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Factors associated with prelacteal feeding practices in a rural northern Nigerian setting

AO Jimoh^{a*}, SE Adaji^b, HA Adelaiye^c, AA Olorukooba^c, C Garba^d, AL Mfuh^e, U Bawa^b, S Idris^f and OS Shittu^b

^aDepartment of Paediatrics, Bingham University, Jos, Nigeria

^bDepartment of Obstetrics and Gynaecology, Ahmadu Bello University, Zaria, Nigeria

^cDepartment of Paediatrics, Ahmadu Bello University, Zaria, Nigeria

^dCommunity midwife, CBS Research Group, PRHI, Nigeria

^eDepartment of Nursing Sciences, Ahmadu Bello University, Zaria, Nigeria

^fDepartment of Community Medicine, Ahmadu Bello University, Zaria, Nigeria

*Corresponding author, email: oyewoao@yahoo.co.uk

† Current affiliation: Bingham University, Jos campus, Nigeria



Introduction: Prelacteal feeding practice contravenes the recommendation of World Health Organisation that breastfeeding be initiated within an hour of childbirth. Consequently, the health, social, emotional and economic benefits of optimal breastfeeding are limited. Therefore, to break this vicious cycle of prelacteal feeding and suboptimal breastfeeding, factors associated with the practice must be identified.

Objective: To assess prelacteal feeding practices and its associated factors in a rural community with the view to generate data for community-level interventions that will promote optimal breastfeeding.

Methods: Data was collected during a community-based surveillance for maternal, newborn and child health project in Tsibiri, a rural community in north-western Nigeria. The survey questionnaire was uploaded into mobile devices running on an android operating system. Trained female interviewers collected the data over a period of one week in 2011.

Results: A total of 270 out of 309 interviewed women had experienced childbirth and were included in the analysis. Majority (85.2%) of respondents utilised prelacteal feeds for their newborns. Plain water was the most common prelacteal feed (44.7%). Prelacteal feeding was associated with births assisted by unskilled birth attendants (AOR 5.322, 95%CI 1.634-17.333); while operative delivery reduced the likelihood of the practice (AOR 0.168, 95%CI 0.060-0.470). No statistically significant association was found between use of prelacteal feed and women's age, education or access to income.

Conclusion: The predominance of prelacteal feeding practices underscores the need for innovative strategies that create awareness among mothers and health care providers, with emphasis on health facility deliveries, advantages of breastfeeding and risks of prelacteal feeding.

Keywords: Breastfeeding, Newborns, Prelacteal feeds, Rural community, Women

Introduction

The World Health Organisation (WHO) defines optimal infant feeding practice as initiation of breastfeeding within one hour of birth; exclusive breastfeeding for the first six months of life; introduction of complementary food from locally available and hygienically prepared food from six months; increased breastfeeding during illness and recovery; and, continued breastfeeding up to two years of age.¹ This recommendation has been proven to contribute to preventing infant under-nutrition;² foster neurocognitive development;³ protect from infections like respiratory tract infections, otitis media, diarrhea, as well as diseases like diabetes mellitus, asthma and obesity in the child.^{4,5} Breastfeeding also lowers the risk of breast cancer, osteoporosis and type 2 diabetes mellitus in the mother and strengthens the emotional bond between the dyad.⁵

Conversely, feeds given to babies before lactation, also known as prelacteal feeds, have been shown to delay the initiation of breastfeeding, interfere with exclusive breastfeeding^{6,7} and increase the risk of illness, and even mortality, of the newborn.⁸ Most reasons given for the practice have no scientific basis. Such reasons include cleansing and preparing the baby's gastrointestinal tract for digestion, quenching thirst, flushing the bladder, affording mother enough time to rest,⁹ insufficient breastmilk, unclean colostrum, prevention of dehydration and

hypoglycaemia.¹⁰ The types of feeds given vary, and can include plain water, glucose water, infant formula,^{10,11} 'ghee' (refined butter), honey,¹² herbs, black tea and dilute cow milk.¹³ Other forms of pre-lacteal feeds documented include dates, sugar and salt.¹⁰

Prelacteal feeding is widely practiced alongside breastfeeding. According to the 2013 Nigeria Demographic Health Survey¹⁴ report, 59% of mothers offer a prelacteal feed to their newborns. Furthermore, the report found that the practice is higher among newborns whose mothers have no education, children in the lowest wealth quintile, those delivered at home, and those whose mothers have no birth attendant during delivery.¹⁴

Ideally, the availability, accessibility and utilisation of maternal healthcare services empower women with health-related information on nutrition, breastfeeding, immunisation and iron supplementation.¹⁵ Therefore, a clear understanding of prelacteal feeding practices and maternal healthcare service utilisation is important as this will aid in the design of targeted and appropriate interventions to specifically improve early-child nutrition and generally improve maternal and newborn health. This is especially relevant in rural communities where the social and cultural environment could be conducive to such practices.

In this study, we focused on determining the prevalence and range of prelacteal feeds utilised in a rural community. We also examined the association of selected sociodemographic factors and utilisation of maternal healthcare services with respect to prelacteal feeding practices. The findings could provide useful baseline data for planning community-level interventions to promote early initiation of breastfeeding as a means of enhancing maternal and newborn health.

Methods

Study Design

A community-based surveillance (CBS) study was carried out between 2010 and 2011 in a rural community, Tsibiri in Giwa local government area of northwest Nigeria, with the objective of assessing maternal and newborn health. Information on prelacteal feeding was obtained from these findings and analysed.

Study Setting and Participants

The study was carried out in Tsibiri, a rural community in the northwest geopolitical region of Nigeria. At the time of the study, the community had an estimated population of about 1 800 inhabitants dwelling in 248 households and about 20% (350) of the population were women in the reproductive age group and girls aged 10–14 years who were married. The community is essentially homogenous with Hausa-Fulani and Islam as the predominant ethnicity and faith, respectively. The main occupation among men is farming while some of the women are engaged in light trading. At the time of the study, the community was served by a Primary Health Care centre, staffed by two community health extension workers (CHEWS). The community is about 10 kilometres from a designated comprehensive emergency obstetric centre (EmOC) and about 20 kilometers from a referral centre.

Sample Size

The community-based surveillance study involved a total community survey of all women aged 14–49 years and those less than 14 years but who were in a marital relationship. Data for this study included only women who had experienced childbirth.

Data Collection

Mobile devices running on Android Operating System pre-installed with Open Data Kit (ODK) Data Collect application were used for data collection. ODK is a free and open source set of tools, which helps users compile and manage data collections. The questionnaire was adapted from the 2008 Nigerian Demographic and Health Survey questionnaire and contained 80 items on sociodemographic characteristics, pregnancy, childbirth and early infant feeding practices, as well as health seeking practices of women. The questionnaire was formatted into ODK-compatible software and uploaded onto the devices.

Each household was allotted a number for identification. A manual map of the community with all households was sketched and GPRS co-ordinates of each household were also obtained. Using the hand-held devices, six female interviewers, who had been trained in the use of the devices, administered the questionnaire over a period of five days in 2011 with each interview lasting 15–20 minutes. Pre-testing was carried out prior to eventual field work. After each interview, collected data were wirelessly sent to a server, aggregated and subsequently downloaded.

Data analysis

The data were cleaned, coded and checked for missing values and outliers. Data were analysed using statistical software SPSS version 20.0.0. The association between the categorical independent variables of interest (sociodemographic characteristics and maternal healthcare services) and dependent variable (prelacteal feeding) was tested by using Pearson Chi-square test (χ^2). The results were considered statistically significant at a p -value of < 0.05 . Multivariate logistic regression analysis was applied to analyse the factors associated with prelacteal feeding practice (outcome variable). Odds ratio (adjusted) with 95% confidence interval was used to assess the strength of association.

Ethical consideration

The study was approved by the Institutional Review Board (IRB) of the Population Council, New York (Protocol number 485) and the Ethical and Scientific Committee of the Ahmadu Bello University Teaching Hospital, Zaria. Informed consent was also obtained from the community head and the study participants.

Results

The community had 319 women in the reproductive age group and 10-14-year-olds who were married. Of these, 309 were available and interviewed. Thirty-nine women gave no information on pregnancy and childbirth and were excluded from further analysis, while 270 (87.4%) were entered into analysis. The sociodemographic characteristics of the study group are presented in Table 1.

Table 1: Sociodemographic characteristics of study group ($N = 270$)

Characteristic	Frequency (%)
<i>Age group (years)</i>	
10-19	80 (29.6)
20-29	128 (47.4)
30-39	59 (21.9)
40-49	3 (1.1)
<i>Mother's educational level</i>	
No formal education	192 (71.1)
Primary	64 (23.7)
Secondary	14 (5.2)
Tertiary	0 (0.0)
Formal education	139 (51.5)
<i>Father's educational level</i>	
No formal education	131 (48.5)
Primary	49 (18.1)
Secondary	64 (23.7)
Tertiary	26 (9.6)
<i>Weekly income of mother[§]</i>	
< N500	204 (75.6)
N500-N1,000	56 (20.7)
>N1,000-N5,000	10 (3.7)
<i>Engagement in income generating activity</i>	
Yes	203 (75.2)
No	67 (24.8)

[§]Included women not working but whose spouses gave money regularly on weekly basis.

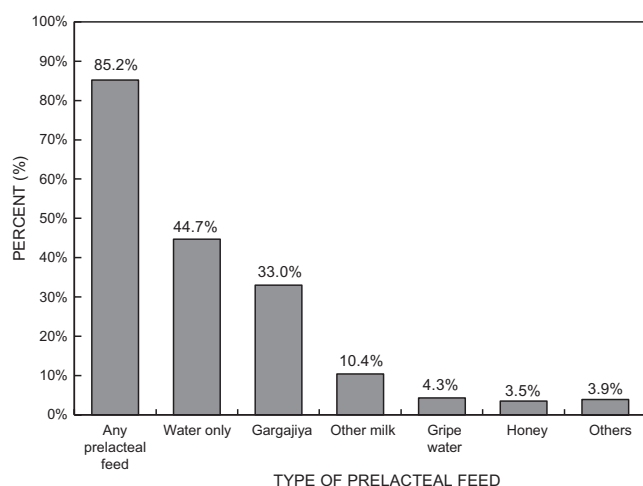


Figure 1: Prevalence of various types of prelacteal feeds given.

Prelacteal Feeding Practices

Out of 270, prelacteal feeding was practiced by 85.2% (230/270) of the respondents. The types of prelacteal feeds are shown in Figure 1. Of those who gave prelacteal feeds, water constituted 44.7% (103/230), the most common prelacteal feed given.

Factors associated with use of prelacteal feeds

Table 2 shows a cross-tabulation of women's use of prelacteal feeding by selected socioeconomic characteristics. The table also shows that a lower percentage (82%) of women aged 10–19 years as opposed to 89.8% of those 30–39 years practiced prelacteal feeding. The percentage of women who gave prelacteal feed reduced with increasing educational level. A similar finding was observed with the father's educational level.

Table 2: Prelacteal feeding practice and sociodemographic characteristics of women (N = 270)

Characteristic		Prelacteal feeding		p-value
		Yes	No	
Women's age at last child's birth	10-19	66 (82.5)	14 (17.5)	.561
	20-29	108 (84.4)	20 (15.6)	
	30-39	53 (89.8)	6 (10.2)	
	40-49	3 (100.0)	0 (0.0)	
Women's educational level	No formal education	166 (86.5)	26 (13.5)	.601
	Primary	53 (82.1)	11 (17.2)	
	Secondary	11 (78.6)	3 (21.4)	
Father's educational level	No formal education	117 (89.3)	14 (10.7)	.299
	Primary	39 (79.6)	10 (20.4)	
	Secondary	53 (82.8)	11 (17.2)	
	Tertiary	21 (80.0)	5 (19.2)	
Mother's engagement in income generating activity	Yes	171 (84.2)	32 (15.8)	.445
	No	59 (88.1)	8 (11.9)	

Note: Figures in parenthesis are percentages.

Table 3: Prelacteal feeding practice and maternal utilisation of healthcare services

Characteristic		Prelacteal feeding		p-value
		Yes	No	
ANC attendance	Yes (n = 160)	136 (85.0)	24 (15.0)	.918
	No (n = 110)	94 (85.5)	16 (14.5)	
Frequency of ANC attendance	<4 times (n = 134)	118 (88.1)	16 (11.9)	.143
	≥4 times (n = 136)	111 (81.6)	25 (18.4)	
Birth Assistant at delivery	No birth attendant (n = 182)	158 (86.8)	26 (13.2)	.000
	Unskilled birth attendant (n = 54)	50 (94.4)	2 (5.6)	
	Skilled birth attendant (n = 34)	21 (61.8)	13 (38.2)	
Mode of Delivery	Spontaneous vaginal delivery (n = 254)	222 (87.4)	32 (12.6)	.000
	Caesarean section (n = 16)	8 (50.0)	8 (50.0)	

Note: Figures in parenthesis are percentages.

A slightly higher percentage (88.1%) of those who had no access to income generating activities gave prelacteal feed compared to their peers who had access to income generating activities (84.2%). There was no statistically significant association between the practice and any of the sociodemographic factors.

Table 3 is a cross-tabulation of prelacteal feeding practice and maternal utilisation of healthcare services. The table shows that no significant association exists between prelacteal feeding practices and attendance at an antenatal care (ANC) clinic. The table also shows that there was a significant association between prelacteal feeding practices and attendance of a birth assistant at delivery, as 94.4% mothers who had an unskilled birth attendant at delivery practiced prelacteal feeding, compared to those who delivered by themselves (86.8%) and those who were assisted by skilled birth attendants (61.8%).

Table 4 shows that the odds of prelacteal feeding practices were 5.32 times more likely to occur for women who had an unskilled birth attendant and 3.25 times more likely for those who did not have any attendant at delivery. The odds of the practice if delivery was by caesarean section were lower (AOR = 0.62; Table 4).

Table 4: Multivariate logistic regression analysis of prelacteal feeding practice and maternal utilization of healthcare services parameters

Parameter	Adj. Odds Ratio	95% CI
Caesarean section	0.168	0.060–0.470
No birth attendant	3.252	1.354–7.810
Unskilled birth attendant	5.322	1.634–17.333

Discussion

Our study was motivated by the existing paucity of literature on the benefits of breastfeeding to maternal, newborn and child health, and the role prelacteal feeding could play in depriving mothers and their newborns of these benefits.^{1,8}

The study found that prelacteal feeding is commonly practiced by women in the study community with up to 85.2% of women reporting use of prelacteal feeds for their newborns. Similar high prevalence rates have been reported from rural communities in Bangladesh,¹² Ethiopia¹⁶ and Vietnam.¹⁷ Lower rates have also been reported across other country settings.^{6,7,11} The variance in prevalence rates could be a reflection of different cultural beliefs and practices related to newborn feeding as well as socioeconomic circumstances. Additionally, the studies with a low prelacteal feeding prevalence were facility-based studies in which rates of prelacteal usage tended to be lower than community-based studies. Respondents in facility-based studies are often recruited when they visit health facilities and such women are more likely to have heard about the benefits of exclusive breastfeeding from health care personnel, hence accounting for the tendency to lower prevalence in facility-based study.

The study also explored the variety of prelacteal feeds and found that plain water which may have been sourced from local streams and wells was the most common prelacteal feed given. Plain water was also reported as a common prelacteal feed in Vietnam¹⁷ and Nepal.¹⁸ In many low and middle-income countries such as the one in which this study was carried out, portable water is often in short supply. Water for household consumption is often contaminated. Water as a prelacteal feed in these settings may not only inhibit breastfeeding but could be directly harmful to the newborn. According to the WHO, diarrhea and malnutrition linked to drinking unsafe water causes significant morbidity and mortality among under-five children.¹⁹

A small proportion of women in the study used gripe water as a prelacteal feed. Gripe water, a liquid prepared from sodium bicarbonate and herbs like ginger, fennel, licorice, cinnamon and clove, has been used by many women in the belief that it treats abdominal colic in children; although there has been no strong scientific evidence to validate these claims.²⁰ Hence, use of gripe water may just be driven by strong marketing strategies rather than evidence of effectiveness.

The women in this study were also found to give their newborns a herbal concoction locally referred to as '*gargajiya*' as the second most common prelacteal feed. This preparation, having not been subjected to any scientific process, may not have any health benefits to the newborns and could be potentially harmful. Furthermore, like all prelacteal feeds, there could be a possibility of failure of establishment of breastfeeding and all the associated consequences.^{8,12}

The use of non-human, unpasteurised milk was another key finding. This has been reported in previous studies.^{10–12} The risks associated with unpasteurised non-human milk from animals like cow, goat and sheep whether prelacteal or not have previously been documented.²¹ This finding could be an indication of the level of awareness in the community on the risks associated with consumption of unpasteurised milk.

The use of honey as a prelacteal feed as found in our study has also been reported in several communities.^{9,12} The medicinal effects of honey have also been reported in several studies.^{22,23} It remains to be explored whether the medicinal effect of honey could underpin the preference for honey as a prelacteal feed by some women; and also, establish whether the medicinal benefits of honey measure up to or outstrips its disadvantage as a prelacteal feed. Current knowledge demonstrates that any prelacteal feed could delay initiation of breastfeeding and deprive mothers and their newborns of the full benefits of early and exclusive breastfeeding.^{1,6,8} This needs to be emphasised to mothers and proponents of honey as a prelacteal feed.

The availability and utilisation of maternal healthcare services could greatly influence the choices women make about infant feeding. In this study, we examined the effect of antenatal care attendance, frequency of attendance and delivery in the presence of a trained birth attendant on prelacteal feeding practices. Our finding that women who had unskilled birth attendant at delivery were five times more likely to use prelacteal feeding was not surprising. Closely related to this was the finding that women who delivered without a birth attendant were three times more likely to use prelacteal feeds. There is further evidence that when a delivery takes place at home (usually under the watch of an unskilled birth attendant or the woman alone), a significant source of maternal health information comes from their family and friends, who base their advice on personal experience or hearsay. Some studies have demonstrated strong links between family and friends as sources of information and infant feeding practices of women.²⁴

In this study, women who delivered via Caesarean section were less likely to use prelacteal feed for their newborns. This may be because the women delivered in the facility where support for exclusive breastfeeding must have been given. Conversely, other authors have found that delivery by Caesarean section, instrumental vaginal delivery or even episiotomy was associated with women's use of prelacteal feeds for their newborns.^{7,18} However, the finding of 50% of the women who had operative delivery giving prelacteal feeds shows that birth attendants and women need to be aware that operative deliveries are not contraindications to early initiation of breastfeeding, and practices could be changed to promote early initiation of breastfeeding.

Pertaining to age, education, and women's access to income, we found no significant association with use of prelacteal feeding. This is in contrast to other studies which found lack of education and poverty as important determinants of use of prelacteal feeding.^{12,19} This finding suggests that use of prelacteal feeds by women for their newborns cuts across socioeconomic status in the study community.

Our study is unique for its data collection and collation strategy. The use of mobile phone technology to collect, aggregate, and consolidate data prior to analysis in a rural setting is uncommon in low and middle-income countries, although it has been described in a previous study.²⁵ The method of using ODK also enhances the validity of the study as the data is more accurate. Such paperless data collection has the potential to make community-based studies more attractive and less cumbersome and deserves further exploration.

Conclusion

It is difficult to generalise the findings of our study to other communities in Nigeria. However, our findings concur with studies from other low and middle-income countries. It may be postulated that prelacteal feeding thrives in settings where attendance of skilled birth assistants at delivery is low. The findings of this study, therefore, emphasise the need for innovative strategies to reach women at risk of offering prelacteal feeds with messages that discourage prelacteal feeding and promote early initiation of exclusive breastfeeding. They also need to be encouraged to utilise health facilities for delivery so that they can receive messages leading to behaviour change in relation to infant feeding practices. Birth attendants, skilled or unskilled, should also be targeted with such messages.

Rural communities present unique challenges for behavioural change interventions that could yield the desired result due to cultural, educational and religious barriers. Therefore, enriching the content of infant feeding messages in rural settings with emphasis on health facility deliveries, the advantages of breastfeeding, and risks of prelacteal feeding could be hugely rewarding in this regard.

Limitations and suggestions for further research

This study relied on women's recall which may weaken the reliability of some of the information collected. However, overall, we think the findings are close to the reality of prelacteal feeding in this study population. We suggest a qualitative study to get in-depth knowledge as to why women give prelacteal feeds. Perhaps, this will provide more solid evidence to guide the design of relevant interventions.

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ORCID

AO Jimoh  <http://orcid.org/0000-0003-0291-2882>

SE Adaji  <http://orcid.org/0000-0002-4331-9463>

OS Shittu  <http://orcid.org/0000-0002-7142-0438>

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