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Original Research Article

Evaluation of knowledge and perception regarding pneumonia among the mothers of under-ten children in Tangail, Bangladesh

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ABSTRACT

Background: Childhood pneumonia is a serious infection and the single largest infectious cause of death in children. The study aims to evaluate knowledge and perception among mothers on pneumonia diseases among the children.
Methods: A hospital based study was conducted to describe socio-demographic factors of mothers, their knowledge and perception of pneumonia disease. Study was conducted at Sheikh Hasina Medical College Hospital in Tangail from June to July 2018 by interviewing 215 mothers of children under-ten years attending a pediatric clinic by using structured questionnaire.
Results: The parents were predominantly primary school graduates (70.7%). The majority of the father worked as daily laborer (61.9%) with about 5-10K BDT of family income per month. Around 88.4% of the mothers had fair knowledge about pneumonia. For children treatment, 90.2% parents consulted with qualified doctor, about 10% utilized self-medication. About 44.7% children were suffered from fever during pneumonia, about 42.8% was experienced shortness of breath, and about 28.4% experienced of wheezing. About 90.2% parents believed that the indoor temperature, humidity and air movement has effect on pneumonia. About 92.6% cares of reducing indoor smoke and dust, about 40.5% families have a smoker. The lack of knowledge among mothers about simple signs and symptoms of pneumonia and also about its causes and factors related with it has become important findings of this study.
Conclusions: Community based public health education and training for health providers at all levels have to be provided about correct and applicable prevention and assessments of pneumonia.

Keywords: Pneumonia, Knowledge, Symptoms, Bangladesh

INTRODUCTION

Pneumonia is a major health problem in children under 10 years of age. According to the World Health Organization (WHO), every year more than 150 million episodes of pneumonia occur which account for more than 95% of all new cases worldwide. According to another report of WHO, the death of pneumonia around the world each year is nearly 2 million children under 5 years. It is estimated that 500 to 900 million acute respiratory infection (ARI) episodes occur per year in developing countries.[1] Previous research has shown that in low resource settings, risk factors for pneumonia in children have included malnutrition, inadequate paternal education, bad ventilated living room, and smoking habits of parents.[2] Pneumonia is the single largest infectious cause of death in children worldwide. Pneumonia killed 920,136 children under the age of 5 in 2015, accounting for 16% of all deaths of children under five years old.[3] Pneumonia affects children and families everywhere, but is most prevalent in South Asia and sub-Saharan Africa. Children can be protected from

pneumonia; it can be prevented with simple interventions, and treated with low-cost, low-tech medication and care.[4]

This makes it the single most common cause of child deaths worldwide. Despite having made some progress, a 51% decrease in pneumonia from 2000 to 2015, it is nowhere near the greater than 86% decrease in mortality from malaria-related under five mortality in the same time frame.[5] There is still a significant road ahead to make a marked reduction in the preventable, treatable deaths due to pneumonia. Pneumonia is the leading infectious disease killer of children worldwide; killing 2,500 children each day more children than malaria, TB, measles, and AIDS combined. Despite causing 16% of all child deaths, pneumonia receives little attention and a tiny fraction of global public health investment less than 2% of total global development funding for health. Despite the existence of effective tools to prevent, diagnose and treat pneumonia, most of the countries struggling with high rates of pneumonia-related deaths allocate a tiny portion of their health budgets to fighting child pneumonia. Mortality due to childhood pneumonia is strongly linked to poverty-related factors such as under nutrition, lack of safe water and sanitation, indoor air pollution and inadequate access to health care. Acute lower respiratory infections, particularly pneumonia, are the leading and largest single cause of mortality among <5-year-old children in developing countries.

In Bangladesh, likes other developing countries fathers, mothers or primary caretakers of pneumonic children had inadequate knowledge about pneumonia. In Bangladesh, 15% of the 119,000 total deaths of children aged less than 5 years due to the pneumonia in 2015.[5] Parents those reside in remote areas have inadequate knowledge about clinical features of pneumonia and do not perceive the illness as serious or life-threatening.[6] Although Bangladesh has achieved 80% immunization coverage, only 22% of children receive postnatal check-ups for immunizations and only 37% receive facility treatment for ARI.[7]

It is very important that rural mothers should have appropriate knowledge about the clinical features of pneumonia, because delays in detecting clinical signs including danger are the major obstacles to preventing deaths due to childhood pneumonia. It has been observed that mothers were unable to detect the severity of the illness of their child and brought the matter to the attention of adult family members or household head in order to get permission to take the child outside of home for treatment. A study in recent past in western Kenya reported that comorbidities, spread from upper respiratory tract and delay in seeking treatment, were the common identified causes of severe pneumonia on presentation to health facilities.[8] Considering these facts, the objectives of this study are to evaluate the knowledge, perception among mothers on pneumonia disease of the children in Tangail, Bangladesh.

METHODS

A cross sectional study was conducted based on a structured questionnaire to determine the parents' knowledge, attitude and practice about pneumonia. The questionnaires were prepared by analyzing earlier survey questionnaires in different parts of the world. The survey study was conducted from June to July 2018 by interviewing 215 mothers of children under ten years attending at the pediatric clinic of Sheikh Hasina Medical Collage Hospital, Tangail by using structured questionnaire. Among 215 children, about 21 children who were suffering from childhood pneumonia in the pediatric department of the hospital were enrolled in this study. Forty-two different questions in the questionnaire had been prepared for collecting the data from the individuals. The data had been collected by face to face interview. All the data of the study were input in SPSS (Statistical Package for the Social Sciences) version 20.0 software from IBM for windows and the gathered data thus analyzed using SPSS and Microsoft Excel. The results were expressed through tabular presentation. The study was carried out using the general principles of the WMA declaration of Helsinki. Respondents were able to refuse participation when they asked for the permission for starting the session or in any part of the questionnaire.

RESULTS

Socio-demographic characteristics of parents

A total of 215 mothers with children (<10 years) were interviewed, out of which 42 (19.5%) were urban residents and 173 (80.5%) were rural residents. Among the interviewed mothers, the majority (207, 96.3%) were housewives. In terms of paternal occupation, 2 (0.9%) were doctors, 13 (6.0%) were teachers, 2 (0.9%) were employees, 18 (8.4%) were farmers, 5 (2.3%) were bankers, 25 (11.6%) were business men, most of them (133, 61.9%) were daily laborers.152 (70.7%) mothers and 149 (69.3%) fathers acquired only primary education. Type of family of most of parents (138, 64.2%) were jointed, 116 (53.95%) parents had 2-3 children and most of parents (144, 67.0%) household income per month were low (5,000-10,000 BDT) (Table 1).

Socio-demographic characteristics of children

Among the children, 113 (52.6%) was male, 102 (47.4%) female and most of children (138, 64.2%) were not going to kindergarten. 28.8% (62) children with age limit 5-6 years were admitted in the hospitals. Most of the children were delivered (129, 60%) at hospitals and the number of breastfeeding children were 145 (67.4%). Fully vaccinated children were 165 (76.7%) against pneumonia (Table 2).

Table 1: Baseline socio-demographic characteristics of parents.

Parents characteristics	Frequency	Percentage (%)
Educational level of mother		
No education	20	9.3
Primary	152	70.7
Secondary	39	18.1
College	4	1.9
Educational level of father		
No education	8	3.7
Primary	149	69.3
Secondary	38	17.7
College	16	7.4
University	4	1.9
Occupation of mother		
Teacher	5	2.3
Housewife	207	96.3
Student	1	0.5
Employee	2	0.9
Occupation of father		
Doctor	2	0.9
Teacher	13	6.0
Farmer	18	8.4
Abroad	17	7.9
Employee	2	0.9
Daily labourer	133	61.9
Business	25	11.6
Banker	5	2.3
Household income per month (BDT)		
5,000–10,000	144	67.0
10,000–15,000	13	6.0
15,000–20,000	5	2.3
20,000–25,000	16	7.4
25,000–30,000	35	16.3
30,000–35,000	2	0.9
Number of children		
≤2	98	45.58
3-4	116	53.95
≥5	1	0.47
Type of family		
Joint	138	64.2
Nuclear	77	35.8
Parents residents		
Rural residents	173	80.5
Urban residents	42	19.5

Knowledge about the factors associated with presence of pneumonia

Different environmental and household factors are associated with the presence of pneumonia disease among under ten years old children. 131 (60.9%) parents thought that the worst condition of pneumonia was observed during winter, 70 (32.6%) parents thought during summer, 13 (6.0%) parents thought during rainy season. 183 (85.1%), parents thought that dust was of the most aggravating factors of the pneumonia. The effect of indoor temperature, humidity and air movement on ARI 194 (90.2%) parents thought, the effect of indoor smoke ash and dust on ARI 182 (84.7%) parents thought. Most of parents (164, 76.3%) did not utilize the frequency of air ventilation in winter season, 200 (93.0%) parents did not utilize air ventilation in spring season. 83 (38.6%) parents frequency of humid cleaning at home within once

a month. 120 (55.8%) parent's home were entered to wind in cold season. 110 (51.2%) parents had air ventilation system. Most of parents (175, 81.4%) parents thought that deficiency of vitamin A causes of pneumonia. Most of parents (199, 92.6%) believe to care at home reducing indoor smoke and dust, 194 (90.2%) parents couldn't stabilize the indoor heating system during winter and cold season, 200 (93.0%) parents didn't take any steps that system. Most of parents (76, 35.34%) home indoor air qualities were bad (Table 3).

Table 2: Socio-demographic characteristics of children.

Children characteristics	Frequency	Percentage (%)
Sex of child		
Male	113	52.6
Female	102	47.4
Going to kindergarten		
Yes	77	35.8
No	138	64.2
Age of child		
1-30 days	21	9.8
1-5 months	26	12.1
6-10 months	25	11.6
1-2 years	41	19.1
3-4 years	24	11.2
5-6 years	62	28.8
7-8 years	13	6.0
9-10 years	3	1.4
Breastfeeding children		
Yes	145	67.4
No	70	32.6
Term of the child		
Full-term	189	87.9
Pre-term	26	12.1
Place of delivery		
Hospital	129	60.0
Home	86	40.0
Vaccination of acute respiratory tract infection		
Yes	165	76.7
No	50	23.3
Number of malnutrition children		
No	182	84.7
Yes	33	15.3
Delivery performed by qualified doctor		
Yes	146	67.9
No	69	32.1

Table 3: Factors associated with presence of pneumonia.

Factors associated with presence of pneumonia	Frequency	Percentage (%)
Environmental condition of the disease		
Summer	70	32.6
Winter	131	60.9
Autumn	1	0.5
Rain	13	6.0
Aggravating factors of the disease		
Dust	183	85.1
Overcrowding	14	6.5
Poverty	7	3.3
No immunization	11	5.1

Continued.

Factors associated with presence of pneumonia	Frequency	Percentage (%)
Effect of indoor temperature, humidity and air movement on ARI		
Yes	194	90.2
No	9	4.2
Don't know	12	5.6
Effect of indoor smoke ash and dust on ARI		
Yes	182	84.7
No	14	6.5
Don't know	19	8.8
Frequency of air ventilation in winter season		
Daily	3	1.4
Weekly	2	0.9
Monthly	7	3.3
Occasionally	39	18.1
Never	164	76.3
Frequency of air ventilation in spring season		
Weekly	3	1.4
Monthly	1	0.5
Occasionally	11	5.1
Never	200	93.0
Frequency of humid cleaning		
Daily	47	21.9
Once a month	83	38.6
Few times a week	58	27.0
Less than once a month	19	8.8
Few times a month	5	2.3
Never	3	1.4
Entrance of wind through home in cold		
Yes	120	55.8
No	95	44.2
Presence of air ventilation system		
Yes	110	51.2
No	105	48.8
Effect of vitamin A deficiency in pneumonia		
Yes	175	81.4
No	16	7.4
Don’t know	21	9.8
Sometimes	3	1.4
Stabilization of indoor heating during winter and cold season		
Yes	20	9.3
No	194	90.2
Skip to	1	0.5
Home indoor air quality		
Very good	36	16.75
Good	43	20
Middle	60	27.91
Bad	76	35.34
Care of reducing indoor smoke and dust		
Yes	199	92.6
No	16	7.4

Signs and symptoms of pneumonia

From those children included in the survey, 64 (29.77%) were sick at the time of data collection or within the last two weeks. Among these 35 (16.28%) had cough at the time of survey or within the last two weeks before the survey. 54 (25.1%) children couldn’t able to drink during pneumonia. 96 (44.65%) children had fever, 61 (28.4%) children had wheezing, 92 (42.8%) children had

shortness of breath, 63 (29.3%) children had clammy or sweaty skin (Table 4).

Knowledge, attitude and practice of parents on pneumonia

190 (88.4%) parents had knowledge about pneumonia. Most of them (194, 90.2%) consulted with qualified doctor to treat pneumonia. 10 (4.7%) adopted by self-medication. 188 (87.4%) parents thought that the etiology of pneumonia was from getting cold. About 191 (88.8%) mothers thought that the care child improved immune system. The number of smoker in family was 87 (40.5%) frequency of smoking at home daily were 78 (36.3%) frequency of visiting outside smokers occasionally rare that was 139 (64.7%), no number of smokers at home was 128 (59.5%), the number of smoking by outside smoker at home were 102 (47.4%) (Table 5).

Table 4: Signs and symptoms of pneumonia.

Signs and symptoms of pneumonia	Frequency	Percentage (%)
Drinking ability of baby		
Yes	161	74.9
No	54	25.1
Suffering from fever/chills		
No	119	55.3
Yes, 2 days	15	7.0
Yes, 3 days	15	7.0
Yes, 4 days	31	14.4
Yes, 7 days	35	16.3
Experiencing shortness of breath		
Yes	92	42.8
No	123	57.2
Experiencing wheezing		
Yes	61	28.4
No	154	71.6
Presence of clammy or sweaty skin		
Yes	63	29.3
No	132	61.4
Sometimes	17	7.9
Don’t know	3	1.4

Table 5: Knowledge, attitude and practice of parents on pneumonia.

Knowledge, attitude and practice	Frequency	Percentage (%)
Knowledge about pneumonia		
Yes	190	88.4
No	25	11.6
Treatment utilized for ARI		
Consulted qualified doctor	194	90.2
Did not consulted doctor	6	2.8
Bed rest	7	3.3
Home remedy	6	2.8
Don’t know	2	0.9
Practicing self-medication in ARI		
No	205	95.3
Yes	10	4.7
Self-medication by		
Paracetamol	60	27.9
Anti-allergy	2	0.9
Antibiotics	111	51.6
Homeopathy	28	13.0
Honey	14	6.5

Continued.

Knowledge, attitude and practice	Frequency	Percentage (%)
Etiology of pneumonia		
Get cold	188	87.4
From infected person	4	1.9
Air pollution	8	3.7
From dust	15	7.0
Care about improving child's immune system		
Yes	191	88.8
No	8	3.7
Don't know	16	7.4
Smoker in family		
Yes	87	40.5
No	128	59.5
Frequency of smoking at home		
Daily	78	36.3
Few times a week	9	4.2
Few times a month	1	0.5
Occasionally, rare	70	32.6
Never	57	26.5
Frequency of visiting outside smokers		
Daily	1	0.5
Few times a week	28	13.0
Few times a month	12	5.6
Occasionally, rare	139	64.7
Never	35	16.3
Number of smokers at home		
Zero	128	59.5
One	75	34.9
Two	12	5.6
Smoking by outside smoker at home		
Yes	102	47.4
No	113	52.6

DISCUSSION

Mothers were interviewed in this study because mostly mothers accompany their children to hospital.9,10 The occurrence of pneumonia disease among children less than ten years was found in this study is similar with the national figures. Two children die of pneumonia every hour in Bangladesh, according to the National Situation Analysis Report of Pneumonia 2018 (The Daily Star, September 8, 2019). The higher population below poverty line and health policy reformation in Tangail was also the crucial factor involved. In developing countries including Bangladesh, mothers or primary caretakers of pneumonic children had inadequate knowledge about pneumonia.[1,11-13] Majority of them did not have prior knowledge about the clinical features of pneumonia.

In the present study, similar result had been observed. It found total (88.4) around 30.4% of parents had fair knowledge and 58% of parents had good perception about pneumonia disease. These results showed even though parent's knowledge about acute respiratory infections, especially pneumonia, was quite stagnant for a long time but almost its level was found at high levels. Socialization and transfer knowledge between health personals to community seems to be successful beside other pneumonia prevention programs and make the knowledge about pneumonia spread widely in community. But this study still found there were lack of knowledge among parents about simple signs and symptoms of pneumonia, especially in term of loss appetite and clammy or sweaty skin as signs of pneumonia.

Environmental factors such as dust, unhealthy household condition, and high room temperature during hot summer months, cold allergy, and winter seasons were perceived as the causes of pneumonia in the present study. In rural Bangladesh, child usually comes in contact with smoke especially produced while cooking food, which is a known risk factor for pneumonia.[14-16] The lack of knowledge about causes and factors related with pneumonia was also found in this study, especially about indoor smoke, dust, humidity, deficiency of vitamin A, charcoal use, and air pollutants associated with biomass fuel, overcrowding, poverty etc. There were only a few

mothers gave correct opinion about chest in drawing, running nose and cough in term of severity of pneumonia. Almost mothers can answered correctly for all of 2 questions in term of simple signs and symptoms of pneumonia. From these results it is showed that this study seems more specific to determine the lack of mother's knowledge and mother's perception by using more variation of questions.

CONCLUSION

Pneumonia is one the most dangerous diseases affecting children under 10 years old. Based on the data, we manage to do some statistical analysis and produce some results. Identifying under-five mortality and morbidity involves studying the major causes of mortality and morbidity, and identifying the most important factors associated with these causes, thus applying the findings to child health policy with the goal of reducing child morbidity and mortality. The results of this study found high prevalence of pneumonia among fewer than 10 in the study area. Under nutrition, about indoor smoke, dust, humidity, deficiency of vitamin A, charcoal use, carrying the child on rural residents, living in crowded house, keeping cattle inside the main house with the child were important factors found associated with the presence of pneumonia. So, it is necessary to prevent those risk factors for reducing pneumonia disease.

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