

ASSESSMENT OF MORBIDITY PROFILE AMONG UNDER-FIVE CHILDREN IN URBAN SLUM AREA OF BERHAMPUR, A SOUTHERN CITY OF ODISHA- A CROSS-SECTIONAL STUDY

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ABSTRACT

BACKGROUND

Under-five children constitute the most vulnerable segment of a country and their nutritional status and mortality rate is a sensitive indicator of community health and nutrition. India contributes to 25% of the over 6.9 million under-five deaths occurring worldwide every year. Children in the age group of 0 to 6 years form 2.3% of the slum population of India.

The aim of the study was to find out prevalence of undernutrition and to assess morbidity pattern of under-five children and its effect on nutritional status and vice versa.

MATERIALS AND METHODS

Study Design- A community-based cross-sectional study.

Study Setting- The 3 slum areas.

Study Period- October 2014 - September 2016.

Sampling Method- Convenient sampling.

Sample Size- 150 children aged 6 months to 5 years.

RESULTS

Out of total 150 children studied, 69.3% children were having undernutrition in the form of underweight, wasting and stunting. ARI was the most common morbidities (44%), followed by diarrhoea (34.7%) and others (21.3%). Children those who were suffering from persistent diarrhoea were more prone to develop undernutrition (85.7%) in comparison to acute diarrhoea (52.6%). Those children were having recurrent ARI were suffering more from undernutrition (76.9%) in relation to those did not have recurrent ARI (45%). Families using municipal water were suffering more from the diseases than those using borewell water. Only 20.7% mother having knowledge about hygiene and it was also found that children of those mother were suffering from less morbidities.

CONCLUSION

The study concludes that morbidities are more and living conditions are poor in slums areas with less availability to good source of water and a separate toilet facility. Hygiene and health-seeking behaviours of mothers are poor because of their low education level. Female literacy and periodic health check-up of under-five children through health camps should be promoted. Sensitising mothers about good health practices through workshops, roadshows, documentary films and other media coverage may improve overall health of under-fives.

KEYWORDS

Morbidity, Slum Area, Undernutrition, Under-Five Children.

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BACKGROUND

Under-five children constitute the most vulnerable segment of a country. Their nutritional status and mortality rate is a sensitive indicator of community health and nutrition.

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UNICEF considers under-five mortality rate as the best single indicator of social development and well-being rather than GNP per capita as the former reflects income, healthcare and basic education, etc.¹

Globally, under-five mortality rate has declined to 40.8 in 2016 and the number of children dying under-five has reached 5.6 million in 2016 compared with nearly 9.9 million in 2000.²

Every year, millions of children under 5 years of age die mostly from preventable causes such as pneumonia, diarrhoea and malaria. India and Nigeria alone account for almost a third (32 percent) of the global under-five deaths. Pneumonia, diarrhoea and malaria remain among the

leading causes of death among children under age 5 accounting for almost a third of global under-five deaths. Pneumonia (16%), diarrhoea (9%) and malaria (5%) of all deaths among children under age 5 worldwide in 2015. In almost half of the cases, malnutrition plays a role, while unsafe water, sanitation and hygiene are also significant contributing factors.³ Globally, more than half of the under-five deaths are attributable to undernutrition.⁴ For this reason, child mortality is a key indicator not only for child health and well-being, but for overall progress towards the Sustainable Development Goals (SDGs).³

At national level NFHS-4 data revealed the national under-five mortality rates (U5MR) is 50 per 1000 live births with 34 in urban and 56 in rural areas.⁵ Odisha's U5MR is estimated to be 49 per 1000 live births with 25 in urban area.⁶

In India, each year 27 million children are born. Around 10% of them, do not survive to 5 years of age. In 2015, there were 214 million malaria cases that led to 4,38,000 deaths. Of these, about 80 percent were children under five years of age and 1% under-five death due to malaria in India. 15% of all under-five death in India is due to pneumonia and 10% due to diarrhea.⁷

Almost 60 percent of deaths due to diarrhoea worldwide are attributable to unsafe drinking water and poor hygiene and sanitation.⁸ Handwashing with soap alone can cut the risk of diarrhoea by at least 40 percent and significantly lower the risk of respiratory infections.^{9,10} Clean home environments and good hygiene are important for preventing the spread of both pneumonia and diarrhoea¹¹ and safe drinking water and proper disposal of human waste, including child faeces are vital to stopping the spread of diarrhoeal disease among children and adults.

This is particularly true for the children living in slums. They are not only deprived of the most basic services, but are also not recognised as an important segment by our urban planners and developers. A vicious cycle of malnutrition and infection and contributes to high child mortality in underprivileged communities of slum dwellers. Under this background, this study is carried out with following objective.

Objectives

1. To assess morbidity pattern of under-five children.
2. To assess its effect on nutritional status and vice versa.

MATERIALS AND METHODS

Source of Data- The study was conducted in the urban slum areas of Berhampur city. The present study included 3 slum areas. The 3 slum areas are Malli sahi, Bauri sahi, Nua sahi.

Study Sample- By convenient sampling method, 150 children were selected.

Study Design- A community-based cross-sectional study.

Study Setting- Slum areas of Ankuli, Berhampur, Odisha.

Study Period- October 2014 - September 2016.

Inclusion Criteria- All children aged 6 months to 5 years residing in slum areas of Ankuli.

Exclusion Criteria

- Children <6 months and >5 years of age.
- Children having cerebral palsy, congenital malformation, HIV infection or any other chronic morbidity.

Data Collection- Data was collected by interviewing the mothers on a pretested structured pro forma with specific questionnaires. Anthropometric measurements were carried out on the children.

Anthropometry

Weight- Every child was weighed with a weighing scale, which was periodically standardised. Recorded in kilograms in standing position with minimum clothes.

Height- For infants, the recumbent length was measured using infantometer. Standing height of the child was measured for he/she who can stand.

Morbidity- Morbidity pattern was documented after taking proper history from mother or informant regarding illness of their children.

Persistent Diarrhoea- Children suffering from diarrhoea for more than 2 weeks was considered persistent diarrhoea.

Recurrent Respiratory Infections- Respiratory infections more than six within the span of a single year was considered recurrent respiratory infections.

Adequate Hygiene- Handwashing with soap and water at critical times including before eating or preparing food and feeding the baby, after using the toilet and disposing excreta of the baby in the toilet was considered adequate hygienic practice. Absence of such practice or lacking any of the components is inadequate practice.

RESULTS

Out of total 150 children studied, 54.7% were males and 45.3% were females. Maximum children were in the age group 3-5 years (52.6%) followed by 1 to 3 years (24%). It was observed that out of total 150 children, 69.3% children were having undernutrition in the form of underweight, wasting and stunting and 30.7% children were normal. Among undernutrition, 55.3% children were having underweight, 50% wasting and 42% stunting. Among the study population, ARI was the most common morbidities 44%, followed by diarrhoea 34.7% and others 21.3%. It was observed that more children were suffering from acute diarrhoea (73.1%) than persistent diarrhoea (26.9%) and undernutrition (85.7%) is significantly more prevalent among children with history of persistent diarrhoea in comparison to acute diarrhoea (52.6%), 39.4% were suffering from recurrent respiratory tract infection and those children were having recurrent ARI (76.9%) were suffering

more from undernutrition in relation to those who did not have recurrent ARI (45%).

Assessing the water supply, 75.3% families were using municipal water and 24.7% were using borewell. However, families using municipal water were suffering more from the diseases than those using borewell water, which is statistically significant.

Among the study population, only 22.7% families were having separate toilet facility. Statistically significant difference in disease occurrence was observed among families preferring open field defecation and those having separate toilet facility.

It was revealed that only 20.7% mother had practice of adequate hygiene and children of those mother were suffering from less morbidities than the other group.

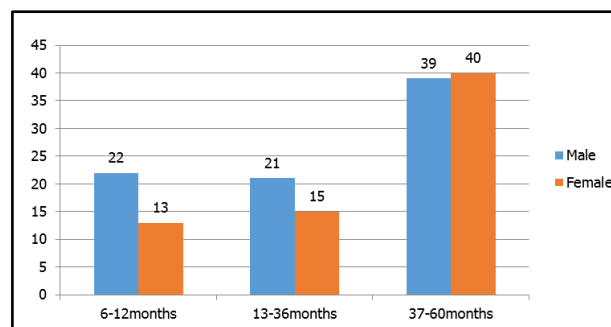


Figure 1. Age and Sex Distribution of Study Population

Nutritional Status	Undernutrition (Type)						Normal Nutrition
	Underweight		Wasting		Stunting		
	Male	Female	Male	Female	Male	Female	
	52	31	44	31	39	24	46 (31%)
	83	(55.3%)	75	(50%)	63	(42%)	

Table 1. Distribution of Study Population According to Nutritional Status

Age (Months)	ARI	Diarrhoea	Others	Total
6-12	17	9	9	35 (23.3%)
13-36	15	11	10	36 (24%)
37-60	34	32	13	79 (52.6%)
Total	66 (44%)	52 (34.7%)	32 (21.3%)	150

Table 2. Distribution of Morbidity Pattern According to Age

Morbidities	Undernutrition	No Undernutrition	Total	Chi-square = 4.731; p value = 0.029
Diarrhoea				
Acute	20 (52.6%)	18 (47.4%)	38 (73.1%)	
Persistent	12 (85.7%)	2 (14.3%)	14 (26.9%)	
Total	32	20	52	
Recurrent ARI				Chi-square = 6.574; p value = 0.01
Yes	20 (76.9%)	6 (23.1%)	26 (39.4%)	
No	18 (45%)	22 (55%)	40 (60.6%)	
Total	38	28	66	

Table 3. Pattern of Morbidity and Nutritional Status

Morbidity	Municipal Water	Borewell Water	Total
ARI	56 (84.8%)	10 (15.2%)	66
Diarrhoea	32 (61.5%)	20 (38.5%)	52
Others	25 (78.1%)	7 (21.9%)	32
Total	113 (75.3%)	37 (24.7%)	150

Chi-square 8.675; p value 0.013

Table 4. Morbidity Pattern and Source of Water

Type of Morbidity	Adequate Hygienic Practice		Total
	Present	Absent	
ARI	11 (16.7%)	55 (83.3%)	66
Diarrhoea	8 (15.4%)	44 (84.6%)	52
Others	12 (37.5%)	20 (62.5%)	32
Total	31 (20.7%)	119 (79.3%)	150

Chi-square 7.059; p value 0.029

Table 6. Mother's Practice of Adequate Hygiene and Morbidity Pattern

Morbidity	Open Field	Toilet Facility	Total
ARI	57 (86.4%)	9 (13.6%)	66
Diarrhoea	41 (78.8%)	11 (21.2%)	52
Others	18 (56.3%)	14 (43.7%)	32
Total	116 (77.3%)	34 (22.7%)	150

Chi-square 11.25; p value 0.004

Table 5. Morbidity Pattern and Toilet Facility

DISCUSSION

It is evident that the prevalence of undernutrition in urban slums is much higher than national average for rural and urban areas.¹² The poor urban dwellers suffer from adverse health outcomes, which do not get reflected in available health statistics. Most sources of health information, which

provide for rural and urban disaggregation, mask the inequalities, which exist within the various economic groups.

Out of total children, 82 were males (54.7%) and 68 were females (45.3%). 4-5 years were the most prevalent age group (39.3%), followed by 6 months to 1 year (23.3%). 104 children (69.3%) were having undernutrition in the form of either underweight, wasting or stunting. Prevalence for underweight was found to be highest (55.3%) followed by wasting (50%) and stunting (42%), which was similar to study done by Rasania SK et al¹³ who observed that 71.5% children were underweight, while 70.1% and 62.7% of children were stunted and wasted, respectively.

In the present study, prevalence of undernutrition was higher in male (41.3%) in comparison to female 28%. However, it is statistically insignificant ($p=0.07$) and can be correlated well with a study by Susmita Bharati et al¹⁴ where underweight boys were (28.0%), while girls were 27.6%. 23.5% boys and 21.5% girls were stunted, while 26.5% boys and 26.9% girls were wasted. It was observed among the total children, moderate-to-severe underweight was found in 38%, wasting in 32% and stunting in 21.4%.

In a study by Bhupeshwari Patel et al,¹⁵ it was found that the prevalence of moderate-to-severe stunting and wasting were 68% and 66.8%, respectively. In the present study, ARI was the most common morbidity (44%) followed by diarrhoea (34.7%) and others (32%), which include malaria, tuberculosis, hepatitis, measles, chicken pox, mumps and worm infestation. But, study by Shaili Vyas et al¹⁶ shown that diarrhoeal illness was (47.9%) followed by ARI (22.21%), pica (13%) and worm infestation (9.21%) and Sanjana Gupta et al¹⁷ found the principal causes of morbidity in children under five years of age were acute respiratory infections, diarrhoeal diseases, skin infections and fever. Acute respiratory infections and diarrhoeal diseases accounted for 77.36% of the total episodes of illnesses, while acute respiratory infections contributed to 47.26% and diarrhoeal diseases accounted for 30.10% of total episodes of illnesses. In our study, 26.9% children were suffering from persistent diarrhoea and 39.4% from recurrent ARI. It was observed that the children with persistent diarrhoea and recurrent ARI were suffering more from undernutrition (85.7% and 76.9%, respectively). These findings are comparable with the study done by Kavita Baranwal et al¹⁸ where there was significant difference in prevalence of PEM in children who gave history of recurrent illness as compared to children who did not have recurrent illness. There was a significant association between source of water and toilet facility with morbidity pattern of children. In these slum areas, most of the family were using municipal water (75.3%) and they were suffering more from ARI (84.4%), diarrhoea (61.5%) in comparison to those who were using borewell water.

Majority of the family (77.3%) did not have separate toilet facility and it was observed that families having separate toilet facility were suffering less from morbidities and findings can be correlated to the study done by Tara Gopaldas et al.¹⁹ Toddlers from homes having access to potable water and sanitary toilet facilities had better

nutritional status than those using non-potable water and not having toilet facilities and study by Checkley et al²⁰ shown that children with less access to safe water source, water storage and sanitation had 54% more diarrheal episodes than those who had these facilities. Sanjana Gupta et al¹⁷ mentioned 48.06% children were from the families, which did not have separate toilet facility.

In our study, 20.7% mothers practiced adequate hygiene and it was noticed that children from those mother were having less morbidities. A similar study was done in urban Dar es Salaam, Tanzania, by Kulwa KB et al²¹ to assess the childcare practices and nutritional status of infants and young children (6-24 months). They observed that more than half of the households practiced good hygiene. Most of the psychosocial factors (e.g., caregivers attention, affection and involvement in child feeding, hygiene, healthcare and training) were performed by mothers.

CONCLUSION

This study concludes that nutritional status of urban slum children are poor and more number of children suffer from undernutrition in varied severity. It confirms that there is significantly increased risk of undernutrition, if the child is not exclusively breastfed for 6 months and if there is delayed introduction of complementary feeding >9 months. Diarrhoea, ARI and other infectious diseases are common morbidities in under-five children. These children with recurrent illnesses are suffering more from undernutrition. The study concluded that living conditions were poor in slum areas with less availability to good source of water and a separate toilet facility. Hygiene and health-seeking behaviours of mothers were poor because of their low education level.

Promotion of exclusive breastfeeding and introduction of complementary feeding in time, availability of good water source and sanitary toilet facility (government aids). Periodic health check-up of under-five children through health camp should be promoted. Sensitising mothers about good health practices through workshops, roadshows, documentary films and other media coverage may improve overall health of under-fives.

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