ORIGINAL ARTICLE

An Intervention Study in Malnutrition among Under Five Children in a Rural Area of Jammu

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Abstract

To assess the impact of nutrition advice given to mothers of under five children. Settings: Three Anganwari centre areas in village Domana (rural field practice area of Postgraduate Department of Community Medicine, Government Medical college, Jammu). Study Design: Longitudinal study. Participants: 206 under five children (134 males and 72 females). Methodology: Three Anganwari centre areas selected by simple random sampling and a total of 206 under five children enrolled for the study by house to house visit. 43 children having varying degrees of malnutrition as per IAP criteria were followed longitudinally for a period of one year through monthly home visits. Episodes of illness and weight was recorded every month and plotted on growth chart. Results: The prevalence of malnutrition was 28.87%. Majority were having Grade I malnutrition. Post intervention results revealed that nutrition education in mothers had a positive effect on the nutritional status of their children.

Key Words

Intervention Study, Malnutrition, Under Five Children, Nutrition Education

Introduction

The nutritional status of under five children is one of the indicators of household wellbeing and one of the determinants of child survival. Poor nutrition leads to ill health and ill health causes further deterioration of nutritional status. Malnutrition is widely prevalent in India. 43%of under five children in India are malnourished (1). It is not only an important cause of childhood morbidity and mortality, but also leads to permanent impairment of physical and mental growth of those who survive(2). Malnutrition is estimated to be the cause of about half of all deaths and is associated with more than half of child deaths from diseases such as malaria (57%), diarrhea (61%), pneumonia (52%) and measles (45%) (3). The adequate requirement of different food stuffs -proteins, fats, carbohydrates, minerals and vitamins is essential for proper growth. But most of the times food shortage is not the root cause of nutritional deficiencies. Many a times, deficiency disorders occur as a result of aberrant food habits, prejudices, taboos, food fads and so on. Much can be done to rectify these through nutrition education. In the above background, an intervention study was designed with the objective to assess the impact of nutritional advice given to mothers in order to bring improvement in the nutritional status of their malnourished children.

Material & Methods

The study was conducted in village Domana (Rural field practice area of Post Graduate Department of Community Medicine, Govt. Medical College, Jammu). The target population comprised of under five children catered by three anganwadi centers located in the field practice area. These anganwadi centres were selected randomly by employing simple random sampling technique. A house to house survey was conducted and a total of 206 under five children were enrolled for the study. Nutritional status of all the under five children was noted and graded using weight for age criteria adopted by Nutrition sub-committee of the Indian Academy of pediatrics (4). One to one counseling sessions on various aspects of nutrition and promotion of health was

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Table 1.Grading of Nutritional Status (IAP Classification) of Study Population

Age (in Months)	Nutritional Status Normal	Gr. I MN	Gr.II MN	Gr. III MN	Number Malnourished
0 -12	41	2	1	-	3
13-24	31	6	5	-	11
25-36	36	8	2	1	11
37-48	29	11	2	-	13
49-60	26	3	2	-	5
Total	163	30	12	1	43

undertaken for all the mothers. An intensive training program for mothers of all undernourished children was delivered on weekly basis for four consecutive weeks. A group of 8-10 mothers formed one group for the purpose of training. All the training programs were conducted by the investigators in order to maintain uniformity. The training program was planned keeping in mind the socio-demographic characteristics of mothers. Therefore, pictorial methods, role plays and case studies were used predominantly employed to drive home the message regarding feeding practices including breast feeding, personal hygiene and care of children during illness and afterwards. Mothers were also taught in the use of ORS, growth charts and identification of danger signs of common diseases like diarrhea, ARI, measles and malaria.

All the mothers of undernourished children were requested to get their children were weighed every month for twelve months following completion of intensive training. The weight of the child was serially plotted on the growth chart. An inquiry was also made about the occurrence of any episode of illness in the child in the preceding month (since the last visit). The illness prevalent at the time of visit was also recorded and managed accordingly. At every visit the mothers were educated about right food practices. At the end of one year, nutritional status of these children was determined again.

Results

Prevalence of malnutrition was 20.87%. 14.56% of the children were having grade I malnutrition and 5.83% of the children were having grade II malnutrition. Only one child had grade III malnutrition. None of the children were having grade IV malnutrition. Malnutrition was observed to be more in the age group of 13-48 months (81.39%) and least common in the age group of 0-12 months (6.97%) (*Table 1*). Malnutrition was more prevalent among male children (72.09%). Grade I Malnutrition was more in males (17.91%) as compared to females (8.33) where as grade II Malnutrition was more in females (6.94%) as compared to males (5.22%). Grade III Malnutrition was found only in one female child. However this difference was not found to be statistically significantly. (*Table 2*) A total of 20/43 under weight children (13 boys and 7 girls) changed their nutritional grade. 13 children (11 boys and 2 girls) restored their normal weight for age. 2 boys and 4 girls shifted to grade 1 from grade II malnutrition whereas 1 girl improved to grade II from grade III malnutrition. The difference was found to be statistically highly significant. The maximum weight gain was 2.8 kg in grade I malnourished female child in the age group of 1-2 years. (*Table 3*)

Discussion

Prevalence of protein energy malnutrition in present study was 20.87%. Similar results and observed by Odunayo(5) (20.5%) and Osuhor (6) (21.1%). According to NFHS -3 (7) (J&K), 29% of children are underweight.

Various other workers (8-19) have reported very high prevalence of malnutrition ranging from 27% to 82.5%. Thakur *et al* (20) also revealed that prevalence of underweight children has remained almost stagnant in the last one decade from 51.6% (1997) to 50.4% (2007). Prevalence of malnutrition reported by Majlesi (21) (7.7%), Ray Kumar (22) (6.65%) and Matte (23) (14.6%) is less than reported in present study. In present

Table 2. Sex Wise Grading of Nutritional Status (IAP Classification) of Study Population

Sex	Nutritional Status Normal	Gr. I MN	Gr.II MN	Gr.III MN	Total Malnourished
Male	103	24	7	-	31
Female	60	6	5	1	12
Total	163	30	12	1	43

X 2 = 1.18 P > 0.05 Not significant

Table 3. Changing Pattern of Nutritional Status Grading of Under Weight Children at the End of Twelve Months Study Period

Sex	Age at enrollment(in Months)	Initial weight (Kg)	Final weight (Kg)	Net weight gain (Kg)	Initial nutritional grade	Final nutritional grade
			Male			
1	38	11.7	13.7	2.0	I	N
2	54	13.0	15.3	2.3	I	N
3	34	11.0	13.3	2.3	I	N
4	34	11.2	13.4	2.2	I	N
5	18	9.0	11.6	2.6	I	N
6	48	13.0	15.2	2.2	I	N
7	43	13.5	15.4	1.9	I	N
8	25	10.0	12.7	2.7	I	N
9	24	10.0	11.9	1.9	I	N
10	29	10.2	12.8	2.6	I	N
11	48	12.9	15.0	2.1	I	N
12	53	12.0	13.9	1.9	II	I
13	51	11.5	13.3	1.8	II	I
		t =26.48, P< 0.0001, Highly Significant				
			Female			
1	38	11.0	13.3	2.3	I	N
2	23	9.7	12.5	2.8	I	N
3	30	9.0	11.2	2.2	II	I
4	16	7.5	10.2	2.7	II	I
5	15	7.0	9.4	2.4	II	I
6	26	8.7	10.7	2.0	II	I
7	33	8.0	10.5	2.5	III	II
		t =22.85, P< 0.0001, Significant				

study, protein-energy malnutrition was observed highest in 13-48 months (81.39%) and lowest in 0-12 months 6.97% (*Table I*). Ray Kumar (22) reported highest prevalence of malnutrition in 12-23 months age group whereas Panda (12) reported highest prevalence among infants.

Protein-energy Malnutrition was more prevalent in males in present study though it was not significant (*Table 2*). Ray (22) and Panda (12) also did not find any significant difference between males and females whereas Aya Ram (16) Banerjee *et al* (24) in their study observed that more females were malnourished. Grade I malnutrition was found more in males whereas grade II was more common in females and grade III was found in only one female child. Banerjee *et al* (24) also reported that grade I malnutrition was more in males and grade II and grade III was more in females.

In the present study nutritional education of mothers at each contact during the study period modified the behaviour of nearly half of the mothers of underweight children and resulted in restoration of normal weight for age in 30.23% of children during the study and 16.28% improved their nutritional grade (*Table 3*) whereas 53.49% persisted in the same grade in which they were enrolled.

Study by Gupta (25) showed that the proper knowledge, attitudes of practices of the mother in relation to certain nutritional concepts are strongly associated with nutritional status of child.Another study by Roy (26) revealed that the intensive nutritional education was highly effective in improving the nutritional status of malnourished children .Community based nutritional program in Ethiopia also showed improvement of nutritional status of children. Stunting rates in the country declined from 57% in 2000 to 44% in 2010 (27).

In a study conducted to evaluate the role of developmental stimulation and nutritional supplementation in rehabilitation of malnourished children in the hospital and community settings, showed both the interventions to produce a significant impact on growth and development in the hospital study, while in the community study the prevalence of PEM reduced significantly after

the interventions (28). Nutrition education has been seen to have a definite impact on nutritional status of children. In a study done in Gaza it was observed that growth monitoring, staff and maternal education, supplementation with vitamins and iron were associated with marked improvements in feeding pattern and growth status of children aged 3-15 months (29). However no significant improvement in nutritional status of children with nutrition education to mothers was seen in study by Banerjee & Mandal (24).

Conclusion

Malnutrition in under five children is still a major problem in our country. Improving child nutritional status is a pre-requisite for achieving MDG 4, to reduce child mortality rate.Every effort should be made to combat this problem through multipronged approach like growth monitoring, nutritional supplementation, nutritional rehabilitation and last, but not the least, nutrition education.

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