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Research Article

Under-nutrition more in male children: a new study

Henna Ahmadi Qadri, Shashank Kumar Srivastav*

Shadan Institute of Medical Sciences, Teaching Hospital and Research Centre, Himayathsagar Road, Hyderabad, Telangana, India

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***Correspondence:**
Shashank Kumar Srivastav,
E-mail: dr.shashankksrivastava@gmail.com

ABSTRACT

Background: A child's entire life is determined in large measures by food intake during the growing age. Since childhood is the most vulnerable phase in the life of human being, nutritional inadequacies will result in hampering of growth as well as development of body. Future of the Country is determined by the growing generation.
Methods: Total number of children aged 1-10 years is 1232 that attended Pediatrics out – patient department in the year 2013-14. The entire children aged 1-10 years were included in the study. Parents or/and guardians of the children were informed about the study. Weight of the children was measured using a portable weighing machine. Grading of nutritional status among 1-10 years old children was assessed by computing weight-for-age according to Indian Academy of Pediatrics classification.
Results: Prevalence of under-nutrition (<80 percentage of standard weight-for-age) was 62.26%. The normal were 37.74%. The prevalence of Grade I malnourished was 29.30%, Grade II 19.49%, Grade III 9.25% and that of Grade IV was 4.22%. Prevalence of under-nutrition was higher among male (32.63%) than of female (29.62%) children.
Conclusions: Nutritional status of children has been recognized as an important of National development which in turn depends on social development indices. Though the country is developing fast with wide availability of resources and food we still notice under-nourishment. Health education to the parents, especially to the mothers on dietary practices like feeding their children with healthy food in terms of quality and quantity should be given. Nutritional rehabilitation centre should be established which will guide the parents in regard to the nutrition of child to be maintain at particular growing age group. The finding of prevalence of under-nutrition in males is unique in Indian context where females are prone to get neglected and sex wise prevalence of under nutrition was usually higher in females as compared to males.

Keywords: Nutritional status, Under-nutrition, Indian academy of pediatrics

INTRODUCTION

Malnutrition and Infection are the two most important factors that affect the growth of children. In most cases of childhood infections, the cause can be traced to insufficient food intake or absorption, which renders the human system vulnerable to infections. The magnitude of the problem of malnutrition among children under five years of age is high throughout in India.[1] More than 26,000 children under the age of 5 die around the world each day mostly due to preventable causes. Nearly all of them live in developing countries or, more precisely in 60 developing countries.[2] A child's entire life is determined in large measures by the food given to him during his first five years. Childhood is a period of rapid growth and development, and nutrition is one of the influencing factors in this period.[3] A number of anthropometric indices have been used successfully for many years to estimate the prevalence of under-nutrition among pre-school children. These include height- for-age, weight-

for-age and weight-for-height. Height-for-age is an index of cumulative effect of under-nutrition during the life of the child. Weight-for-age is the combined effects of both, the recent and the long-term levels of nutrition, whereas weight-for-height reflects the recent nutritional experiences of the child. These indices are reasonably sensitive indicators of the immediate and underlying general causes of nutrition.[4] The risk of mortality is inversely related to children's height-for-age and weight-for-height.[5,6] Freedom from hunger and malnutrition is a basic human right and their alleviation is a fundamental prerequisite for human and national development.[7]

The objective of the study was to assess the nutritional status of children aged 1 to 10 years in children attending out – patient clinics at Peerancheru area of Hyderabad, Telangana State and to identify the nutritional status of children with regard to the differences in gender and to that of family size.

The present study was based upon cross-sectional study carried out in children of 1-10 year age group attending out-patient clinics in Peerancheru area of Hyderabad, Telangana State in the year 2013-14. Ethical clearance was obtained. The objectives of the study was to assess the nutritional status of children aged 1 to 10 years in children attending out-patient clinics at Peerancheru area of Hyderabad, Telangana State and to identify the nutritional status of children with regard to the differences in gender and to that of family size.

Total number of children aged 1-10 years assessed was 1,232 and parents were informed. Consent was obtained from parents and/or guardians of the children in regard to the study. Anthropometric data regarding weight of the children was recorded. Weight of the children was measured using portable weighing machine and reading was taken to the nearest 0.1 kg. The child was made to stand still on the platform of the weighing machine, with the body weight evenly distributed between both the feet. Light indoor clothing was allowed to be worn and footwear was removed when the weight was measured.

METHODS

Total number of children aged 1 – 10 years is 1232 that attended out – patient department in the year 2013-14. The entire children aged 1-10 years were included in the study. Parents or/and guardians of the children were informed about the study. Weight of the children was measured using a portable weighing machine. Grading of nutritional status among 1-10 years old children was assessed by computing weight-for-age according to Indian Academy of Pediatrics classification.

Settings

Out – patient clinics at Peerancheru area of Hyderabad, Telangana State. Grade I to Grade IV nutritional grade is taken as undernourishment as per IAP.

Evaluation of nutritional status

Grading of nutritional status of children was done using the Indian Academy of Pediatrics (IAP) classification. Grade I to Grade IV nutritional grade is taken as undernourishment.[9] IAP calculation for grading of under-nutrition is by formula: Weight/Expected Weight multiplied by 100.

Expected weight (1-6 years) = Age (in years) X 2 + 8.

Expected weight (7-12 years) = Age (in years) X 7-5 / 2.

RESULTS

The prevalence of under-nutrition (<80 percentage of standard weight-for-age) was 62.26%. The normal were 37.74%. The prevalence of Grade I malnourished was 29.30%, Grade II 19.49%, Grade III 9.25% and that of Grade IV was 4.22% (Table 2). Prevalence of under-nutrition was higher among male (32.63%) than of female (29.62%) children (Table 3). Percentage male and percentage female was statistically significant. The prevalence of malnutrition was more in families with respect to number of siblings in that family.

Table 1: Expected weight in kgs for the respective age in years.

Age(Years)	Expected Weight(Kgs)
1	10
2	12
3	14
4	16
5	18
6	20
7	22
8	23
9	26.5
10	30

Table 2: Nutritional grade percentage of standard weight-for-age.

Normal	>80%
Grade I	71-80%
Grade II	61-70%
Grade III	51-60%
Grade IV	<50%

DISCUSSION

In the study, the prevalence of under-nutrition (<80% of standard weight-for-age) was 62.26%. The prevalence of Grade I malnourished was 29.30%, Grade II 19.49%, Grade III 9.25% and that of Grade IV was 4.22%. In a study conducted in a rural area the prevalence of protein energy malnutrition among children aged 1-5 y was found to be 56.4%. In a dietary survey conducted by

Vinod et al., it was found that 52.23% children were suffering from various grades of malnutrition among which 32.18 % children were in grade I, 16.09 % in grade II, 3.46 % in grade III and 0.5 % in grade IV malnutrition.[8]

Table 3: IAP classification of nutritional status.

% of Standard weight for age	Nutritional grade	Nutritional status	Freq. (n)	%
>80%	Normal	Normal	465	37.74%
71 – 80%	Grade I	Mild under-nutrition	361	29.30%
61 – 70%	Grade II	Moderate under-nutrition	240	19.49%
51 – 60%	Grade III	Severe under-nutrition	114	9.25%
< 50%	Grade IV	Very severe under-nutrition	52	4.22%
Total n (%)			1,232	100%

Table 4: Nutritional grading in respect to differences in gender.

Nutritional grade	Male gender	Female gender
Normal	18.35%	19.39%
Grade I	15.74%	13.56%
Grade II	10.14%	9.34%
Grade III	4.78%	4.47%
Grade IV	1.95%	2.27%
Percentage under-nourished	32.63%	29.63%

Prevalence of under-nutrition was higher among male children (32.63%) than of female (29.62%) children and the difference was found to be highly significant. This finding is unique in Indian context where females are prone to get neglected and sex wise prevalence of under nutrition was usually higher in females as compared to males.[8,11]

Singh JP et al., in his study similarly found that prevalence of malnutrition was higher among male children (54.82%) than female children (45.18%).[12]

As the size of family increased the nutritional status of the children was affected. Mudkhedkar et al., found that relationship between family size and nutritional status was inversely proportionate when size of family was large (>8).[14] In a study done in rural Hissar, it was found that majority of the cases of protein energy malnutrition had family size of 5-8 members.[15]

The second order children were more undernourished than the first and third order but the difference was not statistically significant. Verma et al., found a significant association ($p < 0.001$) was observed between birth order and the nutritional status of the child. Highest prevalence of malnutrition (76.2%) was observed in children with birth order 4 and above.[13]

Time of initiation of breast feeding and nutritional status was not statistically associated. However, there was a statistically significant association between duration of exclusive breast feeding and the nutritional status. Kavita et al., reported that Children deprived of colostrum and exclusive breastfeeding also showed significant difference in prevalence of PEM.[11]

Global nutrition targets 2025

Recognizing that accelerated global action is needed to address the pervasive and corrosive problem of the double burden of malnutrition, in 2012 the World Health Assembly Resolution 65.6 endorsed a Comprehensive implementation plan on maternal, infant and young child nutrition, which specified a set of six global nutrition targets that by 2025 aim to:[16,17]

1. Achieve a 40% reduction in the number of children under-5 who is stunted.
2. Achieve a 50% reduction of anaemia in women of reproductive age.
3. Achieve a 30% reduction in low birth weight.
4. Ensure that there is no increase in childhood overweight.
5. Increase the rate of exclusive breastfeeding in the first 6 months up to at least 50%.
6. Reduce and maintain childhood wasting to less than 5%.

Scope and purpose of the briefs

Countries are facing complex overlays of connected malnutrition burdens that need concentrated action at the policy, health-system and community levels. As part of its efforts, the World Health Organization (WHO) has developed a series of six policy briefs (mentioned above), linked to each of the global targets, to guide national and local policy-makers on what actions should be taken at scale, in order to achieve the targets. Recognizing that the six targets are interlinked, many evidence-based, effective interventions can help make progress toward multiple targets. The purpose of these briefs is to consolidate the evidence around which interventions and areas of investment need to be scaled up, and to guide decision-makers on what actions need to be taken in order to achieve real progress toward improving maternal, infant and young child nutrition.

CONCLUSION

Nutritional status of children has been recognized as an important of National development which in turn depends on social development indices. Though the country is developing fast with the wide availability of resources and food we still notice under-nourishment. Nutritional inadequacies will result in the hampering of the development of the body and result in various infections which will further alter the growth of the child. Future of the country is determined by the growing generation of the country. It is the health status of the children of any country that represents the health status of the people of that country. The finding of prevalence of under-nutrition in males is unique in Indian context where females are prone to get neglected and sex wise prevalence of under nutrition was usually higher in females as compared to males. Health education to the parents, especially to the mothers on dietary practices like feeding their children with healthy food in terms of quality and quantity should be given. Nutritional rehabilitation centre should be established which will guide the parents in regard to the nutrition of child to be maintain at particular growing age group.

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