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Original research article

Study of malnutrition among pre-school children in urban area: Hyderabad

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Abstract

Background: Malnourished people lack the nutrients needed for growth and maintenance or are unable to effectively use the food they eat owing to illness. Malnutrition is often used to mean undernutrition, but it can also mean over nutrition. Overeating contributes to malnutrition.

Methods: Door-to-door surveys were used to collect data for a pre-tested timetable. Family information, clinical tests and anthropometric measurements were utilised to assess 3-6-year-olds' nutrition. Immunization, Vitamin "A" prophylaxis and iron folic acid tablets were gathered. Malnutrition and systemic diseases are assessed in excellent daylight with minimal clothing. Measurements were height, weight, and midarm circumference.

Results: This study examined the health, status and nutrition of 3-6-year-olds in Harrajpenta, Hyderabad, Telangana. 290 kids (155 boys, 135 girls) were surveyed. Out of 290 children, 24.85% were normal, 34.54% had grade-I malnutrition, 33.03% had grade-II, 6.06% had grade-III and 1.52% had grade-IV.

Conclusion: According to the current survey, 7.58% of children had severe levels of malnutrition (grade III & IV). In the current study, the majority of mothers (200) lacked literacy and only children of illiterate and barely literate people were found to have severe malnutrition.

Keywords: Malnutrition, pre-school, children, urban area, Hyderabad

Introduction

Malnutrition is a term commonly used as an alternative to under nutrition but technically it also refers to over nutrition, people are malnourished if their diet does not have nutrients for growth and maintenance or they are unable to fully utilize the food they eat due to illness (under nutrition). They are also malnourished if they consume too many calories (over nutrition) Malnutrition according to D.D. Jelliffe (1996) is defined as “A pathological state resulting from the relative or absolute deficiency or excess of one or more essential nutrients”.

There is no one kind of malnutrition. It can take a variety of forms that often appear in combination and contribute to each other such as:

- Protein energy malnutrition (PEM)
- Nutritional anaemia
- Vitamin 'A' deficiency
- lodine deficiency disorders are most serious nutritional problems

Malnutrition among preschool children has been recognized as a major public health problem in many developing countries.

Pre-school child: Children between 3-6 yrs of age are generally called pre-school age children or toddlers. Today, the pre-school age child has become a focus for organized medical social welfare activities, and their death rate is considered a significant indicator of the social situation in a country. They are distinguished by the following characteristics.

Large number: Pre-school age children (3-6 yrs) represent about 12% of the general population in India. A large majority of these children live in rural and tribal areas and share of health and social services.

Mortality: The Preschool age (3-6 years) mortality in India is high as 4.9% of all deaths, due to infection and malnutrition in underprivileged areas.

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Morbidity: Surveys indicate that the main morbidity problems are malnutrition and infections. The prevalence of severe protein energy malnutrition (PEM) ranged between 5-6 % and mild protein energy malnutrition about 40%. PEM is often associated with other nutritional deficiency such as anaemia, xerophthalmia, etc.

Growth and development: Any adverse influences operating on children during this period (e.g., Malnutrition and infection) many result in severe limitations in their development some of them are irreversible.

Accessibility: While the infant may be easily reached, the toddler is hard to reach, and it is therefore difficult to look after his health, special inputs are needed (e.g., day care centres, play group centres, children's clubs) to reach the toddler and to bring him into the orbit of health care.

Present study: The present study is an attempt to compare the health, nutritional status of pre-school children covered under Urban Health Centre, Harrajpenta, and Hyderabad.

Aims and Objectives

1. To study the Health and Nutritional status of Pre-school children in Harrajpenta, Hyderabad.
2. To study the effect of maternal education on nutritional status of children.
3. To study the effect of caste, religion and other socio biological factors on Nutritional status of children.
4. To study the effect of per capita income on Nutritional status of children.
5. To study the effect of maternal education on Child's sickness.
6. To suggest the measures to improve the services.

Materials and Methods

Period of study: The study conducted during the period March 2021 to august 2021.

Place of study: Urban Health Centre, Rajendra Nagar, Hyderabad.

Study Population and Sample size: The study population comprise of all children in age group of 3 to 6 years (Pre School).

Method of study: A door to door survey of the sample population was conducted and information was entered in a pre-tested scheduled Data was collected on

a) General information of the family.
b) Nutritional status of the children in the age group of 3-6 years was recorded by clinical examinations and anthropometric measurements.
c) The information was also collected on immunization status, Vitamin “A” prophylaxis and supply of iron folic acid tablets to the children.

Clinical Examination of the child is done in the good day light with minimum clothing for assessing clinical signs of malnutrition as well as systemic diseases. Anthropometric measurements like height, weight, mid-arm circumference was recorded.

Height: To measure heights of children a vertical measuring rod was used and the height was measured to the nearest one tenth of the centimetre.

Weight: The Child is weighed with minimal garments and weight is recorded in kilogram to the nearest 100 grams. Salter weighing machine as used for this purpose.

Mid-arm circumference: It is measured on the left arm at a point midway between internal margin of an acromion process of the scapula and the tip of the olecranon process of ulna.

Immunization: Particulars were recorded in children between the age groups of 12 months. The B.C.G vaccination was verified by the presence of the scar on the left upper arm, information was elicited from the parents and Anganwadi workers regarding oral polio. D.P.T and measles immunization by oral questionnaire. Immunization cards verified wherever possible. An attempt was also made to find out the reasons of non-Immunization. Information regarding Vitamin "A" and Iron and folic acid tablets coverage was also recorded.

Measurement of nutritional status

Anthropometry is the single most universally applicable in the non-expensive and non-invasive method

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available to access the size, proportions and combinations of the human body. Generally, weight and arm circumference are considered as sensitive indicators since they respond quickly to nutritional deprivation even for short duration.

Measurement of growth is most popular method of assessing the status of PEM in children. Both age dependent and age independent criteria have been suggested for the assessment of protein energy malnutrition in communities. The most popular age dependent criteria are weight for age, height for age and weight for height. The chief among them is weight for height.

Classification of PEM: The following are some of the most accepted and widely used classification of PEM based on clinical findings and simple body measurements (anthropometric criteria).

1. Gomez classification.
2. Welcome classification.
3. Indian Academy of Paediatrics Classification.

Gomez classification: Gomez's Classification of malnutrition was the first one to be proposed by the Mexico. It is based on the deficit in the weight for age for the assessment of nutritional status of children and 90% of the Harvard standard is taken as the cut-off point for separating normal from the malnourished children. Malnutrition is subdivided into three degrees as shown in table below:

Table 1: Gomez's Classification of Malnutrition

SI. No.	Nutritional status	Body weight (% of standard)
1.	Normal	>90% of standard
2.	First degree (Mild malnutrition)	75-90% of standard
3.	Second degree malnutrition (Moderate)	60-75% of standard
4.	Third degree malnutrition (Severe)	< 60% of standard

Table 2: Welcome Classification

S. No.	Nutritional status	Body weight (standard)	Edema
1.	Underweight	80-60	(-)
2.	Marasmus	<60	(-)
3.	Kwashiorkor	80-60	(+)
4.	Marasmus Kwashiorkor	<60	(+)

Indian academy of paediatrics classification: The Nutrition sub-committee of the Indian Academy of paediatrics in 1972 proposed the popularly known as IAP classification of malnutrition on the basis of Harvard growth standards of weight for age is the index for assessment of nutritional status of community. The classification is adopted in growth monitoring of pre-school children in ICDS programme.

Table 3: Nutritional grade and body weight for age

S. No.	Nutritional Grade	Body weight for Age
1.	Normal	≥80% (Harvard standard)
2.	Grade-I	71-80%
3.	Grade-II	61-70%
4.	Grade-III	51-60%
5.	Grade-IV	≤50%

The conventional cut-off points to define malnutrition are:

Mid-arm circumference (MAC) 13.5cm and above are normal nutritional status.

MAC-13.5cm-12.5cm-Mild/ Moderate under nutrition.

MAC-less than 12.5cm-Severe malnutrition.

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Observations

The total children surveyed were 330 in the Urban Health Center, Harrajpenta, Hyderabad.

Table 4: Age and sex wise distribution of studied children

Age group of children in years	Male	Female	Total
3-4	31	27	58
4-5	33	34	67
5-6	91	74	165
Total Children	155	135	290

Mid Upper arm circumference was measured for children aged 3-6yrs. Immunization particulars were taken for 31 male and 27 female children. PARTICULARS OF VITAMIN PROPHYLAXIS OF Children aged 3-4 years were taken for 165 children.

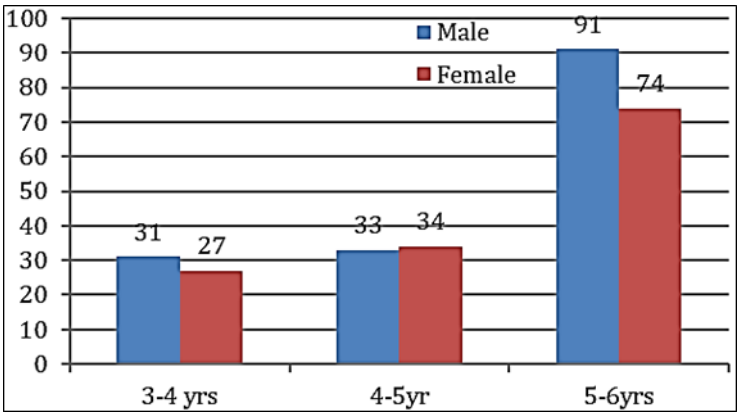

Fig 1: Age and sex wise distribution of studied children

Table 5: Immunization Particulars of Children Aged 3-4 years

Name of the vaccine	Male children No.	Received %	Female Children No.	Received %
BCG	31	100%	27	100%
OPV1/DPT1	31	100%	27	100%
OPV2/DPT2	31	100%	27	100%
OPV3/DPT3	31	100%	27	100%
Measles	31	100%	27	100%
Hepatitis B	19	61.2 %	24	88%

Hepatitis "B" vaccine was introduced from 2002 February onwards in the study area and it is given along with OPV/ DPT at 6 weeks, 10 weeks and 14 weeks of age.

Table 6: Caste Wise Distribution of Study Children

Age group in years	SC	ST	BC	OC	Total
3-4yrs	9	0	29	20	58
4-5yrs	18	1	36	12	67
5-6yrs	34	4	90	37	165
Total	61	5	155	69	290

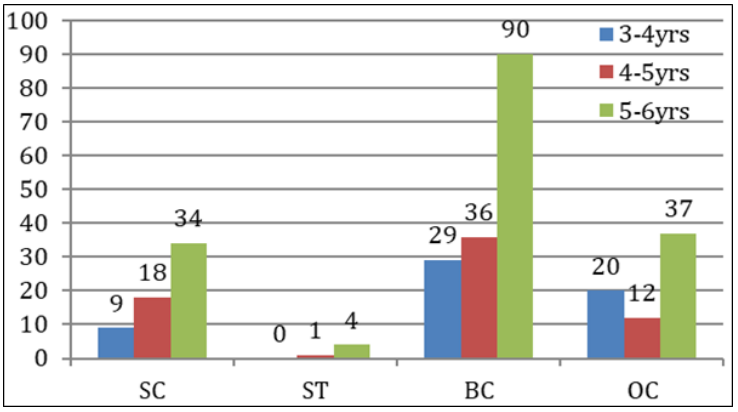

Fig 2: Caste Wise Distribution of Study Children

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Table 7: Caste Wise Distribution of Nutritional Status among Children Aged 3-6 years

Caste	N	Grade I	Grade II	Grade III	Grade IV	Total
BC	36	57	51	9	2	155
SC	9	22	22	6	2	61
OC	25	24	16	3	1	69
ST	1	2	2	0	0	5
Total	71	105	91	18	5	290

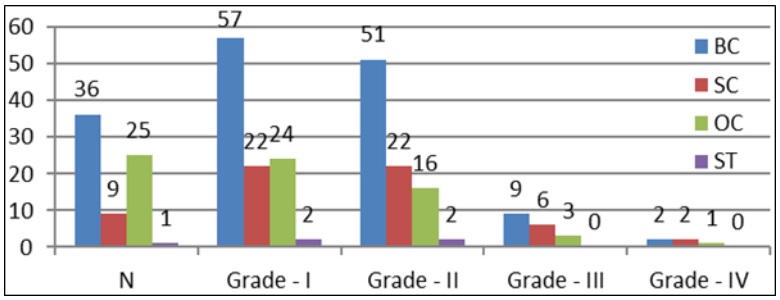

Fig 3: Caste Wise Distribution of Nutritional Status among Children Aged 3-6 years

Table 8: Age wise Distribution of Nutritional Status among Children Aged 3-6 years

Nutritional status	3-4 yrs	4-5 yrs	5-6 yrs	Total
N	33	8	30	71
Grade I	18	28	59	105
Grade II	7	27	57	91
Grade III	0	4	14	18
Grade IV	0	0	5	5
Total	58	67	165	290

Children below 3 years are considered as toddlers, they are mostly confined to home. Children above 3 years are exposed to group behaviour and non-formal education. Diet pattern also differs for both the groups so an attempt is made to assess the nutritional status separated for both the groups.

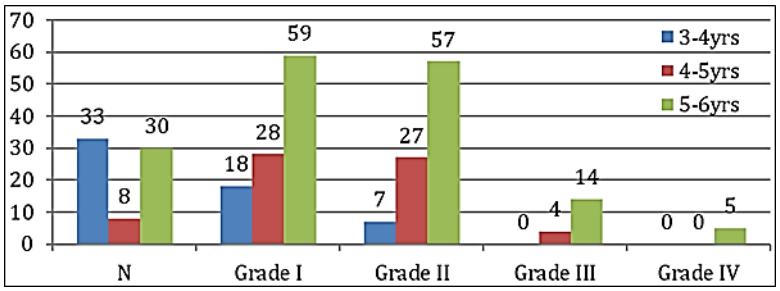

Fig 4: Age wise Distribution of Nutritional Status among Children aged 3-6 years

Table 9: Sex wise distribution of Nutritional Status among children aged 3-6 years

Nutritional status	Male	Female	Total
N	50	21	71
Grade I	55	50	105
Grade II	43	48	91
Grade III	6	12	18
Grade IV	1	4	5
Total	155	135	290

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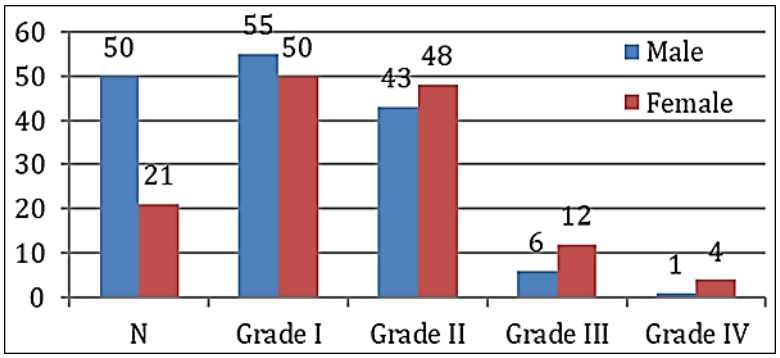

Fig 5: Sex wise distribution of Nutritional status among children aged 3-6 years

Table 10: Effects of Mothers Education on Nutritional Status of Children Aged 3-6 Years

Maternal education	Nutritional Status					Total
	N	Grade I	Grade II	Grade III	Grade IV	
Illiterate	25	62	85	13	5	200
Literate	46	43	6	5	-	90
Total	71	105	91	18	5	290

Table 11: Religion wise distribution of children below 6 years of age

Religion	Number	Percentage
Hindu	184	63.44%
Muslim	84	28.96%
Christian	22	7.58%
Others	-	-
Total	290	100%

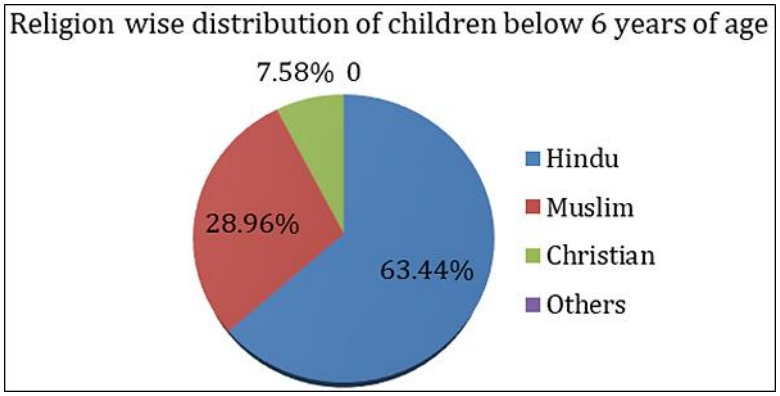

Fig 6: Religion wise distribution of children below 6 years of age

Table 12: Nutritional status of Children according to Religion

Religion	Normal	Grade I	Grade II	Grade III	Grade IV	Total
Hindu	37	56	76	11	4	184
Muslim	24	40	13	6	1	84
Christian	10	9	2	1	-	22
Total	71	105	91	18	5	290

No other religion exists in study area.

Table 13: Distribution Study of Children According to Type of Housing

Type of Housing	No of respondents	Percentage
Pucca	104	36%
Semi Pucca	82	28%
Katcha	104	36%
Total	290	100%

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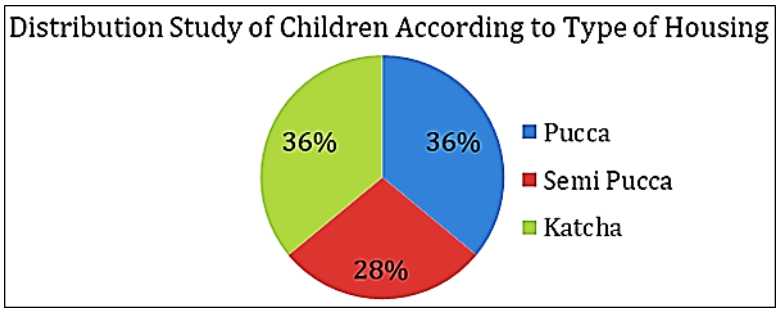

Fig 7: Distribution Study of Children According to Type of Housing

Table 14: Distribution Study of Children According to Type of Family

Type of Family	No	Percentage
Nuclear	191	65%
Joint	66	23%
Extended	33	12%
Total	290	100%

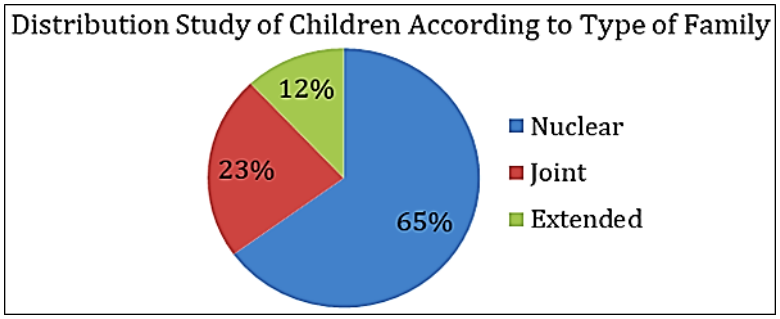

Fig 8: Distribution Study of Children According to Type of Family

Table 15: Nutritional Status of Children According to Per Capita Income

Per Capita Monthly Income	Grades					Total
	N	Grade I	Grade II	Grade III	Grade IV	
<200 L	20	56	71	12	4	163
200-99 UL	35	47	20	6	1	109
500-999	16	2	-	-	-	18
1000-1599 UM	-	-	-	-	-	-
1600 - & above U	-	-	-	-	-	-
Total	71	15	91	18	5	290

Table 16: Distribution of study Children According to Type of Arm circumference (3-6 years)

MUAC in cms	Number	Percentage
<12.5	85	29.31%
12.5-13.5	115	39.65%
>13.5	90	31.03%
Total	290	100%

Table 17: Particulars of Vitamin-a Prophylaxis of Children Aged 3-4 years

Prophylaxis received	Number	Percentage
1st dose only (1 lakh units)	11	6.67%
Received 2 doses (1+2 lakh unit)	60	36.36%
Received 3 doses (5 lakh units)	40	24.24%
Received 4 doses (7 lakh units)	12	7.27%
Received 4 doses (9 lakh units)	12	7.27%
Not received	20	12.12%
Do not know	10	6.06%
Total	165	100%

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Table 18: Prevalence of Infections with or without combination among study children based on symptoms/Signs during last two weeks

Name of the Disease	Number	Percentage
Diarrhoeal disease	17	5%
Acute Resp. Infection	20	6%
H/o worm infestation	26	8%
Anaemia	33	10%
B-Complex deficiency	65	20%
Fevers	25	8%
Conjunctivitis	20	6%
Skin infection	23	7%

Table 19: Respiratory Diseases among Study Children who seeker Health care during this year

Respiratory Disease	Number	Percentage
Sore throat	85	30%
Mumps	18	5.45%
Measles	32	9.69%
Asthma	6	1.81%
Chickenpox	23	7.87%
Tuberculosis	2	0.06%
Sinusitis	14	4.84%
Non-specific ARI	110	36.36%
Whooping cough	-	0%

Table 20: Effect of maternal education on Child's Sickness

Mother Education	Sickness Present		Total
	No	%	
Illiterate	132	68.9%	200
Literate	37	46.15%	90
Total	169	58.27%	290

Discussion

The present study was conducted on the health, status, nutritional status of children aged 3-6 years of Harrajpenta, Hyderabad, Telangana. The total number of children surveyed was 290 (155 male + 135 females). In the present study out of 290 children 24.85% of children found to be normal, 34.54% of children were found to be with grade-I malnutrition, 33.03% of children were found to be with grade - II malnutrition, 6.06% of children were found to be with grade-III malnutrition and 1.52% of children were found to be with grade IV malnutrition. Majority of the children belong to backward caste (54.85%), 22.72% of them belong to forward caste, 20.61% belong to Scheduled caste and 1.82% belong to Schedule Tribe. Most of the children belong to Hindu families (63.44%), 28.96% belong to Muslim families and 7.58% belong to Christian families.

Most of the children belong to nuclear families (65%), 23% belong to joint families and 12% belong to extended families. 6. Only 36% of the children have pucca houses rest of them have either kutcha houses or semi pucca houses. Majority of study subjects (55.76 %) belong to the lower socio-economic group of per capital income less than 200 per month, 38.79% belong to the upper lower with PCI Rs. 200-499, and 5.45% belong to the lower middle with PCI Rs. 500-999 and none I have PCI more than 1000 in the study area per capital monthly income is calculated accorded to Gupta M.C et al modified scale for determining socio economic status. In the present study association of per capita income and nutritional status revealed that among children with per-capita monthly income of less than 20 rupees 9.78% children were found to have severe degree of malnutrition (grade III & IV) 86.95% of children were found to have malnutrition (grade I to IV). Among children with per capita monthly income of Rs. 200-499 rupees 5.47% of children were found to have severe degree of malnutrition (grade III to IV) 67.18% of children were found to have malnutrition (grade I to IV) among children with per capital income to 500 to 999 rupees none of them had severe degree of malnutrition only 11.11% of children were found to have grade-I malnutrition.

In the present study majority of (200) were illiterate and severe degree of malnutrition was more among them severe degree of malnutrition was found only among children of illiterate and just literate mothers. The present study revealed that utilization of immunization services were 100% for six VPD's and 76% for Hepatitis B among 52 children aged 1-2 years of age. In the present study 7.27% of children received full course lakh units) and 12.12% not received vitamin A prophylaxis and other received partial course of vita. A prophylaxis among 165 children aged 3-4 years. Prevalence of diarrhoeal diseases was 5% ARI 6% Anaemia 10% during last 2 weeks prior to the date to survey. There was negative association

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between maternal education and child sickness child sickness was less among children with the mother's education more than tenth standard. National Nutritional Monitoring Bureau (NN MB) report surveys (1988-90) show severe grades of malnutrition las per Gomez classification) in pre-school children (1-4 years) was around 7.5% in A.P.

Conclusions

The present study revealed 7.58% of children were found to have severe degree of malnutrition (grade III & IV). In the present study majority of the mother (200) was illiterate and severed degree of malnutrition was found only among children of illiterate and just literate others. In the present study association of per capital monthly income and nutritional status revealed that severe degree of malnutrition was more among children with per capita monthly income of less than 500 rupees. The present study has shown that the effect of mother's education on child sickness played a major role. Child sickness was less among children with the mother's education more than secondary school education. The present study indicated that the utilization of immunization services as well as Vitamin A prophylaxis and nutritional anaemia prophylaxis is better. In the present study the prevalence of morbidity due to vitamin A deficiency and B complex deficiency is coinciding with the observations made by the studies conducted by various workers in other parts of the country.

The morbidity due to infectious diseases, Diarrhoeal disease. ARI Worm infestations, Anaemia, Fevers, Conjunctivitis and infections were found to be coinciding with the observations made by the other studies. Educational components like personal hygiene, nutritional education and family planning advise and utilization of immunization services decreases the prevalence of morbidity in children. Regarding B complex deficiency in preschool children the NNB (1989-90) study observed the prevalence rate 9% in Telangana. The present study shoes better immunization coverage because. Implementation of UIP and Pulse Polio Programme and Vitamin A Prophylaxis, nutritional anaemia prophylaxis is better in all urban and rural areas of Telangana state.

Recommendations

1. In order to improve the nutritional status of the school children covered that urban area, it is recommended that supplementary food should be given regularly to the preschool children through Anganwadi Centers.
2. To improve the utilization of ICDS services it is recommended to intensity the information, education, activities in the project area, communication (IEC).
3. The Community participation should be made optional in the urban area through personal contact of ICDS by local leaders, voluntary organization, Mahila Mandals, Youth Organizations etc.
4. To strength intersectoral coordination, the ICS functionaries, should develop a good support with other department workers involved in the urban development.
5. A regular supervision and monitoring through the urban health centre field staff should be intensified.

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