revista de pesquisa ISSN 2175-5361

CUIDADO É FUNDAMENTAL

Escola de Enfermagem Alfredo Pinto – UNIRIO

INTEGRATIVE REVIEW OF LITERATURE *DOI: 10.9789/2175-5361.rpcfo.v17.13519*

STRATEGIES FOR MANAGING PAIN RELATED TO BREASTFEEDING: AN INTEGRATIVE LITERATURE REVIEW

Estratégias para o manejo da dor relacionada ao aleitamento materno: revisão integrativa de literatura

Estrategias para el manejo del dolor relacionado con la lactancia materna: revisión integradora de la literature

Mizaelly Layrane Alves Fonseca[I]
Marcelly Santos Cossi[2]
Ana Clara Dantas[3]
Hellyda de Souza Bezerra[4]
Mércio Gabriel de Araújo[5]

RESUMO

OBJETIVO: identificar as estratégias utilizadas para o manejo da dor relacionada ao aleitamento materno. **Método:** trata-se de uma revisão integrativa realizada em novembro de 2023 a janeiro de 2024, que incluiu artigos indexados nas bases de dados: PubMed, Literatura Latino-Americana e do Caribe em Ciências da Saúde e a *Scientific Electronic Library Online*. **Resultados:** foram encontrados 11 artigos que atendiam aos critérios de elegibilidade. A maioria dos estudos foi publicada em 2023 (36,3%), na China (54,5%) e o desenho de estudo que prevaleceu na amostra foi o ensaio clínico controlado randomizado (36,3%), consequentemente, o nível de evidência mais frequente foi o nível II. **Conclusão:** esta revisão conclui que as principais estratégias identificadas foram: massagens mamárias, decocção *Gualou Xiaoyong* combinada com a manipulação indolor da lactação e terapias integradas. Esses achados podem ampliar as possibilidades terapêuticas para os enfermeiros durante a assistência com lactantes com dor relacionada à amamentação.

DESCRITORES: Aleitamento materno; Dor; Tratamento; Enfermagem.

[I,2,4,5] Federal University of Rio Grande do Norte, Santa Cruz, Rio Grande do Norte, Brazil.
[3] Federal University of Rio Grande do Norte, Natal, Rio Grande do Norte, Brazil.

Received: 2024/08/28. **Accepted:** 2025/02/12.

AUTOR CORRESPONDENTE: Ana Clara Dantas
Email: anaclaradaantas@yahoo.com.br
How to cite this article: Fonseca MLA, Cossi MS, Dantas AC, Bezerra HS, Araújo MG. Strategies for managing pain related to breastfeeding: an integrative literature review. *R Pesq Cuid Fundam (Online)*. [Internet]. 2025 [cited year month day];17:e13519. Available from: https://doi.org/10.9789/2175-5361.rpcfo.v17.13519.

ABSTRACT

OBJECTIVE: to identify the strategies used to manage pain related to breastfeeding. Method: this is an integrative review carried out from November 2023 to January 2024, which included articles indexed in the databases: PubMed, Latin American and Caribbean Literature in Health Sciences, and the Scientific Electronic Library Online. **Results:** 11 articles that met the eligibility criteria were found. Most of the studies were published in 2023 (36.3%), in China (54.5%), and the study design that prevailed in the sample was the randomized controlled clinical trial (36.3%), consequently, the most frequent level of evidence was level II. **Conclusion:** this review concludes that the main strategies identified were: breast massage, Gualou Xiaoyong decoction combined with painless lactation management, and integrated therapies. These findings may expand the therapeutic possibilities for nurses when assisting lactating women with breastfeeding-related pain.

DESCRIPTORS: Breastfeeding; Pain; Treatment; Nursing.

RESUMEN

OBJETIVO: identificar las estrategias utilizadas para el manejo del dolor relacionado con la lactancia materna. Método: se trata de una revisión integradora realizada desde noviembre de 2023 a enero de 2024, que incluyó artículos indexados en las bases de datos: PubMed, Literatura Latinoamericana y del Caribe en Ciencias de la Salud y la Biblioteca Electrónica Científica en Línea. **Resultados:** se encontraron 11 artículos que cumplieron con los criterios de elegibilidad. La mayoría de los estudios fueron publicados en 2023 (36,3%), en China (54,5%) y el diseño de estudio que predominó en la muestra fue el ensayo clínico controlado aleatorio (36,3%), en consecuencia, el nivel de evidencia más frecuente fue el nivel II. **Conclusión:** esta revisión concluye que las principales estrategias identificadas fueron: masajes mamarios, decocción de Gualou Xiaoyong combinado con manipulación indolora de la lactancia y terapias integradas. Estos hallazgos pueden ampliar las posibilidades terapéuticas para las enfermeras cuando atienden a mujeres que amamantan con dolor relacionado con la lactancia.

DESCRIPTORES: Lactancia materna; Dolor; Tratamiento; Enfermería; Terapia.

INTRODUCTION

Breast milk is widely recognized as the ideal and complete food for the newborn, especially during the first six months of life, providing all the nutrients, vitamins and minerals necessary for healthy growth and development. The World Health Organization (WHO) reinforces the recommendation of exclusive breastfeeding during this period, as it is considered the safest and most effective practice for promoting infant health. As well as providing nutrients in adequate quantities, breast milk contains immunological factors that offer protection against infections and diseases.[1]

Breastfeeding favors the baby's development and strengthens the emotional bond between mother and child, being described as a moment of unique emotional connection. The act of breastfeeding transcends nutrition, becoming a complex process that involves a variety of emotions and feelings.[2]

Data from the Centers for Disease Control and Prevention on breastfeeding rates among children in the United States of America (USA) born from 2014-2021 show that the rate of exclusive breastfeeding up to six months in 2014 was 24.9%, increasing to 27.2% in 2021.[3]

In Brazil, trends in breastfeeding indicators from 1996 to 2019 show that the indicators of early initiation of breastfeeding increased from 36.3% in 1996 to 62.5% in 2019. The indicator of exclusive breastfeeding up to six months increased from 26.9% in 1996 to 45.8% in 2019. Thus, there has been a significant improvement in breastfeeding indicators in Brazil, but the rates are still insufficient to reach the WHO/UNICEF targets for 2030.[4] There are several challenges reported in the breastfeeding process, including cracked or sore nipples, breast engorgement, mastitis, pain during breastfeeding and difficulties related to the baby's inadequate latch. These factors, especially when present in the early stages, tend to reduce the likelihood of continued breastfeeding unless professional interventions are offered.[5] It is estimated that 90% of women experience pain during the early stages of breastfeeding. Among women with pain who seek professional support, 43% continue to have persistent pain.[6] Research shows that previous experiences significantly influence mothers' breastfeeding plans, and solving these problems can impact their future decisions regarding infant feeding.[7-8]

In this context, nurses' support in breastfeeding is essential for solving problems and for mothers to continue with this practice. The role of nurses in making themselves

available, offering verbal and physical support when necessary and providing important information on pain relief interventions is a fundamental link in ensuring adherence and successful breastfeeding.[9]

Breastfeeding-related pain is a multifactorial and complex phenomenon and it can often be difficult to identify the underlying cause. In this sense, it is important that these professionals act in accordance with evidence-based practice, in order to offer qualified and resolutive care. Although the study by Freitosa et al. (2019) addressed treatment strategies for nipple pain and trauma in breastfeeding women[10], the continuous evolution of practices and the introduction of new interventions require updated evidence. A more recent analysis can identify gaps left by previous studies and provide new perspectives to guide nursing practice and the development of future research on the subject.

In view of the above, this study sought to answer the following research question: what strategies have been used to treat pain related to breastfeeding? The aim of this study is to identify the strategies used to treat pain related to breastfeeding.

METHOD

This is a descriptive integrative literature review, developed according to the following stages: formulation of the guiding question, literature search using eligibility criteria, data collection, critical analysis of the studies included, interpretation and synthesis of the results and presentation of the review.[11]

It should be noted that this study was carried out in accordance with the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist.[12] The research was conducted using the guiding question drawn up using the PICO strategy, where "P" corresponds to the study population: breastfeeding women with associated pain; "I" to the intervention studied: strategies for managing breastfeeding-related pain; "C" to the comparison with another intervention: not applicable in this study; and "O" to the outcome/outcome: reduction in breastfeeding-related pain. The question was therefore: What strategies have been used to manage breastfeeding-related pain?

The literature search took place between November 2023 and January 2024. The databases searched were: PubMed/MEDLINE, Latin American and Caribbean Health Sciences Literature (Lilacs) and the Scientific Electronic Library Online (Scielo). Access was via the journal portal of the Coordination for the Improvement of Higher Education Personnel (CAPES), recognized by the Federal University of Rio Grande do Norte, which was accessed via the electronic address: https://www.periodicos.capes.gov.br.

The descriptors used were identified in the Medical Subject Headings (MESH): Breastfeeding, Pain and Treatment. The search strategy was based on crossing the descriptors using the Boolean operator AND.

Regarding eligibility criteria, the inclusion criteria defined were: complete articles available in the databases and published in the last five years (2019-2023). The time frame was set to ensure that the results are based on recent research and relevant to current maternal and child care practices. The exclusion criteria were: editorials, abstracts, expert opinion, book chapters, reviews, theses, dissertations and monographs. Duplicate studies were only considered once for data analysis.

To help select the studies, Rayyan software was used to manage the preliminary screening of studies. Rayyan is an advanced free-access tool developed by the Qatar Computing Research Institute. After the titles and abstracts were read independently by peers, the studies were initially selected for later reading in full. After careful reading, a consensus was reached to resolve any differences between the researchers.

A data collection tool was previously developed containing the following items: title, authors, year of publication, journal, study design, level of evidence, cause of associated pain, strategies used to manage breastfeeding-related pain and the main results of the study. The database was prepared and stored in Microsoft Word 365.

For the critical analysis of the included studies, the level of evidence was classified according to the model proposed by Polit and Beck (2021), with the following distribution: level I - systematic review/meta-analysis of Randomized Controlled Trials (RCTs); level II - RCT; level III - non-randomized trial (quasi-experimental); level IV - systematic review of non-experimental studies; level V - non-experimental/observational study; level VI - systematic review/meta-analysis of qualitative studies; level VII - qualitative/descriptive study; level VIII - source not related to the research (internal evidence and expert opinion). 13 In order to interpret and synthesize the results, a summary table was drawn up based on the articles selected according to the following variables: authors, year of publication, country of publication, study design, level of evidence, cause of associated pain, strategy used to manage breastfeeding-related pain and the main results of the studies.

The data was analyzed inductively and the results of the review were presented in diagram, table and chart format for better visualization.

Given that this is an investigation based on information published in the literature and does not involve research or documents subject to ethical confidentiality, evaluation by the Research Ethics Committee was waived in this study.

RESULTS

220 articles were identified, 198 in PubMed/MEDLINE, nine in LILACS and 13 in SciELO. Of these, only 11 met the study's inclusion criteria, as shown in Figure 1, drawn up in accordance with the recommendations of the PRISMA 2020 flowchart.

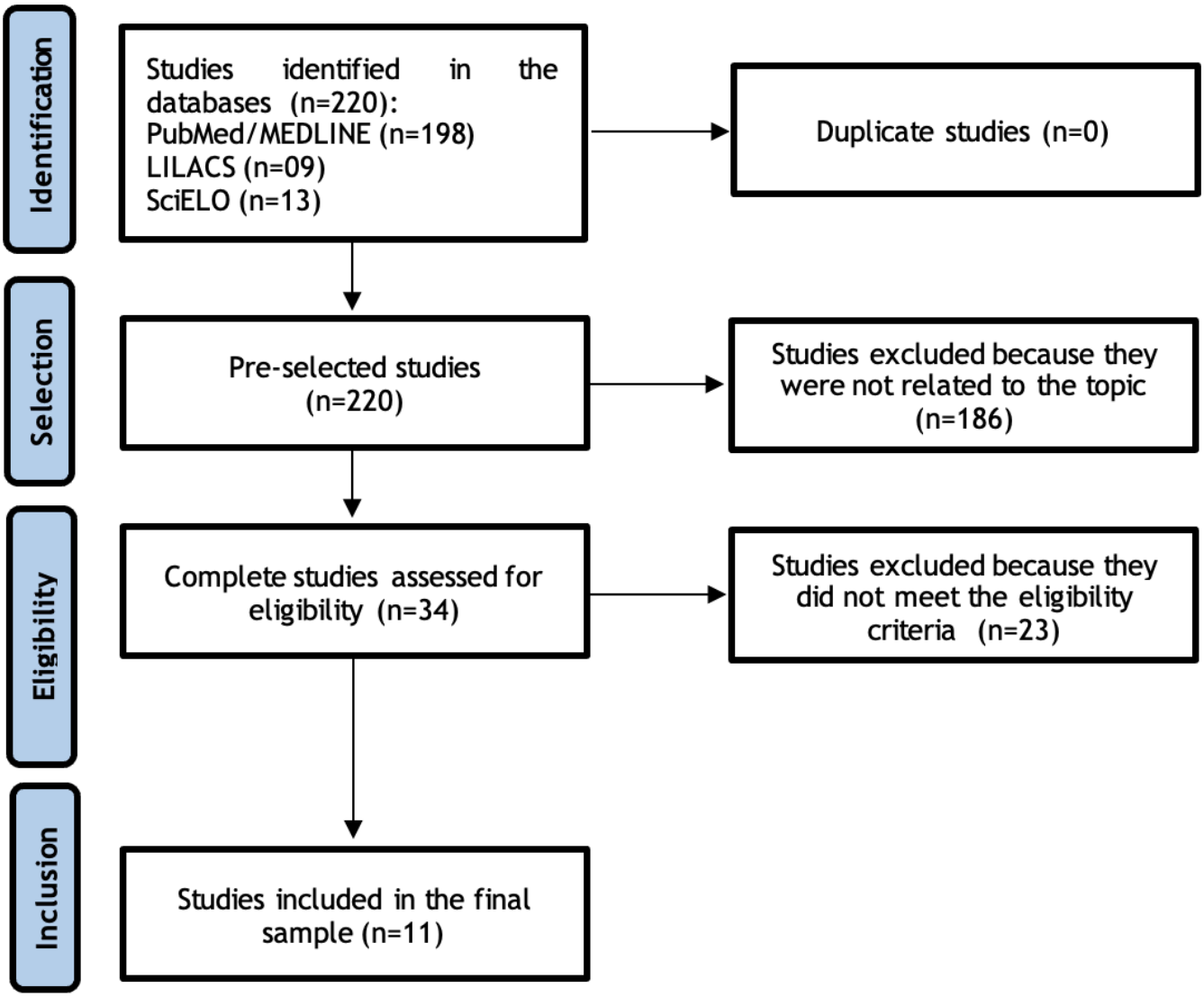

Figure 1 - Summary of the study selection process. Santa Cruz, RN, Brazil, 2024.

Regarding the characterization of the studies, the majority of the studies were published in 2023, with four articles (36.3%). In 2019, three studies (27.2%) were identified. In 2022 and 2021, there were two publications (18.1%) in each year. The country with the highest number of publications was China with six studies (54.5%), followed by Taiwan, South Korea, Thailand, Egypt and Portugal with one publication each (9.0%).

The study design that prevailed in the sample was the randomized controlled clinical trial (36.3%), consequently, the most frequent level of evidence was level II. Case-control studies and case reports were the design of two studies each (18.1%). Quasi-experimental, observational and case series studies were identified in the sample with one study each (9.0%).

Table 1 summarizes the results according to authors, year, country of publication, study design, level of evidence, cause of associated pain, strategy used to manage breastfeeding-related pain and the main results of the studies.

Chart 1 - Summary of the results of the integrative review. Santa Cruz, RN, Brazil, 2024.

Authors, year and country	Study design a nd NE††	Cause of associated pain	Pain management strategy	Main results
Lin et al. 2023 (Taiwan)[14]	Randomized controlled clinical trial/II	Breast engorgement	Therapeutic ultrasound, education and massage	Interventions can be beneficial for lactating women with breast symptoms. However, the effect of ultrasound showed no significant advantage over simulated ultrasound. Combined interventions can be considered a complementary alternative to monotherapy in the treatment of breastfeeding women with pain.
Choi et al. 2023 (South Korea)[15]	Randomized controlled clinical trial/II	Breast engorgement	Myofascial release massage of the pectoralis major	Massage has been shown to be effective in reducing engorgement and breast pain in breastfeeding women, reducing the need for formula supplementation and increasing breastfeeding follow-up. This technique appears to be a promising nursing intervention for pain relief in this context.

Authors, year and country	Study design a nd NE††	Cause of associated pain	Pain management strategy	Main results
Ye et al. 2023 (China)[16]	Observational study/V	Acute mastitis and breast abscess	Gualou Xiaoyong decoction combined with painless lactation manipulation	After treatment, the patients experienced a significant reduction in the size of the breast lump, disappearance or decrease, normalizing the discomfort of body temperature. There was also a decrease in markers such as leukocytes, neutrophils, C-reactive protein and procalcitonin. The presence of bacteria in the milk is delayed and there were no abnormalities on breast ultrasounds, except in two patients with breast abscesses, who temporarily stopped breastfeeding. It is important to note that all patients continued breastfeeding with no adverse reactions observed in the babies.
Jin et al. 2023 (China)[17]	Case report/VII	Breast abscess	Gualou Xiaoyong decoction and painless lactation for 24 days	On the 2nd day of treatment, the patient's breast mass and pain were significantly reduced and general asthenia improved. All conscious symptoms disappeared after 3 days, breast abscesses disappeared after 12 days of treatment, inflammation images disappeared after 27 days and normal lactation images were restored.
Zhang et al. 2022 (China)[18]	Randomized, controlled, multicenter clinical trial/II	Breast abscess	Use of Lactobacillus fermentum CECTF716 during needle aspiration	The use of Lactobacillus fermentum can shorten healing time in patients with lactational breast abscesses.
Munsittikul et al. 2022 (Thailand)[19]	Randomized clinical trial/II	Obstructed mammary duct	Integrated breast massage versus traditional breast massage	The integrated technique resolved the obstructed milk duct significantly faster, with significantly less pain and with a significantly greater reduction in the size of the mass after the first massage compared to the traditional one.

Authors, year and country	Study design a nd NE††	Cause of associated pain	Pain management strategy	Main results
Gao et al. 2021 (China)[20]	Case-control study/V	Nipple lesion without remission	Minimally invasive nipple debridement	For patients with no improvement after correction of the etiology of nipple damage, nipple debridement in chronically injured lactating nipples can create good conditions for wound healing, especially for patients with obvious pain and repeated milk deposition.
Yao et al. 2021 (China)[21]	Case-control study/V	Obstructed mammary duct and mastitis	Systematic five-step therapy: laser therapy, electric milk extraction, breast massage, cold and wet compress and patient education.	The use of systematic therapy proved effective in reducing breast pain, swelling and the extent of breast induration. There was a significant difference in clinical response between the groups evaluated.
Elagamy et al. 2019 (Egypt)[22]	Quasi-experimental study/III	Breast pain	Lanolin	The results indicate that breast milk was more effective in healing nipple sensitivity than the application of lanolin among postpartum breastfeeding mothers.
Chen et al. 2019 (China)[23]	Case series/V	Breast abscess	Ultrasound-guided surgical drainage	This procedure may serve as a promising alternative for women with lactational breast abscesses who require incisive intervention with a high cure rate, relatively short healing time, low recurrence rate, few complications, satisfactory aesthetic result and without interfering with breastfeeding.
Ferreira et al. 2019 (Portugal)[24]	Case report/VII	Candida mastitis	Fluconazole	Two weeks after starting treatment, the breastfeeding woman had no more symptoms and was able to breastfeed without feeling pain.

Source: data from the integrative review.
††Level of evidence according to Polit and Beck (2021).

DISCUSSION

The literature review identified a diversity of approaches and refinements in treatment protocols for breastfeeding-related complications, highlighting the use of pharmacological and non-pharmacological interventions and integrated therapies that have shown significant benefits in the management of breastfeeding-related pain. One of the strengths of this study is the predominance of evidence from research with a high level of evidence, such as controlled clinical trials, which gives greater scientific rigor to the findings discussed here.

It should be noted that China has conducted a significant amount of research into interventions for pain relief in breastfeeding mothers, positioning itself as an important center for scientific production on the subject.

Based on the findings presented in Table 1, a comparative analysis of the convergent and divergent aspects between the results was carried out, resulting in the identification of two thematic categories for the discussion of the data: "pharmacological strategies for managing pain related to breastfeeding" and "non-pharmacological strategies for managing pain related to breastfeeding".

Pharmacological strategies for managing breastfeeding-related pain

The study by Neto et al. (2018), published earlier in this review, showed that lanolin HPA had beneficial effects in relieving nipple pain in nursing mothers.[25] However, the findings of the present review suggest that breast milk was more effective in reducing nipple sensitivity compared to the application of lanolin among postpartum nursing mothers. Although the results indicate a superiority of breast milk, it is important to recognize the limitations of the included studies, such as the variation in the methods of application of the interventions.[22]

The drug fluconazole, from the antifungal class, was described in a case report as effective in reducing symptoms and improving breastfeeding with two weeks of treatment.[24] However, the routine use of antifungals, especially for prolonged periods, should be approached with caution in breastfeeding women who have nipple pain. This type of prescription with prolonged cycles still lacks more solid evidence to justify this intervention in a safe way.[26]

Non-pharmacological strategies for managing pain related to breastfeeding The non-pharmacological strategies identified have shown a significant impact on pain management, with increased comfort and improved quality of life for breastfeeding women during the breastfeeding period. The studies analyzed included breast massage[14-15,19], Gualou Xiaoyong decoction combined with painless lactation manipulation[16-17], the use of Lactobacillus fermentum CECTF716 during needle aspiration[18], minimally invasive nipple debridement20, ultrasound-guided surgical drainage[23], integrated therapies with laser therapy, electrical extraction and compresses21 and fluconazole treatment.[24]

Among the most cited approaches, breast massage has been shown to be significantly effective in several studies. Therapeutic breast massage during lactation consists of gentle massage movements of the breasts towards the axillary area, which stimulates lymphatic and blood circulation and facilitates the resolution of the obstructed milk duct.[27] However, a randomized clinical trial study identified in the sample points out that the integrated massage technique resolves the obstructed milk duct significantly faster and with less pain when compared to the traditional technique. This technique combines the sequential execution of several different massage patterns, with nipple rolling and, in the final stage, manual immobilization of the breast mass and gentle pressing to drain the accumulated milk mass.[19] With regard to massage technique, pectoralis major myofascial release massage has shown promise. This method of breast massage is carried out by releasing the pectoralis major muscle from the breast tissue in the chest, in the supine position, with bilateral massage at 5-minute intervals for a total of 30 minutes.[15]

Treatments based on traditional Chinese medicine, such as the Gualou Xiaoyong decoction, demonstrate a holistic approach, combining various herbs with anti-inflammatory, immunomodulatory and blood circulation regulating properties. It is used with 400 ml of the solution administered twice a day (200 ml at a time).[16-17] However, the shortcomings of standardizing these practices must be considered. For example, the composition and dosage of each component can vary depending on the region and the practitioner, which can influence the results presented.

In breast abscesses, the use of Lactobacillus fermentum CECTF716 during needle aspiration has shown evidence that it can reduce healing time. The 5-day healing rate in the experimental group was significantly higher ($p < 0.05$). It is interesting to note that in this intervention, no adverse reactions were reported in infants.18 In more serious cases, a study shows that ultrasound-guided surgical drainage is an interesting alternative for women who need incisive intervention.[23]

With regard to minimally invasive nipple debridement, the operative procedure begins with disinfection of the

nipple using iodophor and local anesthesia with 1% lidocaine. The procedure is carried out with ophthalmic scissors to remove the keratinized necrotic tissue until the healthy nipple tissue is visible.[20] It can be seen that the effectiveness of nipple debridement depends on the technique used, particularly the direction and depth of the debridement, to ensure the continuity of exclusive breastfeeding after compression and hemostasis.

Nurses perform conservative instrumental debridements, which can be carried out at the bedside or in an outpatient setting, with the aim of removing necrotic tissue without causing pain or bleeding. This type of procedure requires technical and scientific competence on the part of the nurse, as it uses sharp instruments. It is essential to ensure that all professional assistance is supported by current legal aspects.[28] Nurse-led integrated therapies consist of combining therapeutic methods with specific pain management objectives. A case-control study carried out on breastfeeding women with obstructed breast ducts and mastitis showed that the integrated approach, including laser therapy, milk extraction with an electric pump, breast massage, application of compresses with a 33% magnesium sulphate solution and patient education, proved to be effective in reducing breast pain.[21]

In the review by Freitosa et al. (2019), the interventions included latch-on correction associated with the use of lanolin-based ointments, breast milk, topical and oral medications, but there was only statistically significant evidence for the use of lanolin.[10] In contrast, in the present review, the findings suggest that breast milk was more effective compared to the application of lanolin. This shows that the new evidence published provides new perspectives on lanolin versus breast milk.

Another relevant finding of this study is that the data indicate that combined therapies with multiple therapeutic methods have shown important results in reducing breastfeeding-related pain. These findings corroborate the relevance of these interventions for clinical practice, broadening the therapeutic possibilities in the management of breastfeeding-related pain.[29-30] It is therefore recommended that professional nurses consider multidimensional interventions when developing clinical protocols for pain management in the context of breastfeeding.

With regard to the study's limitations, the number of databases consulted may have influenced the final sample of studies selected. In addition, data from studies with a low level of evidence should be interpreted with caution. It is suggested that future studies use a variety of methodological approaches and correlate other variables to improve the quality of the evaluation of interventions.

This study contributes to the advancement of nursing practice by presenting up-to-date evidence on pain management strategies related to breastfeeding. This field is mostly assisted by nursing professionals and the publication of current evidence provides support for planning interventions during nursing practice.

CONCLUSION

It was concluded that the strategies used to treat breastfeeding-related pain are important for successful breastfeeding. The main strategies identified were: breast massage, Gualou Xiaoyong decoction combined with painless lactation manipulation and integrated therapies. These findings may broaden the therapeutic possibilities for nurses when caring for infants with breastfeeding-related pain.

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