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Breast-feeding initiation and determinants of exclusive breast-feeding – a questionnaire survey in an urban population of western Nepal

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Abstract

Objective: To assess rates of initiation of breast-feeding and exclusive breast-feeding within 2 months after delivery and to determine the factors influencing exclusive breast-feeding.

Design: A health worker-administered questionnaire survey was carried out during the time period 1 August–30 September 2005.

Setting: Immunisation clinics of Pokhara, a submetropolitan city in western Nepal.

Subjects: Three hundred and eighty-five mothers who had delivered a child within the previous 2 months.

Results: The rates of initiation within 1 h and within 24 h of delivery were 72.7 and 84.4%, respectively. Within 2 months after delivery, exclusive breast-feeding was practised by 82.3% of the mothers. Breast milk/colostrum was given as the first feed to 332 (86.2%) babies but 17.2% of them were either given expressed breast milk or were put to the breast of another lactating mother. Pre-lacteal feeds were given to 14% of the babies. The common pre-lacteal feeds given were formula feeds (6.2%), sugar water (5.9%) and cow's milk (2.8%). Complementary feeds were introduced by 12.7% of the mothers. By logistic regression analysis, friends' feeding practices, type of delivery and baby's first feed were the factors influencing exclusive breast-feeding practice of the mothers.

Conclusions: Despite the higher rates of initiation and exclusive breast-feeding, practices such as pre-lacteal feeds and premature introduction of complementary feeds are of great concern in this urban population. There is a need for promotion of good breast-feeding practices among expectant mothers and also the community, especially the families, taking into account the local traditions and customs.

Keywords
Infant nutrition
Exclusive breast-feeding
Complementary food
Bottle-feeding
Nepal

Nepal is a poor developing country in the South-east Asia region of the World Health Organization (WHO). In 2002, Nepal was ranked 140th among 174 countries in the Human Development Index and 0.44 in Gross Domestic Product. It has a total land area of 147 000 km^2. According to the 2001 census, the total population of Nepal is 23.15 million (male, 11.56 million and female, 11.58 million). The sex ratio in Nepal is 998 males for 1000 females. As a consequence of a high growth rate, the population of the country is fairly young. About 39.3% of the total population is in the 0–14 year age group and only 6.5% are above 60 years of age. Eighty-one per cent of the economically active population are employed in the agricultural sector. This is a proclaimed Hindu Kingdom and >80% are Hindus, followed by Buddhists (10.7%) and Muslims (4.2%). Only 48.1% of males above 14 years of age have minimum high school level education while for females the percentage is 27.2%[1,2].

The 1996 National Family Health Survey (NFHS) of Nepal in a nationally representative sample of children aged 6–36 months showed that overall, 54.8% were stunted, 12.7% showed wasting and 54.2% were underweight. A survey carried out in 1998 reported that 50.4% of children below 3 years of age were stunted (short for their age) while 48.5% were underweight (low weight for their age)[3]. The magnitude of malnutrition prevalent in Nepal can be attributed to household food shortages, disease burden, poor environmental conditions, inadequate care and faulty feeding practices[4].

Breast-feeding, particularly exclusive breast-feeding, and appropriate complementary feeding practices are universally accepted as essential elements for the satisfactory

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growth and development of infants as well as for the prevention of childhood illness. The value of breast milk as a source of nutrition and as a preventive measure to protect children from diarrhoeal diseases and acute respiratory infections, as well as its psychological benefits, have been reported in several studies[5,6]. The WHO recommends early initiation and exclusive breast-feeding for the first 6 months, with the introduction of appropriate complementary foods and continued breast-feeding thereafter[7].

Breast-feeding practices and patterns vary across populations and between individual mothers, and depend on a number of factors. In Nepal, like in most low-income countries, initiation of breast-feeding is almost universal, with only small variations in gender, residence and ecological region[4]. A community-based survey from rural Makawanpur district, Nepal reported the rates of initiation of breast-feeding as 63 and 95% within 1 and 24 h after birth, respectively[8]. The data on breast-feeding in Nepal are available from the 2001 Nepal Demographic and Health Survey (Nepal DHS), a house-to-house questionnaire survey of a nationally representative sample of 8726 women aged 15–49 years and 2261 men aged 15–59 years. According to the 2001 Nepal DHS, 31% of the children in Nepal are breast-fed within 1 h and 64.9% of them within 24 h after birth. More urban children are breast-fed within 1 h (34.2%) and within 24 h (72.3%) after birth as compared with rural children (30.9 and 64.4%, respectively). Around 69% of the children are fed with colostrum. The rate of exclusive breast-feeding of infants less than 2 months of age was 86.7%[9]. Studies from other countries in South-east Asia have also reported a high rate of initiation of breast-feeding[10–14].

Data on the rates of initiation of breast-feeding and exclusive breast-feeding at the national level are available. However, breast-feeding practices have wide socio-religious connections and also vary according to ecological regions[15]. Moreover, a review of the literature on the factors influencing breast-feeding has shown inconsistent results, and breast-feeding practices are multifactorial in nature[16]. In order to provide appropriate care and advice, it is essential for the health care policy makers to understand the local practices and customs[17]. However, there is no published literature available from the urban population of western Nepal. Hence we undertook this study with the following objectives: (1) to assess the initiation of breast-feeding and exclusive breast-feeding of the mothers within 2 months after delivery; and (2) to determine the factors influencing the mothers' decision to breast-feed exclusively.

Methods

Study area and population

Kaski district is one of the 14 districts in the western development region of Nepal. The district has a land area of $\sim 2000\,km^2$ and a population of 380 000. Kaski district has 43 villages and Pokhara submetropolitan city has a population of 156 000 according to the 2001 census[18]. Pokhara city is administratively divided into 18 municipal wards. Immunisation clinics are conducted once a month in the child health centres located in each of these wards. These immunisation clinics are carried out in collaboration between Pokhara municipality, the United Nations International Children's Emergency Fund (UNICEF) and Manipal College of Medical Sciences, providing manpower, drugs and technical input in the form of qualified medical doctors, respectively.

Study design and participants

A cross-sectional survey on breast-feeding initiation and feeding practices was carried out in Pokhara city during the months of August and September, 2005. The study was carried out in 18 child health centres located in each ward of Pokhara city. The respondents were the mothers attending immunisation clinics in the child health centres. The semi-structured questionnaire used for interviewing mothers was adapted from that of Duong *et al.*[14]. The questionnaire was modified according to the needs of local cultural practices. It was further pre-tested for cultural sensitivity before actual data collection, and the necessary modifications were made to the questionnaire. The interviews were conducted by two research assistants who had attended a 1-day practical training course on interviewing skills prior to actual data collection. All the mothers who had delivered a child within the previous 2 months were informed about the purpose of the study. Oral consent was sought prior to each interview, according to the protocols set by the Declaration of Helsinki[19].

The necessary information was collected on a semi-structured questionnaire. The information collected included initiation of breast-feeding and current feeding practices of the child. Initiation of breast-feeding was estimated according to the mother's report on recall of the events that took place immediately after delivery and initiation of breast-feeding. Exclusive breast-feeding was defined as the mother reporting that nothing else (except medicines) but breast milk was being given from birth till the time of the interview. The other information collected included sociodemographic details, perceptions and decisions about breast-feeding.

Data analysis

The data were coded and analysed using the SPSS package, version 7.5 (SPSS Inc.). In addition to qualitative analysis, descriptive statistics and univariate statistics were applied to compare the demographic factors of exclusive breast-feeding (EBF) and non-exclusive breast-feeding (non-EBF) groups. Univariate and logistic regression analysis was undertaken to explore factors influencing the mothers' decision to breast-feed exclusively. Univariate and adjusted

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odds ratios (ORs) and 95% confidence intervals (CIs) were calculated for each factor.

Results

Demographic characteristics

All the mothers who had delivered within the previous 2 months agreed to participate in the study. The mean age of the babies was 33.6 days (standard deviation (SD) 13.7), 221 (57.4%) of them were males and 164 (42.6%) females. Demographic characteristics of mothers who were interviewed are shown according to the lactation status, i.e. EBF and non-EBF groups, in Table 1. Significant differences were found in household income between the EBF and non-EBF groups, but not in age, religion, ethnicity, caste, education and occupation. The average age of women who practised EBF was 24.1 years (SD 3.9), compared with 24.3 (SD 4.5) years for those who did not. However this difference was not statistically significant. Women with lower household income (≤ 10 000 Nepalese rupees per month) were more likely to be exclusively breast-feeding their babies compared with those who had a household income of > 10 000 Nepalese rupees per month ($P = 0.03$) ($US 1 ≈ 73 Nepalese rupees).

Place of delivery and birth attendant

Out of the 385 respondents, 94 (24.4%) had delivered at home. The majority (92.6%) of these home deliveries were attended by family members (57.9%) and friends (34.7%). However, only 2.1% of the home deliveries were attended by traditional birth attendants (TBAs) and 5.3% were unattended.

Table 1 Sociodemographic factors of mothers who were and were not practising exclusive breast-feeding (EBF)

Characteristic	EBF	Non-EBF	Overall
Age (years), mean (SD)	24.14 (3.9)	24.32 (4.5)	24.17 (4.1)
Household income*,† (in Nepalese rupees)			
≤ 10 000	41 (15.0)	233 (85.0)	274
> 10 000	27 (24.3)	84 (75.7)	111
Religion (%)			
Hindu	65 (17.6)	305 (82.5)	370
Others	3 (20.0)	12 (80.0)	15
Ethnicity (%)			
Indo-aryan	39 (26.0)	111 (74.0)	150
Tibeto-burmese	29 (12.3)	206 (87.7)	235
Occupation (%)			
Housewife	57 (17.1)	277 (82.9)	334
Working	11 (21.6)	40 (78.4)	51
Education (%)			
Up to high school (10th standard)	52 (17.2)	250 (82.8)	302
More than high school	16 (19.3)	67 (80.7)	83
Caste (%)			
Brahmin	8 (20.5)	31 (79.5)	39
Vaishya	5 (13.1)	33 (86.9)	38
Chetri	39 (20.0)	156 (80.0)	195
Shudra	16 (14.2)	97 (85.8)	113

SD – standard deviation.
* $P = 0.03$.
† 10 000 Nepalese rupees≈$US 134.

Initiation and exclusive breast-feeding

Within 2 months after delivery, 317 of the 385 (82.3%) mothers interviewed were exclusively breast-feeding. Breast-feeding was initiated within the first hour by 280 (72.7%) mothers and within 24 h by 325 (84.4%) mothers. Colostrum or breast milk was given as the first meal to 332 (86.2%) babies, while the remaining 54 (14%) babies were given a fluid other than breast milk as their first feed. The feeds other than breast milk given were formula feeds (Lactogen) (24 (6.2%)), glucose water (23 (5.9%)) and cow's milk (11 (2.8%)). In five (1.3%) instances, more than one type of fluid was given to the baby until breast-feeding was initiated. Colostrum or breast milk was given as the first meal to 332 babies. However, 57 of these 332 (17.2%) babies were either given expressed breast milk from other lactating mothers or put to the breast of other lactating mothers. Fifteen (26.3%) of these 57 mothers who gave breast milk from another lactating woman as the first meal had initiated breast-feeding within 1 h after birth. Fifteen (26.3%) mothers could not initiate breast-feeding until up to 24 h and the remaining 27 mothers (47.4%) could not initiate breast-feeding even after 24 h. Most of the mothers fed their babies according to need, i.e. 353/385 (91.6%), with an average of 7.4 feeds per day. None of the mothers were exclusively bottle-feeding their babies and 49 (12.7%) mothers had introduced complementary feeds before 2 months. The complementary foods included formula foods (10.4%), cow's milk (71.8%) and sugar water (two mothers). Thirteen (3.4%) mothers had introduced more than one complementary feed.

Perceptions and decisions about breast-feeding

The following were the perceived reasons given by the mothers for choosing breast-feeding: 'breast-feeding is the right thing to do' (96.4%), 'breast milk is better for the baby' (94.3%), 'breast-feeding is cheaper' (69.1%), 'breast-feeding is more convenient' (40.8%) and 'my friends advised me to breast-feed' (21.3%). The majority of the mothers had decided about the feeding method after delivery (95.1%) rather than during their pregnancy (2.4%), during labour (1.6%) or before pregnancy (1%). Out of 385 mothers, 252 (65.5%) responded that their mother encouraged them to initiate breast-feeding right after birth, followed by the nurse 105 (27.3%). With regard to future feeding intentions for the following 4 weeks, 360 mothers (93.5%) indicated that they would continue exclusive breast-feeding, while the rest intended to feed with formula feeds or use a mix of breast milk and cow's milk. When asked about the age at which they planned to stop breast-feeding, 135 (35.1%) mothers responded at 3 years, 72 (18.7%) mothers at 2.5 years and 70 (18.2%) at 2 years. Ninety-eight (25.5%) mothers planned to

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introduce complementary feeds before 6 months, 271 (70.4%) at 6 months and 16 (4.2%) after 6 months of age.

Health status of mothers

Out of 385 mothers who were interviewed, 129 reported at least one problem related to breast-feeding, The most common problems reported were inverted nipples, cracked or sore nipples by 106 (27.5%) mothers, baby too tired to feed (44 (11.6%)) or difficulty in expressing milk (37 (9.6%)).

Factors affecting breast-feeding

Factors influencing the mothers' decision to breast-feed exclusively were explored by logistic regression analysis and are presented in Table 2. The factors which influenced the mothers' decision on exclusive breast-feeding were: friends' breast-feeding preferences, type of delivery and baby's first feed. Those mothers who had a vaginal delivery were more likely to breast-feed exclusively than those who delivered by Caesarean section (OR 7.6, 95% CI 1.7–34.1). Feeding practices of friends influenced the mothers' decision to breast-feed exclusively. Mothers whose friends were breast-feeding were more likely to breast-feed their baby exclusively (OR 2.2, 95% CI 1.1–4.5). The baby was more likely to be exclusively breast-fed if they had received colostrum/breast milk as the first meal (OR 27.2, 95% CI 12.6–58.7).

Discussion

The initiation rates of breast-feeding in this urban population appear to be much higher than the rates reported from the 2001 Nepal DHS. The survey showed that initiation rates for Nepal and the western region were 64.9 and 59.1%, respectively[9]. The rate of exclusive breast-feeding is comparable with the rate reported from the 2001 Nepal DHS which was 86.7% for infants <2 months of age. The rates of initiation and exclusive breast-feeding are higher than those reported from Western countries[20,21]. However, studies from Australia and rural Vietnam have reported such high rates of initiation and exclusive breast-feeding[14,22]. It is possible that poverty might encourage early and exclusive breast-feeding as these urban poor cannot find an alternative source to feed their babies. In our study, significant differences were found in household income between EBF and non-EBF groups.

In Nepal, ~80–90% of births take place at home and are often conducted by family members or neighbours. Very few home deliveries are conducted by trained TBAs, and many women deliver alone[23]. Despite these mothers being from an urban area where Manipal Teaching Hospital and the Western Regional Hospital are located, 24.4% of the deliveries took place at home and only 2.1% of them were attended by TBAs. Health care providers play an important role in breast-feeding practices by counselling during the antenatal and postnatal visits. There were no significant differences in initiation of

Table 2 Factors influencing mothers' decision to practise exclusive breast-feeding (EBF) by logistic regression analysis

Variable	EBF (%)	Non-EBF (%)	Univariate OR (95% CI)	Adjusted OR (95% CI)	*P*-value
No. of antenatal visits					
≤ 3	218 (68.8)	35 (51.5)	1.0	1.0	
> 3	99 (31.2)	33 (48.5)	0.5 (0.3–0.8)	1.5 (0.7–3.1)	0.25
Feeding preference of husband					
Other methods	60 (18.9)	14 (20.6)	1.0	1.0	
Breast-feeding	257 (81.1)	54 (74.4)	1.1 (0.6–2.1)	1.19 (0.4–2.9)	0.69
Feeding preference of maternal mother					
Other methods	48 (15.1)	9 (13.2)	1.0	1.0	
Breast-feeding	269 (84.9)	59 (86.8)	0.8 (0.3–1.8)	0.4 (0.2–1.1)	0.08
Feeding practice of friends					
Other methods	93 (29.3)	33 (48.5)	1.0	1.0	
Breast-feeding	224 (70.7)	35 (51.5)	**2.3 (1.3–3.9)**	**2.2 (1.1–4.5)**	**0.04**
Delivery method					
Caesarean section	6 (1.9)	10 (14.7)	1.0	1.0	
Normal	311 (98.1)	58 (85.3)	**8.9 (3.1–25.5)**	**7.6 (1.7–34.1)**	**0.008**
Baby's first feed					
Other foods	52 (16.4)	56 (82.4)	1.0	1.0	
Colostrum	265 (83.6)	12 (17.6)	**23.8 (11.9–47.5)**	**27.2 (12.6–58.7)**	**< 0.001**
Breast-feeding problems of mother					
At least one problem	104 (32.8)	25 (36.8)	1.0	1.0	
No problem	213 (67.2)	43 (63.2)	1.2 (0.7–2.1)	1.1 (0.5–2.3)	0.76
Delivery setting					
Home	86 (27.1)	8 (11.8)	1.0	1.0	
Hospital	231 (72.9)	60 (88.2)	0.3 (0.1–0.7)	0.9 (0.3–2.5)	0.89
Birth order					
1	129 (40.7)	30 (44.1)	1.0	1.0	
> 1	188 (59.3)	38 (55.9)	1.2 (0.7–1.9)	0.6 (0.3–1.2)	0.16

OR – odds ratio; CI – confidence interval.

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breast-feeding between home and hospital deliveries, unlike the case reported from rural Vietnam[14]. There appears to be a cultural practice that breast-feeding is universal and should be initiated immediately after birth. A recent qualitative study from Makawanpur district of central region Nepal reported that grandmothers held colostrum in high regard, did not support pre-lacteal feeds and also supported early initiation of breast-feeding[17].

Two important findings to be noted from the results of the present study are pre-lacteal feeding and early introduction of complementary feeds. According to the 2001 Nepal DHS, 24.1% of the babies in the western region had received a pre-lacteal feed. However, in the present study, 14% of the babies received pre-lacteal feeds. The common pre-lacteal feeds given were formula feeds (Lactogen), cow's milk and sugar water. We also observed the practice of premature introduction of complementary feeds before 2 months of age. These findings are similar to the reports of the 2001Nepal DHS[9]. This is a matter of concern because such practices persist despite the ongoing efforts by health education programmes to promote good breast-feeding practices at the national level. It is interesting to note that none of the mothers was exclusively bottle-feeding in the present study. According to the 2001 Nepal DHS, only 2.1% of the babies <2 months of age were fed using a bottle with a teat[9]. It has been noted from earlier studies that use of pre-lacteal feeds and bottle-feeding was very common in some populations[8,10,11,24,25]. Another interesting observation was that 14% of the babies were given breast milk from other lactating mothers as first feed and 47.4% of these babies were breast-fed from other lactating mothers when the mother was unable to initiate breast-feeding within 24 h after delivery. A similar practice has been reported from a rural population of Makawanpur district, Nepal[8]. It is a good practice to breast-feed from other lactating mothers rather than giving pre-lacteal feeds such as formula feeds, sugar water and cow's milk. Such practices have not been reported in earlier studies from elsewhere. It will be of interest to study the reasons for such a delay in initiation of breast-feeding before which the child is breast-fed from other lactating mothers. Although a considerable proportion of mothers faced one or more problems related to breast-feeding (27.5% of the mothers had inverted nipples, cracked/sore nipples), it is encouraging to note that this did not preclude them from exclusively breast-feeding their babies.

The influence of Caesarean delivery on the delayed initiation of breast-feeding has been studied and has shown a negative influence on exclusive breast-feeding[26,27]. A negative influence was also noted in the present study. Mothers who underwent Caesarean section were less likely to breast-feed exclusively as compared with those who delivered normally. In the present study, all the women who delivered by Caesarean section did not exclusively breast-feed. The baby is usually handed over to the attendants until the mother is fully recovered and discharged from the operating room. The anxious relatives often feed the newborn with sugar water, cow's milk or formula feeds before the initiation of breast-feeding. It has been reported that Caesarean section continues to be a barrier to early initiation of breast-feeding despite baby-friendly hospital initiatives[27]. In the present study, the proportion of Caesarian deliveries was rather low (4.2%). A study from rural Vietnam also reported a low rate of Caesarian section, i.e. 29/463 (6.3%)[14]. A hospital-based retrospective study from the Kathmandu valley reported that 9.4% of all deliveries were Caesarian sections[28].

Recent studies have investigated the association between breast-feeding and psychosocial factors by multivariate analysis and shown inconsistent association with these factors. The study also highlighted that breast-feeding practice is multifactorial in nature[16]. Previous studies have reported the influence of maternal mothers on the breast-feeding decision of the mother[14,25]. Studies from the UK and Australia have reported the influence of the father on initiation of breast-feeding and exclusive breast-feeding[20,22]. However, in the present study, such an association was not observed. In the present study, only friends' breast-feeding practices had an influence on the mothers' breast-feeding decision. A study from rural Vietnam reported that all the above-mentioned factors influenced the mothers' decision to breast-feed exclusively[14]. In this urban population, it appears that breast-feeding is a well established practice. Therefore, friends are having a greater influence on breast-feeding than family members. The friends' influence on breast-feeding is further supported by the perceptions of these mothers that 'breast-feeding is the right thing to do' and 'breast-feeding is better for the baby'. Some mothers even responded that 'friends advised me to breast-feed'. The other factor which influenced the mothers' decision to breast-feed exclusively was the first feed of the child. Children who were not given colostrum or breast milk as their first feed were less likely to be exclusively breast-fed.

There were a few limitations in our study. The present study was based on interviews carried out among mothers who had delivered a child within the previous 2 months. Hence there could have been recall bias. The results of this study from an urban population cannot be generalised to the rural population. It could be of interest to carry out a similar study in a rural population.

Conclusions

The rates of initiation and exclusive breast-feeding in this urban population are in agreement with the results of the 2001 Nepal DHS. Despite the higher rates of initiation and exclusive breast-feeding, practices such as pre-lacteal feeds and premature introduction of complementary feeds are of great concern in this urban population. There is a lack of influence of the family on breast-feeding practice

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of the mothers. There is a need for promotion of good breast-feeding practices among expectant mothers and also the community, especially the family, taking into account the local traditions and customs.

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Competing interests: None declared.

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