

Topical Treatments Used by Breastfeeding Women to Treat Sore and Damaged Nipples

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Background: Nipple pain and trauma are frequent complaints of new mothers, and a variety of treatments have been proposed and investigated for efficacy. Numerous studies have examined the efficacy of nipple creams, but there is no published data describing patterns of use in breastfeeding women.

Aim: To describe the use of topical nipple treatments by a cohort of first-time mothers in Australia

Methods: A cohort of 360 nulliparous women were recruited in Melbourne, Australia, and the question, "In the last week, have you used any creams or ointments on your nipples?" was included in a questionnaire on breastfeeding practices administered at 6 time points.

Results: In the first week after giving birth, 91% (307/336) of women used a topical treatment on their nipples. The most popular treatment was purified lanolin, with nearly three quarters of women (250/336) reporting its use. At 8 weeks postpartum, 37% (129/345) continued to use topical treatments, and 94% (320/340) of women continued to breastfeed.

Conclusion: Widespread use of topical nipple creams is concerning not only because it may indicate a high rate of nipple pain but also because this is a disruption to the natural environment where the newborn is establishing breastfeeding.

Keywords: breastfeeding, nipple pain, nipple cream, lanolin

Nipple pain and damage are common problems for postpartum women. Our recent study in Melbourne, Australia, found 80% of new mothers experience nipple pain in the postpartum period, with rates little changed since the first studies were conducted in the U.S. in the 1950s, despite many changes in the culture and practices of postnatal care (Buck, Amir, Cullinane, & Donath, 2014; Newton, 1952). We found no difference in pain between women who had vaginal or caesarean birth (Buck et al., 2014). Nipple pain is the second most common reason women give for weaning, and the most common for discontinuing breastfeeding before leaving hospital (Lewallen et al., 2006; Li, Fein, Chen, & Grummer-Strawn, 2008; Scott, Landers, Hughes, & Binns, 2001; Tucker, Wilson, & Samandari, 2011). Qualitative studies of women's breastfeeding experiences have consistently found that nipple pain has been an unexpectedly unpleasant burden on new mothers and which has in some cases negatively affect a woman's

relationship with her baby (Amir, 2004; Kelleher, 2006; Williamson, Leeming, Lyttle, & Johnson, 2012).

The application of various preparations to soothe and heal nipples is widely recommended (Nancey, 2008; Porter & Schach, 2004; Rennie, Cowie, Hindin, & Jewell, 2009; Walker, 2013). Traditional remedies, such as onions, peppermint water, and olive oil, are also used by breastfeeding women (Akcan & Ozkiraz, 2012; Gungor et al., 2012; Sayyah Melli et al., 2007), and a recent survey of lactation instructors in the U.S. found that 65% recommend folk remedies (Schaffir & Czapla, 2012).

There are several commercially prepared nipple creams available in Australia marketed for the treatment and prevention of sore nipples. Some topical nipple treatments have been shown to reduce pain and improve healing, which may help women's experience of breastfeeding and support them in persisting to find solutions to their breastfeeding problems (Lochner, Livingston, & Judkins, 2009). However, two systematic reviews of interventions for nipple pain and trauma in breastfeeding women, Morland-Schultz and Hill (2005) and Vieira, Bachion,

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Mota, and Munari (2013), concluded that there is a lack of evidence as to the efficacy of any treatment because the studies which have been undertaken to date have lacked rigor.

This article presents prospective data from breastfeeding women documenting their use of nipple treatments over the first 8 postpartum weeks, using data collected in the *Candida* and *Staphylococcus* Transmission: Longitudinal Evaluation (CASTLE) study. The main aim of the CASTLE study was to determine whether *Staphylococcus aureus* or *Candida albicans* is the primary organism involved in breast thrush in lactating women, and further details are available in the published protocol and results (Amir et al., 2011, 2013).

Methods

Setting

Women were recruited from two hospitals in Melbourne, Australia: The Royal Women's Hospital (RWH), a public tertiary women's hospital in Melbourne, and Frances Perry House (FPH), a private hospital located on the same site. RWH has been accredited as Baby Friendly since 1995, and both hospitals have dedicated lactation support services. There is an onsite public pharmacy, separate from the hospital pharmacy, which sells a variety of commercial nipple ointments.

Study Sample

A prospective cohort of 360 nulliparous women was recruited between November 2009 and June 2011 (Amir et al., 2011). Eligibility criteria for the study were 18–50 years of age, nulliparity, ≥ 36 weeks pregnant at recruitment, singleton pregnancy, breastfeeding intention for at least 8 weeks postpartum, sufficient proficiency in English to complete written questionnaires and a telephone interview, and residing ≤ 16 km from Melbourne Central Business District. Criteria for exclusion were medical conditions that do not allow breastfeeding, breast reduction surgery, dermatitis on nipple during pregnancy, under care of the Women's Alcohol and Drug Service, and under care of mental health service or social worker.

Data Collection

The participants completed a questionnaire about their breastfeeding practices in hospital and at Weeks, 1, 2, 3, 4, and 8. The question asked was, "In the last week, have you used any creams or ointments on your nipples?" There were several options of types of topical treatment and a space to write any other treatments used. Any comments the participants made about why they were

using the treatments during the visits were noted by the researchers; participant study numbers are presented alongside the quotes.

Results

Of the 360 women recruited at 36 weeks gestation, 14 were lost from the study, and there was data available for 346; 154 from RWH and 192 from FPH. The mean age was 32.7 years with a range of 19–44, and the caesarean rate was 45% (156/346). This was a highly educated sample of women, with 77% (267/346) having a tertiary degree or higher. The majority of the women were married or living with their partner (332/346). The mean intention to breastfeed was 9.7 months (range 1–24 months). At 8 weeks, 80% of the babies were fully breastfed, and 94% (320/340) were receiving any breast milk.

In the first week after birth, 91% (307/336) of women were using some form of nipple treatment (see Table 1). By far the most popular choice of treatment was purified lanolin; 74% (250/336) of postpartum women were using lanolin at Week 1, almost half were using it after 4 weeks and at 8 weeks 26% (89/345). Overall, 18 distinct commercial treatments were found to be in use, and one woman used olive oil. Early in the study period, Weeks 1–4, hydrogel dressings were used by up to 12% (40/336) of women for the treatment of cracked and damaged nipples, but use of hydrogel dressings had been discontinued by 8 weeks.

The following comments are examples of the notes taken by researchers during their visits with the participants to collect data:

Between wk 4 & 5 postpartum participant had stabbing breast pain. Infant had white coating on tongue. Participant's sister-in-law (midwife) suggested she may have nipple thrush. Participant went to pharmacist who also suggested nipple thrush and gave participant Daktarin gel [miconazole]. Participant used Daktarin gel for 3 days on her nipple every feed. The breast pain went away after this time. White coating also disappeared from baby's tongue. (Participant FPH190)

3 wk ago participant thought she had nipple thrush. She thought her baby had oral thrush. She brought her baby to GP who did not diagnose oral thrush but prescribed Daktarin gel for mother's nipples and baby's mouth as a precaution. Participant used Daktarin on her nipples for a week and intermittently since then. (Participant RWH82)

Table 1. Treatments Used By Week

Type of Treatment	Hospital (n = 338) n (%)	Week 1 (n = 336) n (%)	Week 2 (n = 336) n (%)	Week 3 (n = 326) n (%)	Week 4 (n = 323) n (%)	Week 8 (n = 345) n (%)
Purified lanolin	103 (30)	250 (74)	220 (65)	178 (56)	155 (48)	89 (26)
Antifungal cream	0	1 (0.3)	3 (1)	1 (0.3)	2 (1)	1 (0.3)
Antifungal gel	0	1 (0.3)	8 (2)	12 (4)	17 (5)	26 (8)
Gentian Violet	0	0	0	0	0	2 (1)
Antibiotic ointment	1 (0.3)	0	0	2 (1)	0	1 (0.3)
Combination ointment	1 (0.3)	0	2 (1)	6 (2)	4 (1)	1 (0.3)
Hydrogel dressing	11 (3)	40 (12)	31 (9)	18 (6)	17 (5)	0
Lucas' Pawpaw Ointment ^a	2 (1)	6 (2)	2 (1)	6 (2)	1 (0.3)	6 (2)
Other ^b	4 (1)	9 (3)	6 (2)	11 (3)	9 (3)	3 (1)

^aLucas' Pawpaw Ointment is an Australian product containing petroleum jelly and *Carica papaya*.

^bA number of other creams were used by individual women: Aveda Nipple Care Balm, Bepanthen, Betadine Antiseptic Ointment, Calendula cream, Gentian Violet (two women in week 8), Mustela Nursing Comfort Balm, Nuk Nipple Cream, olive oil, Palmer's Cocoa Butter Nursing Cream, phytoseptic (Golden Seal; *Hydrastis Canadensis*), QV cream, Vaseline, Weleda Nipple Care Cream.

Participant had stabbing breast pain in right breast this week. Given Daktarin oral gel. GP told her to use it on the right nipple only. Not putting it in the baby's mouth. (Participant FPH104)

GP prescribed antibiotics and Daktarin gel for suspected mastitis. (Participant RWH110)

Antifungal gel usage was observed as an increasing trend over the duration of the study, from one woman in Week 1 to 26 (8%) in week 8. This rising prevalence was not seen for combination, antibiotic, or non-medicated creams. In keeping with this rise in antifungal use over the study period, two women had begun to use Gentian Violet by the end of the study. Over the entire study, antifungal gels were used by 47 (14%) individual women. Two women used antifungal gel from Weeks 2 to 8, and four women (1%) from Weeks 3 to 8.

Discussion

The strengths of this study are that it was a prospective study with high retention, and the women reported all usage of topical nipple treatments in the first 8 weeks of breastfeeding. There was a sharp increase in use of treatments between data collected in hospital and at the end of Week 1. It is possible that when they were presented with the list of creams that may have been

used in the first few days after birth, it suggested to the women that they should or could be using a cream and therefore artificially inflated the prevalence.

This study is not able to evaluate how successful the strategies were or why the women chose those particular products, and we did not ask if they were advised to use them by a health care professional. We did not specifically ask the women if they had been applying breast milk to their nipples or about their hygiene practices generally. Many of the participants were recruited in the breastfeeding education classes provided by the hospital, and lanolin is was likely to have been recommended in those classes and also by the midwives on the antenatal wards (A. Moorhead, Clinical Midwife Consultant, personal communication, June 16, 2014).

Nipple Care During the Early Postpartum Period

Recommendations for nipple care vary enormously and can be conflicting; women are variously advised to wash their nipples with soap, or with nothing but plain water, to apply breast milk, to apply creams, of the benefits of a moist healing environment, or to air dry their nipples and frequently change breast pads to prevent dampness (Australian Breastfeeding Association, 2011; Newman & Kernerman, 2009; Walker, 2013). This is the first study to prospectively explore the use of topical therapies by breastfeeding women. Over the 8 weeks of

Intervention Strategies for Mothers With Sore Nipples

Most women experience some initial difficulties with pain and damage during the early days of breastfeeding. When pain and damage interfere with the establishment of breastfeeding, specific and holistic treatment is warranted. Brodribb (2012) recommends the following principles of general management:

- Offer the least sore nipple first.
- Induce letdown before bringing the baby to the breast.
- Suggest baby-led latch or an upright koala hold.
- Encourage small frequent feeds to prevent engorgement.
- Apply warm compresses immediately post feeds for 5 minutes.
- A moist wound healing environment between feeds will reduce pain and speed wound healing.

the study, a pattern of almost universal use of some form of treatment was seen in the early weeks decreasing over time.

Wound Healing and Lanolin Use

Wound healing can be described in terms of three stages—*inflammation*, *granulation*, and *remodeling*—and is influenced by many factors including age, sex hormones, medications, stress, and nutrition (Guo & DiPietro, 2010; Kondo & Ishida, 2010). The lactating woman's nipple is a particularly challenging area to support in terms of healing because of the necessity to keep using the tissue and concerns for the infant's safety when topical medications may be ingested.

Nearly three quarters of this cohort applied purified lanolin to their nipples in the first week of breastfeeding. Lanolin is extracted from sheep wool and is chemically a wax "ultrarefined" to remove free lanolin alcohols to a level lower than 1.5% (Abou-Dakn, Fluhr, Gensch, & Wöckel, 2011). It has been successfully used for several therapeutic purposes including healing anal fissures in children and preventing lip breakdown in adults undergoing chemotherapy (Büyükyavuz, Savas, & Duman, 2010; Santos et al., 2013). Chvapil, Gaines, and Gilman (1988), in their detailed study of lanolin and wound healing in piglets, suggested that lanolin may

promote an inflammatory response, which encourages reepithelialization. On a cellular level, the promotion of healing is better than a plain gauze dressing.

Purified lanolin provides a moist healing environment and has been compared to other treatments for sore nipples and shown to be helpful in reducing pain and supporting healing, but most studies have been small (Coca & Abrao, 2008; Gungor et al., 2012; Vieira et al., 2013). Although concerns have been voiced that lanolin may be associated with an increased risk of infection (Sasaki, Pinkerton, & Leipelt, 2014), Dennis, Schottle, Hodnett, and McQueen (2012) found that in their Toronto study of 151 women, those using lanolin had higher breastfeeding rates at 12 weeks postpartum and had a significantly more pleasant experience of breastfeeding than those using an all-purpose combined cream.

Increased Use of Antifungals During the First 8 Weeks

Over the course of the first 8 weeks postpartum, women's use of lanolin slowly fell, but antifungal treatments were increasingly popular, with 8% (29/346) using some form of antifungal in Week 8, including two women who were prescribed Gentian Violet. Gentian Violet is recommended on the RWH protocol for the treatment of nipple thrush, as a 0.5% aqueous paint, to be applied after breastfeeding twice a day for up to 7 days, when miconazole, nystatin, and fluconazole treatments have failed (RWH, 2013). Comments made by the women on why they were using antifungal gel suggests that some of the use may be preventive and used in tandem with antibiotics for mastitis. Four women (1%) reported using antifungal gel for 4 weeks and two women for six weeks. This prolonged use of antifungal gel is concerning.

Other Topical Treatments

Lucas' Pawpaw ointment is an Australian product containing petroleum jelly and *Carica Papaya* extract and was used by small numbers of women at each time point. Several of the creams used, Palmer's, QV, and Bepanthen are petroleum-based, and some contain polyethylene glycol ethers, which are not recommended for use on broken skin and known to be irritants (Andersen, 1999). Phytoseptic ointment, Weleda, and calendula creams were also used by women in this study. There has been an increasing interest in the use of plant-based extracts in wound healing, and several studies have been published that are promising and suggest that many traditional herbal remedies may be useful.

Süntar et al. (2011), for example, found that a preparation of sage and oregano oils “displays remarkable wound healing activity” and is both bactericidal and fungicidal. Cinnamon, lemongrass, and peppermint have also suggested as potential novel therapies (Liakos et al., 2014; Sayyah Melli et al., 2007). Coconut oil has been shown to be antifungal, antibacterial, used safely in topical massage of premature babies, and as a useful treatment in the wound healing of burns (Das, Rahman, Chowdhury, Hoq, & Deb, 2013; Nangia, Paul, Chawla, & Deorari, 2008; Ogbolu, Oni, Daini, & Oloko, 2007; Srivastava & Durgaprasad, 2008; Valizadeh, Hosseini, Jafarabadi, & Ajoodanian, 2012).

Hydrogel Dressings

Hydrogel dressings were used by 12% of the women, but use had been discontinued by Week 8 of the study. These dressings are expensive; there has been some concerns raised that although they may reduce pain, they may increase the risk of infection (Benbow & Vardy-White, 2004; Brent, Rudy, Redd, Rudy, & Roth, 1998), and they are not recommended by Vieira et al. (2013) in their systematic review.

Concerns About the Use of Topical Treatments

The mother’s breast is the native environment of the newborn baby, and skin-to-skin contact between neonate and mother at birth initiates a cascade of primitive behaviors and reflexes which supports the establishment of both breastfeeding and the mother–infant bond (Barry & Tighe, 2013; Bigelow, Littlejohn, Bergman, & McDonald, 2010; Bramson et al., 2010; Colson, Meek, & Hawdon, 2008; Mahmood, Jamal, & Khan, 2011; Widström et al., 2011). How well the newborn baby initially seeks out and attaches to the nipple may influence the course of breastfeeding, and this in turn is influenced by the sensory environment at the breast. The smell and feel of their mother’s skin varies by birthing and hygiene practices and also according to secretions of Montgomery glands on the nipple (Doucet, Soussignan, Sagot, & Schaal, 2009, 2012; Preer, Pisegna, Cook, Henri, & Philipp, 2013). It is of some concern that such widespread use of topical creams was found not only because it may indicate a high frequency of nipple pain but also because this is a disruption to the natural environment and experience of breastfeeding for the baby, the consequences of which are unknown.

Conclusion

Nipple pain is a key risk to the continuation breastfeeding and also causes considerable distress to new mothers. The use of topical treatments, notably purified lanolin,

for the prevention and treatment of nipple problems in breastfeeding is very common, but what this means for the experience of infants at the breast and the establishment of successful breastfeeding is unknown. Further research is required to establish both an effective intervention for the prevention of nipple trauma and timely treatment of damaged and sore nipples, which need careful evaluation.

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Help for Sore Nipples

Below are examples of some of the advice mothers get about treating sore nipples. Some advice in these videos is helpful. Much of this advice is contradictory or outdated. And one video even recommends formula feeds for overcoming sore nipples!

<https://www.youtube.com/watch?v=6BC5zfdZgPE>

https://www.youtube.com/watch?v=bkk_YW2SY2k

https://www.youtube.com/watch?v=beQAaHqT_6Q

<https://www.youtube.com/watch?v=WBgc0n8pMeE>

<https://www.youtube.com/watch?v=ksH9H4AstmM>

<https://www.youtube.com/watch?v=vsIuv5s8VXE>

Family and Medical Leave Act Guide From the National Partnership for Women and Family

The National Partnership for Women & Families has released the seventh edition of the *Guide to the Family and Medical Leave Act*, available in both English and Spanish. The guide is a comprehensive explanation of the FMLA that aims to make the law more accessible and help individuals navigate its protections and the adjustments made to it over the years.

Source: USBC



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