



A Study To Assess The Prevalence Of Protein Energy Malnutrition (Pem) Among The Children Between 3-5 Years Residing In Selected Community Areas Of Bhubaneswar.

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Abstract: **Introduction:** Protein Energy Malnutrition is a common and widely prevalent type of malnutrition in children residing in rural and urban slums, especially in developing countries. There are various factors influence the risk of under nutrition. Malnutrition plays a important role in morbidity and mortality of children. **Objectives:** 1. To find the prevalence of Protein Energy Malnutrition (PEM) among the children between 3-5 years and 2. to determine the association between the Protein Energy Malnutrition among the children between 3-5 years with their selected demographic variables. **Research Methodology:** A descriptive study was conducted to the children between 3-5 years in selected community areas of Bhubaneswar. Multi-stage random and convenience sampling technique was used to collect the samples. Data were collected by using structured interview technique. Data were analyzed by utilizing descriptive and inferential statistics. **Result:** According to IAP classification, Majority of children 48.9 % were in normal nutritional status, remaining children were suffering with grade I PEM (33.5%), grade II PEM (15.7%), grade III PEM (1.5%) and grade IV PEM (0.4%). **Conclusion:** This study concluded that, many children had Protein-Energy Malnutrition due to their low-socio economic status. Health education should be given to the mothers of under-five children suffering with PEM.

Key words: Assess, Prevalence, Protein-Energy Malnutrition (PEM), Children and Community areas.

INTRODUCTION

Protein-Energy Malnutrition is a common nutritional and fatal problem in under-five children. Childrens need high protein and energy diet to maintain the normal nutritional status. PEM is caused by less intake and improper absorption and utilization of protein and energy. [1]. Factors which are influencing PEM were poor dietary practice, poor environmental sanitation, low socio-economic status, less educational status of the mother, frequent exposure to infections and poor food safety measures [2]. Childrens physical development was assessed by anthropometric measurements, which includes weight, height and mid upper arm circumference. This is a suitable technique to find the physical development of the childrens and it's associated factors [3]. Prevalence of PEM as per the study conducted among under-five childrens in rural areas of Ambala, based on the Gomez classification out of 300 children, 133 (44.44%) children had normal nutritional status, 118 (39.3%) children had 1st degree malnutrition, 47 (15.7%) children had 2nd degree malnutrition and 2 (0.6%) children had 3rd degree malnutrition [4]. A community based intervention study was conducted in infant and young children in Karad, results, total of 120 children, based on IAP classification, children suffering with Grade I PEM (39.6%), Grade II PEM (31%), Grade III PEM (15.5%) and Grade IV PEM (13.7%) [5].

OBJECTIVES:

The objectives of this study are 1. to find the prevalence of Protein Energy Malnutrition (PEM) among the children between 3-5 years and 2. to determine the association between the Protein Energy Malnutrition among the children between 3-5 years with their selected demographic variables.

RESEARCH METHODOLOGY:

A Quantitative Research Approach was adopted to this study. The researcher selected the descriptive research design to plan for this research work. This study was conducted in the selected community areas of Bhubaneswar. Target population of this study was the Children with the age between 3-5 years residing in community areas of ward no. 18 and 19, Bhubaneswar. Accessible population of the study was, the children between 3-5 years residing in Palasuni Village, Medical College, Pandara Village, Balia Pata, Prachi Vihar, Dadei Thakurani Lane, G.G.P Colony, Munda Sahi, Hanuman Sahi, Jaganath Nagar, Rasulgarh Village of Bhubaneswar.

Sample size was calculated based on the study conducted by Sethy G, Jena P, Pradhan S and Biswas T (2017), regarding the prevalence of malnutrition among under five children of urban slums of Berhampur, Odisha, India: A community based cross-sectional study reported the prevalence rate of Malnutrition was found to be 52.6% for the children with the age group of 37 to 60 months. Keeping this prior information in consideration, the sample size was calculated using 'N' master sample size software the absolute precision as 6% the level of confidence as 95% the record sample size is 266. Hence, the Prevalence identification sample size was 266.

Samples were selected by using the convenience Sampling Technique. Samples, were selected as based on the children who were all falling under the inclusion criteria like children aged between 3 to 5 years, resides in selected community areas of Bhubaneswar, Mothers of Children, who can understand and speak Odia and Mothers, who were willing to allow their children to participate in the study and the Exclusion Criteria of this study were the Children with the age between 3-5 years already diagnosed with Grade III & IV Protein Energy Malnutrition, Severe Acute Malnutrition, kwashiorkor, marasmus, marasmic kwashiorkor, overweight or over nutrition, major health issues, communicable disease and chronic disease and mothers, who were not willing to allow their children to participate in the study. Variables under the study were demographic variables and research variables.

Tool of the study was developed and categorized into two sections. Section – I: Socio-Demographic variables, which includes children's Age, Sex, Educational status, Type of family, family size, Educational status of mother, Occupational status of the mother, family income per month, Order of Birth, Type of diet and Section – II: Assessment of Anthropometric measurements of the Children between 3 – 5 Years, which includes Children's weight and height. The content validity was obtained from the experts. Experts Suggestions were incorporated in the final tool.

A pilot study conducted before starting major study in Cuttack. Permission was taken to conduct this main study from the ward counsellors of selected community areas of Bhubaneswar. Written consent was obtained from the mothers of children before starting the study to maintain confidentiality and anonymity of the study subjects. Structured interview questionnaire technique was used to collect the data. Collected data was made into tabulation for analysis and interpretation of the data. The researcher used descriptive and inferential statistics to find the result of this study.

RESULTS:**Table 1: Distribution of socio-demographic variables of children between 3-5 years in selected community areas of Bhubaneswar.**

N=266

Sl.No	Socio-demographic Variable	Frequency (f)	Percentage (%)
1.	Age of the children		
a	36 - 42 months	126	47.4
b	43 - 48 months	63	23.7
c	49 - 54 months	48	18
d	55 - 60 months	29	10.9
2.	Sex of the children		
a	Male	130	48.9
b	Female	136	51.1
3.	Type of family		
a	Nuclear	162	60.9
b	Joint	98	36.8
c	Third generation	6	2.3
4.	Family size		
a	3 members	94	35.3
b	4 members	134	50.4
c	5 members	35	13.2
d	>5 members	3	1.1
5.	Educational status of mother		
a	Illiterate	129	48.5
b	Elementary education	127	47.7
c	High school education	10	3.8
6.	Occupational status of mother		
a	Housewife	156	58.6
b	Labour	110	41.4
7.	Family income per month		
a	< 5,000/-	7	2.6
b	5,001-10,000/-	184	69.2
c	10,001-15,000/-	75	28.2
8.	Order of birth		
a	First child	17	6.4
b	Second child	227	85.3
c	Third child	21	7.9
d	Above third birth	1	0.4
9.	Type of diet of children		
a	Vegetarian	47	17.7
b	Non-vegetarian	201	75.6
c	Eggetarian	18	6.8

Table 1 shows the distribution of socio-demographic variables of children between 3-5 years in selected community areas of Bhubaneswar. Highest 47.4% of children were in the age group of 36-42 months, followed by 23.7% were in the age group of 43-48 months, 18% of children were 49-54 months and 10.9% of children belongs to 55-60 months. More than half (51.1%) of the children were females and the remaining 48.9% were males. Majority 60.9% of children from nuclear family, 36.8% of children belongs to joint family and 2.3 % of children belongs to third generation family. Highest 50.4% of children living in a family with 4 members, followed by 35.3 % of families having 3 members, 13.2% of families were having 5 members and 1.1% families were having more than 5 members. Regarding educational status of parents, highest 48.5% of mother were illiterate and 47.7% of mothers were completed with elementary education. Whereas, the least 3.8% of mother completed high school education. More than half (58.6%) of mothers were house wives and 41.4% were working as labour's And the majority 69.2% of children living

in the family with monthly income between Rs.5,001/-10,000/-, Rs.10,001-15,000/- (28.2%) and less than Rs.5,000/- (2.6%) of children belongs to low income status. Majority 85.3% were second children, 7.9% were third children, 6.4% were first children and 0.4% children were above third birth. Regarding type of diet, highest 75.6% of children prefer non-vegetarian diet and about 17.7% of children prefer vegetarian diet and remaining 6.8% of children prefer Eggetarian diet.

Table 2: Distribution of protein energy malnutrition among children between 3-5 years in selected community areas of Bhubaneswar.

N=266

Grade of Protein Energy Malnutrition [PEM] based on IAP classification	Range of Score %	Frequency (f)	Percentage (%)
Normal	>80	130	48.9
Grade I PEM	71-80	89	33.5
Grade II PEM	61-70	42	15.7
Grade III PEM	51-60	4	1.5
Grade IV PEM	≤ 50	1	0.4

Table 2 shows the distribution of protein energy malnutrition among children between 3-5 years in selected community areas of Bhubaneswar. Regarding grade of PEM based on IAP, majority 48.9% of children were normal, followed by 33.5% of children had grade I PEM. 15.7% of children had grade II PEM. About 1.5% and 0.4% had grade III and grade IV PEM respectively.

Table 3: Association between PEM based on IAP classification with selected socio-demographic variables of the children between 3-5 years in selected community areas of Bhubaneswar.

N=266

Sl. No	Socio-demographic Variables	PEM based on IAP classification		Chi-square	df	p-value
		Absent	Present			
1.	Age of the children			7.344	3	0.062 NS
a	36 - 42 months	72	54			
b	43 - 48 months	28	35			
c	49 - 54 months	20	28			
d	55 – 60 months	10	19			
2.	Sex of the children			9.459	1	0.002*** S
a	Male	51	79			
b	Female	79	57			
3.	Type of family			2.918	2	0.232 NS
a	Nuclear	78	84			
b	Joint	51	47			
c	Third generation	1	5			
4.	Family size			3.324	3	0.344 NS
a	3 members	45	49			
b	4 members	66	68			
c	5 members	19	16			
d	>5 members	0	3			
5.	Educational status of mother			0.467	2	0.792 NS
a	Illiterate	62	67			
b	Elementary education	64	63			
c	Highschool education	4	6			
6.	Occupational status of mother			0.095	1	0.757 NS
a	Housewife	75	81			
b	Labour	55	55			
7.	Family income per month			0.341	2	0.843
a	< 5,000/-	3	4			

b	5,001-10,000/-	92	92			NS
c	10,001-15,000/-	35	40			
8.	Order of birth					
a	First child	8	9			
b	Second child	112	115	1.011	3	0.799
c	Third child	10	11			NS
d	Above third birth	0	1			
9.	Type of diet of children					
a	Vegetarian	21	26			
b	Non-vegetarian	97	104	2.642	2	0.267
c	Eggetarian	12	6			NS

***Significant at $p < 0.001$

Table 3 illustrates the Chi-square test to find out the association between PEM based on IAP classification with selected socio-demographic variables of children between 3-5 years in selected community areas of Bhubaneswar.

The chi-square test inferred that there is significant association between PEM based on IAP classification with sex of the children ($\chi^2=9.459$; $p < 0.001$), Whereas there is no significant association between PEM based on IAP classification with other socio-demographic variables age of the children ($\chi^2=7.344$), type of the family ($\chi^2=2.918$), family size ($\chi^2=3.324$), educational status of the mother ($\chi^2=0.467$), occupational status of the mother ($\chi^2=0.095$), family income per month ($\chi^2=0.341$), order of the birth ($\chi^2=1.011$) and type of diet ($\chi^2=2.642$) of the children between 3-5 years were $p > 0.05$.

DISCUSSION:

Major findings of Socio-demographic Variables:

The study revealed a higher prevalence of PEM among children aged 36–42 months, with 47.4% belonging to this group. This could indicate that the youngest preschoolers are at greater risk due to rapid growth demands. Females (51.1%) exhibited slightly higher rates of malnutrition than males (48.9%), indicating a sex discrimination in care and dietary supply to the children. Nuclear families formed the majority (60.9%), which may explain lower familial support for childcare compared to joint families. More than half of the mothers were illiterate or had only elementary education, which leads to limiting their capacity to understand the nutritional requirements of the children. Hence, there is need for nutritional awareness programs for the mother and who are all taking care of the children.

Major findings on prevalence of Protein Energy Malnutrition:

The distribution of PEM based on IAP Classification revealed that, the majority (48.9%) were classified as normal, while 33.5% had Grade I PEM, and severe cases (Grades III & IV) were in less percentage.

Major findings of association between the Protein Energy Malnutrition among the children with their selected demographic variables:

PEM prevalence was significantly associated with sex of the children ($p < 0.001$) with females disproportionately affected. No significant associations were found with other variables like family type or income, mothers' educational status and occupational status, children's birth order and type of diet, which reflects, different cause of nature of protein energy malnutrition.

CONCLUSION:

This study concluded that, many children suffering with Protein-Energy Malnutrition which leads less physical development. Health awareness should be given to the mothers of under-five children suffering with PEM regarding prevention of PEM and promotion of normal nutritional status. Especially, make the mother to understand the importance of supplementary diet to overcome PEM.

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