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REVIEW ARTICLE

Perioperative nursing care in time of a pandemic caused by the coronavirus: an integrative review

Cuidado perioperatorio de enfermería en tiempo de pandemia provocada por el coronavirus: una revisión integradora

Cuidados de enfermagem perioperatória em tempo de pandemia causada pelo coronavírus: uma revisão integrativa

Vitória Nascimento Ramos[1]
ORCID: 0000-0003-0314-1813
Ricardo Meneses[1]
ORCID: 0000-0001-9962-2827
Lisandra Risi[1]
ORCID: 0000-0001-8436-5100
Priscila Bosco[1]
ORCID: 0000-0001-8583-9371

[1]Universidade do Estado do Rio de Janeiro. Rio de Janeiro, Brazil.

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Corresponding author:
Vitória Nascimento Ramos
E-mail: vitoria.nsc@outlook.com

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Abstract

The aim was to identify, from the scientific publications of nursing in health, the adaptations and changes in the nursing care provided to the patient in the anesthetic recovery during the immediate postoperative period in the pandemic caused by the coronavirus. As a study methodology, an integrative literature review was used, following the steps proposed by Mendes. As inclusion criteria, scientific productions published in Portuguese, English and Spanish, from the years 2019 and 2020, were established. Based on the findings, three categories emerged: "Reorganization of the service during the care of surgical patients with suspected or confirmed COVID-19" , "Personal protective equipment during the care provided to the surgical patient" and "Immediate postoperative care in the case of suspicion or confirmation of COVID-19", which demonstrate the need to reorganize the entire workflow in the operating room, ensuring safety of professionals and patients. In the care of the patient in the immediate postoperative period, we highlight the anesthetic recovery of the patient in the operating room until the patient's complete recovery, in the need to use supplementary oxygen during recovery or transport, the oxygen catheter must be placed under the surgical mask and the patient must be transported to the sector of origin wearing a mask.

Descriptors: Operating Room Nursing; Perioperative Nursing; Postanesthesia Nursing; Postoperative Care; Coronavirus Infection.

Resumén

El objetivo fue identificar, a partir de las publicaciones científicas de enfermería en salud, las adaptaciones y cambios en los cuidados de enfermería prestados al paciente en la recuperación anestésica durante el postoperatorio inmediato en la pandemia provocada por el coronavirus. Como metodología de estudio se utilizó una revisión integrativa de la literatura, siguiendo los pasos propuestos por Mendes. Como criterios de inclusión, se establecieron producciones científicas publicadas en portugués, inglés y español, de los años 2019 y 2020. A partir de los hallazgos, surgieron tres categorías: "Reorganización del servicio durante la atención de pacientes quirúrgicos con sospecha o confirmación de COVID- 19", "Equipos de protección personal durante la atención al paciente quirúrgico" y "Cuidados postoperatorios inmediatos en caso de sospecha o confirmación de COVID-19", que evidencian la necesidad de reorganizar todo el flujo de trabajo en el quirófano, garantizando la seguridad de profesionales y pacientes. En el cuidado del paciente en el postoperatorio inmediato destacamos la recuperación anestésica del paciente en quirófano hasta la completa recuperación del paciente, ante la necesidad de utilizar oxígeno suplementario durante la recuperación o transporte, se debe colocar el catéter de oxígeno debajo del mascarilla quirúrgica y el paciente debe ser transportado al sector de origen con mascarilla.

Descriptores: Enfermería en Quirófano; Enfermería Perioperatoria; Enfermería Postanestésica; Cuidados Posoperatorios; Infección por Coronavirus.

Resumo

Objetivou-se identificar a partir das publicações científicas de enfermagem em saúde, as adaptações e mudanças na assistência de enfermagem prestada ao paciente na recuperação anestésica durante o pós-operatório imediato na pandemia causada pelo coronavírus. Como metodologia do estudo foi utilizada a revisão integrativa da literatura seguindo as etapas propostas por Mendes. Como critério de inclusão foram estabelecidas produções científicas publicadas em português, inglês e espanhol, dos anos de 2019 e 2020. Com base nos achados surgiram três categorias: "Reorganização do serviço durante a assistência de pacientes cirúrgicos com suspeita ou confirmação da COVID-19", "Equipamentos de proteção individual durante a assistência prestada ao paciente cirúrgico" e "Cuidados no pós-operatório imediato na suspeita ou confirmação da COVID-19", que demonstram a necessidade de reorganização de todo o fluxo de trabalho no centro cirúrgico garantindo a segurança dos profissionais e dos pacientes. Nos cuidados ao paciente em pós-operatório imediato, destacam-se a realização da recuperação anestésica do paciente em sala operatória até a completa recuperação do paciente, na necessidade de utilizar oxigênio complementar durante a recuperação ou no transporte, o cateter de oxigênio deve ser colocado sob a máscara cirúrgica e o paciente deve ser transportado para o setor de origem utilizando máscara.

Descritores: Enfermagem de Centro Cirúrgico; Enfermagem Perioperatória; Enfermagem em Pós-Anestésico; Cuidados Pós-Operatórios; Infecção por Coronavírus.

Introduction

The anesthetic recovery period (AR) is incorporated in the first 24 hours after the surgical procedure, which comprises the immediate postoperative period (IPO). The length of stay of the patient in the immediate postoperative period in AR varies from one to two hours, according to the recovery of consciousness, return of reflexes and normalization of parameters, patient assessment and anesthetic discharge[1].

In Brazil, the mandatory use of an anesthetic recovery room in the operating room only came in 1994 with Ordinance MS/GM No. , of December 15, 1977, establishing that the room must have at least two beds, with a distance of 8.5m² between the beds, with 6.5m² per bed when there are more than 2 beds and 1.0m of distance between the headboard of the bed and the wall. The ordinance emphasizes that the number of beds in the RA will depend on the demand for surgeries planned in the unit[2].

The multidisciplinary team is composed of a nurse, a nursing technician and an anesthesiologist, and the nurse is responsible for providing safe, rational and individualized care to the patient after anesthesia[3].

It is essential that nurses working in the anesthetic recovery room have scientific and practical knowledge to provide anesthetic and postoperative care to patients undergoing different types of surgical procedures and to act in emergency situations, as well as technical competence to train and supervise the team[4].

The health team in the anesthetic recovery room seeks to provide patient care in the immediate postoperative period in a quick, systematic and individual way, focusing on patient safety[5] and the nurse is directly involved in the care provided to the patient in the postoperative period. -immediate operative, in which there is vulnerability to complications of the cardiorespiratory, thermoregulatory, integumentary, sensory, locomotor, urinary, digestive, immunological and emotional state[6].

The Ministry of Health (MS) defines COVID-19, belonging to the Coronaviridae family, as a respiratory disease that was identified in Wuhan, China, in December 2019. Its transmission occurs through contact with the sick person through touch on contaminated objects or surfaces, coughing, sneezing, saliva droplets or aerosols. It is also characterized by symptoms that can range from a cold to an acute respiratory syndrome or severe pneumonia[7].

The first confirmed case of COVID-19 in Brazil was in February 2020, in the city of São Paulo and on March 11, 2020 the WHO characterized COVID-19 as a pandemic[5].

Due to the high transmissibility combined with the various forms of contagion and the lack of medicines and vaccines, the spread across continents occurred quickly. Practices have been developed around the world to contain the transmission of the new coronavirus, such as hand hygiene, respiratory etiquette, use of masks, even fabric, physical distance, among others[8].

With the increase in the number of cases and health professionals on the front line in the fight against the new virus, the vulnerability to contagion and illness of these professionals was noticed, especially in nursing, which occupies a central position acting from the management of the disease. public health to fronts of prevention and direct assistance to those affected by SARS-CoV-2 (virus of the coronavirus family that, when infecting humans, causes the disease called COVID-19)[9,10].

The surgical center was directly affected by the suspension of elective surgical procedures, prioritizing urgent and emergency surgeries, aiming to reserve beds for patients with COVID-19, especially intensive care beds[11].

With the pandemic caused by SARS-CoV-2, there were changes in the organization of the work flow and an insufficient number of professionals, causing difficulties in the care provided by the nursing team in the anesthetic recovery room.

Thinking about adequate assistance, aiming to minimize risks and prevent possible complications, it was necessary for there to be training, continuing education, development of routines, inspection of equipment and improvement of human resources[6], making it necessary to reflect on the performance of the nursing team and planning assistance in immediate postoperative care during the pandemic caused by the new coronavirus.

In this sense, the study is justified by the need to identify the changes and adaptations related to nursing care in the anesthetic recovery sector, which occurred during the pandemic caused by the new coronavirus, generating interventions in the patient's care practice in the immediate postoperative period.

The study aims to carry out an integrative review, in order to identify, from scientific publications in nursing and health, the adaptations and changes in the nursing care provided to the patient in the anesthetic recovery during the pandemic caused by the new coronavirus.

Methodology

This is an integrative review, which aims to obtain a better understanding of a given phenomenon based on previous studies, allowing the synthesis of knowledge and the applicability of the results of studies in care practice.

For the construction of the integrative review, the six stages were covered, which are: identification of the theme and the selection of the hypothesis or research question for the elaboration of the integrative review; establishment of criteria for inclusion and exclusion of studies/sampling or literature search; definition of the information to be extracted from the selected studies/categorization of the studies; evaluation of studies included in the integrative review; interpretation of results and presentation of the review/synthesis of knowledge[12].

For the elaboration of the research question of the integrative review, the PICo strategy (acronym for Population, Interest, Context) was used. This strategy allows for the adequate definition of the research question, enabling the identification of keywords, assisting in the bibliographic search, locating relevant primary studies in the databases[13].

Thus, the defined research question was What were the adaptations and changes in the nursing care provided to the patient in anesthetic recovery in the immediate

postoperative period during the pandemic caused by the new coronavirus?

Chart 1. Elements of the PICo strategy and the defined keywords. Rio de Janeiro, RJ, Brazil, 2021

Elements of the PICo strategy and the defined keywords		
Elements	**Acronym**	**Keywords**
P	Population	patient recovering from anesthesia in the immediate postoperative period
I	Interest	adaptations and changes in nursing care
Co	Context	during the pandemic caused by the new coronavirus

The following databases were used for data collection: Medical Literature Analysis and Retrieval System (PubMed), Scientific Electronic Library Online (SciELO) and Latin American Literature in Health Sciences (LILACS). The selected descriptors are in accordance with the Health Sciences Descriptors (DeCS). For the PubMed source, the descriptors are called Medical Subject Headings (MeSH) and are equivalent to DeCS. The table below presents the descriptors by language.

Chart 1. Descriptors selected according to DeCS and MeSH for the search in the databases. Rio de Janeiro, RJ, Brazil, 2021

Descriptors selected according to DeCS and MeSH		
Portuguese	**Spanish**	**English**
Enfermagem de centro cirúrgico	Enfermería en quirófano	Operating room nursing
Enfermagem perioperatória	Enfermería perioperatoria	Perioperative nursing
Enfermagem em pós-anestésico	Enfermería postanestésica	Postanesthesia nursing
Cuidados pós-operatórios	Cuidados posoperatorios	Postoperative care
Infecção por coronavírus	Infección por coronavirus	Coronavirus infection

The Boolean descriptors used were AND and OR. A crossover was performed in each database, with the descriptors: operating room nursing OR postanesthesia nursing OR Perioperative nursing OR postoperative care AND coronavirus infection. Table 3 shows the number of studies found in the searched databases.

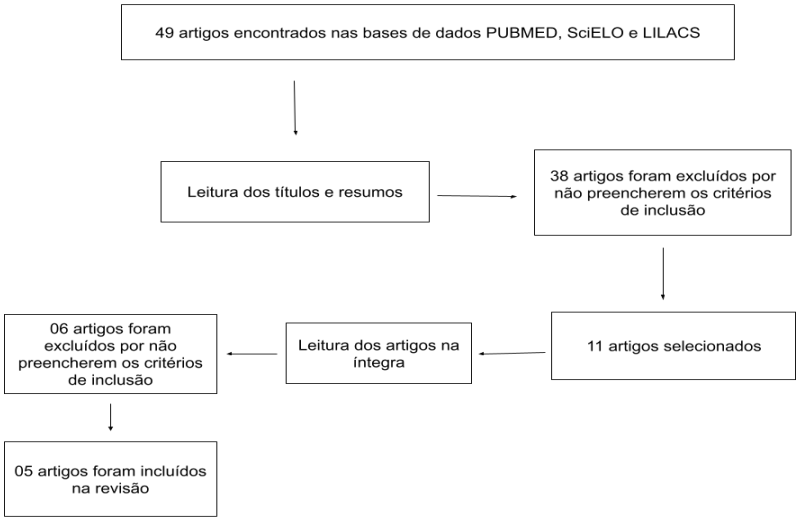
Original articles and review of articles, with a qualitative or quantitative approach, published in Portuguese, English and Spanish, in the years 2019 and 2021 were included. Incomplete texts, articles that were not available in full online, books, abstracts, reports of experience and dissertations.

Based on the PRISMA methodology (Main Items for Reporting Systematic Reviews and Meta-analyses), a flowchart was constructed in Microsoft Word software, presenting the data found in the databases, according to the title, abstract and inclusion criteria (Figure 1[14].

Chart 3. Number of studies found in the searched databases. Rio de Janeiro, RJ, Brazil, 2021

Number of articles found in the searched databases	
PubMed	38
SciELO	4
LILACS	7
Total	49

Figure 1. Flowchart of the phases of identification, screening and selection of articles on adaptations and changes in nursing care provided to patients in the immediate postoperative period during the pandemic caused by COVID-19 in 2019 and 2021 adapted from PRISMA. Rio de Janeiro, RJ, Brazil, 2021



Results

After reading the titles and abstracts of the 49 articles found, 38 articles were excluded for not meeting the inclusion and exclusion criteria. The 11 remaining articles that met the inclusion criteria were read in full. Of these, 5 articles were included in the integrative review.

The five selected articles were published in 2020, with the predominant language being English and it was observed during the search and reading for the selection of publications in the databases that most of the articles were directed to anesthesiology, discussing the practice of intubation and extubation of the patient in the operating room due to aerosolization of the environment and better anesthetic technique during the pandemic. Regarding the methodological aspect, the integrative review predominates, with a selected article being a critical review.

Chart 4. Methodological description of the articles included in this review. Rio de Janeiro, RJ, Brazil, 2021

Title	Author/ Year	Indexing base	Study type	Objective
Reconfiguring the scope and practice of regional anesthesia in a pandemic: the COVID-19 perspective	ASHOKK A, *et al.* 2020	PubMed	Integrative review	To describe the perioperative anesthetic implications of the multisystem manifestations of COVID-19, the anesthetic management options, the scope of RA, and considerations for its safe management in operating rooms. In addition to suggesting an outline for safe and rapid training of healthcare personnel, with a Trusted Professional Activity framework to verify practice readiness among RA-trained residents in COVID-19.
General surgery and COVID-19: review of practical recommendations in the first pandemic phase	BRESADO LA, *et al.* 2020.	PubMed	Integrative review	Review management recommendations for surgical activity and changes in surgical practice during COVID 19.
Recommendations for local-regional anesthesia during the COVID-19 pandemic	LIMA, *et al.* 2020.	PubMed	Integrative review	Review available evidence on regional anesthesia for patients with COVID-19 and offer practical recommendations for safe and efficient performance.
Centro cirúrgico: recomendações para o atendimento de pacientes com suspeita ou portadores de COVID-19	TREVILAT O. *et al.* 2020.	LILACS	Critical review of the literature	Present the recommendations for reorganization of the surgical center in the care of patients with suspected or confirmed COVID-19.
How to prepare the operating room for COVID-19 patients	CUNHA, *et al.* 2020.	SciELO	Integrative review	To present guidelines that provide adequate care and safety conditions to health professionals in preventing human transmission of SARS-CoV-2 infection in the operating room.

In the process of forming the categories, the method of categorical analysis of Bardin was used[15], in which there was the selection of articles, floating reading and coding, which took place through the identification of themes. This process allowed the organization and classification of the categories.

Discussion

To carry out a clearer analysis of the results, three categories were created service reorganization during the care of surgical patients with suspected or confirmed COVID-19, personal protective equipment during the care provided to the surgical patient and care in the immediate postoperative period in the hospital or anesthetic recovery in suspected or confirmed COVID-19.

Service reorganization during the care of surgical patients with suspected or confirmed COVID-19

In the surgical center during the pandemic caused by the new coronavirus, the suspension of elective surgical procedures was recommended, prioritizing patients in urgent, emergency and oncological procedures, with every patient who needs surgery being considered potentially infected[16,17].

Non-urgent outpatient clinical consultations were also suspended, except when physical examination by the physician was required. At that moment, online service, called telemedicine and telephone service were ways of assisting the patient with the exchange of medical information and analysis of test results at a distance, without the professional and the patient being exposed to contamination[17].

Faced with a situation in which there is a new disease and not much is known about its potential for contamination, it was necessary to implement a more rigorous screening for patients who cannot postpone their surgical procedure, being recommended to perform the PCR-RT test, which comes from English and means "reverse transcriptase reaction followed by polymerase chain reaction". It is performed by means of a nasal or nasopharyngeal swab in the preoperative period, seeking to identify the presence of viral genetic material, preventing viral dissemination and a worse postoperative result for the patient[16,17].

Regarding laparoscopic surgeries, it is known that maintaining pneumoperitoneum can expose the surgical team to the risk of contamination by aerosols, so it is recommended that the skin incisions be smaller to reduce possible gas leaks, control the pressure of the pneumoperitoneum at the as little as possible, without compromising the view of the surgical field, complete evacuation of carbon dioxide (CO2) before removal of the surgical pieces[16,17].

Operating rooms intended to care for suspected or positive patients for COVID-19 must preferably be easily accessible, with less contact between the other rooms and be reserved only for the care of these patients. The room doors must remain closed throughout the procedure, with a warning about the recommended precaution and must have a negative pressure ventilation system. In addition, intubation should be performed by the most experienced professional to avoid manual ventilation under the patient's mask, with a minimum of professionals in the room[16,18].

From the reception of the patient in the operating room, the team must be using all the recommended PPE and the patient must be sent directly to the operating room using a surgical mask during transport. The team participating in the surgery should be as small as possible and the non-participation of employees considered to be at risk should be considered. It also becomes necessary to rotate between employees ensuring that the team is not overloaded and exposed to mental and physical exhaustion[16,19].

All material and medication that will be used in the surgical procedure must be taken to the operating room, prioritizing disposable equipment and materials in the room, knowing that all unused material in the room must be discarded. Permanent room supplies such as anesthesia machines and monitors should be covered with disposable plastic to reduce contamination and facilitate cleaning[16,18,20].

At the end of the procedure, the nursing team is responsible for organizing the surgical instruments in plastic containers with lids, identifying them and sending them to the material and sterilization center, as well as changing the entire airway circuit, soda lime, filters and cleaning the anesthesia cart[16,18].

Cleaning of the operating room must be carried out with neutral detergent and immediately after disinfection, cleaning can be carried out with 70% alcohol, sodium hypochlorite or another disinfectant indicated for this purpose. All surfaces such as infusion pumps, screens, monitors, cables, furniture, frequently touched areas such as switches, buttons and controls, among others, must be cleaned. Then, terminal cleaning must be carried out in the room, by the hygiene team[16,20].

Personal protective equipment during the care provided to the surgical patient

Due to the high transmissibility of SARS-CoV-2, including during its pre-symptomatic incubation period, the nurse manager who works in the surgical center faces the challenge of providing and providing personal protective equipment (PPE), which have become scarce due to high demand, which led to their rationing, with the availability of 1 per day, per professional. An example is the N95 mask[21].

According to Decree-Law No. 348/93, of October 1, Art. 3, PPE means all equipment, as well as any complement or accessory, intended to be used by the worker to protect himself from risks, for his safety and health. That is, PPE is intended to protect professionals from risk factors in the hospital environment[21].

In the operating room, the main concern is related to the dispersion of aerosols at the time of transport, intubation and extubation of the patient, and the use of an N95 or FFP2/FFP3 mask by the health professional and a surgical mask by the patient is considered essential[17].

Other equipment such as cap, disposable apron or cloak, gloves, closed waterproof shoes and glasses or face shield, which were also encouraged to protect the N95 or FFP2/FFP3 mask from possible droplets or aerosols, in the same way they are important elements for the protection of the professional, as well as the removal of adornments such as earrings, necklaces, rings, watches, badges and others, which may expose the worker and the patient to biological risks due to the possibility of microorganisms adhering or hindering proper hand hygiene[16,20].

Since hands are an important means of contamination, harboring and transferring microorganisms from one surface to another, hand hygiene must be performed properly with soap and water or 70% alcohol in the five moments recommended by the World Health Organization. , before dressing and after undressing with PPE[16].

In addition, it is necessary to carry out training of professionals, remembering all the personal protective equipment and the correct way for dressing and undressing with trained observers evaluating, contributing to the reduction of self-contamination of professionals[19].

Immediate postoperative care in anesthetic recovery in suspected or confirmed COVID-19

It is recommended by the authors that the immediate anesthetic recovery of patients with confirmed or suspected diagnosis of COVID-19 should be performed preferably in the operating room until the patient is hemodynamically stable and recovered from sedation, if there is a need for supplementary oxygen, the oxygen catheter should be used under the mask[19,20].

Once the operating room team is already adequately dressed for the surgical procedure with PPE, it is recommended that it performs the patient's recovery assistance, avoiding the exposure of other professionals[16,17].

After the patient's condition is stabilized, he must be transported directly to his unit of origin using a surgical mask and, if necessary, oxygen support must be kept under the mask. The professionals who carry out the transport must be properly dressed as recommended[16,20].

Conclusion

The main changes and adaptations directly related to the care of the patient in the immediate postoperative period in the anesthetic recovery were: the performance of the anesthetic recovery of the patient in the operating room until the complete recovery of the patient, being carried out preferably by a professional already dressed in the operating room , avoiding exposure of more professionals. When there is a need to use supplemental oxygen during recovery or transport, the oxygen catheter must be placed under the surgical mask and the patient must be transported to the sector of origin, or at any time, using a surgical mask.

However, it is expected that the work will contribute to a reflection on the performance of the nursing team of the surgical center in the context of the pandemic caused by the Coronavirus, aiming to improve the planning of care, especially in the immediate postoperative care in the anesthetic recovery that seeks prevention and early detection of post-anesthetic and surgical complications, providing quality and safe care for all individuals involved in the process.

As a limitation of the study, there is a low publication of studies that present nursing care in the context of the immediate postoperative period in the surgical center during the pandemic caused by the new coronavirus, mainly related to the anesthetic recovery room. The majority of published studies are intended for postoperative anesthetic practice and are based on the recommendations of societies and experts, lacking research that proves the effectiveness of the recommended measures.

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