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ORIGINAL ARTICLE

Frequency of Common Risk Factors of Pneumonia in Children Aged 2-59 Months: A Cross-Sectional Study

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ABSTRACT

Aim:-To determine the frequency of common risk factors of pneumonia in children aged 2-59 months visiting tertiary care hospital

Study design: A cross-sectional study

Place and Duration: National Institute of Child Health (NICH) Karachi from February to July 2018

Methodology: A total of 157children with complaints of fever 102F (or 39C), cough and tachypnea (≥50br/min from 2 to 11 months of age and ≥40br/min from 12 to 59 months of age) of less than two weeks duration were included in this study. Data was collected from both out-patient and indoor departments with patients fulfilling inclusion criteria after taking informed consent from their mother and risk factors were evaluated as mentioned in proforma.

Results: Inappropriate immunization, Lack of breastfeeding, Malnutrition and upper respiratory tract infection in the mother were the commonest risk factors associated with pneumonia comprising 77.7%, 73.9%, 64.3% and 15.3% respectively.

Conclusion: Our data suggest that non-breastfeeding or lack of breastfeeding during the neonatal period, inappropriate immunization, malnutrition, and upper respiratory tract infection in the mother may substantially increase the incidence and duration of pneumonia in children.

Keywords: Pneumonia, Immunization, Respiratory tract infection, Lack of breastfeeding, Malnutrition

INTRODUCTION

The inflammation of the lung parenchyma known as pneumonia is typically brought on by an infection such as a virus or bacteria, but it can also be brought on by irritation from chemicals or other agents [1]. A primary cause of death for children under the age of five worldwide is pneumonia [2]. The causes of 72.6 percent, 70.2 percent, 17.9 percent, and 59.9 percent of pneumonia cases, respectively, are inadequate breastfeeding, improper immunization, upper respiratory tract infection in the mother, and malnutrition [3].

According to reports, pneumonia claims the lives of 21 percent of children under the age of 5 in poor nations [4]. It is the second-highest cause of mortality in children under the age of five, according to the World Health Organization. Acute respiratory infections occur between 1% and 4% of the time in children under the age of 5 in Pakistan. Children's lives can be improved and pneumonia-related mortality and morbidity reduced through primary healthcare programs [5].

Asia is where 70% of the world's undernourished children reside. In Pakistan, 53.38 percent of children under the age of five are stunted, 11.52 percent are wasting, and 33.03 percent of children under the age of five are underweight [6]. Lack of breastfeeding makes kids 3.6 times more likely to get pneumonia [7].

According to T.A. Khan et al., pneumonia mortality in children under the age of 5 is between 20 and 30 percent in Pakistan [8]. In Pakistan, pneumonia is the leading cause of death for children under the age of 5. In order to design measures to reduce morbidity and death, which will also help to meet the Millennium Development Goal [4], it is our goal to identify the prevalent risk factors contributing to pneumonia.

METHODOLOGY

This Cross-sectional Study was conducted in outpatient and indoor departments at the National Institute of Child Health (NICH) Karachi from February to July 2018. Ethical clearance was taken from the institute's ethical review board and informed consent was taken from the mother of the study participants.

Children between 2- 59 months of age presented with complaints of fever (102F or 39C), cough and tachypnea (≥50br/min from 2 to 11 months of age and ≥40br/min from 12 to 59 months of age) less than two weeks duration were included in this study. Children with congenital heart disease. Children with congenital lung malformation like Adenomatoid cystic malformation, chronic lung disease like cystic fibrosis, asthma, foreign body, cerebral palsy and sickle cell disease were excluded

The sample size was calculated by using the World Health Organization sample size calculator taking prevalence of least value P= 0.179, d= 0.06 and CI= 95%. The estimated sample size was n= 157

Data was collected from both out-patient and indoor departments with the patient fulfilling inclusion criteria after taking informed consent from the mother and risk factors were evaluated as mentioned in proforma (lack of breastfeeding, inappropriate immunization, upper respiratory infections in mother and malnutrition) under the supervision of consultant who has 5 years in pediatrics medicines. The frequency of risk factors was sorted by taking a history from the pediatrician.

The collected data were analyzed through SPSS version 16. Mean and standard deviation was calculated for age. Frequency and percentage were calculated for gender, breastfeeding, upper respiratory infection in the mother, malnutrition and immunization. Effect modifier was controlled through stratification of age, gender, educational status of parents, family monthly income and immunization status of children to see the effect of these as outcome variables. Post-stratification applying chi-square test taken $P \leq 0.05$ as significant.

RESULTS

There were 157children with complaints of fever (102F or 39C), cough and tachypnea (>50br/min from 2 to 11 months of age and >40br/min from 12 to 59 months of age) less than two weeks were included in this study. The age distribution of the children is presented in Table 1. The mean age was 24.65 months. Most of the children's parent was uneducated and low-educated persons. Similarly, low and middle classes were observed in this study as presented in Table 1.

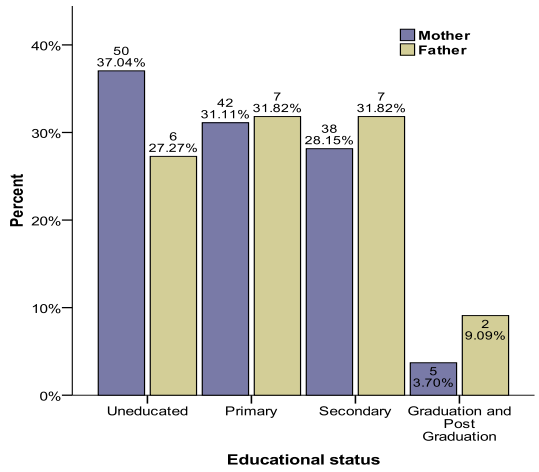

Figure 1: Education Status of the Parents n=157

Table 1: Demographic Characteristics of Study Participants n=157

Age Group (Months)	Frequency	Percentage
3-12	20	12.73
13-24	33	21.01
25-36	97	61.78
>36	07	4.45
Socio-economic status		
Low Class	69	43.95
Middle Class	76	48.41
Upper Class	12	7.64

Table 2: Frequency of Common Risk Factors in Pneumonia in Children from 2-59 Month of Age n=157

Common Risk Factors	Frequency	Percentage
Lack of breast feeding	116	73.9%
Upper respiratory infections in mother	24	15.3%
Malnutrition	101	64.3%
Inappropriate Immunization	122	77.7%

The frequency of common risk factors in pneumonia in children from 2-59 months of age is presented in Table 2. Inappropriate immunization, Lack of breastfeeding, Malnutrition and upper respiratory tract infection in the mother were the commonest risk factors associated with pneumonia and cause 77.7%, 73.9%, 64.3% and 15.3% respectively.

Risk factors in pneumonia children were not significant among different age groups of children and education status of a parent as shown in Tables 3 and 4, while the rate of upper respiratory infections in mothers was significantly high in the middle class whereas other factors were not significant among socio-economic status as presented in Table 5

Table 3: Frequency of Common Risk Factors in Pneumonia in Children with Respect to Age Groups n=157

Common Risk Factors	Age Groups (Years)				P-Value
	3 to 12 n=50	13 to 24 n=33	25 to 36 n=37	>36 n=37	
Lack of breast feeding	37(74%)	22(66.7%)	29(78.4%)	28(75.7%)	0.72
Upper respiratory infections in mother	4(8%)	8(24.2%)	7(18.9%)	5(13.5%)	0.21
Malnutrition	32(64%)	15(45.5%)	27(73%)	27(73%)	0.06
Inappropriate Immunization	40(80%)	24(72.7%)	31(83.8%)	27(73%)	0.59

Table 4: Frequency of Common Risk Factors in Pneumonia in Children with Respect to Educational Status n=157

Common Risk Factors	Educational Status of the Parents				P-Value
	Uneducated n=56	Primary n=49	Secondary n=45	Graduation and post- Graduation n=7	
Lack of breast feeding	47(83.9%)	31(63.3%)	34(75.6%)	4(57.1%)	0.07
Upper respiratory infections in mother	5(8.9%)	8(16.3%)	8(17.8%)	3(42.9%)	0.11
Malnutrition	36(64.3%)	35(71.4%)	28(62.2%)	2(28.6%)	0.16
Inappropriate Immunization	45(80.4%)	39(79.6%)	35(77.8%)	3(42.9%)	0.15

Table 5: Frequency of Common Risk Factors in Pneumonia in Children with Respect to Income Status n=157

Common Risk Factors	Income Status			P-Value
	Low Class n=69	Middle Class n=76	Upper Class n=12	
Lack of breast feeding	57(82.6%)	50(65.8%)	9(75%)	0.07
Upper respiratory infections in mother	5(7.2%)	18(23.7%)	1(8.3%)	0.01
Malnutrition	41(59.4%)	53(69.7%)	7(58.3%)	0.39
Inappropriate Immunization	52(75.4%)	60(78.9%)	10(83.3 %)	0.77

DISCUSSION

In our study Frequency of common risk factors in pneumonia in children from 2-59 months of age upper respiratory tract infection in the mother was found to be 15.3%. According to the study's authors, people with severe pneumonia were nearly three times more likely to have a family member with upper respiratory symptoms. Similar results were found in another investigation; the odds ratio for disease in the mother was 6.53, whereas the odds ratio for disease in a sibling was 24 [9]. Children can readily contract upper respiratory tract infections from home contacts due to their high contagiousness. These infections frequently have viral origins and put kids at risk for pneumonia. The pathogen's virulence and load, which are typically larger when the infection comes from household contacts, also affect how severe the sickness will be [10].

In our study Lack of breastfeeding was found in 73.9% as a common risk factor in pneumonia.

Certain substances found in breast milk include transforming growth factor (TGF)-1, which is linked to the formation of elastin, a substance necessary for the correct structural and functional growth of the lungs. Our study's non-breastfed infants would have had less formed and effective lungs, and pneumonia would have further harmed their lung health [11].

The first six months of a child's life should be spent solely on breastfeeding in order to improve their natural defence. In addition to being successful in preventing pneumonia, it also aids in shortening a child's illness if they do contract it. Malnutrition was identified to be a risk factor for pneumonia in our study with a rate of 64.3%, which is consistent with research from other countries [12].

In our study, 77.7% of inappropriate immunization was found to be a common risk factor in pneumonia. Children's pneumonia has been significantly reduced because to childhood vaccines. The complications of rubeola, varicella, and pertussis include pneumonia. Nowadays, due to normal childhood vaccinations, these disorders and the pneumonia associated with them are rarely seen. Due to routine Hib vaccinations, H. influenzae type B-related pneumonia is also a rare condition [13].

CONCLUSION

In conclusion, our data suggest that non-breastfeeding or lack of breastfeeding, inappropriate immunization, malnutrition; upper respiratory tract infection in the mother may substantially increase the incidence and duration of pneumonia.

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Conflict of interest: None

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