

## To assess the prevalence of malnutrition among the children of age group of 0 - 5 years in the rural area of Vidarbha region

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### Abstract

The problems of malnutrition among under-five children can be used to determine the need for nutritional surveillance, nutritional care, or appropriate nutritional intervention programmes in a community. The present study was planned to assess prevalence of malnutrition in children of the age group of 0 to 5 years. A village based study was carried out to assess prevalence of malnutrition among under-five children at the rural area of Katol. Data was collected by interview schedule for collection of socio-demographic and physical examination format for assessing malnutrition status from January 2016 to April 2016. A child's detailed history, sex and weight were recorded and length/height were measured using standard technique. The height and weight were plotted on WHO centiles curves. The malnutrition was graded according to WHO classification. Data analysis was done by using WHO Anthro and SPSS software. Total study subjects age group 0-5yrs. 310 study subjects were in study group and 320 study subjects in control group. As per WHO classification of protein energy malnutrition, 75/320(23.43%) from control group and 59/310 (19, 03%) from study group study subjects were in normal range Significantly higher number no children from study group 80.96% (251/310) showed malnutrition by applying any of the anthropometric parameter than that in control group 76.56% (245/320) ( $\chi^2$ - value=13.43, p-value=0.0038). In conclusion, high percentage of malnutrition was found in under five children in male children.

**Keywords:** Malnutrition, Children, WHO, Rural.

### Introduction

Malnourishment is a serious challenging problem in India. These children are having comparatively higher mortality and morbidity rates. Under-five children's malnourishment is still major developmental challenge.<sup>1-3</sup> India had enormous economic growth in last 20-30 years despite of this malnutrition is common in both Urban and rural areas. Nevertheless, multiple cases have noticed, so health care sectors and government are taking necessary steps to improve the present condition. Malnutrition is a silent emergency. It's a major part of various cycles that includes poverty and disease. All these factors are interrelated and independent. Socioeconomic and political influence can beat this ferocious cycle for which specific nutritional and health actions are mandatory. Presently in developing countries, health and social consequences affects child growth. The result of this impaired growth during childhood can be classified in terms of morbidity, mortality and psychological and intellectual development.<sup>4-7</sup> These affects can also be seen in adult life in terms of body size, work, reproductive performances and risk of chronic illness.

The government has envisaged a "multi sectoral approach" and "direct and specific interventions" to address the issue of nutritional problem. In spite of all these attempts, the problem still exists and has not been resolved to the desired level.<sup>8-9</sup> On this ground it has now become necessary to look into the depth of the problem, by understanding the situation inside the

house. Present research study proposes to adopt village based planning strategy with due considerations to community involvement, and participation and to deliver scientifically sound and appropriate need based interventions to address various nutritional problems in rural set up.

### Aim and Objective

1. To assess prevalence of malnutrition in children of age group 0 to 5 years.

### Materials and Methods

The present study adopts an experimental epidemiological study design (Pre and post intervention, with control group) - community trial approach. Study was conducted in Rural field practice area under NKP Salve Medical College, Katol block, Nagpur, among all the children in the age group of 0 to 5 years from the randomly selected PHC (Yenva) and selected 5 villages under Sub-center-(Zilpa, and Mendki) fulfilling inclusion and exclusion criteria.

**Sample Size:** Study group - 310, Control group - 320 (based on existing data of Sub -centre)

As an intervention, present study proposes to adopt the village based planning strategy (through village empowerment Committee) empowering the community and families to take care of nutritional wellbeing of the children in the age group of 0-5 years.

Data collection tools appropriately validated and data analysed under the guidance of qualified

statistician using SPSS (19.00 version) software. The tool was validated by experts from tool validity committee from MGM University. Valuable suggestions were given and necessary correction was made after the consultation with the guide.

Permission was obtained from the medical officers from Yenva PHC. Before doing assessment self – introduction and the purpose of the study was mentioned by the investigator. Consent of the samples was taken. Demographic information was completed by the interview method. The protein energy malnutrition assessment of the samples was done by physical assessment. The grading was done according to WHO.

## Results

**Percentage wise Distribution of under Five Children according to their Demographic Variables (Environmental Conditions and Socio-Economic Status):** This section deals with percentage wise distribution of under- five children according to their demographic variables (environmental conditions and socio-economic status). Non-probability convenient samples of 630 subjects were drawn from study population, whom were selected from Katol area. The data obtained from the subjects describe the environmental conditions socioeconomic status is presented in the form of frequency, percentage, their chi-square value and level of significance (Table 1).

**Table 1: Percentage wise distribution of population according to their environmental conditions (n=630)**

Environmental Conditions	Study Group(n=310)		Control Group(n=320)	
	Frequency	%	Frequency	%
<b>Type of House</b>				
Pacca House	159	51.29	157	49.06
Kaccha House	112	36.13	16	5.00
Semi Pacca House	39	12.58	147	45.94
<b>Ventilation</b>				
Yes	170	54.84	182	56.88
No	140	45.16	138	43.13
<b>Light</b>				
Natural	240	77.42	65	20.31
Artificial	70	22.58	255	79.69
<b>Separate Kitchen</b>				
Yes	223	71.94	230	71.88
No	87	28.06	90	28.13
<b>Smoke Outlet</b>				
Yes	59	19.03	79	24.69
No	251	80.97	241	75.31
<b>Electricity</b>				
Yes	304	98.06	297	92.81
No	6	1.94	23	7.19
<b>Type of cooking fuel</b>				
Firewood	129	41.61	157	49.06
Kerosene	13	4.19	10	3.13
Biogas	6	1.94	6	1.88
LPG	162	52.26	147	45.94
<b>Source of drinking water supply</b>				
Sanitary Well	127	40.97	89	27.81
Bore Well	27	8.71	39	12.19
Public Tab	140	45.16	170	53.13
Pond	2	0.65	2	0.63
Others	14	4.52	20	6.25
<b>Water Supply</b>				
Continuous	132	42.58	168	52.50
Intermittent	178	57.42	152	47.50
<b>Method of drinking water purification</b>				
Strains water by cloth	220	70.97	250	78.13
Uses Alum	20	6.45	26	8.13
Water Filter	12	3.87	21	6.56
Boils Water	6	1.94	7	2.19

Electric Purifier	6	1.94	5	1.56
Does not purify	46	14.84	11	3.44
<b>Mode of disposal of domestic waste</b>				
Dumping indiscriminately	22	7.10	43	13.44
Dumping in pit	43	13.87	58	18.13
Community Dumping	212	68.39	213	66.56
Manure Pit	27	8.71	2	0.63
Burning	6	1.94	4	1.25
<b>Sanitary Latrine</b>				
Present and in use	43	13.87	231	72.19
Present and not in use	201	64.84	16	5.00
Absent	66	21.29	73	22.81
<b>Type of salt used</b>				
Powdered Salt	282	90.97	271	84.69
Crystal Salt	28	9.03	49	15.31

Out of 13 environmental conditions 9 conditions i.e. type of house, light, electricity, sources of drinking water supply, water supply, method of drinking water purification, mode of disposal of domestic waste,

sanitary latrine and type of salt used were found to be comparable. Likewise ventilation, separate kitchen, smoke outlet and type of cooking fuel were not comparable.

**Table 2: Socio-economic status wise distribution of malnutrition among study and control subjects**

Kuku swami	Study Group(n=310)		Control Group(n=320)	
	Frequency	%	Frequency	%
Class I(Upper)	44	14.2	25	7.81
Class II(Upper Middle)	27	8.7	46	14.38
Class III(Middle)	84	27.1	98	30.63
Class IV(Lower Middle)	43	13.9	53	16.56
Class V(Lower)	112	36.1	98	30.63
Total	310	100	320	100
$\chi^2$ -value	13.07, p-value=0.019, Significant, p<0.05			

Table 2 shows that majority of the children was belonging to Class III (Middle) and Class V (Lower). For the above table, the calculated chi-square value was greater than tabulated chi-square, thus socio-economic status was found to be significant. Henceforth for both study group and control group, the malnutrition of the children varies according to the socio-economic status.

In maternal care form 21 components were selected and assessed by interview schedule. out of 21 components of maternal care 9 components i.e. ANC registration, number of antenatal check-up, number of time blood pressure checked during last pregnancy, number of abdomen examined during pregnancy, TT injections given during pregnancy, iron supplements given and consumed during pregnancy, delivery conducted and type of delivery were found to be

comparable.. Likewise rest of the components were found to be non-significant. These conditions were not comparable.

Simultaneously birth registration for children in the age group of 0-5 years was assessed by using 9 components. Out of 9 components of birth registration of children in the age group of 0 to 5 years 4 components were found to be significant. These conditions were significant because their calculated chi-square value was greater than the tabulated chi-square value at level of significance of 0.05. Likewise 1 was found to be non-significant. These conditions were non-significant because their calculated chi-square value was less than the tabulated chi-square value at level of significance of 0.05.

**Table 3: Type of illnesses (Conditioning influences form no. 4)**

	Study Group		Control Group		$\chi^2$ -value	p-value
	Frequency	%	Frequency	%		
Fever	28	9.03	16	5.00	3.94	0.047,S
Acute Respiratory Infection	22	7.09	10	3.13	4.90	0.026,S
Worm Infestation	56	18.06	35	10.93	6.47	0.011,S
Diarrhoea	18	5.08	33	10.31	4.29	0.038,S

For histories of illnesses; all were found to be significant. These conditions were significant because their calculated chi-square value was greater than the

tabulated chi-square value at level of significance of 0.05 (Table 3).

**Table 4: Immunization and vitamin A prophylaxis**

	Study Group		Control Group		$\chi^2$ -value	p-value
	Frequency	%	Frequency	%		
Partially Immunized	58	18.71	72	22.50	0.48	0.48,NS
Fully Immunization	239	77.10	238	74.38	0.24	0.62,NS
Vitamin A Prophylaxis	203	65.48	247	77.19	3.49	0.06,NS
Unimmunized	21	6.77	3	0.94	4.68	0.030,S

Table 4 shows that out of 4 components of immunization and Vitamin A prophylaxis 1 component was found to be significant. These conditions were significant because their calculated chi-square value was greater than the tabulated chi-square value at level of significance of 0.05. Likewise 3 were found to be non-significant. These conditions were non-significant because their calculated chi-square value was less than

the tabulated chi-square value at level of significance of 0.05.

**Distribution of under-five Children with Regards to their Nutritional Status:** This section deals with the assessment of nutritional status of under-five children regarding the parameters of protein energy malnutrition, specific vitamin deficiency, and specific trace elements for new-born and child.

**Table 5: Percentage of underweight, stunting and wasting total population (WHO Classification)**

	Study group			Control group		
	M(178)	F(132)	Total(310)	M(158)	F(162)	Total(320)
Normal	28(15.73%)	31(23.48%)	59(19.03%)	19(12.02%)	56(34.56%)	75(23.43%)
Underweight	47(26.40%)	30(22.72%)	77(24.83%)	43(27.21%)	35(21.60%)	78(24.37%)
Wasting	30(16.85%)	11(8.33%)	41(13.22%)	45(28.48%)	23(14.19%)	68(21.25%)
Stunting	73(41.01%)	60(45.45%)	133(42.90%)	51(32.27%)	48(29.62%)	99(30.93%)
Total	178(100%)	132(100%)	310(100%)	158(100%)	162(100%)	320(100%)
$\chi^2$ -value	13.43,p-value=0.0038,Significant					

As per indicators of malnutrition of protein energy malnutrition, 75/320(23.43%) from control group and 59/310 (19, 03%) from study group study subjects were in normal range (Table 5). Significantly higher number no children from study group 80.96% (251/310) showed malnutrition by applying any of the anthropometric parameter than that in control group 84.26% (245/320) ( $\chi^2$ -value=13.43, p-value=0.0038). In both the group more no of male children were seemed to have malnutrition by applying any one of anthropometric parameter than that in female children from study group (male children 150/178 (84.26%) female children 101/132(76.51%) as well as in control group (male children 139/158(87.97%), female children 106/162(65.43%). Majority of children were stunted 133/251 (52.98%) followed by underweight139/158 (87.97%and wasting 41/251 (16.33%) in study group as well as in control group stunted 199/245(40.40%), underweight 78/245(31.83%), wasted 68/245(27.75%).

## Discussion

Protein calorie malnutrition is one of the common nutritional diseases in developing countries. In comparison to females, males are more affected with malnutrition. In study group out of 251, 150 males and

101 females were malnourished. Subsequently in control group, out of 245 children 139 males and 106 females were malnourished. The proportion of malnourished was higher among under five children. Similar results were observed by Srivastava RK et al<sup>10</sup> improper weaning- frequent and recurrent infection makes this group vulnerable.

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calculated using SPSS version 20.0 statistical software and/or World Health Organization Anthro software with aid of Stat/Transfer. Overall prevalence of undernutrition was 35.5%, of which 85 (24.9%), 38 (11.1%), and 49 (14.3%) were stunting, wasting, and underweight, respectively. Male children were more affected in both severe and moderate nutritional problems compared to female children.

Majority of children were stunted 133/251 (52.98%) followed by underweight 139/158 (87.97% and wasting 41/251 (16.33%) in study group as well as in control group stunted 199/245(40.40%), underweight 78/245(31.83%), wasted 68/245(27.75%). Similar results were observed by Sahu SK<sup>12</sup> who has collected data from Google search, Medline, and others. The information retrieved was reviewed and analyzed for discrepancies. Existing evidence shows that the prevalence of under-nutrition among under-five children was high and varied widely (under-weight: 39-75%, stunting: 15.4-74%, wasting: 10.6-42.3%) depending on the assessment methodology adopted.

### Recommendation

Reduction of malnutrition in 0-5 age group can be sure by availability of supplementary feed. Healthcare providers to focus on health education among parents, especially the mothers on the exact nutritional requirements in terms of quality and quantity of the child at specific age groups.

### Conclusion

Majority of under five children were malnourished in study group were 80.96% and in control group were 76.56% Here malnutrition was more common in males than females.

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