point is the immersion time, which must be ensured based on the time indicated by the manufacturer on the product label or data sheet.

In the studied institution, the recommended time for the product is 30 minutes. When respondents were asked what way, they used to control this time, most respondents answered that they used the unit clock, as shown in the following statement:

There is the little clock – an alarm clock [...], sometimes you have so much to do that you end up forgetting to take care of the clock, so put it on the clock, which is more [...] (P12).

There is a clock on the wall. More or less we already know the time, even without it [...] (P8).

In the observations made, no processing had such control, and the immersion time was not taken care of exactly, but all had the established minimum exposure permanence. The observance of the PPS exposure time to the disinfecting agent is important not only for the correct action of the product, but so that excessive absorption does not occur. Leaving the PPS in immersion for a long time is not indicated, as sodium hypochlorite, for example, has a corrosive action and can cause damage to the material.¹⁸ The research developed with the objective of evaluating the Nursing work process in a MSC and calculating the conformity indexes of the work processes found, in relation to the disinfected products, nonconforming processes related to the complete non-submersion of materials and 70.83% (n=17) of the recommended submersion time, corroborating the results found in this study.¹⁹

Another essential care when using chlorinated solutions is protection from light because its inactivation is accelerated by it.^{18,20} This precaution is taken in the institution, based on the use of opaque containers that are kept closed. This precaution was also mentioned in a biosafety booklet, published in 2020, which refers to the disadvantage of sodium hypochlorite being affected or deactivated by light and temperature.²¹

Nursing care post-processing of PPS

After removing the material from exposure to the disinfectant product, it needs to be rinsed, which must be carried out with water that does not bring a biological charge to the product - if such care is not taken, the disinfection will become a failure.²² It was noticed that in the MSC tap water and osmosis water were used, and although the latter fits the aspect already mentioned as recommended for rinsing, the way it was packed, in buckets without prior cleaning, compromises its use and the processing carried out in the PPS.²³ Furthermore,

rinsing after PPS exposure to chemical disinfection with sodium hypochlorite is recommended with plenty of water.²⁰ The final steps of this process can also be seen in the following statements:

What can be dried with compressed air, there are cannulas, we dry with air and there are those that can be dried with a cloth (P5).

Rinse in osmosis water and then dry. After it is dry, we pack and register with validity and everything (P17).

As it is a step after exposure to the disinfectant, drying followed the aseptic technique with the use of clean swabs and compressed air, followed by properly identified packaging and storage.⁴ Both rinsing and inadequate drying compromise the process and may re-contaminate the material.

From this, it was inferred that the drying of PPS occurred in room air. Its packaging was carried out with a barrier system and followed with the recommended identification – product name, batch, process date, expiration date and method; the validity period established in the institution is one year.¹ This period can be revised, since the packaging is not recommended for this process, not guaranteeing the maintenance of a low microbial load.²⁴

The storage of PPS must provide for the maintenance of the process until its distribution and use. For this environment to be considered adequate, the space must be clean, dry, protected from sunlight and the packaging must undergo minimal handling.¹ These aspects were taken into account as seen.

The ineffective chemical disinfection process of PPS can pose risks to patient safety. When the error occurs, disinfected materials, especially semi-critical ones, can lead to cross contamination between customers, by exposing them to a possibly contaminated material.¹⁹

Chemical disinfection requires respect for the recommendations of Organs responsible bodies and the manufacturers of the solutions, to ensure the safety of the process and the patient.²⁵ Many irregularities are being committed by workers, due to difficulties in the development processes of permanent education, lack of knowledge and/ or by disregarding current legislation, conditions that pose risks to the health of the user and the health of the worker.¹⁶

Among the limitations of the research, it is noteworthy that the data were collected in a single institution, which portrays only one reality and does not allow generalization, even though it is a specificity of the qualitative method.

Another aspect that can be considered limiting is the scarcity of publications related to chemical disinfection used in hospitals and public institutions in our country, and with some weaknesses in terms of adherence to recommended practices. Still, another limitation refers to the investigation of permanent health education in the study setting, which could be better explored. Such limitations demonstrate gaps that can be sources of studies capable of expanding the construction of knowledge on the subject.

FINAL CONSIDERATIONS

The study allowed us to conclude that the conceptions and practices of the Nursing team at the MSC regarding the chemical disinfection process need to be revised, due to the incomplete adherence of the team in the correct execution of the processing. Chemical disinfection of PPS is an important part of processing, and we must be aware that PPS must be handled with care.

It was also detected that, although some steps in the process follow current legislation recommendations, other steps are compromised, which makes the final product likely to have its quality compromised, putting patient safety at risk. There is a need for continuing education in health, so that these professionals can change the reality and increase the quality and safety of the care provided.

The writing of this article also enhances the theoretical and practical association not only in the academic environment, but in the institution that performs the activity. It is believed that the situations described are the reality of many institutions in the country and that the stimulus to review the standard operating procedure and the encouragement of theoretical-scientific knowledge contribute to a new perspective on the importance of the MSC, as well as the disinfection process chemistry in the transformations of daily practice.

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