

CENTRAIS DE MATERIAL E ESTERILIZAÇÃO E O CORONAVÍRUS: REFLEXÕES DA ENFERMAGEM
MATERIAL AND STERILIZATION CENTRES AND THE CORONAVIRUS: NURSING REFLECTIONS
CENTROS DE MATERIAL Y ESTERILIZACIÓN Y EL CORONAVIRUS: REFLEXIONES DE ENFERMERÍA

Djailson José Delgado Carlos¹, Luciane Paula Batista Araújo de Oliveira², Wanessa Cristina Tomaz dos Santos Barros³, Kátia Regina Barros Ribeiro⁴, Cristiane Ribeiro de Melo Lino⁵

RESUMO

Objetivo: refletir sobre as Centrais de Material e Esterilização como espaço de atuação da Enfermagem no contexto da pandemia do novo coronavírus. **Método:** estudo qualitativo, reflexivo, elaborado a partir da leitura crítica de produções científicas originais, além de documentos eletrônicos de órgãos e agências de saúde, internacionais e nacionais, pertinentes à temática.

Resultados: emergiram dois eixos temáticos: Central de Material e Esterilização como espaço de protagonismo das enfermeiras; e Central de Material e Esterilização na conjuntura da pandemia do novo coronavírus. Destacam-se a importância da biossegurança e a sobrecarga de trabalho à equipe de Enfermagem. **Considerações finais:** evidencia-se a importância da Central de Material e Esterilização como unidade de apoio técnico à assistência à saúde, para a promoção do cuidado seguro e também do controle e da prevenção de infecções, e a relevância da contribuição da enfermeira, enquanto responsável por esse setor, no enfrentamento da pandemia.

Descritores: Enfermagem; Equipe de Enfermagem; Pandemia; Coronavírus; Educação em Saúde; Contenção de Riscos Biológicos.

ABSTRACT

Objective: to reflect on Material and Sterilization Centers as a space of action for Nursing in the context of the new coronavirus pandemic. **Method:** this is a qualitative, reflective study, determined from a critical reading of original scientific productions, in addition to electronic documents, relevant to the theme, from international and national health agencies and bodies. **Results:** two thematic axes emerged: The Material and Sterilization Center as a space in which nurses play a leading role; and the Material and Sterilization Center in the context of the new

Coronavirus pandemic. The importance of biosafety and the workload on the nursing team are highlighted. **Final considerations:** the importance of the Materials and Sterilization Center as a technical support unit for health care is evidenced, in the promotion of safe care as well as control and prevention of infection in regard to the contribution of nursing, which is responsible for this sector in facing the pandemic.

Descriptors: Nursing; Nursing Team; Pandemics; Coronavirus; Health Education; Containment of Biohazards.

RESUMEN

Objetivo: reflexionar sobre los Centros de Material y Esterilización como espacio de actuación de Enfermería en el contexto de la nueva pandemia de coronavirus. **Método:** estudio cualitativo, reflexivo, elaborado a partir de la lectura crítica de producciones científicas originales, además de documentos electrónicos de organismos y agencias de salud internacionales y nacionales, relevantes a la temática. **Resultados:** surgieron dos ejes temáticos: Centro de Materiales y Esterilización como espacio de protagonismo del enfermero; y Centro de Material y Esterilización en el contexto de la pandemia del nuevo coronavirus. Se destaca la importancia de la bioseguridad y la carga de trabajo del equipo de enfermería. **Conclusión:** se evidencia la importancia del Centro de Material y Esterilización como unidad de apoyo técnico para la atención de la salud, para la promoción de la atención segura y también para el control y prevención de infecciones, y también la relevancia del aporte de la enfermera, como responsable de este sector, frente a la pandemia.

Descriptores: Enfermería; Grupo de Enfermería; Pandemias; Coronavirus; Educación en Salud; Contención de Riesgos Biológicos.

1, 4, 5 PhDs, Federal University of Rio Grande do Norte/UFRN. Natal (RN), Brazil. ¹ <http://orcid.org/0000-0002-1078-1264> ⁴ <https://orcid.org/0000-0002-3513-7483> ⁵ <https://orcid.org/0000-00028684-4065>

2, 3 PhDs, Federal University of Rio Grande do Norte/UFRN. Santa Cruz (RN), Brazil. ² <https://orcid.org/0000-0003-1629-8991> ³ <https://orcid.org/0000-0002-1924-3278>

Como citar este artigo

Carlos DJD, Oliveira LPBA, Barros WCTS, Ribeiro KRB, Lino CRM. Material and Sterilization Centres and the coronavirus: nursing reflections. J Nurs UFPE on line.2021;15:e246944 DOI: <https://doi.org/10.5205/1981-8963.2021.246944>

INTRODUCTION

Material and Sterilization Centers (MSC), as we know them today, started to be organized in Brazil in the middle of the 20th century, with the purpose of processing health products (HPs) necessary for safe and quality care so that they are free of microbial load (viruses, bacteria, fungi and protozoa).¹ Since the beginning, the work processes have been designed to ensure good health practices and are subject to the recommendations of health regulatory institutions, whether at the international or national level.²

MSCs have always had the mission of providing all the units of health care and diagnosis processed articles, free from contamination, functional and safe.³ This complex work process is carried out through the methodical completion of a sequenced protocol using validated steps covering HP reception, cleaning, disinfection, preparation, sterilization, storage and distribution to consumer sectors.⁴

These steps reinforce the purpose of making them free of microbial load and capable of being used again safely.⁵ In this way, MSCs assume relevance in the provision of indirect care to the patient, as they are responsible for the maintenance, validation and control of processing of HPs.⁶

It is known that some microorganisms can cause serious health problems and, in some cases, if spread in a generalized way, affect several populations, which can cause epidemics and pandemics, such as that being currently experienced caused by the new coronavirus (SARS-CoV-2), known as Covid-19.

This virus belongs to a large viral family, known since the 1960s, which causes respiratory infections and whose transmission is of the zoonotic type, that is, it spreads from animals to man. Regarding this possibility, referring to the recent past, we can highlight the following pandemics: the Severe Acute Respiratory Syndrome (SARS), in China, from 2002 and the Middle East Respiratory Syndrome (MERS-CoV), from 2012, caused by bats and camels, respectively.⁷

The new coronavirus has a spherical morphology and is composed of three elements: genome (RNA) present in its interior; a lipoprotein membrane; and glycoprotein spikes, which give it the aspect of a crown, and whose purpose is to facilitate its joining and penetration of the host cell.⁸ Finally, the pathology caused by this virus was named Covid-19 with the following justifications: CO (corona) , VI (virus), D (disease) and 19, as a reference to 2019, the year of its emergence.⁹

The first cases of Covid-19 occurred in the city of Wuhan, in the Hubei province, China, in December 2019, from where the virus spread rapidly to other countries. After thirty days, a Public Health Emergency of world importance was announced and from March 11, 2020, it was considered a pandemic by the World Health Organization (WHO). This measure was introduced in order to improve coordination, cooperation and global solidarity to stop the spread of the virus.¹⁰

As for its dissemination, according to the Bulletin from the Secretary of Health Surveillance, of March 20, 2021, 122,813,796 cases of covid-19 were confirmed worldwide. In this context, the United States is the country with the highest number of cases, followed by Brazil, India, Russia and then the United Kingdom. With regard to the Brazilian reality, this bulletin records 11,950,459 cases and confirms the tragic loss of 292,752 lives, thus conferring the dreadful world classification of being the country with the second highest number of new cases as well as deaths.¹¹

Since then, the pandemic caused by the new coronavirus has been a worrying and difficult scenario to control. In this sense, the importance is clear of processing the products for health which is carried out by MSCs, through standardized execution, in line with the necessary technical recommendations, which contributes to a safe care of health assistance in times of Covid-19.

It cannot be emphasized enough that the work developed in the MSCs is performed by nursing professionals, on a daily basis, with a division of tasks and responsibilities that reflect the technical and social division that permeates the profession.¹²

Such findings justify the realization of this reflection, in which in times of pandemic caused by the new coronavirus it is intended to not just give visibility to the work developed by the nursing team, but also value the role of nurses since, over the years, these professionals have been responsible for the work processes carried out in the MSCs. In the portuguese version we adopted the term in the female gender because we understand that, historically, women have predominated in this profession, which has repercussions until the present day, although the number of male nurses is growing.

These brief considerations justify the development of this reflection and take on relevance by favoring discussions that collaborate with the systematization of knowledge applied to MSCs, as well as by highlighting its importance in safe and quality health care.

OBJECTIVE

To reflect on Material and Sterilization Centers as a space of action for nursing in the context of the new coronavirus pandemic.

METHOD

This is a qualitative, reflective study, prepared from a critical reading of scientific publications, available in an online form, in addition to electronic documents from international and national health agencies and bodies, with an emphasis on the work of Nursing in the context of MSCs in times of Covid-19.

In addition to this procedure, documentation was sought on the websites of the World Health Organization (WHO), the Pan American Health Organization (PAHO), the Center for Disease Control and Prevention (CDC), the Ministry of Health (MS), the National Health Surveillance Agency (ANVISA) and the Oswaldo Cruz Foundation (Fiocruz).

RESULTS

The material selection, structural reading and critical analysis were carried out, and then added to the authors' experiences in assistance, teaching and research, all of this then contributed to the elaboration of this reflective analysis, giving rise to two central thematic axes, namely: "The Material and Sterilization Center as a space in which nurses play a leading role" and "The Material and Sterilization Centre in the context of the Covid-19 pandemic".

DISCUSSION

The Material and Sterilization Center as a space in which nurses play a leading role

MSCs - public or private - routinely undergo an uninterrupted working day, functioning 24 hours a day, every day of the week, and are responsible for processing highly varied types of articles (textiles, glass, metals, rubbers, surgical instruments, equipment, ventilatory material). Due to these characteristics, they are considered as sectors of technical support and providers of indirect health care. They are responsible for handling the materials from reception, purging, cleaning, decontamination, preparation, sterilization, storage and distribution to other care sectors, in order to make them free of microbial load, thus contributing to good health practices.¹²

In all MSCs, since the beginning, the team responsible for carrying out this work has been exclusively the Nursing team. In this context, nurses are responsible for administrative functions such as Technical Responsibility (TR) as well as operational functions, such as being on-duty staff in the sector.² In both conditions they share the responsibilities for planning and supervising work processes; elaboration, validation and supervision of Standard Operating Procedures (SOPs); use of indicators to control the quality of processing; articulation and promotion of team training; and encouraging adherence to measures to contain occupational risks (physical, chemical and biological).^{5,12} At the same time, it is desired that they have an expanded view of MSCs, have technical knowledge of the stages of processing HPs and skills for establishing team dimensioning and the exercise of leadership.¹³

This complex work scenario finds, through biosafety measures, the possibility to control exposure to occupational risks. Here, nurses have opportunities, through the promotion of educational

actions, to encourage and stimulate their team to adhere to the use of personal protective equipment (PPE) - gloves, masks, face shields, ear protectors, hats, aprons, closed-toed shoes.¹⁴⁻¹⁵ It is understood, therefore, that such measures contribute to the adequate performance of the processing of health products, as well as awaken, in the worker, the awareness of the need to remain protected during work, in an unhealthy environment, reinforcing the importance of the use of PPE, including in the context of Covid-19.¹⁶

It is recognized, therefore, that health education is a promising space for nurses to work in and is full of possibilities to overcome the confrontations inherent to MSCs. From this perspective, it is considered that it is possible to plan a schedule of educational activities and sectoral meetings with themes of interest for the team, in that a system of partnerships with other sectors / institutional units can be established, such as: Hospital Commission of Infection Control (HCIC), Patient Safety Center (PSC), Hospital Epidemiological Surveillance, Internal Commission for Accident Prevention (ICAP) and Center for Permanent Education (CPE).

Occasions of this nature take on relevance as they enable the team to be trained in good health practices. They become circumstances for acquiring new knowledge, exchanging experiences, reinforcing the use of PPE, highlighting actions to control occupational risks, strengthening the practice of hand hygiene and discussing and reviewing protocols / routines. They can also be occasions that favor the team's empathy and conviviality, since Nursing professionals work with different schedules and times and thus, in these moments, they can meet to share experiences and seek solutions for their work.

In this regard, health education is regarded as a facilitator of professional development, and sectoral meetings, by strengthening healthy interprofessional bonds, are inseparable mechanisms for achieving quality teamwork.¹⁷ Considering the current context, it will be up to nurses to be updated in finding strategies that contribute to good practices in MSCs in times of Covid-19, in order to guarantee correctly applied techniques, recognition of their team and interpersonal support during this period that has caused intense physical and mental suffering to health professionals.

These problematizations exemplify aspects of the complexity of the work carried out in MSCs and, in view of this, the susceptibility to confrontations caused, many times, by the working conditions. Situations like this require nursing skills such as technical and scientific reasoning, leadership, communication, proactivity and skills in working relationships, necessary for quick and practical decision making, so as not to compromise the quality of service.¹⁸ This insight contributes to the role of nurses in MSCs, since it confirms their leadership of the team with credibility, trust, respect and recognition for their work.¹⁷

It is important to mention that, as it is an indirect health care sector, the work carried out in the MSC may seem invisible to most people. The countless patients who benefit from safe care, using articles free of microbial load, will rarely think about how they came to be or who acted so that these products were available with quality. In fact, it is unlikely that people will know (and recognize) the important work developed in MSCs, and the lack of recognition of this work may even extend to other professionals in the field.

This observation leads us to other reflections: What is the perception of health professionals about the work carried out by MSCs?; Since MSCs are historically a space for the work of nursing, what do the professionals, who work in care units, know about their functioning and the processing of HPs? Would it be possible to find answers to the low visibility of MSCs in the training courses for health professionals, in particular, in nursing courses? As an integral part of health institutions, do MSCs receive appropriate investments in material resources, equipment and people?

These and other questions are concerns that deserve further investigation to be carried out in later studies. For now, consultations with the scientific literature, as well as our experiences, point out that MSCs are both a fruitful field for the nurse's performance, as well as offering the nurse an active role in being decisive in the efficient functioning of these sectors.

Therefore, it should not be different in times of the new coronavirus: it is up to the nurses of the MSC to seek not only the new recommendations for processing the HPs, but also the application of new knowledge about the current pandemic to the nursing work processes in the MSCs, as well as having the responsibility for training their team, as will be explained below.

Material and Sterilization Centers in the scenario of the Covid-19 pandemic

Through the certainty of the importance of biosafety for the maintenance of life and of the challenges to which health professionals are subject, in particular those of nurses working in MSCs, the question arises: how the new coronavirus pandemic (SARS-CoV-2), which caused Covid-19, has influenced the work processes of MSCs? Have these circumstances caused instability to the teams regarding preventive measures in the workplace and the institution of new work processes?

In regard to this, the Ministry of Health¹⁹ specified biological agents and their injurious effects, classifying them into four classes, based on individual risks and risks to the community, in an increasing scale (from 1 to 4), according to severity. From this perspective, Covid-19 falls into risk class 4, due to its high transmissibility through the respiratory tract, the lack of proven pharmacological prophylactic measures, experimental therapy and the high capacity for dissemination in the community and the environment.

Its contagion can be direct by aerosols (coughing, sneezing and droplets of saliva) and indirect by contact (contaminated surfaces, furniture and objects). In both possibilities, the virus accesses the human body through the mucous membranes of the eyes, nose or mouth and the first symptoms can take up to 14 days to appear. It consists of a respiratory infection, sometimes confused with flu, and is characterized mainly by a persistent dry cough, sore throat, myalgia, dyspnoea, anosmia, dysgeusia and, when severe, can progress to pneumonia, severe acute respiratory syndrome, renal failure and even death.⁷

The virus is highly transmissible and affects all types of people, with no predilection for gender, race or age group, manifesting itself in a more compromising way in the elderly, and those with asthma, diabetes, obesity, immunosuppressed or cardiovascular diseases. This situation has justified the practice of social isolation and, at times, the adoption of restrictive measures such as the operation of only services considered essential, such as: supermarkets, notaries, bank agencies, pharmacies, gas stations and health institutions. Its prevention has been encouraged through frequent hand hygiene (water and soap or 70% alcohol gel), adoption of respiratory hygiene measures (use of masks and tissues when coughing and sneezing), social isolation / distancing (without hugging, kissing, greetings) and temperature monitoring with non-contact thermometers in public service establishments.²⁰

The new coronavirus remains on the surface of objects for hours and even days: aerosols / dust (up to 2.5 hours), copper (4 h), cardboard (24 h), stainless steel (72 h) and plastic (72 h). Despite this, it is sensitive to cleaning with soap and water and to surface disinfection - furniture, walls, equipment, computers, multi-parameter monitors, stethoscopes, sphygmomanometers, infusion pumps, artificial respirators, bathrooms, electrical switches, stairs, chairs and floors - with chlorine (hypochlorous acid - HOCl) and 70% alcohol (liquid or gel).²¹

These and other types of care reflect on the quality of assistance and need to be deliberately encouraged through Permanent Health Education (PHE)²² with a view to good practices. Thus, PHE is an opportune moment to present themes, discuss new behaviors and align care protocols with the team. These are ideal moments to reinforce the importance of hand hygiene²³ and, in the absence of this action, encourage the use of 70% alcohol gel²⁴, after all, clean hands save lives.²⁵

From this situation, the need arose to expand prevention and control measures beyond health institutions. The recommended treatment, for mild cases, has been isolation associated with the use of symptomatic medication and, for those who present signs of severity, hospitalization followed by institutional conventions. Subsequently, patient care protocols were created - arrival, hospitalization and discharge / death - and mandatory use of PPE in all units was established as essential for safe and quality care.

Aside from this, there has been a positive sign which is based on multicenter efforts regarding the creation of vaccines against Covid-19, some of which are being administered to the population, despite being restricted to age groups and professional categories. These immunizing vaccines are promising and have been used when approved by health control agencies. It is important to say that such strategies have been adopted by all nations worldwide.

In regard to the work process in MSCs, the consulted literature points out that the pandemic did not bring new recommendations to the stages of processing health related articles, which involve reception, cleaning, disinfection, drying, preparation, sterilization, storage and distribution. However, it should be noted that many health products, used with patients with Covid-19, would be sent to the MSC to be processed and, again, used in a safe and functional way.

It is perceived, therefore, that technologies are necessary for the correct processing of these products used in health care. In this regard, it is worth mentioning that the technical recommendations are for the use of automated cleaning by means of ultrasonic washers and pressurized water jets³. However, in our professional practice, we observed that most MSCs in Brazil are not equipped with these devices, therefore, this process is done manually, using brushes and sponges with detergents to rub surfaces of contaminated articles, which can generate aerosols, increasing workers' exposure to occupational risks, specifically contamination by the new coronavirus.

Even though it is considered a technical support sector, it is questioned whether MSCs and the professionals involved should receive just as much attention, in their physical, emotional and protective aspects, that is aimed at the care sectors that are on the “front line”. It is argued that yes they should, after all it is necessary to be cautious due to the risk posed and to protect those who, in the work environment, are directly or indirectly exposed.

For MSCs, Covid-19 increased its importance for health services, since these sectors are responsible for processing health products and sterilizing part of the textiles used in care and in surgical procedures. It is believed that the pandemic has caused an overload of work in MSCs, where a huge variety of health products are received, indistinctly, that were used in care, in the same physically structural conditions and professional dimensions that existed before the pandemic.⁷

It is worth mentioning that the health crisis caused by the new coronavirus, in all countries, caused a lack of PPE and an increased demand for ventilatory support for severe cases, showing the disproportion between patients with respiratory failure and the availability of mechanical ventilators in public and private hospitals. Also worthy of attention has been the impact of the

pandemic on health professionals, since there have also been many records of illnesses and deaths in this sector.

In this regard, it is noteworthy that, with regard to Brazilian nursing, the Federal Nursing Council created the Observatory of Nursing, with the purpose of monitoring and seeking solutions to cope with Covid-19. With this it is possible for professionals to access updated data and statistical graphs on the state and national scenarios of their specific categories, regarding the numbers of cases, deaths, age group and gender.²⁶

In addition, it is worth noting that the covid-19 pandemic has created new needs and demands for MSCs. The knowledge that the new coronavirus can remain for hours and even days on different surfaces, as previously mentioned, will certainly cause revisions and changes in the current recommendations regarding the methods of decontamination and processing of health products.

FINAL CONSIDERATIONS

This reflection emphasizes the importance of the Material and Sterilization Center as a technical support unit for health care, in the promotion of infection control and prevention and safe care, through the processing of health products, executed and led by Nursing. In addition, it clarifies the functions and responsibilities of the Nursing team for the functioning of this sector, with emphasis on the role of the nurse.

Certainly, the current scenario adds more responsibilities to the work of MSCs. As the nurse is responsible for this sector of technical support, their valuable contribution in facing the pandemic and in the organization of this service is evidenced, based on the administrative and technical-scientific skills.

As for the importance of educational actions and the adoption of biosafety measures for good health practices, it is necessary for the nurse to plan educational events with a view to preventing, reducing or eliminating occupational risks. From this, it is possible to ensure safety and quality in MSCs. This responsibility must be shared between managers, leaders and employees, since the commitment to promoting health and protecting life must be mutual.

From the point of view of the work carried out in the MSC, the pandemic does not seem to have caused major changes in the routines, however, it is admitted that it may have increased the volume of materials that are processed there. Given that there is the possibility of reusing semi-critical health products, especially those widely used in routine respiratory care and procedures on the airways of patients with covid-19.

At the end of this reflection, it is believed that the established purposes have been achieved, and at the same time, new questions are emerging, described throughout the text, which prompt

research with other methodological designs to answer them. On the other hand, it is expected that there will be incentives for new advances that approach the theme from other perspectives, in order to contribute to the construction and systematization of knowledge related to MSCs.

CONTRIBUTIONS

We ensure that all authors participated equally in the design, analysis and interpretation of the reflection, in the writing and critical review with intellectual contribution, and in the approval of the final version of this reflection.

CONFLICT OF INTERESTS

Nothing to declare.

REFERENCES

1. Carlos DJD, Lino CRM, Xavier SSM, Oliveira LPBA, Ribeiro KRB, Barros WCTS. História e processos de trabalho da enfermagem em Centrais de Material e Esterilização. Hist enferm Rev eletrônica [Internet]. 2020 [cited 2021 Mar 30];11(2):133-41. Available from: <http://here.abennacional.org.br/here/v11/n2/a5.pdf>
2. Ministério da Saúde (BR), Agência Nacional de Vigilância Sanitária. Resolução RDC nº 15 de 15 de março de 2012. Dispõe sobre requisitos de boas práticas para o processamento de produtos para saúde e dá outras providências [Internet]. Brasília: Ministério da Saúde; 2012 [cited 2021 Mar 30]. Available from: <https://www20.anvisa.gov.br/segurancadopaciente/index.php/legislacao/item/rdc-15-de-15-de-marco-de-2012>
3. Associação Brasileira de Enfermagem de Centro Cirúrgico, Recuperação Anestésica e Centro de Material e Esterilização. Diretrizes de práticas de Enfermagem cirúrgica e processamento de produtos para a saúde. Barueri: Manole; 2017.
4. Lima MDP, Chaves BJP, Lima VS, Silva PE, Soares NSCS, Santos IBC. Riscos ocupacionais em profissionais de Enfermagem de Centro de Material e Esterilização. Rev Cuid. [Internet]. 2018 [cited 2021 Mar 30];9(3):2361-8. Available from: <https://pesquisa.bvsalud.org/porta1/resource/pt/biblio-979559>
5. Trindade JPA, Vasconcelos LSNOL, Ribeiro EL, Watanabe E, Tipple AFV. Does storage of silicone tubes prior to packaging prevent sterilization? Acta paul. enferm. 2018;31(5):518-524. DOI: 10.1590/1982-0194201800072

6. Sanchez ML, Silveira RS, Figueiredo PP, Mancia JR, Schwonke CRGB, Gonçalves NGC. Strategies that contribute to nurses' work exposure in the material and sterilization central. *Texto contexto - enferm.* 2018 Mar;27(1):e6530015. DOI: 10.1590/0104-07072018006530015
7. Ministério da Saúde (BR), Agência Nacional de Vigilância Sanitária. NOTA TÉCNICA GVIMS/GGTES/ANVISA nº 04/2020. Orientações para serviços de saúde: medidas de prevenção e controle que devem ser adotadas durante a assistência aos casos suspeitos ou confirmados de infecção pelo novo coronavírus (SARS-CoV-2) [Internet]. Brasília: Ministério da Saúde; 2020 [cited 2021 Mar 30]. Available from: <http://portal.anvisa.gov.br/documents/33852/271858/Nota+T%C3%A9cnica+n+04-2020+GVIMS-GGTES-ANVISA/ab598660-3de4-4f14-8e6f-b9341c196b28>
8. Conselho Regional de Farmácia do Estado de São Paulo. Departamento de Apoio Técnico e Educação Permanente. Manual de Orientação ao Farmacêutico: COVID-19 [Internet]. São Paulo: Conselho Regional de Farmácia; 2020 [cited 2021 Mar 30]. Available from: https://www.crfsp.org.br/images/arquivos/Manual_orientacao.pdf
9. Universidade Federal do Rio Grande do Norte. COVID-19: Cuidado de idosos em instituições de longa permanência [Internet]. Natal: Universidade Federal do Rio Grande do Norte; 2020 [cited 2021 Mar 30]. Available from: <https://avasus.ufrn.br/local/avasplugin/cursos/curso.php?id=328>
10. Organização Pan-Americana da Saúde. Folha informativa - novo coronavírus (2019-nCoV) [Internet]. Washington D.C., USA; 2020 [cited 2021 Mar 30]. Available from: <https://www.paho.org/pt/node/68988/folha-informativa-novo-coronavirus-2019-ncov>
11. Ministério da Saúde (BR), Secretaria de Vigilância em Saúde. Boletim Epidemiológico Especial. Doença pelo Coronavírus COVID-19. Semana Epidemiológica 11 (14/3 a 20/3/2021) [Internet]. Brasília: Ministério da Saúde; 2021 [cited 2021 Mar 30]. Available from: https://www.gov.br/saude/pt-br/media/pdf/2021/marco/25/boletim_epidemiologico_covid_55.pdf
12. Costa CCP, Oliveira NVDS, Oliveira EB, Lisboa MTL, Vieira MLC, Silva PAS. A organização e o processo de trabalho da Enfermagem em uma central de material. *Rev Enferm Atual.* 2017;e:19-25. DOI: 10.31011/reaid-2017-v.2017-n.0-art.547
13. Conselho Federal de Enfermagem. Resolução COFEN nº 543 de 18 de abril de 2017. Estabelece os parâmetros mínimos para dimensionar o quantitativo de profissionais das diferentes categorias de Enfermagem para os serviços/locais em que são realizadas atividades de enfermagem [Internet]. Brasília: Conselho Federal de Enfermagem; 2017 [cited 2021 Mar 30]. Available from: http://www.cofen.gov.br/resolucao-cofen-5432017_51440.html

14. Paula FMS, Bezerra NCN, Lopes RCS, Guerra DR. Elaboração de material didático para processamento de produtos para saúde em unidades de atenção primária à saúde. Rev. SOBECC. 2017 Jul/Sep;22(3):165-170. DOI: 10.5327/Z1414-4425201700030008
15. Conselho Federal de Enfermagem. Resolução COFEN nº 424, de 20 de abril de 2012. Normatiza as atribuições dos profissionais de Enfermagem em Centro de Material e Esterilização (CME) e em empresas processadoras de produtos para saúde [Internet]. Brasília: Conselho Federal de Enfermagem; 2012 [cited 2021 Mar 30]. Available from: http://www.cofen.gov.br/resoluco-cofen-n-4242012_8990.html
16. Stempliuk V. Centro de Material e Esterilização e o papel fundamental e amplo na qualidade da atenção. Rev. SOBECC. 2017 Apr/Jun;22(2):59. DOI: 10.5327/Z1414-4425201700020001
17. Carvalho LA, Thofehrn MB, Barlem ELD, Nunes NJS. Resignificating theory of professional links in nursing work. Esc. Anna Nery. 2020 Dec;24(1):e20190138. DOI: 10.1590/2177-9465-ean-2019-0138
18. Frantz SRS, Vargas MAO, Pires DEP, Brito MJM, Bitencourt JVOV, Ribeiro G. Nursing work and competence in hemotherapy services: an ergological approach. Rev. Bras. Enferm. 2020 Apr; 73(3):e20180775. DOI: 10.1590/0034-7167-2018-0775
19. Ministério da Saúde (BR), Gabinete do Ministro. Portaria nº 1.914, de 9 de agosto de 2011. Aprova a classificação de risco dos agentes biológicos elaborada em 2010, pela Comissão de Biossegurança em Saúde (CBS) [Internet]. Brasília: Ministério da Saúde; 2011 [cited 2021 Mar 30]. Available from: https://bvsms.saude.gov.br/bvs/saudelegis/gm/2011/prt1914_09_08_2011.html
20. World Health Organization. Coronavirus disease (COVID-19) pandemic [Internet]. Nova York, USA: World Health Organization; 2020 [cited 2021 Mar 30]. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>
21. World Health Organization. Limpieza y desinfección de las superficies del entorno inmediato en el marco de la COVID-19: orientaciones provisionales [Internet]. Nova York, USA: World Health Organization; 2020 [cited 2021 Mar 30]. Available from: <https://apps.who.int/iris/handle/10665/332168>
22. Ministério da Saúde (BR), Secretaria de Gestão do Trabalho e da Educação na Saúde. Departamento de Gestão da Educação na Saúde. Política Nacional de Educação Permanente em Saúde: o que se tem produzido para o seu fortalecimento? [Internet]. Brasília: Ministério da Saúde; 2018 [cited 2021 Mar 30]. Available from: <http://www.saude.gov.br/images/pdf/2018/dezembro/13/Politica-Nacional-de-Educacao-Permanente-em-Saude.pdf>

23. Fundação Oswaldo Cruz. Se Liga no Corona! - Dica 3 - Lavagem Correta das Mãos [Internet]. Rio de Janeiro: Fundação Oswaldo Cruz; 2020 [cited 2021 Mar 30]. Available from: <https://portal.fiocruz.br/video/se-liga-no-corona-dica-3-lavagem-correta-das-maos>
24. Ministério da Saúde (BR), Agência Nacional de Vigilância Sanitária. Resolução nº 42, de 25 de outubro de 2010. Dispõe sobre a obrigatoriedade de disponibilização de preparação alcoólica para fricção antisséptica das mãos, pelos serviços de saúde do País, e dá outras providências [Internet]. Brasília: Ministério da Saúde; 2010 [cited 2021 Mar 30]. Available from: https://bvsms.saude.gov.br/bvs/saudelegis/anvisa/2010/res0042_25_10_2010.html
25. Centers for Disease Control and Prevention. Guideline for disinfection and sterilization in health-care facilities [Internet]. Atlanta, USA: Centers for Disease Control and Prevention; 2008 [cited 2021 Mar 30]. Available from: <https://stacks.cdc.gov/view/cdc/47378>
26. Persegona MFM, Pires RAR, Medeiros GG, Pinheiro FAZ, Lopes MSS, Nascimento Júnior A, et al. Observatório da Enfermagem: ferramenta de monitoramento da covid-19 em profissionais de enfermagem. *Enferm. Foco* 2020;11(esp.2):6-11. DOI: 10.21675/2357-707X.2020.v11.n2.ESP.4283

Correspondence

Djailson José Delgado Carlos

E-mail: djailson.delgado@hotmail.com

Submission: 07/13/2020

Accepted: 04/12/2021

Copyright© 2021 Journal of Nursing UFPE on line.



This is an open access article distributed under the CC BY 4.0 Assignment [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by/4.0/), which allows others to distribute, remix, adapt and create from their work, even for commercial purposes, as long as they give it due credit for the original creation. It is recommended to maximize the dissemination and use of the licensed materials.