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Research Article

Socio-demographic profile of under five children admitted for acute lower respiratory tract infections in a tertiary care hospital

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ABSTRACT

Background: Children are considered to be susceptible to the host of disease and infections. Acute respiratory tract infection is the leading cause of morbidity and mortality in children below five years of age. Objective of current study was to know the socio-demographic profile of under five children admitted for acute lower respiratory tract infections.
Methods: Hospital based case control study conducted at Basaveshwar and Sangameshwar general hospital, both attached to MR medical college, Gulbarga. The study period was one and half year from 01-01-2012 to 30-06-2013. 200 ALRI cases fulfilling WHO criteria for pneumonia, in the age group of 2 months to 5 years were interrogated for potential modifiable risk factors as per a predesigned proforma. 200 healthy control children in the same age group were also interrogated.
Results: Majority (46%) of the respondents were between the age group of 2-12 months with 60.7% of them from the rural areas. 59 (29.5%) cases had mud or cow dung flooring in their house as compared to 44 (22.0%) controls. The association between flooring and ALRI was statistically significant.
Conclusion: Efforts should be made to improve the literacy status of the parents by the administration. Improving the housing condition of the family and better living can reduce the incidence of the Acute respiratory infection among the under five children.

Keywords: Acute lower respiratory tract infection, Risk factors, Under five

INTRODUCTION

Acute Respiratory Infections (ARI) range from mild cold and cough to life threatening pneumonias. ARI particularly pneumonia is the major cause of morbidity and mortality among young children.[1]

Around 7.6 million children who died in first 5 years of their life in 2010, 64% (4.8 million) died of infectious causes. Of all infectious disorders, pneumonia, diarrhea and malaria were the leading cause of death worldwide- of all deaths in children younger than 5 years, pneumonia caused - 1.396 million deaths. In India an estimated 4 lakh pneumonia deaths occurs annually, which is highest among all the countries in the world. According to recent estimates nearly 43 million new cases of childhood pneumonia occur every year in India with an estimated 0.37 episodes per child per year and out of 1.68 million under five deaths, pneumonia caused 24% i.e. about 4 lakh deaths.[2]

The burden that pneumonia places on families and health system in low resource countries in turn exacerbates inequalities; overwhelmingly, children who are poor, hungry and living in remote areas are most likely to be visited by this "forgotten killer".[3]

Hospital records from states with high infant mortality rates show that up to 13% of inpatient deaths in pediatric wards are due to pneumonia.[1] The proportion of death due to pneumonia is much higher in the community as many children die at home. The reason for high case fatality may be that children are either not brought to the hospitals or brought too late.[4] Many of these risk factors are amenable to corrective measures. Therefore, knowledge of these risk factors related to acquisition of ALRI will help in its prevention, through effective health education of community and appropriate initiative taken by the government, leading to a healthy community and healthy nation as a whole.

Objectives

To know the socio-demographic profile of under five children admitted for acute lower respiratory tract infections.

METHODS

A hospital based case control study was carried out over a period of one and half year from 01-01-2012 to 31-06-2013 in Basaveshwar and Sangameshwar teaching and general hospital both attached to MR medical college, Gulbarga.

Previous one year hospital statistics showed that the proportion of ALRI cases among total hospital admissions of children below 5 years was 25%. Based on this sample size was calculated as 200. All cases of ALRI as defined by WHO from 2 months to 60 months of age of both gender were included in the study group. Children suffering from asthma congenital diseases, and other medical illness and chronic infections were excluded from the study. An equal number of age-sex matched healthy children who were normal siblings of admitted children for non-respiratory complaints as well as those attending immunization clinic and OPD for non-respiratory complaint to the same hospitals during study period without previous history of severe or very severe pneumonia were taken as controls. Thus 200 cases and 200 controls (Total=400) constituted the study population. Verbal informed consent of the child's mother/caretaker was obtained for both the cases and controls and data entered in a pretested semistructured proforma.

RESULTS

Majority (46%) of the respondents were between the age group of 2- 12 months with 60.7% of them from the rural areas. Around 79.8% of them were Hindu by religion and 63.8% of under five children were from nuclear family.

Table 1: Social profile of the under five children.

Variables	Frequency (n=400)	Percentage (%)
Age (months)		
2-12	184	46
13-24	90	22.4
25-36	51	12.8
37-48	44	11
49-60	31	7.8
Sex		
Male	246	61.5
Female	154	38.5
Place		
Rural	243	60.7
Urban	157	39.3
Religion		
Hindu	319	79.8
Muslim	78	19.5
Others	3	07
Type of family		
Nuclear	253	63.2
Joint	83	20.8
Three generation	64	16

Table 2: Housing condition of the under five children.

Variables	Case (n=200)	Control (n=200)	Total (n=400)	P value
Type of housing				
Kuchha	63 (32.5%)	81 (40.5%)	146 (36.5%)	$X^2 = 9.2$ P <0.05
Semi pucca	75 (37.5%)	47 (23.5%)	122 (30.5%)	
Pucca	60 (30%)	72 (36%)	132 (33%)	
Type of floor				
Mud	12 (6%)	23 (11.5%)	35 (8.5%)	$X^2 = 14.15$ P <0.05
Cow dung	47 (23.5%)	21 (10.5%)	68 (17%)	
Cement/tiles	141 (70.5%)	156 (78%)	297 (74.3%)	
Overcrowding				
Yes	106 (53%)	44 (22%)	150 (37.5%)	$X^2 = 41$ P <0.001
No	94 (47%)	156 (78%)	250 (62.5)	
Cooking fuel used				
Bio mass	88 (44%)	35 (17.5%)	123 (30.8%)	$X^2 = 32.97$ P <0.001
LPG/electric	112 (56%)	165 (82.5%)	277 (69.3%)	

65 (32.5%) cases had Kuccha house, 75 (37.5%) had Semipucca house and 60(30.0%) had Pucca house. The association was statistically significant. 59 (29.5%) cases had mud or cow dung flooring in their house as compared to 44 (22.0%) controls. The association between flooring and ALRI was statistically significant.

Overcrowding was present in 106 (53.0%) cases and 44 (22.0%) controls. There was a significant association between overcrowding and ALRI with odds ratio of 4 (95% CI 2.53-6.33) for overcrowding.

In 88 (44.0%) cases and 35 (17.5%) controls biomass fuels like firewood and cow dung were used as fuel for cooking in their households. LPG or electric stoves were used in 112 (56.0%) cases and 165 (82.5%) control houses.

There was a significant association between type of cooking fuel and ALRI, with odds ratio of 3.70 (95% CI 2.28-6.02) for biomass fuels.

Table 3: Age group and occurrence of ARI.

Age group (months)	Cases	Controls	Total
2-12	100 (50%)	84 (42%)	184 (46%)
13-24	46 (23%)	44 (22%)	90 (22.5%)
25-36	22 (11%)	29 (14.5%)	51(12.8%)
37-48	18 (09%)	26 (13%)	44 (11%)
49-60	14 (07%)	17 (08.5%)	31 (07.8%)
Total	200 (100%)	200 (100%)	400 (100%)

Chi square value - 4.14, P >0.05 not significant

There was no significant association between the age group and the occurrence of the cases among the under five children.

Table 4: Socioeconomic status and occurrence of ARI.

Socioeconomic status	Cases (n=200)	Controls (n=200)	Total (n=400)
Class I	01 (00.5%)	14 (07.0%)	15 (03.8%)
Class II	15 (07.5%)	30 (15.0%)	45 (11.3%)
Class III	29 (14.5%)	46 (23.0%)	75 (18.8%)
Class IV	78 (39.0%)	43 (21.5%)	121 (30.3%)
Class V	77 (38.5%)	67 (33.5%)	144 (36.0%)
Total	200 (100%)	200 (100%)	400 (100%)

Chi square value - 30.93, P <0.001 significant

155 (77.5%) cases belonged to lower class (Class IV + V), 44 (22.0%) cases belonged to middle class (Class II + III) and only one case belonged to upper class (Class I). A statistically significant association was found between social class and ALRI.

Table 5: Distribution of study subjects mother's literacy.

Mother's literacy	Cases	Controls	Total
Illiterate	73 (36.5%)	43 (21.5%)	116 (29.0%)
Primary	62 (31.0%)	45 (22.5%)	107 (26.8%)
High school	40 (20.0%)	47 (23.5%)	87 (21.8%)
PUC	23 (11.5%)	53 (26.5%)	76 (19.0%)
Graduate	02 (01.0%)	12 (06.0%)	14 (03.5%)
Total	200 (100%)	200 (100%)	400 (100%)

Chi square value - 30.0, P <0.001 significant

There were higher number of illiterate mothers in cases compared to controls (36.5% versus 21.5%). 62 (31.0%) mothers of cases had primary education, 40 (20.0%) had high school education and 23 (11.5%) had PUC education. Mothers' literacy status was significantly associated with the risk of ALRI.

DISCUSSION

A study done by Cunha et al.,[5] reported that age less than one year was a risk factor for respiratory morbidity. Similarly in a study conducted by Savitha et al.,[6] infants constituted 62.5% of ALRI cases. Selwyn BJ.,[7] Shah et al.[8] have also reported that incidence rates for ALRI are highest in younger children. In the present study ALRI was more common among infants (50%) but there was no statistical significance. In a study conducted by Thamer KY et al., more number of male children were affected by ALRI than females.[9]

Majority of cases in our study were from rural area and there was no significant association between domicile and ALRI. Similar results were reported by Thamer KY et al.[9]

A study done by Hamid et al in Pakistan showed that there was a significant association between low parental education status and occurrence of ALRI.,[10] similar results was observed in study by Cunha et al.[5] Low educational level in mothers were found to be associated with increased risk of ALRI hospitalizations and mortality in a study in Brazil.[11] In our present study, there was a strong association between the parent's education and the occurrence of ALRI. In another study done by Mallikarjun Biradar et al. in Raichur similar finding were observed.[18]

In a study by Rahman MM et al.[12] in Bangladesh observed that poverty was significantly associated with occurrence of pneumonia in children. Biswas et al.[13] revealed per capita income was significantly associated with ALRI. The present study finding was similar to above study findings.

A study conducted by Sikolia et al.[14] in Nairobi (Kenya) observed that poor housing conditions of family was associated with increased risk of ALRI in children. Similar results were reported by Savitha et al.[6] In the present study, there was significant association between type of house, type of floor and ALRI. studies conducted by Bruce N et al.,[15] Broor et al.,[16] Savitha et al.[6] and Smith KR[17] have shown that indoor air pollution by biomass fuels increases the risk of acute lower respiratory infection in children.

CONCLUSION

In our study, socio-demographic variables like low education level of parents, low socioeconomic status and overcrowding, Environmental variables like use of biomass fuel and mud/cow dung flooring were found to be independent risk factors for ALRI.

Hence efforts should be made to improve the literacy status of the parents by the administration .Improving the housing condition of the family and better living can reduce the incidence of the acute respiratory infection among the under five children.

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