

ORIGINAL ARTICLE

Analysis of theses and dissertations on hand hygiene in Brazil: a bibliometric study

Análise de teses e dissertações sobre higienização das mãos no Brasil: estudo bibliométrico

Análisis de tesis y disertaciones sobre higiene de manos en Brasil: un estudio bibliométrico

Adriely de Abreu Varoto¹ ORCID 0000-0002-4143-6834

Fabiana Guerra Pimenta² ORCID 0000-0002-1433-9668

Anna Klara Sá Teles Rocha Alves¹ ORCID 0000-0003-3453-3975

Hoberdan Oliveira Pereira³ ORCID 0000-0002-7290-3677

André Luiz Silva Alvim¹ ORCID 0000-0001-6119-6762

¹*Universidade Federal de Juiz de Fora, MG, Brazil.*

²*Centro Universitário UNA, Contagem, MG, Brazil.*

³*Hospital Odilon Behrens, Belo Horizonte, MG, Brazil.*

Email: andrealvim1@ufjf.br

Address: Rua José Lourenço Kelmer, s/n, São Pedro, Juiz de Fora, MG, Brasil.

Submitted: 26/07/2023

Accepted: 21/08/2023

ABSTRACT

Background and Objectives: in relation to hand hygiene, it is important to highlight the absence of documented investigations in the scientific literature that address the analysis of theses and dissertations related to this practice. This gap justifies the carrying out of this study, which aims to strengthen and expand the knowledge base related to this topic, highlighting its relevance in the areas of teaching, research, extension and innovation. The objective was to analyze theses and dissertations published in *stricto sensu* graduate programs on hand hygiene practices in Brazil. **Methods:** this is a bibliometric study conducted in the Coordination for the Improvement of Higher Education Personnel Theses and Dissertation Catalog, considering the period from 2013 to 2022. **Results:** thirty-one (100%) studies were included, 21 (67.7%) dissertations and six (19.3%) theses. Nursing was the main area of assessment (65.6%), which mainly analyzed adherence to hand hygiene practices (29.0%), health education (12.9%), and carried out microbiological analysis of hands (12.9%). Only three publications used theoretical bases as the central core of the research. **Conclusion:** this study allowed us to identify the need to study the topic at doctoral level, using theoretical bases that will provide the conceptual and philosophical foundation for clinical practice.

Keywords: *Hand Disinfection. Patient Safety. Nursing. Health Education. Health Personnel.*

Justificativa e Objetivos: em relação à higienização das mãos, é importante ressaltar a ausência de investigações documentadas na literatura científica que abordem a análise de teses e dissertações relacionadas a essa prática. Tal lacuna justifica a realização deste estudo, que visa fortalecer e expandir a base de conhecimento relativa a essa temática, destacando sua relevância nos domínios do ensino, da pesquisa, extensão e inovação. Objetivou-se analisar teses e dissertações publicadas em programas de pós-graduação *stricto sensu* sobre as práticas de higienização das mãos no Brasil. **Métodos:** estudo bibliométrico, realizado no Catálogo de Teses e Dissertações da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior, considerando o período de 2013 a 2022. **Resultados:** foram incluídos 31 (100%) estudos, sendo 21 (67,7%) dissertações e seis (19,3%) teses. A enfermagem foi a principal área de avaliação (65,6%) que analisou, principalmente, a adesão às práticas de higiene das mãos (29,0%), a educação em saúde (12,9%), e realizou análise microbiológica das mãos (12,9%). Apenas três publicações utilizaram bases teóricas como núcleo central da pesquisa. **Conclusão:** este estudo permitiu identificar a necessidade de estudar a temática em nível de doutorado, utilizando bases teóricas que fornecerão o alicerce conceitual e filosófico para a prática clínica.

Descritores: *Desinfecção das Mãos. Segurança do Paciente. Enfermagem. Educação em Saúde. Pessoal de Saúde.*

RESUMEN

Justificación y Objetivos: en relación a la higiene de manos, es importante resaltar la ausencia de investigaciones documentadas en la literatura científica que aborden el análisis de tesis y disertaciones relacionadas con esta práctica. Este vacío justifica la realización de este estudio, que tiene como objetivo fortalecer y ampliar la base de conocimientos relacionados con este tema, destacando su relevancia en las áreas de docencia, investigación, extensión e innovación. El objetivo fue analizar tesis y disertaciones publicadas en programas de posgrado estricto sensu sobre prácticas de higiene de manos en Brasil. **Métodos:** estudio bibliométrico realizado en el Catálogo de Tesis y Disertaciones de la Coordinación de Perfeccionamiento del Personal de Educación Superior, considerando el período de 2013 a 2022. **Resultados:** se incluyeron 31 (100%) estudios, 21 (67,7%) disertaciones y seis (19,3%) tesis. Enfermería fue la principal área de evaluación (65,6%), que analizó principalmente la adherencia a las prácticas de higiene de manos (29,0%), educación para la salud (12,9%) y realizó análisis microbiológicos de las manos (12,9%). Sólo tres publicaciones utilizaron bases teóricas como núcleo central de la investigación. **Conclusión:** este estudio identificó la necesidad de estudiar el tema a nivel de doctorado, utilizando marcos teóricos que proporcionarán la base conceptual y filosófica para la práctica clínica.

Palabras clave: *Desinfección de las Manos. Seguridad del Paciente. Enfermería. Educación en Salud. Personal de Salud.*

INTRODUCTION

Hand hygiene (HH) is a necessary measure for the prevention and control of healthcare-associated infections (HAIs). At different levels of health care, professionals, patients, companions and visitors become major players of safe care, which requires the correct HH technique to reduce cross-transmission of microorganisms.¹

By analyzing research that focused on HH practices, whether using alcoholic preparation and/or liquid soap, it was possible to identify some common trends and

approaches.¹⁻³ Its importance and need for awareness among those involved directly reflects the quality of care based on patient safety.² However, studies warn that failures and errors in the application of HH influence the effectiveness of the technique, promoting indicators of low adherence to the five moments recommended by the World Health Organization (WHO).³

Factors such as unavailability of inputs, inadequate physical structure, low commitment to patient safety culture, ineffective preparation of protocols and work overload have an influence on low adherence to HH.⁴⁻⁵ Furthermore, it correlates with health professionals' ineffective knowledge, reinforcing the gaps in clinical practice in relation to health education promotion and risk perception.⁶⁻⁷

The information available in the literature on HH generally focuses on assessing health professionals' knowledge, attitude, and adherence, and the impact of educational and awareness interventions.^{1,3-5-7} In another overview, it is worth highlighting that articles available in scientific journals may originate from theses and dissertations developed by *stricto sensu* graduate programs at master's and doctoral level.⁸

Researchers state that thinking about training and research in higher education institutions (HEIs) reflects the transformation of science and society, contributing to the resolution of a community problem.⁸ In the context of HH, it is noteworthy that there are no published studies in the literature that analyze theses and dissertations on HH practices, justifying their elaboration to strengthen and expand production indicators on the subject and their relevance in teaching aspects, research, extension and innovation. It should be added that this preventive measure is an essential pillar in promoting safe clinical practices, contributing to the quality of care and the construction of a safer and more reliable environment. In this regard, the following guiding question for this research arises: how are HH practices studied and described in theses and dissertations in Brazil?

The objective, therefore, was to analyze theses and dissertations published in *stricto sensu* graduate programs on HH practices in Brazil.

METHOD

Design

This is a bibliometric, descriptive study, of a quantitative nature. This methodology involves assessing knowledge production in a given field of research. Through statistical analysis, bibliometrics promotes top-down review of works, checking publication patterns on a given subject to facilitate decision-making.⁹

Setting studied and Population

The setting for this research involved the Coordination for the Improvement of Higher Education Personnel (CAPES - *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*) Thesis and Dissertation Catalog, available at: <https://catalogodeteses.capes.gov.br/catalogo-teses/>.

Selection criteria

Theses and dissertations published in the major area of knowledge “health sciences” from 2013 to 2022 were included. The temporal delimitation was chosen because HH has been widely disseminated in Brazil, from 2013 onwards, as the fifth international goal for patient safety.¹⁰ Research that was not available for consultation was excluded.

Data source

The methodological path was defined through a protocol drawn up by the researchers themselves to collect data and collect information. Recording and extracting information involved reading all studies in full. The data was fed into a spreadsheet created in Microsoft Excel 2021[®] using the following variables: type (academic, professional master’s degree or thesis); year of publication; advisor); areas of knowledge, assessment and concentration; program name; name of the HEI; and keywords or descriptors. Furthermore, data were collected on the study design and nature, the place where the research was carried out, the subjects involved and theme specification.

Data collection

Data collection was carried out between the fourth and ninth of February 2023, through the CAPES Catalog of Theses and Dissertations with the following keywords “Hand Hygiene” and “Hand Disinfection”. The insertion of other terms was avoided so as not to limit the searches, making the search more comprehensive. We chose to use quotation marks and the Boolean operator “OR”. Initially, 155 studies available on the platform were identified, and after selecting the filters “Year (2013 to 2022)”, “Major area of knowledge (Health Sciences)”, in addition to reading the title and abstract carried out by two researchers, independently, 32 potential publications remained. A dissertation was excluded due to restricted access to the text, and a search was carried out on the Sucupira Platform and Google Scholar in an attempt to recover the document, but the publication was not found. Therefore, a final sample of 31 theses and dissertations was constituted.

Data analysis

Data were analyzed using descriptive statistics to present absolute and relative values using the IBM[®] Statistical Package for the Social Sciences (SPSS) version 21. The temporal distribution graph of theses and dissertations was prepared in Microsoft Excel 2021[®].

Ethical aspects

As this was a bibliometric study that did not involve human beings, an opinion from the Research Ethics Committee (REC) was not necessary.

RESULTS

The majority of research was carried out at academic master's level (46.9%), professional master's degree (34.4%) and doctoral level (19.8%), with nursing as the main area of knowledge and assessment (65.6 %) (Table 1). A total of 24 (100%) areas of concentration were identified, highlighting health and nursing (9.7%), nursing in human health care (6.5%), health sciences (6.5%), nursing practice (6.5%) and nursing care processes (6.5%). There was a homogeneous distribution in relation to thesis and dissertation advisors.

Table 1. Description of theses and dissertations published by *stricto sensu* graduate programs. Juiz de Fora, MG, Brazil, 2023 (n=31)

Variables	n	Percentage
Type		
Academic master's degree	15	46.9
Professional master's degree	11	34.4
Doctoral degree	06	18.8
Knowledge area		
Nursing	21	65.6
Public health	03	9.4
Medical clinic	03	9.4
Collective health	02	6.3
Surgery	01	3.1
Medicine	01	3.1
Infectious and parasitic diseases	01	3.1
Assessment area		
Nursing	21	65.6
Public health	05	15.6
Medicine I	04	12.5
Medicine II	01	3.1
Medicine III	01	3.1

In relation to temporal distribution, the year 2016 accounted for the largest number of dissertation publications. In the assessment of theses, 2013 stood out, while in 2014, 2016, 2017, 2021 and 2022, no studies were found (Figure 1).

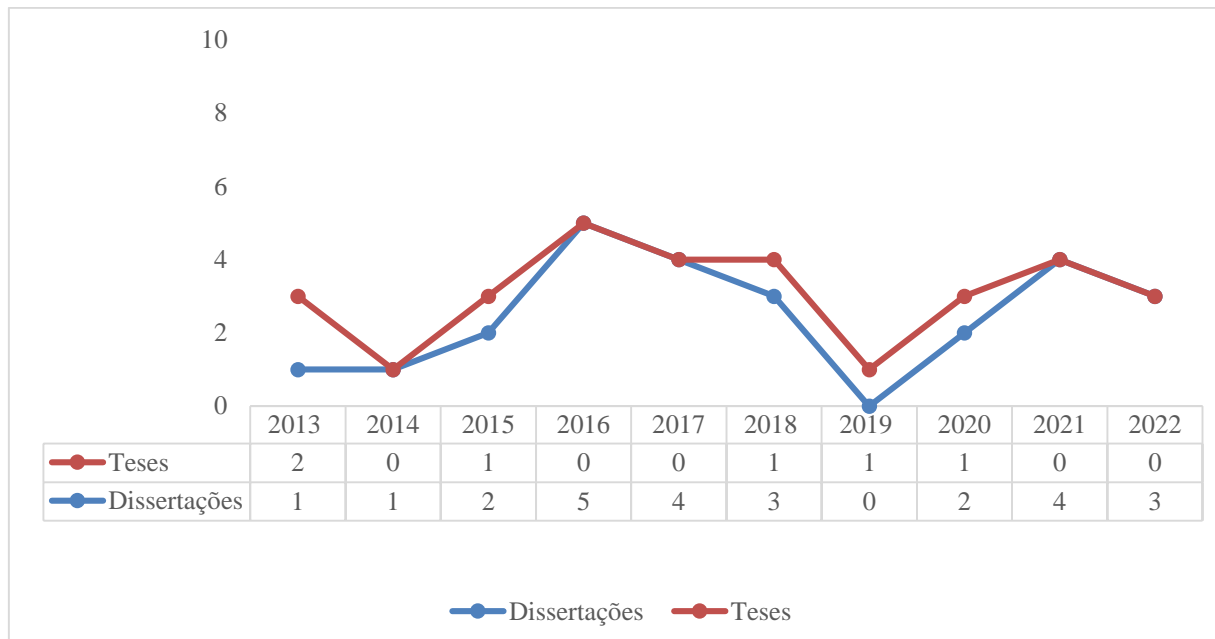


Figure 1. Temporal distribution of theses and dissertations included in this study between 2013 and 2022. Juiz de Fora, MG, Brazil, 2023 (n=31)

TRANSLATION = theses, dissertations

In relation to the HEIs that carried out studies on HH practices, the *Pontifícia Universidade Católica de Goiás* (9.7%) and the *Universidade Estadual Paulista Júlio de Mesquita Filho* (9.7%) stood out. However, it is worth noting that the topic presented a low frequency among 15 institutions, with only one study, respectively, found between 2013 and 2022.

The highest frequency of descriptive (25.8%) and quasi-experimental (19.4%), quantitative studies (74.2%) was identified, which were carried out in health sectors (74.2%). The majority involved health professionals (71.0%) whose object of study included adherence to HH (29.0%), health education (12.9%) and microbiological analysis of hands (12.9%) (Table 2). Only three studies used theoretical bases in theses and dissertations, namely, Social Representation Theory, Health Promotion Model and Grounded Theory.

Table 2. Description of design, nature, location, subject and theme of theses and dissertations published by *stricto sensu* graduate programs. Juiz de Fora, MG, Brazil, 2023

Variables	n	Percentage
Study design		
Descriptive	08	25.8
Quasi-experimental	06	19.4
Cross-sectional	04	12.9
Descriptive and analytical	04	12.9

Methodological	02	6.5
Intervention	02	6.5
Ecological	01	3.2
Prospective (longitudinal)	01	3.2
Systematic review	01	3.2
Case-control	01	3.2
Integrative review	01	3.2
Nature		
Quantitative	23	74.2
Qualitative	06	19.4
Not applicable	02	6.5
Local		
Care sectors (hospital)	23	74.2
Data base	02	6.5
Support sectors	01	3.2
Long-term care institution	01	3.2
Materials and sterilization center	01	3.2
Monitoring system	01	3.2
Emergency Medical Care Service	01	3.2
Urban households	01	3.2
Subjects involved		
Health professionals*	22	71.0
Health professionals and patients	02	6.5
Patients	02	6.5
Companion caregivers	02	6.5
Health professionals and students	01	3.2
Health and administrative professionals	01	3.2
Household residents	01	3.2
Theme specification		
Adhesion to hand hygiene	09	29.0
Health education	04	12.9
Microbiological analysis of hands	04	12.9
Multimodal strategy	03	9.7
Knowledge and attitude	02	6.5
Physical resources, materials and adhesion	02	6.5
Practices and narratives	01	3.2
Monitoring system for hand hygiene	01	3.2
Instrument validity	01	3.2
Academic and professional training	01	3.2
Nursing team's interactional experience	01	3.2
Alcoholic preparation consumption	01	3.2
Health care costs	01	3.2

Note: *Nurses, physiotherapists, doctors and nursing technicians.

In the assessment of the descriptors and/or keywords identified in theses and dissertations, 112 (100%) compound terms were identified, highlighting those that were most repeated, such as HH (18.7%), patient safety (7.1%), health professionals or health personnel (5.4%), HAIs or nosocomial infection (5.4%) and infection control (3.6%).

DISCUSSION

It was observed that the production of studies on HH is carried out mainly at the master's degree, whether academic or professional, and, shortly thereafter, at the doctoral level.¹¹ It is worth mentioning that, in 2021, the master's degree concentrated the largest contingent of students enrolled within graduate programs, and the health sciences course ranked third, among all areas of knowledge, with the highest number of enrollments.¹¹⁻¹²

HH is an essential practice in the care context, but its implementation can be improved in several aspects, including health professionals' adherence, available infrastructure, education, cultural approach and the recognition that it is just one part of a set of infection prevention measures. One of the main criticisms of HH in the care context is the lack of consistency in adherence by health professionals. Although it is widely recognized as an essential measure to prevent the spread of infections, studies show that the HH adherence rate among health professionals is not always as high as it should be.^{1-2,6-7}

In this study, another highlight refers to the large volume of productions carried out in the area of nursing knowledge and assessment. The areas of concentration were directly related to health care, inherent to the practice of caring for the profession. The data corroborated two other bibliometric reviews on patient safety in different hospital contexts, with the majority of researchers being nurses.¹³⁻¹⁴

Regarding the place of publication, when universities are assessed individually, the *Pontifícia Universidade Católica de Goiás* and the *Universidade Estadual Paulista Júlio de Mesquita Filho* stand out, with the largest number of publications on the topic. However, when assessing the region of Brazil where the universities are located, the largest volume of theses and dissertations was attributed to the southeast. Similar data was observed in another study that highlighted 66% of publications carried out in the same region,¹⁴ which can be justified by the fact that it receives several investments from public and private authorities in the country, hosts a large part of public educational institutes as well as groups a large part of Brazilian hospitals.

The year 2016 accounted for the highest number of dissertation publications, with a subsequent decline. This fact can be attributed, according to researchers, to Derek de Solla

Price's Law (Prince's Law), which assessed the general growth of scientific publications in a specific field of study.¹⁵ In this case, the growth of a research topic goes through four phases: a period in which publications are carried out by precursors, in which a small number of scientists begin to publish in a new field; exponential growth, which promotes an increasing number of researchers attracted by the different aspects of the topic that still need to be investigated; a consolidation and stabilization of the scope of knowledge; and a decrease in the number of publications.¹⁶

It is worth adding that this study showed that the most used keywords and/or descriptors were "Hand Hygiene", "Patient Safety" and "Health Personnel". These results follow the temporal trajectory of the Brazilian National Patient Safety Program dissemination and implementation, starting in 2013, by the Ministry of Health, to meet the goals established by the WHO. Thus, the search for new studies was consolidated, seeking different methodological approaches.¹⁷

Regarding the methodological design used between the theses and dissertations, the descriptive and quasi-experimental approach stands out, whose target audience was health professionals and the main object of study was adherence to HH. The choice of method was justified by the objective defined by the researchers to describe processes and practices, classifying and interpreting them to facilitate the understanding of the realities encountered during the research.¹⁸ In this context, it is worth adding that HH can be seen as a routine task that health professionals perform automatically, without really understanding the importance of the act. This can lead to complacency and inadequate execution of the technique. A more educational and oriented approach to understanding the principles behind HH could be more effective.

Most of the studies contributed to the achievement of an important objective of public higher education, which is to transfer knowledge between academia-professors/students-community and professionals.¹⁹ With regard to health professionals, the impact of the activities developed by graduate programs and, subsequently, the translation of knowledge are measured by the occurrence of improvements in care practices.²⁰ It is inferred that professionals understand not only the importance of this measure, but also the correct techniques to carry it out. Lack of adequate training can compromise patient safety and quality of care.

Of the total number of theses and dissertations included in this research, only three used theoretical bases that are consolidated as a theoretical and philosophical foundation for the theme. The first was the Social Representation Theory, which aims to understand and explain how common knowledge is constructed as well as understand the practices associated with it.

It contemplates the concepts that are linked to each other to form a social identity, guide conduct and give meaning to the reality experienced.²¹ In this case, the applicability of this theory revolves around understanding what people know about HH, how they carry out this preventive measure or how they see the practice in their daily lives.

Another theory used was Nola Pender's Health Promotion Model, which can be understood as a method that assists in the implementation and assessment of actions associated with health promotion through the analysis of individuals' experiences, knowledge about a given subject and behaviors adopted to improve actions. Correlating with the present study, this theory aims to understand how people perform HH and how such behavior can be improved.²²

The third and final theoretical basis found in the works is the Grounded Theory, which describes the possibility of generating explanations through understanding individuals' actions when faced with problems and situations experienced. It is possible to understand how people deal with problem situations arising from the HH process and what mechanisms are used to face them.²³

This study presented some limitations that must be considered. The first concerns the non-inclusion of other keywords. Moreover, only the CAPES Thesis and Dissertation Catalog is used, justified because it is considered the official publication and dissemination vehicle for *stricto sensu* graduate programs in Brazil. To mitigate this aspect, the researchers carried out repeated searches to obtain consensus regarding the number of studies included in this research.

In this context, it was possible to analyze theses and dissertations published *in stricto sensu* graduate programs on HH practices. There is a need to study the topic in the doctoral course, using theoretical bases to guide the construction of knowledge in the area of nursing. Most studies were descriptive and quasi-experimental, reinforcing the need for new research, with different methodological approaches and higher levels of evidence to strengthen the quality of scientific production. The importance of nursing is also highlighted with regard to scientific production on HH as well as patient safety. The profession remains at the forefront of care and needs to master various technologies, in addition to adding, at all times, new theoretical-practical knowledge to support its work process.

REFERENCES

1. Hillier MD. Using effective hand hygiene practice to prevent and control infection. *Nurs Stand.* 2020; 35(5):45-50. <https://doi.org/10.7748/ns.2020.e11552>
2. Cawthorne KR, Cooke RPD. Innovative technologies for hand hygiene monitoring are urgently needed in the fight against COVID-19. *J Hosp Infect.* 2020; 105(2):362-363. <https://doi.org/10.1016/j.jhin.2020.04.005>

3. Chang NC, Jones M, Reisinger HS, et al. Hand hygiene and the sequence of patient care. *Infect Control Hosp Epidemiol*. 2022; 43(2):218-223. <https://doi.org/10.1017/ice.2021.82>
4. Oliveira ES, Cardoso MVLML, Bezerra CM, et al. Taxa de higienização das mãos em uma Unidade de Terapia Intensiva Neonatal. *Acta paul enferm*. 2022; 35:eAPE00497. <https://doi.org/10.37689/acta-ape/2022AO00497>
5. Glowicz JB, Landon E, Sickbert-Bennett EE, Aiello AE, deKay K, Hoffmann KK, et al. SHEA/IDSA/APIC Practice Recommendation: Strategies to prevent healthcare-associated infections through hand hygiene: 2022 Update. *Infect Control Hosp Epidemiol*. 2023 Mar;44(3):355-376. doi: <https://doi.org/10.1017/ice.2022.304>
6. Labrague LJ, McEnroe-Petitte DM, van de Mortel T, et al. A systematic review on hand hygiene knowledge and compliance in student nurses. *Int Nurs Rev*. 2018; 65(3):336-48. <https://doi.org/10.1111/inr.12410>
7. Santos C, Brandão E, Ortiz-Sanchez M, et al. Estratégias para a adesão à higienização das mãos. *Rev Enf UFPE on line*. 2019; 13(3): 763-72. <https://periodicos.ufpe.br/revistas/revistaenfermagem/article/view/238374>
8. Freitas MFQ de, Souza J. Pensar a formação e a pesquisa na pós-graduação stricto sensu. *Educ rev*. 2018; 34(71):9-18. <https://doi.org/10.1590/0104-4060.62549>
9. Guimarães AJR, Bezerra CA. Gestão de dados: uma abordagem bibliométrica. *Perspect ciênc inf*. 2019; 24(4):171-86. <https://doi.org/10.1590/1981-5344/4192>
10. Pulzi Júnior SA, Araujo CAS, Ferreira da Silva M. Leadership to promote patient safety culture in public hospitals managed by social health organizations. *Leadersh Health Serv (Bradf Engl)*. 2023. doi: <https://doi.org/10.1108/LHS-03-2023-0017>
11. Almeida ARLP, Oliveira FA, Marinho CLA, et al. Enfermagem em cuidados paliativos nas dissertações e teses no Brasil: um estudo bibliométrico. *Rev Min Enferm*. 2019; 23:e-1188. <http://dx.doi.org/10.5935/1415-2762.20190036>
12. Coordenação de Aperfeiçoamento de Pessoal de Ensino Superior. Mapa da Pós-Graduação no Brasil 2021. GEOCAPS. <https://geocapes.capes.gov.br/geocapes/>
13. Ferreira de Oliveira BK, Arouca da Silva M, Carvalho A da S, et al. Segurança do paciente em unidade de terapia intensiva: estudo bibliométrico. *REAenf*. 2020; 3:e2724. <https://doi.org/10.25248/reaenf.e2724.2020>
14. Galatti EL, Panzetti TMN. Patient Safety in the Surgical Center: Bibliometric Study. *RSD*. 2022; 11(6):e34111629265. <https://doi.org/10.33448/rsd-v11i6.29265>
15. Van NK, Li J, Reniers G, et al. Bibliometric analysis of safety culture research. *Safety Science*. 2018; 108:248-58. <https://doi.org/10.1016/j.ssci.2017.08.011>
16. Dabi Y, Darrigues L, Katsahian S, et al. Publication Trends in Bariatric Surgery: a Bibliometric Study. *Obes Surg*. 2016; 26(11):2691-99. <https://doi.org/10.1007/s11695-016-2160-x>
17. Anvisa. Programa nacional de prevenção e controle de infecções relacionadas à assistência à saúde (PNPCIRAS) 2021 a 2025. Brasília, 2021. https://www.gov.br/anvisa/pt-br/centraisdeconteudo/publicacoes/servicosdesaude/publicacoes/pnpciras_2021_2025.pdf
18. Fernandes AM, Bruchêz A, d'Ávila AAF, et al. Metodologia de pesquisa de dissertações sobre inovação: análise bibliométrica. *Desafio Online*. 2018; 6(1). <https://desafioonline.ufms.br/index.php/deson/article/view/3539>

19. Olson A, Oudshoorn A. Knowledge translation: A concept analysis. Nurs Forum. 2020;55(2):157-164. <https://doi.org/10.1111/nuf.12410>
20. Crossetti MGO, Góes MGO. Translação do conhecimento: um desafio para prática de enfermagem. Rev Gaúcha Enferm. 2017; 38:e74266. <https://doi.org/10.1590/1983-1447.2017.02.74266>
21. Alves HLC, Lima G de S, Albuquerque GA, et al. Uso das teorias de enfermagem nas teses brasileiras: estudo bibliométrico. Cogitare Enferm. 2021; 26:e71743. <https://doi.org/10.5380/ce.v26i0.71743>
22. Cardoso RB, Caldas CP, Brandão MAG, et al. Healthy aging promotion model referenced in Nola Pender's theory. Rev Bras Enferm. 2022; 75(1):e20200373. <https://doi.org/10.1590/0034-7167-2020-0373>
23. Santos JLG, Cunha KS, Adamy EK, et al. Data analysis: comparison between the different methodological perspectives of the Grounded Theory. Rev Esc Enferm USP. 2018 ; 52:e03303. <http://dx.doi.org/10.1590/S1980-220X2017021803303>

Authors' contributions:

Adriely de Abreu Varoto, Fabiana Guerra Pimenta, André Luiz Silva Alvim contributed to article conception, design, data analysis and manuscript writing.

Adriely de Abreu Varoto, Fabiana Guerra Pimenta, Anna Klara Sá Teles Rocha Alves, Hoberdan Oliveira Pereira, André Luiz Silva Alvim contributed to data analysis and interpretation.

All authors approved the final version to be published and are responsible for all aspects of the work, including ensuring its accuracy and integrity.