

NUTRITIONAL STATUS AND ITS ASSOCIATED FACTORS AMONG UNDER FIVE CHILDREN IN BHIMTAR OF SINDHUPALCHOWK DISTRICT NEPAL

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ABSTRACT

Introduction

The nutritional status of an individual is often the result of many inter-related factors. It is a major public health problem in most of the developing countries and occurs prominently among under-five children. Nepal is also the one of the developing country where the prevalence of malnutrition is high.

Objective

This study aimed to assess the nutritional status and its associated factors among under-five children.

Methodology

A descriptive cross-sectional study was conducted in Bhimtar Village Development Committee of Sindhupalchowk. The study conducted in Jan 27 2017 to Feb 8 2017 with the sample 115, self-constructed semi-structured interview schedule was used for data collection and nutritional status was assessed using anthropometric measurements. Descriptive (Frequency, Percentage, Mean, Standard Deviation) and inferential statistic (chi-square test) were used for data analysis.

Results

Among total children 47% were stunted, 30.4% were underweight and 11.3% were wasted. Age of child, frequency of antenatal visit and age of mother at child birth had significant association with nutritional status of children.

Conclusion

The study concludes that significant proportion of under-five children in Sindhupalchowk district were malnourished with stunting and wasting being pre-dominant form of malnutrition. Occurrence of malnutrition was slightly higher among male compared to female children. Child's age, mother's age during child birth and completion of atleast four antenatal visits during pregnancy were found to be significantly associated with child's nutritional status.

KEYWORD

Nutritional Status, Malnutrition, Under-five Children



INTRODUCTION

Nutritional status is a sensitive indicator of community health and nutrition. Nutritional deficiencies raise various morbidities, which in turn, may lead to increased mortality. Malnutrition is a major underlying cause of child morbidity and mortality in developing countries. It affects the child's cognitive and physical development. Globally, the prevalence of stunting and wasting was estimated to be 25% and 5% respectively in 2013; where half of all stunted children lived in Asia.¹ In Nepal 41% of the under-five children were stunted in 2011 where children in rural area were more likely to be stunted than in urban area.²

Despite a there is a decline in reduction of maternal child under-nutrition, Nepal still faces high chronic as well as acute under-nutrition in children.³ Thus, there is need to assess the nutritional status of under-five children. The objective of this study was to assess the nutritional status and its associating factors among under-five children in Bhimtar VDC of Sindhupalchowk District.

METHODOLOGY

A descriptive cross sectional design was used for this study. The study was conducted at Bhimtar VDC of Sindhupalchowk District. Sindhupalchowk is one of the most earthquake affected area of Nepal by the Natural disaster in 2015. Children aged 6-59 months old and their mothers who were willing to participate in the study were included in this study. Cluster sampling method was used for sampling. Each ward of the VDC was considered as cluster. Six clusters (ward 1,2,5,6,7,8) were selected by lottery method. Thereafter, under-five children from selected cluster were selected purposively to meet the required sample size of 115. Sample size was calculated according to the previous prevalence of 41% .³ Self-constructed semi-structured interview schedule was used for data collection. Interview schedule was designed to collect data about child information and family practices, feeding practices, hand hygiene and environmental sanitation, immunization, health problem and anthropometric measurements. Stadiometer with movable head piece was used for measurement of height and length, PROFI-med for weight and Non-stretchable Shakir's tape were used to measure MUAC of children. Pre-testing was conducted in 10% of sample in Tukucha VDC of Kavre District. Validity of tool was ascertained by literature review and subject expert and necessary modifications was done. CDC WHO standard tool was used to assess nutritional status. Data was analysed using descriptive statistics, chi-square and Fischer's Exacttest.

Ethical Considerations

Written permission was obtained from authority of institutional review sub-committee of Nepal Medical

College and VDC secretary of BhimtarVDC. Informed consent was taken from all participants before data collection. Confidentiality was maintained throughout the study.

RESULTS

Data was collected from 115 respondents; out of which half (50.4%) of the respondents were male and one-fourth (25.2%) belonged to the age group 13-24 months. More than half (58.3%) belonged to nuclear family with 79.1% of the mother belonging to the age group 20-35 years. Less than 20% of the parents had education above higher secondary and majority (72.2%) of them were above, the poverty line. (Table 1). Majority (73.9%) of the respondent were delivered at health institutions while mean birth weight was 2.7 Kg and birth order being 1st or 2nd in most (80.9%) of the cases. (Table 2)

Most (93%) of the respondents were breastfed within half an hour of birth along with colostrums. Pre-lacteal feed was avoided in 96.5% of the cases and exclusive breastfeeding was done for six months in majority of cases. Less than 20% of the respondents had suffered from ARI (17.4%) and diarrhea (16.5%) 1 month prior to data collection. (Table 2)

Table 1: Socio-Demographic Characteristic of Respondent and family (n=115)

Variables	Frequency	Percent	Remarks
Age of child in months			Mean ± S.D = 31.03±16.733 Range (6.59)
6-12	21	18.3	
13-24	29	25.2	
25-36	20	17.4	
37-48	23	20.0	
49-59	22	19.1	
Sex of child			
Male	58	50.4	
Female	57	49.6	
Ethnicity			
Disadvantaged	103	89.6	
Janajatis	12	10.4	
Upper caste			
Type of family			
Nuclear	67	58.3	
Joint	48	41.7	
Family size			Mean± S.D= 5.61±2.519 (min,max)=(3,13)
<5	55	47.8	
5-10	51	44.3	
> 10	8	7.0	
Age of mother's at child birth in years			Mean ± S.D = 23.52±5.148 (min,max) = (15,46)
<20	20	17.4	
20-35	91	79.1	
>35	4	3.5	
Religion			
Hindu	114	99.1	
Buddhist	1	0.9	
Socioeconomic status			
Below poverty line	32	27.8	
Above poverty line	83	72.2	



Table 2: Birth History of the Child and feeding Practices (n=115)

Variables	Frequency	Percent	Remarks
Place of child delivery			
Health post	85	73.9	
Hospital	21	18.3	
Home delivery	9	7.8	
Four ANC visit during pregnancy			
Completed	103	89.6	
Not completed	12	10.4	
Birth weight of child in grams(n=108)			Mean±S.D=2787.27±469.76 (min,max)=(1900,4100)
<2500	17	15.7	
2500-3500	88	81.5	
> 3500	3	2.8	
Birth order of child			Mean ± S.D = 1.86±1.146 (min, max) = (1,6)
1 st - 2 nd	93	80.9	
3 rd - 4 th	16	13.9	
5 th - 6 th	6	5.2	
No of children of mother's			Mean± S.D = 1.95±1.146 (min,max) = (1,6)
Up to 2	90	78.3	
3 to 4	20	17.4	
More than 5	5	4.3	
Initiation of breast feeding			
Immediately after a birth/within a half hour	107	93	
After half an hour to within a week	8	7	
Colostrum feeding			
Yes	113	98.3	
No	2	1.7	
Pre-lacteal feeding			
Yes	4	3.5	
No	111	96.5	
Exclusive breast feeding			
<6 months	31	27	
≥6 months	84	73	
Timing of weaning			
<6 months	31	27	
≥6 months	84	73	
Food introduced during weaning			
Rice	60	52.2	
Pudding rice	36	31.3	
Porridge	19	16.5	
Preparing food for child separately or not			
	29	25.2	

Majority (> 80%) of the respondent's mother had practice of washing hand before and after meal, after use of toilet and after helping child with latrine. Few (3.5%) did not have toilet in their household. (Table 3)

Anthropometric measurements revealed that out of 115 respondents 47% were stunted, 30.4% were under weight and 11.3% were wasted. Mid-Upper Arm Circumference revealed that one-fourth (25.2%) were at risk of malnutrition and 4.3% had moderate acute malnutrition. (Table 5)

There was significant association of under weight with age of the child ($p = 0.01$), age of mother during birth of child ($p = 0.03$) and completion of four ANC visit (0.04). (Table 7) Similarly, significant association was established between wasting and completion of 4 ANC visit (0.03). (Table 8)

Table 3: Hand Hygiene and Environmental Sanitation n = 115

Variables	Frequency	Percent	Remarks
Practice of washing child's hand before meal			
Yes	92	80	
No	23	20	
Practice of washing hands after using toilet			
Always	109	94.8	
Sometimes	6	5.2	
Practice of washing hands before preparing meal			
Always	109	94.8	
Sometimes	6	5.2	
Practice of washing hands before feeding child			
Always	108	93.9	
Sometimes	7	6.1	
Practice of washing hands after helping child with latrine visit			
Always	109	94.8	
Sometimes	6	5.2	
Garbage disposal method			
Digging	7	6.1	
Burying	34	29.6	
Composting	26	22.6	
Throwing randomly	48	41.7	
Presence of toilet facility			
Yes	111	96.5	
No	4	3.5	
Source of drinking water			
River	3	2.6	
Pond	2	1.7	
Tap	110	95.7	
Method of water purification			
By filtration	12	10.4	
By boiling	2	1.7	
Without any purification	101	87.8	

Table 4: Health Problems of Child and Health Seeking Behavior (n=115)

Variables	Frequency	Percent
Suffered from ARI in last one month		
Yes	20	17.4
No	95	82.6
Suffered from diarrheal disease in last one month		
Yes	19	16.5
No	96	83.5
Place for treatment		
Hospital	19	16.5
Health post	96	83.5



Table 5: Nutritional Status of Children (n=115)

Variables	Frequency	Percent
Stunting		
Yes	54	47
No	61	53
Under weight		
Yes	35	30.4
No	80	69.6
Wasting		
Yes	13	11.3
No	102	88.7
MUAC		
11-12.4	5	4.3
12.5-13.5	29	25.2
>13.5	81	70.4

Table 6- Association of Stunting with the Characteristics of Children

Characteristics	Category	Stunting			
		Yes	No	X ²	P value
Age of child in months	6-24	20	23.47	0.03	0.85
	25-59	26.9	29.56		
Sex	Male	24.34	26	0.08	0.77
	Female	22.60	27		
Ethnicity	Disadvantaged Janajatis	44.34	45.21	2.59	0.10
	Upper caste	2.60	7.82		
Birth weight of child	<2500	7.82	6.9	1.21	0.72
	≥2500	38.2	40.86		
Age of mother at child birth	<20	10.40	6.9	1.65	0.19
	≥20	36.52	46.08		
Education level of mother	Illiterate	0.86	6.08	4.09	0.06*
	Literate	46.08	46.95		
Socio-economic status	Below poverty line	10.43	17.40	1.59	0.20
	Above poverty line	36.52	35.65		
Initiation of breast feeding	Within half hour	44.34	48.70	0.30	0.72*
	After half hour	2.60	4.30		
Exclusive breast feeding	<6 months	11.30	15.65	0.43	0.51
	≥6 months	35.65	37.40		
4 ANC visit completion	Yes	43.47	46.08	0.99	0.31
	No	3.47	7		
History of ARI in last 1 month	Present	11.30	6.08	3.16	0.07
	Absent	35.65	46.95		
History of Diarrhoeal disease in last 1 month	Present	7.82	8.7	0.00	0.96
	Absent	39.13	44.34		

* Fisher's Exact test P-value is significant at ≤ 0.05 levels

Table 7: Association of Underweight with the Characteristics of Children. (n=115)

Characteristics	Category	Underweight			
		Yes	No	X ²	P value
Age of child in months	6-24	7.82	35.65	6.46	0.01
	25-59	22.60	33.91		
Sex	Male	17.40	33.04	0.90	0.34
	Female	13.04	36.52		
Ethnicity	Disadvantaged Janajatis	27.82	61.73	0.18	1.0*
	Upper caste	2.60	7.82		
Birth weight of child	<2500	5.21	9.56	0.21	0.64
	≥2500	23.47	55.65		
Age of mother at child birth	<20	8.70	8.70	4.37	0.03
	≥20	21.74	60.86		
Education level of mother	Illiterate	1.74	5.21	0.12	1.0*
	Literate	28.70	64.34		
Socio-economic status	Below poverty line	8.70	19.13	0.01	0.90
	Above poverty line	21.74	50.43		
Initiation of breast feeding	Within half hour	27.82	64.35	0.12	1.0*
	After half hour	1.74	5.21		
Exclusive breast feeding	<6 months	8.70	18.26	0.06	0.79
	≥6 months	21.74	51.30		
4 ANC visit completion	Yes	24.35	65.21	4.92	0.04*
	No	6.08	4.34		
History of ARI in last 1 month	Present	5.21	12.17	0.00	0.96
	Absent	25.22	57.40		
History of Diarrhoeal disease in last 1 month	Present	4.34	12.17	0.18	0.66
	Absent	26.08	59.13		

* Fisher's Exact test P-value is significant at ≤ 0.05 levels

Table 8: Association of Wasting with the Characteristics of Children

Characteristics	Category	Wasting			
		Yes	No	X ²	P value
Age of child in months	6-24	5.21	38.26	0.04	0.83
	25-59	6.08	50.43		
Sex	Male	6.08	44.34	0.06	0.79
	Female	5.21	44.34		
Ethnicity	Disadvantaged Janajatis	10.43	79.13	0.11	1.00*
	Upper caste	0.86	9.56		
Birth weight of child	<2500	2.60	12.17	0.60	0.42*
	≥2500	8.69	70.43		
Age of mother at child birth	<20	3.47	13.91	1.82	0.23*
	≥20	7.82	74.78		
Education level of mother	Illiterate	0.86	6.1	0.01	1.00*
	Literate	10.43	82.60		
Socio-economic status	Below poverty line	5.21	22.60	2.45	0.18*
	Above poverty line	6.08	66.08		
Initiation of breast feeding	Within half hour	11.30	81.73	1.09	0.59*
	After half hour	0	7		
Exclusive breast feeding	<6 months	3.47	23.47	0.10	0.74*
	≥6 months	7.82	65.21		
4 ANC visit completion	Yes	7.82	81.73	6.48	0.03*
	No	3.47	7		
History of ARI in last 1 month	Present	2.6	14.78	0.33	0.69
	Absent	8.69	73.91		
History of Diarrhoeal disease in last 1 month	Present	0.86	15.65	0.82	0.69*

* Fisher's Exact test P-value is significant at ≤ 0.05 levels



DISCUSSION

The current study showed that among the total participants, 47% were stunted, 30.4% were underweight and 11% were wasted which is nearly similar to the national finding by the Nepal Demographic Health Survey 2011 which estimated that 41% of children under five years old were stunted, 29% were underweight and 11% were wasted.⁴

Prevalence of stunting (47%) which is indicator of chronic malnutrition is similar to the result of different studies in different setting.⁵⁻⁹ Prevalence of underweight in the current study was 30.4% which is 7% less than the results found by the study conducted in Padampur VDC¹⁰ and Agro-pastoral community of Blue Hora district.⁸ However, prevalence of underweight in the current study is greater than the other national international studies conducted in Dolakha and Kavre districts of Nepal, in Liabela town, Northern Ethiopia.⁷ and in Agro- pastoral community of Blue Hora District.^{5,7,8}

Wasting, an indicator of acute malnutrition had prevalence similar to the study conducted among the street children in India.⁹ However, higher prevalence was found in the study conducted in Dolakha, Nepal and Liabela town.^{5,8}

Factors associated with Nutritional Status

The findings of the current study showed that there was significant association of nutritional status with mother's age and ANC visit during pregnancy which is supported by other studies conducted in Nepal.^{6,11,12} The study further demonstrated that there is significant association of nutritional status with age of the child which is supported by the study in Liabela town, Blue Hora district and western Ethiopia.^{7,8,13}

There is no any significant association was between nutritional status and morbidity which is supported by the study conducted in Padampur VDC.³ However, study in Brazil and Kapilvastu established significant association.^{12,14}

This study showed that there is no any significant association

of nutritional status with sex, ethnicity, occupation of mother, socio-economic status of the family, birth weight, birth order, birth spacing education level of mother, exclusive breast feeding, feeding practices, family type and size in contrast to other similar studies which showed significant association.^{5,7,8,11,12,13,15,16}

CONCLUSION

The study concludes that significant proportion of under-five children in Sindhupalchowk district is malnourished with stunting and wasting being predominant form of malnutrition. Occurrence of malnutrition was slightly higher among male compared to female children. Child's age, mother's age during the birth of child and their completion of at least 4 antenatal visits during pregnancy were found to be significantly associated with child's nutritional status.

RECOMMENDATIONS

The findings suggests awareness program to the mother's needs to be strengthened regarding appropriate age of giving birth to the child and importance of ANC visits during pregnancy.

LIMITATION OF THE STUDY

Nutritional status was assessed using only anthropometric measurements.

Study was limited to the under - five children residing in Bhimtar VDC of Sindhupalchowk district.

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CONFLICT OF INTEREST

There is no any conflict of interest during study.

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