

East African Medical Journal Vol. 78 No. 1 January 2001

INFANT FEEDING PRACTICES DURING THE FIRST SIX MONTHS OF LIFE IN A RURAL AREA IN TANZANIA

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ABSTRACT

Objective: To assess breastfeeding practices in infants aged 0-6 months, focussing particularly on beliefs, knowledge and practices affecting exclusive breastfeeding.

Design: A house-to-house survey with individual interviews using a structured questionnaire, key informants interviews and focus group discussions.

Participants: One hundred and seven mothers were interviewed, nearly all of those living in Nkinga community with infants less than seven months old. The focus group discussions and key informant interviews were also held.

Setting: Nkinga community, Igunga District, Tabora region, Tanzania.

Results: Sixty four per cent of the sample was put to the breast within two to eleven hours. Prolactal feeds were given to about 25% of the infants. The type of prolactal fluid given was mainly glucose water in hospital and plain water with home deliveries. Forty six per cent of the mothers discarded colostrum. The median duration of exclusive breastfeeding was about two months and of full breastfeeding was about four months.

Conclusion: The average duration of exclusive breastfeeding, though far below recommended levels, is higher than is found in most studies in Africa and Tanzania. This may be due to the efforts of hospital staff who had received special training on breastfeeding in recent years.

INTRODUCTION

Breastfed infants do not need extra water(1-3) even under very hot and arid conditions(4). The benefits of breastfeeding increase with increased exclusiveness of breastfeeding and even supplements of water may decrease breastmilk production(5). Exclusiveness of breastfeeding is important for the contraceptive effect of breastfeeding (6,7) and for protection against infections(8-10). Recently, exclusive breastfeeding was shown to carry a significantly lower risk of mother-to-child transmission of HIV-1 than mixed feeding(11).

The World Health Organisation (WHO) has developed a set of indicators and definitions of exclusive breastfeeding, predominant breastfeeding and complementary feeding. These definitions are meant to be applied to surveys using the 24-hour recall method (12). A more comprehensive definition system has been designed and consistency in usage called for in the scientific literature(13,14). Previously, for most health and nutrition professionals, exclusive breastfeeding had meant breastfeeding without the addition of other milks or food, that is to say, an infant who received supplements of water, tea or juice was still considered exclusively breastfed.

Only in this past decade have data been available to indicate how widely exclusive breastfeeding is put into practice, based on 24-hour recall. The only nationally representative data on infant feeding in Tanzania for children younger than five years of age come from the Tanzania Demographic and Health Surveys (TDHS) done

in 1991/92 and 1996/97(15,16). Mothers were asked about the current (last 24 hours preceding the interview) breastfeeding status of all living children under five years old. Almost all children born in the five years before the survey 1996 (97%) were ever breastfed and most were reported to have initiated breastfeeding in the first 24 hours after delivery. The median duration of breastfeeding was around 22 months, while exclusive breastfeeding was around one month and full breastfeeding (exclusive plus predominant, for example, breastfeeding plus water-based drinks only) around two months. Many mothers gave prolactal feeds and introduced foods in the early weeks or months of life. Other than the TDHS, more detailed studies have been done only on a few areas of the country(17,18). Thus, there is a need for a more in-depth and up to date information on early infant feeding patterns in more areas of Tanzania.

The present study investigated breastfeeding practices in a rural area among infants under seven months of age, focusing on exclusive breastfeeding and prolactal feeds, factors that influence them and factors that must be taken into account in developing a promotional strategy for exclusive breastfeeding.

MATERIALS AND METHODS

Study area: The study was carried out in Nkinga village area located in Igunga District, Tabora Region in central Tanzania in May 1999. A Swedish missionary health facility was established in the village in the 1930s and was gradually transformed into a hospital and a Nurse Training School. The hospital has not yet

begun to work towards becoming "Baby Friendly" but several of the staff have learned something about exclusive breastfeeding through a government run training course they attended in 1994. Nearly all the mothers in Nkinga have contact with the hospital during pregnancy and/or delivery (19). Mothers are expected to stay for about 12-24 hours in the hospital after normal delivery and rooming-in is practised. Many traditional healers and traditional birth attendants (TBAs) are also active within the area.

Study population: Based on census population data from 1988, there is an estimated annual population growth rate of 2.4%, an estimated crude birth rate of 41 per 1000 population (20,21) and an estimated infant mortality rate of 100/1000 live births. The number of mothers with infants in the target age group of less than seven months of age was expected to be about 150 mothers. We located 130 mothers and obtained complete information from 108. Twenty-two mothers could not be interviewed because they lived in remote areas without roads, were away on trips or were not at home at the time of visit due to harvesting or other work. One mother had died one month after birth but her sister was interviewed regarding the feeding of the child. These 108 mothers had given birth to 110 children in the target age group, but two children were excluded as being the second twin. Table 1 presents some characteristics of the mothers and infants included in the study.

Table 1

Demographic characteristics of mothers and study children.

Characteristic	no.	%
Age of mother		
<20	9	8
21-24	27	25
25-29	22	21
30-34	15	14
35-39	6	6
≥40	1	1
Do not know	28	26
Educational background		
none	37	34
primary, incomplete	9	8
primary, complete	59	55
secondary, incomplete	3	3
Marital status		
single	20	19
married	87	81
Parity		
1	16	16
2-4	62	58
5-7	16	15
8-10	9	8
≥11	4	3
Delivery		
hospital		
normal	68	63
Caesarean section	8	7
home	32	30
Birth assistance		
medical doctor	8	8
nurse/midwife	66	62
relative	18	17
TBA	8	7
none	6	6
Age of child at interview		
0 - 29 days	20	19
30 - 59 days	14	13
60 - 89 days	18	16
90 - 119 days	14	13
120 - 149 days	15	14
150 - 179 days	10	9
180 - 209 days	17	16

Definitions of breastfeeding: Terms used for different breastfeeding patterns are largely as recommended by WHO (22,23) (Figure 1).

Qualitative study: Seven semi-structured interviews were conducted with key informants, including a nurse tutor, three nurse/midwives, a medical doctor and two TBAs. The interviews focused on mothers use of prelacteal feeds, colostrum, breastfeeding initiation, exclusive breastfeeding and mothers' beliefs and practices regarding infant feeding. In addition to this, the health workers were asked about previous training on breastfeeding issues. Three focus group discussions were conducted with 6-7 women from the area in each group. One group was composed of TBAs, a second of respected, influential elderly women (>50 years) and the third of lactating mothers aged of 20-30 years old. The focus group discussions used a guide with semistructured questions and focused on the same topics covered by the key informants. The discussion was led by a trained community nurse/midwife (AM) in the local language Kinyamwezi and lasted for about one hour.

Household survey: Interviews were conducted by two expatriate nurse tutors and two local community nurse-midwives, specifically trained before the study as recommended by Melville (24). The structured questionnaire used included demographic information, and questions on the infant feeding pattern, both current and retrospectively from birth. The interviews were conducted in the local language Kinyamwezi.

Statistical analysis: All data were coded in FileMaker Pro and statistical analyses were conducted using StatView v5. Relative risk with 95% confidence intervals (95% CI) was calculated in EpiInfo version 6.

Ethical approval: The study was approved by Nkinga Hospital and by the ethics committee at the medical faculty Uppsala University.

RESULTS

Qualitative study: The health staff interviewed at the hospital reported that they had attended training courses and learned to put the child to the breast before cutting the cord and not to discard the colostrum. No prelacteal fluid should be given and the mother should breastfeed exclusively on demand for four to six months.

Mothers sometimes say they suddenly stop breastfeeding their children because of "bad breastmilk" caused by sickness of the mother, pregnancy and hot sun. The consequences for the breastfeeding child of "bad milk" were commonly thought to be diarrhoea, vomiting or stomach upset and even death. To avoid breastfeeding, the child may be sent to the grandmother.

The younger women said that the baby is put to the breast soon after birth. They believe that colostrum is bad, old milk but still they give it to the child.

Grandmothers stated that in case of home deliveries newborns should not be breastfed right away but should be given water and maize gruel. The first milk is thought to be dirty and the mother cleans and washes the breast with local herbs for five days. The TBAs say that the baby usually receives water first and is put to the breast after one day.

Household survey: Twenty two of 108 newborns (20%) initiated breastfeeding within the first two hours of birth and all except one was put to the breast within 24 hours. Reasons given for not putting the child to the breast immediately after birth were related to the health of the mother-infant dyad as well as hospital routines (Table 2). On the average, the mothers were discharged 3-7 days after delivery (median 1.5 days, range 0.5-45 days); mothers who stayed longer did so mainly as a consequence of medical interventions at birth, e.g., Caesarean section (n=8) and social reasons.

Table 2

Initiation of breastfeeding and reasons given for delay by place of birth

	Home	Hospital
Received breast milk within two hours	2	20
Reasons given for delayed initiation of breastfeeding		
Mother		
<i>Delivery:</i> tired, pain, give strength after delivery resting	6	13
<i>Breastmilk:</i> no milk, colostrum is bad	4	6
Child	10	26
tired, not able to suck, hypothermia etc.		
Medical	2	12
Caesarian section, placenta retention, post partum haemorrhage, etc.		
Hospital routines	-	6
delivery at night, instruction by the midwife, nurses did not bring the child to the mother		
No reason given	8	13

Colostrum was considered bad for the infant by 48/107 (46%) of the mothers, while 10/107 (10%) had no opinion on its qualities. The colostrum was discarded while the breast was washed and cleaned with local medicines. The main reasons given by the mothers for expressing at least some of the colostrum was that it had stayed inside the body for a long time and looked yellow, sticky, dirty, not clear, and could harm the baby and provoke diarrhoea, vomiting or abdominal pain.

Thirty four of 108 infants (32%) were given some kind of prelacteal supplements, in small amounts by cup or spoon, some time during the first three days of life. Mothers who gave birth in hospital, thereof 18 who had normal births, were more likely to have given prelacteal supplements compared to women giving birth at home (Table 3); women who were delivered in the hospital (27/76) were 1.2 times more likely to have given prelacteal supplements (95% CI 1.0-1.5) compared to women who delivered at home (7/34). Of those who gave prelacteal feeds (62%) said they were advised to do so by a midwife and (28%) by relatives or no one.

Table 3

Prelacteal feeds given to newborns

	Hospital delivery		Home delivery		Total	%
	normal	not normal	normal	not normal		
Plain water	4	1	7	12	11	
Glucose/sugar water	9	6	0	15	14	
Infant formula	1	1	0	2	2	
Plain porridge	1	0	0	1	1	
Don't know	3	1	0	4	4	
Sub-total	18	9	7	34	32	
None	47	2	25	74	68	
Total	65	11	32	108	100	

Seventy five per cent of the children were exclusively breastfed from birth (Figure 1), and at two months of age about 50% of the infants were still likely to be exclusively breastfed. At four months of age about 50% of the infants were likely to be partially breastfed. There was no significant association between exclusive breastfeeding and the age of the mother, marital status, education or parity. The main reasons for giving the child animal milk and maize gruel from two to three months of age were the mothers' beliefs that they did not have enough breastmilk and that the child was crying because it was not satisfied with mothers' milk.

Figure 1

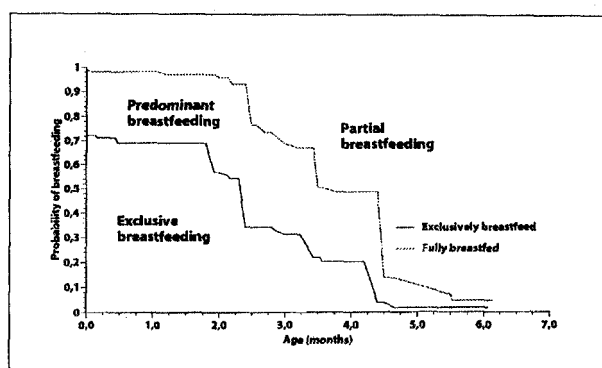


Table 4

Source of information to the mother on how to manage breastfeeding

	Nurse/ midwife	TBA/ relative	no one
Breastfeed exclusively for 6 months	11	0	0
Breastfeed for 4-6 months without supplements	0	13	22
Breastfeed for 2-3 months, then water/juices/cow's milk	5	1	16
Positioning of the baby	4	0	0
Instructions to clean the milk	0	12	0

TBA - Traditional Birth Attendant

Of those who answered the question on their source of information on how to breastfeed their child (n=95), 23% said they were advised by a nurse/midwife, 37% by a TBA or a relative and 40% reported receiving no special information on the subject (Table 4). Exclusive breastfeeding for six months was the most frequent recommendation given by nurse/midwives, while "cleaning of the milk" with local herbs was a frequent recommendation given by TBAs and relatives.

DISCUSSION

The joint WHO/UNICEF statement 1991 on "ten steps to successful breastfeeding"(25) stressed that newborn infants should not be given any food or drinks other than breastmilk (unless medically indicated) and that mothers should be helped to start breastfeeding within half an hour of birth, and to stay with their babies in the same room. All these factors have been shown to have a positive influence on breastfeeding(26). In recent years there has been growing body of research on the benefits of exclusive breastfeeding concluding that it should take place for "about six months"(27)

Beliefs, knowledge and practices with both positive and negative influence on exclusive breastfeeding were found in Nkinga village. Only twenty per cent of the babies were breastfed within one hour after birth, though all but one was put to the breast within 24 hours. Breastfeeding was more often initiated within two hours with hospital deliveries, but the majority were still delayed. The reasons given for delay were seemingly medically indicated, but if there were greater recognition among the personnel of early infant behaviour patterns and needs, much of it could no doubt be avoided. All the babies born in hospital stayed in the same room with their mothers and were breast fed on demand.

Forty six per cent of the mothers thought colostrum was bad and discarded it. This practice has been documented in other African studies(28,29). A survey of the 'Human Relations Area Files' and ethnographic infant feeding literature from 120 cultural groups revealed that the practice of withholding colostrum for more than two days existed in 50 different groups on all continents(30). Whereas women in Guinea Bissau expressed strong opposition to the use of colostrum(28), in Yemen women avoided breastfeeding for the first one to three days simply because they said there was no milk, but had no objection to giving the "empty" breast after birth when informed that this would be good for the baby(31). Health education messages must take into account the strength of traditional beliefs and avoid coercive approaches.

While waiting for the mature milk to appear, prelacteal feeds of water and herbal concoctions are often introduced (29). Thirty per cent of the infants in our sample were given prelacteal fluids before the baby was put to the breast, and thus predominantly breast-fed from birth. (See definitions, Figure 1.) The type of prelacteal fluid given

was mainly glucose water in hospital and plain water with home deliveries. However, about one third of the mothers who said they discarded colostrum did not give any prelacteal feeds.

In our sample there seemed to be a widespread perception of lactation insufficiency and infants were commonly given water or semi-solids from an early age, as has been commonly found elsewhere (27,33). Yet seventy five per cent of our sample were exclusively breastfed from birth to a median age of 2.3 months (Figure 1).

Based on 24-hour recalls, the nationally representative DHS studies have found that exclusive breastfeeding among children less than four months of age in sub-Saharan Africa ranges from one per cent in Niger and Nigeria to 90 per cent in Rwanda. The average rate for the sub-Saharan region is twenty per cent(32). Sub-Saharan Africa has the highest rates of full breastfeeding.

Exclusive breastfeeding rates for all babies under two months of age in Tanzania were 55% in 1996(16) and 43% in 1991(15). The comparable figure for our sample study was 50%. A recent study done in another part of Tanzania found that exclusive breastfeeding rates for infants 0-2 months of age was 15 % in a rural area, and 17 % in an urban area(33).

A possible explanation for differences from place to place and over time is the extent to which health workers have received additional training regarding exclusive breastfeeding, which the Tanzania Food and Nutrition Centre (TFNC) has been investing heavily in throughout the past decade. In Nkinga their nurse/midwives had been to training courses run by TFNC in the middle of the 1990s and learnt about exclusive breastfeeding, including putting the child to the breast before cutting the cord, not to introduce prelacteal fluids, rooming-in and breastfeeding on demand. But the hospital still does not practice all of these things. In addition, health staff and elderly women in focus group discussions emphasised that elderly women were the decision makers in the home concerning breastfeeding. Future efforts to promote exclusive breastfeeding must give attention to them.

ACKNOWLEDGEMENTS

We would like to thank all the mothers and children who participated in the study. We are also grateful to the nurse/midwives Rachel Kissamo and Astrid Bork for cooperation and assistance with data collection. Dr. Samwel Mgelwa and village leader Timothy provided crucial assistances to us. Financial support for this research was provided by InDevelop AB u-lands fond, Uppsala University and PMU Interlife Huddinge, Sweden and is gratefully acknowledged.

Figure 1. Definitions used for breastfeeding patterns.

Breastfeeding: The child has received breast milk (direct from the breast or expressed).

Exclusive breast-feeding: The infant has received only breast milk from his/her mother or a wet nurse, or expressed breast milk, and no other liquids or solids with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines.

Predominant breastfeeding: The infant's predominant source of nourishment is breast milk. However, the infant may also have received

water and waterbased drinks (sweetened and flavoured water, teas, infusions, etc.); fruit juice; Oral Rehydration Salts (ORS) solution; drop and syrup forms of vitamins, minerals and medicines; and ritual fluids (in limited quantities) no food-based fluid is allowed under this definition.

Full breastfeeding: Exclusive breast-feeding and predominant breastfeeding together

Partial breastfeeding The child has received both breast milk and solid-/semi-solid food and/or non-human milk WHO(23) calls this category "complementary feeding", but we agree with Aarts *et al*(22) and others who point out that it can include infants who receive no complementary foods breastmilk + other milk.

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