Effect of Maternal Socio-demographic Factors and Child Feeding Practice on Wasting Among Under Five Years Children in Slum Area of Rupandehi District in Nepal

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ABSTRACT

Introduction: Childhood wasting although well studied elsewhere, it has not been well understood about in slum area of Nepal. This study aimed to assess effect of socio-demographic factors and child feeding practice in the determination of wasting among the children under five years of age in slum area of Nepal.

Methods: A community based cross-sectional study was performed among 150 children under five years of age from the slum area of Nepal between 1st January and 28th February 2013 using simple random sampling techniques. Multivariate analyses were performed to determine factors associated with wasting controlling the potential confounders.

Results: In a total of 150 under five years children, the prevalence of wasting was 56 (37.33%). The current study demonstrated that children of mothers from dalit Adjusted Odds Ratio (OR) 11.5; 95% CI: 03.1 – 41.3), aadibasi/janajati (AOR 4.6; 95% CI: 1.2 – 17.0), illiterate mothers (AOR 3.6; 95% CI: 1.1 – 13.6), laborer mothers (AOR 2.1; 95% CI: 1.1-9.4), child age group 25-36 months (AOR 2.8; 95% CI: 1.5-5.3), multiple child birth order (AOR 10.0; 95% CI: 2.5-25.0), children who were not fed colostrums (AOR 15.0; 95% CI: 1.25-10.0) were more likely to develop wasting compared to their counterparts.

Conclusions: As incremental childhood wasting is associated with maternal socio-demographic factors and child feeding practice, health promotion strategies should focus maternal socio-demographic factors, age of children and early initiation of breast feeding for the improved child nutrition in slum area of Nepal.

Keywords: *socio-demographic factors; urban slum; under five children; wasting.*

INTRODUCTION

Malnutrition is the major cause of child morbidity and mortality under the age of five years in the developing countries.[1,2] It is responsible for 60% of the 10.9 million deaths of children under the age of five years and majority of deaths are due to inappropriate feeding practices.[3] Prevalence of wasting in Nepal among

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under five years of age is 10% which is just 5% lower compared with Nepal Demographic and Health Survey (NDHS) 1996.[4]

Effects of malnutrition in children under the age of five years are numerous: lower resistance to infection, poor mental and cognitive achievement and increased morbidity and mortality.[5,6] Various factors such as socio-demographic, environmental, reproductive, cultural and political were associated with malnutrition in the previously published papers.[7-9]

The current study aimed to assess effects of socio-demographic factors and child feeding practices in the determination of wasting among the children under five years of age.

METHODS

A community based cross-sectional study was conducted from 1st January to 28th February, 2013 in the urban slum areas of Butwal Municipality, Rupandehi, Nepal to assess the nutritional status of children under 5 years of age.

The research proposal was approved by the Ethics Committee for Health Research from Sanjeevani College of Medical Sciences, Rupandehi, Nepal. Mothers provided written consent for themselves and their children. Personal identifiers were removed prior to the data analysis.

Mothers with children of six months to five years of age in the selected households were considered as respondents of this study. For each family within the household, a mother and child pair (youngest child) was taken into consideration when there was more than one child. If a child of six months to five years of age was not found, a subsequent household was recruited until the eligible respondents' requirement was met. Children below six months and above five years of age were excluded from the study.

The sample size of present study was 150 including 74 male and 76 female children which were calculated by assuming the National Prevalence of Wasting (NDHS 2011) as 11% at 95% confidence interval. Households were selected using simple random sampling technique.

Data were collected by face-to-face interviews and measurement of the study subject using a structured questionnaire adapted from the Nepal Demographic and Health Survey 2011.[10] The nutritional status was assessed by using the anthropometric measurements; height and weight by trained field workers. Height of the child was measured in centimeter (cm) using a measuring tape. The child was asked to stand without footwear with the feet parallel, and height of those children below one year was measured in recumbent length by keeping the knee extended, foot plantar flexed and forehead touching the wall. Weight of child was taken in kilogram (kg) under light clothing by using a portable weighing machine. Children who were not able to stand were weighed together with their mother and the mother's weight was subtracted to calculate the exact weight of child.

The nutritional status was assessed by calculating the Height for age (Wasted) for each child and was compared with the CDC 2000 value. The z-scores between ± 2 SD was considered as the cut-off values and was considered as normal. The data was collected and compiled by using Microsoft Office Excel 2010. Statistical Package for Social Sciences (SPSS 20.0) was employed to analyze the frequency distribution of socio-demographic parameters, Chi-square value was observed between different variables and $P<0.05$ was considered as statistically significant. Multivariate analysis was used to find the association between the socio-demographic parameters, child feeding practices and nutritional status.

RESULTS

The maternal socio-demographic factors associated with wasting of children have been demonstrated in Table 1. In a total of 150 mother-child pairs, majority of them 105 (70%) were above 20 years of age, dalit and aadibasi/janajati 100 (66.7%), nuclear family 104 (69.0%), educational level secondary and above 40 (60.0%), housewives 114 (76.0%) and child birth order primi 75 (50%). Bi-variate analyses showed maternal caste/ethnicity, educational level, occupation and child birth order were significantly associated with wasting of children.

Table 2 presents the child characteristics and feeding practice associated with wasting. In a total of 150 children of more than half 87 (58%) were of 6-24 months of age group, slightly more than half 76 (50.7%) were female, majority 128 (85.3%) colostrums fed, slightly more than half 78 (52.0%) had taken complementary feeding at six months, proper waste disposal 123 (82.0%). Age of children and colostrums feeding in bi-variate analyses were significantly associated with wasting of children.

The final results of the multiple logistic regression analysis are shown in Table 3. A numb er of factors related to childhood wasting, such as caste/ethnicity, education, occupation, birth order, age of children, colostrums feeding were significantly associated with childhood wasting.

Table 1. Maternal factors associated with acute malnutrition among children <5 year in Rupandehi district of Nepal.

Characteristics	Total	Acute Malnutrition (wasting/ weight for height)		P value
	n (%)	Yes, n (%)	No, n (%)	
Age (years)				
20 & less	45 (30.0)	16 (35.6)	29 (64.4)	0.768
More than 20	105 (70.0)	40 (38.1)	65 (61.9)	
Caste/ethnicity				
Dalit	57 (38.0)	30 (52.6)	27 (47.4)	0.002
Adibasi/ janajati	43 (28.7)	16 (37.2)	27 (62.8)	
Brahmin /chhetri	50 (33.3)	10 (20.0)	40 (80.0)	
Types of family				
Nuclear	104 (69.0)	37 (35.6)	67 (64.4)	0.504
Joint	46 (30.7)	19 (41.3)	27 (58.7)	
Education				
Illiterate (No education)	27 (18.0)	17 (63.0)	10 (37.0)	0.003
Just Literate	31 (20.7)	9 (29.0)	22 (71.0)	
Primary	32 (21.3)	15 (46.9)	17 (53.1)	
Secondary & above	60 (40.0)	15 (25.0)	45 (75.0)	
Occupation				
Labour	22 (14.7)	15 (68.2)	7 (31.8)	0.005
Service/business	14 (9.3)	4 (28.6)	10 (71.4)	
Housewife	114 (76.0)	37 (32.5)	77 (67.5)	
Birth order				
Primi	75 (50.0)	18 (24.0)	57 (76.0)	0.001
Multi	75 (50.0)	38 (50.7)	37 (49.3)	
Total	150	56 (100)	94	

Table 2. Distribution of child characteristics and feeding practices associated with acute malnutrition.

Characteristics	Total	Acute malnutrition (wasting/ weight for height)		P value
	n (%)	Yes, n (%)	No, n (%)	
Age (months)				
6-24 months	87 (58.0)	32 (36.8)	55 (63.2)	0.020
25-36 months	35 (23.3)	8 (22.9)	27 (77.1)	
37-60 months	28 (18.7)	16 (57.1)	12 (42.9)	
Gender				
Male	74(49.3)	26 (35.1)	48 (64.9)	0.583
Female	76 (50.7)	30 (39.5)	46 (60.5)	
Colostrums Feeding				
Yes	128 (85.3)	43 (33.6)	85 (66.4)	0.022
No	22 (14.7)	13 (59.1)	9 (40.9)	
Complementary feeding				
Given at 6 month	78 (52.0)	27 (34.6)	51 (65.4)	0.474
Given at before or after 6 month	72 (48.0)	29 (40.3)	43 (59.7)	
Proper waste disposal				
Yes	123 (82.0)	42 (34.1)	81 (65.9)	0.085
No	27 (18.0)	14 (51.9)	13 (48.1)	
Total	150	56	94	

Children of mothers from dalit were (Adjusted Odds Ratio (OR) 11.5; 95% CI: 03.1 – 41.3)), aadibasi/ janajati (AOR 4.6; 95% CI: 1.2 – 17.0)) more likely to develop wasting compared to upper caste groups mothers. Furthermore, children of illiterate mothers (AOR 3.6; 95% CI: 1.1 – 13.6), children from laborer mother (AOR 2.1; 95% CI: 1.1-9.4), child age group 25-36 months (AOR 2.8; 95% CI: 1.5-5.3), multiple birth order (AOR 10.0; 95% CI: 2.5-25.0), children who were not fed colostrums (AOR 15.0; 95% CI: 1.25-10.0) were more likely to develop wasting compared to their counterparts.

Table 3. Logistic regression analysis of socio-demographic and child feeding factors associated with acute malnutrition among children in Rupandehi, Nepal (n = 150).

Characteristics	COR (95%CI)	P value	AOR (95%CI)	P value
Age (years)				
More than 20	1.1 (05-2.5)	0.768	2.0 (0.6-5.9)	0.208
20 and less	1.00		1.00	
Caste/ethnicity				
Dalit	4.4 (1.8-10.5)	0.001	11.4 (3.1-41.3)	<0.001
Adibasi/ janajati	2.3 (0.9-6.0)	0.069	4.6 (1.2-17.0)	0.019
Upper Caste Group	1.00		1.00	
Types of Family				
Nuclear	0.7 (0.3-1.5)	0.504	0.6 (0.2-1.7)	0.392
Joint	1.00		1.00	
Education				
Illiterate /No education	5.1 (1.9-13.5)	0.001	3.6 (1.1-13.6)	0.049
Just Literate	1.2 (0.4-3.2)	0.679	0.4 (0.1-1.5)	0.175
Primary	2.6 (1.1-6.5)	0.036	0.9 (0.2-3.1)	0.877
Secondary & above	1.00		1.00	
Occupation				
Labour	4.4 (1.6-11.8)	0.003	2.1 (1.1-9.4)	0.048
Service/business	0.8 (0.2-2.8)	0.769	1.5 (0.3-6.6)	0.451
Housewife	1.00		1.00	
Birth Order				
Multi	3.2 (1.6-6.5)	0.001	10.0 (2.5-25.0)	0.001
Primi	1.00		1.00	
Age (months)				
6-24 months	0.4 (0.1-1.0)	0.061	0.3 (0.1-1.0)	0.053
25-36 months	0.2 (0.1-0.7)	0.007	0.1 (0.1-0.6)	0.007
37-60 months	1.00		1.00	
Gender				
Male	0.8 (0.4-1.6)	0.583	1.1 (0.3-2.6)	0.667
Female	1.00		1.00	
Colostrums Feeding				
No	2.8 (1.1-7.2)	0.026	5.0 (1.25-10.0)	0.001
yes	1.00		1.00	
Complementary feeding				
Given at before or after 6 month	1.2 (0.6-2.4)	0.474	2.0 (0.8-5.1)	0.133
Given at 6 month	1.00		1.00	
Proper Waste disposal				
No	2.0 (0.8-4.8)	0.089	1.6 (0.4-10.0)	0.496
Yes	1.00		1.00	

DISCUSSION

The prevalence of undernutrition was found high in the district in the present study. Among the 150 under five children, slightly more than one third 56 (37.33%) were suffering from wasting. This finding of our study is consistent with an Ethiopian and Pakistani study.[11,12] On contrary to this, some other studies from Ethiopia, Kenya, Vietnam reported quite lower prevalence of wasting among children under the age of five years.[13-16] Similarly, a study from eastern Nepal also reported only 5.2 percent of wasting among under five years children.[17] The magnitude of wasting of our study when compared with recent nationally representative data obtained from Nepal demographic and health survey (NDHS) 2016 was more than 27 percent.[4] This might be because the family residing in an urban slums are dependent on wage income, the instability of employment, and the high residential densities contribute to the onset of disease and malnutrition.[18] Furthermore, faulty infant feeding practices, impaired utilization of nutrients due to infections and parasites, inadequate food and health security, poor environmental conditions and lack of proper child care practices might be the potential factors leading to incremental childhood wasting in urban slums.[19] This call for direct, more focused and integrated health promotion strategies to improve nutritional status of children in urban slums of Nepal.

Our study identified a number of maternal factors associated to childhood wasting, such as caste/ethnicity, education, occupation and the birth order. A previous study conducted in South Africa also revealed that wasting does not manifest gradients related to socio-economic position.[20] However; many studies reported the association between maternal socio-demographic characteristics with childhood malnutrition. For example, Hein, et al, in Vietnam reported the significant relation of the mothers education and occupation with childhood malnutrition[21] while Sapkota, et.al, reported maternal age and ethnicity were significantly associated with childhood malnutrition.[17] Nutrition intervention should therefore, encompass maternal socio-demographic factors for the betterment of nutrition status of children below the age of five years in urban slums of Nepal.

Another point of interest of our study is that children's age and whether or not child is colostrums fed, were important predictors of childhood wasting. Opponent to our finding, in a Kenyan study revealed that there was no significant association between breastfeeding practices and wasting.[15] However, this finding of the current study has been supported by several studies.[11,13,22,23]

There are some important strengths of this research. First, to the best of researchers' knowledge, it might be first study being performed in urban slums of Nepal to assess the effect of socio-demographic factors and child feeding practice associated with childhood wasting. Second, this has explored an important area of future research; might be useful for the health administrators and planners to design evidence based health promotion strategies. However, there are some potential limitations of this study. First, this study is based on mothers' self-report of colostrums feeding of all under five years children may lead to potential recall bias.[24] Second, information like parasitic infection, HIV status, mother's, the child's birth weight and the daily caloric intake, household wealth index and household food insecurity were not assessed in the study. Third, the small sample size itself does not allow us to generalize the study findings.

CONCLUSIONS

Prevalence of wasting among under five years children was higher in the urban slums. Maternal characteristics associated with incremental childhood wasting problems were: ethnicity, mother education, occupation while childhood factors like age of children, birth order and colostrums feeding were important predictors of wasting. Design and implementation of health promotion strategies should focus maternal socio-demographic factors, age of children and early initiation of breast feeding for a improved child nutrition in slum area of Nepal. Further, interventional study is recommended in this regards.

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