

Community acquired pneumonia and demographic factors: A cross sectional study

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ABSTRACT

Background: Pneumonia is very common disease. The aim of the study was to find out the determinants of community acquired pneumonia (CAP) among children and association of demographics.

Subjects and methods: This cross sectional study was conducted from September 2017 to January 2018 Pediatrics department of Sir Ganga Ram Hospital. Hundred pneumonic children under the age of five years were screened by non-probability convenient sampling. Pre-tested questionnaires were used for the collection of data.

Results: Out of 100 pneumonic children, the percentage of males was 66%, 51% of families were from low socioeconomic status and 59% of pneumonic children had incomplete vaccination course. 63% of mothers were not having enough knowledge regarding pneumonia, 42% of children had poor sanitary habits and 55% children were having exposure to tobacco.

Conclusion: Study concluded that incomplete vaccination, less practice of exclusive breast feeding, excessive tobacco exposure, lack of enough knowledge regarding pneumonia, low socioeconomic status were found to be the contributing factors in CAP.

Keywords:

Community Acquired Pneumonia (CAP), Maternal Education, Low Socio-Economic Status, Breast Feeding

INTRODUCTION

Pneumonia is a disease that has become one of the major health problems and its incidence is increasing by each passing day. It is the inflammation of lung tissues which causes serious infection of respiratory tract.¹ Globally according to WHO, some 7.6 million children under 5 years of age die annually due to pneumonia.² Pakistan is a country that has been ranked third in the list of fifteen high stressed countries where the estimated deaths of children due to pneumonia is shockingly high.³ Community Acquired Pneumonia (CAP) is the most prevalent form of pneumonia,⁴ and even in developed countries, morbidity and fatality rate due to CAP is highest among children aged <5 years worldwide.^{1,5}

Microorganisms including viruses, molds or yeast and protozoa are responsible for CAP but its main cause is generally bacterial. *Streptococcus pneumoniae* is the prime bacterial pathogen of pneumonia in children.⁶ Symptoms of pneumonia differ according to the age, but that can be recognized when your child had severe

bad cold, cough, high temperature (105°F), sore throat, decrease appetite, wheezing or difficulty in breathing.⁷ Risk factors for CAP can be weakened immune system, undernutrition, prematurity, lack of education, bed sharing with someone having cough, exposure to household air pollution and feeding practices, inadequate housing, crowding, family size of more than 5-7 members and passive tobacco exposure believed to be an imperative risk factor for childhood pneumonia.⁸ Other factors such as low socio-economic status, lack of exclusive breast-feeding till six months, non-vaccination, nutritional insufficiencies, and co existing illness also play a key role in the causation of infection.⁹ Diarrhea and malaria, are also important contributing factors to the increased burden of CAP disease.¹⁰ Mild and moderate cases of pneumonia are treated in supportive care and with antibiotic treatment.¹¹

A case control study conducted by Geleta and colleagues 2016¹² at Kersa district, Southwest Ethiopia, among children between 2-59 months of age demonstrated that prime reasons of CAP is related to young age of mother less than 18, family size of more than 4 members, rapid exposure of smoking, non-exclusive breast feeding till 6 months, deficiency of zinc supplementation, wasting or stunting and prior upper respiratory tract infection.¹² Bangladesh Demographic

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Table 1. Association between maternal education and breast feeding

Maternal education	Exclusive breast feeding till 6 months of age		Total	p-value
	No	Yes		
Illiterate	13	18	31	0.008
Under matric	21	11	32	
Matric	11	12	23	
Intermediate	1	11	12	
Graduation	0	2	2	

Table 2. Association between maternal education and knowledge of pneumonia

Maternal education	Knowledge of pneumonia		Total	p-value
	No	Yes		
Illiterate	23	8	31	0.0042
Under matric	17	15	32	
Matric	17	6	23	
Intermediate	4	8	12	
Graduation	2	0	2	

and Health Survey conducted by in 2009 among children under five years of age showed that child's age, weight, sex and vitamin A deficiency have connection with prevalence of respiratory infections. Furthermore, mother's age, undernutrition, educational level, and family's socio-economic status were found to be association with ARI.¹³ A case control study was conducted by Rudan and colleagues 2008, to find childhood pneumonia in underdeveloped countries. They evaluated that almost 156 million new cases of pneumonia are listed annually around the world. Important risk factors that contribute in the occurrence of pneumonia include lack of exclusive breastfeeding especially till 6 months, malnutrition, indoor air pollution, underweight babies at time of birth, large family size, and non-vaccination of measles.¹⁴

The present study was aimed to highlight the important risk factors of community acquired pneumonia, so that these factors could be pointed out and awareness could be created through extensive health education to reduce burden of disease.

SUBJECTS AND METHODS

This cross-sectional study was conducted at outdoor department or admitted to the Pediatrics Department of Sir Ganga Ram Hospital. Children of CAP aged below 5 years were selected while children of above 5 years of age, and visiting other hospitals were excluded. Community-acquired pneumonia was defined as an infection acquired or arising in the general population not acquired or arising in a hospital. Data were collected after taking approval from the Institutional Ethics Review Board (IERB). A total of 100 patients of community acquired pneumonia visiting the Sir Ganga Ram Hospital, Lahore were recruited in this study after

taking informed consent from the legal guardians. Pre-tested questionnaire was used to collect data from children's mothers. Data entry and analysis was carried out on Microsoft Excel and SPSS version 21.0. Chi-square test was applied to find out the association between community acquired pneumonia and demographic variables. A p-value less than 0.05 was considered as significant.

RESULTS

A total of 100 patients of community acquired pneumonia visiting the Sir Ganga Ram Hospital, Lahore. About 66% of pneumonic children were males and mostly were between 2-3 years of age. Among them, 81% of were from urban areas and 51% belonged to lower socioeconomic status. Most (63%) pneumonic patient's mothers were having education less than matric and 21% of children's fathers were shopkeepers as profession.

Among total, 31% of mothers were illiterate and 32% were under matric, while 12% had education up to intermediate level and only 2% were graduates among them. About 46% of mothers had not exclusively breastfed their babies for 6 months. A significant difference ($p=0.008$) between mother's education and practice of exclusive breast feeding till 6 months was observed (Table 1). About 63% of mothers were not having knowledge about pneumonia. There was a significant association ($p=0.0042$) found between mother's education and knowledge regarding pneumonia (Table 2). It was reported that 39% families were having monthly income 10,000-15,000, while only 2% were having income above 40,000. Only 41% children were having complete course of vaccination.

And there was a significant association ($p=0.024$) between monthly income of the families and

Table 3: Association between socioeconomic status and completion of vaccinations course

Monthly income (PKR)	Completion of vaccination course		Total	p-value
	No	Yes		
5000-10,000	1	5	6	0.024
10,000-15,000	24	15	39	
15,000-20,000	17	6	23	
20,000-30,000	15	8	23	
30,000-40,000	1	6	7	
Above 40,000	1	1	2	

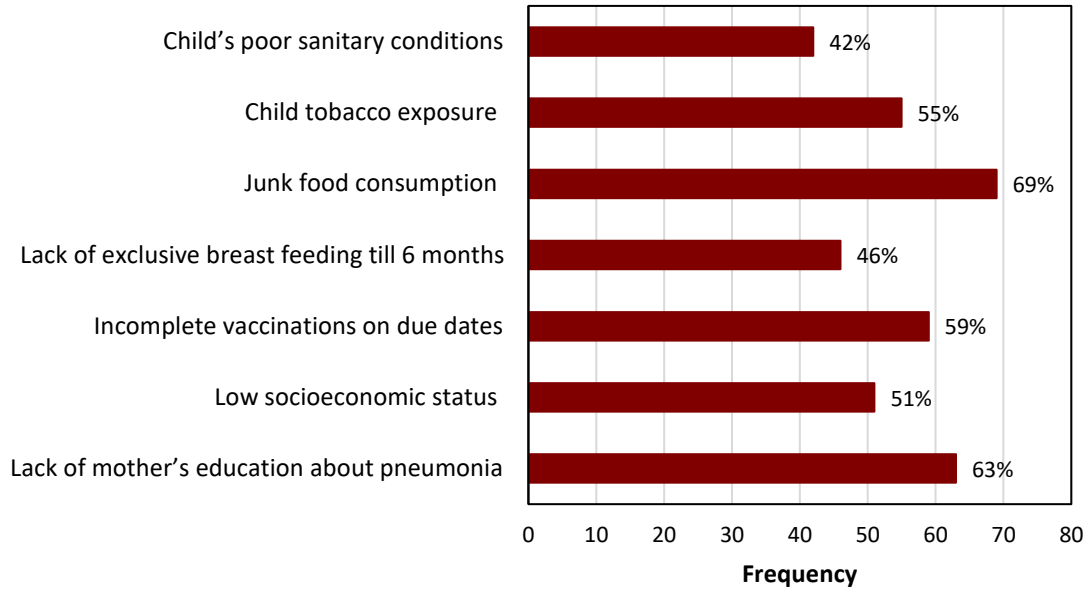


Figure 1. Major determinants of pneumonia in children

completion of vaccination course, by using chi-square test at 0.05 level of significance. Table 3 shows monthly income of the children's families.

Figure 1 shows the major socio-demographic determinants of community acquired pneumonia among the study population. Lack of mother's education about pneumonia (63%), low socioeconomic status (51%), incomplete vaccinations on due dates (59%), lack of exclusive breast feeding till 6 months (46%), junk food consumption (69%), child's active or passive tobacco exposure (55%) and child's poor sanitary conditions (42%) were major determinants of pneumonia in children.

DISCUSSION

Mother's education is very important for the health of the baby. Finding of the study showed that 31% of pneumonic patient's mothers were uneducated, 32% of the mothers were under matric, 23% of the mothers had done matric and only 12% of the mothers had done

inter. Study results showed that 63% of the mothers did not know about pneumonia and only 37% of the mothers had some knowledge about pneumonia. In 2008 study conducted by Rudan and colleagues stated that improper mother's education is one of the determinants in the occurrence of pneumonia.¹⁵ Another study in 2015 conducted by Gebertsadik and colleagues supported current statement that improper educational status of parents, are consistently related with severe ARI.¹¹ Breastfeeding plays important role to strength the immunity of children. Results showed that only 46% of the mothers had exclusive breastfeed their babies for 6 months of age while 54% of the mothers had not practiced this. A case control study conducted by Geleta, and colleagues in 2016 at Kersa district, Southwest Ethiopia among children 2-59 months of age, supported same concept, that lack of exclusive breastfeeding can be a prime reason of community acquired pneumonia.¹⁶ Another study was conducted in 2011 by Bbaale to study the factors linked with the

incidence of diarrhea and acute respiratory infection in children under five years of age. The researcher concluded that exclusive breastfeeding till 2 years can help to reduce the incidence of both diarrhea and ARI.¹⁷ UNICEF in 2006 declared that infants 6 - 11 months old who are not breastfed are at an increased risk of dying from pneumonia compared to those who are breastfed.¹⁵ Vaccination of the baby are very important to improve its immunity and protect it from diseases. Findings of the study showed that only 41% of the parents completed vaccination course of their children on due dates mentioned on vaccination cards and 59% of the parents could not complete vaccination on due dates mentioned on card or either had no vaccination at all. Previous case control study conducted in 2015 by Gebertsadik and colleagues, among children <5 years of age worldwide also supported current statement that incomplete vaccination sessions can make children prone towards diseases like community acquired pneumonia.¹⁸

Mother's education is very important for the health of the baby. Results showed that 31% of pneumonic patient's mothers were illiterate, 32% of the mothers were under matric. Similar results were found by Rudan and colleagues, in 2008 stated that improper mother's education is one of the determinant in the occurrence of pneumonia.^{19, 20}

CONCLUSION

Study concluded that low socio-economic status, lack of vaccination, lack of exclusive breast feeding, lack of enough knowledge regarding pneumonia, excessive tobacco exposure and improper sanitary conditions were found to be the factors in CAP.

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