Original Research Article

Factors associated with nutritional status of under five children in Rara Chhayanath Municipaity, Mugu district

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Received: 08 June 2022
Accepted: 29 June 2022

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ABSTRACT

Background: Proper nutrition is crucial for healthy living. According to Nepal multi-indicator cluster survey 2019, prevalence of stunting, wasting and underweight were 31.5%, 12% and 24.3% respectively. The prevalence of under nutrition is higher in Karnali Province than other Provinces of Nepal. This study is conducted to assess the factors affecting the nutritional status of under five years' children in Rara Chhayanath municipality, Mugu district.
Methods: A community based cross sectional study was conducted in Rara Chhayanath municipality, Mugu district of Nepal which was purposively selected. Three wards were selected for collection of data. Verbal informed consent was taken from the mothers of the under five children and approval was taken from Little Buddha College of Health Science and Municipality. Bivariate analysis was performed to identify the factors associated with nutrition status of children.
Results: In the study, prevalence of stunting and wasting were high as compared to national data i.e., 40.4% and 14.1% percent respectively. The study found that maternal education, family income, exclusive breastfeeding and minimum meal frequency were significantly associated with stunting and wasting.
Conclusions: Socio-economic and child feeding practices were the associated factors of under nutrition. Programs should be focused on socio demographic and economic factors and child feeding practice to reduce problem of malnutrition.

Keywords: Stunting, Under nutrition, Wasting

INTRODUCTION

Good nutrition is the bedrock of child survival, health and development.[1] Nutritional status is the major indicator for assessing the health status of whole population in country. Malnutrition is the major causes of death among under-five year children in Nepal.[1] Good nutrition is essential for children's growth and development, and can substantially reduce their risk of death.[1]

In 2019, 21.3%, or more than one in five children under age 5 worldwide had stunted growth.[2] Between 2000 and 2019, stunting prevalence globally declined from 32.4 to 21.3%, and the number of children affected fell from 199.5 million to 144.0 million. In 2019, nearly two out of five stunted children lived in South Asia while another two out of five lived in sub-Saharan Africa.[3]

Recent data from the 2016 Nepal demographic and health survey indicated that 36% of children under 5 years of age were stunted, 10% were wasted and 27% were underweight.[4] Nepal multiple indicator cluster survey 2019 shows that 31.5% were stunted, wasted 12% and underweight 24.3% of children under 5 years of age.[5] The sustainable development goals (SDG) by 2030 target

for stunting is 15%, wasting 4% and underweight is 10% among the children below 5 years of age and the target of multi sectorial nutritional plan (MSNP) by 2022 is 28% for stunting, 7% for wasting and 20% for underweight.[5] The aim of the study was to assess the factors affecting the nutritional status of under five years' children in Rara Chhayanath Municipality, Mugu district of Nepal.

METHODS

An analytical cross-sectional study design was carried out to assess the factors associated with nutritional status among children of 6-59 months in Rara Chhayanath Municipaity, Mugu district of Nepal. Mugu district is located in Karnali Province of Nepal and is one of the districts with lowest HDI. The study duration was of 10 months i.e., from April 2020 to January 2021. Approval for the study was taken from department of public health, Little Buddha college of health science and Rara Chhayanath Municipality, Mugu District. Verbal and written informed consent were taken from the participants before data collection process. According to the NDHS 2016 the prevalence of stunting was 55%, wasting 8% and underweight were 36% in Karnali Province.

Sample size calculation

Sample size was calculated using the formula:

$$n = \frac{Z^2 \times p \times q}{d^2}$$

Where, Z=standard normal deviate, p=prevalence=55% (prevalence of stunting according to NDHS 2016 in Karnali province), q= (1-p), d=allowable error.

The total sample size of the study was 194 and adding 10% non-response rate, the final sample size was 203. Purposive sampling was used for selecting study area (or ward) and systematic random sampling was used to select the study units within each selected ward. The vitamin A registers were used to identify the total number of households having U5 year's children in the Rara Chhayanath Municipality.

The variables under study were: sex of the child, age of the child, family type, mothers' education, main source of income, family income, exclusive breast feeding, weaning, minimum meal frequency and intake of diverse food. Semi-structured questionnaire was used to interview the mothers of the children. Weighing machine and measuring tapes were used for measuring the weight and height of the under five children for determining stunting and wasting. The weight of the participants was measured in kilogram and height was measured in the unit cm with nearest 0.1 cm. Mentally ill, physically disabled mothers of the children and the children who were ill during and 7 days prior to data collection were excluded from the study.

RESULTS

The socio-demographic and socio-economic characteristics of the participants is depicted in (Table 1).

Table 1: Socio-demographic and socio-economic characteristics of the participants.

Characteristics	N	%
Sex of the child		
Male	99	46.5
Female	114	53.5
Age of the child (months)		
<24	82	38.5
≥24	131	61.5
Family type		
Nuclear	94	44.1
Joint	119	55.9
Education of the mothers		
No education	50	23.5
Primary	101	47.4
Secondary	62	29.1
Main source of income		
Agriculture	72	33.8
Business	28	13.1
Service	65	30.5
Remittance	23	10.8
labor/daily wages	25	11.7
Monthly income (NPR)		
<15000	98	46.0
≥15000	115	54.0

Among the total participants, more than half (53.5%) were female and almost two third (61.4%) were of age more than 24 months. More than half (55.9%) of the participants had joint family. Regarding educational status of the participants, almost half (47.5%) of mothers had completed primary school. Agriculture was the main source of income (33.8%) followed by job/service (30.5%). More than half (54%) had family income more than or equal to Nrs. 15000. Infant and young child feeding and meal related characteristics of the respondents are given in (Table 2). Regarding exclusive breastfeeding and weaning practice of children, more than one-third (69%) of the participants were exclusively breastfed and almost one-third (30.5%) were weaned before 6 months. Food frequency of more than four-fifth (78.4%) of the children was more than 4 times. Regarding intake of diverse food in a day by the children, cent percent were given grains roots and tubers followed by legumes and nuts (98.6%) and Vitamin A rich fruits and vegetables (88.4%).

The nutritional status of the under five years' children is shown in (Figure 1). Among the children, 40.4% were stunted and 14.1% were wasted. The association between stunting and different socio-demographic, socio-economic and nutritional variables of the participants is shown in (Table 3). Among the variables, Ethnicity

(p=0.016), education of mother (p=0.029), main source of income (p=0.006), monthly income (p=0.003), exclusive breast feeding (p=0.002) and meal frequency (p=0.029) were significantly associated with stunting. The association between wasting and different socio-demographic, socio-economic and nutritional variables of the participants is depicted in (Table 4). Among the variables, Ethnicity (p=0.040), education of mother (p<0.001), main source of income (p=042), monthly income (p=0.040), Exclusive breast feeding (p=001) and meal frequency (p=0.008) were significantly associated with wasting.

Table 2: IYCF and meal related characteristics of the respondents.

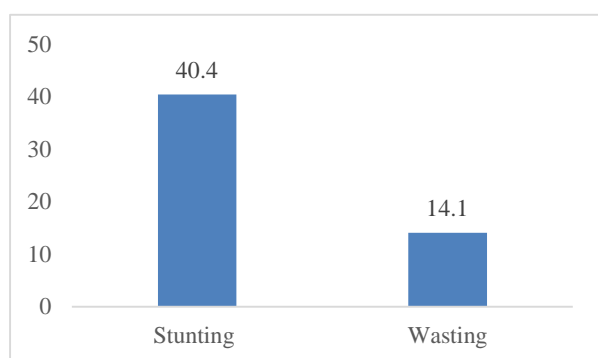| Characteristics	N	%
Exclusive breastfeeding (months)		
<6	66	31.0
≥6	147	69.0
Weaning		
Before 6 months	65	30.5
6 months or more	148	69.5
Meal frequency in a day		
<4	46	21.6
≥4	167	78.4
Intake of diverse food in a day		
Grains roots and tubers	213	100
Legumes and nuts	210	98.6
Dairy products	24	11.3
Flesh foods	12	5.6
Eggs	11	5.2
Vitamin A rich fruits and vegetables	188	88.3
Others	150	70.4

Figure 1: Nutritional status of under five years children.

DISCUSSION

The prevalence of stunting and wasting was found to be 40.4% and 14.1%, respectively among children of 6-59 months in Rara Chhayanath Municipaity, Mugu district of Nepal. Stunting and wasting were higher than the National data of Nepal demographic and health survey 2016.[3] But stunting is lower and wasting is higher than the Karnali province level data of NDHS 2016.[3] The

prevalence of stunting and wasting were lower than the national data of NMICS 2019 of Karnali Province which are 47.8% and 17.6% respectively.[5]

Table 3: Factors associated with stunting.

Characteristics	Stunting		P value
	Yes	No	
Sex of the child			
Male	39	60	0.786
Female	47	67	
Age of the child (months)			
<24	28	54	0.143
≥24	58	73	
Family Type			
Nuclear	40	54	0.565
Joint	46	73	
Education of the mothers			
No education	28	22	
Primary	38	63	0.029
Secondary	20	42	
Main source of income			
Agriculture	21	51	
Business	12	16	
Service	25	40	0.006
Remittance	10	13	
labor/daily wages	18	7	
Monthly income (NPR)			
<15000	50	48	0.003
≥15000	36	79	
Exclusive breastfeeding (months)			
<6	37	29	0.002
≥6	49	98	
Weaning			
Before 6 months	29	36	0.403
6 months or more	57	91	
Meal frequency in a day			
<4 times	25	21	0.029
≥4 times	61	106	

Stunting and wasting were not significantly associated with sex of children of under five years children and the results were supported by study conducted in Bhadrapur, Nepal.[6] Another study conducted in East Gojjam zone, Northwest Ethiopia also supported the finding of this study.[7] Age of children under five years was not significantly associated with stunting and wasting in this study. According to a community-based cross-sectional study was conducted in Wolaita district from May to June 2015, stunting was not statistically significant with child's age.[8] The finding of stunting in relation to children age was in line with a study conducted in Bhadrapur district of Nepal.[6] Stunting and wasting were significantly associated with education of mothers in this study and the result is supported by different studies conducted around the world.[7,8,9] The finding from NDHS 2016 also has stated that the children of mothers with low education had higher level of undernutrition.[11] Main

sources of income were statistically significant with stunting and wasting of the under five children.

Table 4: Factors associated with wasting.

Characteristics	Wasting		P value
	Yes	No	
Sex of the child			
Male	17	82	0.227
Female	13	101	
Age of the child (months)			
<24	10	72	0.531
≥24	20	111	
Family type			
Nuclear	12	82	0.623
Joint	18	101	
Education of the mothers			
No education	21	29	
Primary	7	94	<0.001
Secondary	2	60	
Main source of income			
Agriculture	8	64	
Business	5	23	
Service	5	60	0.042
Remittance	4	19	
labor/daily wages	8	17	
Monthly income (NPR)			
<15000	19	79	0.040
≥15000	11	104	
Exclusive breastfeeding (months)			
<6	17	49	0.001
≥6	13	134	
Weaning			
Before 6 months	11	54	0.430
6 months or more	19	129	
Meal frequency in a day			
<4	12	34	0.008
≥4	18	149	

Regarding income of the family of the children in the community, Both the stunting (p=0.003) and wasting (p=0.04) were significantly associated with income of the family. The finding is supported by different studies conducted in low-middle income countries.[6,7,12-14] Stunting and wasting in this study were not significantly associated with weaning period and the study is in line with the study conducted in Bhadrapur district of Nepal.[7] Stunting and wasting were statistically significant with exclusive breastfeeding in the study as the results are supported by the study conducted in Nepal, Srilanka and India.[6,15,16] Similarly minimum meal frequency of the under five children was statistically significant with the stunting and wasting and the study is supported by a study conducted in Nepal.[6,17]

CONCLUSION

There was higher prevalence of stunting and wasting in the Rara Chhayanath municipality, Mugu district of Nepal in comparison to the National and provincial figure. The study revealed that maternal education, family income, exclusive breastfeeding and minimum meal frequency were significantly associated with under nutrition (stunting and wasting). The municipality as well as province should focus on different nutrition related activities to upgrade the status of under five children in Mugu district of Nepal.

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