

SCIENTIFIC PRODUCTION ON CARDIORESPIRATORY ARREST IN BRAZILIAN NURSING JOURNALS: BIBLIOMETRIC STUDY

PRODUÇÃO CIENTÍFICA SOBRE PARADA CARDIORRESPIRATÓRIA NOS PERIÓDICOS BRASILEIROS DE ENFERMAGEM: ESTUDO BIBLIOMÉTRICO

PRODUCCIÓN CIENTÍFICA SOBRE PARO CARDIORRESPIRATORIO EN REVISTAS BRASILEÑAS DE ENFERMERÍA: ESTUDIO BIBLIOMÉTRICO

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Objective: to analyze the scientific production on cardiorespiratory arrest in Brazilian nursing journals. **Method:** bibliometric study carried out through electronic access to the websites of the 14 Brazilian nursing journals, classified in the Sucupira Platform, for analysis of articles published between 2010 and 2019. **Results:** 18,266 articles were analyzed, of which 50 were selected to integrate the sample. It was possible to observe that 50% of the articles were published in Qualis A extract journals and 80% of the productions were derived from the Southeast Region. Regarding the type of study, 54% were descriptive and 64% quantitative. Regarding the most investigated theme, 28% portrayed the knowledge of nurses and 22% contemplated nursing training on cardiorespiratory arrest. **Conclusion:** the scientific production of Brazilian journals showed a predominance of articles published in Qualis A journals, from the Southeast Region, descriptive, quantitative, which predominantly investigated the knowledge and training of professionals.

Descriptors: Cardiorespiratory Arrest. Nursing Research. Nursing. Bibliometrics. Nursing Care.

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Objetivo: analisar a produção científica sobre parada cardiorrespiratória nos periódicos brasileiros de enfermagem. Método: estudo bibliométrico realizado mediante acesso eletrônico aos websites das 14 revistas brasileiras de enfermagem, classificadas na Plataforma Sucupira, para análise dos artigos publicados entre 2010 e 2019. Resultados: foram analisados 18.266 artigos, dos quais 50 foram selecionados para integrar a amostra. Foi possível observar que 50% dos artigos foram publicados em periódicos de extrato Qualis A e 80% das produções foram derivadas da Região Sudeste. Em relação ao tipo de estudo, 54% foram descritivos e 64% quantitativos. Quanto à temática mais investigada, 28% retrataram o conhecimento dos enfermeiros e 22% contemplaram o treinamento da enfermagem sobre parada cardiorrespiratória. Conclusão: a produção científica dos periódicos brasileiros demonstrou predominância de artigos publicados em periódico Qualis A, oriundos da Região Sudeste, do tipo descritivo, quantitativos, que investigaram predominantemente o conhecimento e o treinamento dos profissionais.

Descritores: Parada Cardiorrespiratória. Pesquisa em Enfermagem. Enfermagem. Bibliometria. Assistência de Enfermagem.

Objetivo: analizar la producción científica sobre paro cardiorrespiratorio en revistas brasileñas de enfermería. Método: estudio bibliométrico realizado a través del acceso electrónico a los sitios de las 14 revistas brasileñas de enfermería, clasificadas en la Plataforma Sucupira, para el análisis de artículos publicados entre 2010 y 2019. Resultados: se analizaron 18.266 artículos, de los cuales 50 fueron seleccionados para integrar la muestra. Fue posible observar que el 50% de los artículos fueron publicados en revistas de extracto Qualis A y el 80% de las producciones se derivaron de la Región Sureste. En cuanto al tipo de estudio, el 54% fueron descriptivos y 64% cuantitativos. En cuanto al tema más investigado, el 28% retrataron el conocimiento de las enfermeras y el 22% contemplaban la formación de enfermería en el paro cardiorrespiratorio. Conclusión: la producción científica de revistas brasileñas mostró un predominio de artículos publicados en la revista Qualis A, de la Región Sureste, descriptivos, cuantitativos, que investigaron predominantemente el conocimiento y la formación de los profesionales.

Descriptorios: Paro Cardiorrespiratorio. Investigación en Enfermería. Enfermería. Bibliometría. Atención de Enfermería.

Introduction

Cardiorespiratory Arrest (CRA) is the emergency condition in which the individual presents sudden interruption of cardiac pumping, being incompatible with life. This, in Brazil, affects about 200 thousand people per year, half of them in the hospital environment⁽¹⁾. This complication has the highest clinical priority, and requires the health team's ability recognize and provide adequate care⁽²⁾.

Among the multidisciplinary team, nurses have a relevant participation in CRA care, because they work at all health care levels and effectively participate in Cardiopulmonary Resuscitation (CPR), so that they need to be qualified and trained to perform the correct care⁽³⁾.

Qualification and training permeate the scientific basis, which corroborates Evidence-Based practice. Thus, the importance of scientific production about CRA is denoted, highlighting that the analysis of scientific productions already carried out is relevant, in order to know the

existing gaps, which can be contemplated in future scientific studies.

The dissemination of researches occurs through scientific journals, which, in Brazil, have grown in quantity in recent years, in various areas of knowledge⁽⁴⁾. Among the various types of journals, those that are linked to Nursing Stricto Sensu Postgraduate Programs tend to disseminate the research conducted by nurses and are important for this professional category.

Nursing researches have contributed to the connection between science and society, building partnerships, presenting scientific evidence and applying them in practice⁽⁵⁾. Given the transdisciplinary action, the relevance of nursing research is the result of the evolution of Nursing science and its clinical performance, centered on the patient and family, to improve the health of the population⁽⁶⁾. In this sense, the following question arises: What is the characterization of publications about

cardiorespiratory arrest in Brazilian nursing journals?

In view of the above, the objective was to analyze the scientific production on cardiorespiratory arrest in Brazilian nursing journals.

Method

A bibliometric study was carried out, which is configured as a technique for analyzing publications, which, through their characteristics, allow understanding the scientific scenario of a given subject and the gaps that can be addressed in future studies⁽⁷⁾.

Data collection was performed between December 2019 and January 2020, through electronic access to the websites of Brazilian nursing journals, registered and classified in the Sucupira Platform (belonging to the Ministry of Education, this platform stores the data of scientific productions of the Brazilian Stricto Sensu Postgraduate Programs, as well as disseminates the list of scientific journals).

Through virtual access to the Sucupira Platform, a complete list of journals was acquired, with subsequent access to the websites of 14 Brazilian nursing journals. In this access, each volume and edition was consulted, reading all the titles and abstracts of the published articles, to identify those addressing CRA.

The following inclusion criteria were adopted: having been published in a Brazilian nursing journal, having contemplated cardiorespiratory arrest and having been published between 2010 and 2019. This delimitation of time is justified to ensure an adequate number of studies, since the inclusion of many researches could jeopardize the method or introduce biases in the analytical phase. The analysis of the studies published in this period allowed analyzing the bibliometric indicators of the current production on the subject. The exclusion criterion adopted was the non-availability of electronic access.

The titles and abstracts of 18,266 articles were read, of which 18,216 did not address

Cardiorespiratory Arrest. Therefore, the study sample consisted of 50 productions. For the extraction of the data from the articles, an adapted instrument of bibliometric⁽⁸⁾ study was used, which contained variables about the year of publication, name of the journals in which they were published and their respective Qualis/CAPES, type of study, level of evidence (with seven levels)⁽⁹⁾, approach (quantitative or qualitative), subtheme of published studies, studied population, authors' institution of affiliation and degree, geographical origin of the studies and descriptors used. It is worth mentioning that the Qualis adopted for the characterization of the articles was the most recent, which was available in the Sucupira Platform at the time of data collection and analysis, corresponding to the four-year period from 2013 to 2016.

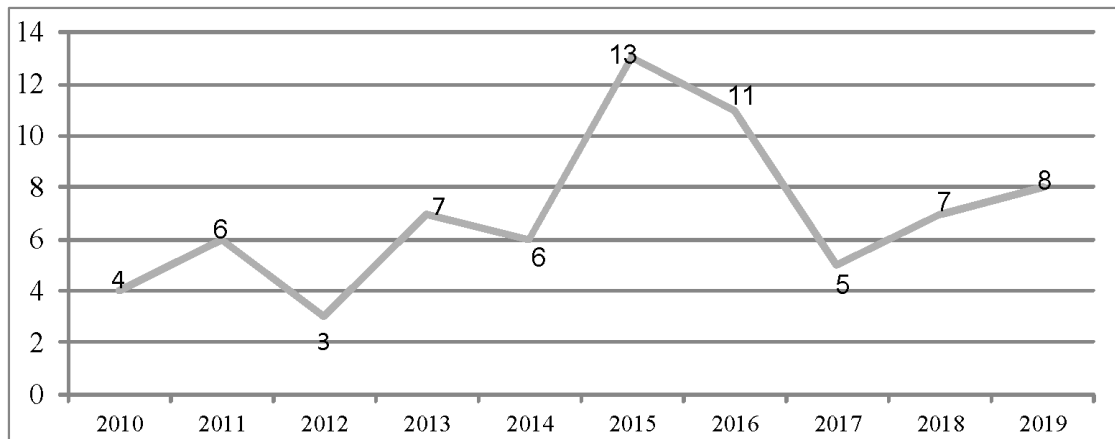
The analysis of the articles followed the three basic laws of the bibliometric study: Lotka's Law, applied in the relationship between the number of authors and the number of published articles, is related to the productivity of authors and presents the idea that some researchers publish a lot, while many authors publish little; Bradford's Law refers to journals whose articles have been published; and Zipf's Law, referring to the frequency count of words, was contemplated due to the measurement of the descriptors/key words used in the studies⁽⁷⁾.

The variables were tabulated in Excel 2013 software and analyzed by R software, through descriptive statistics. As this research addresses information from the public domain, there was no need for appreciation by the Research Ethics Committee (REC).

Results

In relation to the year in which the publications occurred, studies published between 2010 and 2019 were found and higher productions were observed in the years 2015 and 2016 (Graph1).

Graph 1 – Chronological distribution of publication of the articles. Pesqueira, Pernambuco, Brazil – 2020 (N=50)



Source: Created by the authors.

The number of publications per Bradford Zone was 16.66 articles, since the law states that each zone should contain 1/3 of the total publications found. Three publishing zones were established, in descending order, in which the journals that are in the areas in smaller quantity have a higher number of articles published.

The core zone was composed of the three journals that had more than four publications (Revista Latino-Americana de Enfermagem, Revista da Escola de Enfermagem da USP and Revista de Enfermagem UFPE Online). Zone two was composed of six journals that published two to four articles (Revista Brasileira de Enfermagem, Revista da Rede de Enfermagem

do Nordeste, Revista Mineira de Enfermagem, Revista Eletrônica de Enfermagem, Revista Científica de Enfermagem and Revista Uningá). Zone three was composed of five journals that published one article (ACTA Paulista de Enfermagem; Online Brazilian Nursing Journal; Cogitare; Revista Gaúcha de Enfermagem and Revista Saúde Santa Maria).

The 14 journals in which the articles were published belonged to five extracts of Qualis (A1, A2, B1, B2 and B4). Most articles (46%) were published in Qualis A magazines. Table 1 presents the classification of Qualis with the number of articles per journal.

Table 1 – Distribution of the published articles by journal. Pesqueira, Pernambuco, Brazil – 2020 (N=50) (continued)

Qualis	Journal	n (%)
A1	Revista Latino-Americana de Enfermagem	11 (22%)
A2	ACTA Paulista de Enfermagem	1 (2%)
A2	Revista Brasileira de Enfermagem	3 (6%)
A2	Revista da Escola de Enfermagem da USP	8 (16%)
B1	Online Brazilian Journal Nursing	1 (2%)
B1	Revista da Rede de Enfermagem do Nordeste	4 (8%)
B1	Revista Eletrônica de Enfermagem	2 (4%)
B1	Revista Mineira de Enfermagem	2 (4%)
B1	Revista Gaúcha de Enfermagem	1 (2%)
B1	Cogitare	1 (2%)
B2	Revista de Enfermagem UFPE Online	10 (20%)

Table 1 – Distribution of the published articles by journal. Pesqueira, Pernambuco, Brazil – 2020 (N=50) (conclusion)

Qualis	Journal	n (%)
B4	Revista Científica de Enfermagem	3 (6%)
B4	Revista Saúde (Santa Maria)	1 (2%)
B4	Revista Uningá	2 (4%)

Source: Created by the authors.

The predominant type of study was descriptive, present in 27 articles (54%). There were nine articles (18%) of integrative review. Four articles (8%) were experience reports, three (6%) were methodological studies, the case control, quasi-experimental and cohort studies were present in two articles (4%), each. One article (2%) corresponded to the systematic review.

Regarding the levels of evidence, 26 articles (52%) were identified at level 6; 6 (12%), at level 4; 2 (4%), at level 3; and, in 16 articles (32%),

the classification was not applied, because they were integrative reviews, methodological study and experience report.

The quantitative approach was present in 32 articles (64%), qualitative in 15 (30%) and quantitative-qualitative in 3 (6%).

Table 2 presents the subthemes addressed in the analyzed articles, with a predominance (28%) of articles on the theoretical knowledge of nursing professionals.

Table 2 – Distribution of the subthemes identified in the published studies. Pesqueira, Pernambuco, Brazil – 2020 (N=50)

Subtheme studied	n (%)
Nursing knowledge of Cardiorespiratory Arrest	14 (28%)
Training for nurses on Cardiorespiratory Arrest	11 (22%)
Care procedures in Cardiorespiratory Arrest	7 (14%)
Factors associated with survival in Cardiopulmonary Resuscitation	4 (8%)
Characterization of patients affected by Cardiorespiratory Arrest	4 (8%)
Construction and validation of instruments used in Cardiopulmonary Resuscitation	3 (6%)
Use of instruments that aid in Cardiopulmonary Resuscitation	3 (6%)
Knowledge of lay people about basic life support	2 (4%)
Identification and maneuvers of Cardiopulmonary Resuscitation in Basic Care	2 (4%)

Source: Created by the authors.

Regarding the studied population, 23 articles (46%) conducted researches with nurses; 17 (34%), with patients; 5 (10%), with nursing technicians; 4 (8%), with nursing students; 2 (4%), with drivers of the Mobile Emergency Care Service (SAMU); 2 (4%) with lay people/non-health professionals and 1 study (2%) conducted research with deaf students. It is noteworthy that the values cited go beyond the sample quantity of 50 articles, since some

articles investigated, concomitantly, more than one type of population.

Based on Lotka's Law, the list of authors was applied and 134 authors were identified in the 50 published articles. Most articles (26%) had six authors. The maximum number of seven authors was found in four articles (8%), and the lowest number of authors was found in one article (2%), which had an author. Table 3 presents in detail the number of authors in the articles.

Table 3 – Number of authors in the articles. Pesqueira, Pernambuco, Brazil – 2020 (N=50)

Number of authors	n (%)
One author	1 (2%)
Two authors	8 (16%)
Three authors	10 (20%)
Four authors	9 (18%)
Five authors	5 (10%)
Six authors	13 (26%)
Seven authors	4 (8%)

Source: Created by the authors.

Concerning the degree of the 134 authors, 65 (48.50%) were PhD; 30 (22.38%) were MSc; 17 (12.68%), graduates; 12 (8.95%) were students and 10 (7.46%) were specialists.

Regarding the institution of affiliation of the authors, 57 institutions were identified, distributed in 14 national states. In 17 articles (34%), the authors belonged to the same institution, while in 33 (66%), there were authors from different institutions. In 15 articles (30%),

there were 3 institutions of affiliation of the authors; in 12 articles (24%), 2 institutions; and in 6 articles (12%), 4 or more institutions.

In relation to the geographic distribution, Table 4 presents the locations of the authors' affiliation institutions, by state and region. The number presented in the Table exceeds the sample, since, of the 50 articles, 9 (18%) had authors from more than one state.

Table 4 – Geographical locations of the authors' affiliation institutions, by state and region. Pesqueira, Pernambuco, Brazil – 2020 (N=50)

Region/State	n (%)
Southeast	
São Paulo	30 (60%)
Minas Gerais	6 (12%)
Espírito Santo	3 (6%)
Rio de Janeiro	1 (2%)
Northeast	
Pernambuco	3 (6%)
Ceará	1 (2%)
Piauí	1 (2%)
Rio Grande do Norte	1 (2%)
Midwest	
Brasília	3 (6%)
Mato Grosso	1 (2%)
Mato Grosso do Sul	1 (2%)
South	
Paraná	3 (6%)
Rio Grande do Sul	1 (2%)
Santa Catarina	1 (2%)

Source: Created by the authors.

In 47 articles (94%), the presence of Brazilian authors was observed; in two articles (4%) there were authors from Spain; and in an article (2%), authors from Paraguay.

After applying Zipf's Law, 80 descriptors were found. Of these, 28 appeared each in 1 study, and 52 descriptors were present in more than 2 studies, each. The 5 most frequently descriptors in the articles were: "Cardiac Arrest", present in 38 articles (76%); "Cardiopulmonary resuscitation" in 36 (72%); "Nursing", in 12 articles (24%); "Emergency medical services", in 9 (18%) and "Emergency Nursing" in 8 articles (16%).

Based on the application of Zipf's Law, it was possible to build a list of the key words registered in the dissertations and theses. There were 3,745 forms (key words), with 1,329 occurrences. The most frequently key words were "Prenatal Care" with 197 (14.9%) occurrences, followed by "Pregnant Woman" with 134 (10%), "Pregnancy" with 125 (9.4%), "Gestation" with 96 (7.2%), "Prenatal" with 93 (7%), and "Nursing" with 76 (5.7%). The other 608 (45.8%) words included health problems such as syphilis, gestational diabetes mellitus, preeclampsia, obesity, depression, anxiety, anemia, Zika virus and toxoplasmosis.

Discussion

The increase in researches and publications in Nursing is a response to the growing Brazilian scientific expansion. This growth was driven by the increase in Postgraduate Programs in Nursing, whose offer increased by 42% of doctoral courses and 29% of academic master's courses, with a consequent increase in scientific production, which almost doubled in the 2010-2012 triennium⁽¹⁰⁾.

The growth in the offer of doctoral programs may justify the fact that most of the authors of the articles are PhD. The doctorate consists of a *Stricto Sensu* Postgraduate course, focused on training researchers⁽¹¹⁾. Thus, the increase in such courses, with scientific profile, contributes to the training of a greater number of PhD, who have a greater trend to conduct and publish research.

CRA-related publications in Brazilian nursing journals did not occur regularly over the years, with a higher number of publications in 2015. This irregularity was not found in a study that investigated articles about reflective practice in Korean Nursing⁽¹²⁾. These findings point to the need for further studies on the themes with few publications and irregular amount over the years, to contribute to the state of the art and evidence-based practice of Brazilian Nursing.

In relation to the journals in which the articles were published, there was a predominance of publications in journals classified by the Coordination for the Improvement of Higher Education Personnel (CAPES) with Qualis A. Since Qualis consists of the classification of scientific journals, based on factors such as periodicity, internationalization and impact factor⁽¹³⁾, it is relevant that articles on CRA are published in journals of greater Qualis, in order to have a greater range of scientific dissemination.

Regarding the type of study and level of evidence, most articles were descriptive, with evidence level 6. This result is similar to that found in a scope review on the retention of nurses from the United Kingdom, whose results indicate a predominance of descriptive articles⁽¹⁴⁾. Despite the contribution and relevance of descriptive studies to incorporate research results in clinical practice, there is need for financial and scientific investment in studies with a higher level of evidence (quasi-experimental, experimental and/or systematic reviews with meta-analysis), which scientifically base nursing behaviors, based on Brazilian particularities.

Concerning the methodological approach, there was a predominance of quantitative studies. This finding converges with that found in a bibliometric study whose results showed that most nursing dissertations and theses in Portugal, on palliative care, were also quantitative⁽¹⁵⁾. Therefore, it is pointed out the importance of quantitative investigation on CRA, so that statistical parameters enable the inference of information, such as frequencies, comparisons and associations between variables. However, given the subjective aspects involved

in CRA care, by the various actors involved in the process (victim, family members, witnesses, professionals), the relevance of conducting qualitative research is also highlighted.

In relation to the population and subthemes investigated in the articles, there was a predominance of studies on knowledge and training conducted with professionals. A bibliometric study, carried out in nursing dissertations and theses on the Mobile Emergency Care Service, also found a predominance of studies with professionals⁽¹⁶⁾. It is relevant that professional aspects, such as qualification, knowledge and occupational health, are the target of researches, because the integrality of the professional is a decisive factor in the quality of care and, therefore, in the survival and severity of sequelae. Nevertheless, it is relevant that researches on CRA include the other actors involved in the process of promotion, prevention, diagnosis, treatment and rehabilitation of CRA victims.

Moreover, researches on knowledge and training are important, given the need for professional qualification to treat CRA. However, it is pertinent that studies investigate important aspects for survival, related to procedures, nursing care and patient outcome, in addition to health education aimed at the lay population.

In relation to the institutional affiliation of the authors, most of the articles had authors from different institutions, which points to the scientific production carried out in an interinstitutional collaboration network. This fact is related to the increasing consolidation of nursing research groups, which have been on the rise since 2006 in the different health subareas⁽¹⁷⁾, which enables interaction between researchers and, therefore, the establishment of partnerships for scientific production.

The largest number of publications about CRA occurred in the Southeast Region. This reality was also found in a study that analyzed the dissertations and theses of nurses about the Intensive Care Unit (ICU)⁽¹⁸⁾. The predominance of the Southeast can be explained by its pioneering, in the concentration of higher

education institutions, with postgraduate programs and researchers. In this regard, when considering Brazil plurality, there is an urgent need for studies addressing the different regions of the country, so that the specific aspects of each of them can be the target of scientific research.

The descriptors found in the articles mostly pointed to the object of the study and addressed cardiorespiratory arrest. This finding differs from that found in a study on the Grounded Theory in Nursing articles, whose results showed predominance of the descriptor "Nursing", in order to mention/highlight not the object of the articles, but the profession⁽¹⁹⁾. In this context, the importance of the careful choice of descriptors is pointed out, in order to provide better dissemination of the findings of the studies, because the main descriptor facilitates the location of publications in journals and databases. Thus, it is imperative that there be balance in the number of descriptors that allude to the profession with descriptors that evoke the object studied or the specialty of nursing.

This study presents as a limitation the analyzed articles from specific Brazilian nursing journals, therefore, the results found may differ from the reality of studies published in health journals belonging to other professional categories or in international journals.

This study contributes to the analysis of the characterization of the scientific production available in Brazilian nursing journals on the subject, and allows nurses to identify existing gaps and to perform and replicate researches on cardiorespiratory arrest. In addition, this study enables the strengthening of the discussion on the subject in the academic environment and enables the search for interinstitutional, multiprofessional and interdisciplinary partnerships.

Conclusion

This study presented trends and gaps in nursing research related to cardiorespiratory arrest. The bibliometric indicators analyzed confirmed the predominance of articles published in a Qualis A journal, from the Southeast Region,

of the descriptive, quantitative type, which predominantly investigated the knowledge and training of professionals.

There is need for future studies to contemplate subjective aspects existing in CRA, through qualitative research. Furthermore, studies with a higher level of evidence (quasi-experimental, experimental and/or systematic reviews with meta-analysis) are necessary. As for the population investigated, more studies should focus on the various stakeholders involved in CRA assistance, such as the victim, family members, witnesses and multidisciplinary team. It is also noteworthy the relevance of conducting researches that include procedures, nursing care, patient outcome and health education aimed at the lay population.

Collaborations:

1 – conception, design, analysis and interpretation of data: Nelson Miguel Galindo Neto, Kilse Uyara Sitônio Costa Martins, Priscylla Myrelle das Neves Silva and Rute Xavier Silva;

2 – writing of the article and relevant critical review of the intellectual content: Nelson Miguel Galindo Neto, Kilse Uyara Sitônio Costa Martins, Priscylla Myrelle das Neves Silva, Rute Xavier Silva, Ana Carla Silva Alexandre and Guilherme Guarino de Moura Sá;

3 – final approval of the version to be published: Nelson Miguel Galindo Neto, Kilse Uyara Sitônio Costa Martins, Priscylla Myrelle das Neves Silva, Rute Xavier Silva, Ana Carla Silva Alexandre and Guilherme Guarino de Moura Sá.

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