A Comparative Study to Assess the Nutritional Status among Preschool Children Attending Anganwadi Centres of Selected Urban and Rural Areas of Tirupati

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Abstract

Background: Children of today are citizens of tomorrow, which is why it is extremely important to ensure proper health care facilities as well as adequate nutritional intake for the children [1]. Nutrition of the preschool children is of paramount importance because the foundation for life time, health strength and intellectual vitality is laid during that period [2]. Nutritional assessment in the country serves as appropriate data gathering processes to enable accurate planning and implementation of interventions to reduce morbidity and mortality associated with under nutrition[3]. *Objectives:* To assess the nutritional status of the urban and rural preschool children. To compare the nutritional status of urban and rural preschool children. To determine the association between social demographic variables and nutritional status of urban preschool children. To determine the association between social demographic variables and nutritional status of rural preschool children. *Methods:* A comparative study involving 50 urban pre-school children and 50 rural preschool children of selected urban and rural anganwadicentreswere taken for the study. A comparative research design was adopted for this study. Data were collected by using check list and anthropometric measurements.. It included data regarding socio-demographic characteristics and nutritional assessment check list and anthropometric measurements such as height, weight and mid arm circumference. *Results:* Nutritional grading of anganwadi children in urban areas out of fifty children height for age 74% (37) were normal, 12% (6) were moderate malnutrition, 14% (7) were severe malnutrition. With regards to weight for age 62% (31) were normal, 30% (15) were moderate malnutrition, 8% (4) were severe malnutrition. Related to Mid arm circumference 62% (31) were normal, 30% (15) were moderate malnutrition, 8% (4) were severe malnutrition. Based on height for weight 64% (32) were normal, 30% (15) were moderate malnutrition, 12% (6) were severe malnutrition. Among fifty rural area children, based on height for age 66% (33) were normal, 20% (10) were moderate malnutrition, 14% (7) were severe malnutrition. With relates to height for age 46% (23) were normal, 40% (20) were moderate malnutrition, 14% (7) were severe malnutrition. Regards to mid arm circumference 46% (23) were normal, 40 % (20) were moderate malnutrition, 14% (7) were severe malnutrition. Based on height for weight, 48 % (24) were normal, 42 % (21) were moderate malnutrition, 10% (5) were severe malnutrition. *Conclusion:* The present study showed a significant association between nutritional status of preschool children and demographic variables. There is a scope for much improvement in the form of enhanced supplementary nutrition.

Keywords: Nutritional Status; Pre-School Children; Anganwadi Centres.

Introduction

Child malnutrition is a wide spread public health problem having preschool children. India is one of the few countries in the world where poor nutritional status among preschool children is detrimental to their health outcome. Nutritional status indicators like wasting, stunting, low birth weights, breast feed availability and vitamin Adeficiency are also still high in India compared to the USA and China. Child malnutrition reflects a number of intermediary processes such as household access to food, access to health services and caring practices [4].Early childhood malnutrition can have lasting effects on growth and functional status [5].

According to WHO media centre [2014], 6.3 million children under the age of under-five died in 2013. More than half of these early child deaths are due to conditions that could be prevented or treated with access to simple affordable interventions leading causes of death in under-five children are preterm birth complications, pneumonia, birth asphyxia, diarrhoea and malaria. About 45% of all child deaths are linked to malnutrition [6].

The Nutritional status of an individual is often the result of many interrelated factors. It is influenced by the adequacy of food intake in terms of quantity and quality, its utilization in the body and also by the physical health of the individual [7].

There are number of nutrition and health services available for young children in almost all places. Every effort is made to encourage the community members to make use of these   facilities, so as to promote child health [8].

The scheme services are rendered essentially through the Anganwadi worker (AWW) at a village centre called "Anganwadi" [9].

Each anganwadicentre covers a population of 1000. At present 5,78,457anganwadiCentres are functioning throughout India. Anganwadi Centre is a part of ICDS (Integrated Child Development Services) Scheme initiated in 1975. ICDS is India's most ambitious multi-dimensional welfare programme to reach millions of children and mothers who are caught in the grip of malnutrition, diseases, illiteracy, ignorance and poverty [10].

Methodology

After obtaining the permission from project officer, ICDS office Tirupati. Oral permission obtained from the teachers of selected anganwadicentres.The investigator has done home visits and established rapport with the mothers and collected demographic data. The investigator has done visits of selected anganwadicentres, performed nutritional assessment and taken anthropometric measurements.The total 50 from urban 50 from rural areas of selected anganwadicentres.

Inclusion Criteria

- Children who are present at the time of data collection.
- Children who are attending anganwadis regularly.

Results

Nutritional status based on clinical assessment checklist among preschool children belongs to urban and rural areas, Tirupati.

Table 1: Distribution of nutritional status among preschool children belongs to urban and rural areas   N=100(U=50, R=50)

S. No	Clinical Assessment Checklist	Urban		Rural		Total	
		N	%	N	%	N	%
1.	**General Condition**						
	Alert, responsive	41	82	35	70	76	76
	Apathetic	8	16	9	18	17	17
	Listless	2	4	5	10	7	07
	Cachetic appearance	0	0	1	2	1	01
2.	**Posture**						
	Erect posture, straight arms and legs	50	100	50	100	100	100
	Sunken chest	0	00	0	00	0	00
	Humped back	0	00	0	00	0	00
	Sagging shoulders	0	00	0	00	0	00
3.	**Head**						
	Normo cephalic	50	100	50	100	100	100
	Microcephally	0	00	0	00	00	00

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	Macro cephally	0	00	0	00	00	00
	Softening of cranial bones	0	00	0	00	00	00
4.	**Hair**						
	Evenly distributed shiny hair	46	92	39	78	85	85
	Thin and sparse hair	2	4	9	18	11	11
	Brittle hair	2	4	1	2	3	3
	Easily plucked hair	0	0	1	2	1	1
5.	**Skin**						
	Healthy and good skin turgor	50	100	49	98	99	99
	Xerosis	0	00	1	2	1	1
	Mosaic dermatosis	0	00	0	00	0	00
	Pellagrous dermatosis	0	00	0	00	0	00
6.	**Face**						
	Symmetrical	50	100	50	100	100	100
	Moon face	0	00	00	00	00	00
	Nasolabialdyssebacea	0	00	00	00	00	00
	Malar pigmentation	0	00	00	00	00	00
7.	**Eyes**						
	Clear and shiny appearance	48	96	49	98	97	97
	Conjunctivalxerosis	1	2	0	0	1	1
	Xerophthalmia	0	0	0	0	0	00
	Bitot's spots	1	2	1	2	2	2
8.	**Mouth and Oral Membrane**						
	Reddish, pink mucus membrane	39	78	38	76	77	77
	Swollen mucus membrane	2	4	1	2	3	03
	Dry and pale mucus membrane	7	14	9	18	16	16
	Mouth ulcer	1	2	2	4	3	03
9.	**Lips**						
	Uniform pink in colour	34	68	25	50	59	59
	Dry and pale lips	15	30	24	48	39	39
	Angular stomatitis	0	00	1	2	1	01
	Cheilosis	1	2	0	00	1	01
10.	**Teeth**						
	Clean appearance with no discolouration	43	86	40	80	83	83
	Dental caries	4	8	4	8	8	8
	Mottled enamel	1	2	2	4	3	3
	Malpositioned appearance	2	4	4	8	6	6
11.	**Tongue**						
	Uniform pink in colour	45	90	44	88	89	89
	Dry and pale tongue	5	10	6	12	11	11
	Fissured tongue	0	00	0	00	0	00
	Glossitis	0	00	0	00	0	00
12.	**Gums**						
	Pink and healthy appearance	47	94	49	98	96	96
	Swollen gums	1	2	0	00	1	1
	Spongy gums	2	4	0	00	2	2
	Receding gums	0	00	1	2	1	1
13.	**Neck**						
	No presence of swelling	50	100	50	100	100	100
	Goitre	0	00	0	00	00	00
	Neck deviated to one side	0	00	0	00	00	00
	Unequal muscle strength	0	00	0	00	00	00
14.	**Nails**						
	Firm, pink appearance	38	76	31	62	69	69
	Spoon shaped nails	2	4	3	6	5	5
	Brittle nails	2	4	1	2	3	3
	Pale nails	8	16	15	30	23	23

15.	**Skeletal System**						
	Lack of malformation	50	100	50	100	100	100
	Cranial bossing- frontal	0	00	0	00	00	00
	Beading of ribs	0	00	0	00	00	00
	Knocked knees or bowed legs	0	00	0	00	00	00
16.	**Nervous System**						
	Normal coordination and equilibrium	46	92	45	90	91	91
	Numbness and tingling of extremities	3	6	01	2	4	4
	Tenderness of calf muscles	0	00	0	00	00	00
	Burning feet	1	2	4	8	5	5

Distribution of Nutritional Status of Preschool Children belongs to Urban and Rural Areas of Tirupati.

Table 2: Distribution of nutritional status among preschool children belongs to urban rural areas

Sl. No	Anthropometric measurements	Locality	Normal		Moderate malnutrition		Severe malnutrition		Total	
			N	%	N	%	N	%	N	%
1	Height for Age	Urban	37	77	6	12	7	14	50	100
		Rural	33	66	10	20	7	14	50	100
2	Weight for Age	Urban	31	62	15	30	4	8	50	100
		Rural	23	46	20	40	7	14	50	100
3	Mid Arm Circumference	Urban	29	58	15	30	6	12	50	100
		Rural	19	38	21	42	10	20	50	100
4	Height for Weight	Urban	32	64	15	30	3	6	50	100
		Rural	24	48	21	42	5	10	50	100

N=100 (U=50, R=50)

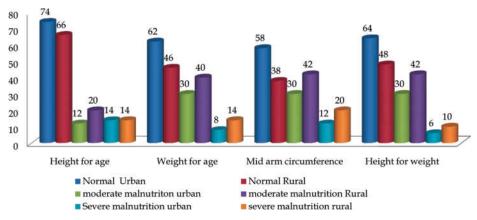*Who Classification (2015) [11]*

Fig. 1: Percentage distribution of nutritional status among preschool children among urban and rural areas

Association of Demographic Variables with Nutritional Status of Urban Preschool Children

Based on height for age, education of father, occupation of father and sleeping pattern were significant at p<0.05 level, based on weight for age education of mother, education of father, occupation of father and sleeping pattern were significant at P<0.01 level. Family income was significant at p< 0.005 level and based on mid arm circumference education of father and occupation of father were significant P<0.01 level, while other variables Education of mother, occupation of mother, sleeping pattern and family income were significant at p<0.05 level. based on height for weightoccupation of father was significant at P<0.01 level, education of mother and father occupation of mother and family income were significant at P<0.05 level.

Association of Demographic Variables with Nutritional Status of Rural Preschool Children

Based on height for age and weight for age shows that there was no significant association between demographic variables and nutritional status of preschool children. Based on mid arm circumference, age of the child was significant at P<0.01 level and

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height for weight shows that occupation of father was significant at P<0.01 level and education of mother, occupation of mother and sleeping pattern significant at P<0.05 level.

Discussion

The First Objective of the Study was to Assess the Nutritional Status of the Urban and Rural Preschool Children

The distribution of nutritional status among 100 preschool children from urban rural anganwadi centres of Tirupati.

In regards to urban area out of 50 children, regarding general appearance of children 16%(8) were apathetic.Regarding posture of the child 100% (50) were of erect posture, Based on hair distribution, 4% (2) were thin and sparse hair, 4% (2) were of brittle hair. Eyes shows; conjunctivalxerosis in 2% (1), bitot's spots in 2% (1). With relates to mouth, reddish mucous membrane in 78% (39). Lips shows; dry and pale lips in 30% (15), Teeth shows; dental caries in 8% (4), Tongue shows; dry and pale tongue 10% (5). With relates to gums; spongy gums in 4%(2). Nails shows; pale nails in 16%(8). With regards to nervous system, numbness and tingling sensation in 6% (3).

In regards to rural area out of 50 children, regarding general appearance of children 18%(9) were apathetic. Based on hair distribution, 18% (9) were thin and sparse hair.With regards to skin 2% (1) were xerosis. Eyes shows; bitots spots in 2% (1). With relates to mouth reddish mucous membrane in 76% (38), Lips shows; dry pale lips in 48% (24), Teeth shows; dental caries in 8% (4). Tongue shows; dry and pale tongue 8% (4). With relates to gums, receding gums in 2% (1). Nails shows; spoon shaped nails in 6% (3), brittle nails in 2% (1), pale nails in 30%(15) With regards to nervous system, numbness and tingling sensation in 8% (4), burning feet in 10% (5).

Present study was supported by another study conducted by ShailiVyas (2014) A Study on Morbidity Profile and Associated Risk Factors in a Rural Area of Dehradun. The results showed that diarrhoea (47.9%) followed by ARI (22.21%), Pica (13%) and Worm Infestation (9.21%) were the commonest morbidities found in the study population . Further, it was seen that the preference to seek treatment in the govt. hospitals was higher (57.6%) than other facilities [12].

In urban areas height for age 74% (37) were normal, 12% (6) moderate malnutrition, 14 % (7 were

severe malnutrition. Weight for age 62% (31) were normal, 30 % (15) were moderate malnutrition, 8% (4) were severe malnutrition. Mid arm circumference 62% (31) were normal, 30% (15) were moderate malnutrition, 8% (4) children were severe malnutrition. Height for weight 64% (32) were normal, 30% (15) were moderate malnutrition, 12 % (6) were severe malnutrition.

In rural areas height for age 66% (33) were normal, 20% (10) were moderate malnutrition, 14% (7) were severe malnutrition. Weight for age 46% (23) were normal, 40% (20) were moderate malnutrition, 14% (7) were severe malnutrition. Mid arm circumference 46% (23) were normal, 40 % (20) were moderate malnutrition, 14 % (7) were severe malnutrition. Height for weight, 48 % (24) were normal, 42 % (21) were moderate malnutrition, 10 % (5) were severe malnutrition.

The similar study was supported by another study conducted by Mrs. I.V. Mamatha (2015) a study on Nutritional status of Pre-School children attending anganwadi Centres of selected urban and rural areas, Tirupati, Andhra Pradesh, India. The results showed Pre-school children in urban areas the mean weight is at the 5th percentile of NCHS standards in rural areas majority children mean weight is at below the 5th percentile of NCHS standards. Age, gender and family income was found to be significant for both urban and rural children [13].

Second Objective of the Study was to Compare the Nutritional Status of Urban and Rural Preschool Children.

In urban areas nutritional status of preschool children based on height for age, 74% (37) were normal, 12% (6) were stunted, 14% (7) were severely stunted. In rural area, 66% (33) were normal, 20% (10) were stunted, 14 % (7) were severely stunted. Based on weight for age, in urban area 62% (31) were normal, 30% (15) were underweight, 8% (4) were severely underweight. In rural area, 46% (23) were normal, 40% (20) were underweight, and 14 % (7) were severely underweight. Based on mid arm circumference, in urban area 58% (29) were normal, 30% (15) were moderate acute malnutrition,12%(6) were severe acute malnutrition. In rural area, 38% (19) were normal, 42% (21) were moderate acute malnutrition, 20 % (10) severe acute malnutrition respectively.Based on height for weight, in urban areas, 64% (32) were normal, 30% (15) were wasted, 6 % (3) were severely wasted. In rural area, 48% (24) were normal, 42% (21) were wasted,10 % (5) were severely wasted.

Similar study conducted by Dr. Stella

NgoziLemchi (2015) Nutritional Status of Pre-School Children in Urban and Rural Areas of Owerri North, Imo State, Nigeria. Results showed no significant difference (P<0.05) between the mean height and weight of urban (1.1m and 16.0kg) and rural (1.1m and 15.9kg) children. For height-for-age, 5% of urban and 11% of rural children were stunted, while weight for height showed that 2% of urban and 17% rural children were wasted [14].

Third Objective of the Study to Determine the Association between Social Demographic Variables and Nutritional Status of Urban Preschool Children.

Based on height for age education of father, occupation of father and sleeping pattern were significant at p<0.05 level. Based on weight for age education of mother, education of father, occupation of father and sleeping pattern were significant at P<0.01 level. Family income was significant at p< 0.05 level.

Based on mid arm circumference education of father and occupation of father were significant P<0.01 level while other variables like education of mother, occupation of mother, sleeping pattern and family income were significant at p<0.05 level.

Based on height for weight occupation of father was significant at P<0.01 level, education of mother and father occupation of mother and family income were significant at P<0.05 level.

A study was conducted by Caroline priya K et.al (2014) Nutritional status of school children in rural, semi urban and urban areas of Tamilnadu. The results showed that 67.33% of children were underweight, of which 29.67% were from rural areas; 6% were found to be overweight or obese, of which 4.67% were from urban areas. There is a significant statistical difference in the prevalence of under-weight children in social class 4 & 5 as compared to class 1, 2, & 3 [15].

Fourth Objective of the Study to Determine the Association between Social Demographic Variables and Nutritional Status of Rural Preschool Children

Based on mid arm circumference age of the child was significant at P<0.01 level and based on height for weight occupation of father was significant at P<0.01 level and education of mother, occupation of mother and sleeping pattern significant at P<0.05 level.

The present study was supported by similar study conducted by Anuradha R et.al (2014) Nutritional Status of Children Aged 3-6 Years in a Rural Area of Tamilnadu. The results showed that the prevalence of under-nutrition (≤ 80 percentage of standard weight for age) was 66.5%. The prevalence of under nourishment increased with increasing age and the difference was found to be statistically significant (p < 0.05). Prevalence of under nourishment was higher among male children (76.9%) than female children (56.3%) and was found to be statistically highly significant. Nutritional status of children of mothers who were unemployed was better than those whose mothers were working but not statistically significant. Father's occupation and nourishment of the children were statistically associated. The prevalence of under nutrition among children whose mothers were illiterate was 78.6%. No significant association was found between parent's educational status type of family size and the nutritional status of the children. As the socioeconomic status increased the prevalence of undernourishment decreased and the difference was found to be statistically significant (p<0.05). The second order children were more undernourished than the first and third order but the difference was not statistically significant [16].

Conclusion

The significant findings of the study reveals that based on height for age 14% (7) were severely malnourished in both urban and rural preschool children, and weight for age and mid arm circumference reveals 14% (7) rural preschool children were severely malnourished than urban areas only 8% (4) only severely malnourished in urban areas. Height for weight Reveals 12% (6) were severely malnourished in urban than rural areas only10% (5) were severely malnourished.

The results of the study also revealed   that education of mother, occupation of father and sleeping pattern was found to be significant association of nutritional status of both rural and urban preschool children. The prevalence of under nourishment was more common in low economic status. Than the high economic status. With increasing age and the difference was found to be statistically significant. Even though the other demographic variables were not found significant, there was an association between demographic variables with the nutritional status of the children. The present study showed a significant association between nutritional status of preschool children and demographic variables. There is a scope for much improvement in the form of enhanced supplementary nutrition. As the causes of malnutrition in children

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are multi factorial, so community needs to be educated about environmental sanitation and personal hygiene and also proper child rearing, breast feeding, and weaning practices especially in the context of changing life style of rural and urban areas in India.

Suggestions

- The study can be replicated on a large sample, there by findings can be generalized to a large population.

- A descriptive study can be conducted on knowledge of anganwadi workers on nutritional assessment.

- Training and retraining of complete staff under ICDS particularly the supervisors, AWWs and their helpers to maintain proper and accurate records of nutritional status of each child.

- Must have direct communication with the parents particularly mothers of children in AWCs so that intervention measures could be taken promptly.

- Use of growth data must be community friendly for participation of all concerned for real benefits.

- Monotony of supplementary nutrition food supply needs immediate attention to improve fast consumption.

- The government offers some health and wellness activities, but could also offer more programmes directed towards nutrition and nutrition education.

- Context of changing life style of rural and urban areas in India.

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