







Trends in Nursing Knowledge Production Regarding the COVID-19 Pandemic in Brazil

Tendências da produção de conhecimento de enfermagem sobre a pandemia da COVID-19 no Brasil

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ABSTRACT

Objective: to analyze the investigative trends of theses and dissertations on COVID-19 from graduate programs in Nursing in Brazil. **Methods:** a bibliometric study conducted using the Theses and Dissertations Catalog from the Coordination for the Improvement of Higher Education Personnel, with bibliometric data analysis through IRAMUTEQ. **Results:** 82 works were selected, with the majority being dissertations (87.8%). They were distributed into six classes: 1) Nursing professionals' mental health. 2) Pregnant and postpartum women health. 3) Adaptation of care for people in vulnerable situations. 4) Human being and being a nurse: living and facing the virus. 5) Nursing work reorganization, and 6) COVID-19 repercussions for nursing. **Conclusion:** research is concentrated on nursing working conditions, mental health, and the care workflows reorganization. **Contributions to practice:** the study brings visibility to the knowledge production in Nursing within the context of the COVID-19 pandemic in Brazil and identifies gaps for future studies.

Descriptors: COVID-19; Nursing Research; Knowledge; Education, Nursing, Graduate.

RESUMO

Objetivo: analisar as tendências investigativas de teses e dissertações sobre COVID-19 dos programas de pós-graduação da área da Enfermagem no Brasil. **Métodos:** estudo bibliométrico realizado no Catálogo de Teses e Dissertações da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior, com análise de dados bibliométricos por meio do IRAMUTEQ. **Resultados:** 82 trabalhos foram selecionados, sendo a maioria dissertações (87,8%). Foram distribuídos em seis classes: 1) Saúde mental dos profissionais de enfermagem; 2) Saúde da mulher grávida e puérpera; 3) Adaptação do atendimento às pessoas em situação de vulnerabilidade; 4) Ser humano e ser enfermeiro: convivendo e enfrentando o vírus; 5) Reorganização do trabalho da enfermagem; e 6) Repercussões da COVID-19 para a enfermagem. **Conclusão:** as pesquisas estão concentradas nas condições de trabalho da enfermagem, na saúde mental e na reorganização dos fluxos de atendimento. **Contribuições para a prática:** o estudo promove visibilidade à produção de conhecimento em Enfermagem no contexto da pandemia de COVID-19 no Brasil e identifica lacunas para futuros estudos.

Descritores: COVID-19; Pesquisa em Enfermagem; Conhecimento; Educação de Pós-Graduação em Enfermagem.

Introduction

The disease caused by the coronavirus (COVID-19) stood out for inducing extensive damage to the pulmonary alveoli and triggering progressive respiratory failure, with potential fatality. In addition to compromising physical vitality, it generated a global crisis that deeply impacted mental health, daily routines, the economy, and social dynamics, establishing a new reality that affected virtually all aspects of human life⁽¹⁾.

As of December 2022, Brazil had recorded more than 35 million confirmed cases, with 691 thousand deaths⁽²⁾. Throughout this period, the reorganization of health care processes and the managerial strategies development were necessary to address the pandemic across the entire Brazilian territory⁽³⁾. A significant portion of efforts was directed toward studying and understanding the disease to find practices that would yield the best outcomes for individuals affected by COVID-19 and for mitigating contagion in the community.

Nursing, a professional class representing 59% of health care professionals worldwide⁽⁴⁾, led the care efforts in combating the disease. It was responsible for both direct patient care and the services management, health education, scientific research production, and advising institutions and political leaders. This underscores the challenges that the disease imposed on the profession practice. Therefore, nursing practices directly influence the care quality, the patients/professionals safety, and the institutional excellence pursuit⁽⁵⁾.

In this context, it is considered relevant to understand the trends in nursing research on COVID-19 to deepen knowledge on the subject, identify gaps for future investigations, and support strategies to be implemented in health care services. Therefore, the guiding question of this study was: What is the investigative trend in the Nursing field regarding COVID-19 in the theses and dissertations produced by postgraduate programs in nursing in Brazil?

This study was aimed to analyze the investiga-

tive trends of theses and dissertations on COVID-19 from graduate programs in Nursing in Brazil.

Methods

This is a bibliometric study. Bibliometric analysis is a method of evaluating scientific literature that involves reading, selecting, summarizing, and archiving relevant points on a specific topic. The objective is to identify scientific contributions made on this topic to understand the state of the art and identify research gaps. Lotka and Zipf's Laws were adopted as the methodological foundation of this study. Lotka's Law states that a small proportion of authors is responsible for the majority of scientific production, while Zipf's Law establishes that the most frequently used words in a study indicate its central topic⁽⁶⁾.

A research protocol developed by the authors, containing search guidelines and inclusion and exclusion criteria, was used to guide data collection and organization. The data collection took place in December 2022, using the Theses and Dissertations Catalog from the Coordination for the Improvement of Higher Education Personnel (CAPES)⁽⁷⁾.

For data collection, the term "COVID-19" was used in the search field, with the application of filters for "Health Sciences" in the Broad Knowledge Area field and "Nursing" in the Knowledge Area field. Inclusion criteria considered theses or dissertations in the Nursing field, conducted in the Brazilian context, and defended between the years 2020 and 2022. Works that did not provide an abstract or did not have COVID-19 as the research theme were excluded. The temporal delimitation spanned from the beginning of the COVID-19 pandemic until the end of 2022.

The initial search yielded 1624 results, of which 626 were associated with the broad knowledge area of "Health Sciences." Among these, 137 were linked to the knowledge area of "Nursing." Nine were excluded for not providing abstract data, and 46 for not featuring COVID-19 as the study's topic. Thus, a final sample of 82 theses and dissertations was obtained.

The selected works were organized into a data

matrix using Microsoft® Office Excel®, containing the following variables: defense year, federative unit, region, institution, author, study design, methodological approach, objective, method, study setting, research participants, data collection, data analysis, and results/conclusions.

The study's characterization variables were analyzed using descriptive statistics. The textual material from the results/conclusions of the studies was processed with the assistance of *Analyses Multidimensionnelles de Textes et de Questionnaires* (IRAMUTEQ®) version 0.7 alpha 2. The corpus was created by combining excerpts from results and conclusions of abstracts from the selected works, organized in a file in Open Office®.

The material was reviewed by a second researcher to eliminate possible typing or spelling errors and to standardize acronyms and similar terms. The following terms were standardized: Unified Health System; Nursing Process; Work Process; Intensive Care Center/Intensive Care Unit; Mental Health; Chronic Diseases; Personal Protective Equipment; Contingency Plan; and Diabetes Mellitus.

Descending Hierarchical Classification (DHC) was used for the analysis. The DHC utilized 80.05% of text segments (Sts), which are text fragments of approximately three to five lines, delimited by semantic similarity by the software.

For the analysis of classes, adjectives, nouns, verbs, and forms not recognized by the IRAMUTEQ® dictionary were included. The occurrences considered in the DHC analysis showed statistically significant values ($p < 0.05$). Subsequently, data analysis and interpretation, synthesis, and discussion of the results were carried out.

Ethical aspects related to authorship and referencing of the works were respected. Approval from the Research Ethics Committee was not necessary as it involved public material available in open access.

Results

Out of the 82 selected works, 72 (87.8%) were

dissertations, and 10 (12.2%) were theses. The predominant defense year was 2021. The regions with the highest amount of studies were the Southeast and South. The studies were mostly cross-sectional, with a quantitative approach. Hospitals were the main investigated setting, and the majority of research participants were nursing professionals and nurses. Studies' detailed characterization is presented in Table 1.

Table 1 – Characterization of Brazilian theses and dissertations in the nursing field on the COVID-19 topic, defended between 2020 and 2022. Florianópolis, SC, Brazil, 2022

Variables	n (%)
Defense Year	
2020	2 (2.4)
2021	77 (93.9)
2022	3 (3.7)
Region	
South	27 (32.9)
Southeast	28 (34.1)
Northeast	20 (24.4)
Midwest	7 (8.6)
North	0
Institution	
Universidade Federal de Santa Catarina	7 (8.5)
Universidade Federal do Rio Grande	6 (7.3)
Universidade Federal do Estado do Rio de Janeiro	5 (6.1)
Fundação Universidade Federal do Piauí	4 (4.9)
Universidade Federal da Bahia	4 (4.9)
Universidade Federal de Alfnas	4 (4.9)
Others	52 (63.4)
Methodological approach	
Quantitative	28 (34.1)
Qualitative	27 (32.9)
Mixed	9 (11)
Literature review	2 (2.4)
Not specified	16 (19.5)
Method	
Cross-sectional	30 (36.6)
Descriptive/exploratory	25 (30.5)
Literature review	7 (8.5)
Methodological	3 (3.7)
Case study	2 (2.4)
Not specified	5 (6.1)
Others	10 (12.2)
Study setting	
Hospitals	20 (24.4)
Primary Health Care	11 (13.4)
Universities	8 (9.8)
Municipal Health Care Network	6 (7.3)
State Health Care Network	4 (4.9)
National Health Care Network	4 (4.9)
COVID-19 Screening Center	2 (2.4)
Others	9 (11)
Not specified	18 (22)
Research Participants	
Nursing Professionals	14 (17.1)
Nurses	9 (11)
Health professionals	9 (11)
Patients	9 (11)
Nursing Students	4 (4.9)
University students	2 (2.4)
Older Adults	2 (2.4)
Nurses and Primary Health Care Managers	1 (1.2)
Managers	1 (1.2)
Health Care Managers and Professionals	1 (1.2)
Nursing Professionals and Patients	1 (1.2)
Others	16 (19.5)
Not specified	13 (15.9)

In the analysis of textual data, the overall corpus consisted of 396 text segments, from which 14,268 occurrences emerged, comprising 3,016 distinct words. The classical textual statistics analysis highlighted the most frequent terms: COVID-19; health; professional; pandemic; Nursing; care, and patient.

In the analyzed material, six semantic classes were identified assisted by IRAMUTEQ®, categorized as follows: 1) Nursing professionals’ mental health. 2) Pregnant and postpartum women health. 3) Adaptation of care for people in vulnerable situations. 4) Hu-

man being and being a nurse: living and facing the virus. 5) Nursing work reorganization, and 6) COVID-19 repercussions for nursing. The CHD analysis highlighted the relationship between Classes 5 and 4, which are linked to Class 6. There was also a relationship between Classes 2 and 3, and all are permeated by Class 1, as shown in Figure 1 and separately described in the sequence.

Figure 2 presents the main results of each class, highlighting the most frequent terms and a qualitative synthesis.

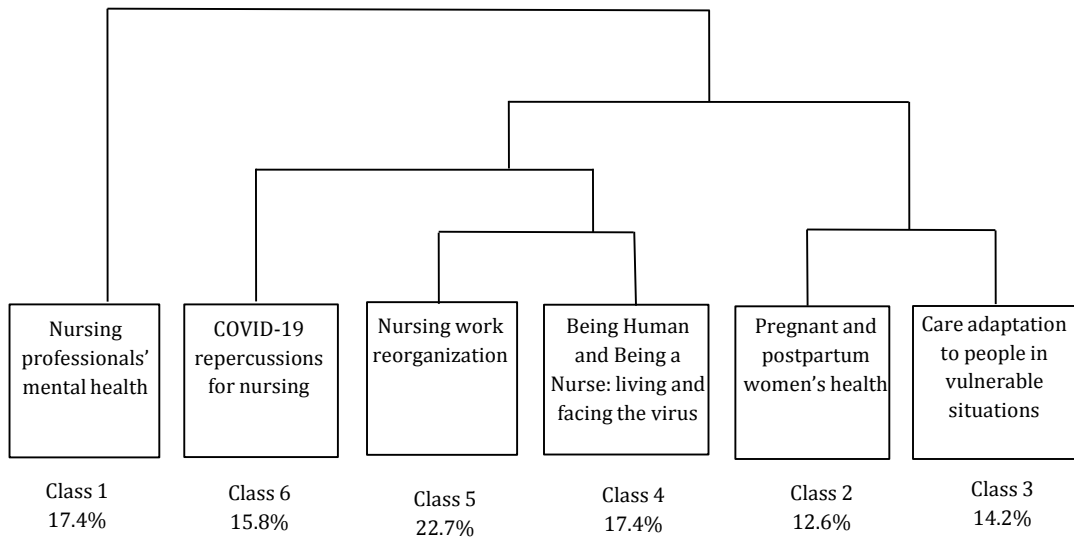


Figure 1 – Descending Hierarchical Classification conducted in IRAMUTEQ® software on the topic of COVID-19 in Brazilian nursing theses and dissertations. Florianópolis, SC, Brazil, 2023

Class	Most Relevant Terms	Synthesis
1) Nursing Professionals' Mental Health	Stress, Level, Variable, Significant, High, Association, Anxiety	This class reveals findings that characterize the work nurses environment, emphasizing mainly the psychological and behavioral aspects during the pandemic. Additionally, it encompasses all the others, intertwining with the unique meaning of each one.
2) Pregnant and Postpartum Women's Health	Maternal and Breastfeeding	Highlights the concern of the studies with pregnant and postpartum women, as well as the newborns' health. This class showed an association with Class 3.
3) Adaptation of Care for People in Vulnerable Situations	Phenomenon, Black, Analysis, Recognize, Experience, and Uncertainty	The productions brought the sense of the need to reinforce the reach of information and guarantee access to appropriate care for all population groups, considering their particularities.
4) Being Human and Being a Nurse: Living and Facing the Virus	Virus, Immunodeficiency, Living, Human, and Coping	This class interfaces with Class 5, in association with the impact that the pandemic had on the work of nurses, as well as in their personal life routine.
5) Nursing Work Reorganization	Personal Protective Equipment, Nurse, Identity, User, and Routine	This category presented the highest frequency of text segments, highlighting the imperative work processes reorganization by the entire nursing team and health institutions in the face of the onset of the new coronavirus pandemic.
6) COVID-19 Repercussions for Nursing	Positive, Work, SARS-CoV-2, Receive, Adherence, Act, and Suspected.	Class 6 is associated with Classes 4 and 5, as it also presents issues related to the daily work of nurses.

Figure 2 – Description of Classes, Most Frequent Terms, and Results Synthesis using the IRAMUTEQ® software, on the COVID-19 topic in Brazilian nursing theses and dissertations. Florianópolis, SC, Brazil, 2023

Discussion

The year 2021 had the highest concentration of studies defended on the topic (96.25%).

In 2020, when the pandemic was declared, the universal guidance was social isolation to contain the virus spreading, and for this reason, many services, including the education sector, were paralyzed for some time until the gradual resumption of activities. Despite this, research with a focus on COVID-19 was encouraged and developed throughout 2020 and continued, with numerous defenses in the year 2021, justifying the findings of this study regarding the publication period⁽⁸⁾.

Regarding the regions and institutions that developed the highest number of studies, federal universities in the South (33.75%) and Southeast (32.5%) regions stand out, as the majority of the country's scientific production is already developed in these regions due to their strong concentration of *stricto sensu* courses (Research Course)⁽⁹⁾. There was proportionality in the number of studies with a quantitative approach (35%) and a qualitative approach (32.5%), reflecting the commitment of Nursing to scientific production. This involves using numerical data to approach reality while also focusing on elucidating the dimensions of phenomena, meanings, and contexts through qualitative research⁽¹⁰⁾.

Mixed-method studies accounted for 11.25% of the total, indicating a growth in the use of this methodological approach, allowing a deeper understanding of the study object from different perspectives⁽¹¹⁾. Regarding research methods, there was a predominance of observational, exploratory, and descriptive studies, as in this type of research, researchers systematically and standardizedly collect and record information without interfering with the studied phenomenon⁽¹²⁾.

The cross-sectional studies were predominant. This design is more commonly used in initial research, characterized by a snapshot in time where the researcher collects and records data at a single moment or within a short period⁽¹²⁾. Another important finding

relates to the adopted data collection method, with data predominantly collected through electronic forms and online interviews, driven by the restrictions on physical contact during this period.

Despite the prevalence of mild to moderate acute manifestations of COVID-19, the rapid spread of the virus led many people to contract the disease simultaneously. As a consequence, the percentage of severe cases became significantly higher in absolute numbers than the health care capacity offered to the population by health services, resulting in a system collapse, especially in the hospital setting⁽¹³⁾. Given the concerns arising from this situation, a predominance of studies set in the hospital environment was identified, corroborating findings from a bibliometric study of online publications on COVID-19⁽¹⁴⁾.

In textual analysis, the research demonstrated a relationship of subordination and interdependence among all identified semantic classes, portraying the reality experienced by nursing professionals during the COVID-19 pandemic in various fields of action and on various topics.

Class 1 encompassed all other classes, highlighting the professional commitment of Nursing to meet the care demand of individuals affected by COVID-19, which had the major consequence of the premature loss of many professionals. The physical and, especially, mental strain, coupled with vulnerability and the risk of infection, stood out, evoking the fear of dying or contaminating others.

A study on nurses' working conditions showed that, at certain moments, professionals experienced feelings of dehumanization at work, being seen as mere numbers or machines, with performance pressure contributing to increased physical and emotional exhaustion⁽¹⁵⁾. Nursing students also faced uncertainties about their professional capacity, completion of studies, fear, and loneliness, leading to an increase in university dropout rates⁽¹⁶⁾.

Within the broader scope of findings, classes 2 and 3 emerged with interdependence, as they encompassed nursing care in very specific areas that require

individualized attention. Class 2 brought to light the significant concern for the pregnant patients group, postpartum women, and newborns, who are naturally immunosuppressed and, therefore, susceptible to COVID-19 infection. Moreover, many uncertainties loomed over the daily lives of professionals regarding how to preserve and ensure these individuals' health condition and to what extent current care practices were still indicated when they were affected by the disease⁽¹⁷⁾.

The task force of scholars on the subject was able to guide the continued encouragement of breastfeeding and normal delivery, as well as maintaining the bond between the mother and child as a positive factor in coping with the disease, even if restricted due to necessary physical precautions to prevent contagion.

The manifestation of COVID-19 during pregnancy showed no association with gestational complications, nor did it affect the indication of the delivery method, vertical transmission, or breastfeeding⁽¹⁸⁾. Because this information was not known from the beginning of the pandemic, there was a greater concern among professionals regarding these individuals.

Nursing, in turn, plays a crucial role in women's health care, especially in the areas of obstetrics and breastfeeding. Therefore, the importance of focusing on and being concerned about assistance within this theme is understood.

On the other hand, class 3 sought to highlight the necessary changes in the routine of care for vulnerable groups, including the aged people, individuals with chronic diseases, immunosuppressed people, immigrants, the low-income population, and those with a low level of education, among others. This concern is evident in the contingency plans for coping with COVID-19 in Brazil, where there is a need for the articulation of the Unified Health System to reduce inequalities and ensure equity⁽¹⁹⁾.

The pandemic emphasized the health care system weaknesses providing assistance to less privileged groups⁽²⁰⁾. The findings of this study highlight Nursing

challenges and concerns creating strategies to maintain the health care networks activities, contributing to the strengthening of safe and comprehensive care and facilitating the continuity of care/treatment. The use of technological tools and digital platforms also served to create support networks, self-awareness, self-responsibility, and resilience to help adapt to the challenges imposed by the pandemic.

Professional development activities were also adapted to promote continuous education, especially for those working on the front lines. Nursing schools adopted remote learning, leading to educators engaging in new teaching strategies to ensure the continuity of education, research, and extension programs⁽²¹⁾.

The shortage of professionals in the market was exacerbated, and measures to accelerate training were implemented by the government. It is important to highlight possible consequences of this situation for nursing students, as the lack of practical experience could compromise clinical and ethical decision-making⁽²²⁾.

Classes 4 and 5 proved to be interdependent, highlighting, in different contexts, the redefinition of Nursing work. Both are subordinated to Class 6, which broadly encompasses how the disease has impacted the *status quo* of nursing.

Class 4 highlighted the professionals' experience, not only in their workplace but also how the entire situation impacted their personal and family life. In addition to the overload and uncertainties, there was also emotional exhaustion related to the fear of contaminating family members, as well as a sense of vulnerability to their own contamination and fear of death.

Many professionals isolated themselves from their families, especially those who lived with individuals belonging to high-risk groups. This contributed to an increase in mental distress cases, along with personal issues of vulnerability and exposure. Psychological distress became a prevalent condition in the work process, requiring professionals to adopt coping strategies to work on the front lines against COVID-19⁽²³⁾.

Discussions about policies and coping strate-

gies that consider the emotional support needs of professionals and their families are crucial. This is because improving working conditions and maintaining the nursing workforce directly impact productivity and the quality of care provided. There are still many gaps regarding post-COVID-19 sequelae in nursing professionals, as well as the post-pandemic care projects that will apply to these professionals⁽²⁴⁾.

Class 5 reinforced the need to adapt Nursing care routines and work environments. Actions to reorganize services in operational, structural, and management dimensions were highlighted, emphasizing the difficulty of overcoming existing demands in services⁽²⁵⁾. These problems were exacerbated by overcrowding, a shortage of professionals, work overload, lack of supplies, and lack of professionals' preparation, intensifying the situations experienced by nurses.

In this context, nurses used knowledge, skills, and innovations in caregiving, contributing to the reconstruction of their professional identity and strengthening their role in society. For the general population, awareness-raising and reorganization of primary care were recorded to promote health education for contagion control, addressing the challenge that the lack of knowledge about the new disease represented⁽²⁶⁾.

The challenges related to the availability of personal protective equipment were a major dilemma because it was necessary to ensure the protection of health care teams despite the scarcity of these resources, emphasizing the essential need for proper material resources management to maintain the human resources supply within institutions⁽²⁷⁾. In this context, in addition to conducting ongoing education actions for professionals with an emphasis on biosafety, nurses, as leaders, needed to reorganize routines, training, and protocols, assuming their role as important care managers and, at the same time, protagonists of direct patient care in chaotic environments^(24,28).

Finally, class 6,, which incorporated and gave rise to all semantic classes from the studies, portrays the main core of what constituted Nursing Research

on COVID-19 during this period: mental health. Most studies, at some point, highlighted issues related to the mental health strain on professionals working on the front lines of the pandemic. Findings point to high levels of stress, anxiety, Burnout Syndrome, sleep disorders, post-traumatic stress, minor psychiatric disorders, among others.

In addition to the challenges imposed by precarious working conditions, the lack of support from society regarding protective measures was a factor that generated discouragement and contributed to the sense of helplessness among frontline professionals⁽¹⁵⁾. The pandemic had two faces for nursing professionals. In one aspect, it provided greater visibility and professional pride, demonstrating the importance and grandeur of the nursing team's work for the population⁽²⁴⁾. On the other hand, the physical and emotional consequences persist, with a significant number of nursing workers falling ill and dying from the disease, anxiety and depression related to the fear of personal illness and family members' illnesses, as well as the physical workload and psychological pressure that the pandemic imposed globally⁽²⁸⁾.

The professionals' perceptions in dealing with COVID-19 were related to fear, prejudice, and loneliness situations experienced by those working on the front lines compared to other people in their lives. However, resilience was a protective factor for professionals facing mental health challenges generated by the pandemic. It is necessary for health care institutions to adopt strategies and tools to support the resilience development⁽²⁹⁻³⁰⁾.

Based on the findings, there was a lack of studies related to the care management and nursing leadership during the pandemic, as well as topics related to the future perspectives of the profession post-pandemic. The primary concerns remained focused on research related to nurses clinical practice and the investigation of the practice environment in its various aspects. It was noted that the role of nurse management was essential and strong during this period, especially as it was carried out almost simul-

taneously with new processes implementation, even without suitable conditions for strategic planning⁽³¹⁾.

It is noteworthy that leadership competence was highly necessary in professional practice but was not emphasized as a subject of academic studies. Therefore, this bibliometric research revealed the experience in management and leadership of teams and institutions by nurses during the pandemic as a knowledge gap for subsequent academic investigations. Studies with this focus could contribute as historical records of nursing management, in addition to supporting analyses and discussions on strategies that can be qualified and incorporated into the nurse's managerial role.

Study limitations

Among the limitations of this study, it is mentioned that the analysis was based solely on the data contained in the abstracts of Brazilian theses and dissertations with a specific time frame. This may have limited the depth of the findings compared to an analysis of full texts.

Contributions to practice

This study emphasizes its contributions to the nursing field, particularly the identification of relevant themes and the promotion of visibility to knowledge production in the context of the COVID-19 pandemic in Brazilian nursing. Additionally, it highlights gaps and research questions as suggestions for future studies.

Conclusion

This research has made it possible to highlight the commitment of nursing to academic research on COVID-19, even in the face of social isolation measures. Studies focusing on the working conditions of nursing professionals, mental health, and care flows reorganization were prevalent. There are still many

uncertainties about the consequences that the disease will leave, whether in the organic, mental, or structural aspects of our society. The research promotion and the search for evidence in the face of what has been experienced are undoubtedly the best ways to prepare for situations like those witnessed in recent years.

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Authors' contributions

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Manuscript writing or relevant critical review of intellectual content: Fusari MEK, Peiter CC, Lanzoni GMM, Santos JLG.

Final approval of the version to be published and Agreement to take responsibility for ensuring that all aspects of the manuscript related to accuracy or integrity of any of its parts are investigated and resolved appropriately: Fusari MEK, Andrade GB, Lemos M, Peiter CC, Lanzoni GMM, Santos JLG.

References

1. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*. 2020;395(10223):497-506. doi: [http://doi.org/10.1016/s0140-6736\(20\)30183-5](http://doi.org/10.1016/s0140-6736(20)30183-5)
2. Ministério da Saúde (BR). COVID-19 no Brasil [Internet]. 2022 [cited Aug 20, 2023]. Available from: https://infoms.saude.gov.br/extensions/COVID-19_html/COVID-19_html.html
3. Wang H, Wang S, Yu K. COVID-19 infection epidemic: the medical management strategies in Heilongjiang Province, China. *Crit Care*. 2020;24(1):107.

- doi: <http://doi.org/10.1186/s13054-020-2832-8>
4. Cassiani SH, Jimenez EF, Ferreira AU, Peduzzi M, Hernández CL. La situación de la enfermería en el mundo y la Región de las Américas en tiempos de la pandemia de COVID-19. *Rev Panam Salud Pública*. 2020;44:e64. doi: <https://dx.doi.org/10.26633/rpsp.2020.64>
 5. Pereira SCA, Ribeiro OMPL, Fassarella CS, Santos EJJF. The impact of nursing practice environments on patient safety culture in primary health care - a scoping review protocol. *BJGP Open*. 2023;7(3):BJGPO.2023.0032. doi: <https://dx.doi.org/10.3399/BJGPO.2023.0032>
 6. Guedes VLS. A bibliometria e a gestão da informação e do conhecimento científico e tecnológico: uma revisão da literatura. Pontodeacesso [Internet]. 2022 [cited Aug 20, 2023];6(2):74-109. Available from: <https://periodicos.ufba.br/index.php/revistaici/article/view/5695/4591>
 7. Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES). Catálogo de Teses e Dissertações [Internet]. 2023 [cited Dec 14, 2023]. Available from: <https://catalogodeteses.capes.gov.br/catalogo-teses/#/>
 8. Peiter CC, Santos JL, Lanzoni GM, Mello AL, Costa MF, Andrade SR. Healthcare networks: trends of knowledge development in Brazil. *Esc Anna Nery*. 2019;23(1):e20180214. doi: <http://dx.doi.org/10.1590/2177-9465-ean-2018-0214>
 9. Cirani CB, Campanario MA, Silva HH. A evolução do ensino da pós-graduação senso estrito no Brasil: análise exploratória e proposições para pesquisa. *Rev Aval Educ Super*. 2020;20(1):163-87. doi: <https://dx.doi.org/10.590/S1414-40772015000500011>
 10. Egy EY. The place of qualitative in nursing research. *Acta Paul Enferm*. 2020;33:e-EDT20200002. doi: <https://dx.doi.org/10.37689/acta-ape/2020edt0002>
 11. Prates CG, Caregnato RCA, Magalhães AMM, Dal Pai D, Urbanetto JS, Moura GMSS. Patient safety culture in the perception of health professionals: a mixed methods research study. *Rev Gaúcha Enferm*. 2021;42:e20200418. doi: <https://doi.org/10.1590/1983-1447.2021.20200418>
 12. Maier C, Thatcher JB, Grover V, Dwivedi YK. Cross-sectional research: a critical perspective, use cases, and recommendations for IS research. *Int J Inform Manag*. 2023;70:102625. doi: <https://doi.org/10.1016/j.ijinfomgt.2023.102625>
 13. Wu Z, McGoogan JM. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China. *JAMA*. 2020;323(13):1239-42. doi: <https://dx.doi.org/10.1001/jama.2020.2648>
 14. Costa IC, Sampaio RS, Souza FA, Dias TK, Costa BH, Chaves EC. Scientific production in online journals about the new coronavirus (COVID-19): bibliometric research. *Texto Contexto Enferm*. 2020;29:e20200235. doi: <https://dx.doi.org/10.1590/1980-265x-tce-2020-0235>
 15. Galon T, Navarro VL, Gonçalves AM. Nurses' perception regarding their health and working conditions during the COVID-19 pandemic. *Rev Bras Saúde Ocup*. 2022;47:ecov2. doi: <https://doi.org/10.1590/2317-6369/15821pt2022v47ecov2>
 16. Lira ALBC, Adamy EK, Teixeira E, Silva FV. Nursing education: challenges and perspectives in times of the COVID-19 pandemic. *Rev Bras Enferm*. 2020;73:e20200683. doi: <https://dx.doi.org/10.1590/0034-7167-2020-0683>
 17. Wang CL, Liu YY, Wu CH, Wang CY, Wang CH, Long NG, et al. Impact of COVID-19 on pregnancy. *Int J Med Sci*. 2021;18(3):763-7. doi: <http://dx.doi.org/10.7150/ijms.49923>
 18. Elshafeey F, Magdi R, Hindi N, Elshebiny M, Farrag N, Mahdy S, et al. A systematic scoping review of COVID-19 during pregnancy and childbirth. *Int J Gynecol Obstet*. 2020;150(1):47-52. doi: <http://dx.doi.org/10.1002/ijgo.13182>
 19. Santos TB, Andrade LR, Vieira SL, Duarte JA, Martins JS, Rosado LB, et al. Hospital contingency in coping with COVID-19 in Brazil: governmental problems and alternatives *Cienc Saúde Coletiva*. 2021;26(4):1407-18. doi: <https://doi.org/10.1590/1413-81232021264.43472020>
 20. Barbosa DA, Schirmer J, Balsanelli AP. Nursing in the context of the COVID-19 pandemic: what lessons have we learned?. *Rev Bras Enferm*. 2022;75(6):e750601. doi: <https://dx.doi.org/10.1590/0034-7167.2022750601>
 21. Cunha IC, Erdmann AL, Balsanelli AP, Cunha CL, Lopes Neto D, Ximenes Neto FR, et al. Ações e estratégias de escolas e departamentos de enferma-

- gem de universidades federais frente à COVID-19. *Enferm Foco* 2020;11(1):48-57. doi: <http://dx.doi.org/10.21675/2357-707x.2020.v11.n1.esp.4115>
22. Peres MA, Brandão MA, Aperibense PG, Lacerda AC, Paim L, Ferreira MA. FACING UP COVID-19: what cannot be relativized in nursing higher education. *Texto Contexto Enferm.* 2020;29:e20200236. doi:<https://dx.doi.org/10.1590/1980-265x-tce-2020-0236>
23. Squires A, Clark-Cutaia M, Henderson MD, Arneson G, Resnik P. "Should I stay or should I go?" Nurses' perspectives about working during the Covid-19 pandemic's first wave in the United States: a summative content analysis combined with topic modeling. *Int J Nurs Stud.* 2022;131:104256. doi: <https://doi.org/10.1016/j.ijnurstu.2022.104256>
24. Carvalho ESS, Vale PRLF, Pinto KA, Ferreira SL. Contents related to nursing professionals during the COVID-19 pandemic on the Youtube™ platform. *Rev Bras Enferm.* 2021;74:e20200581. doi: <http://doi.org/10.1590/0034-7167-2020-0581>
25. Yasin JCM, Barlem ELD, Ruivo ÉDG, Andrade GB, Silveira RS, Bremer LCF. Ethical issues experienced by nurses during covid-19: relationship with moral distress. *Texto Contexto Enferm.* 2023;32:e20230072. doi: <https://doi.org/10.1590/1980-265X-TCE-2023-0072en>
26. Püschel VA, Fhon JR, Nogueira LS, Poveda VB, Oliveira LB, Salvetti MG, et al. Factors associated with infection and hospitalization due to COVID-19 in Nursing professionals: a cross-sectional study. *Rev Latino-Am Enfermagem.* 2022;30:e3571. doi: <https://doi.org/10.1590/1518-8345.5593.3571>
27. Quadros A, Fernandes MT, Araujo BR, Caregnato RC. Desafios da enfermagem brasileira no combate da COVID-19. *Enferm Foco.* 2020;1(11):78-83. doi: <https://doi.org/10.21675/2357-707X.2020.v11.n1.ESP.3748>
28. Souza TP, Rossetto M, Almeida CPB. Impact of COVID-19 in nursing professionals: systematic review and meta-analysis. *Trab Educ Saúde.* 2022;20:e00069176. doi: <http://dx.doi.org/10.1590/1981-7746-ojs00069>
29. Cunha SGS, Deodato S, Brito MJ. Ethical problems experienced by nurse managers in the pandemic of COVID-19 in a university hospital. *Rev Rene.* 2023;24:e81737. doi: <https://dx.doi.org/10.15253/2175-6783.20232481737>
30. Nasi C, Marcheti PM, Oliveira E, Rezio LA, Zerbetto SR, Queiroz AM, et al. Meanings of nursing professionals' experiences in the context of the pandemic of COVID-19. *Rev Rene.* 2021;22:e67933. doi: <https://doi.org/10.15253/2175-6783.20212267933>
31. Bitencourt JV, Meschial WC, Frizon F, Biffi P, Souza JB, Maestri E. Nurse's protagonism in structuring and managing a specific unit for COVID-19. *Texto Contexto Enferm.* 2020;29:e20200213. doi: <https://dx.doi.org/10.1590/1980-265X-TCE-2020-0213>



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