

Nutritional Status of Under-Five Age Group Children in Rural Field Practice Area of Osmania Medical College, Patancheru, Hyderabad, Telangana

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Abstract:

Background: Survival, growth and development in the earliest years of life are fundamental for the future of every individual and for the future of the societies into which those individuals are born. However, these crucial formative years remain a time of peril and loss -disease and malnutrition not only claim the lives of millions of children throughout the world, but they also damage their growth and development, diminish their quality of life in the present and compromise their future.

Aim: To study the nutritional status of under-five age group children.

Objectives: To assess the prevalence of malnutrition and the factors associated with it in under-five age group.

Materials and Methods: A community based cross-sectional study was conducted in the rural field practice area between August and November 2017 among children under five years age group. A multi-stage random sampling technique was done to select the required sample size of 350. The children were examined and anthropometric measurements were taken. Data were entered and analysed using Microsoft Excel 2010 version and Epi-Info version 7. Chi-square test was used to test the significance of association.

Results: The present study shows prevalence of underweight (37%), wasting (24%) and stunting (35%). The sociodemographic, environmental and other health related factors had significant association with malnutrition.

Conclusion: The significant risk factors associated with malnutrition were identified. Health education regarding preventive practices to be adopted by the mothers to improve the nutritional status of children.

Keywords: Nutritional Status, Under-Five Children, Underweight, Stunting, Wasting.

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Introduction

Malnutrition refers to three different types of conditions: 1. Undernutrition includes wasting (low weight-for-height), stunting (low height-for-age) and underweight (low weight-for-age). 2. Micronutrient-related malnutrition includes a lack of essential vitamins and minerals or excess. 3. Third class includes overweight, obesity and diet-related non-communicable diseases viz., heart disease, stroke, diabetes and some cancers according to WHO. [1]

Food systems in developing countries have changed dramatically since the "Green Revolution" period, but malnutrition still represents a challenge. It is a burning social problem as one in every three

malnourished children in the world lives in India according to UNICEF. Prevention of under nutrition in younger children is challenging because growth deficits are generally not recovered, despite adequate feeding in later stages of life. [2] According to WHO, Seven out of ten deaths in this group are due to respiratory infections, diarrhea and malnutrition. The reasons for malnutrition are poverty & rich poor gap; inadequate food production and food gaps; infections; worm infestations; improper infant and child feeding; delayed supplementary feeding; poor environmental conditions; socio-cultural factors like food taboos, food fads. Malnutrition is both the

cause and effect of poverty, infections and follows a vicious cycle. [3]

It is obvious that the issue of poor nutrition leads to high infant mortality rate which recognizes India as having worst malnutrition problem in the world. Millennium Development Goals 1 and 4 advocates for the eradication of extreme poverty & hunger and to reduce child mortality respectively. The under-five children are notoriously fraught with the risk of malnutrition and the prevalence of malnutrition varies between 50-80%. [4]

Sustainable development goal 2 is to end hunger, achieve food security and improved nutrition and promote sustainable agriculture. The SDG report 2023 shows 149 million under-five children are stunted, 45 million are wasted, 37 million are overweight. [5]

POSHAN Abhiyaan was launched by Government of India in 2018. The target of the mission is to bring down stunting among children in the age group 0-6 years from 38.4% to 25% by 2022. In Global Hunger Index 2023, India ranks 111th out of 125 countries which indicates the problem is severe.

In the light of the above considerations, the present study is an endeavour to find out the magnitude of problem and factors associated with the malnutrition among under-five children in rural field practice area.

Aim: To study the nutritional status of under-five age group children in rural field practice area of Osmania Medical College, Patancheru, Hyderabad, Telangana.

Objectives

- 1) To assess the prevalence of malnutrition in under-five age group children.
- 2) To find out association between socio-demographic, health related factors and their influence on the nutritional status of under-five children.

Materials and Methods

A community based cross-sectional study was conducted in Patancheru, the rural field practice area of Osmania Medical College. It covers the population of 2,00,000. The study was done between August 2017 and November 2017 in subcentre Chitkul. Children under five years age group residing in the study area whose mothers/informants willing to participate in the study and had given consent were included in the study. Ethical approval was obtained from Institutional Ethical Committee of Osmania Medical College, Hyderabad.

The sample size was determined using the formula $n = Z^2 p (1-p) \div E^2$ with a power of 80%, confidence limit of 95% and allowable error of 5%. The

calculation was based on the prevalence of underweight in under-five age group was 31.8%. [6] The calculated sample size was 347 which was rounded off to 350.

A multi-stage random sampling technique was done to select the required sample size. out of three subcentres, at the first stage- subcentre Chitkul was selected by lottery method. In the second stage, out of five villages, two villages Chitkul and Pocharam were selected by considering last digit of the random numbers table. Using the Under-five children register at rural field practice area, the eligible children listed were 712 in the study area. Through Systemic random sampling, every second child under five years age group was included in the study till the desired sample of 350 was achieved.

The study was conducted by taking history from the mother/informant. During data collection, written consent was taken from the participants. Confidentiality was ensured in all the stages of data collection. The children were examined and anthropometric measurements were taken. WHO Classification was used for the assessment of malnutrition.

Data were entered and analysed using Microsoft Excel 2010 version and Epi-Info version 7. The result obtained was presented in the form of tables and figure. The categorical variables were presented by percentage. Chi-square test was used to test the significance of association between the independent variables like age, gender, type of family, religion, birthweight, birth order, no. of Antenatal care (ANC) visits, no. of iron and folic acid (IFA) tablets consumed in pregnancy, Utilization of Integrated Child Development Services (ICDS) scheme, initiation of breast feeding after delivery, colostrum feeding, exclusive breast feeding, complementary feeding, mid upper arm circumference, immunization status, education of parents, socio-economic status, age of mother at marriage, interval between last two births and the dependent variable malnutrition. Statistical significance was done at 95% confidence interval i.e., $p < 0.05$ was statistically significant.

Results

A total of 350 children of under five years age group participated in the study. Majority of them belong to the age group of 0-1 years (36%). Male children were (52%) and female children were (48%). A large proportion of subjects belong to Hindu religion (68%). Out of (58%) literate women, most subjects of the study population had completed middle school education (24%). According to modified BG Prasad classification it was observed in this study that most of the participants were showing socio-economic status (SES) as lower middle class (32.9%), upper lower class (30%), followed by upper middle class (24%), and the least participants belonged to the lower class (8%) and upper class (5.1%). Nuclear family contributes to (62%)

followed by three generation (24%) and joint family (14%). (Table 1).

Table 1: Distribution of the study population according to sociodemographic profile (n=350)

Variable	Number (N)	Percentage (%)
Age of children(in years)		
0-1	126	36
1-2	105	30
2-3	39	11.1
3-4	56	16
4-5	24	6.9
Gender		
Male	182	52
Female	168	48
Religion		
Hindu	238	68
Muslim	77	22
Christian	28	8
Others	7	2
Education of mother		
Illiterate	147	42
Primary school	49	14
Middle school	84	24
High school	42	12
Graduate & above	28	8
Type of family		
Nuclear	217	62
Joint	49	14
Three generation	84	24
Socio-Economic Status		
Upper	18	5.1
Upper Middle	84	24
Lower Middle	115	32.9
Upper Lower	105	30
Lower	28	8

The present study shows prevalence of underweight (37%), wasting (24%) and stunting (35%). (Fig. 1)

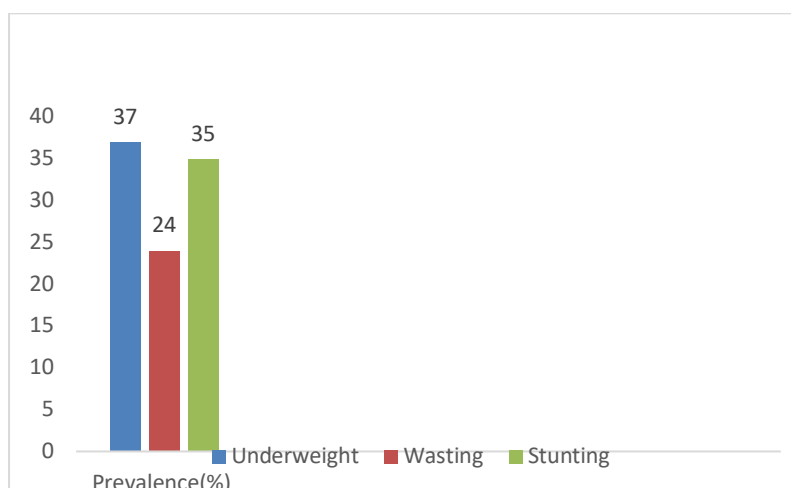


Figure 1: Prevalence of Underweight, Wasting, Stunting

The prevalence of underweight is more among the children with birth weight less than 2.5 kg, with no colostrum feeding, absence of exclusive breast feeding, complementary feeding not initiated at 7 months, partial immunization, mid upper arm

circumference less than 13.5 cm and it was statistically significant ($p < 0.05$).

It was observed in this study that the prevalence of underweight is more among the children who were born to mothers with inadequate ANC visits,

incomplete IFA tablets intake, improper utilization of ICDS, age of woman at marriage less than 21 years, interval between 2 child births less than 2 years and it was statistically significant ($p < 0.05$).

It is noticed that in the present study birth order is not associated with prevalence of underweight and statistically not significant ($p > 0.05$). (Table 2)

Table 2 : Association between underweight and the factors influencing underweight in under-five age group children (n=350).

Factors	Category	Underweight		χ^2 , P value	Inference
		Present	Absent		
Age (in years)	0-1	51	75	1.859 0.76	Statistically not significant
	1-2	36	69		
	2-3	12	27		
	3-4	21	35		
	4-5	10	14		
Gender	Male	56	126	6.597 0.01	Statistically significant
	Female	74	94		
Socio-economic status	Upper	5	13	43.81 <0.0000001	Statistically significant
	Upper middle	21	63		
	Lower middle	28	87		
	Upper lower	54	51		
	Lower	22	6		
Literacy status of mother	Illiterate	76	71	23.01 0.0000016	Statistically significant
	Literate	54	149		
Birth weight	< 2.5kg	84	60	47.06 <0.0000001	Statistically significant
	\geq 2.5kg	46	160		
Birth order	0-2	38	78	1.428 0.2326	Statistically not significant
	More than 2	92	142		
Minimum 4 ANC visits	Yes	94	162	0.073 <0.0000001	Statistically significant
	No	36	58		
No. of IFA tablets consumed in pregnancy	< 100	88	70	42.47 <0.0000001	Statistically significant
	\geq 100	42	150		
ICDS utilisation	Yes	52	144	21.49 0.0000003	Statistically significant
	No	78	76		
Colostrum feeding	Yes	28	204	185.3 <0.0000001	Statistically significant
	No	102	16		
Exclusive breast feeding	Present	53	171	48.4 <0.0000001	Statistically significant
	Absent	77	49		
Complementary feeding	At 7 months	64	143	8.409 0.0037	Statistically significant
	After 7 months	66	77		
Mid upper arm circumference	\geq 13.5cm	25	187	148 <0.0000001	Statistically significant
	< 13.5cm	105	33		
Immunization	Complete	68	201	70.08 <0.0000001	Statistically significant
	Partial	62	19		
Age of mother at marriage	\geq 21 years	48	181	74.3 <0.0000001	Statistically significant
	< 21 years	82	39		
Interval between two child births	\geq 2 years	53	178	58.67 <0.0000001	Statistically significant
	< 2 years	77	42		

Discussion

The present study shows prevalence of underweight (37%), Similar findings were observed in a study conducted by Das, et al where (34.14%) were underweight. [7] The prevalence of stunting and wasting in the study was (35%) and (24%) respectively. Similar results were found in Indian population. [8] The prevalence of underweight (32.1%), stunting (35.5%) and wasting (19.3%)

were observed in NFHS-5. [6] In this study, highest prevalence of malnutrition was observed in 4-5 years age group (41.6%) followed by 0-1 year (40.4%), 3-4 years (37.5%), 1-2 years (34.2%) and 2-3 years (30.7%) and the association was not statistically significant. Sarkar's study conducted in West Bengal shows similar association. [9] In the present study, female were having higher prevalence of underweight. The similar findings were observed in a study conducted by Gondikar A et al. [10] In

this study, highest prevalence of malnutrition was observed in 4-5 years age group (41.6%) followed by 0-1 year (40.4%), 3-4 years (37.5%), 1-2 years (34.2%) and 2-3 years (30.7%) and the association was not statistically significant. Sarkar's study conducted in West Bengal shows similar association. In the present study, female were having higher prevalence of underweight. The similar findings were observed in a study conducted by Gondikar A et al. [10] In the current study, underweight was highly prevalent in lower socioeconomic group (78.5%). Similar association was reported in study conducted by Islam S, et al. [11]

Out of 144 children with birth weight less than 2.5 kg, 84 (58.3%) children were diagnosed with undernutrition and the association was found to be statistically significant. Similar findings were noticed in a study conducted by Purohit L. et al. [12] In the present study the birth order above 2 were 234 children, 92 (39.3%) were underweight and association was not significant statistically. Similar results were found in study conducted by Deepthi CS et al [13] and Gondikar A et al. [10] In the current study, 94 mothers who did not meet the criteria of minimum of 4 antenatal visits of which 36 (38.2%) children were found to be undernourished and the association was statistically significant. Similar significant results were noticed in a study conducted by Gupta R et al. [14]

In the present study, 158 mothers did not consume adequate iron and folic acid supplementation during antenatal period. Of which 88 (55.6%) mother's children were found to be underweight and it was observed that as the consumption of IFA supplementation during pregnancy increases, there is decrease in the prevalence of undernutrition. Similar results were noticed in a study conducted by Chawla. et al. [15] In the study, 154 mothers did not utilise ICDS services during pregnancy and/or lactation. Out of 154, 78 (50.6%) mother's children were underweight and the association was significant. This was in contrast to a study conducted by Rajpal et al where the prevalence of undernutrition was high in children whose mothers utilised ICDS services. [16] Out of 118 children who were not fed colostrum during birth, 102 (86.4%) were underweight. This was in concurrent with the study of Sanjeev Davey et al where the children who were not fed colostrum were underweight and the association was statistically significant. [17] The results were in contrast with the study conducted by Gupta R et al. [14]

Out of 126 children who were not exclusively breastfed, 77 (61.1%) children were underweight which was statistically significant. These results were in concurrent with Shukla Y et al. [18] Out of 143 children who were not initiated complementary feeding between 6 and 7 months, 66 (46.1%) children were underweight. Mid upper arm

circumference of less than 13.5 cm was found in 138 children of which 105 (76%) children were underweight. Out of 81 children who were partially immunized 62 (76.5%) children were underweight. These results are in correlation with the study of Das SR et al. [7] This is in contrast to study by Gondikar A et al. [10] In the current study 121 mothers were less than 21 years at the age of marriage, 82 (67.7%) mothers's children were underweight. The results were in agreement with the results of Mittal A, et al. [19] 119 mothers have birth spacing less than two years, 77 (64.7%) mother's children were found to be underweight. Similar association was reported in J. Vijay and K.K. Patel study. [20]

Conclusion

Malnutrition is a complex global issue with serious implications for health, development, and well-being. Ensuring access to sufficient, safe, and nutritious food is fundamental. This involves not only increasing food availability but also improving food distribution and affordability. Providing comprehensive healthcare services that include nutritional education, growth monitoring, and treatment for malnutrition-related conditions is crucial. Educating communities about balanced diets, the importance of nutrition, and proper feeding practices can help prevent malnutrition. Strengthening economic and social systems can reduce vulnerability to malnutrition. This includes support for low-income families, social safety nets, and improving living conditions. Addressing malnutrition not only improves individual health outcomes but also has broader benefits for communities and economies, fostering healthier and more productive societies.

Recommendations

1. Encouraging exclusive breast feeding and supplementary feeding.
2. Health education to mothers on the nutritional requirements of children and regular growth monitoring.
3. Strengthen nutritional programmes and promote preventive aspects of malnutrition like immunization.

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