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RESEARCH ARTICLE

Morbidity profile of preschool children from below poverty line families of Lucknow district, North India

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Abstract

Background: Diseases like diarrhoea, acute respiratory infections, malaria and malnutrition have been found to be the world's leading cause of morbidity and premature death in children. Appropriate health seeking is important to reduce the complication and death due to these morbidities. The objective of study was to know the prevalence of common morbidities among pre-school children and also determine the mother's health seeking behavior during the course of acute morbidities. **Methods:** A community based cross sectional study was conducted in rural and urban areas of Lucknow district. Total 352 children aged 1-4 years from BPL families were enrolled in this study. Mothers were interviewed on pretested predesigned questionnaire. All the children covered for study were examined clinically for the presence of signs of nutritional deficiency. Anthropometry was performed using standard procedures. **Results:** ARI (22.7 %) and diarrhoea (22.7%) were the most common cause of infectious morbidity observed. The overall prevalence of malnutrition as indicated by children either underweight wasted or stunted or any combination of the three was 61.9 percent and sign of anaemia was present in 50.9 percent. Out of 217 children with at least one of the acute morbidities, higher proportions (87.6 %) were taken to health facilities. The private sector (38.4%) was preferred source of care followed by unqualified practitioners (34.8%). **Conclusion:** The burden of common morbidities among preschool children at household level in this community is very high. Maternal education regarding an appropriate health seeking behavior is needed to contribute towards improved health of children.

Introduction

India accounts for 2.1 million of the 9.7 million annual under-five child deaths globally, thereby contributing to about 21 per cent of the global burden of child deaths (1).Infectious diseases like diarrhoea, acute respiratory infections, malaria and whooping cough have been found to be the world's leading cause of morbidity and

premature death in children especially in developing countries where large number of these children living in poverty. Diarrhoea (22.0%) and acute respiratory infection (ARI) (20.0%) together account for more than 40.0 percent of all deaths in children under-5 years (2).

In India, Common morbidities among children are fever, acute respiratory infections, diarrhoea and malnutrition. Unfortunately malnutrition is rarely perceived as a morbid event by families, communities, and health system(3).Malnutrition among children is often caused by the synergistic effects of inadequate or improper food intake, repeated episodes of infectious diseases, and improper care during illness(4). An estimated 53 percent of all child deaths are associated with underweight status.

Improving families' care seeking behaviour could contribute significantly to reducing child mortality in developing countries. The World Health Organization estimates that seeking prompt and appropriate care could reduce child deaths due to acute respiratory infections by 20 percent (5). However, millions of mothers and their children live in a social environment that is against seeking and enjoying good health (6).

To organize child health services for children, we should know the pattern of various morbidities among them in the community. Hence this study was conducted with the objective to study the prevalence of common morbidities among pre-school children and also determine the mother's health seeking behavior during the course of acute morbidities.

2. MATERIALS AND METHODS

2.1 Study area

This community based cross sectional study was conducted from August, 2012 to July, 2013 in rural and urban areas of Lucknow district. It is a centrally placed district of Uttar Pradesh, a state in northern India. Lucknow has population of 4,588,455 of which almost 66 percent are urban (7).

2.2 Study subjects

Children aged 1-4 years from families who had permanent residence in the area (staying for at least 6 months) and having income less than 65 INR equivalent to 1.25 USD per capita per day at 2005 Purchasing Power Parity, World Bank, 2008(criteria for Below Poverty Line)(8,9).

2.3 Exclusion criteria: The children whose parents did not consent for the study along with the children who were temporary visitors to the house.

2.4 Sample size

The required sample size for this study was calculated using the formula: $N= Z^2_{(1-\alpha/2)}\ p\ q/d^2$ (Lwanga & Lemeshow).Taking the prevalence (p) of underweight in India among under 5 children of lowest wealth index 56.6% (NFHS-3) and the absolute permissible error (d) of 7% with 5% level of significance and a 95% confidence limit, the value obtained was 192(10). Considering design effect of 1.75 and allowance for possible non-response rate of 5% , the final sample size comes out to be 360. Using proportional allocation to the rural and urban population; 120(33%) samples from the rural area and 240(66%) samples from the urban area were selected.

2.5 Sampling design

A multistage sampling method was employed to select mohallas/villages. Total 16 mohallas from urban and 8 villages from rural areas were included in this study. Study households were selected by EPI random walk method. . In households with more than one children of age between 1-4 years, one child was selected randomly.

2.6 Data collection procedure

A structured schedule was designed and pilot tested for the purpose of this study. The respondents were briefed about the survey in local language and after agreement reached upon, interview was conducted to collect data on socio-demographic characteristics, childhood morbidities and care seeking behaviour of mothers of children. If the birth certificate was not available, age of the child was ascertained from the mother. Cultural and religious events were utilized to facilitate recall. To identify retrospective morbidity of children, the mothers were asked about if the child had been sick in the last 2 weeks. Mothers were further probed about the probable nature of the illness based on operational case definitions. All the children covered for study were examined clinically for the presence of signs of nutritional deficiency and other morbidity at the time of interview. Anthropometry was performed by standard technique. Classification of morbidity was done according to International Classification of Diseases, tenth revision.

2.7 Statistical Analysis

Data entry and analysis was done using SPSS-17 version of soft ware. The height and weight of each child was compared with the WHO child growth standards, 2006 reference data for that particular age and sex to get weight for age, height for age and weight for height indices. Children below two standard deviation of the reference median on any of these indices were considered as malnourished.

2.8 Operational definitions

Morbidity: Any deviation from normal physiological well-being.

Acute Morbidity/Illness: Any ill health condition of preschool children in the last two weeks as perceived by mother.

Health seeking behaviour: was defined as mother's response for signs and symptoms of illnesses to reduce severity, complication or even death after she recognized her child's illness and if she reported visiting any health institutions.

2.9. Ethical considerations

The study protocol was submitted to the Institutional Ethical Committee and clearance was obtained. Verbal consent was taken from each selected participant to confirm willingness. Affirmation that they are free to withdraw consent and to discontinue participation without any form of prejudice was made after honest explanation of the survey purpose. Privacy and confidentiality of collected information was ensured throughout the process. Clinical examination and anthropometric measurement of children were done as much as possible without posing any discomfort. If any child was found sick and malnourished, appropriate treatment and advice was given.

1. RESULTS

A total of 360 BPL households with at least one preschool child were planned to participate in the study, out of which 352 children were enrolled making a response rate of 97.77 percent. Out of these 352 children, 234 and 118 were from urban and rural areas. Majority of children were from Hindu families (73.6%) and illiterate mothers (44.3%). Out of total children, 44.0 percent were female and 56.0 percent were males (Table 1).

Table1: Distribution of children according to their socio-demographic characteristics

Characteristics	Urban (n=234)		Rural (n=118)		Total (352)	
	No.	%	No.	%	No.	(%)
Religion						
Hindu	158	67.5	101	85.6	259	73.6
Muslim	76	32.5	17	14.4	93	26.4
Mother's educational status						
Illiterate	102	43.6	54	45.8	156	44.3
Primary school	46	19.7	18	15.3	64	18.2
Middle	38	16.2	24	20.3	62	17.6
High school	23	9.8	11	9.3	34	9.7
Intermediate, above	25	10.7	11	9.3	36	10.2
Age in month						
12-23	92	39.3	38	32.2	130	36.9
24-35	77	32.9	48	40.7	125	35.5
36-47	65	27.8	32	27.1	97	27.6
Sex						
Male	127	54.3	70	59.3	197	56.0
Female	107	45.7	48	40.7	155	44.0

ARI (22.7 %) and diarrhoea (22.7 %) were the most common cause of infectious morbidity observed followed by fever 10.2 percent in children. Among non infectious morbidities protein energy malnutrition and anaemia were common. A child either underweight, wasted or stunted or any combination of the three was considered as having malnutrition which comes to be 61.9 percent indicating prevalence of malnutrition. About 50.9 percent children were had sign of anaemia. The most common form of malnutrition was stunting (47.2%), followed by underweight children (41.8%) and 19.3 percent of children had wasting (Table 2, 3).

Table 2: Distribution of Children according to their morbidity profile

Morbidity condition	Urban(n=234)		Rural (n=118)		Total (n=352)	
	No.	%	No.	%	No.	%
1-Infectious morbidity						
ARI	52	22.2	28	23.7	80	22.7
Acute diarrhoea	53	22.6	22	18.6	75	21.3
Fever(unspecified)	22	9.4	14	11.9	36	10.2
Impetigo/furuncle	11	4.7	1	0.8	12	3.4
Worm infestation	12	5.1	4	3.4	17	4.5
Scabies	4	1.7	5	4.2	9	2.6
Conjunctivitis	10	4.3	2	1.7	12	3.4
Ear discharge	4	1.7	1	0.8	5	1.4
Fever with rash	1	0.4	0	0.0	1	0.3
2-Non infectious morbidity						
PEM*	148	63.2	70	59.3	218	61.9
Anaemia(pallor)	122	52.1	57	48.3	179	50.9
Vitamin A deficiency	2	0.9	0	0.0	2	0.6
Vitamin B deficiency	7	3.0	5	4.2	12	3.4
Vitamin D Deficiency	3	1.3	1	0.8	4	1.1
Dental Caries	17	7.4	5	4.2	22	6.2
Epilepsy	1	0.4	0	0.0	1	0.3
Down's syndrome	1	0.4	0	0.0	1	0.3

*Protein energy malnutrition (children either underweight wasted or stunted or any combination of the three)

Table 3: Distribution of children according to their nutritional status

Children's nutritional status	Urban (n=234)		Rural (n=118)		Total (n=352)	
	No.	%	No.	%	No.	%
Weight for age(underweight)	97	41.5	50	42.4	147	41.8
Height for age(stunting)	116	49.6	50	42.4	166	47.2
Weight for height(wasting)	52	22.2	16	13.6	68	19.3

Out of 217 children who had diarrhoea, fever, ARI and other illnesses two weeks preceding the survey, higher proportion (87.6 %) were taken to health facilities or health care provider. No care was sought for 12.4 percent children. The private sector was preferred source of care for illnesses followed by unqualified practitioner. Only 26.8 percent went to government health facility. Mothers' main reasons for not seeking care were transport problem /far distance from health facility (57.1 %), lack of time (17.9 %), and perceived illness was not serious (14.3%)(Table 4).

Table 4: Mothers health seeking behaviour for acute childhood morbidity (N=217)

Characteristics	Urban		Rural		Total	
	No.	%	No.	%	No.	%
Children taken to Health facility						
Yes	130	89.9	60	84.5	190	**87.6**
No	16	11.0	11	15.5	27	12-4
Place of health seeking(n=190)						
Government health facility	42	32.6	9	14.8	51	26.8
Private health facility	45	34.9	28	45.9	73	38.4
Unqualified practitioner	42	32.5	24	39.3	65	**34.8**
Main reasons for not seeking treatment (n=28)						
Health Facility distance/transport problems	8	50.0	8	66.7	16	**57.1**
Illness consider not serious	3	18.8	1	8.3	4	14.3
Financial constrains	1	25.0	2	16.7	3	10.7
Lack of time	4		1	8.3	5	17.9
Time of health seeking after onset of illness (n=190)						
First day	87	66.9	43	71.7	130	**68.4**
2-3 days	36	27.7	15	25.0	51	26.8
After 3 days	7	5.4	2	3.3	9	4.7
Main reason for delay in health seeking(after 1 day of onset of illness) (n=60)						
Health facility distance/transport problems	0	0.0	2	11.8	2	3.3
Illness consider not serious	23	53.5	7	41.2	30	**50.0**
Financial constrains	9	20.9	2	11.8	11	18.2
Lack of time	11	35.6	6	35.6	17	28.3
ORT* treatment in acute diarrhoea (n=75)						
Yes	27	50.9	11	50.0	38	**50.7**
No	26	49.1	11	50.0	47	49.3
Fluid used for ORT* in acute diarrhoea (n=38)						
ORS	20	74.1	9	81.2	29	76.3
HAF^{+}	2	7.4	2	18.2	4	10.5
ORS+HAF	5	18.5	0	0.0	5	13.2

*oral rehydration therapy, + Home available fluids

Care was sought on the first day of perceived onset of illness for 68.4 percent. For the rest, care seeking was started on the second and subsequent days of perceived onset of illnesses. Main reason for consultation after

first day was illness not consider serious. Only 50.7 percent of the children suffering from diarrhoea were given oral rehydration therapy. Most common fluid used for ORT was ORS (Table 4).

4. DISCUSSION

4.1 Prevalence of common morbidity

In this study ARI (22.7%) and diarrhoea (22.7 %) were the most common cause of infectious morbidity observed followed by fever 10.2 percent in children. In a study conducted in urban slums of Etawah district, India, diarrhoea and upper respiratory tract infection were the most common morbidities reported in under five children (11). In the study from Meerut slums, India around a quarter of the under five children reported suffering from diarrhoea (24.2%) and about 22.2 percent of the children reported having ARI in the 15 days preceding the survey (12). In another study from Pakistan acute respiratory infection was the leading disease reported in preschool children (27 %). Gastroenteritis was reported in 14 percent and fever in 19 percent children (13).

In our study among non infectious morbidities, protein energy malnutrition and anaemia were common. The most common form of malnutrition was stunting (47.2%), followed by underweight children (41.8%) and 19.3% of children had wasting. A study conducted in Uttar Pradesh, India found the most common form of malnutrition among Children of 12-59 months age was stunting (51.4%), followed by underweight children (43.5%) and 21.7 percent of children had wasting(14). Another study conducted in Central India, revealed that 59.8 percent of the children were underweight, 43 percent were stunted and 35 percent wasted(15).

In our study about 50.9 percent children were had sign of anaemia. This is lower than prevalence reported in other developing country studies. A study conducted in urban slums Nagpur, India on under five children reported that prevalence of anaemia was 78.71 percent(16). A study in North Gaza showed that among pre-school children prevalence of anaemia was 65.3 percent (17).This difference could be attributed to different diagnostic criteria used in these studies. In our study we used clinical sign (pallor) for diagnosis of anaemia, so mild cases could be missed.

4.2 Mothers health seeking behaviours for acute childhood morbidity

Our study showed the children who had diarrhoea, fever, ARI and other illnesses two weeks preceding the survey, higher proportion (87.6 %) were taken to health facilities or health care provider. In West Bengal, India, the overall treatment rate was above 93 percent and most of the children were treated in hospitals and health centre(18). Another study conducted in Derra, Ethiopia showed that 87.2 percent of ill under-five children were taken to health facilities(19).

In our study the private sector was preferred source of care for illnesses followed by unqualified practitioner. Only 26.8 percent went to government facility. A study in a fisherman village, Veerampattinam, India it was found that all parents sought for allopathic system and majority, private care for their sick children. Inspire of low socio economic status private health facility was preferred due to availability even in the evening and night, accessibility, quick relief and good individual attention (20).

In our study no care was sought for 12.4 percent children. Main reasons for not seeking care from health facilities were transport problem /far distance from health facility (57.1 %), lack of time (17.9 %), and perceived illness was not serious (14.3%). A study in Derra District, Ethiopia showed that lack of money (36 %), distances (27.7%) and perception of the illness not being serious (25.3 %) were the major reasons for not seeking care (19).

Our study results further showed that 50.7 percent of the children suffering from diarrhoea were given oral rehydration therapy. Most common fluid used for ORT was ORS. NFHS-3, India reported that despite 74 percent of women knowing about ORS, only 26 percent used it when their child suffered from diarrhoea. Another disturbing fact was that caregivers of only one in ten children gave increased fluids during diarrhoea. More than half (57%) of children received neither oral rehydration therapy nor increased fluids when sick with diarrhoea (10). Another study

conducted in Meerut urban slums, India revealed that only 21.2% of the children suffering from diarrhoea were given ORS (12).

4.3 Study limitations

1 As the study is cross-sectional in design, it does not represent seasonal variation of morbidity.
2 Due to financial constraints, no blood investigations were done. Micronutrient disorders were diagnosed on the basis of clinical signs only, so mild cases could have been missed.
3 Some measurements may not be accurate due to subjective responses and recall biases from answers which were based on the reminiscence of the mothers and possible dilution effect of selecting one child from a household.

5. CONCLUSION

The prevalence of common morbidities like diarrhoea, ARI and Malnutrition were very high among preschool children from BPL families of Lucknow district, India. Although health seeking for acute childhood morbidities was a common practice, large proportion of children were treated by unqualified practitioners. Distance from health facility and lack of time were the main determinants for non health seeking behaviour. There is an urgent need to educate mothers regarding prompt and appropriate health care seeking as well as proper home based care practices. For improvement of overall health status of children, the primary health care services at community level should be strengthened.

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