



Jornal de Pediatria

ISSN: 0021-7557

assessoria@jped.com.br

Sociedade Brasileira de Pediatria
Brasil

Pizzani, Luciana; Lopes, Juliana de Fátima; Gurian Manzini, Mariana; Simões Martinez, Claudia Maria
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Jornal de Pediatria, vol. 88, núm. 6, noviembre-diciembre, 2012, pp. 479-482
Sociedade Brasileira de Pediatria
Porto Alegre, Brasil

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Bibliometric analysis of theses and dissertations on prematurity in the Capes database

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Abstract

Objective: To perform a bibliometric analysis of theses and dissertations on prematurity in the Capes database from 1987 to 2009.

Methods: This is a descriptive study that used the bibliometric approach for the production of indicators of scientific production. Operationally, the methodology was developed in four steps: 1) construction of the theoretical framework; 2) data collection sourced from the abstracts of theses and dissertations available in the Capes Thesis Database which presented the issue of prematurity in the period 1987 to 2009; 3) organization, processing and construction of bibliometric indicators; 4) analysis and interpretation of results.

Results: Increase in the scientific literature on prematurity during the period 1987 to 2009; production is represented mostly by dissertations; the institution that received prominence was the Universidade de São Paulo. The studies are directed toward the low birth weight and very low birth weight preterm newborn, encompassing the social, biological and multifactorial causes of prematurity.

Conclusions: There is a qualified, diverse and substantial scientific literature on prematurity developed in various graduate programs of higher education institutions in Brazil.

J Pediatr (Rio J). 2012;88(6):479-82: Premature infant, bibliometrics, scientific publication indicators.

Introduction

According to the global action report on premature birth developed by the World Health Organization, 15 million infants are born prematurely worldwide every year, 1 million of which die. The problem is more serious in poor countries, especially those of Sub-Saharan Africa and Asia. In these regions, the preterm birth rate is 12 out of 100 live births, while in developed countries it reaches 9%. In Brazil, this rate is 9.2%, the same as that of Germany.¹

Although the majority of preterm infants survive, recent international studies showed that this population has high morbidity rates.^{2,3}

Due to complexity of the issue, the scientific literature on prematurity has been constantly growing, including the production of books, journal articles, theses, dissertations, among others.

As for theses and dissertations, it can be said that they constitute a very important scientific heritage, demonstrating scientists' concerns about the issue; additionally, they can be studied from different perspectives, allowing for analyses of the configurations of their study fields.⁴

One of the possibilities of evaluating this scientific literature represented by dissertations and theses is the use

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No conflicts of interest declared concerning the publication of this article.

Suggested citation: Pizzani L, Lopes JF, Manzini MG, Martinez CM. Bibliometric analysis of theses and dissertations on prematurity in the Capes database. *J Pediatr (Rio J)*. 2012;88(6):479-82.

Manuscript submitted Apr 09 2012, accepted for publication July 10 2012.

<http://dx.doi.org/10.2223/JPED.2232>

of a methodology called bibliometrics, which can be defined as the study of quantitative aspects of the production, dissemination and use of scientific information reported in different supports, such as books, articles, theses and dissertations, using its results to predict and support decisions in the field of science.⁵

National and international studies use the bibliometric approach to report investigations in different areas of knowledge. More specifically in the area of pediatrics, investigations report studies on pulmonary auscultation,⁶ knowledge production in the field of child and adolescent health,⁷ evaluation of the impact of the indexation of pediatric journals in databases,⁸ among others.

The present study aimed to perform a bibliometric analysis of theses and dissertations on prematurity from the Capes database, covering the period 1987 to 2009.

Methods

The methodology adopted has an exploratory and descriptive nature, using a bibliometric approach for the production of indicators of scientific production.^{9,10}

The methodological route was developed in five stages:

- 1) Construction of the theoretical framework by reading scientific texts in the areas of bibliometrics and prematurity to scientifically support the research;
- 2) Choice of the database for the selection of bibliographic material: Capes Thesis Database;
- 3) Selection of bibliographic material. The search terms used to collect records related to prematurity were the following: *Prematuro* (Premature), *Bebê prematuro* (Premature baby), *Prematuro fatores de risco* (Premature risk factors), *Recém-nascido fatores de risco* (Newborn risk factors), *Bebês fatores de risco* (Babies risk factors), *Criança prematura* (Premature child), *Neonato fatores de risco* (Neonate risk factors), *Nascimento prematuro* (Premature birth), *Lactente* (Infant), *Lactente prematuro* (Premature infant), *Bebê de risco* (Risk baby), *Recém-nascido prematuro* (Premature newborn), *Recém-nascido pré-termo* (Preterm newborn), *Muito baixo peso prematuro* (Very low weight premature infant), *Baixo peso prematuro* (Low weight premature infant), *Pré-termo* (Preterm), *Bebê pré-termo* (Preterm baby), *Criança pré-termo* (Preterm child), *Lactente pré-termo* (Preterm infant).
- 4) Design of instruments. Two protocols were established as instruments for data collection of the variables of interest. The first one, developed on a spreadsheet (Microsoft Office Excel 2007 for Windows software), was planned to meet the purposes of the bibliometric

analysis, including the following variables of interest: author, year of defense of the work, identification of the higher education institution, academic level (masters' degree, doctoral degree, professional master's degree), Brazilian geographic region, development agencies that supported the investigation, keywords attributed by the authors of the theses and dissertations.

The second instrument aimed to characterize the selected dissertations and theses in regard to the type of resulting scientific literature: books, articles and book chapters. This instrument was also developed on a spreadsheet of Microsoft Office Excel 2007 for Windows software and included the following variables of interest: author, title of the work, *résumé* on Lattes database, resulting scientific production (articles and publication in books).

- 5) Procedures for data collection and analysis. Data collection took place between September 20 and September 30, 2010. At first, 4,041 reports covering the terms used in the collection were retrieved. After reading all abstracts, it was found that there was a need to exclude duplicate records, as well as those not related to the birth of preterm infants, such as studies in the areas of veterinary, biology, agronomy and engineering. Thus, 1,173 theses and dissertations were selected, representing the scope of the work, and analyzed with respect to the resulting scientific publications. Using the name of the authors of each thesis or dissertation, searches were performed in Lattes Platform to verify in the *résumé* of each researcher whether there were books and articles related to the dissertation or thesis.

The collected and analyzed data are on public domain and are available on the website www.capes.gov.br. The research protocol was approved by the Human Research Ethics Committee of Universidade Federal de São Carlos (CEP/UFSCar), under the number 525/2009, on January 11, 2010.

Results

A total of 1,173 reports on prematurity from 1987 to 2009 were retrieved from Capes Thesis Database. The distribution of theses and dissertations per year showed that there was a sharp increase in scientific production during the study period, as observed in Figure 1.

The keywords attributed by the authors of the dissertations and theses represented the most addressed issues in studies related to prematurity. In the 1,173 selected records, 1,547 keywords were found, with a frequency of citation ranging from one to 291 occurrences. Table 1 shows the 33 most found issues. All of them occurred at least 10 times.

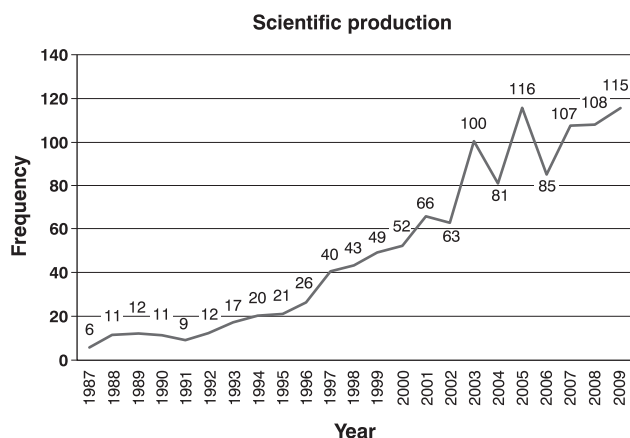


Figure 1 - Distribution of theses and dissertations per year

As for the distribution of records by academic level, it was observed that there were 858 (73.1%) master's dissertations, 278 (23.7%) doctoral theses, 36 (3.1%) professional master's dissertations and one record without specific information.

Indicators for higher education institutions identified 96 different establishments that produced knowledge on the issue of prematurity in the period 1987 to 2009, with the prominence of: Universidade de São Paulo (259 occurrences), Universidade Federal de São Paulo (125), Fundação Oswaldo Cruz (71), Universidade Federal de Minas Gerais (67), Universidade Federal do Rio Grande do Sul (60), and Universidade Estadual de Campinas (50).

As for the distribution of the 96 Brazilian higher education institutions in geographical regions, the Southeast Region received prominence, with 48 institutions, followed by South (21 institutions), Northeast (15), Midwest (eight), and North (four) regions.

As for the analysis of the *résumés* of the authors to assess the scientific production generated by the theses and dissertations, it was found that, of the 1,173 authors, 903 were registered in the Lattes Platform. Among these, it was observed that the theses and dissertations on prematurity resulted in 691 journal articles and 275 books. In the case of 207 records, no other publications were generated.

Discussion

The results of this study reveal a significant increase in the production of theses and dissertations on prematurity in Brazil in the period 1987 to 2009. The literature shows that the country has been facing successive changes in the social determinants of diseases and in the organization of health services in the last three decades. Even so, the frequency of premature births remains high, and premature birth complications are the second leading cause of child death, after pneumonia.¹¹⁻¹³

National studies developed by the Brazilian Ministry of Health point out that this increase is related to the growing rates of scheduled cesarean deliveries, with improper termination of pregnancy without medical justification, leading to iatrogenic prematurity and increased risk of infant and perinatal death, even among late preterm infants with appropriate birth weight.¹⁴

These data are strengthened by the results obtained with the analysis of the keywords found in theses and dissertations on prematurity. It was possible to observe that studies are directed toward the low weight and very low weight preterm newborn, encompassing social, biological and multifactorial causes of prematurity. Studies point out the following causes: pregnancy, gestation, premature birth, retinopathy of prematurity, and adolescent pregnancy. We

Table 1 - Keywords

Keywords	Frequency
<i>Prematuro</i> (Premature infant)	291
<i>Recém-nascido</i> (Newborn)	161
<i>Prematuridade</i> (Prematurity)	87
<i>Recém-nascido de baixo peso</i> (Low weight newborn)	71
<i>Fatores de risco</i> (Risk factors)	44
<i>Gravidez</i> (Pregnancy)	37
<i>Gestação</i> (Gestation)	28
<i>Recém-nascido de muito baixo peso</i> (Very low weight newborn)	26
<i>Unidade de terapia intensiva neonatal</i> (Neonatal intensive care unit)	25
<i>Método mãe-canguru</i> (Mother-kangaroo method)	25
<i>Aleitamento materno</i> (Breastfeeding)	22
<i>Parto prematuro</i> (Premature delivery)	21
<i>Desenvolvimento</i> (Development)	21
<i>Enfermagem</i> (Nursing)	20
<i>Mortalidade infantil</i> (Infant mortality)	19
<i>Mortalidade neonatal</i> (Neonatal mortality)	18
<i>Neonatologia</i> (Neonatology)	18
<i>Desenvolvimento infantil</i> (Child development)	18
<i>Enfermagem neonatal</i> (Neonatal nursing)	17
<i>Relações mãe-filho</i> (Mother-child relationships)	16
<i>Ruptura prematura de membranas fetais</i> (Premature rupture of fetal membranes)	16
<i>Doença periodontal</i> (Periodontal disease)	16
<i>Lactente</i> (Infant)	15
<i>Crescimento</i> (Growth)	15
<i>Criança</i> (Child)	15
<i>Retinopatia da prematuridade</i> (Retinopathy of prematurity)	14
<i>Gravidez na adolescência</i> (Adolescent pregnancy)	14
<i>Trabalho de parto prematuro</i> (Preterm labor)	13
<i>Adolescência</i> (Adolescence)	11
<i>Mortalidade</i> (Mortality)	10
<i>Dor</i> (Pain)	10
<i>Idade gestacional</i> (Gestational age)	10
<i>Leite humano</i> (Breast milk)	10

can also highlight the researchers' interest on breastfeeding, mother-child relationship, infant mortality, among other subjects identified in the Table 1 of this study.

Thus, both the national and international scientific community are placing a greater emphasis on the study of the two above mentioned categories of preterm infants and of the risk factors that lead to the occurrence of prematurity, due to the fact that, with the technological advances in health care, practices to improve survival of extremely premature infants have been implemented, in order to identify causes and minimize or prevent possible incapacitating sequelae.^{2,3,11}

The presence of a greater number of master's dissertations can be attributed to two important factors. The first one refers to the creation of graduate programs in Brazil, which initially focused on the master's level, with doctoral courses emerging only after the consolidation of these programs.¹⁵ The second factor refers to the fact that the places available for master's courses are more numerous than those available for doctoral courses, generating thus a greater number of master's dissertations compared with the number of doctoral theses defended in graduate programs, which led to the higher amount of dissertations detected in this study.

As for the distribution of the 96 Brazilian higher education institutions in geographical regions, the Southeast region was found to be prominent. In this sense, the present study corroborates the findings of Regalado,¹⁶ revealing that much of the science is still developed in the states of São Paulo, Rio de Janeiro, and Minas Gerais, with the Universidade de São Paulo accounting alone for almost one quarter of all scientific publications.¹⁶

Data were analyzed with respect to the type of document used to disseminate the production of knowledge on prematurity. A predominance of journal articles was observed, followed by the production of books. These data corroborate the research of Sacardo,¹⁷ which informs that these types of documents are the formal channel of communication most used by researchers to publish their studies. These channels are essential because they remain available for a long time, reach a broader audience and are also the most read and cited by the academic community.

In conclusion, the results of this study allowed to quantitatively explore some aspects of the scientific literature on prematurity available in the Capes database. However, further studies with a deeper approach would be necessary in order to understand the impact of the knowledge about the subject on the national and international context of scientific research, overcoming the typical limits of this database.

Nevertheless, the results obtained by the bibliometric analysis point out that there is a solid, diverse and substantial academic literature on prematurity within higher education institutions in Brazil.

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