

# Comprehensive Newborn Care: a Bibliometric Literature Review

REVIEW

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## Abstract

**Objective:** To analyse the scientific production of comprehensive newborn health care in primary care.

**Method:** A bibliometric study with a quantitative approach using a sample consisting of 27 studies (two from the Virtual Health Library and 25 from PUBMED) published between 2005 and 2015.

**Results:** The highest number of publications on this subject were published in 2010, and the country with the most publications was the United States. Comprehensive newborn care was summarised and presented in the form of a concept map.

**Conclusions:** The bibliometric indicators showed that perinatal care must be provided in primary care; however, there were gaps in the scientific literature regarding approaches related to this care. This work is expected to contribute by increasing health professionals' understanding of comprehensive newborn care by disseminating scientific production and promoting discussion on the subject, thereby reducing child mortality.

## Introduction

In the early days of a child's life, he/she is considered potentially vulnerable to disease. Therefore, it is essential to adequately monitor the newborn and to identify early risk factors during this period [1, 2].

Data from the World Health Organization (WHO) [3] showed that approximately 16 million children died before reaching their fifth birthday in 2015. Most deaths were due to causes considered preventable

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by primary care, including diseases such as pneumonia, diarrhoea and malaria. The first month, the first week and the first hours of life are the most critical for a baby's survival because approximately one million newborns die on their day of birth and approximately 2.8 million die during the first 28 days. Neonatal mortality is a worldwide public health problem and therefore a health care indicator for the perinatal period [4].

In addition to the WHO, other international organisations, such as the United Nations Children's Fund (UNICEF) and other non-governmental organisations, have paid special attention to child health to ensure comprehensive monitoring and achieve a reduction in mortality through changes in health care to meet the millennium development goals (MDGs) [1].

To help reduce infant mortality in Brazil and to achieve and maintain the MDGs, the Ministry of Health (Ministério da Saúde-MS) has developed a number of policies and manuals to guide health professionals' actions, especially those who are on the front line of care during this fragile stage of life. The primary implemented guides include the Neonatal Integrated Management of Childhood Illness (IMCI), the Child Health Handbook, version 2013, the Agenda for Commitment to Comprehensive Child Health and Reduction of Infant Mortality, and Newborn Health Care: A Guide for Health Professionals [5].

Weaknesses in the implementation of these policies in primary care at the beginning of children's lives can have negative consequences on growth and development. These consequences include developmental delays, poor school performance, depression, violent behaviour, maintenance of mortality rates and high rates of chronic disease that interrupt the child's development into a healthy and economically active adult. These issues indicate that the MDGs have not been met and cause an imbalance in the country's economic level [6, 7].

Due to the lack of studies focused on health indicators specific to comprehensive newborn care (specifically during the perinatal period) that aim to guide primary care health professionals' actions, the main purpose of this bibliometric study is to analyse scientific production on comprehensive newborn health care in primary care with an emphasis on the identification of empirical health indicators. This study should contribute to the development of a data collection instrument for use in the first home visit for the newborn.

## Methods

This study is a bibliometric study with a quantitative approach. This study type is often used to evaluate trends and patterns in specific scientific fields. This type of study has been employed over the years to characterise scientific production regarding both the most cited articles and classic citations within a journal or among the same specialties [8].

Recently, concerted efforts have been made to analyse the proportion and quality of publications on the most concerning diseases and to identify gaps in research in different fields of knowledge used by scientific authorities to support important decisions [9, 10].

To select publications on comprehensive newborn care, the following national and international digital literature databases were used: PUBMED, the Theses and Dissertations Portal of the Brazilian Federal Agency for the Support and Evaluation of Graduate Education (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior-CAPES) and the Virtual Health Library (VHL). A journal search in these databases was performed using health terminology available in the Medical Subject Headings (MeSH) and Descriptors in Health Sciences (DeCS), which are used as the standard and unified language for indexing scientific studies and journals and which enable searching at various levels of specificity.

Data were collected between January and March, 2015. The following descriptors were used: Newborn or *Recém-nascido*; Comprehensive Health Care or *Atenção Integral à Saúde*; Primary Health Care or *Atenção primária à saúde*. The terms were separated by the Boolean operator "AND" and cross-referenced as appropriate. The following inclusion criteria were used for sample selection: full articles available, focused on the subject of interest, published in either English or Portuguese and published during the last eleven years (2005-2015).

The search produced 361 studies after filtering according to the established criteria. The titles and abstracts were carefully reviewed, resulting in the exclusion of 334 publications that did not cover the proposed subject. The final sample consisted of 27 studies. These studies were organised, saved into folders, and named according to the digital library in which they were located.

A data collection form was used to facilitate the analysis of the selected studies, followed by importation into Microsoft Office Excel software version 2013 to generate a database with variables that enabled descriptive statistical analysis with frequency distributions in absolute numbers and percentages. The results were represented in charts and tables according to the items that characterised scientific production, such as journal name, year of publication, country of the author's institutional affiliation, professional training of the principal authors, *Journal Citation Reports* (JCR), descriptors/keywords and empirical indicators.

The concept map methodology was used to organise the terms and categorise the relationships between the concepts connected by the empirical health indicators related to comprehensive newborn health care. CMap Tools version 5.03 (developed and freely distributed by the Institute for Human Machine Cognition of the University of West Florida) was used. This tool allows the user to construct, navigate, share and criticise knowledge models represented by concept maps. It is an evaluative tool

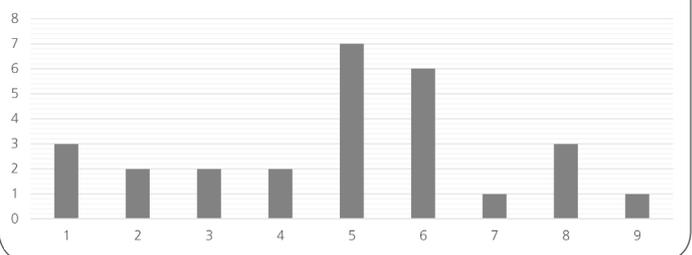
that facilitates the organisation of knowledge and promotes experiences that provoke reflection, the search for understanding and information processing, thereby facilitating learning [11].

The aim of this study was to identify affinities between indicators of comprehensive newborn health care based on their incidence among studies and their focus as the subject of the studies. Empirical indicators are criteria and/or experimental conditions that are used to observe or measure theoretical concepts that serve as a basis for given practices to identify situations considered normal or expected, thereby making it possible to prevent health problems [12]. The indicators were grouped according to a systematic and summarised organisation that was not hierarchically based on the identification of relationships by conceptual thematic affinities.

## Results

The sample comprised 27 studies on comprehensive newborn health care in Primary Health Care (PHC); two of the studies were from the VHL, and 25 were from PUBMED. No study was obtained from the CAPES Portal databases after analysing the relevance of the topic. **Figure 1** shows that the greatest number of publications were published in 2010 (seven studies, 25.9%), followed by six studies in 2011 (22.2%).

**Figure 1:** Distribution of scientific production on comprehensive newborn health care according to year of publication. João Pessoa, state of Paraíba (PB), Brazil, 2005 to 2015.



**Table 1** shows the country of the author's institutional affiliation. The United States was the most prominent country, with eight studies (29.6%), followed by Brazil with five studies (18.5%). Notably, only one institution had more than one publication included in the study.

**Table 1.** Distribution of scientific literature on comprehensive newborn care according to country of the author's institutional affiliation. João Pessoa, PB, Brazil, 2005 to 2015.

Country/author's institutional affiliation	N=27	
	n	%
Australia		
The University of Queensland	1	3.7
The University of Queensland Centre for Clinical Research	1	3.7
Murdoch Childrens Research Institute	1	3.7
University of Melbourne	1	3.7
South Africa		
University of Cape Town	1	3.7
Brazil		
Federal University of Rio Grande do Sul		3.7
Federal University of Bahia	1	3.7
Paulista School of Medicine	1	3.7
Fluminense Federal University	1	3.7
"Júlio de Mesquita Filho" Paulista State University	1	3.7
Canada		
The University of Manitoba	1	3.7
Memorial University of Newfoundland	1	3.7
Spain		
Servicio Madrileño de Salud	1	3.7
United States		
Columbia University	2	7.4
Medical College of Wisconsin	1	3.7
Seattle Children's Research Institute	1	3.7
Robert Wood Johnson Medical School	1	3.7
Hospital Corporation of America	1	3.7
University of Virginia	1	3.7
University of Utah Department of Pediatrics	1	3.7

Country/author's institutional affiliation	N=27	
	n	%
The Netherlands		
University Medical Centre Utrecht	1	3.7
India		
School of Public Health	1	3.7
Lithuania		
Kaunas University of Medicine	1	3.7
Nigeria		
University of Benin Teaching Hospital	1	3.7
Pakistan		
Aga Khan University	1	3.7
Sweden		
Uppsala University	1	3.7

**Table 2** shows the distribution of the journals in which the selected studies were published. The most cited journal was Pediatrics (22.3%), with six papers. The British Medical Journal (BMJ) had the highest impact factor, with a JCR of 16.30. The average JCR for the 19 journals among which the studies were distributed was 2.42, with a standard deviation of 3.67.

**Table 2.** Distribution of the scientific literature on comprehensive newborn health care according to the journal and its respective impact factor, Joao Pessoa, PB, Brazil, 2005-2015.

Journal	JCR* 72014	N=27	
		n	%
BMC† Pregnancy and Childbirth	2.19	1	3.7
Int J Womens Health	0.00	1	3.7
BMC Psychiatry	2.21	1	3.7
BMC Family Practice	1.67	2	7.4
BMC Pediatrics	1.93	2	7.4
BMC Public Health	2.26	1	3.7
Implement Sci	4.12	1	3.7
BMJ‡	16.30	1	3.7
Indian J Public Health	0.00	1	3.7
NIH Public Access	0.00	1	3.7

Journal	JCR* 72014	N=27	
			%
Arch Pediatr Adolesc Med.	5.73	1	3.7
Pediatrics	5.47	6	22.3
Academic Pediatrics	2.01	1	3.7
Sao Paulo Med J	0.72	1	3.7
Cad Saude Publica	0.98	1	3.7
Medicina (Kaunas)	0.49	1	3.7
Niger J Clin Pract	0.53	1	3.7
SAMJ§	1.63	1	3.7
Rev Lat Am Enfermagem	0.53	1	3.7
Arch Dis Child	2.90	1	3.7

\*: Journal Citation Records. †: Biomed Central.

‡: British Medical Journal. §: South Africa Medical Journal

The keywords that predominately corresponded to the MeSH indexing recommendations included the descriptor "newborn", which was the most cited in the studies analysed (27) (i.e., all studies contained this descriptor), followed by primary health care (22), infant (15) and breastfeeding (10), as shown in **Table 3**. The latter descriptor suggests that a greater number of studies were published on breastfeeding compared to the other types of care provided during the perinatal period.

**Table 3.** Distribution of scientific production descriptors on comprehensive newborn health care. João Pessoa, PB, Brazil, 2005 to 2015.

Keyword	n	Keyword	n
Acceptance of health care	01	Weight gain	01
Accessibility of health services	01	Quality guarantee	02
Counselling	02	Case management	01
Guideline adherence	03	Pregnancy	06
Patient adherence	01	High risk pregnancy	01
Community health worker	01	Hyperbilirubinaemia	01
Antibacterial agents	02	Hospitalisation	02
Breastfeeding	10	Neonatal jaundice	07
Infant food	01	Gestational age	01
Patient discharge	02	Infant	15
Sickle cell anaemia	01	Infant, Premature	06

Keyword	n	Keyword	n
Congenital abnormalities	02	Respiratory tract infections	02
Antimalarials	01	Early intervention	03
Social support	01	Traditional medicine	01
Primary health care	22	Doctors	01
Anthropometry	01	Megalocephaly	02
Outcome assessment	02	Child mortality	03
Risk assessment	02	Obesity	01
Infant welfare	02	Obstetrics	02
Bilirubin	02	Role of the professional	01
Head	01	Parity	01
Maternal-child health centres	01	Homebirth	01
Death certificate	01	Paediatrics	06
Pregnancy complications	02	Health personnel	02
Eating behaviour	01	Pneumonia	02
Child behaviour	01	Poverty	01
Communication	01	Public policy	01
Interdisciplinary communication	01	Vulnerable populations	01
Continuity of patient care	03	Family Practice	01
Child	02	Knowledge practices	02
Disabled children	03	Preschool	07
Comprehensive health care	01	Health care provision	01
Caregivers	02	Primary prevention	01
Outpatient care	01	Health programs	01
Long-term care	01	Government programs	01
Child care	06	Health promotion	03
Intensive care	02	Parental Psychology	01
Postpartum care	01	Newborn	27
Prenatal care	03	Referral and consultation	01
Developmental disabilities	03	Mother-child relationship	01
Child development	02	Doctor-patient relationship	01
Diarrhoea	02	Parent-child relationship	01
Health planning directives	01	Professional-family relationship	02
Practice directives	04	Risk	01



revealed a continuous number of publications that peaked in 2010 and 2011 and an absence of scientific production in the years 2007 and 2015 up to the time of data collection (March). There is a shortage of literature on this subject, which is important for reducing infant mortality, in contrast to the attempts at improvement mentioned above.

When the national and international literature on comprehensive newborn health care produced over the past 11 years is compared, the results show greater concern about the systematisation and standardisation of health professionals' actions at an international level [16]. At that level, researchers have focused on creating care guidelines, home visit instruments, consultation instruments, and specific screening tests as well as on the training of health workers and improvements in the qualifications for top-level professionals. This information systematisation is aimed at improving health actions [17].

In accordance with the above concerns, a strategy adopted by the United States ("The well-baby care" strategy) was identified that represented more than one-third of all visits by infants and small children in the country. This strategy has proven to be successful in identifying health conditions and behavioural, developmental and social issues that can have long-term effects on children's lives [18, 19]. In Canada, a similar initiative uses an instrument known as the "Rourke Baby Record" [20]. This instrument consists of four guidelines for charting well baby/child home visits from birth to five years of age.

Some of the investigated studies [21, 22], in addition to UNICEF and the WHO, agree that the home visit (HV) is an important strategy to promote universal access to prenatal and postpartum care and thus help reduce maternal and newborn mortality. In this regard, research [23] has shown that newborn care interventions based on home care can prevent 30 to 60% of newborn deaths. This point underlines the importance of home vi-

sits to babies in the first week of life as a method to reduce neonatal mortality as recommended by the above-mentioned worldwide organisations.

The HV promotes positive parenting and prevents the child's exposure to stress during a critical developmental period. However, most families in countries such as Bangladesh, Malawi and Nepal receive fewer home visits than should be conducted according to evidence-based models [23-26]. Furthermore, Brazilian health professionals do not have specific instruments to guide or facilitate visits and diagnosis during their health promotion activities nor scales to facilitate their evaluation.

An analysis of the main indicators of comprehensive newborn care collected from articles published nationally and internationally during the study period revealed that this topic was subdivided into data related to maternal health and newborn health. However, it was not possible to identify publications that solely addressed the guidance given to mothers regarding the promotion of comprehensive newborn health care because the indicators were cited indirectly due to the limited coverage given to the particular conditions of mother-child health care issues.

## Conclusion

The investigated bibliometric indicators reveal care practices that should be implemented during the perinatal period, with a greater focus on issues related to breastfeeding. A greater number of publications was found in international journals, with the United States accounting for the highest number of published articles on this subject.

Despite consolidated efforts, the prevailing scientific publications have gaps with regards to the approach used for comprehensive newborn care in primary care because they do not provide complete information for health professionals. For this reason, more research is needed on this subject, especially in Brazil.

We hope that this work will expand health professionals' understanding of the importance of comprehensive newborn health care by disseminating scientific production and promoting discussion so that effective actions can be taken. However, there are some limitations to the study. For example, this study only includes research published in English and Portuguese, although the former language is the main language of scientific communication.

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