RESEARCH ARTICLE

PREVALENCE OF MALNUTRITION AND FACTORS ASSOCIATED WITH NUTRITIONAL STATUS OF CHILDREN IN RURAL AREA OF ALLAHABAD DISTRICT OF UTTAR PRADESH.

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Manuscript Info	*Abstract*
	In developing countries malnutrition is one of the major public health problems among children. Normal growth is dependent on adequate nutrition and encompasses major transformations from birth to adulthood. Socio-economic status and behaviors of family members, environmental factors are other determinants of nutritional status of children. This research was conducted to assess the factors associated with nutritional status of children in Allahabad District of Uttar Pradesh. This was a community based Cross-sectional study. It was conducted in Allahabad district. A totalsample of three hundred ninety one children were selected using random sampling technique. Data was collected using a pre tested schedule. More than half of the children (74.79 % in Jasra Block and 67.53 % in Chakka Block) aged 6-24 months were malnourished according to Gomez Classification . Most of the mothers were illiterate. Majority of the children were found stunted according to Waterlow's classification. More than the half the children (57.75%) were underweight who were born by mother less than 18 years of age where as 75% were underweight born by mother aged above 35 years of age. More than half of the children were found underweight and Nearly 2/3rd of the children were found stunted. To get better nutritional status of children, greater emphasis should be given to under five years children with community based awareness programs to mother and care givers. .

Introduction:-

Malnutrition is one of the greatest single threat to the world's public health among children in developing countries according to World Health Organization **(WHO, 2010).** It affects the child at the most crucial period i.e. stage of development, which can lead to permanent impairment in later life which includes reduced work capacity, growth retardation, and poor social and mental development **(Awasthi and Kumar, 1999; Manna et al., 2011).**

In the World about 43 percent children are malnourished in Developing countries like India, which is mainly due to the dietary inadequacy. India has diverse agro-climatic regions, ethnic multiplicities, socio-cultural practices, life styles and eating habits which vary not only between states but also within districts **(Vashisth*et al*., 2005).** About 44.1 percent people were malnourished in UP only **(NFHS- 3, 2006).** Thus, there is a need for assessment of nutritional status in various parts of our country to obtain a clear picture of status of mal-nutrition in various regions. The study was conducted to assess the prevalence of malnutrition and factors associated with nutritional status of under five year children in Allahabad District of Uttar Pradesh.

Material and methods:-

The study was conducted in Jasra and chakkaBlock of Allahabad District.The subjects of study consisted of all mother-child pairs. Total ten villages of Jasra and chakaBlock (five from each block) were selected for the study in the first stage. From each village 39 respondents were selected for the study. A total sample of 391 was selected randomly. Interviews with the sampled mothers were conducted using a semi-structured schedule. The schedule consist question regarding demographic information and anthropometric measurements. Digital infant weighing machine for weight andinfantometer for height wereused for anthropometric measurements.Weight-for-age criterion were used to assess nutritional status of the infants as described by **Gomez (1990).**Participants were informed about objective and importance of the study and written consent was taken from them before data collection. Data were analyzed by using appropriate statistical tests were used **(Gupta and Kapoor, 2002).**

Results:-

More than half of the children (71.79 % in Jasra Block and 67.68 % in Chakka Block) aged 6- 24 months were malnourished according to Gomez Classification. Most of the mothers were illiterate and their family size was more than five.Majority of the children were found stunted according to Waterlow's classification. More than the half the children (57.75%) were underweight who were born by mother less than 18 years of age where as 75% were underweight born by mother aged above 35 years of age. However the association between age of the mother at the birth of the child and nutritional status is not statistically significant. More than half of the children were found underweight and Nearly 2/3rd of the children were found stunted.There was a significant association ($p<0.001$) between PEM and religion. More than two third (71.2%) of children were Hindu while the rest were Muslim and the Hindu children (56.1%) were more malnourished than the Muslim children (28.8%). Regarding the caste in Hindu, 36.6% children belonged to schedule caste in which more than three fourth were significantly ($p<0.001$) malnourished as compared to general caste children (30.2%). The majority (55.3%) of children belonged to nuclear family while the rest (44.7%) to joint family and the prevalence of PEM was significantamong them.. The association between PEM and number of siblings was found to be significant ($p<0.001$) and the prevalence of PEM was observed higher among children (61.1%) of ≥3 siblings compare to children (41.3%) with 1-2 siblings.Majority (62.2%) of children of illiterate mother were malnourished as compared to children (48.2%) of literate mother and significant association was found between the prevalence of PEM in children and their mother's and father's educational level and it was observed that 64.5% children were affected with PEM whose father's educational level was illiterate or primary school.

Table 1: Nutritional status of the children (weight for age Gomez classification) *

NUTRITIONAL STATUS	JASRA BLOCK N(Percentage)	CHAKKA BLOCK N(Percentage)	TOTAL N(Percentage)
Normal(≥90% of Median)	54(28.4%)	62(32.46%)	116(30.44%)
Mild Under nutrition (Gr. I) (76-90% of Median)	78(41.1%)	88(46.1%)	166(43.56%)
Moderate Under nutrition (Gr.II) (61-75% of Median)	37(19.4%)	23(12.04%)	60(15.74%)
Severe Under-nutrition (Gr.III) (≤60% of Median)	21(11.05%)	18(9.42%)	39(10.23%)

*Weight for age calculated according to Gomez malnutrition Classification (NCHS/WHO as standard)

Table 2: Nutritional status of the children: height-for-age*

Nutritional status	JASRA BLOCK N(Percentage)	CHAKKA BLOCK N(Percentage)	TOTAL N(Percentage)
Normal (>95%)	54(28.4%)	62(32.46%)	116(30.44%)
Mild Impaired (87.5%-95%)	78(41.1%)	88(46.1%)	166(43.56%)
Moderate Impaired (80%-87.5%)	37(19.4%)	23(12.04%)	60(15.74%)
Severely Impaired (<80%)	21(11.05%)	18(9.42%)	39(10.23%)

Table 3: Factors associated with nutritional status of children

Variables	Normal weight N (%)	Malnourished N(%)	Total N(%)	Significance
Religion				
Hindu	119(43.9)	152(56.1)	271(71.2)	$\chi^2 = 22.648$
Muslim	70(63.6)	40(36.4)	110(28.8)	p<0.001
Caste (in Hindu)				
Schedule caste	11(11.1)	88(88.9)	99(36.6)	$\chi^2 = 71.505$
Others backward class	30(33.3)	60(66.7)	90(33.2)	p<0.001
General class	62(75.6)	20(24.4)	82(30.2)	
Type of family				
Nuclear	81(38.4)	130(61.6)	211(55.3)	$\chi^2 = 9.03$
Joint	100(58.8)	70(41.2)	170(44.7)	p=0.003
Number of siblings				
1 - 2	94(58.7)	66(41.3)	160(41.9)	$\chi^2 = 10.862$
≥3	86(38.9)	135(61.1)	221(58.1)	p<0.001
Mother's literacy				
Illiterate	72(37.8)	118(62.2)	190(49.8)	$\chi^2 = 11.916$
Literate	101(51.8)	92(48.2)	191(50.0)	p<0.001
Father's education				
Illiterate & Primary school	83(35.5)	151(64.5)	234(61.4)	$\chi^2 = 12.857$ p<0.001
Middle school & above	88(59.8)	59(41.2)	147(38.6)	

Table 4: Nutritional Status of Children by Age

Age of the child in months	Weight for age (Gomez) classification				
	Normal (≥90% of Median)	Mild Under nutrition (Gr. I) (76-90% of Median)	Moderate Under nutrition (Gr.II) (61-75% of Median)	Severe Under-nutrition (Gr.III) (≤60% of Median)	Total
0-6 months	2(1.7%)	1(0.5%)	1(1.7%)	0	4(1.02%)
6-12 months	33(28.4%)	42(23.9%)	12(0.2%)	9(23.1%)	96(25.5%)
12-24 months	50(43.2%)	79(44.9%)	29(48.3%)	13(33.4%)	171(43.7%)
24-36 months	31(26.7%)	54(30.7%)	17(28.6%)	17(43.5%)	120(30.6%)
Total (381)	116(29.6%)	176(45.01%)	60(15.34%)	39(10.1%)	391

Conclusion:-

The present study shows that More than half of the children (74.79 % in Jasra Block and 67.53 % in Chakka Block) aged 6- 24 months were malnourished according to Gomez Classification (NCHS/WHO standard) and prevalence of PEM was higher in children of Hindu religion, schedule caste, nuclear family, children having ≥3 siblings, illiterate father and lower socioeconomic status. The study suggests intensification of Integrated Child Development Services (ICDS) with multi-sectoral strengthening that can be achieved by the help of Accredited Social Health Activist (ASHA), Aganwadi Worker (AWW) and local village self help groups. The extent of malnutrition can be countered by educating the parents with respect to basic nutritional requirements of their children and encouraging them to consume locally available low cost foods.

Acknowlegement:-

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