A CROSS-SECTIONAL STUDY OF MORBIDITY AND ITS CORRELATES IN UNDER-FIVE CHILDREN IN SLUMS OF SHILLONG, MEGHALAYA

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ABSTRACT

BACKGROUND

One-fourth of the worldwide under-five deaths annually occur in India. Over 70% of these deaths are due to preventable diseases. Malnutrition, socio-economic status, place of residence, mother's education, access to quality health services and living environment are important determinants of morbidity and mortality of under-five children. There is a gap in literature regarding the morbidity pattern and its correlates among under-five children in the slums of Shillong city.

Therefore, this study was designed to study the morbidity status and its pattern in under-five children and to find out the correlates of morbidity.

MATERIALS AND METHODS

A cross-sectional study with a pre-tested questionnaire was used to interview primary caregivers of 225 under-five children regarding the morbidity pattern currently and in the last three months. Anthropometric measurements of under-five children were also taken. Data was analysed using MS Excel and MedCalc version 16.2. Chi-square test was used to find association between categorical variables.

RESULTS

Majority (47.7%) of under-five children belonged to SES II, majority (45.8%) of them were of first birth order, 40% had only one sibling, 13.3% of the fathers and 27.6% of the mothers were illiterate. In the last 3 months, 61.8% children experienced some morbidity. ARI (64%), fever (35.6%) and diarrhea (11.5%) were the most common morbidities. Among under-fives with normal nutritional status 62.2% had any morbidity compared to 60.7% of those with malnutrition. Significant statistical association ($p < 0.05$) was found between number of siblings and morbidity status.

CONCLUSION

The most common morbidity among the study population were ARI, undernutrition followed by fever and diarrhea. All of which being preventable highlights the importance of family health counseling comprehensive of awareness about prevention and home-based care of these diseases.

KEYWORDS

Morbidity, Under-Fives, Diarrhea, ARI, Slum, Meghalaya.

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BACKGROUND

Infant and child mortality and morbidity remains a burning issue in developing countries.^[1] Over 6.9 million under-five deaths occur worldwide every year, one-fourth of which occur in India. Around 10% of the 27 million children born in India annually do not survive till the age of 5 years^[2]; 70% of

these deaths are due to acute respiratory infections (ARI), diarrhea, measles, malaria or malnutrition and often due to a combination of illness. A child may get several episodes of these diseases a year and malnutrition has been known to aggravate the incidence of such episodes.^[3] The common determinants of child morbidity and mortality are socioeconomic status (SES), place of residence, mother's education, access to quality health services and living environment.^[4]

The most vulnerable and underprivileged populations of the city of Shillong or any other cities for that matter reside in slums. However, few prior studies have been carried out to study the morbidity pattern and its correlates in under-fives in this area and hence the present study was designed. This study aimed at studying the morbidity status and finding out its correlates in under-five children residing in the slums of the city of Shillong.

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MATERIALS AND METHODS

The present cross-sectional study was conducted in four urban slums of Shillong, selected by convenient sampling, in the field practice of the Department of Community Medicine during August - October 2016. Presuming the prevalence of childhood morbidity of 47.58% and taking relative precision of 15% and non-response rate of 20%, the estimated sample size was 235^[5]. Under-five children who were available at the time of house-visit were included and those whose primary caregiver (mostly their mothers in this study) did not give their consent for the study were excluded from the study.

Data was collected by house-to-house survey from the primary caregiver of all the under-five children residing in the slum and meeting the inclusion criteria after taking informed verbal consent. Interviews of the primary caregiver were conducted using a pre-designed and pre-tested questionnaire and the questions asked were in a language they well understood (English, Hindi and Khasi languages were used). Information regarding their socio-demographic profile, current morbidity, morbidity pattern in last three months, feeding history, etc. was obtained. Clinical examination and anthropometric measurements including length/ height, weight and mid upper-arm circumference were collected and recorded. Digital weighing machine was used for obtaining weight to the accuracy of nearest 100 grams and expressed in kilograms (kg). For children who could not stand on its own, the weight was obtained subtracting the recorded weight of the primary caregiver/ mother alone from the recorded weight of the primary caregiver/ mother with the child. Measurement of height was done with the help of a stretch-resistant measuring tape. For infants and children who could not stand, length was measured. Height and length was measured to the nearest accuracy of 0.1 cm.

Data entry and analysis was done using Microsoft Excel version 2010 and data analysis was done by using MedCalc version 16.2. Chi-square test was used to find association between categorical variables. The 'p' value of < 0.05 was considered significant.

RESULTS

It was observed that out of 225 under-five children who were enrolled in the study, 123 (54.7%) were male. It was observed that 53 (23.6%) belonged to 12 - 23 months and the same proportion were from 36 - 47 months' age group. Majority (47.7%) of the under-fives belonged to SES II followed by SES III (30.2%) and SES IV (19.5%) (Table 1). Fathers of the under-fives mostly were educated up to high school 62 (27.6%) followed by middle school 52 (23.1%) and primary school 32 (14.2%). Similarly, mothers mostly had high school education 47 (20.9%) followed by middle school education 52 (23.1%) and primary school education 32 (14.2%). As high as 30 (13.3%) of the fathers and 62 (27.6%) of the mothers were illiterate; 202 (89.8%) of the mothers were housewives (Table 2). Majority 45.8% of the under-fives were of first birth order and 90 (40%) of the under-fives had only one sibling (Table 2). No significant statistical association was found between education of the parents, occupation of the mother or birth order of the child and morbidity in the present study. However, significant statistical association ($p < 0.05$) was found between number of siblings and morbidity status (Table 2).

It was observed that 139 (61.8%) had experienced some kind of morbidity within the last 3 months, out of which 76 (54.7%) were males. About one-fourth, i.e. 34 (24.5%) of the under-fives suffering from any morbidity belonged to 36 - 47 months' age group followed by 12 - 23 months (20.9%) and 24 - 35 months (20.1%) respectively. However, in the present study no significant statistical association was found between sex and age of the child and morbidity (Table 2). In the past 3 months ARI (64%), fever (35.6%) and diarrhea (11.5%) were the most common morbidities in the study population. Other morbidities (13%) that they encountered during this time were skin infections and rashes, worm infestation, eye and ear discharges and injuries (Fig. 1). Out of 164 under-fives having normal nutritional status 102 (62.2%) had any morbidity, while out of 61 malnourished children 37 (60.7%) had any morbidity during the last 3 months. All the cases of malnutrition in the present study were of undernutrition making it one of the most prevalent morbidity (27%) in the study population. No significant statistical association was found between nutritional status and morbidity in the present study (Table 3).

Socio-Demographic Variables	Frequency	%
Sex		
Male	123	54.7
Female	102	45.3
Age (in Completed Months)		
0 - 11	41	18.2
12 - 23	53	23.6
24 - 35	47	20.9
36 - 47	53	23.6
48 - 60	31	13.7
Socioeconomic Status (SES) Class		
(According to Modified Kuppuswamy Scale, 2014)		
I (Lower)	3	1.3
II (Upper lower)	107	47.7
III (Lower middle)	68	30.2
IV (Upper middle)	44	19.5
V (Upper)	3	1.3

Table 1. Socio-Demographic Profile of the Study Population (n= 225)

Socio-Demographic Variables	Total (%)	Presence of Morbidity within 3 Months		χ^2 value	P value
		Yes (%)	No (%)		
	225 (100)	139 (61.8)	86 (38.2)		
Sex					
Male	123 (54.7)	76 (54.7)	47 (54.7)	0.0000134	0.99
Female	102 (45.3)	63 (45.3)	39 (45.3)		
Age (In Completed Months)					
0-11	41 (18.2)	27 (19.4)	14 (16.3)	4.772	0.3115
12-23	53 (23.6)	29 (20.9)	24 (27.9)		
24-35	47 (20.9)	28 (20.1)	19 (22.1)		
36-47	53 (23.6)	34 (24.5)	19 (22.1)		

48-60	31 (13.7)	21 (15.1)	10 (11.6)		
Socioeconomic Status (SES) (According to Modified Kuppuswamy Scale, 2014)					
I (Lower)	3 (1.3)	1 (0.7)	2 (2.3)	2.983	0.5608
II (Upper Lower)	107 (47.7)	67 (48.2)	40 (46.5)		
III (Lower Middle)	68 (30.2)	41 (29.5)	27 (31.4)		
IV (Upper Middle)	44 (19.5)	27 (19.4)	17 (19.8)		
V (Upper)	3 (1.3)	3 (2.2)	0 (0)		
Father's Education					
Illiterate	30 (13.3)	20 (14.4)	10 (11.6)	3.809	0.5572
Primary	32 (14.2)	18 (12.9)	14 (16.3)		
Middle School	52 (23.1)	32 (23)	20 (23.3)		
High School	62 (27.6)	42 (30.2)	20 (23.3)		
Higher Secondary	27 (12)	13 (9.4)	14 (16.3)		
Graduate and Above	22 (9.8)	14 (10.1)	8 (9.2)		
Mother's Education					
Illiterate	62 (27.6)	40	22 (25.6)	0.424	0.99
Primary	32 (14.2)	20	12 (14)		
Middle School	42 (18.7)	25	17 (19.8)		
High School	47 (20.9)	29	18 (21)		
Higher Secondary	23 (10.2)	14	9 (10.4)		
Graduate and Above	19 (8.4)	11	8 (9.2)		
Mother's Occupation					
Housewife	202 (89.8)	126	76 (88.4)	0.298	0.584
Working Women	23 (10.2)	13	10 (11.6)		
Birth Order					
1	103 (45.8)	66	37	3.553	0.3139
2	82 (36.4)	45	37		
3	23 (10.2)	15	8		
4 and Above	17 (7.6)	13	4		
Number of Siblings					
0	70 (31.1)	47	23	8.743	0.0329*
1	90 (40)	52	38		
2	36 (16)	20	16		
3 and Above	29 (12.9)	20	9		
Table 2. Association of Morbidity with different Socio-Demographic Factors					

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*p < 0.05 (statistically significant)

Figure 1. Distribution of Morbidity (Multiple Responses Present)

Presence of Morbidity within 3 Months	Nutritional Status		Total (%)
	Normal (%)	Malnourished (%)	
Yes	102 (62.2)	37 (60.7)	139 (61.8)
No	62 (37.8)	24 (39.3)	86 (38.2)
Total	164 (100)	61 (100)	225 (100)

Table 3. Association of Morbidity Status and Nutritional Status

χ^2 value= 0.0444, df= 1, p value= 0.8331*

*p > 0.05 (not statistically significant)

DISCUSSION

In the current study, more than half of the under-fives were males and the male-female ratio was 1.2: 1. Similar findings were observed in a study done in urban slums of Pune in 2014.^[6] It was observed in this study that around 68% under-fives were aged 12 - 47 months and almost one-fourth belonged to age groups 12 - 23 months and 36 - 47 months respectively. In the studies by Bhavsar et al and Damor et al, majority belonged to 12 - 23 months too.^[7,8] In the present study, around half of the under-fives belonged to SES II, followed by SES III (30.2%) and SES IV (19.5%). This finding varied from the study of Bhavsar et al, where almost half of children belonged to SES IV followed by 19.5% in SES III.^[7] Even in another study from Gujarat, majority belonged to SES IV.^[8] However, Shah V (2005) found more number of children from upper class in their study and 33.11%, 29.11%, 17.33% belonged to SES III, SES I and SES II respectively.^[9] Majority of the parents of the under-fives in the current study were educated up to high school, i.e. 27.6% of the fathers and 20.9% of the mothers. However, rates of illiteracy were as high as 13.3% and 27.6% among the fathers and mothers respectively. Majority (89.8%) of the mothers were housewives in the present study. Majority 45.8% of the under-fives were of first birth order and 40% of the under-fives had only one sibling. Statistically significant association was found between number of siblings and morbidity status. It was observed that 61.8% had experienced some kind of morbidity within the last 3 months, out of which 54.7% were males. However, no significant statistical association was found between sex and morbidity. Grover et al^[1] found that morbidities were significantly higher in boys as compared to

girls (63.4% vs. 26.4%, $P < 0.01$), but it was opposite in the study by Panda et al (female- 68.1% vs. male- 65.3%).^[10]

Though no statistical significance was found between age and morbidity status, almost one-fourth of the under-fives suffering from any morbidity belonged to 36 - 47 months' age group followed by 12 - 23 months and 24 - 35 months. In the past 3 months, ARI (64%), fever (35.6%) and diarrhea (11.5%) were the most common morbidities in the study population. Other morbidities (13%) that they encountered during this time were skin infections, worm infestation, eye and ear discharges and injuries. ARI was the most common cause of morbidity followed by fever and Diarrhea in a longitudinal study of morbidity pattern and nutritional status of under-five children in a slum community of Kolkata.^[11] ARI and Diarrhea were the most common morbidities reported by various other studies as well.^{[6][12,13]} In our study 72.9% of the under-fives had normal nutritional status, while other suffered from varying levels of undernutrition. As high as 62.2% of those with normal nutritional status had some kind of morbidity and 60.7% of the undernourished children had some kind of morbidity. Though no statistical association was found between undernutrition and morbidity in the present study, various studies across the globe confirm that there is a synergistic relation between undernutrition and childhood morbidity.^[14,15] The limitations of the study were use of non-probability sampling method, i.e. convenient sampling and small sample size.

CONCLUSION

The present study highlighted that ARI is the most common morbidity among under-five children followed by fever and diarrhea. Focus should be given on counselling of the parents and caretakers through Anganwadi workers, link workers and health workers regarding prevention and home-based care of these diseases. Significant association was found between number of siblings and morbidity status. This elicits the importance of family planning counselling and motivation to adopt suitable contraception in the eligible couples. No association was found among literacy of the parents or nutritional status and the morbidity status of the participants. This may be due to a less sample size. However, these factors remain proven important influencers in control of morbidity and mortality in under-fives.

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