Effects of Malnutrition among Urban Under-Five Children: A Cross Sectional Study

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Abstract

Malnutrition is now the most prevalent nutritional condition in poor nations, and it is a major contributor to under-five mortality and morbidity globally. More than one third of the world's malnourished youngsters are found in India alone. Among them, more than half of young children under the age of 3 are seemed to be underweight. The bulk of the world's malnourished children are mostly located in India, raising warnings about the need to improve health policies with a primary focus on reducing social and physical inequality. This study's goal was to evaluate the consequences of malnutrition in children under the age of five. Study design: To determine the consequences of malnutrition, a cross-sectional study using key informant interviews was used. 460 kids and their mothers took part in the investigation. Using multivariate logistic regression, odds ratios with a 95% confidence interval were utilised to determine the consequences of malnutrition in children under the age of five.

Results: among 460 children, (44.13%) had fever with infections and malnutrition was significantly associated with Pneumonia, Presence of illness in the last two weeks, Frequent diarrheal episodes and Respiratory Tract Infections once in a month (p<0.05).

Conclusion: Malnutrition has become a more widespread issue, and it can be prevented by providing children with the proper care and upbringing when they are younger. Additionally, educating mothers about the value of good nutrition for their children can help to solve the malnutrition issue in our community.

Keywords: Malnutrition, Consequences, Underfive, Children, Respiratory tract infections, Pneumonia and Diarrhea.

1. Introduction

In India, undernutrition among children under the age of five has emerged as a major public health issue. The nutritional condition of children under five is also being impacted by the eating habits of the current generation, which is leading to an increase in the incidence of non-communicable illnesses such obesity, diabetes, hypertension, and coronary heart disease etc.

Around 815 million people worldwide (11% of the population) are undernourished as of 2017. 176 million fewer individuals than in 1990, when 23% of the world's population was underweight. India is said to be the country where 60 million underweight children reside, and it is also where 80 percent of the world's malnourished children reside.

8294

Malnutrition is now the most prevalent nutritional condition in poor nations, and it is a major contributor to under-five mortality and morbidity globally. More than one third of the world's malnourished youngsters are found in India alone. Among them, more than half of young children under the age of 3 are seemed to be underweight. [1] Malnutrition is regarded as one of the most urgent problems, and one of its main effects is delayed physical and intellectual development. [2]

The bulk of the world's malnourished children are mostly located in India, raising warnings about the need to improve health policies with a primary focus on reducing social and physical inequality. [1]

According to certain surveys, a lot of kids eat unbalanced, unnutritious diet that leaves them undernourished or lacking in certain micronutrients. The community's capacity to make the best decisions is significantly influenced by the availability of nutrient-dense foods in marketplaces. [3] 38% of people in Karnataka are underweight, which accounts for both acute and chronic malnutrition. [4]

Babies born to unwell mothers are more likely to be unwell themselves. Long-term repercussions on people and society are associated with nutritional deficiencies. People who don't obtain enough nutrition are more likely to get infectious illnesses like pneumonia and TB, which often have higher fatality rates. [5]

Numerous studies have also revealed that many parents are ignorant of the benefits of breastfeeding and the idea that different food types should be offered to their kid. [6]

For survival, to maintain a high standard of living, and to ensure the security and protection of human life, nutrition is a crucial component of good health. For healthy development, correct organ formation and function, a strong immune system, and favourable neurological and cerebral growth, enough nourishment is necessary. [7]

The most vulnerable age group for malnutrition is children under two, and preventing its appearance is one strategy to lessen the impact of malnutrition. The goal of acute malnutrition prevention is to stop malnourished children from progressing to moderate acute malnutrition and to stop children with moderate acute malnutrition from becoming worse and becoming severely malnourished.

2. Materials and Methods

Using the cluster sampling technique, a cross-sectional study was conducted on 460 children under the age of five and their mothers in the urban districts of Belagavi city. With the assumption that each ward has 30% malnourished children under the age of five, 16 wards were chosen at random by computer, and 30 samples were taken from each ward using simple random sampling. The formula below was used to determine the sample size.

Sample size (n) = $\dfrac{Z^2_{1-\alpha/2}}{d^2} SD^2$

Where

n- Sample size, $Z_{1-a/2}$ is one tail Standard Normal Variate Assuming sample size at 95% CI, SD - 10% error in estimation of mean ie, 10% of SD. 'd' is tolerable error - 20% attrition for lost cases etc.

The sample size was determined as 460 using the formula above. The District Health Authority and Institutional Ethical Committee both approved the study. The reason of the study was explained to mothers and mothers were asked to give consent to carry out the

8295

study. Data collection was done by using predesigned, pretested and validated questionnaires. For ease of comprehension, these questions were translated into the local language, and anthropometric measurements such as height, weight, and mid upper arm circumference were taken using established WHO scales. Children with physically handicapped and seriously ill during survey were excluded from the study. A simple random sample method was used to gather information from mothers and their under-five-year-olds. Data was cleaned and analysed by using SPSS software. Chi square test was adopted to find out the association and Multiple regression method was used to findout the determinants of Malnutrition. The power of association was checked by using odds ratio with 95% confidence interval.

3. Results

Table 1: Effects of Malnutrition wise distribution

Effects of Malnutrition	Number	Percentage
Diseases occurring commonly		
Pneumonia	84	18.26
Diarrhoea	173	37.61
Fever with infections	203	44.13
Presence of illness in last two weeks		
Yes	189	41.09
No	271	58.91
Habit of hand washing before meal		
Yes	368	80.00
No	92	20.00
Latrine at home		
Yes	432	93.91
No	28	6.09
Diarrhoeal episode		
Frequently	164	35.65
Not frequently	296	64.35
RTI frequency		
Once a month	219	47.61
Twice/thrice a month	87	18.91
Not frequently	154	33.48
Total	**460**	**100.00**

Table 1 reveals that majority (44.13%) had fever with infections,(58.91%) children didn't had any illness in last two weeks during data collection,(80.%) children has the habit of Handwashing before meal, Majority (93.91%) had Latrine at home, More than half (64.35%) didn't had frequent diarrheal episode and (47.61%) had RTI once in a month.

8296

Eur. Chem. Bull. 2023,12(Special Issue 7), 8294– 8300

Table 2 : Association between Effects of Malnutrition with status of malnutrition

Effects of Malnutrition	No malnourished	%	Malnourished	%	Total	%	Chi-square	p-value
Diseases occurring commonly								
Pneumonia	50	59.52	34	40.48	84	18.26	41.7090	0.0001*
Diarrhoea	46	26.59	127	73.41	173	37.61		
Fever with infections	115	56.65	88	43.35	203	44.13		
Presence of illness in last two weeks								
Yes	60	31.75	129	68.25	189	41.09	25.7730	0.0001*
No	151	55.72	120	44.28	271	58.91		
Habit of hand washing before meal								
Yes	172	46.74	196	53.26	368	80.00	0.5600	0.4540
No	39	42.39	53	57.61	92	20.00		
Latrine at home								
Yes	197	45.60	235	54.40	432	93.91	0.2050	0.6510
No	14	50.00	14	50.00	28	6.09		
Diarrhoeal episode								
Frequently	53	32.32	111	67.68	164	35.65	18.8530	0.0001*
Not frequently	158	53.38	138	46.62	296	64.35		
RTI frequency								
Once a month	111	50.68	108	49.32	219	47.61	33.1710	0.0001*
Twice/thrice a month	16	18.39	71	81.61	87	18.91		
Not frequently	84	54.55	70	45.45	154	33.48		
Total	211	45.87	249	54.13	460	100.00		

*p<0.05

Table 2 reveals that Malnutrition was significantly associated with Pneumonia (chi=41.7090,p=0.0001), Presence of illness in the last two weeks (chi=25.7730,p=0.0001),Frequent diarrheal episode (chi=18.8530,p=0.0001) and RTI once in a month (chi=33.1710,p=0.0001) at 0.05 level of significance. Malnutrition was negatively associated with habit of Handwashing before meal and Latrine at Home.

Table 3: Multiple logistic regression analysis of status of malnourish by Effects of Malnutrition

Effects of Malnutrition	Malnourished	%	Total	95% CI for OR		p-value
				Lower	Upper	
Diseases occurring commonly						
Pneumonia	34	40.48	2.63	1.51	4.59	0.0010*
Diarrhoea	127	73.41	0.88	0.53	1.45	0.6050
Fever with infections	88	43.35	Ref.			
Presence of illness in last two weeks						
Yes	129	68.25	2.19	1.44	3.33	0.0001*
No	120	44.28	Ref.			
Habit of hand washing before meal						
Yes	196	53.26	0.85	0.50	1.44	0.5450
No	53	57.61	Ref.			
Latrine at home						
Yes	235	54.40	0.51	0.27	0.96	0.0360*
No	14	50.00	Ref.			
Diarrhoeal episode						
Frequently	111	67.68	1.32	0.84	2.07	0.2310
Not frequently	138	46.62	Ref.			
RTI frequency						
Once a month	108	49.32	1.15	0.76	1.74	0.5180
Twice/thrice a month	71	81.61	4.20	2.19	8.05	0.0001*
Not frequently	70	45.45	Ref.			

*p<0.5

Table 3 The multiple logistic regression analysis of total of malnutrition scores by Effects of Malnutrition shows that Pneumonia is significant of 2.63 odds (95% CI, p=0.0010) as compared to Diarrhea and Fever with infections.

Presence of illness in last two weeks is significant of 2.19 odds (95% CI, p=0.0001) as compared to non presence of illness during data collection.

Availablity of Latrine at home is significant of 0.51odds (95% CI, p=0.0360) as compared to non availability of Latrine.

Occurrence of RTI Twice/thrice a month is significant of 1.15 odds(95% CI, p=0.0001) as compared to occurrence of RTI once a month.

4. Discussion

The findings of the study showed that presence of Pneumonia, increases the risk of malnutrition and this was supported by study conducted in Public Health Centers in Banjarnegara, Kebumen, Jepara, and Pekalongan districts of Indonesia, [10]

8298

Eur. Chem. Bull. 2023,12(Special Issue 7), 8294– 8300

It was also observed that underfive children with frequent diarrheal episodes are prone to develop malnutrition and study done in Pakistan supported this. [11]

Recurrent respiratory tract infections plays a vital role in children has significant association with malnutrition and this was supported by one study. [12] [13]

5. Conclusion

The above findings of the study, it can be concluded that malnutrition is one of the major public health problem in India which affects both Physical and Mental health of children. Some socio economic and health related factors are significantly found associated with severe effects of Malnutrition. Hence mothers/caregivers should be sensitized towards the importance of child care and proper nutritional and health practices helps to overcome the problems associated with malnutrition. A healthy mother can give birth to healthy child. In this view, nutritional counseling to be done for mothers and evaluated properly time to time.

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Conflicts of interest

There are no conflicts of interest

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8299

Eur. Chem. Bull. 2023,12(Special Issue 7), 8294– 8300

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8300

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