ORIGINAL ARTICLE

Nutritional Assessment of Under Five Children of Slum Population of Jammu

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Abstract

Objective: To assess the nutritional status of under-five children living in slums in Jammu. **Design:** Prospective descriptive study. **Material and Methods:** Two hundred children (n=200) belonging to under 5 age group residing in the slums of Jammu were enrolled and screened for age, sex, history of breast feeding, family income and birth order of child. Also, children were assessed for clinical features of various vitamin deficiencies, anemia, skin and respiratory disorders. Indian Academy of Pediatrics (IAP) classification was used to classify children in various grades of malnutrition. **Results:** Out of 200 children studied 20%, 17%, 13% and 6% of under -5 children were in Grades I, II, III and IV categories of malnutrition, respectively. Clinically moderate anemia was present in 64% of children. About 53%, 27% and 19% of children had features suggestive of vitamin D, vitamin A, vitamin B complex deficiency. Dental caries was seen in 26% children while hepatomegaly and splenomegaly were seen in 16% and 8% cases respectively. Skin and respiratory tract disorders were observed in 6% and 22% cases. **Conclusion:** This study shows that about 19% of slum population belonged to III - IV grade malnutrition which is quite significant. These children did have features suggestive of multiple vitamin deficiencies. Proper Health education needs to be imparted to mothers to give adequate diet from early stages of life for growth which will thereby decrease mortality and morbidity in under 5 children due to malnutrition.

Key Words

Malnutrition, Nutritional Status, Slums, Under-five

Introduction

Children are the most vulnerable group of individuals when considering the mortality and morbidity patterns among the different age groups and due to this reason, they are the group which need the attention of the health care the most. Under five children constitute approximately 15% of the country's total population and are the most vulnerable group which suffers from highest morbidity.

These children represent a transition from infancy when the child is protected physically & physiologically by the mother. [1] During this period about 40% of physical growth and 80% of mental development occurs in children . [2] Malnutrition is common among all sections of the Indian population, but is of greatest consequence in

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preschool children. [3,4] Among under-five children, malnutrition is a very important concern for the health authorities in India. The term malnutrition includes undernutrition, overnutrition and selective nutritional deficiencies. Undernutrition results because of either inadequate intake, less or poor absorption or due to excessive loss of nutrients. Protein energy malnutrition (mainly kwashiorkor and marasmus) results due to lack of proteins and calories in infants and young children. [5-7]

As per data collected by National Family Health Survey - 4 (NFHS-4), India has 38.4% stunting in children under 5 years, 21% wasting and 35.8% underweight children in under -5 age group. [8] In India, the maximum children who are affected reside in the slum areas. Slums are defined by the United Nations Organizations as a building or group of buildings and area characterized by overcrowding, deterioration in sanitary conditions, or absence of facilities and amenities, which because of these conditions or any of them endanger the health, safety or morals of its inhabitants or the community. [9-10]

The slums in India are overcrowded with coexistence of weak buildings, insufficient communications and civic amenities. The existence of slums is an indication of poverty and the population dwelling in slums is termed as `urban poor'. [11,12] Slums are the result of urbanization and industrialization which are likely source for many epidemics. Due to the lack of minimum basic services such as safe drinking water, environmental sanitation, durable housing, and health care, the slum dwellers are at increased risk of diseases and various infections. [13, 14] Primary causes are poverty, ignorance and lack of awareness regarding nutritive constituents of foods, traditional habits of not introducing complementary feeds at appropriate age, social and cultural factors like giving males more food than female, intrauterine growth retardation, maternal malnutrition, high birth order of children, lack of health education, faulty feeding. Various secondary causes leading to malnutrition are chronic illness and various infections like childhood TB, frequent episodes of gastroenteritis due to contaminated food and water in slums, delayed hospitalization in case of illness due to lack of awareness. [15-17]

Keeping this in background this study was focused on finding the pattern of morbidity in under five children of slums and categorizing children in various grades of malnutrition .

Material and Methods

An observational cross-sectional one-year study conducted in two hundred under 5 children with their respective mothers belonging to slum areas of Jammu district after due approval from Institutional Ethical Committee Vide no ASCOMS/ IEC/RP&T/2020/418 was conducted. The data for the study was collected using a pre structured questionnaire. The mothers were interviewed to collect the required information. Data on age, sex, history of breast feeding, family income and birth order of child was collected. Also, children were assessed for clinical features of various vitamin deficiencies, anemia, skin and respiratory disorders. Classification recommended by Indian Academy of Pediatrics (IAP) was utilized to classify children in various nutritional categories. IAP Classification considers expected weight for age and then grade I (70-80% of expected), grade II (60-70% of expected), grade III (50-60% of expected) and grade IV (less than 50% of expected) PEM (protein energy malnutrition) are classified. [3]

Results

A total of 200 consecutive under five children and their mothers from slum areas of Jammu constituted the study population. It was observed that 58% (n=116) children were males and 42% (n=84) were females as shown in *Table no 1*.

Among the study population, 32 (16%) 66(33%) and 70(35%) children were 1st, 2nd and 3rd born respectively while 32(16%) children were more than 3rd in birth order when they were born as depicted in *table 2*

We observed that 40% of children belonged to the families with per capita monthly income less than Rs. 2000. Only 27% belonged to the families with per capita income between Rs.2000- 3000. 19% of families had their family income between Rs.3000 -5000 and only 14% of families had income more than Rs.5000 as shown in *table 3*.

It was found that 20%, 17%, 13% and 6% children were in grades I, II, III and IV categories of malnutrition, respectively and 44% of the children were in normal nutritional grade as shown in *table 4*. Out of 116 boys,

Table 1. Age and sex distribution of children

Age (years)	Males	Females	Total
0-1	37	33	70
1-2	23	19	42
2-3	20	14	34
3-4	17	07	24
4-5	19	11	30
Total	116	84	200

Table 2. Birth order of subjects

Birth order	Males	Females	Total	Percentage (%)
1st	20	12	32	16
2nd	39	27	66	33
3rd	38	32	70	35
More than 3rd	19	9	32	16

Table 3. Family income of subjects

Family Income (in Rs)	No. of children	Percentage (%)
<2000	80	40
2000-3000	54	27
3000-5000	38	19
>5000	28	14
Total	200	100

Table 4. Age and sex wise distribution of children with various grades of Malnutrition

Age	Males Grades of malnutrition					Females Grades of malnutrition					Total
	Normal	1	11	111	1V	Normal	1	11	111	1V	
0-1	22	6	5	3	1	15	11	5	2	-	70
1-2	13	4	6	3	2	10	2`	1	1	-	42
2-3	8	7	5	2	2	5	3	1	1	1	34
3-4	4	3	2	4	1	2	1	2	2	2	24
4-5	5	2	2	3	1	4	1	5	5	2	30
Total	52	22	20	15	7	36	18	14	11	5	200

Table 5. Clinical features in children

Clinical features	Number	Percentage (%)
Anemia (moderate to severe)	128	64
Vitamin D deficiency	106	53
Vitamin A deficiency	54	27
Vitamin B complex deficiency	38	19
Hepatomegaly	32	16
Dental Caries	52	26
Splenomegaly	16	8
Skin disorders	12	6
RTI	44	22

Table 6. History of breast feeding in children

Breast feeding History	No. of children	Percentage (%)
Exclusively breast fed	60	30
Breast fed for <6 months	110	55
Not Breast fed at all	30	15
Total	200	100

55.17% (n= 64) were malnourished and out of 84 girls, 57.14% (n= 48) were malnourished showing that females are slightly more malnourished. Clinically moderate anemia was observed in 64% children. Vitamin D

deficiency features were present in 53% children, while vitamin A deficiency features were seen in 27% children. Dental caries was observed in 26% children, while Vitamin B complex deficiency features in form of glossitis, angular cheilosis, stomatitis etc. were seen in 19% children. Hepatomegaly was seen in 16% while splenomegaly was seen in 8% cases. Respiratory tract infections were seen in 22% cases and skin changes were seen in 6% cases as shown in *Table no 5*.

Only 30% were exclusively breastfed, 55% were breastfed for less than 6 months while rest 15% were not at all given breastfeeds as shown in *table 6*.

Discussion

Under five morbidity is a major cause of concern for our health care system and yet the data over the pattern of morbidity specially from the setting where health facilities are lacking is very sparse. We studied the nutritional status of 200 under five children living in Slums in Jammu

In our study we found that 55.17% males and 57.14% females were malnourished which is little more in females but not significant. A similar study done by Ray [18] also did not find any significant difference between males and females whereas Banerjee *et al* [19] in their study observed that more females were malnourished. Another study although done in rural areas of Jammu by Gupta S *et.al.* [20], showed that malnutrition was more prevalent in males in their study. In the present study, Grade I and III malnutrition were seen more in females and Grade II and IV malnutrition is seen more in males while the study by Gupta S *et.al.* [20] shows that 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 (19) also reported that grade I malnutrition was more in males and grade II and grade III was more in females.

We also found that 40% of children belonged to the families with per capita monthly income less than Rs. 2000. A similar study by Siddiqui F *et.al.* [21], shows a strong interconnection between malnutrition and poverty. In present study we saw that only 30% were exclusively breastfed and in a previous study by Huey SL *et.al* [22], shows lack of breastfeeding leads to malnutrition. We found that 51% of these children were of birth order 3

and more and a study done by Mondal K *et.al.* [23], shows that more the birth order, more the malnutrition.

In this study we found out that most of the children had vitamin deficiencies, anemia (64%) and skin (6%) and respiratory tract infections (22%) while in a study done by Shinde M *et.al.* [12] showed that illness among under-five children were diarrhoeal disease 30.10% and respiratory disease 46.4% and both combined accounted for 76.5% of the total episodes of illness. Another study by Mahejabin F *et.al.* [14], showed that slum dwellers were mostly affected by diseases of the respiratory system (14.9%) and were mostly affected by diseases of the digestive system (11.9%). A study done in Nagpur by Narkhede V *et.al* [6] showed highest prevalence of anemia (78.71%) among malnourished children.

In the present study we found that increased birth order, low birth weight baby, less family income, lack of breast feeding were some of the factors seen in the malnourished children. A review by Goudet *et al.* [24] emphasises that understanding malnutrition in children in slums is very much needed in order to inform interventions, and provide guidance to practitioners and decision-makers. Another review by Sahu SK *et al.* [5] suggests that interventions like promoting practice of exclusive breast feeding, timely introduction of complementary feeding, health education, maintaining personal hygiene, knowledge about various nutritive foods, proper implementation of IAP immunization, proper feeding, periodic deworming, timely hospitalization in case of observation of symptoms, standard case management and proper management of diarrhoea and Acute respiratory illness as well as continuation of feeding during illness may reduce malnutrition of under-five children.

Conclusion

To conclude our study revealed that about 19% of children of migrant labor population belong to III - IV grade malnutrition which is quite significant. Low birth weight, less family income, increased birth order and lack of exclusive breast feeding were seen frequently in these children. Malnutrition in under five children is still a major problem in our country. Health education should be imparted to mothers to improve quality of food provided to these children to improve the nutritional status of their children.

Financial Support and Sponsorship
Nil.
Conflicts of Interest
There are no conflicts of interest.

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