

Presença de conforto na hipotermia terapêutica em unidade de terapia intensiva neonatal

Comfort in therapeutic hypothermia in a neonatal intensive care unit

Confort en hipotermia terapéutica en una unidad de cuidados intensivos neonatales

Patrícia Natália Monteiro Leite¹, Ana Luisa Teixeira da Costa Durante², Giacomo Miceli Junior³,
Fernanda Bruna do Nascimento Alves³, Andrea dos Santos Garcia³, Paula de Souza Mota³, Sarah
Goes Barreto da Silva Moreira³, Simone Gomes dos Anjos³, Monique Votto Ferreira⁴, Carlos
Roberto Lyra da Silva³

RESUMO

Objetivo: identificar a distribuição da produção entre os autores; verificar a dispersão de periódicos acerca do tema estudado e caracterizar os termos mais utilizados para descrição de conceito de conforto em hipotermia terapêutica neonatal. **Método:** pesquisa com abordagem de métodos mistos, de caráter descritivo e exploratório, período temporal de 1985 a 2021 na base de dados Scopus, como meios de investigação aplicou-se a análise bibliométrica e cientométrica com a utilização do *software RStudio*. **Resultados:** obtiveram-se como resultados 152 documentos, distribuídos em 97 fontes (periódicos). A média de citações por documento ficou em 15,46. E a quantidade de referências totalizou 2.654. Houve um aumento do número de produções a partir do ano 2005. Os Estados Unidos é o país com maior impacto. **Conclusão:** O uso da hipotermia terapêutica neonatal está em crescimento. Os temas que mais se aproximaram da palavra conforto foram técnica segura, conhecimento técnico científico, capacitação profissional, minimizar a dor, humanização dos cuidados com recém-nascido, acolhimento e comunicação com a família.

Descritores: Conforto; Hipotermia induzida; Unidade de terapia intensiva neonatal.

ABSTRACT

Objective: to identify the distribution of production among authors; to verify the dispersion of journals on the subject studied and to characterize the terms most used to describe the concept of comfort in neonatal therapeutic hypothermia. **Method:** this was a mixed-methods, descriptive and exploratory study from 1985 to 2021 using the Scopus database. Bibliometric and scientometric analysis was used as a means of investigation using the RStudio software. **Results:**

¹Universidade Federal do Estado do Rio de Janeiro (UNIRIO), Rio de Janeiro-RJ. *E-mail: patricia.leite@edu.unirio.br.

²Instituto Nacional do Câncer (INCA), Rio de Janeiro-RJ.

³Universidade Federal do Estado do Rio de Janeiro (UNIRIO), Rio de Janeiro-RJ.

⁴Hospital da Força Aérea do Galeão, Rio de Janeiro-RJ.

152 documents were obtained from 97 sources (journals). The average number of citations per document was 15.46. The number of references totaled 2,654. There was an increase in the number of publications from 2005 onwards. The United States is the country with the greatest impact. **Conclusion:** the use of neonatal therapeutic hypothermia is growing. The themes that came closest to the word comfort were safe technique, technical scientific knowledge, professional training, minimizing pain, humanizing newborn care, welcoming and communication with the family.

Descriptors: Comfort; Induced hypothermia; Neonatal intensive care unit.

RESUMEN

Objetivo: identificar la distribución de la producción entre los autores; verificar la dispersión de las revistas sobre el tema estudiado y caracterizar los términos más utilizados para describir el concepto de confort en la hipotermia terapéutica neonatal. **Método:** se trató de un estudio de métodos mixtos, descriptivo y exploratorio, realizado entre 1985 y 2021 en la base de datos Scopus, utilizando análisis bibliométricos y cienciométricos con el software RStudio. **Resultados:** se obtuvieron 152 documentos de 97 fuentes (revistas). El número medio de citas por documento fue de 15,46. El número de referencias ascendió a 2.654. Se observó un aumento del número de publicaciones a partir de 2005. Estados Unidos es el país con mayor impacto. Conclusión: el uso de la hipotermia terapéutica neonatal está creciendo. Los temas que más se acercaron a la palabra confort fueron técnica segura, conocimiento científico técnico, formación profesional, minimización del dolor, humanización de la asistencia al recién nacido, acogida y comunicación con la familia.

Descriptores: Confort; Hipotermia inducida; Unidad de cuidados intensivos neonatales.

INTRODUCTION

Comfort is described as a complex and multidimensional construct, and consists of a subjective, positive and individual experience that can be lived in situations of illness and/or treatment by the individual, being the desirable end in patient care.¹

Therapeutic hypothermia (TH) benefits neuroprotection after neonatal asphyxia. Regarding comfort in this technique, the Brazilian Society of Pediatrics recommends the presence of a specialized team and technological devices for the benefit of safe therapy.²

Neonatal intensive care units (NICUs) are specialized care spaces which, due to the rapid increase in technology, can increase the life expectancy of high-risk newborns. It is estimated that neonates undergo around 11 to 12 invasive procedures a day, resulting in hyperalgesia and negative effects such as stress, changes in vital signs and instability.³

Therefore, the HT procedure is carried out in the NICU due to the need for comprehensive monitoring by a multidisciplinary team during all phases of treatment due to the risks of seizures, control of normothermia, among other possible complications associated with hypoxic-ischemic encephalopathy (IHE) resulting from perinatal asphyxia. There are also indications, contraindications, clinical management recommendations and other important precautions for babies undergoing HT.

In this sense, to approach comfort, we sought theoretical grounding from the second author *Kolcaba*⁴ who in her theory of comfort emphasizes it as an immediate experience, strengthened by a sense of relief, tranquility and transcendence, considering the physical, psycho-spiritual, socio-cultural and environmental context.⁴

From the State of the Art developed during the preparation of the Master's Dissertation "Concept of comfort in neonatal therapeutic hypothermia from the perspective of nursing professionals", it was possible to detect the precariousness of the quantity of scientific products, especially at national level, about comfort as an object of investigation in Neonatal Therapeutic Hypothermia.

In addition, it is important to describe the scientific production on comfort in Therapeutic Hypothermia in Neonatal Asphyxia by means of a bibliometric study, which allows the identification of the authors, sources and institutions that publish the most on the subject, thus quantifying the productions and subsidizing new studies.

Therefore, the study is relevant not only for Nursing but also for other multidisciplinary areas that care for Neonatal clients, as it is believed that reflections may emerge on the following aspect: how *is* the word comfort being used in scientific investigations involving the Therapeutic Hypothermia procedure in Neonatal ICUs?

In order to understand the state of the art on the subject in question, the laws of Bibliometrics were used: Lotka, Bradford and Zipf. The aim was to identify the distribution of production among authors; to check the dispersion of journals on the subject studied and to characterize the terms most used to describe the concept of comfort in therapeutic hypothermia in the Neonatal Intensive Care Unit.

METHODS

A bibliometric study with a quantitative and qualitative approach of a descriptive and exploratory nature. Bibliometrics quantifies scientific works and measures their production, as well as making it possible to retrieve information and monitor what is produced in a given area of study.^{5,6}

Quantitative techniques were used to show indicators that represent the state of the art of the knowledge produced on a given topic. Bibliometrics has been considered an important tool for studies aimed at characterizing scientific production, allowing greater visibility for metric studies of recorded information, such as products resulting from scientific activity, articles and scientific productions in general.⁶

This study was carried out in July 2021, using *online* access to the *Scopus* database. The time limit was set at 2021. The search *string* consisted of articles or review articles, with the following descriptors: '*Comfort*', '*Induced Hypothermia*' and '*Intensive Care Units Neonatal*', extracted by consulting the Health Sciences Descriptors (DeCS), combined with the Boolean operator *AND* and *OR*, as filters '*limit until 2021*' and document type '*articles*' *OR* '*review articles*'. No exclusion criteria were used.

The bibliographic survey identified 152 scientific productions, of which 78 (51.3%) were book chapters, editorials, letters, notes and other types of documents, 62 (40.8%) were articles and 12 (7.9%) were reviews. The period retrieved by the search covered the years 1985 to 2021.

It should be noted that the sample was composed by two authors, as recommended by the *Preferred Reporting Items for Systematic Reviews and Meta-Analysis* (PRISMA) method⁷, allowing the inclusion and exclusion criteria to be rigorously followed simultaneously and

independently. The results obtained were compared to identify any inconsistencies in the identification of studies between researchers.

For Bibliometric analysis, information was collected and extracted using *RStudio* software and saved as a *.CSV file, sorted into a spreadsheet using *Microsoft Excel 2010® software*, and divided into categories: Collection of retrieved data, Sources, Authors, Affiliations and Countries, Documents and Keywords. As for the scientometric analysis, the categories included conceptual, intellectual and social structure.

The data was imported into the *R-Studio software*, version 3.0.1 and analyzed using descriptive statistics (absolute and relative frequencies). For the analysis, the fundamentals of three bibliometric laws were applied⁸ : The fundamentals of *Lotka's* first law, which refers to the most productive authors, were taken into account when considering the number of articles published.^{8,9} The fundamentals of *Bradford's* second law, referring to the means of disseminating scientific production, were covered by measuring the institutions and documents produced, which made it possible to observe the institutions with the highest and lowest production on the phenomenon studied.⁸ The fundamentals of *Zipf's* third law, which refers to counting the frequency of words, were taken into account by measuring the descriptors/keywords of the scientific productions.⁸

As this was a study using publicly available data, there was no need for approval by a Human Research Ethics Committee.

RESULTS

The period retrieved by the search covered the years 1985 to 2021. 152 documents were found, of which 62 are classified as articles, 78 are letters, editorials and other types of publications and 12 are review articles. These documents are distributed across 97 sources (journals). The average number of citations per document was 15.46. The number of references mentioned totaled 2,654. A total of 306 keywords were specified by the authors, and the most frequently found keywords in the documents totaled 1,279.

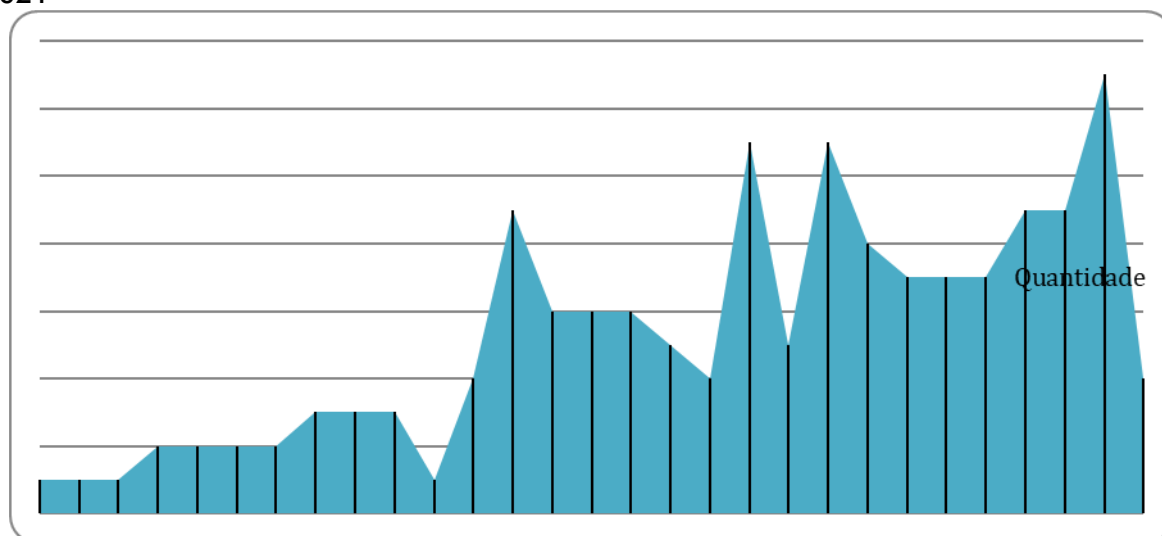
With regard to the authors, the selected collection includes 527 researchers, of which 28 are single-authored documents and the other 499 are multi-authored documents. The average number of authors per document was 3.47. The collaboration index was 4.12.

Collaboration networks aim to show the interaction of how authors, affiliations/institutions and countries relate to others in a specific field of research, making it possible to reveal the

authors, institutions and countries with regular research. Out of a total of 20 countries, most authors are found in the United States, followed by China and the United Kingdom.

It can be seen that there was a greater increase in publications from 2005 onwards, with the first article recorded in 1985. Over the years, production peaked in 2020 with 13 articles. Reading the articles from 2021 and 2020, it can be seen that this explosion of publications sought to investigate a variety of topics involving neonatal clients in the NICU, with only three articles on Neonatal Therapeutic Hypothermia, two articles on Brain Monitoring and one article on pain management in neonates. It is possible to identify that publications have intensified since 2005, which corroborates the importance of this research and the context addressed here (Figure 1).

Figure 1 - Evolution of the amount of scientific production in *Scopus* in the annual period from 1985 to 2021



Source - Prepared by the authors (2021).

The predominant language was English, present in 281 publications (61.50%), followed by 27 articles (5.90%) available in Portuguese, 26 articles (5.70%) in Italian and 123 (27%) in other languages.

In terms of countries, the countries that published the most on the subject were the United States (190), followed by the United Kingdom (28) and Brazil (27).

Regarding the indicators related to documents. *Bradford's Law* on research data allowed us to verify the productivity of the journals, finding the core on the subject

addressed here, i.e. the most relevant sources based on their number of publications in a set of journals, it was found that 11 journals make up the so-called most devoted/productive core when researching hypothermia in the Neonatal ICU and HT in HIE, indexed in the *Scopus* database, identifying the main sources where information on the subject can be sought. This suggests that special consideration should be given to the limited number of sources to be updated on this topic. 97 source entries (journals) were identified, of which 11 are the most relevant.

Figure 2 - Table showing the application of *Bradford's law* of journal impact

Journal	Classification	Frequency	Cumulative Frequency	Zone
<i>Neonatal Network: NN</i>	1	9	9	Zone 1 (Core)
<i>Jognn - Journal Of Obstetric, Gynecologic, and Neonatal Nursing</i>	2	8	17	
<i>Neonatal Network</i>	3	8	25	
<i>Advances In Neonatal Care</i>	4	6	31	
<i>Journal Of Maternal-Fetal And Neonatal Medicine</i>	5	4	35	
<i>Journal Of Perinatology</i>	6	4	39	
<i>Journal Of Neonatology</i>	7	3	42	
<i>Newborn And Infant Nursing Reviews</i>	8	3	45	
<i>The Nursing Journal Of India</i>	9	3	48	
<i>Acta Paediatrica, International Journal Of Paediatrics</i>	10	2	50	
<i>Archives De Pediatrie</i>	11	2	52	
<i>Archives Of Pediatrics And Adolescent Medicine</i>	12	2	54	Zone 2
<i>Cochrane Database Of Systematic Reviews</i>	13	2	56	
<i>Critical Care Nursing Clinics Of North America</i>	14	2	58	
<i>Journal Of Advanced Nursing</i>	15	2	60	
<i>Journal Of Babol University Of Medical Sciences</i>	16	2	62	
<i>Journal Of Neonatal Nursing</i>	17	2	64	
<i>Journal Of Nursing</i>	18	2	66	
<i>Journal Of Obstetric, Gynecologic, And Neonatal Nursing : Jognn / Naacog</i>	19	2	68	

Kinderkrankenschwester : Organ Der Sektion Kinderkrankenpflege / Deutsche Gesellschaft Fäær Sozialpã,,Diatrie Und Deutsche Gesellschaft Fäær Kinderheilkunde	20	2	70	
--	----	---	----	--

Source - Research data (2021).

It can be seen in Figure 2 that the low level of dispersion is identified by defining the core of journals that focus on the topic, which is made up of eleven (11) journals with a considerable number of articles of interest.

It can be seen that Zone 1, which is considered the core, is the productive zone. Zone 2 concentrates a smaller number of journals, which means that the number and productivity of journals is concentrated in Zone 1, which is considered to be the most productive.

The *H-index* is a performance indicator with a dynamic number, and its purpose is to indicate a balance between the productivity (scientific output) and citation impact (citation count) of publications, in this case journals.¹⁰

Among the 10 journals with the highest number of local citations, of the total number of references (776 references located in the document collection) mentioned in the documents, it was found that the most referenced articles are those from the journal *Pediatrics*, which has 159 reference citations.

According to *Lotka's law*, the number of articles published per author increases as the output of the authors with the most publications becomes less frequent. By applying this law, it was possible to classify the most productive authors on the subject. In the *corpus of* this research, 527 authors were found who addressed Therapeutic Hypothermia. These included 28 authors of single-authored documents and 499 authors of multi-authored articles.

The authors with the most local access, i.e. among the collection of documents, were *Jacobs SE* with 394 citations, his most accessed article with an average of 35.81 citations per year; *Conde-Agudelo A.* with 147 citations and an average of 24.50

citations per year; and *Shah P. S.* with 145 citations and an average of 9.66 citations per year.

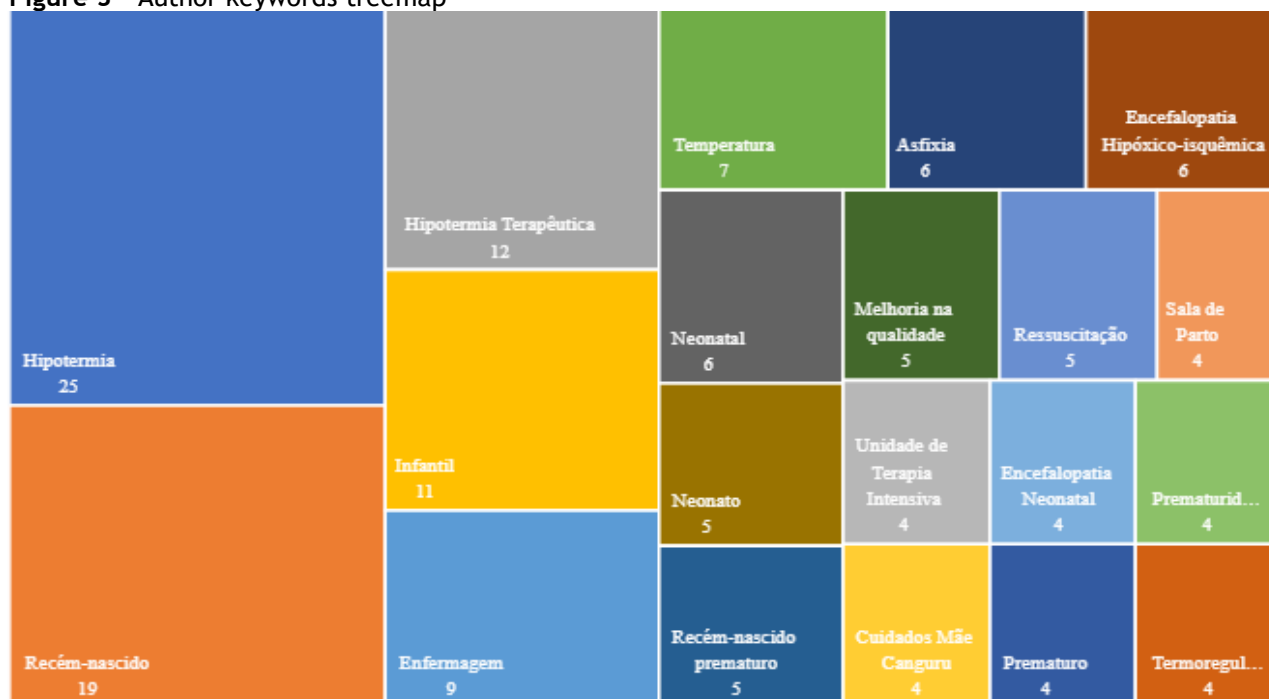
It can be seen that the United States is the most accessed country among the authors with 337 total citations and an average of 15.3 citations per year, followed by the United Kingdom with a total of 180 citations and an average of 45 citations per year.

Referring to the 20 most accessed documents globally among the 152 documents retrieved, considered the most relevant by the community. The *Scopus* database provides a visualization of the *H-index* of articles from 1985 to 2021. The most accessed author was Jacobs et al (2011) with 394 citations, in second place Conde-Agudelo and Díaz-Rossell (2016) with 147 citations, the corresponding types of studies being: randomized clinical trial and systematic review with meta-analysis respectively.

A keyword is a simple or compound term that summarizes what a document (article/content) is about. It is an important indicator of content, making it possible to identify the main topics covered, as well as indicating research trends. From the 152 documents, 306 keywords specified by the authors and a total of 1,279 keywords were extracted.

There were 20 keywords with the highest occurrence. Hypothermia was the most frequent keyword, with a total of 25 occurrences, while others with lower frequency were: premature, thermoregulation and neonatal encephalopathy (Figure 3).

Figure 3 - Author keywords treemap



Source - Research data (2021).

DISCUSSION

One limitation of the study was that the findings may not correspond to the reality of productions involving the word comfort available in other areas of health or other data search portals.

The analysis of 152 documents from the Scopus database related to the keywords "Neonatal Therapeutic Hypothermia", "Hypoxic-Ischemic Encephalopathy" and "comfort" revealed relevant information on the state of the art of this subject. As it is an innovative technology, primary studies are still timid at national level, especially randomized clinical trial studies on the application of this technique are more widespread in developed countries such as the UK, Portugal and the USA.

Many documents were retrieved with terminology focused on the prevention of hypothermia in NBs in the neonatal ICU. This theme is confused with the keyword contained in the search *string* descriptor called "Induced Hypothermia", in this case the

technique performed in the neonatal setting. The predominant language is English, and the articles are mainly published in medical journals, followed by nursing journals.

In relation to the growth in publications on the subject, a study on HT in IHE addresses the efficacy and safety of moderate whole-body hypothermia in NBs with IHE born in hospitals with and without NICUs or hypothermia equipment, concluding that whole-body hypothermia can be effective and appears to be safe when started within 6 hours of birth in the hospital of birth in term and near-term newborns with IHE.¹¹

There has been an increase in publications since 2005, but with unstable growth. The highest productivity peaks were in 2005 with 9 articles published, 2011 and 2013 with 11 documents published respectively, and the highest peak was in 2020 with 13 articles.

An integrative literature review showed that since 2005, publications on the subject of our study have intensified and several randomized controlled clinical trials have been carried out showing therapeutic hypothermia as a clinically viable strategy to minimize brain damage and mortality in newborns after acute asphyxia who evolve with moderate to severe IHE.¹¹

A review study on comfort in oncology nursing highlighted among its findings in relation to areas of knowledge, a high number of publications on child health and spirituality, and also concluded that research related to oncology nursing and comfort has increased significantly over the years, especially in the last five years.¹²

It was found that the United States is the country with the largest production of articles, and from which the authors are linked through the main institutions that publish on the subject.

It was also possible to identify the most accessed articles by the scientific community. The most-accessed article aimed to determine the efficacy and safety of moderate body hypothermia in newborns with IHE born outside of HT referral centers, with 394 citations to date.

Regarding the use of the hypothermia technique, there are two modalities: whole-body and selective head hypothermia.^{11,13} In 2020, the studies that researched the subject addressed the experience of parents with children undergoing therapeutic hypothermia⁽¹³⁾, another study showed that therapeutic hypothermia is currently the treatment of choice for newborns with hypoxic-ischemic encephalopathy and the timely application of nursing interventions in this treatment is the main evidence for reducing mortality and neurodevelopmental disorders.^{13,14}

Research shows that despite the risks, HT has substantial benefits.^{11,15} However, applying the HT technique safely to newborns with IHE requires months of training for the multidisciplinary team, with an emphasis on understanding the multisystemic impairment involved in perinatal asphyxia, associated with the potential complications inherent in this treatment modality.^{11,13-16}

With regard to the term hypothermia in the Neonatal ICU, there was a tendency to research: Hypothermia and survival of premature and/or postoperative NB; Therapeutic Hypothermia in HIE related among other subjects to nursing care, Humanization in the Neonatal ICU and Fatty necrosis of the subcutaneous tissue.¹⁵

In line with the findings on comfort, another study showed the importance of humanized attitudes which, together with scientific knowledge and skills, contributed to the recovery of the newborn's health, minimized stress factors in the neonatal environment, as well as promoting family acceptance and the establishment of bonds during the care process and concluded that the acquisition of knowledge about humanized care mainly involved comfort actions, newborn safety, family acceptance and attention to the environment.¹¹⁻¹³

In this sense, a review study corroborating the theme states that "*the multidisciplinary exchange in a NICU can contribute significantly to the quality and safety of care for asphyxiated NBs, since they are vulnerable and susceptible to health problems, mainly because they are at risk of compromising vital organs after IHE*".^{11:5}

In line with this theme, the results of a study on comfort from the perspective of cancer clients addressed the importance of holistic nursing care and said that we should use therapeutic tools to promote comfort and well-being for clients.¹⁷ To this end, care should include interventions *"in the area of physical alterations or symptoms, managing emotions, preparing for changes in routine and possible changes in family and social roles, allowing the patient to adapt to a new health and life condition"*.^{17:6}

Through the conceptual, intellectual and social structures, which reflect a network vision through nodes and links, they revealed the chain of production of authors, journals, keywords according to the specification of the object under analysis.

In relation to the conceptual structure, it can be seen that, based on the keywords, it is possible to identify that there is a growing trend of topics of interest for new research in the area. It was possible to identify groups with consolidated research themes and techniques, as well as those that are emerging. The grouping with a recent and growing trend of evolution is hypothermia and the newborn, for which preventive techniques for heat loss in premature and term NBs have been used since the NB's admission to the Neonatal ICU, such as the traditional bath and wrap technique, as well as the treatment of induced hypothermia for the treatment of IHE involving whole-body and selective head cooling techniques.

With regard to comfort in HT, two studies looked at treatment and techniques for minimizing pain during procedures in the neonatal ICU.^{18,19} A study involving the experience of parents of children in HT showed the importance of family support in the treatment of IHE.²⁰ Another study evaluated the safety of the TH procedure by training the nursing team in the therapy.²¹

With regard to social structure, it was possible to find out about collaboration networks, and it was found that there are groups of authors, institutions and countries working in partnership. However, in short, the authors, institutions and countries research the subject in isolation. This does not represent a consolidated collaboration network in this area.

CONCLUSION

The bibliometric characteristics of scientific productions on comfort in neonatal therapeutic hypothermia revealed a predominance of studies produced in English and originating in the United States of America. It was possible to verify the elite authors, especially those with the highest number of citations.

The themes that came closest to the term comfort were: safe technique, scientific technical knowledge, professional training, minimizing pain, humanizing NB care, welcoming and communication with the family. The use of HT in the neonatal ICU is growing and it is said that a safe procedure requires months of training.

There were only a limited number of studies retrieved on the subject, which may be due to a gap in knowledge about comfort in TH and the databases not covered. It is therefore suggested that further research be carried out on other data portals in order to expand scientific production on the subject and disseminate scientific evidence in the context of building a concept of comfort in Therapeutic Hypothermia.

REFERENCES

1. Souza MC dos S, Jaramillo RG, Borges M da S. Conforto de pacientes em cuidados paliativos: revisão integrativa. *Enferm. glob.* [Internet]. 2021 [acesso em 22 de fevereiro 2022];20(6). Disponível em: <https://dx.doi.org/10.6018/eglobal.420751>.
2. Procianoy RS. Hipotermia Terapêutica. Documento científico. Departamento Científico de Neonatologia (2019-2021). Sociedade Brasileira de Pediatria. [Internet]. 2020 [acesso em 20 de agosto 2021]. Disponível em: URL: https://www.sbp.com.br/fileadmin/user_upload/22568c-DocCient_-_Hipotermia_Terapeutica.pdf.
3. Gomes PPS, Lopes APA, Santos MSN, Façanha SMA, Silva AVS, Chaves EMC. Medidas não farmacológicas para alívio da dor na punção venosa em recém-nascidos: descrição das respostas comportamentais e fisiológicas. *Br JP.* [Internet]. 2019 [acesso em 20 de julho 2021];2(2). Disponível em: <http://dx.doi.org/10.5935/2595-0118.20190026>.

4. Kolcaba K. Comfort theory and practice: a vision for holistic health care and research. New York: Springer Publishing Company: 2003.
5. Garcia LAA, Camargo FC, Gomes THM, Rezende MP, Pereira GA, Iwamoto HH, et al. Production of knowledge of nursing about potential life years lost: bibliometric study. Refacs. [Internet]. 2017 [cited 2021 jul 18];5(1). Disponível em: <http://dx.doi.org/10.18554/refacs.v5i1.1911>
6. Agra MAC, Freitas TCS, Caetano JÁ, Alexandre ACS, Sá GGM, Galindo Neto NM. Nursing dissertations and theses on the mobile emergency care services: a bibliometric study. Texto Contexto Enferm. [Internet]. 2018 [cited 2021 feb 22];27(1):e3500016. Disponível em: <https://www.scielo.br/j/tce/a/Z8HvTPNDjv9MjLQHvKwQdTn/?lang=pt>.
7. Selçuk AA. Um Guia para Revisões Sistemáticas: PRISMA. Arco Turco Otorrinolaringol .[Internet]. 2019 [acesso em 22 de fevereiro 2022];24(1). Disponível em: <http://dx.doi.org/10.5152/tao.2019.4058>.
8. Pucinelli RH, Kassab Y, Ramos C. Metodologias ativas no ensino superior: uma análise bibliométrica. Brazilian Journal of Development. [Internet]. 2021 [acesso em 22 de fevereiro 2022];7(2). Disponível em: <http://dx.doi.org/10.34117/bjdv7n2-051>.
9. Cândido RB, Garcia FG, Campos ALS, Tambosi Filho E. Lotka's Law: a look at the productivity of the authors in the brazilian literature of finance. Revista eletrônica de biblioteconomia e ciência da informação. [Internet]. 2018 [cited 2021 feb 22];23(53). Disponível em: <http://dx.doi.org/10.5007/1518-2924.2018v23n53p1>.
10. Guimarães GL. Por uma crítica do índice-h pela área da enfermagem à luz de thomas kuhn. Texto contexto enferm. [Internet]. 2019 [acesso em 22 de fevereiro 2022];28:e20180264. Disponível em: <http://dx.doi.org/10.1590/1980-265X-TCE-2018-0264>.
11. Leite PNM, Teixeira RB, Silva GD da, Reis AT, Araujo M. Hipotermia terapêutica e encefalopatia hipóxico-isquêmica. Revenferm UERJ. [Internet]. 2020 [acesso em 20 de fevereiro 2022];28:e42281. Disponível em: <http://dx.doi.org/10.12957/reuerj.2020.42281>.
12. Moura LF, Louro TQ, Ribeiro YC, Silva RCL, Figueiredo NMA, Silva CRL. O conforto na enfermagem oncológica: revisão de literatura. Journal of Nursing UFPE/Revista de Enfermagem UFPE. [Internet]. 2016 [acesso em 20 fevereiro 2022];10(10). Disponível em: <https://doi.org/10.5205/1981-8963-v10i10a11458p3898-3906-2016>.

13. Saldaña C, Nathali F. Hipotermia terapéutica en el recién nacido con encefalopatía hipóxica - isquémica en la Unidad de Cuidados Intensivos Neonatales. DSpace Repository. [Internet]. 2020 [acesso em 20 de janeiro 2022];1-98, Disponível em: <https://hdl.handle.net/20.500.12866/7756>.
14. Ibrani D; Molacavage S. The six-hour window: how the community hospital nursery can optimize outcomes of the infant with suspected hypoxic- ischemic encephalopathy. Neonatal Network. [Internet]. 2018 [cited 2022 feb em 20]. Available from: <https://doi.org/10.1891/0730-0832.37.3.155>
15. Whalen M. A case study of severe hypercalcemia secondary to subcutaneous fat necrosis: a diagnosis of exclusion. Neonatal Network. [Internet]. 2019 [cited 2022 aug 10];38(4). Available from: <http://doi.org/10.1891/0730-0832.38.4.236>.
16. Laptook AR, Shankaran S, Tyson J, Munoz B, Bell EF, Goldberg RN, et al. Effect of therapeutic hypothermia initiated after 6 hours of age on death or disability among newborns with hypoxic-ischemic encephalopathy a randomized clinical trial. JAMA. [Internet]. 2017 [cited 2022 feb 22];318(16):1550. Available from: <http://doi.org/10.1001/jama.2017.14972>.
17. Louro LFM, Santiago LC, Louro TQ, Ribeiro YC, Silva RCL, Silva CRL. O conforto sob a perspectiva dos clientes oncológicos em tratamento quimioterápico ambulatorial. Cienc Cuid Saude. [Internet]. 2018 [acesso em 22 de fevereiro 2022];17(4)e45001. Disponível em: <http://doi.org/10.4025/cienccuidsaude.v17i4.45001>.
18. Allegaert K. A critical review on the relevance of paracetamol for procedural pain management in neonates. Frontiers In Pediatrics. [Internet]. 2020 [cited 2021 jul 20];8(89). Disponível em: <https://doi.org/10.3389/fped.2020.00089>.
19. Salmani N, Karjoo Z, Dehghani K, Sadeghnia A. Effect of facilitated tucking with the nurse and a simulated hand on physiological pain index during vein puncture on premature infants. Journal Of Babol University of Medical Sciences. [Internet]. 2018 [cited 2021 jul 20];20(9). Available from: <https://www.scopus.com/record/display.uri?eid=2-s2.0-85069471883&origin=inward&txGid=084d9126ebaedb1f4dd69683414d627e>.
20. Nassef Sk, Blennow M, Jirwe M. Parental viewpoints and experiences of therapeutic hypothermia in a neonatal intensive care unit implemented with family-centred care. Journal of Clinical Nursing. [Internet]. 2020 [cited 2021 aug 20];29. Available from: <https://onlinelibrary.wiley.com/doi/full/10.1111/jocn.15448>.

21. Huang Y-T, Lee M-Y, Liao H-Y, Chang C-C. Increasing the rate of completion of the therapeutic hypothermia procedure in the NICU. *Hu li za zhi the journal of nursing*. [Internet]. 2020 [cited 2021 jul 20];67(4). Available from: [https://doi.org/10.6224/JN.202008_67\(4\).09](https://doi.org/10.6224/JN.202008_67(4).09).