To Study the Socio Economic Determinants of Protein Energy Malnutrition Among Children Less than 6 years of Age of Angan Wadi Center Kududand, Bilaspur, Chhattisgarh

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Abstract

Malnutrition is a serious problem in Chhattisgarh, afflicts 65% of children under 5 and causes over 50% of all deaths in this age group C. G. has succeeded in lowering the % of stunted and underweight children under the age of 5 year from 53% to 35% and from 53% to 39% respectively. The survey reveals that the number of wasted children in the state has increased from 24% to 32%. In C.G % of stunted and underweight children is high in the state capital Raipur and Chief minister's constituency Rajnandgaon. In Raipur this% of 51.1% and 52.3% respectively and in Rajnandgaon it is 54% and 46.65 respectively.

Malnutrition causes weaklings of children and an important cause of childhood morbidity and mortality. Also, it leads to permanent impairment of physical and mental growth of those who survive.

Protein energy malnutrition is identified as a major health and nutrition problem in developing countries like India. Chhattisgarh is a developing state of India, where a large population belongs to lower socioeconomic status. In Bilaspur dist. 2/3rd population of urban area living in slum and variables like age, sex, religion, literacy status of parents and morbidity of the children are significantly associated with malnutritionwhich contributes to high child mortality in under privileged community. So the community based study was conducted to know the different socioeconomic determinants of malnutrition in nearby area of Bilaspur.

Aim

To study socio economic determinants of Protein Energy Malnutrition among children less than 6 years of age of anganwadi centre Kududand, Bilaspur.

Objectives

- To determine the nutritional status of children less than 6 years of age.
- To study association of various factors affecting nutritional status of children less than 6 years of age.
- To find out the socio-demographic profile of the child less than 6 years of age.

Material and Methods

Study design Community based cross sectional study in anganwadi centre among children below 6 years of age.

Site: Anganwadi centre no. 19 KududandBilaspur, Chhattisgarh.

Sample size: Total 40 children of age <6 years present at the time of visit to the anganwadi were included in our study.

Data collection and analysis

Data was collected on the basis of predesigned questionnaires by interviewing parents of respective children. Data was compiled in Microsoft excel. Analysis of data was done by using epi info software and from the data different charts and graphs were made.

Methodology

Weight of children below 6 years of age – Using salter weighing machine.

Height of children 2-6 years of age–Using measuring scale fixed to the wall.

Height of children below 2 years of age – Using crown to heel length.

Mid upper arm circumference: Using shakirs tape.

Some important indicators used in the study.

To rule out PEM in our study, Waterlow's classification and Mid upper arm circumference were used.

Waterlow's classification:

It defines two groups for PEM:

a   Malnutrition with retarded growth - Height/Age ratio drops – Chronic condition. (Stunting/Shortness)

b   Malnutrition with a low weight for a normal height in whichWeight/Height ratio is less – Acute condition (Wasting)

Wt/Ht (%) = Wt of child/Wt of normal child at same age X 100

Ht/Age(%) =Ht of child/Ht of normal child at same age X 100

Nutritional Status	Stunting	(% Ht/Age)
	Wasting	(% Wt/Ht)
Normal	>95	>90
Mildly impaired	87.5 – 95	80 -90
Moderately impaired	8o – 87.5	70 – 80
Severely impaired	<80	<70

Mid upper arm circumference (MUAC)

Arm circumference cannot be used before the age of 1 year.

It is used between the ages one to five years.

It is measured by **Shakir's tape**.

>13.5 cm	Green	Normal Nutritional Status
12.5-13.5 cm	Yellow	Mild – Moderate Malnutrition
<12.5 cm	Red	Severe Malnutrition

Observation and Results: The findings of our study on Protein Energy Malnutrition among children under 6 years of age is described as follows

1. **Demographic profile of study participant**

Intervals	Frequency	Percentage
Age		
<3 years	28	70
>3 years	12	30
Total	40	100
Sex distribution		
Male	14	35
Female	26	65
Total	40	100
Socio Economic Status		
Lower	01	2.5
Lower Middle	30	75
Upper Lower	03	7.5
Upper Middle	06	15
Total	40	100
Type of Family		
Joint	24	60
Nuclear	16	40
Total	40	100
Type of House		
Kuchha	12	30
Semipucca	04	10
Pucca	24	60
Total	40	100

According to above table, maximum participants (i.e. 70%) of our study were from age group less than 3 years.This table shows that in the study population female participants were more (65%) than male participants (35%).3/4th of our study participants were from lower middle socio-economic class, while only 15% were from upper middle class.in study population more than half (i.e. 60%) were from joint family.Table shows that more than half (60%) of study participants were living in pucca houses, and approx. 1/4th are in kuchaa houses.

2. **Incidence of stunting of study participants.**

Incidence of stunting of study participants	Frequency	Percentage
Normal	21	65
Mild Stunting	13	32.5
Moderate Stunting	01	2.5
Severe Stunting	0	0
Total	40	100
Incidence of wasting among study participants		
Normal	25	62.5
Mild	07	17.5

Table cont....

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Moderate	07	17.5
Severe	01	2.5
Total	40	100
Incidence of Malnutrition by MUAC		
Normal	18	55.4
Mild-Moderate	14	42.5
Severe	01	3.1
Total	33	100
Incidence of malnutrition by Waterlow's classification		
Normal	21	52.5
Acute	05	12.5
Chronic	14	35
Total	40	100

From above table, 32.5% of participants having mild stunting, that is much higher than moderate type of stunting and no one was suffering from severe stunting. Above table shows that incidence of mild and moderate wasting is same in the study participants i.e. 17.5% while severe wasting is very low (2.5%) and the rest of participants are in normal limits. Above table describes that according to mid upper arm circumference, 42.4% of study participant's present higher incidence of mild–moderate type of malnutrition, while the incidence of severe malnutrition is much low (3.1%), rest of participants (i.e. 54.5%) are in normal limits. Above table shows that (as per Waterlow's classification) incidence of acute malnutrition cases are 12.5% while chronic malnutrition is 35% and rest 52.5% of participants are in normal limits.

3. Crosstabulation between various factors of study participants with malnutrition

Various Factors	Malnutrition		Chi Square test	Significant (p value)
	Yes	No		
Age				
>3 years	12	16	$X2=5.47$	.01<.05
<3 years	07	05		
Total	19	21		
Sex	Yes	No		
	06	08	$X2=3.92$	.04<.05
	13	13		
Total	19 (47.5%)	21(52.5%)		
Socio Economic status				
Lower	00	01		
Lower Middle	14	16		
Upper Lower	03	0	$X2=4.25$	.04<.05
Upper Middle	02	04		
Total	19 (47.5%)	21(52.5%)		
Education status of Head of Family				
Illiterate	01	01		
Primary	0	01		
Middle	06	04	$X2=6.47$	0.01<.05
High School	09	11		
Graduation & Above	03	04		
Total	19 (47.5%)	21(52.5%)		
Type of House				
Kuchha	06	06		
Semi Pucca	01	03		
Pucca	12	12	$X2=2.46$	0.18>.05
Total	19 (47.5%)	21(52.5%)		
Type of Diet				
Vegetarian	09	05		
Mixed	15	11	$X2=1..89$	0.14>.05
Total	24(60%)	16(40%)		

According to above table, in the study population malnutrition is more seen with the children >3 years, i.e. more than half (58.3%) participants who are >3 years presenting malnutrition which is statistically significant. It means that difference were found between age interval. In study population, malnutrition is frequently related with female participants (50%) while less common with male participants (42.8%). Which is statistically significant. It means that difference were found between gender. The relation of education of head of family describes that in the study population malnutrition is more related with upper lower socioeconomic class (i.e.100%) participants. This trend is decreases in upper middle socioeconomic class. Which is statistically significant. It means that difference were found amongs socio economic status. Malnutrition is associated with the low literacy level of the Head of Family, i.e. 50% participant are malnourished of illiterate head of family, and this status is significantly decreases toward the high education and qualification of head of family. The association between education of head of family with malnutrition which is statistically significant. In the study population malnutrition is equally present in both the participants living in kuchaa (50%) and pucca (50%) houses which is not statistically significant it means that the differe were not found in type of famly w.r.t malnutrition. This table describes that in the study population, malnutrition is more commonly seen among participants having vegetarian diet (64.3%) and it is slightly low (57.7%) in mixed type of diet. But not statistically significant.

Discussion

Cross sectional study was conducted among 40 children of age <6 years from Anganwadi centre, Kududand, Bilaspur to know nutritional status among them by Waterlow's classification and mid-upper arm circumference. Weight of child was taken by Salter's weighing machine. Height of child below

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2 years of age was taken by measuring Crown to Heel length. Height of child of 2-6 years of age was measured by scale fixed to the wall.

In our study 40 samples were taken whereas similar study was conducted in Babina Block, Jhansi district (M.P.) where 200 samples were taken. In another study conducted at AWCs in Sarjapura, Banglore to study the prevalence and determinants of PEM among 2-6 years of child where 245 children were taken for study.

According to our study maximum participants were children <3 years of age and female. Maximum participants were from lower-middle class and joint family. Incidence of mild stunting and mild-moderate wasting was maximum among study participants. Malnutrition according to Waterlow's classification includes chronic malnutrition (35%) followed by acute (12.5%). According to MUAC mild moderate malnutrition was 42.4% and severe was 54.5%. In the study malnutrition was more in females, children from upper-lower class, children with parents having education of middle school and illiterate parents. Children residing in kuchaa and pucca house were equally affected.

Study done in Babina block was on the basis of Gomez classification and the results found were overall occurrence of PEM in under 6 years children was observed to be 67%, however it was found to be significantly higher (80.9%) in the age group in 1-3 years. This age group exhibited significantly higher prevalence of grade1, grade 2, grade 3 PEM. PEM was higher among children of illiterate mothers/ mothers having primary education and was maximum (77.7%) among those children whose father were labourer.

In another study conducted at Sarjapura, Banglore, the Prevalence of stunting (low height for age) in the study was 66(27%), out of them 54(22%) of children had mild stunting and 12(4.9%) of children had severe stunting. Maximum prevalence of underweight was in age group 36-48 months i.e. 50(59.5%) and least prevalence in 24-36 months i.e. 32(31.4%). It was found that 116(47.3%) of the children were underweight. 87(35.5%) and 29(11.8%) of children were in grade I and grade II PEM respectively and no child was of grade III and IV PEM.

Conclusion

Taking 40 samples in our study we came to following conclusion:

♦ Incidence of mild-moderate wasting was maximum in our study participants i.e. 35%.

♦ Incidence of mild stunting was maximum i.e. 32.5% followed by moderate stunting i.e. 25%.

♦ According to MUAC, 42.4 % children were suffered from mild-moderate malnutrition.

♦ According to Waterlow's classification, 35% children were chronic malnourished while 12.5% children suffered with acute malnutrition.

♦ Female were suffered malnutrition more than male study participants.

♦ Maximum malnourished children were from upper-lower class family.

♦ 60% children suffering from malnutrition were of parents with middle school education.

♦ Malnutrition was more among children who take vegetarian diet than those who use take mixed diet.

Recommendations

Health Promotion

● Health education to pregnant and lactating women.

● Promotion of breast feeding.

● Measures to improve family diet.

● Development of low cost weaning food.

● Nutritional education.

● Improvement family environment.

Specific protection

● Balanced diet for child.

● Immunisation.

Early diagnosis and Treatment

● Periodic surveillance.

● Early diagnosis and treatment of infection and diarrhoea.

● Deworming.

● Development of supplementary feeding programmes during epidemic.

Reference

1   www.medind.nic.in/../iajto6i4p291.pdf

2   www.emedicine.medscape.com/article/ 1104

3   www.en.wikipedia.org/wiki/malnutrition

4   A study of protien energy malnutrition in children (0-6 year) in rural population of babina block in jhansi district of u.p. available   from   ir.knust.edu.gh/../ bb%2520final.pdf]

5   www.cg.nic.in/../Pip201213.pdf

6   Park's Textbook of Preventive and Social Medicine 23rd edition.

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