

Factors Associated with Feeding Practices of Children in Kaski

¹Dipika Khatri, ¹Naveen Shrestha

¹School of Health and Allied Sciences, Pokhara University

ABSTRACT

Exclusive breastfeeding for the first six months followed by complementary feeding along with breastfeeding is crucial for proper growth and development of a child. This study aims to determine the factors that influence the feeding practice of mothers having the children 6-23 months in Kaski district and to correlate the relationship between complementary feeding practices and nutritional status of children 6-23 months. A community-based cross sectional analytical study was conducted among 453 mothers having the children 6-23 months, applying cluster sampling technique and using the structured questionnaire, salter scale weighing machine, stadiometer and sakir tape were used as research tools. From all respondents 67% started complementary feeding at 6-8 months of age. The practices of minimum meal frequency, minimum dietary diversity, and minimum acceptable diet were 93.8%, 45.9% and 42.4% among mothers of 6-23 months aged children, respectively. More than half of children have worst feeding practices. Types of family, mother's education, father's education, mother's occupation were significantly associated with feeding practices. In term of nutritional status, 62.26% of children were stunted, 7.3% of children were underweight and 3.4% of children were wasted. Feeding practices were significantly associated with children nutritional status based on wasting and mid upper arm circumference. Overall in Kaski district, it was found that majority of mother had poor feeding practices which contribute to the under nutrition. Nutrition messages on Infant and Young Child Feeding Practices (IYCF) should emphasis dietary diversity and frequency of feeding for all the children.

Keywords: Associated factors, Children, Feeding practices, Nutritional status

Corresponding address: Naveen Shrestha, School of Health and Allied Sciences, Pokhara University.

E-mail: naveen.shrestha@gmail.com

INTRODUCTION

Feeding practices of infants are chief determinants of future physical and mental well-being because of rapid growth and development of tissues during the first year of life.¹ The World Health Organization (WHO) recommends exclusive breastfeeding for the first 6 months of age and introduction of complementary feeding with continued breastfeeding for at least 2 years.² The recommended infant and young child feeding practices for children aged 6-23 months includes: continued breastfeeding; feeding semi-solid/solid food according to the age of the child and feeding a variety of foods such as cereals, fruits, vegetables.³ These feeding recommendations if followed appropriately can decrease infant mortality by 19 percent and prevent malnutrition especially in developing countries like Nepal.¹

Complementary feeding is required in appropriate quantity, quality, and frequency to fulfill the daily energy needs for growth and development of child.⁴ Nepal Demographic and Health survey 2006 showed that about a quarter of children starts consuming solid or semisolid food at the age of 4-5 months. Complementary Foods are not introduced in a timely fashion for all children. Seventy percent of children aged 6-8 months children were introduced to complementary foods in Nepal.⁵ Similarly, the prevalence of minimum meal frequency, minimum dietary diversity and minimum acceptable diet in the year 2006⁵ was found to be 82, 34, and 32% respectively while in the year 2011,⁶ it was found to be 76.6%, 30.4% and 26.5% respectively. This data shows

the deteriorating conditions in infant feeding practices in Nepal and suggest an immediate attention on monitoring and improvement of these practices.

Malnutrition is a significant health problem for infants and young children in Nepal. The Nepal demographic health survey 2011 shows that 41% of children under five years of age are stunted, 11% are wasted, and 29% are underweight.⁶ According to WHO, in 2003 malnutrition has been responsible directly or indirectly for 60% of the 10.9 million deaths annually among children under 5 years in the whole world, where two thirds of these deaths are associated with inappropriate feeding practices in the first year of life.⁷ In developing countries, malnutrition accounts for 50% deaths of the children fewer than five years.¹ It is believed that appropriate complementary feeding practices have the potential to prevent 6% of all under-five deaths particularly in the developing world.⁸ Efforts to improve feeding practices can also improve malnutrition among children in developing countries.⁹

Understanding the effect of infant and young child feeding (IYCF) practices on improving the nutritional status of children under two years of age, the World Health Organization (WHO) has developed eight core infant and young child feeding indicator such as: early initiation of breastfeeding, exclusive breastfeeding under six months, continued breastfeeding for one year, introduction of solid, semi-solid and soft food, minimum dietary diversity, minimum meal frequency, minimum acceptable diet and

consumption of iron rich or iron fortified food.¹⁰

Complementary feeding practice is a significant factor that determines the nutritional status of children. Suboptimal infant feeding practices are the major reasons for childhood under nutrition in developing countries including Nepal.⁹ Poverty, under-development, cultural factors, poor environmental sanitation and lack of awareness of appropriate feeding practices are potential contributors to patterns of inadequate feeding practices and infant nutrition.

METHODS

A Community based cross-sectional analytical study was conducted in Kaski District, Nepal, involving the mothers had children from 6 to 23 months, applying cluster sampling technique and using the structured questionnaires, salter scale, stadiometer and sakir tape and we took the ethical approval from institutional review committee, Pokhara university. Verbal and written consent was taken from each participant as a mother and permission to carry out the research was taken from district development committee and district public health office. Mothers of children with known anomalies, mothers who were not at home at the time of data collection and mothers who failed to provide consent for any reason was excluded in the study. Raw data was cleaned, coded and entered by using EPI DATA version 3.2 and all the entered data were transferred into Statistical Package for Social Science (SPSS version 16) for further analysis and based on WHO z-score value anthropometry measurement was further entered into SPSS for the analysis. The chi-square test was used to test the association between dependent and independent variable. Confidence interval (CI) for odds ratio was set as 95% and p value of <0.05 was taken as significant.

RESULTS

Out of total 453 children 30.2% were from rural areas and took from VDC and 69.8% were from municipality. Among studied children 54.3% were male and rests other were female. The majority of the children were in the age range of 13-23 months (61.6%). In this study youngest mother was 16 years while oldest mother was 44 years with the median age 26 (IQR= 9). Many (98.7%) of the mothers were married with rest 1.3% being widow or separated. Almost 94% respondent follows hindu religion while rest other follows other religion. Almost 54% were of upper caste group followed by dalit and rest other caste. More than half (56.5%) lived in nuclear family and rest in joint families and extended families (Table1)

Around 3% of mothers and 2% of fathers were illiterate while other has some level of education. Likewise more than half (73.3%) of mother were housewife while rest other were practicing some kind of profession. Almost 37% of fathers were in foreign employments, 2.4% were unemployed and rests were involved in some kind of Profession (Table 2).

Table 1: Socio-demographic characteristics of respondent

Socio demographic characteristics	n=453	
	Frequency	Percent
Sex of child		
Male	246	54.3%
Female	207	45.7%
Age of children(months)		
6-12 months	174	38.4%
13-23 months	279	61.6%
Median 14 (IQR= 9)		
Religion		
Hindu	424	93.6%
Buddhist	12	2.6%
Christian	11	2.4%
Muslim	6	1.3%
Residence		
Urban	318	70.2%
Rural	135	29.8%
Caste		
Dalit	89	19.6%
Disadvantage janajatis	49	10.8%
Religious minorities	7	1.5%
Disadvantage non dalit terai caste	9	2.0%
Relatively advantage janajatis	55	12.1%
Upper caste group	244	53.9%
Type of Family		
Nuclear	256	56.5%
Joint	192	42.5%
Extended	5	1.1%
Mother's age		
≥26 year	230	50.8%
<26 year	223	49.2%
Median 26 (IQR= 6)		
Marital status		
Married	447	98.7%
Separated	2	0.4%
Widow	4	0.9%

Table 2: Socio-economic characteristics of the respondents

Characteristics	n=453	
	Frequency	Percent (%)
Mother education		
Illiterate	13	2.9%
Read and write	35	7.7%
Primary level	93	20.5%
Secondary level	127	28.0%

Higher secondary level	122	26.9%
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University degree	63	13.9%
Father education		
Illiterate	7	1.5%
Read and write	27	6%
Primary level	86	19%
Secondary level	127	28%
Higher secondary level	118	26%
University degree	88	19.4%
Mother occupation		
Housewife	334	73.7%
Government sector	11	2.4%
Private sector	20	4.4%
Business	65	14.3%
Agriculture	16	3.5%
Labour	7	1.5%
Father occupation		
Government sector	32	7.1%
Labour	64	14.1%
Business	88	19.4%
Agriculture	24	5.3%
Foreign employee	169	37.3%
Unemployment	11	2.4%
Private sector	65	14.3%
Economic status		
Lowest quintile (16-38)	90	19.9%
2 nd quintile (39-45)	101	22.3%
3 rd quintile (46-56)	82	18.1%
4 th quintile (57-70)	87	19.2%
5 th quintile (71-100)	93	20.5%

From this study it was found that more than half of children were introduced complementary food at 6 months of age. Majority of the breastfed children 6-8 months old and 9-23 months old had attained the recommended minimum meal frequency i.e. 96.2% and 93.7% respectively. Among the non breastfed children 6-23 months old, 66.6% of children had attained the minimum meal frequency. More half (54.1%, 57.6%) of the children had not received the minimum dietary diversity and minimum acceptable diet respectively. It was found that more than half (57%) of the children have worst feeding practices while rest other have satisfactory feeding practices (Table 3)

It was found that family type (p=0.011), mothers education (p=0.004), fathers education (p=0.008), mother occupation (p=0.011) were significantly associated with feeding practices. Nuclear family was 0.5 times less likely to have satisfactory feeding practices than the joint family (OR 0.559, CI 0.382-

0.818). Uneducated mothers were 3 times more likely to have satisfactory feeding practices educated mothers (OR 3.16, CI 0.958-10.415). Mother involved in agriculture were 4 times more likely to have satisfactory feeding practices than the mother involved in other occupation (OR 4.283, CI 1.360-13.494). Fathers who are able to read and write were 2 times more likely to have satisfactory feeding practices than the father who had the primary level education (Table 4, 5). It was found that majority of children were stunted (62.25%), 7.3% of children were underweight and 3.4% of children were wasted. Boys were found more stunted, underweight and wasted than girls. Based on MUAC, 80.4% of children were well nourished, 19.4% of children well suffered from acute malnutrition and 0.2% of children were suffered from moderate acute malnutrition (Table 6, 7).

From this study it was found that feeding practices was significantly associated with wasting (p=0.021) and MUAC (p=0.04), whereas feeding practices was not significantly associated with stunting and under-weight. Those children who had satisfactory feeding practices were 0.2times less likely to be wasted than the child who has a worst feeding practices (OR 0.201, CI 0.045-0.901). Similarly, the children who had worst feeding practices had around 1.5 times higher chance of having the normal nutritional status based on MUAC(OR 1.597, CI 1.003-2.544) (Table8).

Table 3: Practice of mothers on child feeding

Characteristics	Frequency	Percent (%)
Introduction of complementary food		
Before 6 months	113	24.8%
At 6 months	251	55.4%
After 6 months	89	19.6%
Continued breastfeeding practices (n=453)		
Yes	428	94.5%
No	25	5.5%
Minimum meal frequency		
For breastfed child (n=450)		
6-8 months (n=52)		
< 2 Times	2	3.8%
≥2 Times	51	96.2%
9-23 months (n=398)		
< 3 Times	26	6.5%
≥ 3 Times	374	93.5%
Non breast-fed children (6-23 months) (n=3)		
< 4 times	1	33.3%
≥ 4 Times	2	66.7%
Minimum dietary diversity		
Children age 6-23 months		
<4 food group	245	54.1%

≥4 food group	208	45.9%
Minimum acceptable diet		
Children 6-23 months		
Achieved	192	42.4%
Not achieved	261	57.6%
Feeding practices		
Satisfactory feeding practices	192	42.4%
Worst feeding practices	261	57.6%

Table 4: Socio-demographic characteristics and feeding practices

Characteristics	Feeding practices (FP)		P- value	OR	95% CI
	Satisfactory feeding	Worst feeding			
Sex					
Male	103(41.9%)	143(58.1%)	0.809		
Female	89(43%)	118(57.8%)			
Residence					
Rural	61(45.2%)	74(54.8%)	0.432		
Urban	131(41.2%)	187(58.8%)			
Religion					
Hindu	178(42%)	246(58%)	0.470		
Christian	6(54.5%)	5(45.5%)			
Buddhist	4(33.3%)	8(66.7%)			
Muslim	4(66.7%)	2(33.3%)			
Caste					
Dalit	46(51.7%)	43(48.3%)	0.341		
Disadvantage janajatis	21(42.9%)	28(57.1%)			
Religious minorities	4(57.1%)	3(42.9%)			
Disadvantage non dalit terai group	4(44.4%)	5(55.6%)			
Relatively advantage janajatis	19(34.5%)	36(65.5%)			
Upper caste group	98(40.2%)	146(59.8%)			
Family type					
Nuclear	93(36.3%)	163(63.7%)	*0.011		
Joint	97(50.5%)	95(99.5%)			
Extended	2(40%)	3(60%)			
# Nuclear	93(36.3%)	163(63.7%)	**0.003	0.559	0.382-0.818
#Joint	97(50.5%)	95(49.5%)			

*denotes significant at <0.05, ** denotes significant at < 0.01, # denotes significant among the factors

Table 5: Socio-economic status and feeding practices

Characteristics	Feeding practices (FP)		P- value	OR	95% CI
	Satisfactory feeding	Worst feeding			
Mother education					
Illiterate	9(69.2%)	4(30.8%)	**0.004		
Read and write	24(68.6%)	11(31.4%)			
Primary	39(42.9%)	52(57.1%)			
Secondary	45(35.4%)	82(64.6%)			
Higher secondary	50(42%)	69(58%)			
University degree	23(36.5%)	40(63.5%)			
# Illiterate	9(69.2%)	4(30.8%)	*0.048	3.16	0.958-10.417
# Literate	183(51.6%)	257(58.4%)			
Mother occupation					
House wife	143(42.8%)	191(57.2%)	*0.011		
Government sector	4(36.4%)	7(63.6%)			
Private sector	4(20%)	16(80%)			
Business	24(36.9%)	41(63.1%)			
Agriculture	12(75%)	4(25%)			
Labor	5(71.4%)	2(28.6%)			
# Agriculture	12(75%)	4(25%)	**0.007	4.28	1.360-13.494
# Others	180(41.2%)	257(58.8%)			
Husband education					
Illiterate	5(71.4%)	2(28.6%)	**0.007		
Read and write	18(66.7%)	9(33.3%)			
Primary	38(44.2%)	48(55.8%)			
Secondary	59(46.5%)	68(53.5%)			
Higher secondary	45(38.1%)	73(61.9%)			
University degree	7(30.7%)	61(69.3%)			
# Read and write	18(66.7%)	9(33.3%)	*0.040	2.52	1.021-6.253
# Primary	38(44.2%)	48(55.8%)			
Husband occupation					
Government	11(34.4%)	21(65.6%)	0.250		
Labour	24(37.5%)	40(62.5%)			
Business	32(36.4%)	56(63.6%)			
Agriculture	14(58.3%)	10(41.7%)			
Foreign employee	81(47.9%)	88(52.1%)			
Unemployed	5(45.5%)	6(54.5%)			
Private	25(38.5%)	40(61.5%)			
Economic status					
Lowest quintile	44(48.9%)	46(51.1%)	0.079		
2 nd quintile	49(48.5%)	52(51.5%)			
3 rd quintile	37(45.1%)	45(54.9%)			
4 th quintile	28(32.2%)	59(67.8%)			
5 th quintile	34(36.6%)	59(63.4%)			

Significant at <0.05, ** denotes significant at < 0.01, # denotes significant among the factors

Table 6: Prevalence of stunting, wasting and underweight

Nutritional status of children	All (n=453)	Boys (n=246)	Girls (n=207)
Stunting	282 (62.25%)	167 (67.9%)	115 (55.55%)
Wasting	15 (3.4%)	12(4.8%)	3 (1.5%)
Underweight	30 (7.3%)	24 (9.7%)	6 (2.9%)

Table 7: Measurements based on MUAC

MUAC	Frequency (n=453)	Percent (%)
Moderate acute malnutrition	1	0.2%
Acute malnutrition	88	19.4%
Well nourished	364	80.4%

Table 8: Relationship between feeding practices and nutritional status of children

Feeding practices	Children nutritional status		P-value	OR	95%CI
	Underweight				
	Under weight	Normal			
Satisfactory feeding practices	11(5.7%)	181(94.3%)	0.512		
Worst feeding Practices	19(7.3%)	242(92.7%)			
	Wasting				
	Wasted	Normal			
Satisfactory feeding practices	2(1%)	190(99%)	*0.021	0.20	0.045-0.901
Worst feeding practices	13(5%)	248(95%)			
	Stunting				
	Stunted	Normal			
Satisfactory feeding	123(64.1%)	69(35.9%)	0.495		
Worst feeding Practices	159(60.9%)	102(39.1%)			
	MUAC				
	Malnutrition	Well nourished			
Satisfactory feeding	46(24%)	146(76%)	*0.048	1.58	1.003-2.544
Worst feeding practices	43(16.5%)	218(83.5%)			

* denotes significant at <0.05

DISCUSSION

Infant and young child feeding (IYCF) practices include early initiation of breast feeding within one hour of life and timely introduction of complementary food from the age of six months with increasing in amount and frequency over time along with breast feeding as demanded by child. This study was carried out to evaluate the practices of complementary feeding in terms of minimum meal

frequency, minimum dietary diversity, and minimum acceptable diet and to determine the factors influencing the feeding practices. In this study it was found that all most all the children were breastfeed and this result was compare with the reports of Nepal demographic and health survey (NDHS) and the similar study of Nepal. In present study it was found that around 67% of children were introduce solid or semi solid food at 6-8 months and this finding was higher than the finding of similar study conducted in Rupandehi districts of Nepal¹¹ and lower than the finding of Indonesia where 87.3% of children were introduce solid or semi-solid food at 6-8 months.¹² The observed difference might be due to difference in sampling size between the surveys and due to the difference in cultural practices. If solid or semi solid food are not introduced after the six months of age than the infants growth may falter.¹³

Finding of recent study shows that 93% of children aged 6-23 months had received the recommended meal frequency and these findings was higher than the finding of similar studies conducted in Nepal (76.6%),^{11,14} Indonesia (53%),¹² Nigeria (53%),¹⁵ Sirlanka (88%).¹⁶ Frequent meals are required in order to ensure the child receives enough energy. Present study shows that only mother education was significantly associated with minimum meal frequency but similar study conducted in Indonesia,¹² Bangladesh,¹⁷ Nepal,¹¹ and Nigeria¹⁵ shows that others factors such as occupation of mothers, development region, antenatal visit were also significantly associated with recommended meal frequency. Similarly, in this study the proportion of infants getting recommended meal diversity was 49.2% and these finding was higher than the finding of other related study conducted in Nepal (35%),¹¹ India (15.5%),¹⁸ Nigeria(16%),¹⁵ Ethiopia(10.8%)¹⁹ where as these finding was much lower than Srilanka (71%).¹⁶ Moreover, in Nepalese context, there is widespread cultural belief of cereal foods having high energy contents would be enough for child growth, thereby ignoring the importance of food diversity and other reason behind prevalence of low food diversity might be limited household food availability, poor economic status of household. This study shows that type of family, mother education, mother occupation, husband education, husband occupation and economic status of household were significantly associated with minimum dietary diversity but other similar study shows that age of mother and religion were also significantly associated with minimum dietary diversity.^{12, 20}

Minimum acceptable diet, a combination of minimum meal frequency and minimum dietary diversity, in this study was 42.4%, which was higher than in Ethiopia (5.2%),²¹ India (9.2%),²² Nigeria (9%)¹⁵ but was lower than the findings from Sirlanka (68%).¹⁶ In this study minimum acceptable diet was significantly associated with mother occupation, mother education, father education, family types but similar study shows that age of mother, mother from wealthier household,

ANC visit was also significantly associated with minimum acceptable diet.

Overall, factors significantly associated with feeding practices were type of family, mother education, mother occupation and father education. Sex of child, occupation of father, income, and age of mother were not significantly associated with feeding practices. This shows that sex of a child is not important for the feeding purposes. Mothers give same importance to feed their child despite of gender though sex preference is said to be existing in our society. The education level of mothers and fathers has been consistently reported as the determinant of infant feeding. This study also found the similar results. A recent comparison of five Asian countries on infant feeding reported that mother's education was a significant determinant of appropriate infant feeding.²³ Sri Lanka had the highest proportion of children meeting the infant feeding guidelines for diversity, frequency and acceptability; and this was linked to the higher education status of mothers and overall literacy.²³

In this study alternative hypothesis was accepted because there was a significant relationship between various variable and feeding practices.

Infant feeding practice is a major determinant of nutritional status of infants as shown in this study. The malnutrition begins early in life with poor infant feeding practices. The high prevalence of stunting(62%) observed in this studied may have resulted from the early introduction of complementary feeds, and of poor quality food and the prevalence of underweight and wasting was 7.3%,and 3.4% respectively.

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From this study it was confirm that the major problem of young children in this district was chronic malnutrition. Similar study conducted in different countries like India,²⁴ Africa,²⁵ Kenya,²⁶ Ethiopia²⁷ shows that rate of stunting was higher than underweight and wasting but in developed countries like Niarobia, Ghana⁸ the rate of underweight was higher than stunting and wasting . In this study it was found that rate of stunting, wasting and underweight was found higher in boys than girls. Similar study shows that rate of stunting, wasting and underweight was higher in girls than boys.²⁵

CONCLUSION

This study reported that a large proportion of young child start complementary feeding from the age of 5-7 months. Majority of children have achieved the recommended meal frequency and more than one-third of children met the recommended dietary diversity and acceptable diet. In Kaski district, majority of mothers had poor infant feeding practices. There was an association of feeding practices with type of family, mother education, father education and mother occupation. However, sex of children, religion, caste, economic status of house hold and father's occupation were not significantly associated with feeding practices. Under-nutrition has been a major problem in Kaski district and can be further complicated with poor infant feeding practices. There was significant relationship between the feeding practices and nutritional status of children based on wasting and MUAC.

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