

Dietary Practices of Lactating Women and Nutritional Status of Children in Baglung District, Nepal

Gautam U¹, Yadav DK²

Abstract

Introduction: Breastfeeding success depends on both mother and child. There is high energy requirement to produce breast milk, which is wholesome food for under 6 months children and then complementary foods are introduced to child. Inadequate feeding practices affect nutritional status of children. The main aim of this study was to measure the dietary practices of lactating women and nutritional status of their children.

Material and Methods: A cross sectional study was conducted among 343 lactating women and under two years children of Baglung district. Random sampling technique was applied to select the participants. Face to face interview was conducted among women to collect the data and anthropometric measurement was performed among the children. Data were entered in EPI-DATA version 3.1 and exported to Statistical Package for Social Sciences (SPSS version 17.0) for further analysis. **Results:** Only 5.2% of mother had taken additional two meals per day and energy intake of 31.8% of women was met. Dietary practices of mothers were not associated with nutritional status of children. Breastfeeding practice was nearly universal (99.7%). Bunks (91.8%) of children were put into breast for breast feeding within first hour of birth. Exclusive breastfeeding rate was 34.5%. Bottle feeding was practiced by 15.6% of women. Less than half (40%) of 6-23 months children (n=174) had achieved satisfactory feeding practice (minimum meal frequency and minimum dietary diversity). The rate of wasting (n=180), stunting (n=180) and underweight (n=343) was 10%, 22.2% and 9.3% respectively. Feeding practice to children was associated with wasting and stunting. **Conclusion:** Dietary practice of women and feeding practice to their children was not satisfactory. Dietary practice of women was not associated with nutritional status of children but feeding practice was associated with their nutritional status. The rate of stunting, wasting and underweight was high.

Key words: Dietary practices, lactating mothers, feeding practices, children, nutritional status

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Introduction

Lactation is defined as the period of the new-born infant's life in which breast-milk is the primary source of nourishment. Breast-

milk is the ideal food for new-born infants and studies shows that breast-fed infants have fewer problems with infectious and non-infectious diseases, and experience milder cases of respiratory and ear infections as well as diarrhoea than non-breast-fed babies¹.

Both mother and child participate in the act of nursing, and consequently breast-feeding success depends on the two of them¹. The nursing mother first needs to focus on meeting her nutritional requirements. The energy required to produce 1 litre of milk is estimated around 700 kcal and so recommendations include increasing energy intake above the pre-pregnant requirements by 500 kcal day¹. According to the essential nutrition action (ENA), taking at least two additional meals per day during lactation is recommended for all lactating women².

During the first six months after delivery, the baby is fed only on breast milk, and the baby depends on the mother for all nutrient requirements. Eating a healthy diet while breastfeeding is important because what mother eats determines the energy, protein, nutrient and vitamin content of breast milk. So food should be selected and prepared properly³.

Around the age of six months, an infant's need for energy and nutrients starts to exceed what is provided by breast milk and complementary foods are necessary to meet those needs. An infant of this age is also developmentally ready for other foods⁴. IYCF practices guidelines promoted by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) recommend feeding an average healthy child in the following way: continued breast-feeding, solid/semi-solid foods 2-3 times for infants 6-9 months old and 3-4 times for infants 9-24 months old, with an additional snack being offered 1-2 times per day. The minimum IYCF practices for children 6-23 months are defined as continued breastfeeding, feeding at least the minimum number of times per day, and feeding from minimum number of food groups per day⁵. The criteria for non-breastfed children include feeding substitutes of breast milk (infant formula, powdered or fresh animal milk, cheese, yogurt and other milk products)⁵.

As recommended by WHO, evaluation of nutritional status is based on a comparison of three indices for the children with indices reported for a reference population of well-nourished children (WHO Multicentre Growth Reference Study Group 2006). The three indices (height-for-age, weight-for-height, and weight for-age) are expressed as standard deviation units from the median for the reference group. Children who fall below minus two standard deviations (-2 SD) from the median

of the reference population are regarded as moderately malnourished, while those who fall below minus three standard deviations (-3 SD) from the reference population median are considered severely malnourished. Marked differences, especially with regard to height-for-age and weight-for-age, are often seen between different subgroups of children within a country⁶.

The aim of this study was to find the dietary practices of lactating women and nutritional status of their children.

Material and Methods

A cross sectional study was conducted in Baglung district, Nepal. The sample size was determined by assuming national prevalence of children feed with minimum acceptable diet that is 35% with 5% precision at 95% confidence interval. Sample size was 343 of lactating women and their children. Out of 343 children, underweight was measured to all children while stunting and wasting were calculated to children whose age was above six months (180).

In Baglung district, listed all four municipalities and six rural municipalities then one municipality and one rural municipality were randomly selected from the list for the study area. Baglung municipality and *Kathe khola* rural municipality were selected for study areas. After that all households which had at least one lactating woman having less than two years child were selected and listed from every ward of selected municipality and rural municipality. Researcher went to the centre of ward, spin the pen and the direction as indicated by the head of pen was chosen then researcher moved round and round in the chosen direction until researcher get 16 samples from each ward.

Inclusion of participant in the study was determined by mothers consent and the age of child was being between 0-23 months. After taking verbal and written informed consent of lactating woman of child then data were collected regarding her dietary practice, child feeding practices and their nutritional status through using pre-designed, pre-tested questionnaire in Pokhara Lekhnath Municipality, Nepal.

Tools for data collection were interview schedule, Salter scale for weight measurement, Stadio meter for height measurement and flash cards, sample plastic fruits and bowls. Interview schedule was prepared by extensive literature review. The schedule consisted of four parts: part I socio-demographic information, part II mothers dietary pattern, part III child feeding practices, and part IV tapped nutritional status of child.

For determining IYCF practices; guidelines promoted by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) recommend feeding an average healthy child in the following way was adapted: continued breast-feeding, solid/semi-solid foods 2-3 times for infants 6-9 months old and 3-4 times for infants 9-24 months old, with an additional snack being offered 1-2 times per day and feeding from minimum number of food group (<4) per day.

As recommended by WHO, evaluation of nutritional status is based on a comparison of three indices for the children with indices reported for a reference population of well-nourished children (WHO Multicentre Growth Reference Study Group 2006). The three indices (height-for-age, weight-for-height, and weight for-age) are expressed as standard deviation units from the median for the reference group. Children who fall below minus two standard deviations (-2 SD) from the median of the reference population are regarded as moderately malnourished, while those who fall below minus three standard deviations (-3 SD) from the reference population median are considered severely malnourished.

The size of dishes used to measure the amount of food was of 250 ml, which was equivalent to a standard cup size. Through this reference, the amount of food was converted into a standard serving size, and the daily energy intake was calculated by Nutrition facts 0.9.5.0 version and food tables.

Face to face interview was conducted among women to collect the data and anthropometric measurement was performed among the children. Data were entered in EPI-DATA version 3.1 and exported to Statistical Package for Social Sciences (SPSS version 17.0) for further analysis. Data analysis was done by standard statistical methods, percentage were calculated for descriptive statistics. Chi-square test of significance was employed whenever required.

Ethical approval was taken from Pokhara University Research Center. The approval was taken from Baglung municipality and *Kathe khola* rural municipality of Baglung district before initiation of the study.

Results

In this study 7.9% of mothers were below 21 years, 87.2% were between 21-35 years and 5% were above 35 years age. Among the respondents by ethnicity 50.7% were upper caste group. Based on religion a majority of 90.7% were Hindu. Majority of respondents

(63.3%) were from rural area. Nuclear family was more common than joint family (67.1% vs 32.9%). Nearly 12% had not attended any formal schooling. Likewise more than half (56.0%) were involved in household work and around 16% were employed in government job, 14.3% do have their own business, and remaining 9.3%, 2.9%, 1.5% were involved in agriculture, labor work and others respectively. Monthly income of mother was classified into 5 quintiles, in this study the proportion of lower quintile was relatively less while all other category of quintiles were almost equal proportion.

More than half (56.5%) of children were male and also 52.5% of them were above 6 months of age.

Table 1 show that only 5.2% of mothers took 2 extra meals during the previous day and 31.8% have recommended energy intake.

Table 2 depicts the 3 indicators considered in this study for determining the magnitude of appropriate breastfeeding practices. More than 90% of children were breastfeed feed within one hour of birth and 34.5% of infants aged 0-5 months were feed exclusively with breast milk.

Table 3 represent the complementary feeding practice to 6-23 months children. 42.3% of breastfed infants 6-8 months of age received solid, semi-solid or soft foods for at least 2 times, 46.6% of breastfed children 9-23 months of age received solid for at least 3 times, 23.5% of non-breastfed children 6-23 months of age received for at least 4 times. 43.7% of children 6-23 month of age received foods from 4 or more food group and 15.6% of infants were bottle feed.

The WHO Classification of Malnutrition in less than two years age group is depicted in Table 4. Age specific values of height, weight are shown. The rate of stunting, wasting and under-weight was 22.2%, 10% and 9.3% respectively.

Table 5 represents daily energy intake of mothers. Only 31.8% of mother's energy intake was as recommended.

Table 6 shows the factors association between nutritional status of children and dietary practices of mothers. In this study daily energy intake by mother was not associated with nutritional status of children.

Table 7 shows the association between nutritional status of child and feeding practices to them. Stunting and wasting were significantly associated with feeding practices whereas under-weight was not associated with feeding practices to children.

Table 1: Dietary practices of mothers

Indicators	Definitions	Proportion
Number of meals intake by mother	Proportion of mothers who took 2 extra meals during the previous day	18 (5.2%)
Energy intake by mother	Proportion of mothers who took above 2500 Kcal energy during the previous day	109 (31.8%)

*** 1 gram Carbohydrate/protein = 4 calorie, 1 gram Fat = 9 calorie

Table 2: Breastfeeding practices to children

Indicators	Definitions	Proportion
Status of breastfeeding	Proportion of children 0-23 months who were ever breastfeed	342 (99.7%)
Breast milk initiation time	Proportion of children 0-23 months who were breast feed within 1 hour of birth	315 (91.8%)
Exclusive breastfeeding upto 6 months (n=206)	Proportion of infants 0-6 months of age who are fed exclusively with breast milk	71(34.5%)

Table 3: Complementary feeding practices to children

Indicators	Definition	Proportion
Minimum meal frequency (n=174)	Proportion of breastfed children 6-8 months of age who receive solid, semi-solid or soft foods for at least 2 times (n=26)	11 (42.3%)
	Proportion of breastfed children 9-23 months of age who receive solid, semi-solid or soft foods for at least 3 times (n=131)	61 (46.6%)
Minimum dietary diversity (n=206)	Proportion of non-breastfed children 6-23 months of age who receive solid, semi-solid or soft foods for at least 4 times (n=17)	4 (23.5%)
	Proportion of children 6-23 months of age who receive foods from 4 or more food groups	90 (43.7%)
Satisfactory feeding practice (n=174)	Proportion of children 6-23 months of age who have meet minimum meal frequency and minimum dietary diversity	57 (32.8%)
Bottle feeding	Proportion of children 0-23 months of age who are fed with a bottle	32 (15.6%)

Table 4: Nutritional status of children

Characteristics	Description	Proportion
Stunted (n=180)	Children who fall below -2 SD from the median of the reference population are malnourished	40 (22.2%)
Normal	Children who had score from -2 SD to +2 SD median of the reference population are normal	140 (77.8%)
Wasted (n=180)	Children who fall below -2 SD from the median of the reference population are malnourished	18 (10%)
Normal	Children who had score from -2 SD to +2 SD median of the reference population are normal	162 (90%)
Under-weight (n=343)	Children who fall below -2 SD from the median of the reference population are malnourished	32 (9.3%)
Normal	Children who had score from -2 SD to +2 SD median of the reference population are normal	311 (90.7%)

Table 5: Energy intake by lactating women per day

Kilo calorie	Frequency/ percentage
< 2000	118 (34.4%)
2000 – 2499	116 (33.8%)
≥ 2500	109 (31.8%)
Median 2200kcal IQR (700) Min/max1300/3300	

Table 6: Under nutrition in child and dietary practices of mothers

Characteristics	Under nutrition					
	Stunting	p-value	Wasting	p-value	Under weight	p-value
Daily energy intake by mother						
<2500 Kcal	38 (23.3%)	0.276	16 (9.8%)	0.799	24 (10.3%)	0.387
≥ 2500 Kcal	2 (11.8%)		2 (11.8%)		8 (7.3%)	

Table 7: Under nutrition in child and child feeding practices

Characteristics	Under nutrition					
	Stunting	p-value	wasting	p-value	Under weight	p-value
Feeding practices						
Satisfactory feeding practice	19 (33.3%)	0.024*	14 (24.6%)	0.001*	10 (17.5%)	0.317
Unsatisfactory feeding practices	21 (17.9%)		4 (3.4%)		14 (12.0%)	

Discussion

In this study it was found that majority of mothers were not taking additional two meals which consistent with the study in Ethiopia². Likewise, energy intake of mothers was insufficient which agrees with similar studies^{2,5,7}.

Findings of the current study shows that 91.8% of children were breastfed within one hour of birth and these findings are higher than the finding of similar study conducted in Nepal which shows rate of timely initiation of breastfeeding was 72.7%^{8,9,10}.

Globally, only about one-third of infants are fed breast milk exclusively for their first 6 months¹¹. In this study majority (34.5%) of children (6-24 months) were exclusively breastfed for first 6 months and this rate was higher than Eastern Europe/Commonwealth of Independent States (14%), and South Asia (36%), and similar to East Asia/Pacific regions (52%)¹².

In this study 9.3% children between 6-23 months were fed using the bottle with nipple which was higher than finding of related studies conducted in Bangladesh (3.5%)¹³.

In this study dietary diversity (7 food groups) for children aged 6–23 months (food groups eaten <1 day) was assessed, and result presents that mean dietary diversity score was 1.44. In Similar review by Arimond and Marie T. Ruel on dietary diversity(7 food groups) for children aged 6–23 months (food groups eaten <3 day), revealed mean diversity score to be low in African (3.2 in Benin, 2.2 in Ethiopia, Malawi 2.4, Mali 1.7, 2.9 in Rwanda) and Asian countries (Cambodia 2.8, Nepal 2.8) as compared to Latin America(Colombia 4.8, Peru 4.5)¹⁴. In this study dietary diversity score was less than scores of African and Asian countries.

Number of meals intake during breastfeeding was not significantly associated with nutritional status of child. This study shows that daily energy intake was significantly associated with mid upper arm circumference of child. Energy intake was not significantly associated with wasting, stunting and underweight. A study conducted in Russia also suggests there are no evidence-based recommendations existing concerning the intake of dietary macronutrients of a lactating woman, which optimizes the physical development of a baby¹⁵.

Poor infant and young child feeding (IYCF) practices are recognized as a significant contributor to under nutrition globally¹⁶.In present study complementary feeding practice to child was significantly associated with wasting and stunting whereas weight for age and mid-upper arm circumference were not significantly associated and this result was compared to reports of similar studies in Nepal and other countries. Many children in developing countries become stunted during infancy as a result of inappropriate weaning practices and poor diet. Various studies in developed and developing countries suggest that stunting is associated with complementary feeding practices^{14,17-21}. This study also found the similar result.

The result of this study also reveals that underweight was not significantly associated with complementary feeding practices but a similar study by Kumar et al. observed improper complementary feeding was significantly associated with underweight²².

Conclusion

Majority lactating women were not taking additional meals as per need during this period and their energy intake was not sufficient. Nearly three-fourth children had not achieved satisfactory feeding practice. The rate of stunting, wasting and under-weight was high. Dietary

practice of mother was not significantly associated with nutritional status of children. Complementary feeding practice to the children was associated with wasting and stunting status.

Recommendation

The awareness on nutritional requirement during lactation period should be focused and adequate message should be disseminated to lactating mothers

and their family members in order to improve her dietary practices. Adequate nutritional food should be provided to lactating mother in order to meet high energy requirements during lactation. Mothers and primary feeder of children should be encouraged to feed children with diverse food groups and at regular interval. The focus on proper weaning practices to child should be focused in order to improve nutritional status of children.

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