European Journal of Molecular & Clinical Medicine (EJMCM)
ISSN: 2515-8260 Volume 09, Issue 07, 2022

Original research article

A Study on Morbidity Profile Among Under-Five Children in Rural and Urban ICDS Projects in Karimnagar.

[1]Anil Moluguri, [2]Dasari Gayathry, [3]Hima Bindu Moluguri, [4]Karmakonda Anil Kumar

[1]Associate Professor, Department of Community Medicine, CAIMS, Karimnagar, Telangana,

[2]Assistant Professor, Department of Community Medicine, Government Medical College, Siddipet, Telangana, India

[3]Assistant Professor, Department of Community Medicine, SVS Medical College, Mahabubnagar, Telangana, India

[4]Associate Professor, Department of Community Medicine, Dr.V.R.K.Women's Medical College, Ranga Reddy, Telangana State, India

Corresponding author: Dasari Gayathry

E-mail: gayatrispm@gmail.com

Abstract

Background: Malnutrition is the one of the leading cause of morbidity and mortality in children of under-five in developing countries. Globally combating malnutrition in all its forms is one of the greatest public health challenges. Hence the present study was undertaken in anganwadi of urban and rural ICDS projects in Karimnagar to explore the morbidity pattern of under-five children covered under the ICDS project.

Material and Methods : A community based cross-sectional study was undertaken in the rural and urban anganwadi centers of Karimnagar ICDS projects during a period of one year from March-2013 to February-2014. A semi-structured questionnaire was used to collect the data, it was analyzed and valid inferences were drawn. Chi square test was used to test the significance.

Results: The present study found that the undernutrition (28.2%) is the most common morbidity seen in children, followed by acute respiratory infections (8.87%), Worm infestations (8.06%), anemia (8.06%) and diarrhea (5.64%). The other morbidities are Viral fever (4.84%), Scabies (3.22%), Boils (2.42%), Vitamin A deficiency (1.61%), Injuries (1.61%) and UTI (0.8%).

Conclusion: The present study revealed that the morbidities like undernutrition, respiratory diseases and various vitamin deficiencies among under-five children were very common. Further studies are required to assess the knowledge, attitude and perceptions of parents towards malnutrition. A widespread health and nutrition awareness campaign is desired in the study area to prevent and reduce the burden of morbidities and malnutrition.

Keywords: Morbidities, Under-five children, Rural, Urban, ICDS

Introduction

Malnutrition is one of the leading cause of morbidity and mortality in children of under-five in developing countries.[1]Globally combating malnutrition in all its forms is one of the greatest public health challenges. It is well recognized that under-five children are nutritionally vulnerable part of the community, also very susceptible to morbidity due to infections.[2]Growth and development during childhood is used as a marker to assess health, nutrition and their future development.[3] Prevalence, severity and frequency of morbidity due to infections depend upon infant and young child feeding and caring practices, nutritional status of the child, environmental hygiene, socio-economic status,educational status of mother and availability of safe drinking water.[2]Approximately 70% of the world's malnourished children live in Asia, resulting in highest concentration of childhood malnutrition in this region. About half of the preschool children are malnourished ranging from 16% in China to 64% in Bangladesh.The World Health Organization (WHO) estimated that malnourished children numbered 181.9 million (32%) in developing countries. In addition, an estimated 149.6 million children younger than 5 years are malnourished when measured in terms of weight for age. In South Central Asia and Eastern Africa, about half the children have growth retardation due to Protein Energy

Malnutrition (PEM). This figure is 5 times the prevalence in the western world.[4] Prevalence of stunting and underweight are high especially in South Asia, where one in every two preschool children is stunted. Besides PEM, Asian children also suffer from micronutrient deficiency. Iron deficiency anemia affects 40-50% of preschool and primary school children. Nearly half of all vitamin A deficiencies in the world occurs in South and South East Asia, with large number of cases in India. In most countries there is a clear association between the factors like food habits, socio-cultural and government policies, family income, primary health care, poor complementary feeding, socioeconomic inequality, food consumption pattern, infections, worms, behavioral problems, inheritance and low nutrient intakes.[5]

Malnutrition is increasing a child's risk of dying.[6]Lack of food is not the sole cause of malnutrition. Lack of awareness and knowledge about feeding amount, frequency, type of food, etc., contributes significantly to poor nutritional status among children.[7]Micronutrient deficiencies are causes of malnutrition and are associated with ill-health throughout the world. This is particularly true in developing countries like India. Deficiencies in Iodine, iron, and Vitamin A are associated with a range of mild to severe effects. Feeding practices play a pivotal role in determining the nutritional status, morbidity and survival of children, particularly in the neonatal period and infancy. Proper infant feeding, starting from the time of birth is important for the physical and mental development of the child. The timing and type of supplementary foods introduced in an Infant's diet also has significant effects on the child's nutritional status.[8]

Further combating malnutrition is a multi-sectorial activity. Hence the Government of India started as early as 1975, Integrated Child Development Services(ICDS) scheme program, by Ministry of Social and Women's Welfare, in perseverance of national policy for children, which provides services through a vast network of ICDS centers, better known as 'Anganwadi'. There is a strong nutrition component in this program in the form of supplementary nutrition, vitamin A prophylaxis, iron and folic acid distribution. The beneficiaries are children up to six years, pregnant and lactating mothers, women in the age group of 15-44 years and adolescent girls in selected blocks. The term 'Anganwadi' developed from the idea that a good early child care and development center could be run with low cost local materials even when located in an 'Angan' or courtyard. The local anganwadi is the corner stone of the ICDS program.The work of Anganwadi centers is supervised by Mukhyasevikas. Field supervision is done by the

Child Development Project Officer (CDPO).[9]The impact of program on the lives of children is evident in several crucial indicators viz. increased birth weight, reduced incidence of malnutrition, increased immunization coverage and reduced infant and child mortality rate in areas covered by ICDS. With this background, the present study was undertaken in anganwadi of urban and rural ICDS projects in Karimnagar to explore the morbidity pattern of under-five children covered under the ICDS project.

Material and Methods :

This is a community based cross-sectional study was carried out to evaluate the morbidity pattern in the rural and urban Anganwadi centers of Karimnagar ICDS project. The study was conducted for a period of one year from March 2013to February 2014. By random sampling method Anganwadi centers were selected in both rural and urban areas. The sample size for this study was calculated to be 846, by using the formula $n=z\ \alpha 2\ p\ (100-p)/\ \varepsilon 2$ considering the estimated prevalence of undernutrition (48%) from previous studies and the margin of error on p (put at 5%) with 10% non-response rate. A total of 846 children, 423 each from rural and urban Anganwadi centers were selected for the study. The data was collected using pre-designed and pre-tested questionnaire from the Anganwadi teachers and mothers of these children. Ethical clearance was obtained before conducting the study from the Ethical Committee of Prathima Institute of Medical Sciences, Karimnagar during the survey, verbal consent was taken from the individuals who gave details about their family.

INCLUSION CRITERIA:

- All the children attending the selected Anganwadi centers were included in the study.

EXCLUSION CRITERIA:

- Children with previous history of disease, children with congenital abnormalities and those children who are not cooperative.

Statistical Analysis: The data thus collected was coded and entered on a Microsoft excel sheet and analyzed by using Epi info version 7. Results are presented in the form of tables and percentages. Chi-square was applied for the analysis.

Results

Table-1 depicts the attendance of children in anganwadi centers in the study area, which showed that in the rural area, 321 (37.9%) children attended anganwadi center regularly and 102(12.1%) were irregular to the anganwadi center. While in urban area, 339(40.1%) children attended anganwadi center regularly and 84 (9.9%) were irregular to the center.

Table 1: Attendance of children in Anganwadi centers

Attendance		Group		Total
		Rural	Urban	
Regular	Number	321	339	660
	Percentage	37.9	40.1	78.0
Irregular	Number	102	84	186
	Percentage	12.1	9.9	22.0
Total	Number	423	423	846
	Percentage	50.0	50.0	100.0

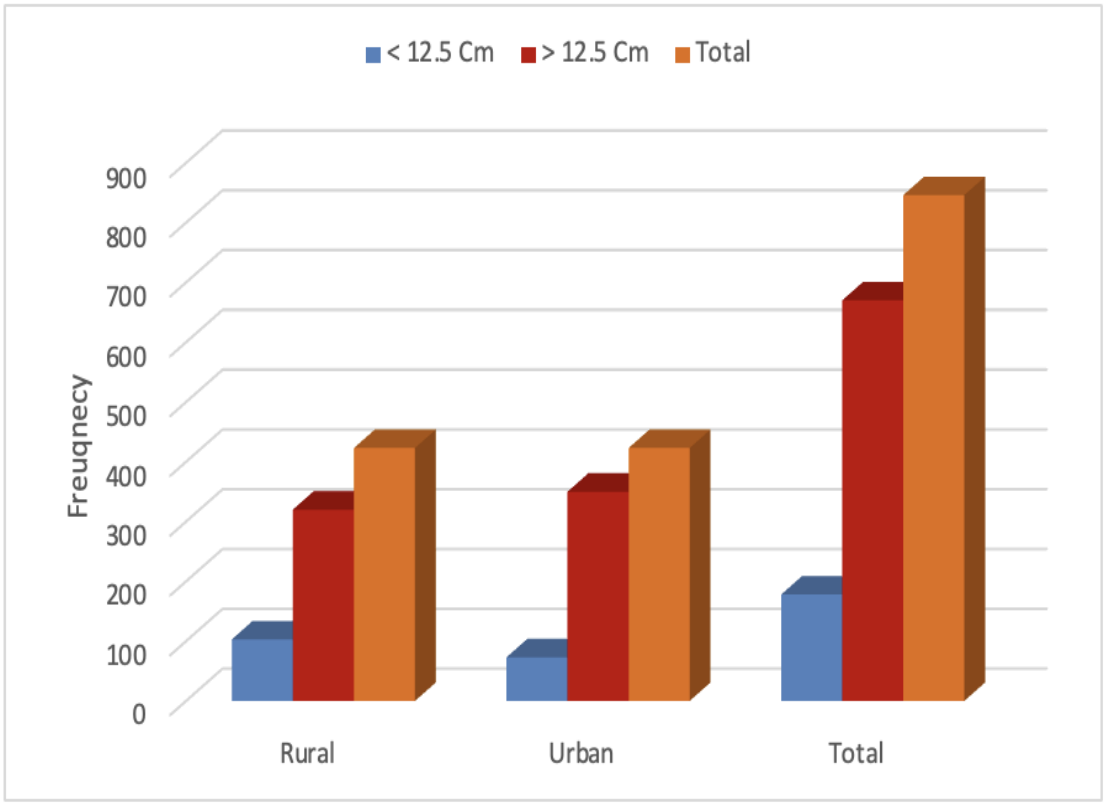

Figure 1: Distribution of children based on Mid-arm circumference (MAC)

Figure-1 shows mid-arm circumference of the total children surveyed. From the table it is evident that 12.2% children in rural and 8.6% in urban showed MAC >12.5 cm which indicate children that were with good nutritional status and 37.8% children in rural and 41.4% in urban showed MAC<12.5 cm indicating that these children were malnourished.

Table 2: Nutritional grading of children based on residence

IAP grading	Group		Total
	Rural	Urban	
Normal	239 (28.3%)	192 (22.7%)	431 (50.9%)
Malnourished	184 (21.7%)	231 (27.3%)	415 (49.1%)
Total	423(50%)	423 (50%)	846 (100%)

Table-2 shows nutritional grading of children based on residence. It was observed that among the 846 children surveyed, 415(49.1%) children are malnourished, of which 184(21.7%) belonged to rural area and 231(27.3%) to urban area.

Table 3: Distribution of various infections resulting from malnutrition among Anganwadi children

Variables		Malnutrition		Total	Chi-square value	P-value
		Absent	Present			
Diarrhea	Absent	410 (48.5%)	357(42.2%)	767 (90.7%)	20.696	<0.001
	Present	21 (2.5%)	58 (6.9%)	79 (9.3%)		
ARI	Absent	382 (45.2%)	324 (38.3%)	706 (83.5%)	17.068	<0.001
	Present	49 (5.8%)	91 (10.8%)	140 (16.5%)		
Fever	Absent	379 (44.8%)	297 (35.1%)	676 (79.9%)	35.28	<0.001
	Present	52 (6.1%)	118 (13.9%)	170 (20.1%)		
Dental carries	Absent	363 (42.9%)	361 (42.7%)	724 (85.6%)	1.31	0.252
	Present	68 (8.0%)	54 (6.4%)	122 (14.4%)		
Skin infection	Absent	397 (46.9%)	357 (42.2%)	754 (89.1%)	8.083	0.0004
	Present	34 (4.0%)	58 (6.9%)	92 (10.9%)		
Worm infestation	Absent	396 (46.8%)	335 (39.6%)	731(86.4%)	22.404	<0.001
	Present	35 (4.1%)	80 (9.5%)	115 (13.6%)		
Total		431 (50.9%)	415 (49.1%)	846 (100%)		

Table-3 presents the various infections resulting from malnutrition among study children. In the present study highest number of diarrhea cases were registered in malnourished children, 58(6.9%) than in normal children, 21(2.5%). Acute respiratory infections were nearly two fold high 91(10.8%) in malnourished children than normal children, 49(5.8%). Total number of children with fever were 170(20.1%), out of which 118(13.9%) were malnourished who were having frequent episodes of fever. A total of 122(14.4%) children were having dental caries. There was no significant difference in dental caries between normal and malnourished children. Total number of children suffering from skin infections were 92(10.9%), of which 58(6.9%) were malnourished. 115(13.6%) children were having worm infestations of which, 80(9.5%) were malnourished.

Table 4: Micro-nutrient deficiencies among Anganwadi children

Variables		Malnutrition		Total	Chi-square value	P-value
		Absent	Present			
Vitamin A deficiency	Absent	423 (50.0%)	383 (45.3%)	806 (95.3%)	16.088	<0.001
	Present	8 (0.9%)	32 (3.8%)	40 (4.7%)		
Vitamin B deficiency	Absent	388 (45.9%)	348 (41.1%)	736 (87.0%)	7.11	0.008
	Present	43 (5.1%)	67 (7.9%)	110 (13.0%)		
Total		431 (50.9%)	415 (49.1%)	846 (100%)		

Table -4 shows the micro-nutrient deficiencies among study children. A total of 40(4.7%) children were suffering from vitamin-A deficiency, which include 32(3.8%) of the

malnourished children. Among the total malnourished children 415(49.1%), 110(13.0%) children were having vitamin-B deficiency.

Discussion

Malnutrition is an important cause of ill health and mortality among children in developing countries. Malnutrition present in early age continues to have long lasting effects in the later years of life. In India, around half of the children are suffering from undernutrition and is an issue of grave concern. ICDS serve as an important intervention to tackle this problem and there is a need to analyze the profile ofchildren attending these services. The present study deals with evaluation of morbidity pattern among the children attending anganwadi centers in rural and urban areas of Karimnagar.

Among under-5 children, malnutrition and morbidity are issues of great public health importance due to their contribution to child mortality and Disability Adjusted Life Years(DALYs). These two phenomena are generally synergistic and contribute to a vicious cycle. Malnutrition makes a child more susceptible to infection (or increases severity of infection) and infection contributes to malnutrition, which causes a vicious circle. Infact, malnutrition causes impaired immunity and makes the body susceptible to disease and death, while infection poses a challenge to nutrient absorption by the body and loss of appetite which also reduces nutritional benefits to the body. It's noteworthy that malnutrition is not a direct cause of death rather it is a risk factor for death and loss of healthy life years. It interacts with disease and exacerbates the role of the latter in causing deaths and DALYs. Morbidities like undernutrition, respiratory diseases, and various vitamin deficiencies among under-five children in the present study were very common. Similar findings have been reported in studies done by Chandra Shekhar et al and George et al.[10]

A total of 9.3% were suffering from diarrhea out of which 6.9% were malnourished and 2.5% were normal children. In a study conducted by Patnaik L et al, to know the morbidity pattern among under –five children in an urban slum area of Bhubaneswar city, Out of total children,47.58% were suffering from some form of morbidities. Undernutrition (28.2%) is the most common morbidity seen in children, followed by acute respiratory infections(8.87%), Worm infestations (8.06%), anemia (8.06%) and diarrhea (5.64%). The other morbidities are Viral fever (4.84%), Scabies (3.22%), Boils (2.42%), Vitamin Adeficiency (1.61%), Injuries (1.61%) and UTI (0.8%). Worm infestations, anemia and Urinary tract infections were confirmed by stool, blood Hb% and urine examination respectively. Within last 3 months, acute respiratory infection (12.9%), was the most common morbidity followed by Fever (4.84%) and Diarrhea (2.42%).[11]

Overall prevalence of ARI was found to be 16.5 % in our study in which, acute respiratory infections were 5.8% in normal children and 10.8% in malnourished children. From the study, we conclude that malnourished children are two times more at risk of developing acute respiratory infections compared to normal children. In a study conducted by Bipin Prajapati et al, to assess the prevalence of acute respiratory infections in under five children in urban and rural communities in Ahmadabad district, it was observed that according to sex wise, 56.3% were males and 43.7% were females. More ARI cases were seen in 4-5 years of age group(47.3%) and in this age group 45.3% were males and 50.0% were females. There was a strong correlation between nutritional status and occurrence of ARI. Observations indicate that nutritional status of child has direct bearing on his susceptibility to ARI.[12]The present study found a significant association between ARI and nutritional status ($p < 0.001$). Similar observations were noted by Deb SKNilanjan Kumar Mitra.[13]Fever affected children in this

study contribute to 20.1%, out of which 13.9% children were malnourished and 6.1% were having normal nutritional status.

The prevalence of underweight, stunting and wasting was found higher in children with morbidities like diarrhoea, fever, cough and worm infestations in last 15 days. The findings in our study were similar as compared with another study conducted by Santosh Kumar A et al., in urban slums of Mysore city where the prevalence of underweight, stunting and wasting was found to be significantly higher ($p < 0.005$) in children with a history of respiratory infections and diarrhoea.[14] So, repeated infections in recent time period might have aggravated the continuous nutritional deficient stage and children's nutritional status worsened further. Bhatia V, Puri S et al. conducted a community-based cross-sectional study and found that there is a statistically significant relationship between acute ailments (diarrhoea, ARI) and malnutrition, where 73.08% children were suffering from malnutrition in comparison with 42.08% children when no acute ailment had occurred($p < 0.001$). It was observed that among these children, 20.45% children were passing worms in stools in the last 6 months.[15] Among the children in the study group, the leading causes of morbidity (excluding chronic conditions) in decreasing order of incidence were fever (20.1%), acute respiratory infections (16.5%), dental caries(14.4%), worm infestations(13.6%), skin infections(10.9%) and vitamin deficiencies (vit-B: 13.0% and vit-A: 4.7%).

In another study done by Gulati PV, he reported that respiratory and diarrheal diseases together account for two third of total morbidity in children under the age of five years.[16] Similar findings were reported by Datta Banik et al , that the respiratory and diarrheal diseases together account for 73.9% of total episodes of diseases with respiratory diseases contributing 39.7% and diarrheal diseases 33.9% of total episodes of diseases.[17] Recent data from studies by Narkhede Vinodet al,[18] Srivastava DK et al [19] and Abhulimhen - Iyoha BI [20] also report that malnutrition, respiratory infection and diarrheal diseases are still major problems among under five children. (Rural area of Jammu).

Surprisingly dental caries are more in children with normal nutritional status(8.0%) when compared to malnourished children (6.4%). Skin infections are more (6.9%) in malnourished children than in children with normal nutritional status (4.0%). Total number of children suffering from worm infestations in this study are13.6%, out of which 4.1% children were having normal nutritional status and 9.5% were malnourished. Two types of vitamin deficiencies are also commonly seen in malnourished children, vit-A and vit-B. In our study vit-A and vit-B deficiencies account for3.8% and 7.9% respectively in malnourished children.

A Comparative Study of Health Profile of Children (0-6years) in ICDS vs. Non ICDS in Urban Slums of Hyderabad; A.P.", a study done by P. Sudha Kumari ,VimalaThomas showed that , Vitamin A deficiency was 8% and 15 %, Vitamin B deficiency was 15% and 20%, Respiratory infections were 10% and 19%, Diarrheal diseases were 4% and 10%, Scabies was 1% and 2% ; Skin infections were 3% and 7% in slums covered by ICDS and not covered by ICDS respectively. The morbidity also was seen more in Non ICDS slum children when compared to slums covered by ICDS.[21]

Conclusion

The present study revealed that the morbidities like undernutrition, respiratory diseases and various vitamin deficiencies among under-five children were very common. Undernutrition is a well-known contributory factor to high mortality in children due to infectious diseases. Though the cause of the high rate of childhood mortality was not studied, high prevalence of respiratory tract infections and micronutrient deficiency disorder such as

vitamin A deficiency might be playing an important role. Poor environmental sanitation and unhygienic personal habits appear to predispose them to the risk of infection. Studies are required to assess the knowledge, attitude and perceptions of parents toward malnutrition. A widespread health and nutrition awareness campaign is desired in the study area to prevent and reduce the burden of morbidities and malnutrition. ICDS should be involved in nutritional supplementation to the under -five children along with the mothers and health education of the mothers.

The limitations of the present study was dealing with evaluation of the nutritional status of children attending Anganwadi's in the district and has used semi-structured questionnaire and anthropometric measurements and no laboratory investigations or evaluations of functional indices were carried out owing to limited resources. The present study was confined to children attending Anganwadi's and might not be reflecting the true nutritional status of preschool children in Karimnagar. The study used limited anthropometric measurements and has not used any calorimetric approaches or dietary surveys.

References

1. D S Natekar, A Mhaske. Nutritional Status and Dietary Habits of Preschool Children. International Journal of Pharmaceutical Science Invention, 2015; 4(9):38-42
2. Ramachandran P, Gopalan HS. Undernutrition & Risk of Infection in Preschool Children.Indian Journal of Medical Research. 2009;130:579-83.
3. Manjunath R, Kumar KJ, Kulkarni P, Begum K, Gangadhar MR. Malnutrition among under-five children of Kadukuruba tribe: Need to reach the unreached. J Clin Diagnostic Res. 2014; 8: 2-5.
4. WHO. child nutrition '' journal of community medicine'' 2000 VO;24:5-6.
5. Khor G L. Update on the prevalence of malnutrition among children in Asia.2004; 5:113-122
6. WHO Messages for World Health Day 2005.
7. Kilaru A, Griffiths P.L, Ganapathy S, et al. Community-based Nutrition Education for Improving Infant Growth in Rural Karnataka. Indian pediatrics. 2005; 42: 425-32.
8. SanthoshGhosh DHEERAJ Shsh, on Dietary intake, and common nutritional problems among underfive children,'' Indian pediatrics'', July 2004, vol: 41, Pp:682.
9. Park K. Jabalpur: BanarsidasBhanot Publishers; 2019. Park's Text book of Preventive and Social Medicine.
10. M Thukral and ChanderShekhar. Role of Anganwadi centres in improving the status of full immunization in Madhya Pradesh. Indian Journal of Preventive and Social Medicine. 2008; 39:1-2.
11. PatnaikL,Pattnaik S, Kumar V et al ; Morbidity pattern among under 5 children in a urban slum area of Bhubaneshwar city, Odissa; IJMCH.. 2012; Vol.14 (2).
12. BipinPrajapati, NitibenTalsania, Sonaliya K N ;A study on prevalence of acute respiratory tract infections (ARI) in under 5 children in urban and rural communities of Ahmedabad district, Gujrat; National journal of community medicine, Vol. 2, issue 2;July –Sept. 2011
13. Nilanjan kumar Mitra. A longitudinal study on ARI among rural under-fives. Indian Journal of Community Medicine.2001; 26:1(8).
14. Santosh Kumar et al; A study on health and nutritional status of children in urban slums of Mysore; Indian j. Com. Med.
15. Bhatia V, Puri S; Malnutrition among under - six children in Chandigarh: Scarcity in plenty. Journal of Clinical and Diagnostic Research. 2007; 6:483-487.

16. Gulati, P. V. A survey of morbidity and mortality pattern in children under the age of 5 years in a semi-urban area, Masjid Moth, Delhi.1965.Thesis for M.D. in Social and Preventive Medicine, All India Institute of Medical Sciences, New Delhi.
17. Datta Banik ND, Krishna R, Mane SIS, Lila R: Longitudinal study on morbidity and mortality patterns of children in Delhi during the first two years of life—A review of 100 children. Indian J Med Res 55:504, 1967.
18. Narkhede V, Sinha U, Bharadwaj S D. Morbidity Profile in under -five children in urban slum area of Nagpur. Natl J Community Medicine. 2012; 3(3):442-46.
19. Srivastava DK, Tripathi D, Gour N. Morbidity Profile of under five children urban slums of Etawah Dist. Ind J Community Health. 2012; 24 (2):153.
20. Abhulimhen-Iyoha BI and Okolo AA. Morbidity and mortality of child hood illness at the emergency pediatric unit of the University of the Benin teaching hospital, Benin City. Niger J Paed. 2012; 39(2):71-74.
21. Sudha kumara P and Vimala Thomas. A comparative study of health profile of children (0-6 years) in ICDS Vs Non-ICDS urban slums of Hyderabad, AP. International Journal of Health Sciences & Research.2013; Vol.3; Issue: 8