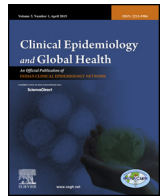




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Original research article

Prevalence and risk factors of pneumonia in under five children living in slums of Dibrugarh town

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ABSTRACT

Background: Pneumonia is a severe form of acute lower respiratory infection responsible for high preventable morbidities and mortality amongst under five year child. Many risk factors and barriers for care seeking influencing the prevalence of ARI and pneumonia.

Methods: A community based cross sectional study was undertaken in two slums of Dibrugarh town that were randomly selected.

Subject: Selection was done by probability proportionate to size technique. A total of 624 children were examined by house to house visit.

Results: Prevalence of pneumonia was 16.34%. Socio economic status ($p=0.005$), education of mothers ($p=0.000$), timely initiation of complementary feeding ($p=0.006$), complete immunization ($p=0.000$) and indoor air pollution ($p=0.000$), were significantly associated with occurrence of pneumonia. In multivariate analysis, pneumonia is significantly associated with indoor air pollution.

Conclusion: High prevalence of pneumonia and its association with different preventable risk factors needs to be addressed. Different community based intervention can be implemented to reduce this preventable morbidities.

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1. Introduction

Global Burden of Disease estimates 2010, stated that acute lower respiratory infection (ALRI) is the leading cause of death among children aged under five years in developing countries.¹ About 13 Million children under 5 years of age die every year in the world, out of which 95% of them are in developing nations, one third of total deaths are due to ARI.² Estimate showed for developing nations, that more than 150 million episodes of pneumonia occur every year in under five years age group.³ India needs a special mention as India tops the list amongst the 15 countries having a high incidence of childhood pneumonia with 43 million episodes of pneumonia annually⁴

Though wide diversity is seen in different studies in assessing the risk factors in the focus, study design and outcome, undernutrition, use of solid fuels in a household, crowding, lack of exclusive breastfeeding, low degree of maternal education, limited access to secondary care and passive care-seeking behavior which are often characteristics of poor households are cited by many studies as the common risk factors for occurrence of ARI.⁵ Therefore, it is necessary to study the risk factors which may perpetuate the development of ARI and understanding which will further help in the prevention of ARI and its complications.

People living in the slum areas are usually a diversified community of different caste, creed, religion and occupation with compromised facilities like water supply, hygiene and sanitation, living condition, population density and so on. So the present study was intended to conduct in an urban slum amongst children under five years with the objectives, to assess the risk factors and prevalence of pneumonia in under five children living in slums of Dibrugarh town.

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2. Methods

Ethical consideration: Ethical approval was taken from Institutional Ethics Committee. Due permission before conducting the study was taken from Joint Director of Health Services. Informed written consent was taken from either of the parent of each participant after briefing about the research purpose, methods and involvement at the time of obtaining consent.

Sample size: A community based cross sectional study was undertaken from September 2015 to February 2015 in the slums of Dibrugarh town. There are ten numbers of registered slums and two slums were randomly selected. Taking annual cumulative incidence of pneumonia for 12–23-month as 38.3 per thousand with 95% confidence interval and 10% relative precision, the required sample size is 627 which were rounded up to 630.⁶ The participants selected per slum were based on probability proportionate to size technique. All children between age group of 1–5 years were enlisted by house to house visit and the required number of children was selected from the list using random sampling.

The interview schedule was field tested and then data was collected by interviewing the caregivers who was mostly the mothers in many of the participants. All consenting under-five children without chronic respiratory ailments were included, while those with were excluded. Statistical analysis was done using rates, ratio, proportion, univariate and multivariate analysis.

3. Results

Response rate of the study was good as all selected participated. A total of 630 numbers of children were to be examined but as the data set came as incomplete in six of the participants hence 624 numbers were taken in analysis in the two slums Chandmari ghat and Graham bazar. According to modified Kuppaswamy 2014, socio economic classification, 42.3% belong to upper lower class, 32.5% belonged to lower middle class and 17.78% belonged to upper middle class, while 7.3% belonged to lower class.

6.7% of mothers of the study participants received education up to high school and above while 24.35% mothers were illiterate. Pre-lacteal feeds were given to 53.52% babies. Exclusive breast feeding was done in 43.6% of the children. In 11.53% of children complementary feeding was started before 6 months while 68.75% received complementary feeding at six months. 61.53% of children were completely immunized while 36.85% were partially immunized and 1.6% didn't receive any immunization [Table 1]. In our study, the prevalence of pneumonia was found to be 16.34% [Table 2].

In univariate analysis, socio economic status based on Kuppaswamy classification 2014 is significantly associated with pneumonia occurrence. Also, education of mothers ($p=0.000$), timely initiation of complementary feeding ($p=0.006$), complete immunization ($p=0.000$) and indoor air pollution ($p=0.000$), are significantly associated with occurrence of pneumonia [Table 3].

In multivariate analysis, pneumonia is significantly associated with indoor air pollution [Table 4].

4. Discussion

About 120 million cases of pneumonia occur annually throughout the world of which 1.7 million die.⁷ Many of the deaths are preventable with simple interventions and can be treated with low cost technologies and care.⁸

In our study lower socio economic status is significantly associated with occurrence of pneumonia. Lower income is cited as a risk factor for ARI.⁸ Similar result was shown in another study done in Hooghly district of West Bengal.⁹

Table 1

Distribution of the study group according to different variables.

Variables	Number	Percentage (%)
Socio economic status		
Upper Middle Class and above	111	17.78
Lower Middle class	203	32.5
Upper Lower Class	264	42.3
Lower Class	46	7.3
Maternal education		
Illiterate	152	24.35
Upto primary	148	23.71
Upto matric	282	45.19
High school and above	42	6.7
Prelacteal feed		
Given	334	53.52
Not given	290	46.47
Breast feeding		
Exclusive Breast feeding	272	43.6
Breast milk and water	68	10.9
Others	284	45.5
Variables	Number	Percentage (%)
Complementary feeding		
Less than 6 months	72	11.53
At 6 months	429	68.75
More than 6 months	123	19.71
Immunization		
Complete	384	61.53
Partial	230	36.85
Not immunized	10	1.6
Indoor air pollution		
Yes	434	69.55
No	190	30.44

Table 2

Distribution of study participants according to presence of pneumonia (based on fast breathing and chest indrawing).

Sex	Pneumonia	
	Yes	No
Male	54, (52.94%)	241 (46.16%)
Female	48, (47.06%)	281 (53.83%)
Total	102, (16.3%)	522 (83.7%)

Lack of awareness and education of the mothers may adversely have an impact on the outcome of the illness which may be amenable to public health intervention.¹⁰ Our study showed lack of maternal education is significantly associated with occurrence of pneumonia. Educated mothers recognize the signs and symptoms of pneumonia early and so accesses health care earlier and so their children have a better outcome than others.¹¹ A study conducted in Nigeria reveals that poor parental educational status is significantly associated with ARI.¹²

In the present study, prelacteal feeding was not significantly associated with occurrence of pneumonia. K Hemagiri et al in their study have found significant association of prelacteal feeding with childhood pneumonia.¹³ Age at onset of complementary feeding may also be associated with pneumonia occurrence. Occurrence is 21.3% when feeding was started at 4 months, 13.7% at six months and 30.7% beyond six months of age.¹⁴ Our study too shows statistical association of complementary feeding in time with pneumonia occurrence.

Immunization of children with two doses of measles vaccine through routine immunization, immunization with three doses of pentavalent vaccine and also booster doses of DPT vaccine during childhood can go a long way for prevention of pneumonia occurrence. Reduction in occurrence of pneumonia have been observed in completely immunized child as according to age, as

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