



THE DELPHI METHOD IN RESEARCH IN THE FIELD OF NURSING: A BIBLIOMETRIC STUDY

A METODOLOGIA DELPHI EM PESQUISAS NA ÁREA DE ENFERMAGEM: UM ESTUDO BIBLIOMÉTRICO

EL MÉTODO DELPHI EN INVESTIGACIÓN EN EL ÁREA DE ENFERMERÍA: UN ESTUDIO BIBLIOMÉTRICO

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ABSTRACT

Objective: to characterize the scientific productions that used the Delphi method in nursing studies. **Method:** bibliometric review using Web of Science, PubMed, CINAHL, LILACS, and MEDLINE databases with the keywords "Nursing" and "Delphi technique" between 2013 and 2014. **Results:** 71 articles were selected, of which 75% had been published in English, with predominance in the Web of Science database, produced in Brazil, Australia and the United States. The keyword "Nursing" had the greatest occurrence (29.57%), followed by "Delphi technique" (19.71%). The category "teacher" prevailed among researchers (56.33%), followed by "graduate students" (18.30%). **Conclusion:** there was a trend of scientific production relating to academic centers focusing on obtaining consensus and research priorities. **Descriptors:** Bibliometrics; Delphi technique; Nursing.

RESUMO

Objetivo: caracterizar as produções científicas que utilizaram a metodologia Delphi em estudos de enfermagem. **Método:** revisão bibliométrica nas bases de dados Web of Science, PubMed, CINAHL, LILACS e MEDLINE, utilizando os descritores "Enfermagem" e "Técnica Delphi" entre 2014 e 2013. **Resultados:** selecionaram-se 71 artigos, dos quais 75% foram publicados em língua inglesa, com predomínio na base Web of Science, produzidos no Brasil, Austrália e Estados Unidos. O descritor "Nursing" (enfermagem) teve maior ocorrência (29,57%), seguido por *Delphi technique* (técnica Delphi) (19,71%). A categoria "docente" predominou entre os pesquisadores (56,33%), seguida de "alunos da pós-graduação" (18,30%). **Conclusão:** observou-se uma tendência da produção científica ligada a centros acadêmicos com foco na obtenção de consenso e prioridades de pesquisa. **Descritores:** Bibliometria; Técnica Delphi; Enfermagem.

RESUMEN

Objetivo: caracterizar las producciones científicas que utilizaron el método Delphi en los estudios de enfermería. **Método:** revisión bibliométrica en las bases de datos Web of Science, PubMed, CINAHL, LILACS y MEDLINE, usando los descriptores "Enfermería" y "Técnica Delphi" entre 2013 y 2014. **Resultados:** se seleccionaron 71 artículos, de los cuales el 75% había sido publicado en inglés, con predominio en la base de datos Web of Science, producidos en Brasil, Australia y Estados Unidos. El descriptor "Nursing" (enfermería) tuvo la mayor ocurrencia (29,57%), seguido por *Delphi technique* (técnica Delphi) (19,71%). La categoría "docente" prevaleció entre los investigadores (56,33%), seguida por "estudiantes de posgrado" (18,30%). **Conclusión:** se observó una tendencia de producción científica relacionada con centros académicos, centrada en la obtención de consenso y prioridades de investigación. **Descriptores:** Bibliometría; Técnica Delphi; Enfermería.

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INTRODUCTION

Scientific research is one of the pillars of any profession. It produces knowledge that supports the professional practice and meets social demands. Research in the field of health use knowledge from the biological, exact, and social sciences. Methodological issues and research techniques are a challenge for nursing studies.¹

The analysis of scientific production contributes to knowledge of topics of common interest and those that had not aroused the same attention in the scientific community. The production of new research contributes to address the deficiencies, to know the profile of nursing publications and professional improvement.²

The Delphi technique was developed to achieve an agreement on a given topic in present times or anticipate the probability of future events by means of systematic research on experts' findings in a certain field. The flexibility of the method allows its use in a large number of studies, in several areas of knowledge, and in different organizations.^{1,3} The Delphi technique was originally developed by the RAND Corporation in the 1950s. The purpose was to eliminate personal interactions between strategists in the decision-making process of the Cold War, becoming highly popular in health research due to its flexibility in data handling, efficiency in decision making, and estimates of future scenarios.⁴⁻⁶

The Delphi technique is based on successive questionnaires applied to a group of professionals specialized in the field under study. The process is repeated until a consensus previously established by the researcher is reached.^{1,7} This operation contributes to scientific development, which leads to the need of studying and assessing the activities of production and communication of knowledge. Bibliometrics arises in response to this need. It is defined as a quantitative and statistical technique used to measure the levels of production and dissemination of scientific knowledge.^{8,9}

The assessment of knowledge production using bibliometric techniques highlights the topics addressed, the goals, and research designs, contributing to scientific advancement in the field of nursing, revealing the consolidation of studies that have already used this method. The goal of the present study is to assess the scientific production of nursing studies that have used the Delphi

technique found in national and international databases.

METHOD

This is a quantitative and retrospective bibliographical study conducted through bibliometric analysis, which is a technique that allows retrieving, studying and assessing citations in order to construct indicators of scientific production. The results allow assessing the scientific production of individuals, fields of knowledge, and countries.¹⁰

The search was carried out in the following databases: MEDLINE (Medical Literature Analysis and Retrieval System Online); LILACS (Latin America and Caribbean Health Sciences); CINAHL (Cumulative Index to Nursing and Allied Health Literature); Web of Science; and PubMed (Database resources of the National Center for Biotechnology Information).

The research was conducted in the abovementioned databases using the keywords "Delphi technique" and "Nursing" and the combination of keywords in Portuguese, Spanish and English with proper syntax of each database. The criteria for inclusion of studies included scientific articles conducted using the Delphi technique in the field of nursing, published between 2004 and 2013. Data collection was carried out on 2nd April 2014.

The references found were assessed using a form with the following items: author; title; country; database; year; abstract; and e-mail address. The articles that met the criteria for inclusion were assessed in their entirety. We performed descriptive statistics operations, frequency counting, and we also designed tables and figures. In the process of retrieving information, non-standard fields were filled manually, thus enabling the treatment of selected variables.

RESULTS

We found 516 articles, of which 317 were excluded because they were duplicated, and 128 because they did not meet the inclusion criteria. The sample of the study included 71 articles for assessment. Table 1 illustrates the results relating to the year of publication, database, and country of origin of the selected articles.

Table 1. Percentage distribution and frequencies of the articles included in the study taking into consideration the year of publication, database, and country of origin. Uberaba, MG, 2014.

Year of publication	Number	Percentage
Variable		
2004	3	4.2%
2005	3	4.2%
2006	5	7,0%
2007	6	8.5%
2008	4	5.6%
2009	7	9.9%
2010	10	14.1%
2011	9	12.7%
2012	13	18.3%
2013	11	15.5%
Total	71	100%
Databases		
LILACS	11	15.5%
PubMed	22	31%
CINAHL	4	5.6%
Web of Science	25	35.2%
MEDLINE	9	12.7%
Total	71	100%
Country of origin		
Brazil	16	22.5%
United Kingdom	8	11.3%
Australia	9	12.7%
United Stated	9	12.7%
New Zealand	3	4.2%
Spain	3	4.2%
Portugal	3	4.2%
Sweden	5	7.0%
Other	15	21.1%
Total	71	100%

Web of Science database had the largest index of publications. It is a multidisciplinary platform that allows studying the production in any field of knowledge. PubMed, which is specialized in medical sciences, ranked in second place. Such platforms have global scope, constituting a set of multidisciplinary journals with a significant portion of the international scientific publications.^{11,2}

LILACS ranked third with respect to the number of articles. It is a cooperative product of the Virtual Health Library (VHL), with coverage in the countries of Latin America and the Caribbean. MEDLINE, with 16.36% of the studies, is an international database of

the biomedical area. It is produced by the National Library of Medicine (USA). CINAHL, although specific to the nursing field, had only 5.45% of the studies.¹³

Figure 1 illustrates the institutional affiliation of the first researcher of the publications included in the present study and the nature of the institutions in which the studies were conducted. This criterion was used because usually the order of citation of the authors follows the order of relevance to the article.

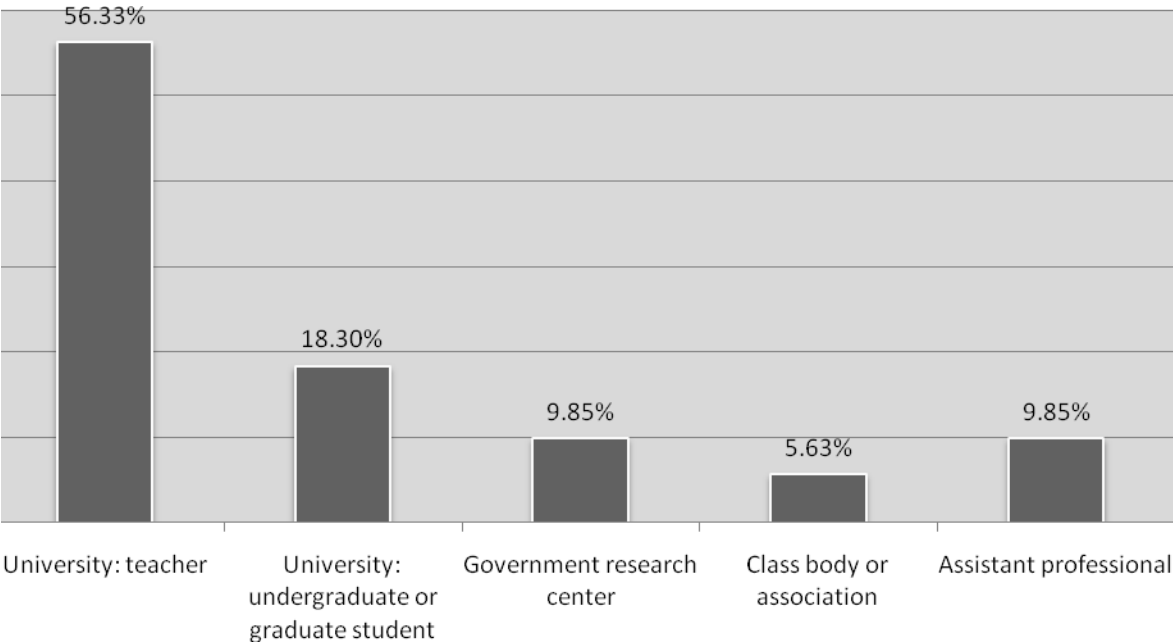


Figure 1. Percentage distribution of articles by institution and professional category of the authors. Uberaba, MG, 2014.

The category "teacher" prevailed among researchers, followed by "master's/doctoral students" and "professionals linked to governmental research centers or health services". Even though there was a greater number of teachers in the conduction of studies and publications, the participation of undergraduate and graduate students drew attention. It was not possible to identify the field of work in some articles. There were also

authors who mentioned more than one field of work, in which case only the first field was taken into consideration. This fact highlights the importance of including complete data (and standardized) in all journals available in databases in order to facilitate more complete bibliometric studies.¹⁴ Figure 2 illustrates the distribution of articles relating to the journals in which they were published.

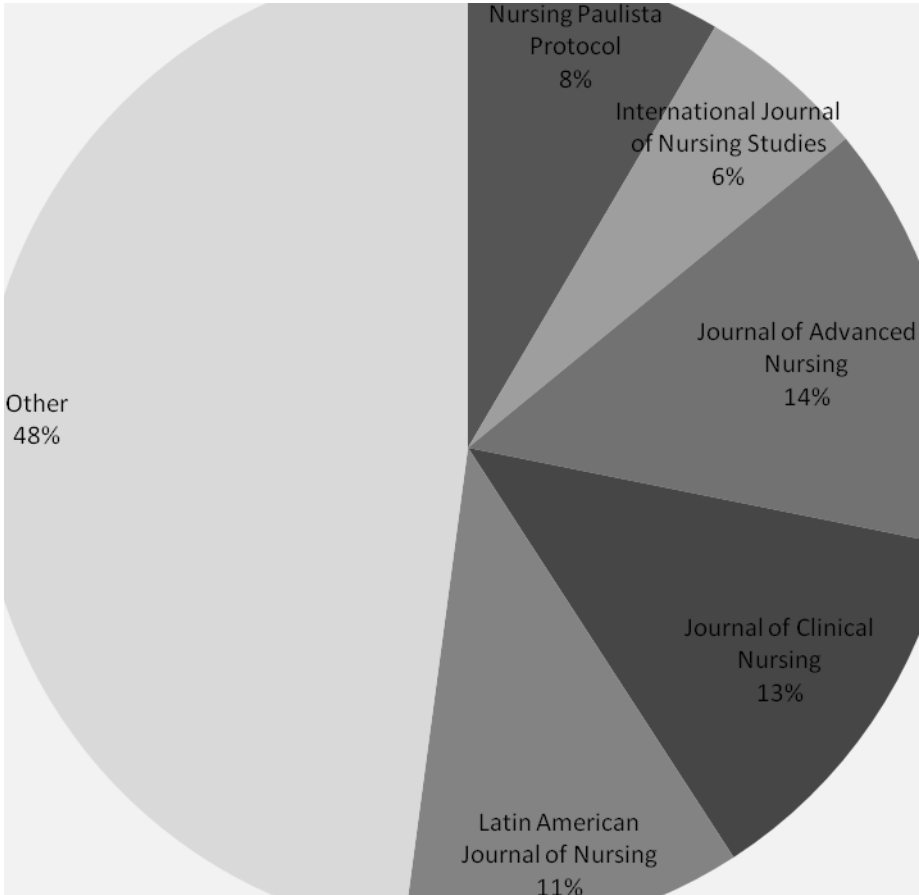


Figure 2. Distribution of the 71 articles with respect to the journals in which they were published. Uberaba, MG, 2014.

With respect to the journals in which the articles were published (Figure 3), it is worth

noting the relevance of the Journal of Advanced Nursing from the United Kingdom,

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which is classified as International Qualis (Brazilian official system with the purpose of classifying scientific production) A1 by the Coordination for the Improvement of Higher Education Personnel (CAPES) (Government agency linked to the Brazilian Ministry of Education in charge of promoting high standards for graduate courses in Brazil).¹⁵ This journal has given great emphasis to studies addressing the Delphi

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method. Of the 10 articles published with greater impact, three addressed the use of the Delphi technique.¹⁶ Figure 4 illustrates the predominance of publications in English, followed by trilingual (Portuguese, English and Spanish) or bilingual (Portuguese and English) articles, and only written in Portuguese.

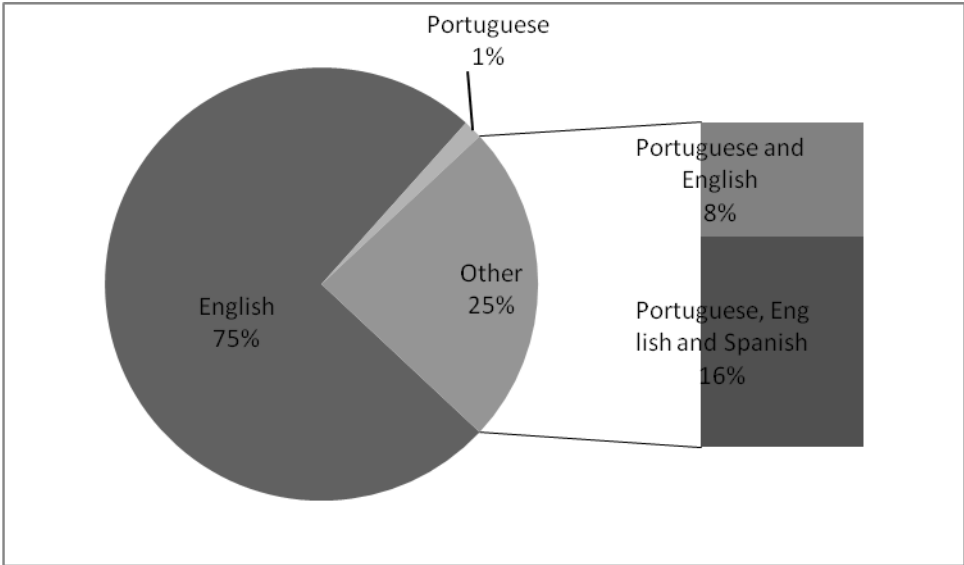


Figure 3. Percentage distribution of articles with respect to the language in which they were published. Uberaba, MG, 2014.

A total of 293 keywords were found in 62 articles, since nine publications did not have keywords. The keyword "Nursing" was prevalent. It was found in 21 publications, representing 29.57% of the articles assessed.

The keyword "Delphi technique" was used 14 times (19.71%). Some keywords were compound words, such as "Nursing research" or "Delphi method", which denotes closeness with initial keywords. Other keywords used were "Delphi study" (11.26%), "Delphi" (8.45%), and "Nurse Care" (7.05%).

DISCUSSION

The results showed that the number of international scientific production relating to the use of the Delphi method in research in the field of nursing has grown, indicating greater importance and visibility of the topic in the global scientific community. In this sense, the quantitative indicators allow identifying metric aspects of the production from the count of the number of publications by author, type of document, and the number of publications by research institution or country. Assessments for extended periods of time allow unveiling publishing trends in fields or topics.¹⁷

Data from SCImago Journal & Country Rank (SJR) indicate that the Brazilian scientific production was in the fifteenth place in the world ranking between 1996 and 2012, with 1.56% of total publications. In the same period, the prominence of Brazilian nursing became evident occupying the seventh place,

accounting for 2.1% of world production among the various health professional categories.^{11,8}

The dissemination was concentrated in a limited number of journals classified by the Qualis system as of greatest impact on the world scientific literature. This fact indicates a trend to increased competitiveness in the dissemination of nursing research, following the logic of the market in which the index of citation and the impact factor as a criterion for assessing scientific literature are taken into consideration. Accordingly, researchers seek to optimize the dissemination of their works in journals of greatest impact, i.e., those in which they are widely read and cited, a fact that also provides an advantage in competition due to the limited resources for research.¹⁹

The increase in scientific production in recent decades implies new scientific findings published in scientific journals. Subsequently, the results are read and cited by other researchers. Bibliometric indicators are especially important for researchers and organizations, since these measures are often used in research funding decisions, career plans, and promotions.¹⁷

The most prominent language was English, used in 75% of the publications. This fact consolidates this language as universal language according to the requirement of the journals, recognizing it as the language of the current scientific world.²⁰ Students of graduate programs in health sciences

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recognize that being fluent in English is essential for the courses attended and professional practices, representing competitiveness and reputation. However, the same graduate students report difficulties in proficiency exams, writing, and conversation, having to resort to other professionals to prepare their abstracts.²¹

A considerable increase in the number of works on the subject addressed has been observed, especially from 2010. The recent literature has indicated that the Delphi technique is growing in popularity among the studies conducted in the field of nursing,²²⁻³ which is a trend also observed in the global scientific production.¹⁸

A problem faced during the present study was the duplicity of the citations and the lack of standardization between the databases, in which the fields were not equal to the same records, there were different export formats for bibliographic programs, lack of abstracts, and use of terms that did not exist in the DeCS/MeSH system (Health Sciences Descriptors - A structured and trilingual thesaurus created by BIREME (Latin America and Caribbean Center on Health Sciences Information)). The lack of standardization may limit articles retrieval. Special attention is recommended on the part of authors to choose the keywords, since they enhance the dissemination of publications.²⁰

There was a tendency of scientific production to be linked to academic centers. In the Brazilian case, this aspect was evidenced in reports found in the SCIE (Science Citation Index Expanded) and SSCI (Social Sciences Citation Index) databases, in which the prevalent scientific production was from public universities.¹¹ Graduate programs are directly associated with the construction of scientific knowledge.²⁴ However, there was significant participation of government bodies, class associations, and professionals of the healthcare network in the studies conducted.

This present bibliometric study allowed identifying the main methodological aspects of the studies assessed. In this context, by examining the methodological strategies, the way in which knowledge was produced made it possible to advance toward the ways through which science is performed in nursing.²⁵

CONCLUSION

The use of bibliometric resources proved to be useful for the assessment of nursing studies that used the Delphi method and were published in different databases, revealing research trends in certain fields and encouraging further studies. The use of

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computational resources allowed obtaining nearly instantaneous results, contributing to the production of research in a short period of time.

The Delphi technique used in research in the field of Nursing has been used in a number of countries and in studies conducted by teachers and graduate students with a focus on obtaining consensus and/or identifying the priorities of research in a particular field. The articles had a higher number of publications in English and a large portion described research conducted in Brazil, Australia, and the United States.

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