

# Evaluating Paediatric Health Workers' Management of Cracked Nipples in Nigeria

## Subtitle Management of Cracked Nipples

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### Abstract

**Background:** Cracked nipple and nipple pain are common complaints among lactating mothers and if not adequately addressed could disrupt breastfeeding.

**Methods:** A cross sectional study was conducted among paediatric health care workers that attended the National scientific conference using a structured questionnaire to obtain information on their cracked nipple consultation, knowledge of causes of cracked nipples and interventions used by them.

**Results:** 109 delegates participated and they included 54(49.5%) doctors and

55(50.5%) nurses. Majority 98(89.9%) had managed a case of cracked nipple in lactating mothers, while 84(78.5%) had seen breastfeeding interrupted by it . Improper positioning of the infant on the breast (94%) and incorrect use of breast pump (44%) were the leading causes of cracked nipples. The common interventions used were proper latching (88.89%) and air drying, while analgesics and topical ointments were the least interventions.

**Conclusion:** Cracked nipple is a common cause for the cessation of breastfeeding among lactating mothers in Nigeria, its effective management can optimize the nutrition of the growing infant.

**Keywords:** Cracked nipple; Paediatric; Health Workers; Breastfeeding; Management; Nigeria

### Introduction

Breast milk is the best nutrition for the new born in the first six months of life and continues to provide a significant source of nutrient up to the first 2yrs [1,2]. Successful breastfeeding is an interplay of maternal comfort, good breast physiology, a good latch and ability of the baby to suckle [3,4]. Cracked nipple causes discomfort and pain during breastfeeding, both of which can have a negative feedback effect by discouraging the mother from putting the baby to breast, often interrupting exclusive breastfeeding [5,6]. is the feeding option widely recommended for infants in the first six months of life [2]. A reduction or decrease in suckling ultimately reduces breast milk supply and may cause undernutrition in early childhood [4,7].

Breastfeeding mothers commonly present to health care workers when they have nipple pain or cracked nipples in the post-partum period. It constitutes about 18-58% of health care workers' consultations by lactating mothers globally [8-10].

Several factors have been identified as causes for cracked nipples. These include poor breastfeeding position or latching technique, bottle feeding, flat or inverted nipples, use of breast pumps, breast engorgement, bacterial and fungal infections on the nipple, ankyloglossia, palatal anomalies, psoriasis and dermatitis among others [9,11].

Cracked nipple is preventable and also treatable when it occurs. Early and proper



treatment promotes early resolution and prevents interruption of breastfeeding by the lactating mother [5,11]. Different methods have been used by health workers to treat cracked nipples. They were usually multiple interventions aimed at ameliorating the cause of the cracked nipple in addition to treating it. Advocated treatment modalities include correction of breastfeeding positioning and attachment, application of expressed breast milk, use of nipple shields for flat and inverted nipples, treatment of infection with antimicrobials including antibiotics and antifungals and the application of safe topical ointments to promote wound healing [5,11,12]. Topical ointments used for the treatment of cracked nipples include purified lanolin, hydrogen dressing, dexpanthenol, peppermint herbs and creams. Comparative studies carried out to determine the effectiveness of these various ointments in the treatment of cracked nipples did not demonstrate any statistically significant difference in the resolution of cracked nipple [5,12]. Therefore, health workers in different countries use what is readily available in their localities to treat cracked nipples.

The knowledge of health care workers in the management of cracked nipples is important as the prescription of the right medication determines the promptness of its resolution. There is however paucity of data on the knowledge of health workers on the management of cracked nipple in Nigeria. This study was therefore undertaken to assess the frequency of cracked nipple consultation among paediatric health workers in Nigeria, their knowledge and treatment options for cracked nipples in the course of their practice.

## Methodology

A cross sectional study was conducted among the participants at 45<sup>th</sup> annual scientific conference of the Paediatric Association of Nigeria, The annual scientific meeting of the Pediatric Association of Nigeria is a forum that is usually attended by health workers who are involved or have interest in the care of children. It is usually attended by doctors and nurses at different levels of their profession. The forum is a place where experts in the field critically review the problems confronting both child health specialists and the Nigerian Child and subsequently recommending solutions for these problems. Nigeria is divided into six geo-political zones for easy administrative and political purposes. Participants for this study were drawn from these geo-political zones.

Ethical clearance was gotten from the local organizing committee of the conference. Verbal consent was obtained from the attendees and questionnaires were given to those that gave consent. Completed questionnaires were continually retrieved throughout the duration of the conference. Information collected from respondents included health facility information [name, location, type of practice, level of care rendered] and Health worker information [occupation, care of Neonates and nursing mothers]. Questions on frequency of consultations for cracked nipple and mother's interruption of breastfeeding due to cracked nipples, prescribed interventions for its treatment with outcomes and assessment of knowledge of causes of cracked nipples in nursing mothers.

Data collected was entered and analyzed using EPI INFO version

7. Chi- squared test and Fishers Exact test were used to test for significant associations between proportions. Comparison of means was done with the student's t test. A p value of 0.05 or less was considered statistically significant.

## Results

Among the 800 registered delegates only 109(13.6%) completed the questionnaire. They represented 43 different institutions all within Nigeria. The names of 6 institutions were not disclosed but their locations were filled into the questionnaire. The highest respondents were 59(54.13%) from the South-South while the least 5(4.56%) were from the North eastern part of the country, Table 1. The respondents included 54(49.54%) doctors and 55(50.46%) nurses. Eighty five (88.89%) health workers were practicing in tertiary centers. Only one respondent came from a center rendering primary level of care. Half of the doctors were consultants while 28(52%) of the nurses were at the level of Assistant Chief Nursing Officers (ACNO) or higher, Table 1.

Variable	N (%)
<b>Geopolitical region of health institutions</b>	
South-South	59(54.13)
North-Central	16(14.68)
South-East	14(12.84)
South-West	8(7.34)
North-West	7(6.42)
North-East	5(4.59)
<b>Total</b>	<b>109 (100)</b>
<b>Occupation of health workers</b>	
Doctors	54(49.5)
Nurses	55(50.5)
<b>Total</b>	<b>109 (100)</b>
<b>Level of health care provided in the work place</b>	
Primary	1(0.92%)
Secondary	23(21.10%)
Tertiary	85(77.98%)
<b>Total</b>	<b>109 (100)</b>
<b>Qualification of health workers</b>	
Doctors (n=54)	



Consultant	27(50)
Senior registrar	16(29.6)
Registrar	8(14.8)
Medical officer	2(3.7)
House Officer	1(1.9)
<b>Total</b>	<b>54 (100)</b>
Nurses	
Assistant Chief Nursing officer or higher	28(52.8)
Principal Nursing officer	1(1.9)
Senior Nursing Officer	9(17)
Nursing Officer I & II	11(20.8)
Unclassified	4(7.6)
<b>Total</b>	<b>53 (100)</b>

**Table 1:** Characteristics of studied population

One hundred and eight (99.8%) of the health workers routinely cared for neonates, 98(89.91%) of them had done a consultation in which cracked nipple was a presenting complaint and 84(78.5%) had seen breastfeeding interrupted due to cracked nipples. According to the health workers, the most common cause of cracked nipple was improper positioning by 103(94.5%) of the respondents, followed by incorrect use of breast pump 48(44.04%) and fungal infection 35(32.11%), Table 2.

Causes of cracked nipple	Doctor N(%)	Nurses N(%)	All health workers N (%)	P value
Improper positioning	51(94)	52(95)	103(94)	<b>0.98</b>
Incorrect use of breast pump	25(46)	23(42)	48(44)	<b>0.63</b>
Fungal infection	15(28)	20(36)	35(32)	<b>0.34</b>
Washing of Nipples	8(15)	5(10)	13(12)	<b>0.35</b>
Not cleaning the nipples with a clean cloth	1(2)	3(5)	4(4)	<b>0.61</b>
Pulling on nipples while pregnant	1(2)	2(4)	3(3)	<b>1</b>
Not washing of nipples	0 (0)	1(2)	1(1)	<b>1</b>
Do not know	1(2)	0(0)	1(1)	<b>0.49</b>

**Table 2:** Knowledge of paediatric health workers on the causes of cracked nipple

There was no significant difference in knowledge of doctors and nurses on the causes of cracked nipple.

All the health workers prescribed at least one form of intervention, the most frequent was to counsel on proper latching technique by 95(87.1%) respondents, followed by reassurance 70(64.2%), cleaning and air drying 59(49.5%). The least likely intervention was prescription of medications by 18(10.5%) health workers, Figure 1. Among 18 participants that prescribed oral medications, 7 (38.8%) prescribed antibiotics and 11(61.1%) paracetamol. Twenty six (23.87%) health workers prescribed topical ointment and it included Vaseline by 20(76.9%), 2(7.7%) prescribed pure lanolin and 1(3.8%), olive oil. Other interventions used were application of gentian violet and counsel on the use of good fitting brazier by two and one respondents respectively. There was no significant occupational or regional difference in the type of intervention rendered by health workers ( $P \geq 0.05$ ), Table 3. Nurses were significantly more satisfied with the outcome of their treatment than doctors ( $\chi^2=10.004$ ,  $df=2$ ,  $p=0.001$ ), Table 4.

Interventions for cracked nipple	P value for occupation(doctors /nurses) difference	P value for regional difference
Reassurance	0.63	0.41
Clean and air dry	0.92	0.2
Counsel on proper latching	0.8	0.2
Apply milk on sore areas	0.5	0.6
Absolutely nothing	1	1
Apply ointment	0.39	0.7
Apply medication	0.97	0.3

**Table 3:** Regional and occupation differences in interventions used for cracked nipple by paediatric health workers in Nigeria

Occupation	Outcome			Total N(%)
	Don't know N(%)	No effect N(%)	Satisfied N(%)	
Doctors	17(33)	2(4)	33(63)	52(100)
Nurses	3(6)	0(0)	46(94)	49(100)
<b>Total</b>	<b>20(20)</b>	<b>2(2)</b>	<b>79(78)</b>	<b>101(100)</b>

**Discussion**

This study showed that 90% of health care workers had been consulted by lactating mothers because of cracked nipples. We found a relatively higher rate of consultations for cracked nipple when compared to the 36% and 32% reported in studies that were carried out Australia [11] and Brazil [9] respectively. Besides regional differences, our relatively high rate could be due to the interest of those that volunteered to participate in study. The health workers that participated in the study could have been those



who have directly or indirectly seen the impact of cracked nipple in their practice while those who have not seen it could have opted out of the study, thereby giving us an apparently high rate. Cracked nipples are often painful and when severe it can lead to the cessation of breastfeeding of the young infant [13,14] as was observed in this study.

Various reasons have been attributed for the aetiology of cracked nipples. Studies carried out in Brazil [9] and Australia [11] reported improper feeding technique as the commonest cause of cracked nipples as also observed in this study. However, while infection and palatal anomalies were observed as other common causes of cracked nipple in the Australian study, incorrect use of breast pumps and fungal infections were the other common reasons observed by health care workers in this study. The high frequency of incorrect use of breast pump as a cause of cracked nipple in our study is not surprising as expectant mothers are not routinely educated on the proper use of the breast pump in the clinic as much attention is paid on putting the baby to the breast immediately after delivery [15]. Furthermore, the scenarios which make a mother to need breast pump to support exclusive breastfeeding are relatively lower in a developing country like Nigeria. This is because developed countries are more likely to have a higher proportion of working class mothers who work away from home and as a result would lead to a greater dependence on breast pump to support breastfeeding.

In comparison to other studies [6,11,16], health workers in this study also prescribed different forms of intervention to curb or halt the progression of cracked nipples. These interventions include re-assuring the breastfeeding mother, application of expressed breast milk, air drying and improved latching techniques as also commonly prescribed by health workers in this study. In a study carried out in Australia [11], infection was suspected in about half of the study participants and 31.8% of them were treated with antibiotics because of positive cultures from the nipple. In a prospective study that evaluated the role of antibiotics in the management of chronic breast pain among lactating mothers in Ohio, America [17], there was a higher prevalence of cracked nipples and positive *staphylococcus aureus* breast milk culture among those who did not respond to conservative treatment. They however responded to treatment with oral antibiotics. It is therefore not surprising that 38% of health workers in our study prescribed antibiotics in treating cracked nipples, although this study did not explore how often swabs were taken for microscopy, culture and sensitivity among the lactating mothers presenting to health care workers. Although the use of anti-fungal agents are not as common as antibiotics prescription in treatment of cracked nipples, it is however an imperative intervention in fungal infections of the nipple [11,18]. One would have expected the health workers in this study to prescribe anti-fungals in treating cracked nipples as 32.1% of them were aware that fungal infections could cause cracked nipples.

The application of topical ointments in the treatment of cracked nipple is a common practice [11,19,20] as also observed in our study. However, while Vaseline was the commonest and only two people prescribed purified lanolin in this study, purified lanolin was the commonest ointment prescribed in other studies [19,20,21]. This could be attributed to the fact that purified lanolin is not readily available in our country. Several studies have compared the healing effects of different ointments like lanolin,

glycerin gel, hydrogel wound dressing and liquid paraffin [6,11,12,20,21]. The results of these studies are however not conclusive. While some of them attributed lanolin to be better at wound healing in cracked nipples, others did not arrive at such conclusions. Lanolin promotes wound healing by providing air permeable barrier to cracked nipples [5,6,22].

Overall, 78.2% of health workers were satisfied with their treatment outcome of cracked nipples, however this experience was significantly higher among the nurses than the doctors. This is probably because nurses play a more prominent role in our well baby clinics and are more likely to handle less severe cases of cracked nipples, unlike the doctors who see more serious cases of cracked nipples referred to them by the nurses.

## Conclusion

Cracked nipple consultation among health care workers is high and the frequency at which breastfeeding was interrupted by cracked nipples was also high. There is a need for health care workers to actively manage this condition using purified lanolin as a safe ointment that promotes active healing of cracked nipples in addition to the prescription of antibiotic and anti-fungal when necessary.

## Declaration of interest

The authors disclose no conflict of interest. The authors did not receive any grant from funding agencies; public, commercial or not-for-profit agencies.

## References

1. World Health Organization. Global strategy for infant and young child nutrition. Geneva: World Health Organization; 2003.
2. Federal Ministry of Health, Nutrition Division. National policy on infant and young child feeding in Nigeria. Abuja: Federal Ministry of Health; 2007.
3. Mohammadi F, Kiani A, Gholamzadeh S, AsadiNoghabi F, SadeghiT (2018) The Factors Affecting Successful Breastfeeding (SBF). Iranian Journal of Neonatology. Jun: 9(2).
4. Keloglan S, Yilmaz A, Gumus K (2018) Factors Affecting Mothers' Breastfeeding. Int J Caring Sci-225-230.
5. Vieira GO, Martins CC, Vieira TO, de Oliveira NF, Silva LR (2010) Factors predicting early discontinuation of exclusive breastfeeding in the first month of life. J Pediatr (Rio J). 86:441-444.
6. Shanazi M, FarshbafKhalili A, Kamalifard M, AsghariJafarabadi M, Masoudin K et al. (2015) Comparison of the effects of lanolin, peppermint, and dexpanthenol creams on treatment of traumatic nipples in breastfeeding mothers. J Caring Sci 4(4): 297-307.
7. Abou-Dakn M, FluhrJW, Gensch M, WöckelA (2011) Positive effect of HPA lanolin versus expressed breast milk on painful and damaged nipples during lactation. Skin Pharmacol Physiol 24:27-35.
8. Jackson KT, Dennis CL (2017) Lanolin for the treatment of nipple pain in breastfeeding women: a randomized controlled trial. Matern Child Nutr. 13 (3).
9. Suresh S, Sharma KK, Saksena M, Thukral A, Agarwal R, et



- al. (2014) Predictors of breastfeeding problems in the first postnatal week and its effect on exclusive breastfeeding rate at six months: experience in a tertiary care centre in Northern India. *Indian J Public Health* 58:270-300.
10. da Silva Santos KJ, Santana GS, de Oliveira Vieira T, Antônio de Souza C, Santos T, et al. (2016) Prevalence and factors associated with cracked nipples in the first month postpartum Santos et al. *BMC Pregnancy and Childbirth* 16:209.
  11. Buck ML, Amir LH, Cullinane M, Donath SM (2014) Nipple pain, damage and vasospasm in the first 8 weeks Postpartum. *Breastfeeding Med* 9 (2): 56-62
  12. Kent JC, Ashton E, Hardwick CM, Rowan MK, Chia ES, Fairclough KA et al. (2015) Nipple Pain in Breastfeeding Mothers: Incidence, Causes and Treatments. *Int J Environ Res Public Health* 12(10): 12247-12263.
  13. Lochner JE, Livingston CJ, Judkins DZ (2009) Clinical inquiries: which interventions are best for alleviating nipple pain in nursing mothers? *J Fam Pract* 58: 612a–612c.
  14. Ahluwalia IB, Morrow B, Hsia J (2006) Why do women stop breastfeeding? Findings from the pregnancy risk assessment and monitoring system. *Pediatrics*. 116:1408–1412.
  15. Federal Ministry of Health, Nutrition Division. National policy on infant and young child feeding in Nigeria. Abuja: Federal Ministry of Health; 2007.
  16. Gilmour C, Hall H, McIntyre M, Gilles L, Harrison B (2009) Factors associated with early breastfeeding cessation in Frankston, Victoria: a descriptive study. *Breastfeed Rev* 17 (2): 13-19.
  17. Akkuzu G, Taskin L (2000) impacts of breast care techniques on the prevention of possible post partum problems. *Prof Care Mother Child* 10 (2): 38-41.
  18. Witt AM, Burgess K, Hawn TR, Zyzanski S (2014) Role of oral antibiotics in treatment of breastfeeding women with chronic breast pain who fail conservative therapy. *Breastfeed Med* 9 (2): 63-72.
  19. Brodley V, Powers D (1997) Long-term treatment of a breastfeeding mother with fluconazole resolved nipple pain caused by yeast: a case study. *J Human Lactation*.
  20. Lochner JE, Livingstone CJ, Judkins DZ (2009) Which interventions are best for alleviating nipple pain in nursing mothers? *J Fam Prac* 58 (11): 612a-612c.
  21. Niaz A, Rahimi VB, Soheili-Far S, Askari N, Rahmanian-Devin P, et al. (2018) A systematic review on prevention and treatment of nipple pain and fissure: are they curable? *J Pharmacopuncture* 21(3):139-150.
  22. Buck ML, Amir HL, Donath HM (2015) Topical treatments used by breastfeeding women to treat sore and damaged nipples. *Clinic lactation* 6(1): 16-23.