

Original Article

# Under nutrition among Chepang children of Chitwan, Nepal

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## ABSTRACT

**Background and Objectives:** Under nutrition, which includes wasting (low weight-for-height), stunting (low height-for-age) and underweight (low weight-for-age) makes children in particular much more vulnerable to disease and death. This research analyzes the nutrition status of the Chepang children (an indigenous Tibeto-Burman ethnic group of the Mahabharat mountain range of central Nepal living semi-nomadic life) and the associated demographic factors affecting it.

**Material and Methods:** This study is carried out in children of chepang community living in Kalika municipality, Chitwan, Nepal. The children were interviewed together with their parents/ teachers after which their anthropometric measurements were taken. Information regarding socio – demographic information, physical activities and diet intake were recorded. Food frequency questionnaire was utilized to know the frequency of food per week. Face-to-face interview technique with a structured questionnaire was used to collect data from the respondents.

**Results:** Out of the 145 children, 72.3% of children were found to be underweight and 86.9% stunted whereas comparatively lower amount of children were found to be wasted (6.2%). Nearly half of the children (43.5%) under 5 years of age were found to be at a risk for acute malnutrition.

**Conclusions:** Majority of the children were underweight. More than half of the total children were found to be stunted and underweight where as few numbers of the children were found to be wasted.

**Key words:** Chepang, Ethnic group, Nutrition, Stunting, Under Nutrition, Underweight, Wasting

## INTRODUCTION

Under nutrition, which includes wasting (low weight-for-height), stunting (low height-for-age) and underweight (low weight-for-age) makes children in particular much more vulnerable to disease and death [1].

WHO estimates that malnutrition accounts for 54% of child mortality worldwide, about 1 million children. Hence, malnutrition exists globally and may result in both short and long-term irreversible negative health outcomes. According to FAO, the consequences of malnutrition are a significant concern for the Government of Nepal, since around 1 million children under

5 years (36%) suffer from chronic malnutrition (stunting or low height for age) and 10 percent suffer from acute malnutrition (wasting or low weight for height) [2].

Prevalence of underweight, stunting and wasting was 22.7%, 37.3% and 25.7% respectively in Chitwan according to a research done by Ruwali [3]. The Chepang have often been characterized as the poorest of Nepal's poor. According to the 2011 Census, their population stands at 68,399 Chepang in the country, of which 67.63% were Hindu, 23.38% were Buddhists, 7.74% were Christians, and 1.25% others [4]. They are mostly located in Dhading District, Chitwan District, Gorkha District, Makwanpur District, and Tanahu District with 3.7% people speaking Chepang as their first language in Chitwan district only [4].

Chepang community is an indigenous Tibeto-Burman ethnic group of the Mahabharat mountain range of central Nepal living semi-nomadic life [5-6] Nikita. AJSSM]. With such conditions, their nutrition status among children and their lifestyle seem to be in poor conditions. With this research, the aim is to find out the prevalence of children suffering from malnutrition so that further research can be done on this to help their situation. Recording of their lifestyle and dietary pattern can help to better understand them which ultimately make it easier to provide help and support for them.

Assessment of the under nutritional status among the school going children of the Chepang community is going to be conducted. This age group is a sensitive age group. For the rapid growth during adolescence ahead, conserves are being laid down during this period.

**Objective of the study:** The general objective was to study the nutritional status (under nutrition) of the Chepang School going children of Kalika Municipality in Chitwan District of Nepal.

#### *Specific Objectives*

- i. To study the demographic and anthropometric measurements of the Chepang school going children.
- ii. To study the prevalence of stunting, wasting and underweight (under nutrition status)

#### **MATERIAL AND METHODS**

This is a cross sectional descriptive study carried out to assess the nutritional status and dietary pattern of Chepang children population from Chitwan district. The children were interviewed together with their parents/ teachers after which their anthropometric measurements were taken. The children were interviewed together with their parents/ teachers after which their anthropometric measurement was taken as taken by Dhungel and Bhattarai, 2020 [7].

An interview method followed by anthropometric measurement for the height in cm and weight in kg was used including waist hip ratio for the data collection. Then the children were asked about socio - demographic information, physical activities and diet intake. Food frequency questionnaire was to know the frequency of food per week. A structured questionnaire was used as tool of data collection. Face-to-face interview with children and their parents were used to collect data from the respondents.

The height was measured by using stadiometer and weighing machine was used for the weight measurement. Weighing machine was

standardized for the accuracy of weight before the weight measurement. The waist hip ratio was taken by using inch tape [7]

Data collection tool and basic interviewing techniques were strictly followed in addition to check the consistency and completeness of the tool. Data processing was done by creating variables, entering, coding and tabulation of the data and analysis was done using SPSS version 20 software and Ms Excel.

## RESULTS

The socio-demographic details of the study subjects are presented in Table 1. It shows that 15.9% children were from ages under 5 years, followed by (46.9%) 6 - 9 years and (37.2%) 10 -12 years.

**Table 1: Socio-demographic variables**

Variable	Number	Percentage
<b>Age</b>		
<5 years	23	15.9
5-9 years	68	46.9
>10 years	54	37.2
<b>Sex of respondent</b>		
Male	70	48.3
Female	75	51.7
<b>Religion of respondent</b>		
Christian	145	100.0
<b>Type of your family</b>		
Nuclear	72	49.7
Joint	73	50.3
<b>Educational Status of respondent</b>		
Not started class	32	22.1
Class1-5	94	64.8
Class 6-10	19	13.1
<b>Source of family income</b>		
Agriculture	47	32.4
Agriculture & labor	84	57.9
Driving, shop, business & other	14	9.7
<b>Annual income of family</b>		
Nrs. <30,000	87	60.0
Nrs. >30,000	58	40.0

**Table 2: Nutritional Status of the Chepang children**

Variable	Number	Percent
<b>MUAC of the respondents</b>		
Risk for acute malnutrition(12.5-13.5)	10	43.5
Well Nourished(>13.5)	13	56.5
<b>BMI of the respondents</b>		
Underweight (<18.5)	121	83.4
Normal (18.5-24.99)	24	16.6
<b>WH Ratio for male</b>		
Low risk (<0.95)	54	77.1
Medium risk (0.96-1)	16	22.9
<b>WH Ratio of female</b>		
Medium risk (0.81-0.85)	29	38.7
High risk (>0.85)	46	61.3
<b>Height for age ( Waterlow's classification)</b>		
Normal (>95)	19	13.1
Mildly Impaired (87.5-95)	92	63.4
Moderately impaired (80-87.5)	30	20.7
Severely impaired (<80)	4	2.8
<b>Weight for height (Gomez Classification (WHO standard)</b>		
Normal (>90)	136	93.8
Mildly impaired ( 80-90)	9	6.2
<b>Weight for age (Gomez Classification (WHO standard)</b>		
Normal nutritional status ( 90-110)	40	27.6
First degree, mild malnutrition (75-89.99)	63	43.4
Second degree, moderate malnutrition (60-74.99)	37	25.5
Third degree, severe malnutrition ( <60)	5	3.4

More than half of the children (51.7%) were female whereas the rest of the children (48.3%) were male. All of the respondents followed Christianity as their religion. Half of the children (50.3%) belonged to joint family and the rest (49.7%) belonged to nuclear family.

Majority of the children (64.8%) were enrolled in class 1-5 followed by (13.1%) enrolled in class 6-10 and nearly quarter (22.1%) children had not started their study yet. More than half of the children's families (57.9%) had income from agriculture and farming, whereas 32.4% had agriculture as their income source and the rest 9.7% had driving, business, shops, etc. as their income

sources. More than half of children (60.0%) had annual family income below Nrs.30,000 and the rest (40%) had annual family income above NRs.30,000.

Table 2 depicts the nutritional status of the Chepang Children of Chitwan. Among the children under 5 years of age, a little more than half of the children (56.5%) were well nourished (MUAC>13.5) while nearly half of the children (43.5%) were at a risk for acute malnutrition (MUAC between 12.5-13.5).

Majority of the children (83.4%) were underweight (BMI below 18.5) and the rest (16.6%) were normal (BMI between 18.5-24.99). Three quarters of the total male respondents (71.4%) had waist-hip ratio of below 0.95 (low risk for obesity) and the remaining children (22.9%) had waist/hip ratio between 0.96 to 1 (medium risk for obesity).

For the total female respondents, more than half children (61.3%) had waist-hip ratio above 0.85 (high risk for obesity) and the rest (38.7%) had waist-hip ratio between 0.81-0.85 (low risk for obesity).

More than half of the children (63.4%) had mildly impaired height for age while nearly a quarter of them (20.7%) were moderately impaired, followed by 13.1% with normal height for age and 2.8% severely impaired. Thus, 86.9% of the total children were found to be stunted.

Nearly all the children (93.8%) had normal weight for height (>90) and the rest (6.2%) were mildly impaired (80-90). Therefore, 6.2% of the children were found to be wasted.

Almost half of the total children (43.4%) were in the first degree, mildly malnourished (75-89.99), a little over a quarter (27.6%) had

normal nutritional status (90-110), a quarter of the children (25.5%) were in the second degree, moderately malnourished (60-74.99) and the rest (3.4%) were in the third degree, severely malnourished (<60). Thus, it was found that 72.3% of the total children were underweight.

## DISCUSSION

The above study presents that 15.9% children were from ages under 5 years, followed by (46.9%) 6 - 9 years and (37.2%) 10 -12 years which is similar to the statistics of the Central Bureau of Statistics (CBS), 2001 according to which there were higher percentage of children of the age group 6-9 (28.3%) followed by 10-14 (26.2%) and finally least percentage of children under 5 years (24.2%) [8]. In the present study, more than half of the children (51.7%) studied were female whereas the rest of the children (48.3%) were male which is in contrast to the statistics of CBS, 2001 [8]. According to the present study, all of the respondents followed Christianity as their religion which is very surprising as Statistical Yearbook of Nepal, 2013 indicates Hinduism as the major religion followed (81.3%) with Christianity in the fourth position only (1.4%) [9].

In light of the present context, half of the children (50.3%) belonged to joint family and the rest (49.7%) belonged to nuclear family, which is in contrast to the Annual Household Survey 2015/16, which states that 17.1% people belong to nuclear families while the rest belong to various degrees of joint families [10]. Present study depicts that majority of the children (64.8%) were enrolled in class 1-5 followed by (13.1%) enrolled in class 6-10 and nearly quarter (22.1%) children had not started their study yet. It was found in the current study that

children who were 5 years old hadn't started their school, yet in opposition to the findings by World Bank collection of development studies, it was reported that primary school starting age (years) in Nepal was 5 years [11]. In pretext of current study, more than half of the children's families (57.9%) had income from agriculture and labor, whereas 32.4% had agriculture as their income source and the rest 9.7% had driving, business, shops, etc. as their income sources which is similar to the findings conducted by Chettri and Silwal [12]. Present study illustrates that more than half of children (60.0%) had annual family income below Nrs. 30,000 and the rest (40%) had annual family income above NRs. 30,000. This data is in opposition to the study conducted by Chettri and Silwal who states that higher percentage of people (49%) earned more than Nrs. 30,000 a year whereas the rest (26%) earned less than Nrs. 30,000 annually [12].

In present context, it is illustrated that among the children under 5 years of age, a little more than half of the children (56.5%) were well nourished (MUAC>13.5) while nearly half of the children (43.5%) were at a risk for acute malnutrition (MUAC between 12.5-13.5). Majority of the children (83.4%) were underweight (BMI below 18.5) and the rest (16.6%) were normal (BMI between 18.5-24.99). Three quarters of the total male respondents (71.4%) had waist-hip ratio of below 0.95 (low risk) and the remaining children (22.9%) had waist/hip ratio between 0.96 to 1 (medium risk). For the total female respondents, more than half children (61.3%) had waist-hip ratio above 0.85 (high risk) and the rest (38.7%) had waist-hip ratio between 0.81-0.85 (low risk).

In a study done among Chepang children in two municipality of Dhading district, It was

found that 26.8% children were underweight, 66% were stunted and 6.6% were suffering from wasting [13]. In this study, more than half of the children (63.4%) had mildly impaired height for age while nearly a quarter of them (20.7%) were moderately impaired, followed by 13.1% with normal height for age and 2.8% severely impaired. But Ghimire (2015) reported that on an average, 17% children of Chepang had better height, weight and thickness of arm than other communities' children [13].

In a study among Pakistani primary school children, eight percent (95% CI 6.9-9.4) children were stunted and 10% (95% CI 8.7-11.5) children were thin [14] which is very low in comparison to chepang children in our study. Another population based Survey in Bangladesh states that overall prevalence of stunting, wasting and underweight was 41.3%, which is also different from present study [15].

A study conducted in Chepang children of Dhading district depicts those children stunted prevalence was 66%, which is nearly similar to the present context i.e., 86.9%, however the underweight prevalence was 66%, which is in contrast to present study. Meanwhile, the prevalence of wasting is very similar i.e., 6.6% [13].

Nearly all the children (93.8%) had normal weight for height (>90) and the rest (6.3%) were mildly impaired (80-90). Therefore, present study depicts that very less number of the children (6.2%) were found to be wasted. Almost half of the total children (43.4%) were in the first degree, mildly malnourished (75-89.99), a little over a quarter (27.6%) had normal nutritional status (90-110), a quarter of the children (25.5%) were in the second degree,

moderately malnourished (60-74.99) and the rest (3.4%) were in the third degree, severely malnourished (<60).

## CONCLUSION

The study revealed that, among the children under 5 years of age, a little more than half of the children were well nourished while nearly half of the children were at a risk for acute malnutrition. Majority of the children were underweight and the rest were normal. Male children were found to have lower risk for obesity than female children. More than half of the total children were found to be stunted and underweight whereas very low numbers of the children were found to be wasted.

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