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Nutrition status between Tharu and Dalit children under 5 years at Rupandehi, Nepal

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Abstract

The aims of this study was to find out and compare the nutritional status between Tharu and Dalit community of Butwal Sub-metropolitan city, ward no15 Rupandehi District, Nepal. Quantitative and comparative types of research designs were used to collect the first hand data. 150 (75/75) children were taken as sample for the study using random sampling method. The interview schedule was applied as research tools to collect the primary data and information from the mothers of the children. Likewise, weighting machine and Shaker measuring tape were used as measuring instruments. Gomez and Water-low classification was used to analyze the data. The raw data was treated by SPSS version 20 [Mean, Standard Deviation, 'Z' test]. In the study area, the Dalit community was found more backward in education in comparison to Tharu community. The practice of nutritional behaviors in colostrum's feeding and immunization were found quite good among the respondents. The present study concludes that the level of nutrition status between Tharu and Dalit community children did not have any significant difference due to the low impact of socio-economic factors.

Keywords: Children, Dalit, nutrition, status, Tharu

Introduction

Nepal is broadly divided into three geographical regions on the basis of their geographic structure with Himalayan, Hilly and Teri occupying 17%, 68% and 15% of total land respectively. About 65% of people are dependent on agriculture for their livelihood (Central Bureau of Statistics, 2021) [2].

Nutrition is defined as a science of food and its relationship with health. It is primarily concerned with the roles played by nutrients in the body growth, development, and its maintenance (Joshi, 2012) [5]. Childhood is a time of active growth in terms of physical size, mental, emotional and psychological development. Normal growth is dependent on adequate nutrition and encompasses major transformations from birth to adulthood (Acharya *et al.*, 2019) [1]. Children's right to have access to safe diet and adequate nutrition is undeniable, and fulfillment of their right is essential to attain the highest standard of health (Ghimire *et al.* 2020) [3]. Nutrition and malnutrition both are closely interrelated. If one is affected, the other will be affected sooner or later.

Malnutrition can be defined as a pathological condition of varying degree of severity and diverse clinical manifestations, resulting from the deficient assimilation of components of nutrient complex. It affects the physiological patterns of tissues, reduces the defensive capabilities to withstand different environmental conditions, and lowers both the efficiency and ability in work and shortens life (Gomez, Galvan, Craviato, & Fronk, 1955) [15]. Globally, child malnutrition is a public health problem with major consequences for child survival, damaging the cognitive and physical development of children and the economic productivity of individual strengths (Pravana *et al.*, 2017) [8]. Malnutrition contributes to 50% of all child deaths and 11% of the total global disability worldwide. Geographically, 70–80% of undernourished children worldwide live in lower and middle income countries, including Nepal (Pravana *et al.* 2017) [8]. Childhood under-nutrition is a major public health problem in developing countries. In 2018, globally, approximately 21.9% under-five years children were estimated to be stunted and 7.3% children wasted, and almost two out of five stunted children belonged to South Asia (Shrestha, Vicendese, and Erbas, 2020) [10]. Nepal is among the countries having the highest prevalence of childhood under-nutrition in the South Asian

region (Shrestha *et al.*, 2020) [10]. Although Nepal's global hunger index score has improved in the past two decades, its score is 19.5, considered moderate. Although some agricultural interventions shows that despite the improvements, food and nutrition insecurity is still the matter of concern. For this, more support and resources for farmers are needed (Nutritional status of Nepal, 2020) [7]. Nutrition plays an important role for the proper development of human body. Deficiency of nutritional food in our daily diet leads to different diseases and metabolic disorders. Malnutrition is the major problem in different developing and underdeveloped countries. GDP per capital was just \$ 1034 in current US dollars as of 2018, the third lowest level in Asia (World Bank, 2021) [14]. According to Ghosh *et al.* (N.D.) [4], the prevalence of under nutrition among the Nepalese children of the Kathmandu valley regarding stunting and underweight below 0.2 (t-score) stands at the figures with boys (57% stunting and underweight) and girls (43.42% stunting and 46.09% underweight). However, in terms of Nepal, the magnitude of under nutrition is similar in both boys and girls (UNICEF, N.D.) [11].

Some studies have shown that the nutritional condition of Dalit children is very poor in comparison to general children in Asian countries; however, there is lack of sufficient evidence for this in the Nepalese context. A study conducted in Kapil bastu district of Nepal reported that while measuring by anthropometric measurements, more than 60% under five-year children were found to have some kind of malnutrition. Out of them, nearly one to fourth children were in critical condition below -3SD (Kafle *et al.* 2017) [6]. Another Study conducted in Rupandehi district reported that 65% children aged between 36 to 59 months were stunted, and 46% were underweight. The children studied belonged to the 3% uneducated mothers (Kafle *et al.* 2017) [6].

Our study place is located in Rupandehi District, Butwal sub metropolitan city ward no.15. In this site, no study has been done so far to assess the nutritional status of Tharu and Dalit communities. Dalit community in this area still remains untouchable, victimized, uneducated, unemployed, below the poverty line and lacking in all the resources. And Tharu ethnic community is also backward in several sectors. Thus, there has been a need to determine the current nutritional status and associated factors. The present study is therefore designed to assess and compare the nutritional status between Tharu and Dalit community children at the age of under five years in Brutal Sub-metropolitan city ward no 15, Rupandehi, Nepal. This study can be used by the concerned authorities as a reliable resource in priority setting and designing effective nutritional program for affected children. For the upliftment of other ethnic groups such types of study should be conducted in hilly and mountain regions as well.

Methodology

The purpose of this study was to compare the nutrition status between Tharu and Dalit children under five years at Butwal 15 Rupandehi Nepal. The quantitative and comparative types of research design were applied in this research. All the Tharu and Dalit mothers of ward 15 who have under 5 years children were the population of this study. Among them, 75Tharu and75 Dalit children were taken as a sample for the study using random sampling method with lottery technique. The interview schedule was

applied as a research tool to collect the primary data and information from mothers and their children. Likewise, weighting machine and measuring tape were used as instruments. Gomez and Water Low's classification were used to analyze the data. The raw data was converted by SPSS version 20 [mean, Standard Deviation, 'Z' test]. All analyzed data are presented in relevant table, figure and chart according to need and demand of the subject matter. In the study area, the Dalit community was found backward in education in comparison to Tharu community. The practice of nutritional behaviors in colostrum's feeding and immunization were found quite good among total respondents. However the Tharu community was found better in comparison to Dalit.

Finding and Discussion

A joint statement issued in May 2009 by the World Health Organization (WHO) and UNICEF on "WHO child growth standards and the identification of severe acute malnutrition in infants and children with description created in order to support implementation of the new standards" was given in the table.

Table 1: Index of MUAC measurement tape

Red	0 cm - 11.5 cm
Yellow	11.5 cm - 12.5 cm
Green	from 12.5 cm

Education Level of Respondents Mothers: Education is the symbol of modern civilization and main harbinger to progress and prosperity. One scholar said that if you plan for six months, sow the seed of grains and if you plan for 100 years, educate the child. This statement indicates the important of education at present and in future. It plays a vital role for the reduction of different health problems of Nepal. Educated people have positive attitude about health behavior. They can decide what is right and what is wrong. In the Nepalese context, mothers play an important role in her family. Only educated mothers are more conscious about the health of their children than that of uneducated mothers. The entire respondents cover one to five- year children's mother. The details of educational status of the respondents are presented at the table.

Table 2: Distribution of Nutritional Status by Education Level

Education	Norms	Level	Tharu		Dalit		Total	
			No	%	No	%	No	%
Illiterate	>90%	Normal	2	2.66	8	10.66	10	6.66
	76-90%	Mild	4	5.34	10	13.34	14	9.33
	61-75%	Moderate	4	5.34	6	8.00	10	6.66
	<60%	Severe	-	-	-	-	-	-
Illiterate Total			10	13.34	24	32.00	34	
Literate	>90%	Normal	14	18.66	11	14.67	25	16.66
	76-90%	Mild	25	33.34	21	28.00	46	30.66
	61-75%	Moderate	23	30.66	18	24.00	41	27.33
	<60%	Severe	3	4.00	1	1.33	4	2.66
Literate Total			65	86.66	51	68.00	116	
Total			75	100	75	100	150	100

The above table shows the nutritional status in terms of education level according to Gomez's classification. Out of 75 respondents in Tharu community, 13.34 percent were illiterate. Within 10 respondents, 2.66 percent were normal; 5.34 percent, mild; and 5.34, moderate. Similarly, among 75

respondents, 86.66 percent were from literate. Within 65 respondents, 18.66 percent were normal, 33.34 were mild, 30.66 were moderate, and 4.00 percent were severe. Out of 75 respondents in Dalit community, 32.00 percent were illiterate. Within 24 respondents, 10.66 percent were normal, 13.34 percent were mild, and 8.00 percent were moderate. Similarly, among 75 respondents, 68.00 percent were literate. Within 51 respondents, 14.67 percent were normal, 28.00 percent were mild, 24.00 percent were moderate, and 1.33 percent were severe. Comparing the nutritional status of Tharu community with Dalit community, it can be concluded that Dalit children have lower nutritional status that of Tharu children, as shown in the table with low parameter.

Distribution of Nutritional Status by Breast Feeding:

Breast feeding is an important source of nourishment for children till the second year of age. An infant who gets regular breast feeding always gets sound sleep at night and day. Their stool would be normal and their physical growth would be satisfactory. The infant below four to six month of age requires breast feeding every two or three hours to get necessary nutrients. Similarly, the infants of above six month should be breastfed with other substitute food in every three to four hours. The duration of feeding practice in Tharu and Dalit community is shown in the table below.

Table 3: Distribution of Nutritional Status by Breast Feeding Duration

Duration	Norms	Level	Tharu		Dalit		Total	
			No	%	No	%	No	%
1-2 year	>90%	Normal	10	13.33	15	20.00	25	16.66
	76-90%	Mild	12	16.00	20	26.67	32	21.34
	61-75%	Moderate	15	20.00	25	33.34	40	26.67
	<60%	Severe	1	1.33	-	-	1	0.66
Total no of 1-2 year child			38	50.67	60	80.00		
Above 3 years	>90%	Normal	7	9.33	5	6.67	12	8.00
	76-90%	Mild	15	20.00	6	8.00	21	14.00
	61-75%	Moderate	13	17.33	3	4.00	16	10.67
	<60%	Severe	2	2.66	1	1.33	3	2.00
Total no of above 3 years child			37	49.33	15	20.00		
Total			75	100	75	100	150	100

The above table shows the nutritional status of breast feeding duration according to Gomez's classification. Out of 75 respondents in Tharu community, 50.67 percent were 1 to 2 years. Within 38 respondents, 13.33 percent were normal, 16.00 percent were mild, 20.00 percent were moderate and 1.33 percent were server. Similarly, 49.33 percent were from above 3 years. Within 37 respondents, 9.33 percent were normal, 20 percent were mild, 17.33 percent were moderate, and 2.66 percent were severe. Out of 75 respondents' in Dalit community, 80.00 percent were 1 to 2 years children. Within 60 respondents, 20.00 percent were normal, 26.67 percent were mild, and 33.34 percent were moderate. Similarly, 20.00 percent were from 2 to 3 years Dalit children. Within 15 respondents, 6.67 percent were normal, 8.00 percent were mild, 4.00 percent were moderate, and 1.33percent was severe. Thus, it can be concluded that Tharu women's breast feeding practice seems to have longer duration than Dalit women. Long duration of breast deeding plays an important role in the determination of nutritional status of early stage children.

Nutritional Status of Tharu and Dalit Children

According to MUAC Standard: The Mid Upper Arm Circumference (MUAC) measures the muscle around the arm. MUAC almost remains constant. The mid upper arms are measured by placing a shaker tape around the child's left arm midway between the elbow and the shoulder. The constancy measurement of the middle upper arm circumference between 1 to 5 years of age helps easily assess the malnourished children under 5 years of age. The finding of the nutritional status of children in the study area according to MUAC standard is mentioned below.

Table 4: Nutritional Status of Tharu and Dalit Children on the Basis of MUAC Standard

Condition	Measurement (cm)	Tharu		Dalit		Total	
		No	%	No	%	No	%
Normal	>13.5	29	38.67	25	33.33	54	36.00
Mild	12.5-13.5	40	53.33	43	57.33	83	55.33
Severe	<12.5	6	8	7	9.34	13	8.67
Total		75	100	75	100	150	100

The table shows that, among Tharu children, 38.67 percent were normal children, 53.33 percent had mild and 6 percent had severe nutritional condition. Similarly, in Dalit, 33.33 percent, 57.33 percent and 9.34 percent children were normal, mild and having severe nutrition condition respectively. Hence, it can be concluded that the nutritional condition of Tharu children was better than Dalit children of Butwal Sub-metropolitan city ward no 15, Rupandehi, Nepal.

Analysis of Nutritional Status of Height for Age: Height is a very important component in the assessment of nutrition status. It measures the linear growth of the body and the degree of skeletal development. The height for age of the Tharu and Dalit selected for the study is shown in the table below:

Table 5: Comparison of Nutritional Status by Height for Age

Level	Tharu		Dalit		Total	
	No	%	No	%	No	%
Normal	66	88.00	69	92.00	135	90.00
Stunted	9	12.00	6	8.00	15	10.00
Total	75	100	75	100	150	100

The table shows the nutritional status of children according to the water low's classification. Out of 75 children from Tharu community, 88 percent were normal and 12 were stunted. However, in Dalit community, 92 percent were normal and 8 percent were stunted. The result found the Dalit children' height for age was better than that of Tharu community children. Comparatively the nutritional status according to height for age was seen well in Dalit community than Tharu community of Butwal 15 Rupandehi, Nepal.

Weight for Height: Weight is also a very important component in the assessment of nutritional status. The weight of a person somehow determines the nutritional status of a person. Height is the major liner growth of the body and the degree of skeleton development. Weight and height ratio should be related to nutrition. So the researcher applied water low scale to compare the weight for height. The result of the respondent's children is shown in the table.

Table 6: Comparison of Nutritional Status by Weight for Height of Water Low Classification

Norms	Level	Tharu		Dalit		Total	
		No	%	No	%	No	%
20-25	Normal	20	26.67	14	18.67	34	22.67
<20	Malnutrition	55	73.33	61	81.33	116	77.34
>25	Over Malnutrition	-	-	-	-	-	-
Total		75	100	75	100	150	100

The above table shows that nutritional status of Tharu and Dalit communities' children according to weight for height indicator. Out of 75 Tharu children, 26.67 percent were found normal and 73.33 percent were found malnourished (wasted). Similarly, out of 75 children from Dalit community, 18.67 percent were found normal and 81.33 percent were found malnourished. Comparatively, it was found that majority of the children of the study area were found malnourished according to weight for height indicator. However, Tharu children were found slightly better nourished than Dalit children.

Comparison of MUAC: When the researchers conducted MUAC among Tharu and Dalit community children, the following result was found.

Table 7: Comparison of MUAC between Tharu and Dalit Community Children

Statistical Measure	Tharu	Dalit
No. of Respondents	75	75
Mean	13.64	13.22
Standard Deviation	2.10	2.50
Degree of Freedom	148	
Tabulated Z value at 0.05 percent level	1.96	
Calculated Z-value	0.86	
Result	No Significant Difference	

The above table shows the result of Tharu and Dalit children regarding nutrition. Were mean value of Tharu and Dalit children were 13.64 and 13.22 respectively. Likewise, standard deviation was found to be 2.10 and 2.50 respectively. While calculating Index value to know the level of significance between them, it was found that 0.86 at 0.05 percent level of significance at 148 degree of freedom but the tabulated Z value was 1.96. So, it reaches greater value than calculated 'Z' value. The result found that there was "No significant difference" between MUAC of two groups.

Comparison of Weight for Age: Weight for age is the important fact in nutritional status. Weight was the indicator of the nutrition status of children. The researchers compared the status between Tharu and Dalit children whose result were given in the table.

Table 8: Comparison of Weight for Age between Tharu and Dalit Respondents Children

Statistical Measure	Tharu	Dalit
No. of Respondents	75	75
Mean	11.53	10.83
Standard Deviation	2.51	2.03
Degree of Freedom	148	
Tabulated Z-Value at 0.05 percent level	1.96	
Calculated Z-Value	0.94	
Result	No Significant Difference	

From the above-mentioned table, the mean score of Tharu and Dalit according to weight for age indicator were 11.53 and 10.83 respectively. It was found that the Tharu children were better according to mean score of two groups' children. Similarly, the researchers tried to find out significant difference between Tharu and Dalit community children. The researcher applied Z test to see significant difference. Using two-tailed test of distribution, the tabulated Z value at 0.05 percent level was 1.96 at 148 degree of freedom whereas 0.94 was calculated Z value. Therefore the researchers found that there was "no significant difference" between the Tharu and Dalit community children in terms of standard weight value.

Although there was "no significant difference" between the Tharu and Dalit children, the nutritional status of Tharu children was seen slightly better than that of the Dalit children on the basis of weight for age in mean score.

Comparison of Height for Age: When the researcher conducted height for age calculation among Tharu and Dalit community children, the following result was found.

Table 9: Comparison Height for Age between Tharu and Dalit Community children

Statistical Measure	Tharu	Dalit
No. of Respondents	75	75
Mean	33.43	32.53
Standard Deviation	4.24	3.58
Degree of Freedom	148	
Tabulated Z-Value at 0.05 percent level	1.96	
Calculated Z-Value	1.42	
Result	No Significant Difference	

This above table shows that mean values of Tharu and Dalit children were 33.43 and 32.53 respectively. Likewise, standard deviations were found to be 4.24 and 3.58 respectively. When calculated, Z value was 1.42 at 0.05 percent level of significance in 148 degree of freedom but the tabulated 'Z' value was 1.96. It reaches Z value which was greater than calculated 'Z' value. In this situation, the nutrition status of Tharu children was found to be slightly better than the Dalit children on the basis of height for age in mean score. Statistical Result showed "no significant difference" between two groups.

Conclusion

On the basis of finding Gomez's classification while comparing the nutritional status of the Tharu community with Dalit community, it is safe to conclude that Dalit children had lower nutritional status with low parameter than Tharu children did. Dalit community was found to be more backward in education in comparison to Tharu community. Tharu women had practiced long duration breast feeding than Dalit women. Long duration of the breast feeding duration plays an important role in the determination of status of early stage children. According to MUAC standard, majority of Tharu children were normal but Dalit children were malnourished. Similarly, water-low's classification of weight for height of Tharu and Dalit communities had mild nutritional status and height for age indicators of both communities' children showed that children of both communities were malnourished. However, on the basis of all test items, the nutritional status of Tharu community children was found better than Dalit community

children, with one exception in which Dalit children were better than Tharu children on Height for Age test. While comparing the nutrition status by Z test, the researchers found "no significant difference" in height for age and weight for age between both groups.

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