Maternal knowledge about breastfeeding: application of a pilot questionnaire developed in the neonatal intensive care unit

ARTICLE

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Abstract
This paper addresses discussions which involve Neonatal Intensive Care Units (NICU) and the interrelationships with the care of the premature babies. The participants were mothers from hospitalized babies and the data were gathered by a semi-structured questionnaire applied face-to-face and remotely. The focus was to understand the knowledge of mothers related to breastfeeding. The analysis procedures were supported by Iramuteq software based on descending Hierarchical Classification Method, analysis of similarity and the word cloud. The findings reveal that even though the mothers presented a broad knowledge about breastfeeding we identified a lack of knowledge on themes such as plugged milk duct, breast engorgement and breast infection. In addition, the results might contribute for building strategies to be applied by Healthcare professionals.

Keywords: Breastfeeding. Health. Learning. Premature Child. Psychology.

Conhecimento materno sobre aleitamento: aplicação de questionário piloto elaborado para Unidade de Terapia Intensiva Neonatal

Resumo
Este artigo aborda discussões que envolvem Unidades de Terapia Intensiva Neonatal (UTIN) e suas inter-relações com os cuidados destinados aos bebês prematuros. Os sujeitos foram mães de bebês internados em UTIN e a coleta dos dados foi realizada por meio de um questionário semiestruturado, aplicado de forma presencial e remota (impresso e eletrônico). O objetivo foi capturar o conhecimento das mães sobre o aleitamento materno. A análise dos dados valeu-se do software Iramuteq, utilizando a teoria dos grafos, o dendrograma, a nuvem de palavras e a análise de similitude. Identificamos que, embora haja um entendimento geral das mães em relação aos aspectos fundamentais sobre o aleitamento, há uma necessidade de fortalecer o conhecimento sobre a ‘pega correta’, o manejo do ‘ingurgitamento mamário’ e o tratamento de ‘fissuras’. Os resultados apresentam temas para que profissionais da saúde aprimorem estratégias a fim de capacitar mães diante de desafios relativos à amamentação.
1 Introduction

Discussions about breastfeeding are part of the daily lives of those who care for newborns, although the families involved in this process don't always realize how little they understand this universe. In this sense, it is fundamentally important to understand that breastfeeding is not instinctive in human beings and therefore needs to be learned. As such, access to information can influence its prevalence, making it a crucial factor if it is to be prolonged and achieve success (Alves; Mota; Pagliari, 2021; Carvalho; Gomes, 2019; Morais; Guirardi; Miranda, 2020; Rocha et al., 2018; Silva et al., 2021).

However, when a newborn requires care in a Neonatal Intensive Care Unit (NICU), a number of challenges arise, both for health professionals and for mothers and fathers. Multidisciplinary approaches that foster the mother-baby dyad bond become essential (Freitas; Lazzarini; Seidl, 2021; Morais; Guirardi; Miranda, 2020; Oliveira et al., 2021; Porto et al., 2020; Teston et al., 2018).

Pediatric intensive care units emerged in the 1960s and advances in technological resources made it possible to recover critically ill children. These advances made it possible for newborns to survive in neonatal intensive care units in the 1970s, which was unfeasible before that time. Since then, neonatal units have been responsible for ensuring comprehensive and humanized care for newborns. To this end, they have made several advances, such as the specialization of pediatricians, the emergence of improved technological resources, an increase in research as a way of ensuring humanized care and a better quality of life for these patients and, more recently, the recognition of the importance of meeting the psychosocial needs of parents in order to reduce perinatal and neonatal morbidity and mortality (Azevedo; Pfeil, 2019; Baldini; Krebs, 2010; Costa;...
A baby born prematurely (before 37 weeks gestation) can generate anxiety and apprehension in the parents, causing them to suspend the construction of the imaginary baby and face the real baby - a child exposed to risk not only from an organic point of view, but also from a psychological point of view. At this point in its development, the baby depends on others and, in some cases, is deprived of intimate contact with its parents (Freitas, 2022; Wanderley, 2011).

Among the current guidelines for the care of premature babies, the importance of ensuring access to health care centered on families and their needs, the establishment and maintenance of breastfeeding as a means of reducing the risk of infection, ensuring high-quality nutritional intake and strengthening the maternal bond occupy a prominent place (Almeida; Goldstein, 2022; Freitas; Lazzarini; Seidl, 2021; Oliveira et al., 2021; "WHO | UN News", 2022; Wanderley, 2011; World Health Organization, 2012).

The present work is dedicated to studying the knowledge of mothers of newborns admitted to the neonatal ICU, in order to determine the content to be covered in a didactic material. The aim of this material was to help promote the mother-baby bond, the physical and mental health of both, and to provide security for the care and support needed for breastfeeding. In this way, the data captured in this research supported the development of content in the form of didactic material, promoting clarification of doubts with precise information, without, however, directly conflicting with the prior knowledge of these mothers (Freitas; Lazzarini; Seidl, 2021; Winnicott, 2020).

We would also like to point out that our experiences in the hospital field as members of a health team in a NICU sparked an interest in discussions around the problem of breastfeeding. One of the first perceptions to emerge was how much the families involved in this process lack understanding of this universe. In other words, we realized that beyond a biological or instinctive understanding of the human being, we
have to consider a socially constructed reality, based on history and culture, permeated by the figure of the woman/mother, psychological factors and the world of work (Marques; Cotta; Priore, 2011; Ministério Da Saúde, 2021).

Therefore, the didactic material in the form of comic strips (HQ), a teaching product developed on the basis of the data acquired from this pilot questionnaire, is a material with a medium level of innovation. It has clear, accessible language and provides relevant information for health professionals. Addressing the issue in question with mothers and their families during the child's hospitalization also provides some complementary support to the materials currently produced and offered by the Ministry of Health.

2 Methodology

Participants

The field of this research was a highly complex Neonatal and Pediatric Intensive Care Unit, located in the municipality of Barra Mansa, in the Southern Fluminense Region of the state of Rio de Janeiro, which treats patients with health insurance and the Unified Health System (SUS). The unit has approximately 34 employees and has an average of 30 admissions per month.

The research subjects are mothers of babies who were admitted to the neonatal ICU during the month of May 2023, totaling 14 patients. The research in question was submitted to and approved by the Research Ethics Committee under CAEE number 57801022.3.0000.5237.

Instruments

At first, the pilot questionnaire was applied using 4 women as the initial sample, subdivided into 2 groups: mothers with their children in the ICU and mothers with their children at home one month after discharge from hospital. The participants were informed
about the characteristics of the study and included in the research after giving their consent. After the pilot study, the questionnaire was modified, with minor revisions that made it easier to understand and allowed for better performance in the remote format.

Data on mothers’ knowledge of breastfeeding was collected using an individual semi-structured questionnaire, applied in person and remotely, via a printed and electronic form. The questions covered theoretical and practical issues related to breastfeeding, such as information received on breastfeeding during pregnancy, prenatal and postpartum care, support and participation of the husband or partner and family in the breastfeeding process, instructions received on when to offer the breast to the baby after birth, the benefits of breastfeeding for the child and mother, psychological factors and their influence on milk letdown, as well as perceptions about feeding, weak milk, fissures, breast engorgement, ingestion of drinks and foods to stimulate milk growth, milk removal, identification of feelings and sensations when breastfeeding the baby, information received from health professionals in the neonatal ICU about breastfeeding, use of accessories and correct latch-on. The records were kept in November 2022. The choice of the electronic form was made by the mothers themselves, who indicated that they had more freedom to answer the questions at other times, i.e. inside and outside the hospital unit. This allowed them to turn their attention to caring for their newborns, as well as meeting the professional demands of the post-pandemic world of work (Lima; Soares; Santana, 2022).

The final version of the questionnaire was summarized in seven sections divided as follows: section 1 - explanation and consent form, section 2 - identification, section 3 - prenatal care, section 4 - support system, section 5 - postpartum, section 6 - neonatal ICU and section 7 - knowledge about breastfeeding, and was applied exclusively using an electronic form. The convenience sample consisted of 14 mothers of babies admitted to a NICU in May 2023. At the time of application, information was provided about participation and the research carried out.
Procedures

The data was analyzed using the IRAMUTEQ software, which supports multiple languages, including Portuguese, and operates based on the Python language and the R statistical software (Probo et al., 2023). Introduced in Brazil in 2013, it is used for statistical analysis of texts and interviews. The software facilitates the coding and organization of information.

This makes it easier to locate the segment of text used in qualitative research. To do this, procedures must be followed to prepare the initial text that gives rise to the corpus of analysis. The steps are described below:

Stage 1: The answers are generated on the basis of 14 interviews, which gave rise to the texts organized in a single file;

Stage 2: On the basis of the file, each text is separated by a command line called in this software as follows: insert four asterisks (****), then insert a space and an asterisk (*) linked to the command word (e.g. **** *knowledge);

Step 3: The file should be proofread, taking into account elements such as punctuation, typos and the combination of compound words;

Step 4: The file should be saved in Notepad as a text document that uses UTF-8 character encoding (Unicode Transformations Format 8 bit codeunits).

In the case of compound words, we will use the following format: asterisk (*) linked to the command word and then the insertion of an underline (e.g. *Pre_natal). The questions have been removed, keeping only the answers complete and related to the question.

The stages presented above ensured careful observation in order to get the most out of the compound words in the corpus. The process includes coding the text corpus by compiling the interview responses into a file, using specific commands to separate the texts, reviewing punctuation and errors, and saving the file in a compatible format for analysis. Compound words are formatted with an underscore.
It is worth noting that the analysis of primary data acquired in text format, prominently used in the Humanities and Social Sciences, has made use of specific software. In the case of IRAMUTEQ, Graph Theory, designed by the mathematician Leonhard Euler, plays an important role. This is because similarity analysis, for example, is based on this theory, making it possible to identify co-occurrences between words and their results (Camargo, Justo, 2013). Graphs are abstract structures used to model pairwise relationships between objects. A graph is made up of vertices (or nodes) and edges (lines) that connect them. This theory is used to solve problems in many areas, including computer science, engineering, biology, sociology and many others. In this article, we used the dendrogam, word cloud and similarity analysis to evaluate the speeches made by the interviewees (Melo, 2014; Santana; Matias; Santana, 2023; Silva, 2015).

3 Results and Discussion

After grouping and processing the occurrences of words, a schematic representation is created, called a class dendrogam. This dendrogam makes it possible to visualize the words with the greatest percentage of difference and average frequency, showing the link between them (Souza et al., 2018).

Class 1 presents the flow of milk, its properties and its function, showing that management interferes with the result. Class 2 is related to the act of breastfeeding itself, addressing the difficulties and the know-how. Class 3 emphasizes the fact that breastfeeding prevents illness and promotes immunity, and the benefits for the baby. Class 4 points out the actions to remove milk, i.e. massage, the pump, drainage, how and when it should be done. It should be noted that each class has a different color and the Elementary Context Unit (ECU) of each class has the same color as the class. Figure 1 below illustrates the result of the dendrogam.
By inserting the highlighted words into the text segments, we identified and analyzed the link between the mothers' knowledge and actions, placing them in the role of protagonists of the breastfeeding process in the NICU.

The dendrogram shows four well-defined classes of words: class 1 clearly indicates breastfeeding procedures, delimiting the act of feeding established at the time of breastfeeding. Class 2 reveals another facet of the process, this time related to
technique - the act of giving and taking the breast is presented as a domain of 'how to do it'. Class 3, on the other hand, refers to immunity, help, good and illness, and is a core reference to the benefits of breastfeeding for the baby. Class 4 translates an element of self-care, identified through words such as massage and pump, which show a concern for breast complications from unsuccessful breastfeeding.

In turn, the word cloud diagram has the function of highlighting, grouping and organizing the words that appear most frequently in the text, promoting quick visualization of the key words, signaling their prominence in the research analysis corpus (Moimaz et al., 2016; Tinti; Barbosa; Lopes, 2021). The data from the text corpus was processed, resulting in a word cloud shown in figure 2.

Figure 2 - Word cloud of UCE in each class and words provided by IRAMUTEQ software.

Source: Elaborated by the authors.
After the processing stages, the meanings in the word cloud resulting from the mothers' speeches were interpreted. The word "know" was the most prominent, followed by the words "receive" and "take". In the context of the narratives analyzed, the word 'know' has the meaning of knowledge. The word "receive" has the meaning of communication and, finally, the word "take" is strongly associated with action, highlighting the centrality of theory and practice in the discourse of these women. The periphery of the cloud is made up of terms related to the central core of "knowing how to do", with words such as "milk", "food", "right" and "mask" complementing the objects of the core.

Finally, similarity analysis aims to recognize nuclei and structures in narratives and is anchored in graph theory. The use of this resource reduces the time dedicated to recurrences and patterns from narratives, as well as helping to recognize the representation structure, making it possible to identify words and their results indicating a connection (Moimaz et al., 2016; Tinti; Barbosa; Lopes, 2021).

From the graphic representation in figure 3, we can see the occurrence of a semantic range of words: "milk", "when", "know", "how", "receive".

Figure 3 - Similarity analysis of UCE in each class and words provided by IRAMUTEQ software.
After analyzing the tree of similarities, it can be seen from the connections that most of the women interviewed - regardless of age, schooling and municipality - were unsure about the information on breastfeeding that should be provided during prenatal care. This aspect indicates a gap in the guidance offered, since the interviewees’ discourse does not directly include the advantages of breastfeeding. Despite this, the vast majority showed that they knew about the benefits of breastfeeding for the baby.

The similarity graph produced by analyzing the answers given by the mothers taking part in the survey is made up of 12 nodes, representing the most frequent words in the mothers' answers. These nodes are connected by edges, which represent the similarity between the words. The edges are colored according to the level of similarity between the words. The words "breastfeed" and "milk" are the most connected to each other, indicating that mothers associate breastfeeding with breast milk. The words "mother", "baby" and "nutrition" are also related to each other, suggesting an association in the mothers' speeches between breastfeeding and the baby's nutrition. In addition, the words "health", "benefits" and "prevention" are also related to each other, indicating a direct link between breastfeeding and the health of the baby and the mother.

From this analysis, it is possible to infer that the mothers who took part in the survey have a certain knowledge of the fundamentals of breastfeeding. They associate breastfeeding with breast milk, the baby's nutrition, and the health of the baby and the mother. However, the graph also reveals some gaps in the mothers' knowledge. For example, terms such as "correct latch", "breast engorgement" and "fissures" are not related to any other words. This indicates that mothers are not familiar with these practical aspects of breastfeeding.

An important limitation of this study is the fact that it focuses only on the speeches of mothers and does not include their partners/fathers as part of the research. This was based on the realization that the greatest responsibility for care falls to women when it comes to motherhood, and that it is almost the exclusive domain of women when it
comes to breastfeeding. It is understood that this is a reality of the patriarchal structure of our society (Vicente; Freitas, 2022). However, this discussion was not addressed due to its complexity within the scope proposed for this work.

### 4 Conclusions

The aim of this study was to capture the knowledge of mothers of newborns admitted to a neonatal ICU about breastfeeding. In order to achieve this goal, we observed the relevance of a pilot questionnaire, a data collection instrument that allowed us to dialog and mature the processes that involved the realities experienced by mothers in a NICU. In this case, we reflected on various aspects, such as the language used, the questions selected and the thematic sections established during the construction of the questionnaire. These reflections served as a basis for the inclusion and exclusion of these aspects, which later gave rise to the official questionnaire.

The interrelationships identified in the mothers' speeches suggest that, although there is a general understanding of the fundamental aspects of breastfeeding, there is a need to strengthen knowledge about practical issues such as 'correct latch-on', the management of 'breast engorgement' and the treatment of 'fissures'. These gaps highlight opportunities to improve health education strategies and empower mothers to deal with the practical challenges of breastfeeding, promoting a more positive breastfeeding experience free from common problems at this stage of life.

It is essential to highlight the central role of mothers as active agents in the breastfeeding process. This reinforces the importance of effective communication and ongoing support from health professionals to strengthen mothers' confidence and ensure the promotion of infant health through well-informed and effective breastfeeding practices.
Such practices can be facilitated by an educational product that expands mothers’ knowledge of breastfeeding, since the level found does not yet reach the desired depth. This product should address practical aspects for successful breastfeeding in these specific cases.

Brazil has a privileged position globally in terms of actions to encourage breastfeeding, whose creation in the public health sphere can be traced back to the 1940s. Since then, we can see that the paths taken have culminated in actions such as: the creation of the National Institute of Childcare, now the Fernandes Figueira Institute at Fiocruz, Convention 103 (Maternity Support) approved by the International Labor Organization, thus ensuring maternity leave and human milk banks, and the Child-Friendly Hospitals.

Finally, it is hoped that this genuinely interdisciplinary research will open up a channel for reflection on the role of the Single Health System and the implementation of public policies, based on Article 200 of the 1988 Federal Constitution, as well as actions aimed at health professionals that are more anchored in teaching with significant pedagogical guidelines.

References


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