Original Research Article

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A socio-demographic study on prevalence of undernutrition among preschool children, under Rural Health Center, Santhiram Medical College, Nandyal, Andhra Pradesh

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ABSTRACT

Background: Life of every human starts with infancy, childhood into adult life. During this process, childhood happen to be the most vulnerable phase associated with nutritional deficiency affecting the growth leading to morbidity and mortality. Malnutrition in pre-school children is considered most important indicator of the nutritional and health status of the country which is given top priority in National Family Health Survey- 4 (NFHS-4). Pre-school children in India have higher percentage of undernourished children and are 100th place among 119 malnourished countries in the world. The aims of the study were to assess the nutritional status of children aged 3-6 yrs in rural area attending Anganwadi centers under Rural Health Center, SRMC, Nandyal and to identify the factors associated with the nutritional status of pre-school children.

Methods: Cross sectional study, area under Rural Health Center, Santhiram Medical College, A.P. Sample size for study is 161, calculated using Epi info-7 calculator. Study was carried during June 2017- July 2017 for a period of two months among 3-6 yrs children attending AWC under RHC, SRMC, Nandyal. Samples selected were based on using multistage random sampling technique. All the children were subjected to measure for body weight and their ages were recorded using Gomez classification based on weight for age. All the mothers were interviewed using pre tested questionnaire. The data compiled in excel sheet and later was analyzed using SPSS-22 version.

Results: Total number of children between 3-6 yrs included in the study is 161. Female children (57.8%) outnumbered male children (42.2%) in the study. Undernourished children according to Gomez classification were falling in second degree with 77 (47.8%), followed by first degree 63 (39.1%). The age, mothers' education and B G Prasad socio economic class-4 and class-5 with Under Nutrition were showing significant correlation showing p value less than 0.05.

Conclusions: Mothers' education and BG Prasad socio economic class is showing more influence on second degree and first degree under nutrition based on Gomez classification.

Keywords: NFHS-4, Preschool children, Under nutrition, Anganwadi Center, RHC

INTRODUCTION

Life of every human starts with infancy, childhood into adult life. During this process, childhood happen to be the most vulnerable phase associated with nutritional

deficiency affecting the growth leading to morbidity and mortality. Malnutrition in pre-school children is considered most important indicator of the nutritional and health status of the country which is given top priority in National Family Health Survey- 4 (NFHS-4). Pre-school

children in India has higher percentage of undernourished children in the world. Prevalence of underweight cannot be easily estimated from commonly recognized clinical syndromes of malnutrition such as marasmus and kwarhiorkor, as these constitute to be part of tip of iceberg and under nutrition is recognized as a major public health problem in the developing countries like India

As per the declaration given by United Nations; "the child shall enjoy special protection and shall be given opportunities and facilities by law and order and by means to enable him to develop physically and mentally in a healthy and normal manner and in a condition of freedom and dignity". But still under nutrition continues to be a primary cause of ill-health and premature mortality among 3-6 yrs children in developing countries.² as per NFHS-3, it has been estimated that in India, 65% under five aged children were suffering from varying degree of under nutrition. But according to NFHS-4 showed that percentage of children under five years who are stunted and underweight has declined only by 10% and 7% since 2005-2006, showing not much significant improvement in the nutritional status of the children in India.³ India ranked 100 out of 119 countries in global hunger index (GHI) developed by the International Food Policy and Research Institute (IFPRI) in 2016 and where child undernourished is concerned, it stood 117 among 119 countries. 4 Under nutrition in long term can cause impaired child's immune system and weakens the defenses against other diseases. Whereas over nutrition in childhood leads to Non Communicable diseases like hypertension, diabetes, coronary heart diseases, orthopedic disorders and respiratory diseases.⁵

Aim

a) To assess the nutritional status of children aged 3-6 yrs in rural area attending Anganwadi centers under Rural Health Center, SRMC, Nandyal.

b) To identify the factors associated with the nutritional status of pre-school children.

METHODS

Sample size for study is 161, calculated using epi info-7 calculator. Study was carried during June 2017- July 2017 for a period of two months among 3-6 yrs children attending AWC under RHC, SRMC, Nandyal. Ethical clearance was obtained from Institutional Ethical Committee before starting the study. Study design is a Cross Sectional study, area under Rural Health Center, Santhiram Medical College; A.P. Samples selected were based on using multistage random sampling technique following Inclusion and Exclusion criteria.

Inclusion criteria

All those mothers' were giving written informed consent to be part of the study.

All those children, falling in the age 3-6 yrs, who were present at Anganwadi centers, were included in the study.

Exclusion criteria

All those mothers' who said no to informed consent and

Those children absent to AWC at the time of study were excluded.

All the children were subjected to measure for body weight and their ages were recorded using Gomez classification based on weight for age. All the mothers were interviewed using pre tested questionnaire regarding their education, occupation and socioeconomic status based on BG Prasad socio economic classification considering the latest Consumer Price Index for the month of June 2017. The data collected and compiled in numerics in excel sheet and later was analyzed using SPSS-22 version and Chi-Square test is applied for statistical inference. 5% precision is considered and p value less than 0.05 were taken as significant

RESULTS

Table 1: Age.

Age	Frequency	Percent (%)
3 yrs	63	39.1
4 yrs	60	37.3
5 yrs	35	21.7
6 yrs	3	1.9
Total	161	100.0

Table 2: Gender.

Gender	Frequency	Percent (%)
Male	68	42.2
Female	93	57.8
Total	161	100.0

A total of 161 (boys=68, girls=93) aged between 3-5 years were included in the present study to evaluate the prevalence of under nutrition. Age distribution was analyzed in (Table 1). It was observed that children falling between 3 years (39%) and 4 years (37.3%) were more in percentage. Females (57.8%) were more than males (42.2%) (Table 2). Mothers' education was analyzed and it was observed that illiterates (60.2%) were more in percent (Table 3).

Table 3: Mother's education.

Mother's Education	Frequency	Percent (%)
Illiterate	97	60.2
Primary school	24	14.9
Middle School	7	4.3
High School	24	14.9
Intermediate	6	3.7
Degree	3	1.9
Total	161	100.0

Table 4 Father's occupation.

Father's Occupation	Frequency	Percent (%)
Unemployed	1	0.6
Unskilled laborer	37	23.0
Skilled Laborer	63	39.1
Agricultural laborer	46	28.6
Semi professional	6	3.7
Professional	4	2.5
Businessman	4	2.5
Total	161	100.0

Table 5: Mother's occupation.

Mother's Occupation	Frequency	Percent (%)
Unemployed	62	38.5
Unskilled laborer	30	18.6
Skilled Laborer	24	14.9
Agricultural laborer	40	24.8
Semi Professional	4	2.5
Professional	1	.6
Businessman	0	0
Total	161	100.0

Table 6: BG Prasad socio economic classification.

BGPSE	Frequency	Percent (%)
Class-1	3	1.9
Class-2	16	9.9
Class-3	26	16.1
Class-4	62	38.5
Class-5	54	33.5
Total	161	100.0

Table 7: Gomez classification.

Gomez classification	Frequency	Percent (%)
Normal 91-100	10	6.2
First degree 76-90	63	39.1
Second degree 61-75	77	47.8
Third degree <60	11	6.8
Total	161	100.0

Fathers' occupation was analyzed and observed that Skilled Laborer (39.1%) followed by Agricultural laborer (28.6%) (Table 4). Mothers' occupation analyzed and observed to be mostly Unemployed (38.5%) and Agricultural Laborer (24.8%) (Table 5). Analysis of socio-economic class as per BG Prasad classification, most of them were falling under Class-4 (38.5%) followed by Class-5 (33.5%) (Table 6). As per the analysis of the study using Gomez Classification, it was observed that most of them were falling in Second degree under nutrition (47.8%) followed by First degree under nutrition (39.1%) (Table 7). Therefore it is noteworthy that girls were more under nourished than boys, age and sex showing highly significant (p<0.05). Therefore even Mothers' education, Fathers' occupation, per capita income and Socio-economic class showing highly significant (p<0.05) in prevalence under nutrition among pre-school children and has a chance of landing these children into severely malnourishment.

Table 8: Age* under nutrition.

Age	Under Nutrition				Total
	Normal 91-100 (%)	First degree 76-90 (%)	Second degree 61-75 (%)	Third degree <60 (%)	
3 yrs	9 (14.3)	28 (44.4)	23 (36.5)	3 (4.8)	63 (100)
4 yrs	1 (1.7)	17 (28.3)	38 (63.3)	4 (6.7)	60 (100)
5 yrs	0 (0.0)	18 (51.4)	15 (42.9)	2 (5.7)	35 (100)
6 yrs	0 (0.0)	0 (0.0)	1 (33.3)	2 (66.7)	3 (100)
Total	10 (6.2)	63 (39.1)	77 (47.8)	11 (6.8)	161 (100)
Chi-Square tests		Value	Df	P value	
Pearson Chi-Squar	re	36.936 ^a	9	0.001	
Likelihood ratio		29.298	9	0.001	
Linear-by-Linear a	association	8.186	1	0.004	
N of Valid cases		161			

P value is 0.001, which is <0.05, showing significant correlation.

Table 9: Mother's education* under nutrition.

Mother's Education	Under Nutrit	Under Nutrition				
	Normal 91-100 (%)	First degree 76-90 (%)	Second degree 61-75 (%)	Third degree < 60 (%)		
Illiterate	7 (7.2)	31 (32.0)	53 (54.6)	6 (6.2)	97 (100)	
Primary school	0 (0.0)	13 (54.2)	9 (37.5)	2 (8.3)	24 (100)	
Middle School	0 (0.0)	5 (71.4)	1 (14.3)	1 (14.3)	7 (100)	
High School	0 (0.0)	9 (37.5)	13 (54.2)	2 (8.3)	24 (100)	
Intermediate	1 (16.7)	4 (66.7)	1 (16.7)	0 (0.0)	6 (100)	
Degree	2 (66.7)	1 (33.30	0 (0.0)	0 (0.0)	3 (100)	
Total	10 (6.2)	63 (39.1)	77 (47.8)	11 (6.8)	161 (100)	
Chi-Square tests		Value	Df	P value		
Pearson Chi-Square		35.395 ^a	15	0.002		
Likelihood ratio		28.985	15	0.016		
Linear-by-Linear asso	ciation	3.250	1	0.071		
N of Valid cases		161				

P=0.002, which is <0.05, showing significant correlation.

Table 10: Mother's occupation* under nutrition.

Mother's Occupation	Under Nutri	Under Nutrition				
	Normal 91-100 (%)	First Degree 76-90 (%)	Second Degree 61-75 (%)	Third Degree <60 (%)		
Unemployed	6 (9.7)	27 (43.5)	25 (40.3)	4 (6.5)	62 (100)	
Unskilled laborer	0 (0.0)	12 (40.0)	18 (60)	0 (0.0)	30 (100)	
Skilled laborer	1 (4.2)	8 (33.3)	12 (50.0)	3 (10)	24 (100)	
Agricultural laborer	2 (5.0)	14 (35.0)	20 (50.0)	4 (10.0)	40 (100)	
Semi professional	1 (25.0)	1 (25.0)	2 (50.0)	0 (0.0)	4 (100)	
Professional	0 (0.0)	1 (100)	0 (0.0)	0 (0.0)	1 (100)	
Businessman	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (100.0)	
Total	10 (6.2)	63 (39.1)	77 (47.8)	11 (6.8)	161 (100)	
Chi-Square tests		Value	Df	P value		
Pearson Chi-Square		13.826 ^a	15	0.539		
Likelihood ratio		16.903	15	0.325		
Linear-by-Linear associa	tion	1.182	1	0.277		
N of Valid cases		161				

P=0.539, which is >0.05, showing no significant correlation.

Table 11: Per capita income* under nutrition.

Per capita Income	Under Nutrit		Total		
	Normal 91-100 (%)	First Degree 76-90 (%)	Second Degree 61-75 (%)	Third Degree <60 (%)	
> 5357	0 (0.0)	16 (30.2)	32 (60.4)	5 (9.4)	53 (100)
2652-5356	5 (8.9)	24 (42.9)	22 (39.3)	5 (9.4)	56 (100)
1571-2651	0 (0.0)	17 (53.1)	14 (43.8)	1 (3.1)	32 (100)
812-1569	5 (29.4)	4 (23.5)	8 (47.1)	0 (0.0)	17 (100)
Class-5	0 (0.0)	2 (66.7)	1 (33.3)	0 (0.0)	3 (100)
Total	10 (6.2)	63 (39.1)	77 (47.8)	11 (6.8)	161 (100)
Chi-Square Tests		Value	Df	P value	
Pearson Chi-Square		31.126 ^a	12	0.002	
Likelihood ratio		30.824	12	0.002	
Linear-by-Linear associa	tion	9.398	1	0.002	
N of Valid cases		161			

P=0.002, which is <0.05, showing significant correlation.

Table 12: BG Prasad socio-economic class* under nutrition.

BGP/SE	Under Nutrition				Total (%)
	Normal 91-100 (%)	First degree 76-90 (%)	Second degree 61-75 (%)	Third degree <60 (%)	
Class-1	0 (0.0)	29 (66.7)	1 (33.3)	0 (0.0)	3 (100)
Class-2	5 (31.3)	4 (25.0)	7 (43.8)	0 (0.0)	16 (100)
Class-3	0 (0.0)	13 (50.0)	13 (50.0)	0 (0.0)	26 (100)
Class-4	5 (8.1)	27 (43.5)	24 (38.7)	6 (9.7)	62 (100)
Class-5	0 (0.0)	17 (31.5)	32 (59.3)	5 (9.3)	54 (100)
Total	10 (6.2)	63 (39.1)	77 (47.8)	11 (6.8)	161 (100)
Chi-Square test	ts	Value	Df	P value	
Pearson Chi-Sq	uare	31.989 ^a	12	0.001	
Likelihood ratio	0	32.041	12	0.001	
Linear-by-Line	ar association	9.804	1	0.002	
N of Valid cases	S	161			

P=0.001, which is <0.05, showing significant correlation.

DISCUSSION

A healthy child becomes a healthy adult, when all the factors which determine the health of the child, especially nutrition plays the most important and vital role. Under nutrition plays a definite role causing physical, immune system and psychological well-being of the child. In our study girls found to be more in number compared to boys similar to the study done by Radhamani et al. The majority of children were falling in age group 3-4 yrs. 6 In the present study mothers who were illiterate and unemployed, who had children suffering from under nutrition and also were falling in class-4 and class-5. According to BG Prasad classification which is significant in relation to Under Nutrition with p<0.05.8 Therefore poverty is the main cause of concern and has major influence on nutrition of pre-school children, similarly the Kanjilal et al concluded that socio-economic status plays a major determinant role on the nutritional status of children both in rural and urban areas. Basic strength in this present study is Gomez classification, which has been used as screening tool for under nutrition weight for age. In our study results were showing most of the children were falling in second degree under nutrition and has more chance of falling into severe degree, which is found similar to the study done by Bisai, et al. 10

Limitation

The only limitation for this present study is that this has to extend to large population.

CONCLUSION

Mothers' education and BG Prasad socio economic class is showing more influence on second degree and first degree under nutrition based on Gomez classification. Therefore more number of health education camps regarding dietary practices, feeding children with low cost locally available healthy food. Improving socio economic standards and improving literacy among illiterate mothers.

Recommendations

The recommendation to improve the health status of the preschool children may be

- Health education, nutrition education and personal hygiene may be part of regular educational activities in the community.
- Better preschool health services may be planned periodically at anganwadi centers.
- Production of local fresh food and utilization for better nutritional supplementation for preschool children.
- Conducting regular literacy campaigns for improving the educational status of all mothers.
- Creation of facilities for improving economic status and utilization of monitory benefits from self help groups in the community by all mothers.
- Strengthening all ICDS centers and also to increase more centers for effective implementation of programs to reduce incidence of under nutrition among preschool children.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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