



## ORIGINAL RESEARCH ARTICLE

### NUTRITIONAL STATUS OF UNDER 5 CHILDREN AND ASSOCIATED FACTORS OF KUNCHHA VILLAGE DEVELOPMENT COMMITTEE

GP Dhungana<sup>1\*</sup>

<sup>1</sup> Department of Community Medicine and Public Health, Chitwan Medical College, Bharatpur-13, Chitwan, Nepal.

<sup>2</sup> Department of Community Medicine and Public Health, Institute of Medicine (IOM), Maharajgunj, Kathmandu, Nepal.

\*Correspondence to : Mr Govinda Prasad Dhungana, Department of Community Medicine and Public Health, Chitwan Medical College, Bharatpur-13, Chitwan, Nepal.  
Email: dhunganagovindana2012@gmail.com

#### ABSTRACT

The study was under taken to assess nutritional status of children and identify the associated factors. Nutritional status of children age 12-59 month was assessed using anthropometric measurement namely weight, height and mid upper arm circumference (MUAC) using standard procedure. To identify the factor, semi structural questionnaire was used for the mothers. Sixty percent of children had normal nutritional status and 40% followed by some malnutrition status by Gomez classification. No of ANC visit (odd ratio = 7.54 and 95% CI was 1.37 - 41.41), practice during the pregnancy period (P value < 0.021), and feeding practice of extra milk to the children (P value < 0.037) was significantly associated factors.

**Key Words:** ANC visit, MUAC, Nutritional Status.

#### INTRODUCTION

The nutritional status of children is important as it determines their health, physical growth and development, academic performance and progress in life. Under nutrition and poor health from preventable causes disproportionately affect the well-being of millions of people in the developing world. Factors at individual, household and community level, or a combination of these factors, may contribute to poor nutrition and health status.<sup>1</sup> In particular, malnutrition among women is likely to have a major impact on their own health as well as their children. More than 3.5 million women and children under age five in developing countries die each year due to the underlying cause of under nutrition.<sup>1</sup> A child can grow and develop into a useful competent asset, participating as an adult member to the community as well as nation. Nepalese children show evidences of under nutrition as indicated by their stunting, wasting or wasting and stunting combined along with the features of various micronutrient deficiency disorders.<sup>2</sup> According to NDHS 2006 reveals that the percent prevalence for underweight and wasted children of under five years of age were 39% and 13%. Latter scenario of under five child nutritional status shows that 41% percent of the under five children are stunted while 11% were wasted, 46% were anemic of age 6 to 59 months. The children in the rural area are more likely to be stunted (42%) than in urban area (27%) according to NDHS 2011. Looking at these figures we can say that rapid decline is not observed of any malnutrition status of under 5 children. Hence understanding the factors that affect the nutrition of children is a need.

Nepal is facing Poverty, population explosion, and environmental

degradation. However various types of governmental and nongovernmental health programmes have been launched from time to time but they still need improvement. So needs to care of under 5 children.<sup>3</sup>

In general, the nutritional status of children in Nepal has improved over the last decade. The proportion of stunted children declined from 57 percent in 2001 to 41 percent in 2011 and that of underweight children, from 43 to 29 percent in the same period. The proportion of wasted children declined, too, but only slightly, from 13 percent in 2006 to 11 percent in 2011, among the 11 percent who are wasted, 3 percent are severely wasted. Forty-one percent of children under five are short for their age, and 16 percent are severely stunted.<sup>4</sup>

Low birth, mother's education, knowledge about the micronutrient (vitamin A, iron and iodine), management of diarrhea, feeding practice and complementary practice, marriage, lack of maternal autonomy are the factor affecting the nutritional status.<sup>5,1,8</sup> Different studies shows that the causes of malnutrition in the children can be tackled. There are lack of knowledge related to health and nutritional and economic constraints. Social and cultural factors need to be addressed properly before developing and implementing any nutritional programs in Nepal. Our country took a diverse change together in pursuit of a common goal to reduce under nutrition and launched the country's new multi-sector nutritional plan 2013-2017; in Kathmandu.<sup>10</sup> Hence understanding the factors that affect the nutrition of children is a need. Various factors may

play the role of predictor variables while explaining the state of malnutrition. This analysis tries to analyze the factors associated with nutritional status among children of under-five.

**METHODS**

This descriptive cross sectional study was conducted in 2070/02/07 to 2070/02/27 in Kunchha Village Development Community (VDC) in Lamjung. The data was conducted by Household survey by face to face interview method and anthropometric measurement. Prior to the data collection verbal permission was obtained from the respondent. The content validity of the instrument was established by the extensive literature review and reliability maintained by pre testing the questionnaire and modified tools as necessary. The tools were translated into Nepali language for the simplicity and consistency of instrument. For measuring height, children were made to stand bare foot on a floor against the wall and with feet parallel and joined together and with heels and buttock touching the wall. It was made sure that that head was held erect and hands were hung closely at the sides. The height was marked on the wall with a chalk and then it was measured with a tape. Length of child within the 24 months was taken in supine position. For measuring the weight, Salter’s scale was used. Before using, it was made sure that the pointer was pointing at zero in the scale. Shakir’s tape was used. MUAC was taken on the left hand midway between the elbow and shoulder joint so that the hand was simply relaxed and hanging by the side. MUAC measures the age of 1 year and 5 years children. The standard value of Nutritional status by MUAC:<sup>6</sup>

Nutritional status	MUAC	Indicator
Adequate nutrition	≥13.5 cm	Green
Risk of malnutrition	12.5 - 13.4 cm	Green
Moderate acute malnutrition	≥11 - <12.5cm	Yellow
Severe acute malnutrition	<11 cm	Red

Weight for age: It is an indicator of the overall nutritional status used in “Road to Health” chart. It measures underweight with respect to normal weight of child at that age.

$$\text{Weight for age (\%)} = \frac{\text{Weight of a child}}{\text{Weight of a normal child of that age}} \times 100$$

Gomez classification is based on weight retardation. It locates the child on the basis of his/her weight in comparison with a normal child of the same age. In this system the “normal” reference child is in the 50<sup>th</sup> centile of the Boston standards.

Weight for age	Nutritional Status
90% and above	Normal
75-89%	Mild malnutrition

60-74%	Moderate malnutrition
Less than 60%	Severe malnutrition

All mothers who had child 1 year to 59 month asked about the questionnaire related to material child health and take the anthropometric measurement for children to measure the nutritional status. In Kunchha VDC all together 64 mothers and their children of age 1 year to 59 months but only 50 sample was collected during the data collection time. So near about 79 percent had the complete data available. Other 21 percent did not collect due to children were stay outside the village during the data collection period.

The data was checked for completeness and consistency. The collected data was first edited, organized, coded and entered into statistical package for social science (SPSS) version 19.0. The collected data was analyzed by using both descriptive and inferential statistics. The data were presented in different table. The nutritional status was measured by Gomez classification and Mid Arm circumference (MUAC). The chi square test was applied to test the association and odd ratio applied for strength of association between the nutrition status and its associate factors.

**RESULTS**

Kunchha VDC shelters 457 households with the total population of 1828 people comprising 913 males and 915 females. The major ethnic groups were Brahmin, 44 % and majority of the people followed Hinduism, 95.4 %. The mean and SD of age of children was 2.21±0.99 years. Maternal characteristics of various variables such as age of breast feeding child practiced of exclusive breast feeding, no of ANC attendance was in table 1. The mean and SD of breast feeding time, Maternal high, weight, BMI was 8.22±7.01, 150.22±6.38, 49.9±7.49, 22.15±3.32 respectively (table 1).

**Table 1: Frequency of Maternal health and feeding practices of the study participants (n=50)**

Maternal characteristics		Frequency	Percentage
Age of breast feeding child	<6 month	8	16.0
	6-11 month	34	68.0
	≥12 month	8	16.0
	Mean ±SD	8.22±7.01	
Practiced Exclusive Breast Feeding	Yes	47	94.0
	No	3	6.0

Number of ANC attendance	One	1	2.0
	Two	2	4.0
	Three	6	12.0
	Four or more	41	82.0
Avoid eating any food during Pregnancy	Yes	4	8.0
	No	46	92.0
Maternal Height	≤145 cm	12	24.0
	>145 cm	38	76.0
	Mean ±SD	150.22±6.38	
Maternal weight	≤45 Kg	14	28.0
	>45 Kg	36	72.0
	Mean ±SD	49.9±7.49	
Maternal BMI	<18.5kg/m <sup>2</sup>	7	14.0
	18.50-24.99kg/m <sup>2</sup>	43	86.0
	≥25.kg/m <sup>2</sup>	0	0
	Mean ±SD	22.15±3.32	

visit more than four times ANC check up where only 2 % were followed by one times.

**Table 2: Prevalence of nutritional status according to Gomez classification and MUAC (n=50)**

Nutritional status		Frequency	Percent
Gomez classification	Normal nutritional status	30	60.0
	Mild malnutrition status	16	32.0
	Moderate malnutrition status	2	4.0
	Severe malnutrition status	2	4.0
Mid Arm circumference	satisfactory nutritional status	41	82.0
	Mild moderate malnutrition status	9	18.0
	Severe malnutrition status	0	0.0

Gomez classification the nutritional status of children was 60% was normal followed by 32% mild and 4% was moderate and severe malnutrition (table 2). Out of 50 children 82% was satisfactory and only 18% followed by mild moderate nutritional status and there was no severe malnutrition by MUAC.

Sixty eightpercent mothers were breastfeeding of their children in 6 to 11 months, only 16% were followed by less than 6 months and greater than or equal 12 month. 94% mothers were practice of exclusive breastfeeding and only 6% followed by did not practiceof exclusive breastfeeding. 82% mothers were

To identify the factor affecting the nutritional status, the nutritional status was classified in to two categories: Normal nutritional status and Malnutrition status then bivariate analysis was performed.

**Table 3: Association between the nutritionalstatus with various variables (n=50)**

Variable	Category	Nutritional status		P-value
		Normal Nutritional status	Malnutrition status	
BMI	<18.5	4(57.1%)	3(42.9%)	0.868†
	18.50-24.99	26(60.5%)	17(39.5)	
No of ANC check up	<4 times	2(22.2%)	7(77.8%)	0.021†*
	≥4 times	28(68.3%)	13(31.7%)	
Problem in pregnancy period	Yes	11(78.6%)	3(21.4%)	0.095†
	No	19(52.8%)	17(47.2%)	

Intake of food during pregnancy period	As usual	16(64.0%)	9(36.0%)	0.081
	More than as usual	11(73.3%)	4(26.7%)	
	Less than as usual	3(30.0%)	7(70.0%)	
Practice during Pregnancy period	≥ 60%	30(65.2%)	16(34.8%)	0.021†*
	<60%	0(0.0%)	4(100.0%)	
Age at first pregnancy	< 20yrs	12(60.0%)	8(40.0%)	1.00
	≥ 20 yrs	18(60.0%)	12(40.0%)	
Delivery Facility	Intuitional	26(65.0%)	14(35.0%)	0.149‡
	Home	4(40.0%)	6(60.0%)	
Exclusive Breastfeeding	<6 month	4(50.0%)	4(50.0%)	0.529‡
	≥ 6 month	26(61.9%)	16(38.1%)	
Feeding extra milk	Yes	21(52.5%)	19(47.5%)	0.037†*
	No	9(90.0%)	1(10.0%)	
Knowledge	≥ 60%	24(60.0%)	16(40.0%)	1.00‡
	< 60%	6(60.0%)	4(40.0%)	
Immunization	Complete	29(60.4%)	19(39.6%)	1.00‡
	Incomplete	1(50.0%)	1(50.0%)	
Extra food	Single	10(55.6%)	8(44.4)	0.630
	Combination	20(62.5%)	12(37.5%)	
Food habit	Sarbotompitho	12(63.2%)	7(36.8%)	0.721
	Others	18(58.1%)	13(41.9%)	
Age of children	≤ 2 years	22(66.7%)	11(33.3%)	0.180
	>2 years	8(47.1%)	9(52.9%)	

‡ Fisher exact test, \* significant value at 5% level of significance

Table 3 shows that there was significant association between the practices (taking anthelmintic medicine, iron tab, TT vaccination, colostrums feeding, iodine salt, regular eating habit of vegetables and fruits) during the pregnancy period and Nutritional status. Also there was significant association between feeding practices of extra milk and No. of ANC check up with Nutritional status at 5% level of significance. But there was no significant association between extra food habit (i.e. porridge, Jaulo, family foods or Super-flour) and combination of any two or more than two foods, feeding practice of the Super-flour and other nutrient, BMI of mothers, problem pregnancy, intake of food during pregnancy, age at first pregnancy, delivery facility, exclusive breastfeeding, immunization, extra food, food habit. Also there was no significant association between the knowledge about the preparing the super-flour, breastfeed during diarrhea, the umbilical cord cut and nutritional status.

**Table: 4: Logistic regression analysis for significantly associated factors and nutritional status**

Variable	Nutritional status		Odd ratio	95% CI
	Normal Nutritional status	Malnutrition status		
No Of ANC Check up				
≥4 times+	28(68.3%)	13(31.7%)	1	
<4 times	2(22.2%)	7(77.8%)	7.54	1.37 - 41.41

+Reference categories

Table 4 shows that less than four times ANC check up has 7.54 times more likely the malnutrition than those mothers who visit more than or equal to four times, whose 95% CI was 1.37- 41.41.

**DISCUSSION**

The satisfactory nutritional status had 41% and 59 % had some malnutrition. Majority of them were wasted (42.7%).<sup>5</sup> This study shows that 60% had the normal nutritional status and 32% had mild malnutrition status and 4% had moderate and severe malnutrition. This analysis shows better nutritional status than those of study. The sample size 100 children of where 80% were normal while 17% were stunted and 3% were severely stunted.<sup>7</sup> Our study showed that the poor nutritional status than those of study. Our study was carried out on a small scale and results cannot be generalized towards the population of under 5 children in large scale.<sup>7</sup> It shows that nutritional status was better than our study. Above all the study shows that Kunchha VDC has nutritional problems.

Using logistic regression model, factors significantly associated with the nutritional status of the study participants as determined by , frequency of antenatal care visit and age of breastfeeding.<sup>1</sup> Nutritional status was significantly related to history of breast feeding, eating fast food, taking canned/bottled drinks.<sup>9</sup> This study shows that the nutritional status was significantly associated with feeding extra milk, practice of taking anthelmintic medicine, iron tab, iodine salt, TT vaccination, taking vegetable, delivery at health facility and frequency of ANC visit. This analysis shows similar features of above study. The malnutrition is 7.54 times more likely for those whose ANC visit less than four times. This study was similar to study done in Ethiopia.<sup>1</sup>

**CONCLUSION**

The normal nutritional status was 60% and mild malnutrition status 32% whereas moderate and severe malnutrition status was 4% respectively. ANC visit, practice during the pregnancy period and feeding extra milk were associated factors of nutritional status.

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**REFERENCES**

1. Kiday H, Afework M, Meron G. Feeding practices, nutritional status and associated factors of lactating women in Samre Woreda, South Eastern Zone of Tigray, Ethiopia. Nutrition Journal 2013;12:28.
2. Pradhan A. Factors associated with nutritional status of the under five children. Asian Journal of Medical Sciences 2010;1: 6-8.
3. Adhikari D. A study on health status of children under five years of age in rural village in eastern part of Nepal. Journal of Nobel Medical College Vol. 2, No.1 Issue 3, 49-54.
4. Nepal Millennium Development Goals Progress Report 2013;15.
5. Peiris TDR, Wijesinghe DGNG. Nutritional Status of under 5 Year-Old Children and its Relationship with Maternal Nutrition Knowledge in Weeraketiya DS division of Sri Lanka. Tropical Agricultural Research 2010; 21(4): 330 - 339.
6. Park K. Park’s Textbook of Preventive and Social Medicine. 19th ed. Prem Nagar, Jabalpur, India. 2007; 508.
7. Hassam SL, Mahmood UR, Fahd SL, Salim W, Huma J. Department of Community Medicine, Ayub Medical College, Abbottabad, Assessment of nutritional atatus of 1-5 years old , J Ayub Med Coll Abbottabad 2010;22(3).
8. Taufiq M, Takehito T, Keiko N, Masashi K, Shafiqullah H, Masafumi W, Kaoruko S. Factors associated with the health and nutritional status of children under 5 years of age in Afghanistan: family behavior related to women and past experience of war-related hardships, BMC Public Health 2008;8:301.
9. Anuar Zaini MZ, Lim CT, Low WY, Harun F. Factors affecting Nutritional Status of Malaysian Primary School Children, Asia Pac J Public Health July 2005;17: 71-80.
10. www.ekantipur.com.np.2012.