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Existing Trends of Malnutrition in the Community

Dr. Pawan Kumar Sharma[1], Dr. Rakesh Bihari Kurele[2*], Dr. Rajesh Gaur[3]
[1]Civil Surgeon, District Hospital Datia, Madhya Pradesh, India
[2] Dept. of Surgery, Government Medical College, Datia, Madhya Pradesh, India
[3] Dean, Government Medical College, Datia, Madhya Pradesh, India

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***Corresponding author**
Rakesh Bihari Kurele

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Abstract: Children are nation's wealth. The prosperity and progress of a country depends on the health of these budding citizens. Thus it has been rightly said, "The healthy children are nation's strength." Children constitute the biggest resource in form of future manpower of any nation and funds spend on their health and welfare must be considered as an investment rather than expenditure. Children form the largest segment of India's population. Children age 0-18 years constitute 56% of the India's population, out of this about 16% belong 0 to 5 years preschool age and about 40% belong to 6 to 18 year of age (school age). Aim of the study is to evaluate existing pattern of malnutrition in different groups of community. Information was collected from interview with the parents and examination of fewer than five years children was entered in a predesigned and pretested proforma of the study. It can be concluded from present study that nutritional status of fewer than five children lays key role in morbidity and mortality among these groups of children. Higher less than five morbidity and mortality emphasize the need for strengthening of health services at least in those areas which are unreachable.
Keywords: Morbidity, Mortality, Malnutrition.

INTRODUCTION

Malnutrition in children is widely prevalent in India. It is estimated that 57 million children are under weight (moderate and severe). More than 50% of deaths in 0-4 years are associated with malnutrition. The median case fatality rate is approximately 23.5% in severe malnutrition, reaching 50% in edematous malnutrition.

There is a need for standardized protocol based management to improve in outcome of severely malnourished children. Charak explain emacitation, premature wrinkling of skin and appearance of gray hair on the basis of disharmony of Dhatus[1].

Hase [2] first reported four cases of kwashiorkor in India among garden workers in Assam. The term protein calorie malnutrition was first used by Jelliffe [3] to describe a spectrum of disorders, marasmus with mainly calorie deficiency at one End and kwashiorkor with quantitative deficiency of protein on the other. Between these is mild and moderate mixed form [4]. With introduction of Joule as unit of energy. The term protein calorie malnutrition has been replaced by protein energy malnutrition.

The listless, apathy misery and easy irritability manifested by children in kwashiorkor present in striking and constant feature [5]. Diarrhoea, anorexia and vomiting are common and loose bulky stools containing undigested food is usual [6].

Over the world 10 million children less than five years of age die each year and 22% of these deaths occur in India. This proportion is substantially higher than for other countries. The next highest being Nigeria which accounts for 8%. Since India carries the main burden of child death globally, India's performance in improving child survival will define whether the Millennium Development Goal (MDG) IV will be achieved by 2015 i.e. global child death reduced by two thirds. Diarrhoea and pneumonia account for approximately half the child death in India and malnutrition is thought contribute to 61% of Diarrheal deaths and 53% of pneumonias deaths.

AIM AND OBJECTIVES

To evaluate existing pattern of malnutrition in different groups of community

MATERIALS AND METHODS

This community-based study was carried out in Department of Pediatrics, of our institute and Community level Nutrition Rehabilitation Center (NRC). Information was collected from interview with

the parents and examination of fewer than five years children was entered in a predesigned and pretested proforma of the study. Information was obtained regarding the name, age, sex, address, occupation of parents, literacy and age of mother, father, socio-economic status, number of sibling and birth order of child and space between two siblings and information regarding place of residence (Rural, Urban) types of house (kaccha/pakka) and other epidemiological variables. P. Kumar 1991 did evaluation of socio-economic status with the help of B.G. Prasad classification. According to this the study population was classified into 5 groups as per their monthly per capita income:

$$\text{Monthly per capita income} = \frac{\text{Total income from all sources}}{\text{Total no. of dependants}}$$

Social class - I More than Rs. 1000 P/M
Social class - II Rs. 500-999 P/M
Social class - III Rs. 300-499 P/M
Social class IV Rs. 150-299 P/M
Social class V Less than Rs. 150 P/M

Educational status of parents and caregiver was divided into two groups:

- Illiterate - Person who cans neither read nor writes
- (B) Literate - person who can read and write name were included this group.

OBSERVATIONS AND RESULTS

Table-1: Age wise distribution of children admitted at NRC & KRH

Age in month	PEM III		PEM IV		Total
	NRC	KRH	NRC	KRH	
6-12	03	08	12	15	38
13-18	03	06	11	07	27
19-24	08	04	07	03	22
25-30	01	01	02	01	05
31-36	03	01	07	01	12
37-48	01	09	01	01	12
49-60	01	01	00	01	03
1. Total	20	30	40	29	119

χ^2 =0.065 P=0.33

A total of 119 children were admitted in NRC & KRH reveals that majority of them were less than 24 months 87 (73.1%). Children >24 months constitutes only 26.8% of the total; according to other studies malnutrition usually affects younger age group.

Table-2: Sex wise distribution of children In relation to grades of malnutrition

Sex	MalnutritionGrade III		MalnutritionGrade IV		Total
	NRC	KRH	NRC	KRH	
Male	14(70%)	22(73.4%)	24(60%)	23(79.3%)	83(69.8%)
Female	06(30%)	08(26.6%)	16(40%)	06(20.7%)	36(30.2%)
Total	20	30	40	29	119

χ^2=0.79 P=0.08

Table-3: Distribution of children according to cast

Case	KRH	NRC	Total
Schedule tribes cast (ST)	04(6.7%)	45(75%)	49(41.2%)
Schedule cast (SC)	15(25%)	09(15%)	24(20.2%)
Others	40(67%)	06(10%)	46(38.6%)
Total	59	60	119

P=0.00001

Table-4: Distribution of malnutrition & Social class

Socioeconomic class	Malnutrition Grade III	Malnutrition Grade IV	Total
I	00(0%)	00(0%)	00(0%)
II	05 (10%)	05 (7.3%)	10 (8.5%)
III	08 (16%)	10 (10.4%)	18 (15.1%)
IV	28 (56%)	44 (63.7%)	72 (60.5%)
V	09 (18%)	10 (14.4%)	19 (15.9%)
Total	50	69	119

P=0.86

Table-5: Birth order of Children & grades of malnutrition

Birth order	Malnutrition Grade III	Malnutrition Grade IV	Total
2. I	05 (10%)	08 (11.9%)	13 (10.9%)
II	06 (12%)	10(14.5%)	16 (13.6%)
III	13 (26%)	17 (24.6%)	30 (25.2%)
IV	17 (34%)	24 (34.6%)	41 (34.4%)
V	09 (18%)	10 (14.4%)	19 (15.9%)
Total	50	69	119

P=0.97

Table-6: Literacy status of parents

Education Status	Mother			Father		
	Malnutrition III	Malnutrition IV	Total	Malnutrition III	Malnutrition IV	Total
Illiterate	41(82%)	62(89.4%)	103(86.5%)	24(48%)	5173.9%)	75(64%)
Literate	09(28%)	0.7(10.2%)	16(13.5%)	26(52%)	18(26.1%)	44(36%)
Total	50	69	119	50	69	119

P=0.21 P=0.003

Table-7(A): WHO classification of studied children (n=119); NRC (n=60)

Classification	Moderate malnutrition		Severe malnutrition	
Symmetrical Edema	No	40 (66.6%)	Oedematous malnutrition	20 (33.4%)
Wt./Ht.	Wasting (< -2SD ≤ -3SD)	17 (28.4%)	Severe Wasting (< -3SD)	43 (71.6%)
Ht./Age	Stunting (< -2SD ≤ -3SD)	34 (56%)	Severe Stunting (< -3SD)	26 (43%)

P=0.0000076

Table-7(B): WHO classification of studied children (n=119);KRH (n=59)

Classification	Moderate malnutrition		Severe malnutrition	
Symmetrical Edema	No	42 (68%)	Edematous malnutrition	17 (28%)
Wt./Ht.	Wasting (< -2SD ≤ -3SD)	21 (35.5%)	Severe Wasting (< -3SD)	39 (64.5%)
Ht./Age	Stunting (< -2SD ≤ -3SD)	38 (66.8%)	Severe Stunting (< -3SD)	20 (33.2%)

P=0.0001

Table-8: Age wise prevalence of wasting as per WHO criteria

WHO Criteria	Age in month					Total
	6-12 months	13-24 months	25-36 months	37-48 months	49-60 months	
Wasting (70-79%)	04 (10.5%)	12(24.5%)	04(23.6%)	08 (66.6%)	02 (66.6%)	30 (25.2%)
Severe wasting (<70%)	34 (89.5%)	37(75.5%)	13(76.4%)	04(33.4%)	01(33.4%)	89 (74.8%)
Total	38	49	17	12	03	119

P=0.0012

Table-9: History of contact with TB and Measles in malnourished children

Malnutrition (n=119)	Tuberculosis		Measles	
Malnutrition III (n=50)P=0.0034	Yes	03(6%)	Yes	14(28%)
	No	47(94%)	No	36(72%)
Malnutrition IV (n=69)P=0.0022	Yes	08(11.5%)	Yes	23(33.4%)
	No	61(88.5%)	No	46(66.6%)
Total P=0.000027	Yes	11(9.2%)	Yes	37(31.1%)
	No	108(90.8%)	No	82(68.9%)

DISCUSSION

The present study of malnutrition in children admitted in Nutritional Rehabilitation Center &Kamla Raja Hospital was studies under five year of age. This prospective study was carried out between September 2006 to August 2007 on a total of 119 children. Observation of present study were depicted in term of distribution of children with respect to age, sex, grades of malnutrition and morbidity they were suffering from. Relationship of grade of malnutrition among these children was studied with respect to per capita income, Birth order and literacy of parents. Further morbidity pattern was studied with respect to systemic illnesses and degree of malnutrition.

Distribution of children according to age revealed that majority of children was clustered below the age of 24 months. Male preponderance in the present study indicates bias of Indian culture toward health and welfare of male children. Evaluation of nutrition status of 119 children revealed that as the age of child increases, the number of children suffering from grade III & IV decrease. It was noted that number of children suffered from grade IV malnutrition in age group of 37-48 & 49-60 months is less. This study also observed that majority of ST children was delivered at home (81.6%), followed by SC and other casts (58.4% & 41.3%). Only 38.8% of total children availing government facilities.

Majority of children were suffering from gastrointestinal (37.8%), respiratory disorder (30.2%), CNS (29.5%) and Measles (31.1%). Relationship of grades of malnutrition with per capita income revealed that majority of children i.e. 10%, 16% & 56% belonged to grade III malnutrition. Correlation of birth order with nutritional status revealed that as the birth order increases, the percentage of malnutrition also increasing. Number of children in grade II & IV malnutrition was 8 times more in children with illiterate mother compared with literate mother group. Maternal literacy plays a crucial role in nutritional status and development of child, and has been extensively reported.

Observation of present study and those reported by other worker support synergistic effect of malnutrition on infection and infection on nutritional status

CONCLUSIONS

Following conclusions can be drawn from present study

- Morbidity among various casts and age group of children was higher especially in the schedule tribe and age group less than 36 months.
- Degree of malnutrition and infection showed synergistic effect on each other.
- This Study fulfilling all the aims and objectives and it can be concluded from present study that nutritional status of fewer than five children lays key role in morbidity and mortality among these groups of children. Higher less than five morbidity and mortality emphasize the need for strengthening of health services at least in those areas which are unreachable.

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