

# Development of an Evidence-Based Nipple Care Pathway for New Breastfeeding Mothers

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## Introduction

The World Health Organisation (WHO) recommends that babies should: be put to the breast within the first hour after birth; be exclusively breastfed for the first 6 months (meaning no other foods or liquids are provided, including water, except prescribed medications); continue breastfeeding up to two years of age or beyond, and receive complementary foods only after 6 months old (Butte et al., 2002; WHO, 2023). Despite the well-established evidence supporting these recommendations, exclusive breastfeeding (EBF) rates have remained low (WHO, 2023). It is estimated that only 44% of infants globally are exclusively breastfed (WHO, 2021). In the United Kingdom (UK) only 1% of mothers are said to maintain EBF to 6 months (Department of Health, 2013; UNICEF, 2017). It is estimated that only 24%, 17% and 13% of infants born in England, Wales and Northern Ireland respectively are exclusively breastfed to six weeks (Breastfeeding in the UK, 2022.). Approximately 80% of breastfeeding mothers in the UK fail to meet their breastfeeding desires due to breastfeeding-related pain and other infant, maternal, or social challenges (UNICEF, 2017; Wray & Garside, 2018). Nipple pain and injury persist as one of the most common reasons for ceasing breastfeeding (Dennis et al., 2014; Ziermer et al., 1990; Morland-Schultz & Hill, 2005). Currently there are no consistent evidence-based recommended practices to help new mothers overcome this challenge (Buck et al., 2014). While numerous interventions have been proposed to reduce nipple pain, a critical evaluation failed to reveal any irrefutable intervention, leading to differences in recommended approaches (Dennis et al., 2014). The aim of this study, therefore, is to review breastfeeding evidence and translate it into Nipple Care Pathway - simple but effective supportive self management guideline for mothers which may be useful in the prevention, easy identification, and better management of BRNIs.

## Methods

This study included a 5-stage scoping review (Arksey and O'Malley, 2005) followed by a modified Delphi consensus process. Delphi is a structured group communication processes in which complex issues where data are conflicting or incomplete are evaluated by experts using an iterative process to reach consensus (Dalkey and Helmer, 1963; Nasa et al., 2021).

The scoping review identified peer reviewed studies and extracted key practices recommended focused on improving management of BRNIs. Key practices were extracted, creating an item list for review in the Delphi study.

A wide range of maternal health experts including midwives, health visitors, doulas, community pharmacists, GPs, gynaecologist and mothers who have breastfed for at least 4 weeks in the past year were recruited to the Delphi panel, who anonymously evaluated the key practices. A brief welcome meeting was followed by 3 rounds of online surveys where the Delphi panel rated and provided feedback on the key practices. Consensus was set at 80% agreement for each item.

Recommendations meeting the consensus threshold were compiled into the Nipple Care Pathway.

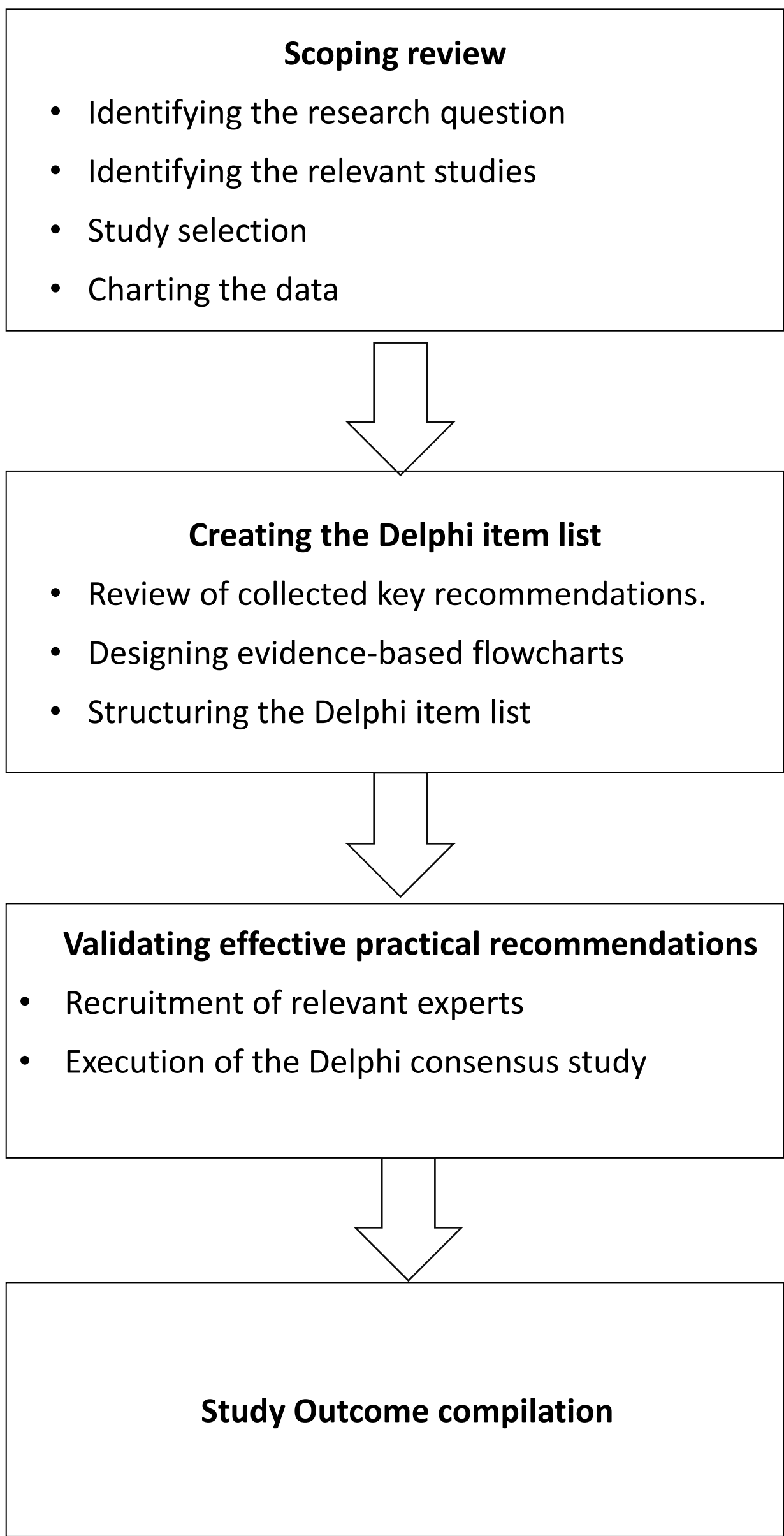


Figure 1. Flowchart of study procedures

## Results

Twenty-six maternal health experts completed round 1, 22 completed round 2, and 23 completed round 3. Key maternal health disciplines were represented in every round. Thirty-two statements were assessed in round 1, seventeen in round 2 and eleven in round 3. By the final round 25 recommendations achieved consensus. Recommendations were categorised into 3 groups: Support and Education-related; Breastfeeding Technique; and Nipple Care.

|         | Participants (n,%) | Opening Items (n) | Items reaching consensus (n) | Items added for review next round (n) |
|---------|--------------------|-------------------|------------------------------|---------------------------------------|
| Round 1 | 26 (100)           | 32                | 18                           | 3                                     |
| Round 2 | 22 (84.6)          | 17                | 11                           | 5                                     |
| Round 3 | 23 (88.5)          | 11                | 10                           | -                                     |

Table 1. Study rounds summary

**Support and Education:** Over 80% of the respondents believed that first-time mothers in the UK are generally unprepared for breastfeeding and its challenges. 96.3% felt new mothers intending to breastfeed are more likely to succeed if they had better understanding of the physiological discomfort and hypersensitivity commonly associated with early stages of breastfeeding. 92% agreed that one-to-one breastfeeding classes should be integrated as part of routine ANC services for all expectant mothers, where one-to-one classes are not feasible, 90% agreed group breastfeeding sessions would be adequate alternatives. All participants agree that: *“Pregnant women should be provided with prenatal breastfeeding education that is open and realistic about potential challenges encountered when breastfeeding; offers a problem-focussed approach to monitor breastfeeding; and explains clearly when, how, and where to get further information, advice, and support.”*

**Breastfeeding Technique:** The recommended techniques to improve breastfeeding experience include ensuring babies take as much of the areola as possible in their mouths (88.4%), gently massaging the breasts to soften before feeding (91.3%), gently breaking the latch if milk flow is not established within 2 minutes (81.8%), and considering breast pumping when unable to breastfeed due to separation (95.5%), latch-related difficulties (86.4), or pain (81.8%).

**Nipple Care:** 88.5% of respondents recommended the application of lanolin to prevent breastfeeding-related nipple injuries. 96.2% agreed that the principle of moist wound healing can be applied in treatment of cracked and severely damaged nipples. 96% agree that frequent lanolin application and short-term use of nipple shield is an effective measure for mother with BRNIs who want to continue breastfeeding while their nipples heal.

These recommendations were compiled to create two flowcharts. The first flowchart aims to support optimal breastfeeding latch, signs of successful feeding, and efficient nipple care to reduce risk of BRNIs and increasing breastfeeding confidence. The second flowchart aims to support breastfeeding-related nipple injury identification and management.

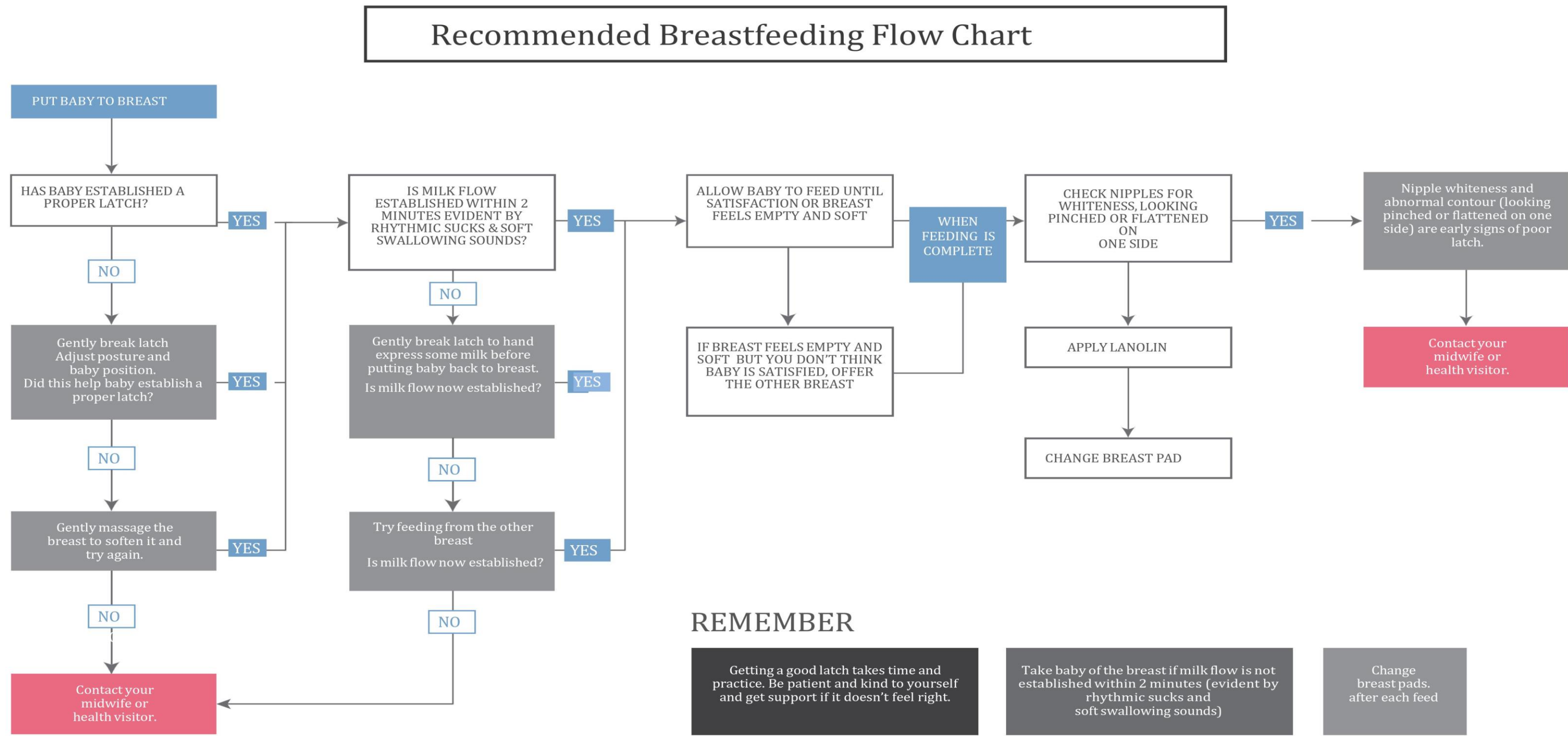


Figure 2. Breastfeeding-related nipple injury prevention tool.

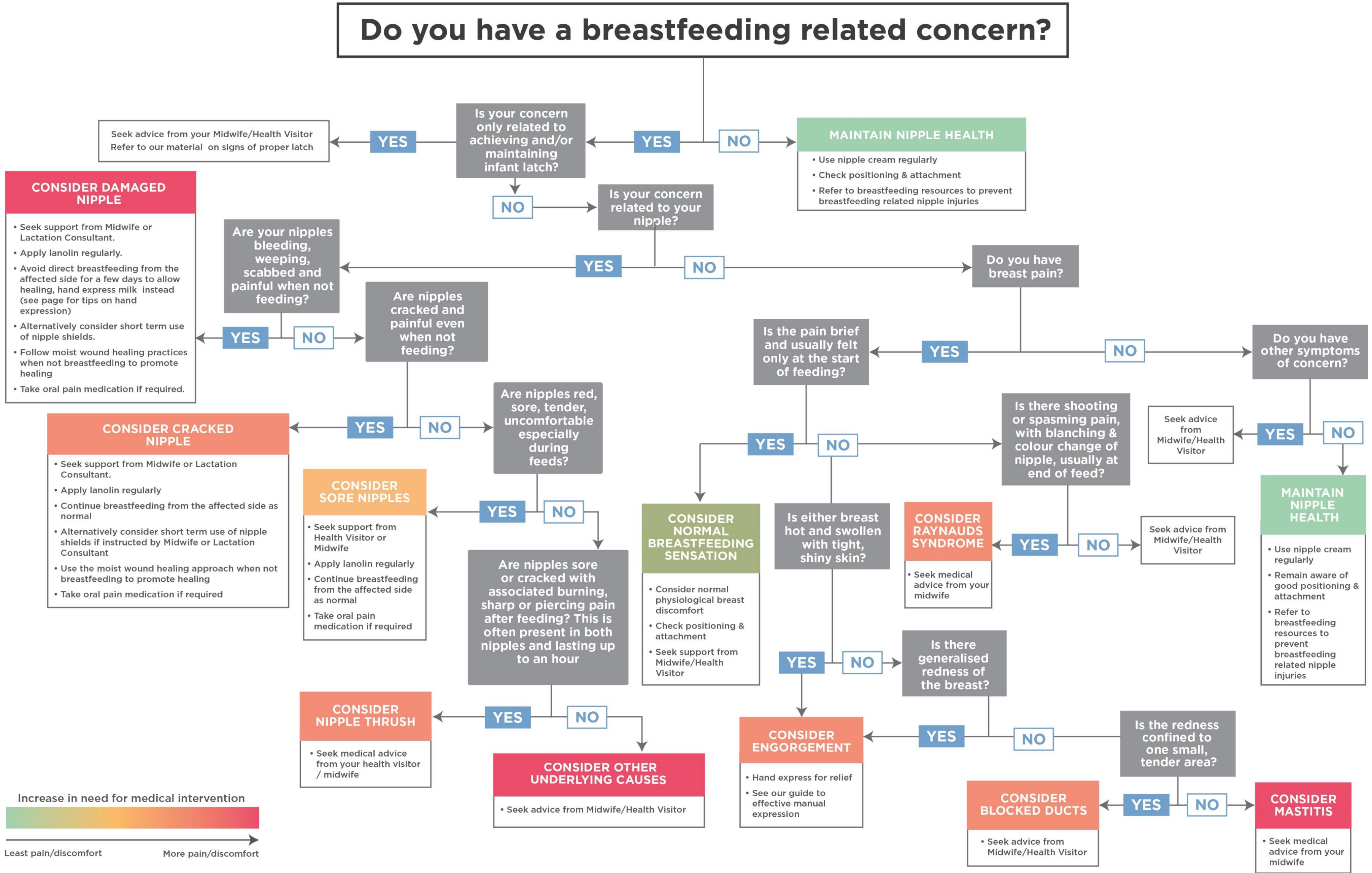


Figure 3. Breastfeeding-related nipple injury identification tool.

## Conclusions

This study harnesses the knowledge and experiences of multidisciplinary experts within maternal health to develop evidence-based recommendations for different stages and scenarios in the breastfeeding journey and generate effective and practical self-care materials. Key outcomes includes that expectant mothers should be prenatally provided with open and realistic education that offer a problem-focused approach to breastfeeding. Good breastfeeding technique was agreed to be key in preventing nipple injury. Where cracked and severely damaged nipple injury does occur, a set of approaches comprising the use of moist wound healing, application of lanolin, and short-term use of nipple shields were considered appropriate to support mothers to continue to breastfeed. Our findings indicate that many healthcare providers may prefer to offer a tailored approach to nipple care and breastfeeding support, which is informed by the individual mothers’ physiology, level of nipple damage, and specific breastfeeding challenge. More research is required to understand the unique and individual needs of nursing mothers to ensure all breastfeeding women can access accurate information regarding the range of solutions and support available to manage any issues they experience.

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