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Original article

Nursing management strategies for coping with Covid-19 in a Neonatal Unit: an exploratory study

Estratégias de gestão de enfermagem no enfrentamento da Covid-19 em Unidade Neonatal: estudo exploratório

Estrategias de gestión de enfermería en el afrontamiento de la Covid-19 en una unidad neonatal: estudio exploratorio

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Abstract

Objective: to identify challenges and strategies used by nurses in the management of a Neonatal Unit since the pandemic period. **Method:** qualitative, exploratory study, conducted between February and March 2024 in a neonatal unit of a hospital in southern Brazil. Nine nurses participated, interviewed using a semi-structured script. The data were subjected to content analysis, from which two thematic categories emerged. **Results:** the challenges identified included shortage of materials, insufficient human resources, and reorganization of care workflows and protocols. Among the strategies adopted, the strengthening of prevention measures, expanded use of personal protective equipment, team training, and implementation of care protocols stood out, some of which were maintained after the pandemic period. **Conclusion:** the pandemic required the reorganization of nursing management, mobilizing strategies aimed at care safety, professional qualification, and standardization of care, partially maintained after the pandemic period.

Descriptors: Health Management; Intensive Care Units, Neonatal; Hospital Care; Neonatal Nursing; COVID-19

Resumo

Objetivo: identificar desafios e estratégias utilizadas por enfermeiros no gerenciamento de uma Unidade Neonatal desde o período pandêmico. **Método:** estudo qualitativo, exploratório, realizado entre fevereiro e março de 2024, em uma unidade neonatal de hospital do Sul do Brasil. Participaram nove enfermeiras entrevistadas por roteiro semiestruturado. Os dados foram submetidos à análise de conteúdo, da qual emergiram duas categorias temáticas. **Resultados:** os desafios identificados incluíram escassez de materiais, insuficiência de recursos

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humanos e reorganização de fluxos e protocolos assistenciais. Entre as estratégias adotadas destacaram-se o fortalecimento das medidas de prevenção, ampliação do uso de equipamentos de proteção individual, capacitações da equipe e implementação de protocolos assistenciais, algumas mantidas após o período pandêmico. **Conclusão:** a pandemia demandou reorganização do gerenciamento de enfermagem, mobilizando estratégias voltadas à segurança assistencial, qualificação profissional e padronização do cuidado, mantidas parcialmente após o período pandêmico.
Descritores: Gestão em Saúde; Unidade de Terapia Intensiva Neonatal; Assistência Hospitalar; Enfermagem Neonatal; COVID-19

Resumen

Objetivo: identificar desafíos y estrategias utilizadas por enfermeros en la gestión de una Unidad Neonatal desde el período pandémico. **Método:** estudio cualitativo, exploratorio, realizado entre febrero y marzo de 2024 en una unidad neonatal de un hospital del Sur de Brasil. Participaron nueve enfermeras entrevistadas mediante un guion semiestructurado. Los datos se sometieron a análisis de contenido, del cual emergieron dos categorías temáticas. **Resultados:** los desafíos identificados incluyeron escasez de materiales, insuficiencia de recursos humanos y reorganización de flujos y protocolos asistenciales. Entre las estrategias adoptadas se destacaron el fortalecimiento de las medidas de prevención, ampliación del uso de equipos de protección individual, capacitaciones del equipo e implementación de protocolos asistenciales, algunas mantenidas después del período pandémico. **Conclusión:** la pandemia exigió la reorganización de la gestión de enfermería, movilizando estrategias orientadas a la seguridad asistencial, la cualificación profesional y la estandarización del cuidado, mantenidas parcialmente después del período pandémico.
Descriptores: Gestión en Salud; Unidades de Cuidado Intensivo Neonatal; Atención Hospitalaria; Enfermería Neonatal; COVID-19

Introduction

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), the etiological agent of Coronavirus Disease 2019 (Covid-19), identified in December 2019, triggered a global health crisis that required prevention, protection, and social isolation measures, impacting the organization of health services.[1-2]

The adversity caused by Covid-19 had numerous negative consequences, especially for Nursing, which is on the front line of care in the hospital setting. For these professionals, the demand for new roles during the pandemic – such as implementing health control and prevention strategies, among others – added to the comprehensive care responsibilities of team managers and leaders, who are in charge of managing decision-making and responsible for forecasting and supplying equipment and materials.[3-4]

Thus, several managerial competencies were required of nurses in their work process, which are considered essential for the service to be delivered effectively. However, considering individual and organizational skills, several challenges emerged in the face of Covid-19, such as the shortage of human resources, technical knowledge, and Personal Protective Equipment (PPE), which contributed to worsening the situation and hindered the functioning of the services provided by nurse managers.[1]

Nursing professionals were on the front line, providing the necessary care to patients infected with the new coronavirus.[2] Constant and direct contact with the disease resulted in a high rate of exposure to transmission risks. Worldwide, they were responsible for the centrality of care and for maintaining the treatment of patients affected by the virus.[5]

In the face of the Covid-19 pandemic and the need to reorganize a care unit, the shortage of supplies, inadequate staffing, lack of PPE, work overload, and the definition of new workflows made it essential to restructure the actions of the nursing team.[6]

These challenges proved even more complex in Neonatal Units, highly complex services that require specialized, continuous, and interdisciplinary care focused on the needs of the newborn. During the neonatal period, complications or physiological changes may occur that interfere with healthy development, requiring referral to these units. They are intended for the hospitalization of newborns up to twenty-eight days of life who present serious illnesses, low birth weight, or prematurity, requiring continuous care from qualified professionals and specific technologies for monitoring, diagnosis, and treatment.[7]

The hospitalization of a newborn in the Neonatal Unit is a situation that affects the entire family and may cause emotional harm, especially to parents. The family faces fear regarding the baby's health and changes in habits due to hospitalization, requiring adaptation to hospital routines.[8] Holistic, scientific, and humanized care for neonates can reduce infant mortality, in addition to providing greater reassurance to parents, increasing trust in the care team, and preventing future complications in child development.[7]

Coronavirus infection affected pregnant women, postpartum women, and newborns, especially those born prematurely, causing intense and disruptive changes to neonatal care and affecting practices that facilitate bonding and neurosensory protection, so hard-won over recent years.[9-10]

Thus, with the presence of Covid-19, requirements arose regarding isolation and reduced circulation of people, including the suspension of the presence of grandparents, siblings, and other family members from the support network, and restricted access for mothers and/or fathers who were symptomatic and/or positive for SARS-CoV-2. In other words, these measures required the reformulation of conducts and practices, bringing the need for new strategies to ensure care.[10] Therefore, the challenge for the entire team was to ensure the safety and intensive care of newborns and their parents, in addition to caring for themselves, without departing from the basic principles of humanized care that have guided neonatal care in Brazil.

Although studies have addressed aspects related to neonatal care and the repercussions of the pandemic in this context, less emphasis has been placed on the management strategies used by nurses in Neonatal Units, considering their care-related, technological, and relational particularities, as well as the permanence of these strategies after the pandemic period.[4,7-10] Given this gap, this study aimed to identify the challenges and strategies used by nurses in the management of a Neonatal Unit since the pandemic period.

Method

This is a qualitative, exploratory study conducted in the Neonatal Unit of a hospital in southern Brazil, a reference center for maternal and child care and highly complex neonatal care. The choice of setting was justified because it is a service that underwent care and management reorganizations during the Covid-19 pandemic, constituting a relevant context for investigating nursing management strategies. The study follows the Consolidated Criteria for Reporting Qualitative Research (COREQ).

During data collection, the unit had a total of sixteen beds, eight of which were designated for intensive care, one of them being an isolation bed, four beds in

the Conventional Neonatal Intermediate Care Unit (UCINCo), and four beds in the Kangaroo Neonatal Intermediate Care Unit (UCINCa).

Nurses working in the Neonatal Unit who had worked there for at least six months during the Covid-19 pandemic were included. This time frame was defined because it allows sufficient experience with the care and management changes implemented in the pandemic context. Professionals on vacation or on leave during data collection were excluded.

The unit's nursing team consisted of 13 nurses and 36 nursing staff members. Of the 13 eligible nurses, nine professionals participated; two were on vacation during the data collection period and two chose not to participate in the study, without giving reasons for their decision. Sampling was purposive, seeking to include the unit's eligible nurses.

Data collection ended after the participation of the professionals who agreed to take part in the study and the identification of saturation of the empirical content, characterized by the recurrence of elements present in the accounts and the absence of new content relevant to answering the study objective, considering the specific context of the Neonatal Unit investigated.

Data were collected from February to March 2024 through individual interviews conducted with a semi-structured script. The instrument consisted of two parts: i) professional characterization of the participants, covering age, sex, professional position, institution of training, specializations, and length of experience in the Neonatal Unit; and ii) guiding questions related to the challenges, strategies, and changes perceived in nursing management during and after the Covid-19 pandemic: “What challenges related to nursing management did you perceive in the context of the Neonatal Unit during the Covid-19 pandemic?”; “What strategies adopted in nursing management contributed to addressing these challenges?”; and “What managerial changes or advances implemented during the pandemic remained after the pandemic period?”.

Initial contact with the team took place through the Unit's nurse manager, who only announced that the study was being conducted. Subsequently, eligible professionals were contacted in person by the principal researcher, at the

workplace, to present the research and invite them to participate. The interviews, scheduled in advance according to the participants' preferred day and time, were held in person, in the Unit, and lasted an average of fifteen minutes. They were recorded using a mobile electronic device with the interviewee's authorization.

The interviews began after the reading and signing of the Informed Consent Form, and to ensure participant anonymity, a coding system was used that included the abbreviation P for participants, followed by the differentiation of each one, represented by a sequential Arabic numeral in ascending order, according to the order of the interviews, for example: P1, P2; in order to ensure confidentiality.

After the interviews, they were fully transcribed by the principal researcher using the Google Docs® platform. The data were subjected to content analysis.[11] In the pre-analysis stage, an exhaustive reading of the interviews was carried out to constitute the analytical *corpus*. In the material exploration phase, the statements were coded and the units of meaning were identified, based on recurring words, expressions, and meanings present in the accounts. Subsequently, in the stage of treatment of results and interpretation, the units of meaning were grouped into two thematic categories: “Challenges encountered in care management and their impacts in a Neonatal Unit” and “Care management strategies in a Neonatal Unit since the pandemic period”. Data interpretation took place through the elaboration of analytical syntheses, in order to highlight convergences, divergences, and the most significant excerpts from the accounts. The analysis was conducted by the principal researcher and discussed with the study advisor, aiming to increase the interpretative consistency of the findings.

The study adhered to the guidelines and regulations established for research involving human beings, as set forth in Resolution No. 466/12 of the Conselho Nacional de Saúde (National Health Council). The researcher obtained authorization from the hospital and, after institutional approval, the project was submitted to the Research Ethics Committee and approved under CAAE registration 74508223.2.0000.0121 and Opinion No. 6.448.331.

Results

Nine nurses working in the Neonatal Unit participated in the study. All were female, aged between 33 and 59 years, with a mean age of 42 years. Regarding the institution of training, four (44%) had graduated from the Universidade Federal de Santa Catarina (UFSC), while five (56%) had graduated from other institutions: Universidade Paulista, Universidade do Vale do Rio dos Sinos, Universidade Federal de Santa Maria, Universidade do Vale do Itajaí, and Universidade Federal do Rio Grande do Sul, with one participant (11%) from each institution. As for academic degrees, seven (77%) held a master's degree; three (33%) a doctorate; and six (66%) a specialization, of whom five (55%) had a specialization in neonatal intensive care. Length of experience in the Neonatal Unit ranged from two to 16 years, with a mean of eight years.

Regarding the analysis of the interviews, the results were organized into two thematic categories: Challenges encountered in care management and their impacts in a Neonatal Unit; and Care management strategies in a Neonatal Unit since the pandemic period.

Challenges encountered in care management and their impacts in a Neonatal Unit

During the pandemic caused by Covid-19, nurses had to face distinct challenges in nursing management in the Neonatal Unit under study. Among them, the shortage of equipment and materials, mainly PPE, was evident. In addition to the lack of resources, which hindered the daily routine, the challenge of working with low-quality materials directly affected the safety and emotional well-being of these professionals.

> *In the management of equipment and materials, we had no idea of the impact that would have in the short or long term [...] we did not know whether it would be something easily manageable or something we would never be able to manage. (P5)*

> *The quality of the materials decreased, because it was necessary to buy in larger quantities and the suppliers were perhaps unable to keep up with supply. The hospital had to take what was available on the market. The masks were practically transparent. And we would say: am I really protecting myself with this mask? (P1)*

Another relevant point mentioned by the interviewees was the lack of human resources caused by the absence of professionals infected with the virus, among other causes of medical leave. Thus, further challenges emerged: work overload and the difficulty of staffing to fill the work schedules.

> *The hospital held a selection process to hire nursing and physiotherapy professionals for the units with the greatest demand from Covid patients. However, here our staff were sick and there was no cover; those who kept working were tired and overloaded [...] The issue of sick leave certificates was what caused the most instability. (P4)*

During this period, according to the professionals' accounts, protocols were constantly changed. Workflows and guidelines within the Neonatal Unit were also altered, such as meal and rest times, in order to avoid crowding and widespread contamination among the team. Protocols were also created regarding the entry of parents and family members into the unit. Thus, these daily changes became yet another challenge for nursing management.

> *The challenges were the daily changes [...] every day we came to work and there was different information. (P3)*
> *There were constant changes in protocols and guidelines; one week it was one way, then the next it had already changed, and that caused some confusion. (P6)*

The professionals also reported difficulty in dealing with emotional management during this period, due to the lack of scientific knowledge and uncertainties about the disease. The little information on the spread of the virus in the neonatal area and its clinical manifestations was very recent and scarce. Thus, fear of the unknown generated tension, anguish, fears, and insecurity among the professionals.

> *The pandemic was something we had never imagined could happen. There was no prior planning, no flowchart, no indication of how to do things, no ready-made protocols; that made it quite difficult [...] the main challenge was dealing with something unexpected, which directly affected the lives of patients and professionals. (P5)*
> *For us, it was very distressing to want to act quickly to attend to the baby, but thinking: calm down, I need to wash my hands, ask for the PPE, put it on, and do everything in the right order. This delay in promptly attending to the children caused anguish for the whole team. (P1)*

Care management strategies in a Neonatal Unit since the pandemic period

Among the strategies adopted since the pandemic period, infection prevention and control measures stood out. Participants reported changes in care habits, especially related to mask use, hand hygiene, and the use of PPE, understood as practices incorporated into the care routine.

> *And today the guidance on mask use still continues. Professionals, even without flu-like symptoms, wear a mask when caring for the children [...] This is a practice that has remained, it will probably never go away, because we still have Covid-19 circulating in the community, as well as other viruses, such as influenza and syncytial virus. (P1)*
> *We only used to wear a mask when we were going to express milk or perform a procedure, such as inserting a PICC or performing bladder catheterization. To this day we wear it throughout care, we enter the room already wearing a mask, and I think that is a good thing, which should have existed before and did not. (P4)*

Another strategy reported by the participants was the provision of training sessions promoted by the Hospital Infection Control Service (SCIH), addressing hand hygiene and the donning and doffing of PPE. According to the interviewees, offering the activities in both in-person and online formats favored the organization and adherence of the professionals.

> *We received training from the SCIH on hand washing, on how to put on PPE, the sequence for putting it on properly. (P1)*
> *This part of managing meetings and online training was something that came to stay, it really was a gain [...] we organized ourselves around it and, to this day, it continues in the hybrid model, in person and online. (P2)*

Participants also highlighted the development of care protocols and workflows as a strategy incorporated since the pandemic period. According to the accounts, the definition of institutional guidelines contributed to the organization of care for newborns and their families, and to the management of situations related to Covid-19.

> *The CCIH [Hospital Infection Control Committee] prepared a document, like a step-by-step guide [...] what would be needed, isolate or not isolate, how to do it, how not to do it. That helped too! We did not have that many cases in babies, but there were mothers with Covid, and the babies came here. We thought: what to do with this baby? How many times to collect samples? [...] At first it was a bit confusing, then we knew how to do it. (P3)*
> *Today we are better prepared to face critical situations, with protocols and with the experience that the Covid-19 pandemic pushed us to acquire. (P8)*

Another strategy mentioned by the participants was the reorganization of visits in the Neonatal Unit, through the implementation of a visiting schedule, which has remained in place since the pandemic period. According to the accounts, criteria were established for the entry and stay of family members, with restrictions on the number and degree of kinship of visitors. The interviewees presented distinct perceptions regarding the maintenance of this strategy.

> *For babies who did not have Covid, when the mother had no symptoms, we created a visiting schedule. The father was scheduled and there was a whole checklist of precautions for him to be able to enter [...] we kept the schedule and that was a good thing. (P4)*
> *Today we cannot open visits to people other than parents and grandparents; that is something that has remained, which we need to bring back. (P2)*

The findings show that the challenges experienced during the Covid-19 pandemic had a direct impact on care management in the Neonatal Unit, involving the availability of material and human resources, the reorganization of workflows and protocols, and coping with the emotional repercussions among professionals. In response to this scenario, strategies were implemented related to infection prevention and control, professional training, the development of care protocols and workflows, and the reorganization of visits. Some of these strategies remained incorporated into the unit's practices after the pandemic period, indicating that the experience contributed to the reorganization of work processes and to the development of responses to critical situations.

Discussion

This study made it possible to identify challenges and strategies used by nurses in the management of a Neonatal Unit since the pandemic period. The Covid-19 pandemic resulted in a significant number of infected people, critically ill patients, and deaths worldwide, configuring a new global reality, especially for health professionals who worked on the front line. In this context, the main challenges included the shortage and low quality of equipment and materials, insufficient human resources, constant changes in care protocols and workflows, and the emotional repercussions related to uncertainties about Covid-19. On the other hand, strategies were identified related to strengthening infection prevention and control measures, professional training, the

development of care protocols, and the reorganization of visits in the unit.[12]

During the accounts, it was noted that newborns were not directly affected in terms of Covid-19 contamination. Although the virus affected relatively few babies, it caused intense and disruptive changes in neonatal care, affecting practices essential for bonding and neurosensory protection, hard-won over recent years.[10]

The shortage and low quality of equipment and materials, especially PPE, highlight challenges related to health resource management in the context of the Covid-19 pandemic. In Brazil, the Conselho Federal de Enfermagem (Federal Nursing Council) recorded more than 3,600 complaints regarding the lack, shortage, or inadequacy of materials, including masks, gloves, and gowns in the hospital environment.[1] In this scenario of health crisis, resource management takes on a strategic character, requiring nurses to have competencies related to planning, monitoring the use of supplies, and decision-making to maintain care safety and occupational protection.

The risk of contamination, both due to the lack of PPE and to the increased demand that led to the use of these materials over extended work shifts, contributed to increasing health professionals' exposure to the coronavirus. The lack of these materials during the pandemic was a reality, placing nurses in a situation of occupational vulnerability. In this sense, the shortage combined with the poor quality of materials had negative repercussions for the professionals in the Neonatal Unit, who perceived themselves as unprotected and exposed to contamination during patient care.[13]

The insufficiency of material resources observed in this study was accompanied by limitations related to human resources, in line with international findings that describe difficulties in maintaining teams and high work overload during the Covid-19 pandemic. In the field of nursing management, this scenario reinforces the centrality of staffing and of the institutional capacity to respond to critical situations.

Similarly, a study conducted in Austria found that health professionals worked beyond the limits of their capacities during the Covid-19 pandemic, resulting in physical and mental exhaustion. In addition to working overtime, they worked for many hours without adequate breaks, as well as in a state of permanent alert. They also reported a lack of work-life balance and the consequences of overwork. For the participants, this overload, combined with the shortage or

unavailability of staff, was a primary problem. Many frequently had to make several requests to management to hire more health workers.[14]

The shortage of staff in health services during the Covid-19 pandemic was caused by contamination with the virus, by the leave of those belonging to risk groups, or by the lack of specialists. This resulted in work overload, psychological illness, and an increase in the number of deaths among health professionals.[15]

The correlation between the shortage of PPE and the increase in infected people leads to a reduction in the number of available staff and results in the need for frequent changes in shift schedules and work sectors, which aggravates team fatigue and feeds a feeling of devaluation, especially when there is no financial compensation for overtime. The lack of human and material resources amplifies the risk and the physical and psychological overload of professionals, which may lead to complications for their health.[16-17]

Changes in workflows and care protocols constituted important challenges for the management of the Neonatal Unit during the Covid-19 pandemic. The constant reformulation of conducts and practices required rapid adaptation by the teams, mobilizing new strategies to maintain the quality and safety of care. In this scenario, professionals accustomed to well-established protocols began to work in an environment marked by uncertainty, requiring nursing management to demonstrate leadership, communication, and decision-making skills in the face of critical situations. Furthermore, the urgency to prevent their own contamination and the transmission of the disease to family members imposed exhausting routines of care, hygiene, and preparation, often extending beyond the work environment and working hours.[10]

The pandemic highlighted elements inherent to health crisis management, such as speed of response, continuous reorganization of care workflows, management of resource shortages, and decision-making in scenarios of high uncertainty. In this context, nursing management goes beyond the operational dimension of care and takes on a strategic role in maintaining care safety.

The findings also demonstrated the role of nurse leadership in managing teams in critical scenarios. In circumstances marked by uncertainty, frequent protocol changes, and the urgency of rapid care adaptation, nursing leadership becomes essential to sustain work processes, foster communication among professionals, and support clinical and managerial decision-making.

Another aspect mentioned by the interviewees, when asked about the challenges faced during the pandemic, was dealing with emotional management, due to the lack of information about the disease and the emergence of many feelings such as fear, insecurity, and anguish. In a pandemic scenario, health professionals, especially those in nursing, faced substantial variations in their workplaces. This encompassed extended working hours, constant changes in teams, and the relocation of services due to the new organization of care workflows for patients with and without Covid-19. These changes increased stress, uncertainty, and even the feeling of helplessness among these workers, who found themselves in a complex, dynamic, and unpredictable context.[13]

Florence Nightingale's Environmental Theory, which focuses on the environment of individuals' health care, broadens the concept of ambience by considering emotional and social aspects. From this perspective, emotional involvement can be impacted by a space that provides different experiences, while the social dimension is influenced by the interactions among the people within the physical care environment.[18]

In light of this framework, the findings show that care is not restricted to the physical environment but also involves emotional and social dimensions. Circulation restrictions, changes in care workflows, the reorganization of visits, and the emotional repercussions experienced by professionals demonstrate how changes in the care environment simultaneously affect the team, the newborns, and their families.[18]

Another study revealed aspects similar to this research, in which, during the pandemic, many nursing professionals experienced a range of feelings, including fear, anguish, apprehension, sadness, and anxiety. In some cases, they resorted to crying to relieve the pressure of exhausting work schedules. These feelings were triggered by the spread of the virus and the loss of patients and coworkers. Their experience amid the public health crisis resulted in fragile mental health and, in many cases, the exacerbation of Burnout Syndrome.[2]

A study conducted in Poland explored the level of burnout among groups of health professionals who worked during the Covid-19 pandemic. Many of them experienced significant or moderate levels of constant stress or suffered from depression with the onset of the pandemic. One third of the respondents experienced a heavier workload than before the outbreak, with nurses being one of the most affected groups. Working under unusual and unsafe conditions, working daily with an increased risk of infection, and dealing with protective equipment never used before resulted in an increase in negative mental effects, which may have manifested as increased anxiety, prolonged stress, and even depression.[19]

Regarding the strategies used since the pandemic period, the infection prevention and control measures, professional training, the development of care protocols and workflows, and the reorganization of visits in the Neonatal Unit stood out. Training sessions, a visiting schedule, and new protocols and workflows were also established to address the disease. A study conducted with the aim of identifying the nursing care provided to newborns in the context of the pandemic pointed to nurses' ability to adapt to new challenges, compliance with protective measures, and the response to emerging and increasingly intense needs, which was a crucial factor in the effectiveness of the response implemented in the institution.[4]

According to the accounts, hand hygiene was already practiced previously; however, with the pandemic, there was an improvement in both the procedure and its frequency, as reported by the participants in this study. Conversely, one study investigated the change in hand hygiene compliance during the Covid-19 pandemic period. The authors found that compliance gradually decreased over time, as health professionals returned to old routines more quickly with regard to hand hygiene before patient contact (patient protection) compared to hand hygiene after patient contact (self-protection).[20]

In the perception of nursing professionals in an Intensive Care Unit, the practice of hand hygiene is a crucial strategy for the control and prevention of Healthcare-Associated Infections, as well as for self-protection. Therefore, this practice, during the care of hospitalized patients, contributes to the creation of a safety culture for both the patient and the nursing professional working in this sector.[21]

Furthermore, it is worth noting that the nurses of the Neonatal Unit under study played an important role in the management of materials during the pandemic, mainly PPE, with control of the supply of these materials being identified as a strategy. Efficient and effective management of material resources in health institutions must be aligned with care-related issues. It is essential to adopt strict controls to ensure the availability of these resources with quality, in a timely manner, in the necessary quantity, and at a fair price. The nursing team, as the main requester and user of these products, especially those classified as medical and hospital supplies, plays a crucial role in this process.[22]

The PPE in shortest supply was surgical masks, as their use went beyond the hospital environment, with the general population seeking them as a protective measure. Surgical masks play a crucial role in preventing the transmission of respiratory droplets, especially among health professionals and support staff who are within one meter of patients diagnosed with or suspected of Covid-19 infection.[23]

In this context, as a strategy to cope with the above, online training sessions were offered by the hospital. One study emphasizes the importance of offering training as a routine practice in health services, not only during the pandemic but at all times. This can promote positive changes in professionals' routines and prevent insecurity in the face of new approaches in health care practice.[13]

Another study addresses the lack of training and awareness among professionals working in care, and highlights that the waste of materials is more common and frequent when there is no adequate training and awareness regarding their use and handling.[22]

The hospital environment is susceptible to several health risks. A fundamental strategy in preventing incidents and even fatalities is the adoption of health protocols in the hospital unit. The continuous need to update scientific evidence, establish clinical protocols, and standardize procedures results from the risk of contamination of health professionals during direct contact with patients, especially those with diseases. The active involvement of management and health professionals is crucial to the successful implementation of any work process.[24]

The presence of Covid-19 imposed isolation requirements and restrictions on the circulation of people. Official documents established the suspension of the presence of grandparents, siblings, and other members of the support network, allowing access exclusively to asymptomatic parents, after daily and safe screenings at the entrance to the Neonatal Unit.[10] One of the changes made in the unit during the pandemic period was the free presence of mothers and the creation of the visiting schedule, which allowed access only to fathers and grandparents. Before the pandemic, parents had free access and other family members could also visit. On the other hand, another study shows that, despite the importance of restrictions for pandemic prevention and control, it is crucial to remember that these measures affect the organization of the health service, requiring the local team to adopt new care practices to ensure the quality of care.[18]

The presence of factors such as misinformation, risk of infection, frequent changes in work procedures, lack of PPE, and uncertainties about the duration of the pandemic and its outcome for each professional could significantly impact the experiences and working conditions of nursing professionals. These challenges had the potential to affect not only their professional lives but also their personal lives.[16]

The challenges related to the Covid-19 pandemic drove the reorganization of work routines in health institutions, including Neonatal Units. Several strategies implemented since the pandemic period have remained incorporated into daily practice, evidencing lasting repercussions on nursing management and care. In the field of management, it is important to look at the past in order to plan future actions based on the evaluation and weighing of positive and negative aspects, and to envision the implementation of more effective and safer actions.

As a contribution, the study broadens the understanding of the challenges and nursing management strategies in a Neonatal Unit during the Covid-19 pandemic, and highlights aspects related to resource management, reorganization of work processes, continuing education, and the development of care safety protocols. The findings also make it possible to recognize strategies incorporated into practice after the pandemic period, as well as to provide input for planning management actions and preparing health services for future crisis situations.

The study limitations include the fact that the research was conducted in a single hospital institution, the small sample of participants, and possible selection bias, since the results reflect a specific care reality and may not represent other Brazilian institutions.

Conclusion

This study made it possible to identify challenges and strategies used by nurses in the management of a Neonatal Unit since the pandemic period.

The main challenges included the shortage and low quality of equipment and materials, insufficient human resources, work overload, difficulties in staffing the work schedules, constant changes in care protocols and workflows, and the emotional repercussions related to uncertainties about Covid-19.

In response to this scenario, the professionals implemented strategies aimed at care safety and at maintaining care for newborns and their families, notably the strengthening of infection prevention and control measures, professional training, the development of protocols, and the reorganization of visits in the unit. Many strategies have remained incorporated into care practice since the pandemic period.

The findings reinforce the importance of institutional actions related to resource management, continuing education, support for professionals' mental health, and contingency planning for future health crises.

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