A Study on Nutritional Status of Under Five Jirel Children of Eastern Nepal

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Abstract

Introduction An observational study on nutritional status of under five years of children in Jirel community in Jiri VDC, Dolakha District was conducted.

Objectives To assess the nutritional status of Jirel children of age group 12 months to 60 months

Methods Total 309 children were included in study including 167 male and 142 female. Anthropometric measurement scales namely- measuring tape, Swiss made GPM height scale and weighing machine were used. The findings were analyzed using Mid Upper Arm Circumference (MUAC) parameter, Gomez classification, Indian Academy of pediatrics classification and Watrlow's classification. Nutritional counseling and treatment of associated illness were provided in clinic setup.

Results According to MUAC measurement, among 309 children, 51.13 percent were found to be normal and 12.62 percent were severely malnourished. According to Gomez classification, 37 percent children were normal but no one was found to be severely malnourished. 64 percent were found to be having mild to moderate malnutrition. According to Waterlow's classification 71 percent were found to be normal and 29 percent were stunted while no one was found to be wasted.

Conclusion While comparing the data obtained from our study the nutritional status of Jirel children is not satisfactory being even poorer than that of Dolakha district and national averages.

Key words Jirel children, Nutrition, MUAC, Gomez, Waterlow.

Introduction:

Nutrition is defined as the science of food and its relationship to health[1]. Nutritional status of our country is poor. This is mainly due to cultural, social, economical, educational and political structure of Nepal. Fourteen percent of Nepali children are malnourished (Wt/Age) according to Annual Health Report 2002/2003[2]. Nutritional status is one of the key indicators of health and its assessment is a must in community diagnosis[3]. Assessment of nutritional status helps find out the magnitude of malnutrition in the community[4]. Chronic infection with parasitic diseases has been shown to have negative effects on child health and particularly growth. Infection related problems that can lead to significant deficits in growth and development include diarrhea, malabsorption of nutrients and anemia. In some cases, the immune system is compromised, opening the door to other infections[5,6,7]. This study is carried out in Jirel children of age 12 months to 60 months from Jiri Dolakha Nepal to assess the nutritional status and to compare with the national as well as district averages.

Materials and Methods

Study Population

Subjects in the study are from the Jirel ethnic group. Most Jirels live near the small town Jiri and surrounding wards of the same village development committee in Dolakha District in Eastern Nepal, at an average altitude of 2100 meter. Jiri area is composed of several small independent villages. Two major rivers, the Tamakosi and the likhu khola run form her boarder to the East and West respectively. The Jirels, a small tribe is said to be descended from Kirat. They have 12 clans and 11 sub clans[8,12]. Male and female children from Jirel

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ethnic group aged from 12 months to 60 months were included in the study the total number being 309 (Male- 167 and female-142) .

Methods

Anthropometric measurement of the subjects was taken on Jiri Helminth Project clinic by physicians and Axullary Nurse Midwifes (ANM) from June 2004-June 2005. Height (in mm) was taken by GPM (Swiss made) scale for more than 2 years old children and. baby scale for less then 2 years. Weight in kilogram, was taken with weighing machine and mid upper arm circumference (MUAC) of left hand was measured by using measuring tape. The height and weight of the children according to age and sex were compared with median weight for age and height for age and weight for height as per ICMR standards[9]. Nutritional status of the children were assessed through weight for age (wasting) and height for age (stunting) standards according to Waterlow MUAC. The result has been shown in following table.

classification. To determine the normality, World Health Organization (WHO) Guidelines was taken as reference for all anthropometric indicators[10].

Medical Care

The child found to be anthropometric measurement falling below normal range for their Age/ Sex was counseled for appropriate level they should have for their normal growth and development and the role of appropriate combination of food stuff for proper nutrition was also explained. Any illness including associated infectious diseases was treated accordingly in the clinic set up.

Results

Among the study population of 309 Jirel children aged 12 months to 60 months. 51.13 percent were found to be normal and 12.62 percent were having severe malnutrition in

Table No. 1. Mean Upper Arm Circumference (MUAC) of Jirel Children

MeasurementMUAC(cm)	No.of children			Percentage	Reference
	Male	Female	Total		
>13.5	96 (57.48%)	62 (43.67%)	158	51.13	Normal
12.5-13.5	52 (31.14%)	60 (42.25%)	112	36.25	Mild-Moderate malnutrition
<12.5	19 (11.38%)	20 (14.08%)	39	12.62	Severe Malnutrition
Total	167	142	309	100	

Weight for Age

Table No. 2. Gomez Classification of Nutritional Status of Jirel Children

Wt. for age	No.of children			Percentage	Reference
	Male	Female	Total		
>90%	48 (28.74%)	64 (45.07%)	112	36.25	Normal
75-90%	98 (58.68%)	60 (42.25%)	158	51.13	Mild Malnutrition
60-74%	21 (12.57%)	18 (12.68%)	39	12.62	Moderate Malnutrition
<60%	-	-	-	-	Severe Malnutrition
Total	167	142	309	100	

Table No.3. Indian Academy of Paediatric classification (I APC) of Nutritional Status of Jirel Children

Wt. for age	No. of children			Percentage	Reference
	Male	Female	Total		
>80%	117 (70.06%)	112 (78.87%)	229	74.11	Normal
70-80%	42 (25.16%)	23 (16.20%)	65	21.04	grade 1 Malnutrition
60-70%	7 (4.19%)	7 (4.93%)	14	4.53	grade 2 Malnutrition
50-60%	1 (().59%)	-	1	0.32	grade 3 Malnutrition
<50%	-	-	-	-	grade 4 Malnutrition
Total	167	142		100	

Table No. 4. Waterlow's classification of Nutritional status of Jirel Children

Ht/AgeWt/Ht	>90%	<90%				
	Male	Female	Total	Male	Female	Total
>80%	167(66.47%)	53 (37.32%)	220 (71.20%)	56 (35.53%)	33 (10.68%)	89 (28.805)
<80%	-	-	-	-	-	-

Ht/AgeWt/Ht	>90%	<90%
>80%	Normal	Stunted
<80%	Wasted	Wasted and stunted

Discussion

Measurement of MUAC is very easy method of assessing nutritional status of community[3]. In our study 51.13 percent children have normal nutritional status and only 12.62 percent have severe malnutrition. But Lele study shows around two third children have normal nutritional status and only 8.52 percent have problem of severe mal nutrition where as Jiri study of 2003 shows that 85.34 percent are normal and 2.51 percent are severely malnourished[11,13]. This indicates that more Jirel children are malnourished as compared to all ethnic group living in Jiri. But Gomez classification shows around 37 percent children with normal nutritional status and no child was found to have severe malnutrition. The Jiri study of 2003 has shown 96.41 percent normal and no children are found to have severe malnutrition[13]. This also shows that Jirel children are prone to have malnutrition than the other ethnic group residing in Jiri . In our study mild to moderate malnutrition (Wt/Age) are found around 64 percent which is very high as compared to the national average of 14.0 percent and average for Dolakha district i.e.14.2 percent[2]. This National and district level data does not correspond to the data we found in Jirel children. This means that malnutrition is more prevalent in Jirel children but one good thing to be noted is that severe malnutrition case is not seen in Jirel children. The cause of increased frequency of malnutrition may be the poor economic status of the community. IAPC shows around 75% children are Normal which is some how better than the result of Gomez classification.

Regarding these two classifications Gomez shows recent nutritional status while MUAC shows gross nutritional status. We can say that recent nutritional status of Jirel children is not good though MUAC shows satisfactory result. But as MUAC is very gross measurement it can't give the best inference so the severe malnutrition shown by MUAC is not justified by Gomez classification in our study.

Waterlow's classification gives the idea of longstanding nutritional status and that of undergoing rapid loss of weight. Our study shows 71% children to be normal and 29% are found stunted and no one are found wasted. Pokhara study shows only 4.9 percent children below 5 year were stunted and 6.5 percent were wasted ,Lele study shows 11 percent stunted and Jiri study of 2003 shows 30.22 percent stunted[11,13,14] .Our study corresponds to the Jiri study but does not correspond to the study of Pokhara and Lele. Frequency of stunted children is higher in comparison to other parts of Nepal .

In sex wise analysis of nutritional status of the Jirel children, no similarly is found in all types of classification. MUAC shows 57 percent of male and 43 percent female children are normal respectively where as Gamez and IAPC shows the opposite in percentagewise (45% Vs 28% Gomez and 78% vs 70% IAPC) Waterlow classification shows male predominance in normal nutritional status which means more female children live with perverted nutritional status than male which is the opposite to that of the Pokhara study[14].

Conclusion:

The nutritional status of Jirel children is not good in comparison to national, district and Jiri VDC averages[2,13]. This may be due to poor socio economic status and high prevelance of helmenthic infection . Jirel boys are more stunted then girls which needs elaboration with further study.

Acknowledgement

We thank all the staff of Jiri Helminth Project and Jiri Growth Study funded by US, NIH grants A137091 AL 44406 and HD 40377 for their assistance. We especially thank Miss B.M. Jirel and Mrs S. Jirel for their technical help. Our special thanks to the Jirel community for their Co-operation and anticipation.

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