Cross Section Study of Malnutrition in Children of 1-10 Years Age Group in Urban Slums of Aligarh

By Shoaib Ahmad & Paras Talat

Delhi University

Abstract - Nutrition plays important role in development of growth and development of child. In many developing countries poor nutritional status is mainly due to illiteracy, poverty, least job opportunities etc. Poor hygiene, intestinal infection, worm infestation are another important groups leading malnutrition in India. Cross sectional study was conducted in Bhojpuri slum which is densely Muslim populated slum of Aligarh City, Uttar Paradesh on 300 children. Objective of the study was to assess the nutritional status of children below ten years of age. Measurement of height and weight was done by weighing machine and measuring scale removing shoes with minimal clothing. To measure the stunting of children enrolled in this study, height of the children measured during study was compared with expected height for age. The magnitude of stunting was decided on the basis of Water low classification and was stastically analyzed using chi square test. Our study also revealed that incidence of grade III malnutrition in 7-10 year age group was highest (27.7%). Present study also concluded that prevalence of stunting among the children of Bhujpura Slum was more prevalent than wasting. It was found that out of 300 children 248 (83%) were stunted and male female proportion was 162 (65%) and 86 (34.7%) respectively. Malnutrition prevalent in these children can be attributed to their low socio economic status, poverty and early age of employment.

Keywords : malnutrition, stunning, children.

GJMR-K Classification : NLMC Code: WB 400, WS 113

CROSS SECTION STUDY OF MALNUTRITION IN CHILDREN OF 1-10 YEARS AGE GROUP IN URBAN SLUMS OF ALIGARH

Strictly as per the compliance and regulations of:

Cross Section Study of Malnutrition in Children of 1-10 Years Age Group in Urban Slums of Aligarh

Shoaib Ahmad [α] & Paras Talat [σ]

Abstract - Nutrition plays important role in development of growth and development of child. In many developing countries poor nutritional status is mainly due to illiteracy, poverty, least job opportunities etc. Poor hygiene, intestinal infection, worm infestation are another important groups leading malnutrition in India. Cross sectional study was conducted in Bhojpuri slum which is densely Muslim populated slum of Aligarh City, Uttar Paradesh on 300 children. Objective of the study was to assess the nutritional status of children below ten years of age. Measurement of height and weight was done by weighing machine and measuring scale removing shoes with minimal clothing. To measure the stunting of children enrolled in this study, height of the children measured during study was compared with expected height for age. The magnitude of stunting was decided on the basis of Water low classification and was stastically analyzed using chi square test. Our study also revealed that incidence of grade III malnutrition in 7-10 year age group was highest (27.7%). Present study also concluded that prevalence of stunting among the children of Bhujpura Slum was more prevalent than wasting. It was found that out of 300 children 248 (83%) were stunted and male female proportion was 162 (65%) and 86 (34.7%) respectively. Malnutrition prevalent in these children can be attributed to their low socio economic status, poverty and early age of employment.

Keywords : *malnutrition, stunning, children.*

I. INTRODUCTION

Nutrition is one of the most essential things of life and plays a crucial role in body growth, development and maintenance of health. Without adequate nutrition it is not possible to maintain health and protection of the body from ailments. Nutrition provides energy to the body which utilizes it to perform hundreds of biological and physical activities.

Though nutrition (food) is the basic need of life for human being, thousands of people are not able to get balanced or minimum food required for life across the world due to many reasons. Situation of food crisis is more serious in war torn countries like Sudan, Somalia, Rwanda, Uganda, Afghanistan, Iraq and Sri Lanka.

In many developing countries like India, Pakistan, Bangladesh, Nepal, poor nutritional status is mainly due to illiteracy, poverty, least job opportunities etc. Corruption at political and bureaucratic level is another leading cause of malnutrition in India and other Asian countries. Poor hygiene, intestinal infection, worm infestation are another important groups leading malnutrition in India.

In their several studies, National Nutritional Monitoring Bureau (India) found that prevalence of under nutrition is declining from 18-20.8% (1969-75) to <8.5% for the year 1976 onwards. This may partially be attributed to adaptation of lower standards of normal adopted after 1975[1].

Prevalence of under nutrition across the world varies from country to country. In developing countries, war torn countries and countries with political unrest and ethnic conflicts, its prevalence is high enough. In Sudan various studies have disclosed some alarming truth. Francesco Grandesso (2005) reported that in South Darfur (Sudan) 24% children younger than 5 years were acutely malnourished[2].

Michael J. (1988) reported that, in eastern Sudan (Tigrayan) prevalence of undernutrition among children <5 years of age was 14-50 %[3]. Not only in developing countries, under nutrition in various developed countries is also prevalent. In China and Malaysia 10% and 12% children less than 5 years of age were undernourished respectively. In Cambodia, Micronesia, Philippines, Vietnam and Papua New Guinea prevalence of under nutrition among children under 5 years of age were (45.3%), (48%), (30.6%), (30%) and (45%) respectively. In India several studies have been done in various states to assess the nutritional status of children aged 0-12 years. L. Jeyaseelan & M. Lakshman (1997) reported that 8.2% children aged 5 –7 years living in urban and rural areas of south India were severally undernourished[4].

In 2005, F.A.O. reported 46.7 % wasting and 44.9% stunting in children of < 5 years age. [17]

Saiman Khalil and Zulfia Khan (2004) reported that the prevalence of wasting of boys and girls were 32.76% and 28.12% respectively and stunting was observed as 79.73% of boys and 81.8% of girls[4]. It was reported that out of 1,10,00 persons 38% male and 30% female showed vitamin-A deficiency in Bihar[5]. As

Author α : Dept of Moalijat, A & U Tibbia College & Hospital, New Delhi. E-mail : drshoaibau@gmail.com
Author σ : Dept of Tahaffuzi Wa Samaji Tib, A & U Tibbia College & Hospital, New Delhi.

malnutrition is still prevalent in developing countries with this preview present study was done.

II. Material and Methods

Cross sectional study was conducted in Bhujpura slum which is densely Muslim populated slum of Aligarh City, Uttar Paradesh. In this study 300 children (1-10 years) were selected randomly from the slum area. General information like name of the child, father's name, age, sex, religion and monthly income of their parents were recorded. Measurement of height and weight was done by weighing machine and measuring scale removing shoes with minimal clothing.. During measurement of weight and height norms of anthropometry were followed. The grading of malnutrition was done as per the recommendation of the nutrition subcommittee of pediatrics[6].

To measure the stunting of children enrolled in this study, height of the children measured during study was compared with expected height for age. The magnitude of stunting was decided on the basis of **Water low classification[7]** .Children were also studied for different nutrition related symptoms, signs and ailments like Angular Stomatitis, Cheilitis, Diarrhea, Dermatitis, Night blindness, Pallor, edema and Respiratory tract infections. For statistical analysis, student t-test and Chi-square Test were applied.

III. Results and Discussions

Present study was carried out in Bhojpura Slum of Aligarh City in 2006 by the department of Dietetics and Hospital Food Services, Food Craft Institute, University polytechnics, Aligarh Muslim University, Aligarh. Three hundred children of 1-10 year of age were enrolled in this study. Out of 300 children 195 (65%) were male and 105 (35%) were female and 285 (95%) were Muslim and 15 (5%) were Hindu .It revealed that Bhojpura Slum is a Muslim dominated Slum area of Aligarh. Children were divided in four age groups and it was found that maximum number of children was from 7-10 year age group while least number of children was from 3-5 year age group.

The overall occurrence of malnutrition in children of 1-10 years of age was found to be **68%**. However it was found to be significantly higher (72.5 %) in the age group of 1-3 years and lower (62.1%) in the age group of 5-7 years. This age group (1-3 year) also exhibited significantly higher prevalence of grade I, and IV malnutrition .And prevalence of malnutrition was highest in age group of 7-10 in II and III grades only. Present data also revealed that prevalence of malnutrition in under five children was highest in 1-3 year age group **(table-1)**. Chakraborty et al[8] (2006) also reported higher prevalence of Protein Energy Malnutrition in the age group of 1-3 years while Saxena et al.[14] (1997) reported a higher prevalence of

malnutrition in the age group of 0-1 year. It was found that males had an overall higher prevalence (69.7%) of malnutrition than females (64.8%) in our study. Saxena et al.(1976)[9] and Srivastava (1985) [10] also reported similar results as overall higher prevalence of malnutrition in males in comparison to females. While Chakraborty et al.(2006) [8] reported contradictory results as overall higher percentage of malnutrition among females (70.6%) than in males (62.6%). However grade II and grade IV malnutrition was found to be higher in males (19.5% and 9.7 %) than in females (12.4% and 3.8% respectively) in our study. And prevalence of malnutrition was higher in females with grade I and grade III (28.5% and 20% respectively) than males (22.6% and 17.9 % respectively (see table-1).

The children were also analyzed for their height for expected age. It was found that 52 (17%) children [63.4% male and 36.5% female] were healthy while 248 (83%) children were stunted. Out of 248 stunted children, 162(65%) were male and 86 (34.7%) were female. Out of 195 male and 95 female children enrolled in this study 162 (83%) male and 86 (82%) female were stunted. It indicated that prevalence of stunting in male and female was almost equal. Age wise stunting of children was also observed and it was found that the onset of stunting was highest (87.5%) among the children of 3-5 year age group and lowest (79%) among the children of 1-3 year age group.

Magnitude of stunting was also studied and it was found that highest level of marginal stunting (19%) was prevalent in 7-10 year age group and lowest level of marginal stunting (6%) in 1-3 year age .Medium stunting was highly prevalent (33%) in children of 3-5 year age group and lowest (24%) among 7-10 year age group Similarly, severe stunting was highly (48%) prevalent in 3-5 year age group and lowest (38%) was observed in 7-10 year age group.It was also found that marginal (15%) and severe (46%) stunting were more prevalent in females in comparison to males (13% and 41.5% respectively), while medium stunting was more prevalent in males (29.7%) that females (25.7%). **(Table1)**

Prevalence of different malnutrition related diseases and symptoms &signs among the children enrolled in this study was also studied and it was found that Angular Stomatitis which is caused by vitamin B2 and/ or pyridoxine deficiency was present in 63 (21%) [35 male and 28 female] children. Cheilitis caused by vitamin B2 and/ or pyridoxine deficiency was present in 60 (20%) [34 male and 26 female] children. Diarrhea and Dermatitis caused by Nicotinic acid deficiency were present in 78 (26%) [47 male and 31 female] and 45 (15%) [29 male and 16 female] children respectively. Night blindness caused by vitamin A deficiency was present only in 25 (8.3%) [16 male and 9 female] children. Similarly Pallor mainly caused by Iron deficiency mainly was present in 95 (32%) [59 male and 36 female] children, while Edema caused by severe

protein deficiency (Kwashiorkor) was found in 26 (8.7%) [19 male and 7 female] children. And in 108 (36%) children (71 male and 37 female) respiratory tract infection was found. Respiratory tract infection is highly prevalent in overcrowded family, undernourished and immune compromised children. Saxena S.C. et al. (1997) found that 8.6% children aged 0 – 6 years in a slum area of Kanpur were undernourished[9] .Joseph B. et al. (2002) reported that wasting (31.2%) and stunting (9.4%) were more prominent among younger children of rural Karnataka[11]. Mridula, D. et al (2004) reported that 65.5% and 48.5% children of > 5 years of Urban Slum of Varansi were wasted and stunted[12].Ehtisham et al, (2005) reported 56.39 % malnutrition among children aged 1-5 in Aligarh City[13] which was comparable with our study.

IV. CONCLUSION

Our study concluded that prevalence of grades I, II and IV malnutrition (wasting) was highest in children of the age group 1-3 year. Male children had a higher incidence of grade II and grade IV, and Female children had a higher prevalence of grade I and grade III malnutrition (wasting). Our study also revealed that incidence of grade III malnutrition in 7-10 year age group was highest (27.7%). This might be due to work load and psychological stress because most of the children (male and female) of this age group were working in lock factories, on Dhaba and Restaurants. Our results were similar to other studies who stated that prevalence of malnutrition (wasting) was highest in the age group of 1-3 year[8-11].

Present study also concluded that prevalence of stunting among the children of Bhujpura Slum was more prevalent than wasting. It was found that out of 300 children 248 (83%) were stunted and male female proportion was 162 (65%) and 86 (34.7%) respectively. Prevalence of stunting in male (83%) and female (82%) was almost equal with a nominal superiority of 1% in male children. Stunting was highly prevalent (87.5%) in 3-5 year age group and it was lowest (79%) in 1-3 year age group. It was also found that highest incidence of marginal stunting (19%) was observed in 7-10 year age group while highest medium (33%) and severe (48%) stunting was observed in 3-5 year age group. Marginal stunting (15%) and severe stunting (46%) were highly prevalent in female children. And medium stunting (29.7%) was prominent in male children.

REFERENCES RÉFÉRENCES REFERENCIAS

1. Ghai O.P. Essential Pediatrics (6th Edi.). CBS Publishers and Distributors. 2005; pp. 101, 104-106.
2. Francesco G. An Assessment of the people living in three communities in South Darfur, Sudan found a higher number of deaths from violence and disease. According to a brief report in March. JAMA 2005, March 23/30.
3. Michael J. T., Nieburg P., Waldman R.J., The Association between inadequate rations, under nutrition prevalence, and mortality in refugee camp. Case studies of refugee population in Eastern Thailand, 1979-1980, and Eastern Sudan, 1984-1985. Journal of Tropical Pediatrics, 1988; 34(5); 218-224.
4. Jeyaseelan L. and Lakshman M. Risk factors for malnutrition in South Indian Children. Journal of biological Sciences. 1997; 29: 93-100.
5. Khalil S, and Khan Z. A study of physical growth and nutritional status of rural school going children of Aligarh. Indian Journal of Preventive and Social Medicine 2004; 35(3&4) : 90-98.
6. Internet Prevalence of malnutrition among children in the Western Pacific Region (nation data, unless stated). www.wpro.who.int/NR/rdonlyres.
7. Yadav R.J. Prevalence of vitamin A deficiency in Bihar- A gender perspective. Indian Journal of Social and Preventive Medicine. 2006(2) 55-57.
8. Chakraborty S., S.B. Gupta S.B., Chaturvedi B. et al. A study of protein energy malnutrition (PEM) in children (0 to 6 year) in a rural population of jhansi Distrigt (U.P.). Indian Journal of Community Medicine. Oct: 2006 (4): 291-292.
9. Saxena S.C., Poonam Saxena, Gupta S.C. et al. Study of protein calorie malnutrition amongst under six children in a Slum area of Kanpur. The Indian Journal of Community Health. 1997 (3): 45-48.
10. Srivastava, V. K., Thesis for MD (SPM), 1983, Kanpur University
11. Joseph B., Rebella A., Kulla P. et al. prevalence of malnutrition in rural Karnataka, South India; a comparison of anthropometric indicators. Journal of Health, Population and Nutrition. 2002 Sep. 20 (3) 239-244.
12. Mridula D., Mishra C.P. and Srivastava P. Nutritional Status of 'At Risk' underfives of urban slums of Varanasi. Indian Journal of Preventive and Social Medicine. 2004 (1&2): 15-20.
13. Ehtisham et al., A Study of utilization of integrated child development services in 1-5 years old children registered with Rural Health Training Center, Jawan, Aligarh, U.P. Indian Journal of Social and Preventive Medicine. 2005(3&4): 137-142.

Table 1 : Showing Prevalence of malnutrition (wasting) among the children of 1-10 years of age

Age group (Years)	Total Children	Normal	Grade-I	Grade-II	Grade-III	Grade-IV	Total
Age wise							
1-3	62	17(27.4%)	19(30.6%)	8(12.9%)	11(17.7%)	7(12.6%)	45(72.5%)
3-5	45	18(37.5%)	12(25%)	6 (12.5%)	8 (16.6%)	4 (4.8%)	30(62.5%)
5-7	82	31(37.8%)	25(30.4%)	10(12.2%)	7(8.5%)	9(10.9%)	51(62.5%)
7-10	108	30(27.8%)	18(16.6%)	27(25%)	30(27.7%)	3(2.8%)	78(72.2%)
Sexwise							
Male	195	59(32.3%)	44(22.6%)	38(19.5%)	35(17.9%)	19(9.7%)	136(69.7%)
Female	105	37(35.2%)	30(28.5%)	13(12.1%)	21(20%)	4(3.8%)	68(64.8%)
Total	300	96 (32%)	74(24.7%)	51(17%)	56(18.7%)	23(7.6%)	204(68%)

Table 2 : Showing Prevalence of malnutrition (stunting) among the children of 1-10 years of age

Age group (Years)	Total Children	Normal	Marginal	Medium	Severe	Total
Age wise						
1-3	62 (20.7%)	13 (21%)	04 (6%)	17 (27%)	28 (45%)	49 (79%)
3-5	48(16%)	06 (13%)	03 (6%)	16 (33%)	23 (48%)	42(88%)
5-7	82(27.3%)	13 (16%)	11 (13%)	26 (32%)	32 (39%)	69 (84%)
7-10	108 (36%)	20(18.5%)	21(19%)	26 (24%)	41(38%)	88 (82%)
Sexwise						
Male	195 (65%)	33 (17%)	23 (12%)	58(30%)	81 (41.5%)	162 (83%)
Female	105 (35%)	19 (18%)	16 (15%)	27 (25.7%)	43 (46%)	86 (82%)
Total	300	52 (17%)	39 (13%)	85 (28.3%)	124 (41%)	248 (83%)