




Barriers to seeking timely treatment for severe childhood pneumonia in rural Bangladesh

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ABSTRACT

Objective Delays in seeking medical attention for childhood pneumonia may lead to increased morbidity and mortality. This study aimed at identifying the drivers of delayed seeking of treatment for severe childhood pneumonia in rural Bangladesh.

Methods We conducted a formative study from June to September 2015 in one northern district of Bangladesh. In-depth interviews were conducted with 20 rural mothers of children under 5 years with moderate or severe pneumonia. We analysed the data thematically.

Results We found that mothers often failed to assess severity of pneumonia accurately due to lack of knowledge or misperception about symptoms of pneumonia. Several factors delayed timely steps that could lead to initiation of appropriate treatment. They included time lost in consultation with non-formal practitioners, social norms that required mothers to seek permission from male household heads (eg, husbands) before they could seek healthcare for their children, avoiding community-based public health centres due to their irregular schedules, lack of medical supplies, shortage of hospital beds and long distance of secondary or tertiary hospitals from households. Financial hardships and inability to identify a substitute caregiver for other children at home while the mother accompanied the sick child in hospital were other factors.

Conclusions This study identified key social, economic and infrastructural factors that lead to delayed treatment for childhood pneumonia in the study district in rural Bangladesh. Interventions that inform mothers and empower women in the decision to seek healthcare, as well as improvement of infrastructure at the facility level could lead to improved behaviour in seeking and getting treatment of childhood pneumonia in rural Bangladesh.

INTRODUCTION

Pneumonia is the leading cause of childhood mortality in low-income countries.¹ In Bangladesh, 14% of annual mortality among children under 5 years is attributable to pneumonia.² Several risk factors, including indoor air pollution,^{3 4} malnutrition,⁵ lack of breastfeeding,⁶ low maternal education,⁷ low socioeconomic status of families, poor access to essential health services, poor quality of care⁸ and concurrent illnesses,⁷ increase the risk of pneumonia. In low-income countries, 70% of child deaths, including those from pneumonia, might be associated with delays in seeking healthcare or not seeking care at all.⁹ Although childhood pneumonia

What is already known on this topic?

- In Bangladesh, 14% of annual deaths in children below 5 years are due to pneumonia.
- Delayed seeking of medical attention is one of the main reasons for childhood pneumonia-related deaths. However, specific reasons behind these delays are not sufficiently documented.

What this study adds?

- Limited knowledge among caregivers and absence of community-based health education in the district of study might have inhibited early diagnosis of pneumonia and the consequences.
- Delay in seeking healthcare, social norms, health centres' irregular schedules, inadequate medical supplies, shortage of hospital beds and distance from health centres delayed treatment initiation.
- Domestic challenges included financial hardships and challenges in finding a caregiver to stay with other children at home as mother accompanied sick children in hospital.

is usually curable by low-cost antibiotics, oxygen and supportive care if diagnosed at an early stage,¹⁰ failure to recognise the danger signs and symptoms often delays appropriate intervention, resulting in increased mortality.^{11 12} Challenges in accepting and accessing informal healthcare providers in the rural community and overcoming financial and cultural constraints are factors that lead to delays in seeking formal healthcare.^{13 14} These barriers have been previously exposed, leading to several interventions, including the implementation of facility-based Integrated Management of Childhood Illness, Treatment of Diarrhea and ARI, and Essential Newborn Care.^{15 16} Despite these interventions, childhood pneumonia-related deaths, due to delayed seeking of intervention, persist. Moreover, there is critical lack of evidence of the specific reasons for these delays in Bangladesh, particularly in rural areas. We, therefore, conducted formative research to understand mothers' perceptions and understanding of the symptoms and causes of pneumonia and their attitudes and practices of relating to healthcare-seeking behaviour (HSB) when children

have pneumonia. This study aimed to identify factors associated with delay in seeking treatment of severe pneumonia in children under the age of 5 years in rural Bangladesh.

METHODS

Study design

We conducted formative qualitative study from June to September 2015.

Study site and setting

This study investigated the feasibility of the effectiveness trial (PR-14066) planned on day care approach versus hospital management of severe childhood pneumonia within the Bangladeshi healthcare system. We conducted this study in randomly selected four unions of Karimganj subdistrict of Kishoreganj district, which is approximately 130 km north of the capital city, Dhaka.

There is a specialised public medical college hospital.¹⁷ General healthcare services are provided through 250-bed District Sadar Hospital (DH) and at subdistrict level through 12 Upazila health complexes (UHCs).¹⁸ Besides for only outpatient services, there are 109 union subcentres or health and family welfare centres (HFWCs) at union level and 312 community clinics at ward level.

Participants

We purposively selected study participants from different settings and sociodemographic backgrounds. The team visited UHCs and other hospitals and collected a list of caregivers of children under 5 years with moderate or severe pneumonia who sought healthcare in last 3 months. Among those, we identified caregivers of our selected four unions. We visited their residence, approached them to participate and who agreed enrolled them using written informed consent. Besides, during data collection, our team members were also available in those facilities, and following the same procedure, they also enrolled a couple of caregivers. Considering diversity, we enrolled caregivers proportionately from all selected unions.

Data saturation occurred after 20 in-depth interviews (IDIs). The interviews were conducted from venues that were convenient to the respondents, mostly at their home. Participants shared their experiences with their sick children.

Data collection

We developed an IDI guideline (online supplemental material) to collect a range of information related to mothers' perceptions, recognition of signs, beliefs and attitudes towards childhood pneumonia, their HSBs and associated barriers. The guideline translated into Bengali (local language) was pretested in one union (similar context) of study district and revised based on feedback. We conducted the IDIs in local language and average duration was 47 min per interview. The interviewer took notes, noted down non-verbal responses and tape-recorded the conversation.

A six-member research team (female: four, male: two) with social science expertise conducted this study including data collection, analysis and report preparation. They were also prepared for the assignment through induction in research design, study objectives, methodology and data collection.

Data analysis

We followed the content analysis approach of data analysis. Four researchers (female: three, male: one) transcribed the

Table 1 Sociodemographic characteristics of the study participants (mothers of the under 5 years children) in four selected unions of one rural district, Bangladesh, 2015

Characteristics	Participated mothers (n=20)	Selected male children (n=9)	Selected female children (n=11)
Age (years)			
18–25	10	7	3
26–30	5	2	3
31–35	5	0	5
Education			
No education	6	1	5
>5 years of schooling	9	5	4
5→10 years of schooling	5	3	2
Age (years) at marriage			
13–17	7	3	4
18–20	13	6	7
Husbands' (of participants) occupation			
Labourer	6	3	3
Farmer	4	2	2
Rickshaw/van puller	6	2	4
Driver (auto-rickshaw)	3	2	1
Businessman	1	0	1
Religion			
Islam	14	6	8
Hindu	6	3	3
Number of children <5 years			
1–2	10	5	5
>2	10	4	6
Age (months) of targeted children			
0–6	2	2	0
7–11	7	4	3
12–23	5	2	3
24–59	6	1	5

audio-recordings of interviews in the local language and coded them. They shared the codes and key findings in weekly meetings. After reading, rereading and coding the texts, supportive key findings were formalised through a matrix table. On completion of data collection, two researchers analysed the data using ATLAS.ti (V.7.5.9). During data display and reduction, we reread text documents and refined codes. Coded outputs were created by Atlas.ti and displayed in the matrix table. The outputs were subsequently reread, conceptualised and categorised by emerging themes. Teams developed main themes during the analysis process. Afterwards, the qualitative investigator prepared the report in English.

RESULTS

The average age of the 20 mothers was 28 years (range 18–35 year). Most (15; 75%) mothers had below primary school certificate (class I–V) education, and half had only one child. Their average age at marriage was 17 years (range 13–20 years.) (table 1).

Healthcare-seeking behaviour and practices relating to childhood pneumonia

Use of home remedy

Some mothers (5/20) reported the use of certain home remedies to treat pneumonia. These remedies included honey or *tulsi leaf* (holy basil), bathing the child in hot water, warming a piece of

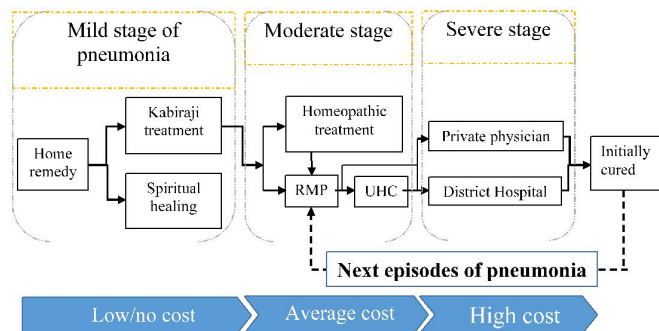


Figure 1 Pathway of seeking of treatment for childhood pneumonia in four selected unions of rural Bangladesh, 2015. RMP, rural medical practitioner; UHC, Upazila health complex.

cloth by placing it on the top of a kerosene lamp and placing it on the chest of the sick child, massaging mustard oil on the chest, head massage using hot oil with garlic or with oil taken from a lamp and using a mixture of *tulsi leaf*, ginger and breastmilk.

One mother of a 42-month-old girl stated:

I massaged her nose and chest for the first three days with mustard oil and then took her to a doctor. From the day of delivery, I used to massage my child's whole body with oil until she was three years old. I learned the process from my parents.

First contact point for seeking healthcare

When children feel cold, cough or have fever and/or chest pains, almost all mothers perceived the symptoms to mean they had caught the cold. Mothers preferentially chose rural medical practitioners (RMPs) for initial healthcare services because they were readily available within the community, inexpensive and accessible within a short period of time (figure 1). These informal community-based healthcare providers were known as 'village doctor' and 'Chutka doctor' to the local people.

Conversely, mothers who lived close to HFWC or UHC visited these formal facilities as first contact. Financially challenged mothers usually sought care from the HFWCs to receive free treatment. Mothers stated that they followed advice from elders and visited Kabiraj (provider of herbal remedies), while others reported taking their children for treatment at homeopaths.

Second contact point for seeking healthcare

If the initial treatment was not effective, the condition of the child got worse, and/or the child developed fast breathing and/or was unable to eat, the next step was decided by family elders or recommended by RMPs. Some well-off families also sought care from child specialists. Others consulted caregivers or families whose members were aware of a DH or a medical college hospital and trusted the services.

Non-compliance with the doctor's advice

The appropriate treatment for severe pneumonia started after confirmation of the diagnosis at the district level. In most cases, children recovered successfully if they sought care in a timely fashion and received appropriate treatment. According to the participants, in some cases, the child's illness deteriorated into moderate pneumonia because of incomplete drug administration by the mother, or because families were unable to buy prescribed medicines in time. Mothers were often asked to admit their children to the hospital at this stage. Some of them did not get permission from family members. Getting substitute caregivers

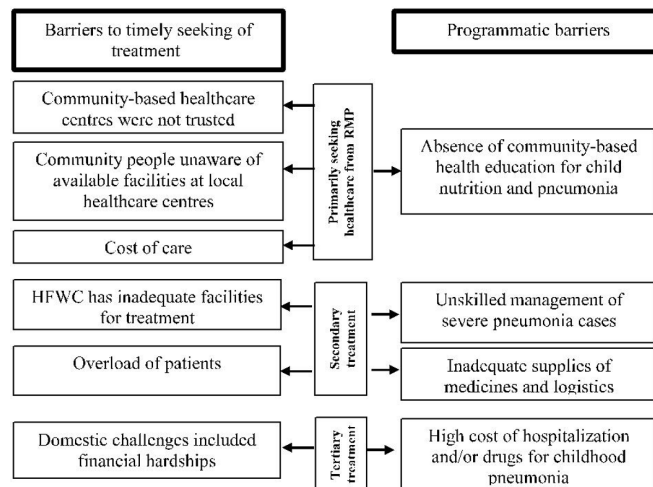


Figure 2 Barriers reported to timely seeking for childhood pneumonia treatment in four selected unions of rural Bangladesh, 2015. HFWCs, health and family welfare centres; RMP, rural medical practitioner.

for other children during their expected stay in hospital with the sick child was also a challenge. They would, therefore, disregard the advice. Usually, such mothers then tried to arrange for prescribed medicines and injectable drugs to be given at home.

Barriers in timely seeking of treatment

Lack of knowledge as a barrier to identifying signs and symptoms

The participating mothers did not know the symptoms of childhood pneumonia. They also had limited awareness of the consequences of childhood pneumonia. It was reported that at the community level, there were no health education programmes to generate awareness on the severity of pneumonia or the necessity of seeking timely healthcare for childhood pneumonia (figure 2).

Unfamiliarity with available health facilities

Mothers were unaware of available healthcare facilities for the treatment of childhood pneumonia. Besides, it was reported that government health facilities established at the union or community levels were not well trusted (figure 2). Irregular presence of health service providers and lack of medicines and other supplies made the community reluctant to use these facilities.

A mother of a 36-month-old girl stated:

There is a hospital at Joyka union. We do not like to go there... doctors are rarely present at that centre.

Barriers to communication and transport

To get to a healthcare facility in some locations in the study area, mothers travelled long distances by boat, particularly during the monsoon. During summer, walking was the only means of travelling long distances from home to healthcare facilities. From those remote areas, 4–5 hours of walking were required before getting to a health facility with the sick child.

According to a mother of a 38-month-old girl:

During the monsoon season we use boats to go to healthcare facilities, otherwise we must walk, as rickshaws and other vehicles are not available. We have to struggle a lot to reach a healthcare facility.

Challenges when children had pneumonia

Mothers reported that when their children had pneumonia, they were required to stay with them in hospital during the entire

period of care. This compromised other household chores and care for other children. This situation sometimes created a disorder in the family.

According to a mother of a 23-month-old boy:

When my child suffered from pneumonia, I felt tense and ran to the doctor. I could not sleep for a month and was not able to concentrate on my other responsibilities.

Mothers reported that sometimes delays in treatment were due to financial hardship. Families could not afford the cost of hospitalisation and/or drugs. The treatment cost for childhood pneumonia primarily depended on the severity of the disease. Families sometimes borrowed money or sold household assets to pay for treatment.

The mother of an 18-month-old girl said:

I heard from those mothers who sought care for their pneumonic children from hospitals. They spent about 10,000 to 15,000 taka (\$120-180) for their children's recovery.

Scarcity of quality treatment at the community level

All the mothers reported challenges associated with inadequate treatment, or poor quality of treatment, at the community level. All children with pneumonia were referred to the Upazila or district facilities. This involved time-consuming travel and delayed treatment. Besides, because of limited beds and inadequate equipment at the UHC, not all referrals could be admitted.

According to the mother of a 22-month-old boy:

For general diseases, we receive full support from the available facilities in the locality, whereas we must travel far away to find treatment for children suffering from pneumonia. Why does not the Government provide all the supplies to the local health facilities for the sake of its rural citizens! That will save us money and lives.

Role of 'middleman'

Rural mothers and other family members, who sought care at the UHC or DH for the first time, easily fell into the trap of 'middleman'. According to mothers, there remain difficulties in navigating through the health system. Considering business benefits, middlemen dragged caregivers to private healthcare providers, who lacked appropriate expertise to manage childhood pneumonia. The consequences were unnecessary spending of time and money.

DISCUSSION

This study explored and identified barriers to health-seeking behaviour with significant repercussions, including delayed treatment, which often aggravated severity in childhood pneumonia. Our study also revealed rural mothers' inability to recognise the symptoms of pneumonia, or to differentiate between pneumonia and other respiratory problems with similar symptoms, and to appreciate the severity and consequences of the disease.

The study also found that it was common to seek healthcare from RMPs and use home remedies. Rural caregivers typically trusted RMPs and preferred them as the first point of contact,¹⁹ because they were available within the locality, easily accessible and provided health services at low cost. Caregivers sought formal healthcare when their children's condition worsened. Participants in the study also considered services in public local health centres unsatisfactory.⁹ These findings were similar to those from other studies.^{9 20-22}

Studies showed that educated mothers could identify their children's illnesses and avail them for early treatment.²²⁻²⁴

In our study, 30% of the mothers were illiterate, while the remaining had some level of formal education, although none had completed grade 10 of school. Limited institutional education among mothers, and lack of community-based awareness on pneumonia, contributed significantly to mothers' failure to recognise the danger signs and symptoms of childhood pneumonia and to delays in seeking timely treatment. However, previous study identified that if the caregivers are supported with required information, understand the danger signs and symptoms, and treatment regimen, they are more likely to adhere to the prescribed treatment.^{25 26}

Current WHO guidelines²⁷ have instructions on the management and treatment of pneumonia. It requires a few days of hospitalisation, intravenous fluids, injectable antibiotics and, at times, oxygenation and nebulisation. According to Bangladeshi National Drug Policy, essential drugs are provided free of cost at public health services facilities, although evidence exists of frequent and persistent non-availability of essential drugs at UHCs.²⁸ Caregivers were advised to buy the medicines from private sources.²⁹ This study revealed, due to financial challenges, this out-of-pocket expenditure was difficult, and it often resulted in delayed commencing of treatment. It has been previously reported that delayed initiation of appropriate therapies for severe pneumonia increases the mortality rate.³⁰

An association was observed between the socioeconomic factors and the risk of pneumonia.³¹ Most rural people had financial challenges.³² Other qualitative studies suggested that low-economic conditions influenced behaviour in seeking of treatment for pneumonia at the community level.¹⁹ This study also revealed similar findings.

Limitations

Our study had several limitations. We collected data from rural communities in one district. The findings might not, therefore, be representative of the entire rural Bangladesh. Study participants were also selected purposively, which may have increased the possibility of bias. We did not conduct interviews with the fathers of the children in the study, which could have triangulated the findings and possibly added a different dimension to the conclusions.

CONCLUSION

This study identified critical social, economic and infrastructural factors that affect timely seeking of treatment for childhood pneumonia in rural Bangladesh. Mothers often fail to recognise the symptoms and are unable to appreciate severity and consequences of the disease, primarily due to misconception about pneumonia symptoms and lack of knowledge. Priority should be given to increasing awareness among caregivers that childhood pneumonia is a preventable disease and that is also treatable at an affordable cost, if the decision to seek treatment is taken in good time. It can become fatal if appropriate treatment is not provided soon after the onset. Interventions that target improving mothers' knowledge and empowering women in the making decisions to seek healthcare, as well as improvement of infrastructure at the facility level will likely contribute to improved HSB in rural Bangladesh.

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Competing interests None declared.

Patient consent for publication Parental/guardian consent obtained.

Ethics approval The icddr,b's Institutional Review Board, which comprises the Research Review Committee and the Ethical Review Committee, reviewed and approved the study protocol (PR-15030). All participants provided written informed consent before the interviews.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available on reasonable request. Access to field notes and anonymized printed transcripts of the interviews will be restricted to individuals granted permission by the corresponding author, for the purposes of future research.

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Guideline for in-depth interview (IDI)

Background information:

- i. Name of child
- ii. Age of child
- iii. Name of study participant
- iv. Age of study participant
- v. Educational background of study participant
- vi. Occupation of study participant
- vii. Contact number of study participant

Perception, attitude and health seeking behaviour about pneumonia:

1. Please mention the name of any illness that you consider as respiratory. Is there any other local name for the illness?
2. Have you ever heard about pneumonia?

Could you please describe pneumonia in your own words? How do you know about it?

[Probe that whether she heard about pneumonia before her child suffered in pneumonia, if yes- what she heard? Sources of information]

3. Do you have any idea about the signs and symptoms of pneumonia? Please discuss.
 - How will you identify a pneumonia or severe pneumonia affected child?

[Probe about the preliminary signs and symptoms of pneumonia, danger signs and symptoms of pneumonia]

4. How would you explain about the causes of pneumonia?
5. Discuss about the facilities to prevent pneumonia?
6. How did you think your child was infected from pneumonic illness?

How did you identify that your child is affected by pneumonia? Please tell us in details.

[Probe- did you face any problem to identify childhood pneumonia?]

7. Would you please give us an idea about your experiences while your child suffers from pneumonia?

[Probe-

- Know in detail about onset of the disease.
- What did you do after identifying the disease? Why did you do that? What was the outcome of that?
- When did you bring your child in HFWC/UHC/district hospital/village doctor/local pharmacy or other service providers?

- ✓ Why have you chosen this type of services?
 - ✓ If the mother didn't take her child to HFWC/UHC/district hospital, then ask the reason
 - ✓ If she did not take her child to any health facilities or service providers then ask the reason behind that
8. What is the present condition of your child? How do you take care of your pneumonia affected child now? How do you know about this? What did you do specifically to prevent pneumonia of your child?
 9. What do you think about the reasons that your child was affected by pneumonia?
 10. Please discuss about the obstacles (if any) you faced to seek care for your child from any health facilities (specific health facilities).

[Probe

- Ask details about every single barrier that she faced to take her child there
- How did you overcome these barriers?

11. Discuss about the services of that (specific)/those health facilities.

[Probe

- What did service provider tell about your child?
- How did they provide treatment to your child?
- Discuss about the problems whether you faced or not to take services from that facility? [try to take detail information about each problem]

12. Satisfaction level of study participant

- Please discuss the satisfaction or dissatisfaction level of yours about the service and the reason behind it.
- Would you please share your expectations regarding better health care services?

13. Suppose government and/or non-government agencies have arranged interventions (i.e. a day-care approach (DCA), please explain to the study participant if s/he doesn't have any idea about DCA) for the pneumonic children, how will it help you?
14. Would you please tell us about the problems that you could face to receive such facilities?
15. What can we do to make you interested to go and receive such facilities? Please, give us your opinion and any suggestions to make the services effective.