ASSESSMENT OF NUTRITIONAL STATUS OF CHILDREN UNDER 5 YEARS OF AGE ATTENDING RURAL AND URBAN ANGANWADI CENTRES OF JABALPUR DISTRICT

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ABSTRACT

Background: The key activity performed by anganwadi workers in integrated child development services (I.C.D.S.) at Aganwadi Centres was recording of weight of children using WHO growth monitoring charts. The assessment of nutritional status under five years age children was for early detection and timely correction of under nutrition in young children of both rural and urban areas.

Methods: A cross- sectional study was conducted using multistage random sampling. Technique to select 25 each rural and urban anganwadi centres of Jabalpur district. To track over the nutritional status of 0-5 years children registered both in rural and urban anganwadi centres, colour coded WHO growth monitoring charts separate for girls and boys were reviewed in month of March 2012.

Results: More rural 3.7% than urban 1.9% 0-3 years children were found severely under weight (red zone) (p=<0.001). Significant difference was also recorded in 3-5 years moderately under weights (yellow zone) children more in rural 29.8% than in urban 20.2% . (p=<0.001)

Conclusion: Severely and moderately underweight children were significantly more in rural anganwadi centres compared to urban counterpart.

Key words: Growth monitoring, under weight, anganwadi workers, rural and urban areas,   ICDS

INTRODUCTION

The nutritional status of an individual is often the result of many interrelated factors, influenced by adequacy of food intake both in terms of quality and quantity and also by physical health. It helps to know the children at risk and in greatest need of assistance.

Preschool children are the most vulnerable to the effect of under nutrition because of their rapid growth and thus their nutritional status is considered to be sensitive indicator of community health.[1]

The new WHO standards depict normal early childhood growth under optimal environmental conditions and can be used to assess children everywhere, regardless of ethnicity, socioeconomic status and type of feeding.[2]

It is strongly linked with poverty therefore poor children are more likely to be underweight at birth.[3]Child under nutrition is a major contributor to the Global hunger index (GHI)[1,4,5] Low weight for age is associated with more than half of all deaths in young children.[5]

National family health survey (NFHS-3), data indicate that nearly 50% of children below 5 years of

age in India have protein energy malnutrition of varied severity, 16-20% have severe form.[6] Children below <3 yrs of age 46% were under weight 38% were stunted 19% were wasted that are lower than Saharan Africa.[6]

Thus in rural areas because of poor living condition and presence of all the risk factors for malnutrition like poverty illiteracy and non-availability adequate food make vulnerability to various forms of malnutrition – moderate and severe form.[7]

Children having malnutrition are manifested as Under nutrition (less weight for age); Stunted (short for their age); and Thin or wasted (low weight for height or acute under nutrition)

Nutritional indicators are expressed in standard deviation (S.D.) unit so called Z score, from median of reference population.[8]

Indicator weight for age – underweight, captures elements of both stunting and wasting that are indicators of chronic and acute under nutrition. Levels of stunting and wasting are higher in rural than in urban area.[6] The tribal areas, food scarce districts, chronically drought pron rural and tribal hamlets have inadequate access to nutrition and health services.[9]

MATERIALS & METHODS:

The study was permitted by ethical committee of the Medical College, Jabalpur. It was a cross sectional study which was conducted in one rural and one urban integrated child development services (ICDS) projects of Jabalpur district of Madhya Pradesh during the month of March 2012. From each project 25 anganwadi centres were selected randomly and data for the different nutritional grades of 0-5 years age (0-3 & 3-5 years) children registered under these rural, urban anganwadies were collected using multistage random sampling method.

Weight for age is the robust parameter, most widely used and practical method to monitor growth and assess the nutritional status of young children. It is most sensitive and simple measurement which indicates improvement or deterioration of nutritional status. It is direction of growth which matters most, weighing children and putting on growth charts makes the invisible malnutrition become visible. The system of integrated child development services (ICDS) which is world's largest outreach program for mothers and children is using growth charts for growth monitoring and promotion.[1]

Growth Monitoring means regular weighing of young children at agreed upon intervals, (monthly weighing in infancy, after every two months in second year of life and at three months thereafter), to measure the growth of young children with a view to detect any deviation at the earliest from the normal path of growth and ensure prompt action.

Growth monitoring is the preventive and promotive strategy. Ideally it presents mal nutrition visible. Growth monitoring also detects the malnutrition at the earliest much before the clinical signs of malnutrition appear.[1,8]

Integrated child development services (ICDS) has been made responsible for growth monitoring of young children the key person who does growth monitoring is Anganwadi worker working at Aganwadi centre. She maintains the growth chart of every child and weighs each child under the age of 3 years each month. She also organizes informal education to 3-6 years age children. There is inadequate coverage of children of below 3 years of age who are at greater risk malnutrition, a very little is done to cover the 0-3 years age group children. In reality 3-6 years age group children are mostly covered.[9]

The growth chart being used at anganewadi centres has three coloured tracks (zone) viz – green, yellow, red /orange. The children in Green Track- (above-2SD) are normal children. The children plotted in yellow track (below- 2SD to 3 SD) would be termed as moderately under weight. In orange/red track which comprises severely under weight (below – 3SD of reference median). The weight of a girl or a boy of same age differs slightly. Therefore separate growth charts for boys and girls have been introduced in ICDS.[6,8]

WHO reference values are used up to 5 years of age since the influence of ethnic and genetic factors on the young children at this age, period is considered insignificant given the similar socioeconomic environment.[2]

ICDS has provided colour coded growth charts to the anganwadi centres to facilitate them to identify the children easily in corresponding nutritional level based on age and weight of the children. Green, yellow and red colours tracks are Layman's terms but this classification is framed by ICDS for anganwadi workers, and this classification directly reflects the SD classification as per WHO standards.[6,8]

Statistical Analysis: The data were analysed using SPSS 20. Appropriate univariate and bivariate Statistical analysis were carried out using the Student's test for the continuous variable and two tailed Fisher exact test or χ^2 test for categorical variables. To measure the linear association χ^2 trend was used. All means are expressed as mean ± standard deviation and proportion in percentages. The critical levels of significance of the results were considered at 0.05 levels i.e. p<0.05 was considered significant.

RESULTS

Total 4254 (0-5years) age group children 2497 (0-3 years) and 1757 (3-5years) were studied for growth monitoring among them 1681 were from rural and 2573 from urban areas.

Rural 28.95% and 22.5% urban children were found underweight with 25.85% moderately (yellow zone of growth monitoring chart) and 3.15% severe (red zone of growth monitoring chart) in rural area whereas 20.8% moderately and 1.7% severely malnourished in urban area were found.

Children 78.3% in urban anganwadi centres of age group 3-5 years were found to be in green zone of WHO growth monitoring charts in comparison with 67.6% in rural area, which was statistically significant. (χ^2- 25.02, p<0.001). (Table-2)

Table -1: Distribution of 0-3 yrs of age group children according to nutritional status[8] (as per WHO Growth chart) in rural and urban Anganwadi Centers

Nutritional Status (WHO Growth Chart)	Rural (n=993) Cases (%)	Urban (n=1504) Cases (%)	Chi-square	P Value
Green *	740 (74.5)	1153 (76.7)	1.494	0.2215
Yellow**	216 (21.8)	322 (21.4)	0.04	0.8384
Red***	37 (3.7)	29 (1.9)	7.51	0.0061

χ^2 trend = 3.72, p=0.05371; Green*(above -2SD) : Normal weight, Yellow** (below -2SD to 3 SD) : Moderately underweight ,Red***(below -3SD): Severely underweight

Table 2: Distribution of 3-5 yrs of age group children according to nutritional status[8] (as per WHO Growth chart) in rural and urban Anganwadi Centers

Nutritional Status (WHO Growth Chart)	Rural (n=993) Cases (%)	Urban (n=1504) Cases (%)	Chi-square	P Value
Green *	465 (67.6)	837 (78.3)	25.02	0.0000006
Yellow**	205 (29.8)	216 (20.2)	21.13	0.0000043
Red***	18 (2.6)	16 (1.5)	2.76	0.09635

χ^2 trend = 24.439, p=0.000001; Green*(above -2SD) : Normal weight, Yellow** (below -2SD to 3 SD) : Moderately underweight ,Red***(below -3SD): Severely underweight

It was insignificant in 0-3 years (rural 74.5% and 76.7% urban) children found in green zone of growth monitoring charts. (χ^2- 1.494, p=>0.05) (Table-1 There was no significant difference between proportion of severely malnourished children (red category of growth charts) in the 3-5 years age group children 2.6% rural and 1.5%urban. (χ^2- 2.76, p=>0.05) (Table-2)

However the children of age group 0-3 years the occurrence of severely malnourished children (found in red zone of growth chart) rural 3.7% and urban 1.9% that was statistically significant. (χ^2- 7.51, p<0.001) (Table -1)

3-5 years moderately undernourished children (in yellow category of growth chart) were recorded significantly more in rural 29.8% than in urban 20.2% (χ^2- 21.13, p<0.001)(Table-2), where as no significant difference was recorded in 0-3 years of age group.21.8% rural and21.4% urban children (χ^2-0.04,p>0.05) (Table-1)

In (0-3) years category age group rural population observed with significantly higher proportion in Red level (Severely malnourished) nutritional status as compared to the urban population p<0.001. However proportions of cases in green and yellow labels/ grades were having insignificant differences p>0.05. Overall the linearity of the distribution was not significant mean the linearity was almost similar in both rural and urban population. (χ^2 trend= 3.72; p>0.05) (Table-1)

In (3-5) years category rural population observed with significantly lower proportion in green (Normal) and higher in yellow (moderate) level nutritional status as compared to the urban population and this showed significant changes p<0.001. While in red nutritional level the proportion of cases were not having significant difference. (p>0.05) In this age group the distribution showed a significant linear trend of green and yellow levels (grades) of nutritional status and the rural children were found with large shifting towards the low level of nutrition.

DISCUSSION

In our study growth monitoring charts of 4254 children under five years of age were reviewed. We found the weight of 74.23% children in the green track (Normal weight) and the prevalence of undernutrition was 25.73%, among them 23.32% were moderately under weight (Yellow track) and only

2.42% were found in red track or severely under weight.

Our study also shows 28.95% rural and 22.5% urban under five children underweight. The study by Forces New Delhi 2005 [10] and evaluation study of ICDS 2007 [11] also conform the poor nutritional status of rural under five children.

According to National Family Health Survey-3 in (2005-06) 62.7% children of under five years age were underweight.[6] In another study by National Institute of Nutrition (ICMR Hydrabad) conducted during 2011[12] in Madhya Pradesh the prevalence of under nutrition was found to be 57%. The study by N.N.M.B. (2006)[13] also shows in Madhya Pradesh the prevalence of under weight children 46%. The study by Shahnawaz and J.B. Singh (2014) in Jhadol block Udaipur District of Rajasthan the prevalence of 63% undernutrition of moderate to severe grade.[14]

In our study the overall normal nutritional grade was found high >71% in rural and >77% in urban children. The study by National Institute of Nutrition 2011[12] in Madhya Pradesh and WHO growth reference study 2006[15] showed that improvement in nutritional status of young children of rural and urban area has reduced the number of undernourished children and also morbidity and mortality.[12,15]

According to National Family Survey (NFHS-3) the occurrence of more cases of under weight children in rural area in comparison to urban areas.[6]

Therefore problem of under nutrition is more in rural areas than in urban areas[6] the most vulnerable group for severely under weight children is 0-3 years age group because of poor accessibility of this group to anganwadi centres due to the various reasons like lack of awareness illiteracy and ignorance about more healthy food habits and weaning practices.[9] Another reason is that these children are deprived of proper attention and care by their parents as they have to go to work leaving the children at home.[9] Hence the under 5 years rural children are most vulnerable to prevailing conditions of malnutrition, morbidity and mortality.[3,7]

This makes the overall picture grim in rural areas as more number moderately as well as severely malnourished children have been recorded in rural anganwadies.[16] The study by NCAER New Delhi 2001 in Bihar reported that prevalence severely malnourished children of 13- 36 months was 28% children 6-12 months 6% and in children 37-72 months was 5%. About 11.3% of children were moderately malnourished and in children of 37-72 months age group reported higher incidences of moderate malnourishment.[16] The study by Indian Institute of Health Management and Research, Jaipur (IIHMR 2000)[17] also show the prevalence of severe malnourished children were 14% in 0-3 years age group whereas it was 13% in 3-6 years age group children.

N.C. Das et al 2006 [18] in his study also found the level of malnourished children 60% among them 40% having mild, 18% moderate and 0.6% children severely malnourished.

Prevalence of more severe malnourished children would lead to higher incidence of <3years morbidity & mortality.[5,7] In a study (2006) Akaninwor JO, Abbey BW, Ayalogu ED found in Nigeria that the protein energy malnutrition (PEM) is the major cause of death among children of 0-4 yrs age.[19]

CONCLUSION:

Our result shows that the rural anganwadi children were found with more severely underweight than those of their urban counterpart thus this leads to recommend that there is need of improvements in the rural anganwadi working and more emphasis and attention for the nutritional intake is required for the rural children. We have noticed that in 3-5 age cohort a significant linear trend of shifting of nutritional levels from green yellow and red levels in rural children compared to the urban children signifies that the rural population is more vulnerable to undernourishment.

The young cohort of the study i.e. 0-3 years category of rural population showed a remarkably significant findings that a higher proportion of cases compared to their counterpart urban population were observed in the Red/ severe under nutritional status. Since the early childhood is more important for the growth and development of child thus this segment of the children needs more emphasis for the nutritional care.

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