


BMJ Open Factors affecting mothers' intentions to visit healthcare facilities before hospitalisation of children with pneumonia in Biliran province, Philippines: a qualitative study

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ABSTRACT

Background and objectives Despite a substantial reduction in the mortality rate of children under 5 years in the past 25 years, pneumonia remains the single-largest infectious cause of child deaths worldwide. This study explored the chronological order of visited healthcare facilities and practitioners, and the factors affecting mothers' intention to seek care before the hospitalisation of children with pneumonia.

Methods and analysis A qualitative research design was employed using theory of planned behaviour as a framework for the analysis. Using purposive sampling technique, 11 mothers, whose children under 5 years old were hospitalised with severe pneumonia, were recruited for individual semi-structured interviews. Their socio-demographic information was analysed using descriptive statistics.

Results Mothers brought their sick children to multiple facilities, and 1 to 19 days had passed before hospitalisation. We identified four major factors determining mothers' intentions: (1) doing something useful for the sick child, (2) expecting the child to receive the necessary assessment and treatment, (3) accepting advice to visit a healthcare facility and be referred to a hospital and (4) considering issues and benefits associated with hospitalisation. Mothers noticed their children's unusual symptoms and monitored them while applying home remedies. They also took their children to traditional healers despite knowing that the treatments were not necessarily effective. Mothers expected children to be checked by health professionals and listened to advice from family members regarding the facilities to visit, and from healthcare staff to be referred to a hospital. Financial issues and the double burden of housework and caring for the hospitalised child were mothers' major concerns about hospitalisation.

Conclusion Children were hospitalised after several days because they visited multiple healthcare facilities, including traditional healers. Improving care quality at healthcare facilities and reducing financial and mothers' burden may reduce the hospitalisation delay for children with pneumonia.

Strengths and limitations of this study

- We conducted a qualitative study to identify the chronological order of visited healthcare facilities and practitioners and various factors that influenced mothers' intention to seek care before hospitalisation of children with pneumonia.
- We used the theory of planned behaviour as a framework for the analysis, which is often applied in the context of healthcare-seeking behaviours.
- The study was conducted in a rural province of the Philippines, where many barriers to early hospitalisation of sick children still exist.
- Future studies should examine the duration in relation to distance (km) from the participants' residence to healthcare facilities for descriptive time mapping.
- We did not include the mothers of children who did not reach the hospital. They might have different patterns of healthcare facility visits and different factors influencing their choices

INTRODUCTION

The global mortality rate of children aged under five years has fallen by more than half from 93 deaths per 1000 live births in 1990 to 39 in 2017.^{1 2} However, the Millennium Development Goal 4, which aimed to reduce under-5 mortality by two-thirds from 1990 to 2015, has not been achieved.³ A new target was set to reduce under-5 mortality to 25 deaths per 1000 live births by 2030.^{4 5} However, it is still a long way to achieve this target. About 15 000 under-5 deaths occurred every day in 2017, and most of them were preventable.¹ Pneumonia-associated deaths are also preventable; however, pneumonia remains the single-largest infectious cause of deaths in children aged below 5 years. It was

estimated that approximately 2200 children died because of pneumonia every day in 2018.⁶

In the Philippines, the under-5 mortality rate markedly decreased from 48 per 1000 live births in 1998 to 27 per 1000 in 2017.⁷ Pneumonia is the second most common cause of death after prematurity among children under five in the Philippines.¹ The National Demographic and Health Survey showed that advice or treatment was sought for 67% of children with symptoms of acute respiratory infection (ARI), which was higher than for children with other symptoms such as diarrhoea or fever.⁷ However, although advice or treatment was more often sought for children with ARI, there was a failure to seek advice or treatment for about one-third of them.⁷

Various factors may affect the patterns of using health-care services when children are sick, including demographic characteristics of caregivers such as educational level and marital status, and socio-economic characteristics such as family structure, living area and household income.^{8–11} A study in Uganda showed that despite free and reliable care being available, individuals did not use healthcare facilities for other reasons, including distance to facilities and insufficient services.¹² Moreover, it is usually difficult for caregivers to recognise the danger signs of ARI, indicating the need for immediate medical attention.^{13,14} Therefore, the reasons for caregivers' use of healthcare services is complex, and the factors affecting their care-seeking intentions need to be understood.

We previously conducted a qualitative study to investigate the roles and perspectives of fathers, whose children had pneumonia-like episodes in Biliran province in the Philippines, and identified various factors affecting fathers' decision to seek care.¹¹ We also found that many fathers still believed that '*piang*' is a cause of respiratory symptoms, which is a widely held traditional belief about the cause of children's respiratory symptoms, such as fever and cough, in the Philippines being due to a sprain or dislocation of tissues or bones in the chest or back.¹⁵

This study aimed to reveal the chronological order of visited healthcare facilities before children were hospitalised with pneumonia and the factors affecting mothers' intention to seek care before hospitalisation.

MATERIAL AND METHODS

Study design

A qualitative study involving in-depth, individual semi-structured interviews.

Study site

This study was undertaken as part of a joint research project titled 'Comprehensive Etiological and Epidemiological Study on Acute Respiratory Infections in Children' conducted by Tohoku University Graduate School of Medicine in Japan and the Research Institute for Tropical Medicine in the Philippines from 2011 to 2017. The project's main component was a cohort study in Biliran province (Eastern Visayas Region, Philippines) aiming to

provide evidence to reduce the impact of paediatric ARI including pneumonia. The total population of Biliran province is about 172 000, and the province has eight municipalities.¹⁶ There are three levels of public health-care facilities in Biliran province: (1) Barangay Health Stations (BHSs), to which midwives and health volunteers are usually assigned; (2) Rural Health Units (RHUs), which have at least one qualified doctor and several nurses and midwives, and provide primary health services; and (3) Biliran Provincial Hospital (BPH), which is the only hospital in Biliran province and located in the municipality of Naval, the province capital. Traditional healers and pharmacists are included in the Philippine standard occupational classification, and there are pharmacies and traditional healers in Biliran provinces.^{17,18}

The study was conducted in the paediatric department of BPH. We divided participants' place of residence into two categories: Naval (the capital of Biliran province and the only place in the province with a hospital) and outside Naval (approximately 30 km from Naval).

Study participants

Mothers whose under 5 years children were hospitalised with severe pneumonia were selected for the study. We employed research assistants trained to diagnose childhood pneumonia according to the algorithm of the Integrated Management of Childhood Illness (IMCI). Although the IMCI algorithm for ARI was revised in 2014, we continued to use the previous algorithm, which includes children with chest indrawing as severe pneumonia cases requiring hospitalisation, since the new algorithm was not widely implemented in the Philippines during the study period.¹⁹ We used the purposive sampling method and participants were enrolled if they were mothers whose children aged from 0 to 59 months were hospitalised at BPH with a diagnosis of severe or very severe pneumonia, and who provided informed consent. As one caregiver was 17 years old, we obtained consent from her husband and mother and asked her husband to be present during the interview. A total of 11 mothers were enrolled.

Patient and public involvement

Patients and the public were not invited to comment on the study design and did not contribute to the writing and editing of this document for readability or accuracy.

Data collection

The semi-structured interviews were conducted from 19 to 22 February 2017 in a separate room of BPH individually with each participant. We recruited participants at the paediatric admission ward of BPH every morning. A semi-structured questionnaire was used for the interview to gather information on mothers' observations of their children's condition, chronological order of visited facilities until hospitalisation and intention to obtain care and treatment. Each interview lasted 19 to 42 min (mean=30.4 min).

Before starting the interview, we collected demographic information and data necessary to assess the socio-economic status (SES) of the household. We used a simple poverty scorecard to assess SES that included 10 simple questions to assess whether a household's income is below the poverty line.^{20 21} Questions on school attendance of the child, salaried employment, material of the house's roof and walls, type of toilet facility and possession of a refrigerator and television were asked. Each question has a different score, so the weight of each item is different in the final SES score. The SES total scores could range from 0 to 100, with a lower score indicating lower SES. Interviews were conducted by a researcher (MS) and an interpreter who was a nurse fluent in two local languages (Waray and Cebuano) of Biliran province. The interpreter was trained regarding research objectives, research background and interview procedures. The researcher mainly asked in-depth questions in English and the interpreter translated from English to the local languages for the participants. During the interviews, both the researcher and interpreter took notes, summarised the interview findings and confirmed if mothers had any forgotten information to our questions at the end. All interviews were audio-recorded and transcribed verbatim. No further interviews were considered necessary as data saturation was achieved.

Data analysis

We used the theory of planned behaviour (TPB) as our framework for the analysis, which is often applied in the context of healthcare-seeking behaviours.²²⁻²⁶ The TPB is a commonly used model to identify decision-making processes that can translate into actions. It included three belief-based constructs that determine an individual's behaviour: attitude, subjective norms and perceived behavioural control.²⁷⁻²⁹ Attitude is defined as the feeling of favourableness or unfavourableness towards the behaviour. Subjective norms refers to perceived social pressures from others and the community (eg, if someone's family members or friends think that one should perform a behaviour, one's intention to do so may increase). Perceived behavioural control refers to the individuals' perception of their ability to perform the behaviour, which is also considered to directly influence the behaviour itself. The three belief-based constructs influence each other.²⁷⁻³⁰

The interviews were transcribed in English and the local language, and all transcriptions were translated into English by the interpreter to verify accuracy of the interview contents. First, we sorted the chronological order of the facilities visited before hospitalisation in BPH. Second, inductive thematic analysis of the interview data was undertaken, which included five key stages: familiarisation, coding, theme development, theme definition and reporting.³¹⁻³⁴ One researcher (MS) then selected meaningful units from the transcripts according to the study question considering the TPB, and these units were refined and assigned codes. The initial codes and

transcripts were then reviewed by other researchers (NO and KS) to discuss if the codes reflected the meaning of each unit and resolve any discrepancies. The codes were then grouped into related subcategories and categorised based on similarities and differences.³⁵⁻³⁷ Finally, the results were collated and summarised to link the themes and data. Themes were defined and finalised through discussion (MS and HO), and all researchers agreed on the final analysis, interpretation and reporting. We used the SRQR reporting guidelines.³⁸ For the socio-demographic information, we analysed frequencies, percentages and measures of central tendency.

RESULTS

Socio-demographic characteristics of the participants are shown in [table 1](#). Of the 11 mothers of hospitalised children, only one participant reported not completing elementary school education. From the 11 participants, the SES scores of five households were under 31 (ie, the national poverty threshold), indicating that their income was under the minimum level of resources necessary for living in the Philippines.^{20 21}

Facilities visited before hospitalisation

The facilities visited before children were hospitalised with pneumonia and time elapsed between first facility visit and hospitalisation are shown in [table 2](#). Three children lived in Naval and eight lived outside Naval. The time elapsed from the first facility visit to hospitalisation was 5 days or less except for one child for whom 19 days elapsed before hospitalisation and was living in Naval. The other two children in Naval visited one facility before hospitalisation. Among children living out of Naval, only one child visited just one facility (RHU), while the others visited two to four facilities. One child (No. 3) visited a traditional healer and RHU twice. In their first visit to the traditional healer, the traditional healer was absent, so the child had to visit her again. Then the child was taken to RHU, where she was advised to go home after being nebulised. However, the child's condition worsened and went back to RHU. Eight children visited traditional healers before hospitalisation. All children who came to BPH by ambulance were referred from RHU and lived outside Naval.

Factors influencing mothers' intention to seek care

Four themes were identified regarding the factors influencing mothers' intention to seek care for their children's respiratory symptoms: (1) doing something that might be useful for the sick child, (2) expecting the child to have necessary assessment and treatment, (3) accepting advice to visit a healthcare facility or to be referred to a hospital and (4) considering the issues and benefits associated with hospitalisation ([table 3](#)). Ten categories were identified under these themes. We present brief transcripts of mothers' interviews with the mothers' identity numbers provided in [table 3](#).

Table 1 Demographic characteristics of mothers of children hospitalised with pneumonia in Biliran Provincial Hospital, Philippines (n=11)

Demographic characteristic	Mean (SD)	N	%
Age (range: 17 to 41 years)	25.8 (7.2)		
<20		1	9.1
20–29		7	63.6
30–39		2	18.2
40–49		1	9.1
Education			
Not completed elementary school		1	9.1
Completed elementary school		1	9.1
Not completed high school		3	27.3
Completed high school		4	36.4
Beyond high school		2	18.2
Occupation			
Sales clerk		1	9.1
Homemaker		10	90.9
Number of children (range: 1 to 10)	2.9 (2.6)		
1		3	27.3
2		2	18.2
3		4	36.4
≥4		2	18.2
Simple poverty scorecard (range: 12 to 52)	28.1 (13.2)		
<31		6	54.5
≥31		5	45.5
Gender of the child with pneumonia			
Female		6	54.5
Male		5	45.5
Age of the child with pneumonia (0 to 4 years old)			
<1		3	27.3
≥1 to <2		4	36.4
≥2 to <3		1	9.1
≥3 to <4		2	18.2
≥4 to <5		1	9.1

Doing something useful for a sick child

Mothers noticed something wrong with their children, identified cough and/or fever as the initial symptom and realised that their children developed other symptoms such as difficulty breathing, abnormal breath sounds, sputum and being irritable. Some mothers identified trigger events such as falling from a chair, hugging a dog and spitting for a week.

My child hugged a dog last Sunday. It took a week for symptoms to become severe. Yes, she had a cough, and on Saturday it became severe (M2).

When mothers noticed unusual symptoms, they observed their children at home and monitored their condition. They remembered what kinds of meals children could eat, from what time children refused breast-feeding, whether children could play and if children were in a good mood or not.

While children were at home, mothers applied home remedies such as a sponge bath for fever, herbal medicines and ointment (Vicks) on child's chest for cough or Western medicines for fever and cough that they kept at home or received from RHU.

Around 6 pm, I gave my child 'lakdan.' I usually use that. It's like oregano leaves. I mashed 'lakdan' leaves and gave it to the child using a spoon. It's bitter, but I forced her to drink it (M5).

When not sure about the effectiveness, some mothers hesitated to give any medications to their children.

I brought my child to BHS for consultation, and I wanted to know the right medicines to give him. I was afraid to give him medicines that might not be good for the child's condition (M9).

Expecting child to receive necessary assessment and treatment

Mothers knew the location, distance and cost of each healthcare facility when they selected one to visit. Some mothers expected to get prescriptions to buy medicines or receive free medicines at RHU. They also knew where a traditional healer lived, and when she/he was at home. Moreover, mothers understood the healthcare facility's function well. Some mothers pointed out that BHS opened only as scheduled, and sometimes had no available medicines. Some mothers knew the function of RHU during weekends, when it accepted only emergency and delivery cases and referred patients immediately to BPH. They also recognised that they might not be able to pay all costs when they visited the healthcare facility.

What I wanted from RHU was just a prescription for medicines, those cheaper medicines. Then we went home after getting the medicines because we did not have money (M1).

Some mothers expected their children to be seen by a doctor.

Because the doctor is not around at RHU every Friday, and there are only nurses, I brought my child to BPH, as there is a paediatrician here (M11).

Some mothers were concerned that their children might have 'piang'. They remembered that their children fell or slipped before symptoms such as coughing and abnormal breathing started. Mothers wanted to know if

Table 2 Number of days from first facility visit to hospital admission

	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9	No. 10	No. 11
Place of residence	Outside of Naval	Outside of Naval	Outside of Naval	Outside of Naval	Outside of Naval	Outside of Naval	Outside of Naval	Naval	Outside of Naval	Naval	Naval
Transport to BPH	Ambulance	Ambulance	Ambulance	Ambulance	Ambulance	Ambulance	Ambulance	Transport arranged by family	Transport arranged by family	Transport arranged by family	Transport arranged by family
Number of days from first facility visit to hospital admission	2 days	5 days	4 days	2 days	2 days	1 day	2 days	1 day	4 days	19 days	3 days
Order of facilities visited before hospitalisation at BPH	TH ↓ RHU ↓ BPH	RHU ↓ TH ↓ RHU ↓ BPH	TH ↓ TH ↓ RHU ↓ RHU ↓ RHU ↓ BPH	RHU ↓ TH ↓ RHU ↓ BPH	TH ↓ RHU ↓ BPH	RHU ↓ BPH	TH ↓ RHU ↓ BPH	TH ↓ BPH	BHS-1 ↓ BHS-2 ↓ TH ↓ BPH	Pharmacy ↓ RHU ↓ Private clinic ↓ BPH	BPH outpatients ↓ BPH

BHS, Barangay Health Station; BPH, Biliran Provincial Hospital; RHU, Rural Health Unit; TH, Traditional healer.

Table 3 Themes and categories of factors influencing mothers' intentions to seek care for children with pneumonia

Themes	Categories
Doing something that might be useful for the sick child	Mothers noticed some unusual symptoms. Mothers applied home remedies.
Expecting the child to have necessary assessment and treatment	Mothers understood the location and functions of each healthcare facility. Mother wanted their children to be checked by a traditional healer if they had a certain condition that was believed to be associated with respiratory symptoms, despite knowing that the healer treatment was not necessarily effective. Mothers expected their children to be assessed and treated at the Rural Health Unit.
Accepting advice to visit a healthcare facility or to be referred to a hospital	Mothers accepted the advice when healthcare facility staff referred their child to a hospital. Mothers received advice from family members when choosing the healthcare facility to visit.
Considering issues and benefits associated with hospitalisation	Money issues persisted throughout the child's hospitalisation. Mothers coped with the double burden of providing hospital care and completing housework. Mothers felt relieved when they saw their children recovering while in hospital.

their children had 'piang' and believed that only a traditional healer could confirm it and treat it with massage.

When the child had fever, we went to the traditional healer. My child got a sprain when playing because she was hyperactive. The child recovered after being seen by the traditional healer (M7).

After children were diagnosed as 'piang' by a traditional healer, mothers realised that the treatment was not necessarily effective. Some mothers mentioned that their children's condition did not get better and even worsened after seeing a traditional healer and thought that traditional healers could treat only 'piang'. There were two mothers who preferred not to take children to a traditional healer.

If it is not piang (sprain), the hilot (traditional healer) would not do massage. The hilot said that the child just fell, and no sprain was found. After seeing by the traditional healer, the child's cough became

more severe, and the difficulty in breathing started (M3).

Accepting advice to visit a healthcare facility or to be referred to a hospital

Mothers received advice on facilities to visit including RHU, BHS, a traditional healer and BPH from their family members. They positively accepted the opinions of their husbands, mothers and mothers-in-law.

The mother-in-law decided to bring the child to the hospital. It was the mother-in-law's decision to bring the child here (BPH) for admission (M9).

When their children had severe respiratory symptoms that could not be managed at RHU and referral to BPH was recommended, mothers accepted the advice of RHU staff, especially of doctors.

I decided to bring the child to RHU. On Friday, around 8 am. The staff at RHU said that the child already had a severe condition, and she needed to be referred because of her breathing pattern (M5).

Considering issues and benefits associated with hospitalisation

Mothers considered money issues first when told about a referral or deciding to go to BPH. Mothers knew that they needed money for the treatment and asked their husbands to arrange it or obtained money from relatives or neighbours before coming to BPH. Although mothers accepted the referral to BPH, they expected to only have an outpatient consultation because of a lack of money.

Before coming to the hospital, my husband went back to his working place and asked for an advance of salary (from owner of farm). We sold the chicken to get the money (300 pesos) before coming to the hospital (M9).

Money issues persisted during children's hospitalisation. Mothers needed to buy medicine and medical devices for treatment and pay the examination costs after children were hospitalised. Some mothers and husbands asked for financial support from relatives, nuns and government staff.

I needed money to buy an oxygen tube for giving oxygen to my child at BPH. I asked my cousin to go and borrow money from my mother (M8).

Mothers had to cope with the increased burden of taking care of their hospitalised children and performing household duties at home. Sometimes, other siblings did not want to stay at home without their mother, and some still needed to be breastfed.

I sometimes go home to breastfeed my 1-year-old child (M10).

Family members supported mothers in the hospital and at home. Husbands, mothers or mothers-in-law

accompanied the mothers and sick children in BPH and took care of other children at home.

My younger sister brought rice, so we just bought meat outside. My mother and my husband take care of the other children at home (M8).

Mothers felt relieved to see their children recovering in hospital. Some children received nebuliser treatment, oxygen, intravenous drip infusions and medicines during hospitalisation. Mothers recognised that children's condition improved and expected to go home soon.

I felt sorry when I saw her crying when she had an intravenous injection. Now I am happy to see her because she's ok (M11).

DISCUSSION

This study revealed that children with pneumonia visited multiple facilities before hospitalisation, including traditional healers, RHU, BHS and BPH outpatient department. Regarding the time between the first facility visit and hospital admission, only two children with pneumonia were hospitalised after 1 day, and it took 2 days or more for the other children. Previous studies showed that children with pneumonia had a significantly longer delay in receiving adequate treatment due to visiting multiple facilities than children without pneumonia but with issues such as diarrhoea and malaria.^{39 40} Visiting multiple facilities, including traditional healers, may be one of the main reasons for the delay in receiving appropriate treatment. There were also different patterns of visited facilities between children living in Naval and outside; all children from Naval went BPH without a referral, while seven out of eight children living outside Naval were referred by RHU. Studies not specific to childhood pneumonia showed that travel time to health facilities was an important determinant of childhood mortality.^{41 42} Another study investigating children with diarrhoea indicated that having the nearest health facilities within a 15 min walk was a significant factor of health-seeking behaviour.⁴³ Although we did not verify participants' exact duration (in minutes) to the nearest health facility in this study, the long distance might be a reason for most children living outside of Naval not visiting the BPH directly. Hospital accessibility may be an important factor for delayed hospitalisation and might be associated with childhood mortality.^{41 42}

In our study, mothers identified abnormal symptoms in their children and tried to alleviate them. It has been shown that the danger signs of pneumonia are difficult to recognise for caregivers,^{44 45} which might be associated with a delay in hospitalisation and fatal outcome of severe pneumonia.⁴⁶ However, our participants remembered the initial symptoms and some unusual symptoms in the later stages of the illness, as also shown in previous studies.^{47 48} The educational level of our participants was relatively high, with more than half of them having completed high school, and a previous study has shown that higher

maternal educational level was significantly associated with knowledge of aetiology.⁴⁹ Mothers noticed unusual symptoms such as difficulty breathing; thus, if they could have taken appropriate action immediately, children's hospitalisation may not have been delayed.

In our study, eight children visited traditional healers before or after going to public health facilities, and mothers believed that only traditional healers could diagnose 'piang'. Consulting traditional healers for children with ARI is a well-known behaviour in the rural community of the Philippines, where 'piang' is still a widely held cultural belief.¹⁵ Mothers in the study also believed that 'piang' was associated with respiratory symptoms such as cough or difficulty breathing. Nevertheless, some thought that the treatment of traditional healer was not necessarily effective. However, the use of traditional healers was still common among our participants, and only two mothers did not want to consult one. Compared with our previous study with fathers¹¹ mothers were younger and had a higher level of education. While fathers mentioned the affordable cost of traditional healers as a reason to consult them, no mothers in the present study mentioned this factor. Mothers seemed to take it for granted that children with respiratory symptoms need to see traditional healers, which is perceived as a favourable attitude that may be influenced by a subjective norm that exists as a strong traditional belief in this community.^{22 50 51}

Mothers accepted the advice to visit a hospital from not only family members but also RHU staff. Mothers are usually the first to identify illness symptoms in the child;⁵² however, caregivers' knowledge was not always positively associated with care-seeking behaviour.⁵³ As care-seeking decisions do not follow a linear process,⁵⁴ such advice from healthcare staff may function as a subjective norm for mothers' intention to visit a hospital.

The increased burden of daily household duties and caring for the hospitalised child and financial issues were the main barriers to hospitalisation. Regarding the double burden, family members' support was found to help mothers to seek care for their children.⁵⁵ In addition, mothers' main concerns when their children were advised to be hospitalised were found to be financial issues in previous studies.^{11 56 57} We found that fathers also struggled with money issues as part of their role, and most borrowed money for children's hospital expenses.¹¹ A social health insurance system, Philippines Health Insurance (PhilHealth), was implemented in 1995 to achieve Universal Health Coverage, improving access to quality care and reducing out-of-pocket expenditure.^{58–60} However, out-of-pocket expenditure on healthcare has increased between 2000 and 2012.⁶¹ It has also been difficult to enrol low-income earners in PhilHealth,⁶⁰ and there is still a long way to reach universal health coverage. In fact, our participants also had significant financial burdens from the hospitalisation of their children, as they needed to pay for extra costs. It should be noted that the delay in seeking healthcare results in additional out-of-pocket expenses.^{62 63}

Although some mothers hesitated to take their children to hospital, they felt relieved to see their children recovering after hospital treatment. Treatment efficacy and health service quality were positive factors that led to mothers seeking formal medical care,⁶⁴ and the severity of the child's health condition is associated with mothers' health-seeking behaviour.⁶⁵ Therefore, mother's understanding that their child could recover after receiving treatment at the healthcare facility may increase their perceived behavioural control to take appropriate action when their child experiences a severe condition in the future.

This study has some limitations. First, we did not examine the exact duration in relation to distance (km) from participants' residence to the healthcare facilities for descriptive time mapping. Future studies should obtain additional information to compare duration and care between homes and facilities.⁶⁶ Moreover, we did not include mothers of children who did not reach the hospital. They might have different patterns of healthcare facility visits and different factors influencing their choices. Finally, we could not confirm the transcripts with the participants, as it was difficult to contact them again. Future studies should include other areas of the Philippines and increase the number of the participants, including mothers of children who are not hospitalised.

CONCLUSION

Mothers took their children with severe pneumonia to various healthcare facilities before they were hospitalised. They decided to choose the healthcare facility based on various factors. Mothers' understanding of each healthcare facility's function or/and possible treatment was an important factor. The decision to take their children to public healthcare facilities such as RHU was driven by mothers' expectation of proper assessment and treatment and by the advice from family members. At the same time, mothers took children to traditional healers because of their strong cultural beliefs. Although this may be difficult to change, mothers and families may take children to public healthcare facilities if they can understand the operational schedule and doctor's availability, and receive free medicines. Financial issues and mothers' increased burden of housework and hospital care were major barriers to hospitalisation. Reducing the financial burden associated with hospitalisation and establishing a support system for mothers of hospitalised children may reduce hospitalisation delays. Timely and appropriate advice from healthcare staff, especially doctors, may also ensure prompt hospitalisation of children with pneumonia.

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important cultural and intellectual content. All authors reviewed the manuscript and contributed to its writing.

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REFERENCES

- 1 The United Nations Children's Fund (UNICEF). Under-five mortality, 2018. Available: <https://data.unicef.org/topic/child-survival/under-five-mortality/> [Accessed 1 Apr 2019].
- 2 The United Nations Children's Fund (UNICEF). Levels & trends in child mortality. Estimates developed by the UN inter-agency group for child mortality estimation, 2018. Available: [file:///C:/Users/marisato/Downloads/UN-IGME-Child-Mortality-Report-2018%20\(3\).pdf](file:///C:/Users/marisato/Downloads/UN-IGME-Child-Mortality-Report-2018%20(3).pdf) [Accessed 24 Oct 2019].
- 3 United Nations. The millennium development goals report, 2015. Available: [https://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20\(July%201\).pdf](https://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20(July%201).pdf) [Accessed 24 Oct 2019].
- 4 GBD 2015 Child Mortality Collaborators. Global, regional, National, and selected subnational levels of stillbirths, neonatal, infant, and under-5 mortality, 1980-2015: a systematic analysis for the global burden of disease study 2015. *Lancet* 2016;388:1725-74.
- 5 United Nations. Goal 3: sustainable development goals. ensure healthy lives and promote well-being for all at all ages. Available: <https://www.un.org/sustainabledevelopment/health/> [Accessed 24 Jun 2019].
- 6 The United Nations Children's Fund (UNICEF). For every child. Pneumonia, 2019. Available: <https://data.unicef.org/topic/child-health/pneumonia/> [Accessed 13 Jun 2020].
- 7 Philippine Statistics Authority (PSA). Philippines national demographic and health survey, 2017. Available: https://psa.gov.ph/sites/default/files/PHILIPPINE%20NATIONAL%20DEMOGRAPHIC%20AND%20HEALTH%20SURVEY%202017_new.pdf [Accessed 24 Oct 2019].
- 8 Kanté AM, Gutierrez HR, Larsen AM, *et al.* Childhood illness prevalence and health seeking behavior patterns in rural Tanzania. *BMC Public Health* 2015;15:951.
- 9 Amin R, Shah NM, Becker S. Socioeconomic factors differentiating maternal and child health-seeking behavior in rural Bangladesh: a cross-sectional analysis. *Int J Equity Health* 2010;9:9.
- 10 Khera R, Jain S, Lodha R, *et al.* Gender bias in child care and child health: global patterns. *Arch Dis Child* 2014;99:369-74.
- 11 Sato M, Oshitani H, Tamaki R, *et al.* Father's roles and perspectives on healthcare seeking for children with pneumonia: findings of a qualitative study in a rural community of the Philippines. *BMJ Open* 2018;8:e023857.
- 12 Nabyonga Orem J, Mugisha F, Okui AP, *et al.* Health care seeking patterns and determinants of out-of-pocket expenditure for malaria for the children under-five in Uganda. *Malar J* 2013;12:175.

- 13 The United Nations Children's Fund (UNICEF), World Health Organization (WHO). Pneumonia: the forgotten killer of children. Available: http://apps.who.int/iris/bitstream/10665/43640/1/9280640489_eng.pdf [Accessed 25 Oct 2019].
- 14 Scott JAG, Wonodi C, Moisi JC, et al. The definition of pneumonia, the assessment of severity, and clinical standardization in the pneumonia etiology research for child health study. *Clin Infect Dis* 2012;54 Suppl 2:S109–16.
- 15 Veronica LT. Piang, Panuhot or the moon: the folk etiology of cough among Boholano mothers. research Institute for tropical medicine, 1999. Available: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.489.2385&rep=rep1&type=pdf> [Accessed 25 Oct 2019].
- 16 Republic of Philippines. Philippines Statistic Authority. Population of Region VIII - Eastern Visayas (Based on the 2015 Census of Population). Available: <https://psa.gov.ph/content/population-region-viii-eastern-visayas-based-2015-census-population> [Accessed 24 Oct 2019].
- 17 Philippine statistics authority. Philippine standard occupational classification (PSOC), PSOC unit groups under minor group 323, 2012. Available: <https://psa.gov.ph/classification/psoc/?q=psoc/minor/323> [Accessed 20 Jun 2020].
- 18 Philippine statistics authority. Philippine standard occupational classification (PSOC), PSOC unit groups under minor group 321, 2012. Available: <https://psa.gov.ph/classification/psoc/?q=psoc/minor/321> [Accessed Access 13 June 2020].
- 19 Dembele BPP, Kamigaki T, Dapat C, et al. Aetiology and risks factors associated with the fatal outcomes of childhood pneumonia among hospitalised children in the Philippines from 2008 to 2016: a case series study. *BMJ Open* 2019;9:e026895.
- 20 Schreiner M. Simple poverty Scorecard Philippines. Available: http://www.simplepovertyscorecard.com/PHL_2009_ENG.pdf [Accessed 25 Oct 2019].
- 21 Schreiner M. A simple poverty scorecard for the Philippines. *J Philipp Dev* 2007;XXXIV.
- 22 Armitage CJ, Conner M. Efficacy of the theory of planned behaviour: a meta-analytic review. *Br J Soc Psychol* 2001;40:471–99.
- 23 Hertweck SP, LaJoie AS, Pinto MD, et al. Health care decision making by mothers for their adolescent daughters regarding the quadrivalent HPV vaccine. *J Pediatr Adolesc Gynecol* 2013;26:96–101.
- 24 Krones T, Keller H, Becker A, et al. The theory of planned behaviour in a randomized trial of a decision aid on cardiovascular risk prevention. *Patient Educ Couns* 2010;78:169–76.
- 25 McDermott MS, Oliver M, Simnadis T, et al. The theory of planned behaviour and dietary patterns: a systematic review and meta-analysis. *Prev Med* 2015;81:150–6.
- 26 Tipton JA. Using the theory of planned behavior to understand caregivers' intention to serve sugar-sweetened beverages to non-Hispanic black preschoolers. *J Pediatr Nurs* 2014;29:564–75.
- 27 Ajzen I. The theory of planned behaviour is alive and well, and not ready to retire: a commentary on Sniehotta, Presseau, and Araújo-Soares. *Health Psychol Rev* 2015;9:131–7.
- 28 Ajzen I. The theory of planned behaviour: reactions and reflections. *Psychol Health* 2011;26:1113–27.
- 29 Ajzen I. The theory of planned behavior. *Organ Behav Hum Decis Process* 1991;50:179–211.
- 30 Godin G, Kok G. The theory of planned behavior: a review of its applications to health-related behaviors. *Am J Health Promot* 1996;11:87–98.
- 31 Kosasih K, Abeyratne U. Exhaustive mathematical analysis of simple clinical measurements for childhood pneumonia diagnosis. *World J Pediatr* 2017;13:446–56.
- 32 Vaismoradi M, Turunen H, Bondas T. Content analysis and thematic analysis: implications for conducting a qualitative descriptive study. *Nurs Health Sci* 2013;15:398–405.
- 33 Mitchell SA, Fisher CA, Hastings CE, et al. A thematic analysis of theoretical models for translational science in nursing: mapping the field. *Nurs Outlook* 2010;58:287–300.
- 34 Braun V, Clarke V. Using thematic analysis in psychology. qualitative research in psychology. *Qual Res Psychol* 2006;3:77–101.
- 35 Braun V, Clarke V. What can "thematic analysis" offer health and wellbeing researchers? *Int J Qual Stud Health Well-being* 2014;9:26152.
- 36 Castleberry A, Nolen A. Thematic analysis of qualitative research data: is it as easy as it sounds? *Curr Pharm Teach Learn* 2018;10:807–15.
- 37 Clarke V, Braun V. Teaching thematic analysis: overcoming challenges and developing strategies for effective learning. *Psychologist* 2013;26:120–3.
- 38 O'Brien BC, Harris IB, Beckman TJ, et al. Standards for reporting qualitative research: a synthesis of recommendations. *Acad Med* 2014;89:1245–51.
- 39 Ferdous F, Ahmed S, Das SK, et al. Pneumonia mortality and healthcare utilization in young children in rural Bangladesh: a prospective verbal autopsy study. *Trop Med Health* 2018;46:17.
- 40 Kirolos A, Ayede AI, Williams LJ, et al. Care seeking behaviour and aspects of quality of care by caregivers for children under five with and without pneumonia in Ibadan, Nigeria. *J Glob Health* 2018;8:020805.
- 41 Okwaraji YB, Cousens S, Berhane Y, et al. Effect of geographical access to health facilities on child mortality in rural Ethiopia: a community based cross sectional study. *PLoS One* 2012;7:e33564.
- 42 Schoeps A, Gabrysch S, Niamba L, et al. The effect of distance to health-care facilities on childhood mortality in rural Burkina Faso. *Am J Epidemiol* 2011;173:492–8.
- 43 Adane M, Mengistie B, Mulat W, et al. Utilization of health facilities and predictors of health-seeking behavior for under-five children with acute diarrhea in slums of Addis Ababa, Ethiopia: a community-based cross-sectional study. *J Health Popul Nutr* 2017;36:9.
- 44 Campbell H, El Arifeen S, Hazir T, et al. Measuring coverage in MNCH: challenges in monitoring the proportion of young children with pneumonia who receive antibiotic treatment. *PLoS Med* 2013;10:e1001421.
- 45 Chavez MA, Naithani N, Gilman RH, et al. Agreement between the world Health organization algorithm and lung consolidation identified using point-of-care ultrasound for the diagnosis of childhood pneumonia by general practitioners. *Lung* 2015;193:531–8.
- 46 Bohn JA, Kassaye BM, Record D, et al. Demographic and mortality analysis of hospitalized children at a referral hospital in Addis Ababa, Ethiopia. *BMC Pediatr* 2016;16:168.
- 47 Tuhebwe D, Tumushabe E, Leontsini E, et al. Pneumonia among children under five in Uganda: symptom recognition and actions taken by caretakers. *Afr Health Sci* 2014;14:993–1000.
- 48 Abbey M, Chinbuah MA, Gyapong M, et al. Community perceptions and practices of treatment seeking for childhood pneumonia: a mixed methods study in a rural district, Ghana. *BMC Public Health* 2016;16:848.
- 49 Ndu IK, Ekwochi U, Osuorah CD, et al. Danger signs of childhood pneumonia: caregiver awareness and care seeking behavior in a developing country. *Int J Pediatr* 2015;2015:167261.
- 50 Mishra K, Mohapatra I, Kumar A. A study on the health seeking behavior among caregivers of under-five children in an urban slum of Bhubaneswar, Odisha. *J Family Med Prim Care* 2019;8:498–503.
- 51 Kassam R, Collins JB, Liow E, et al. Caregivers' treatment-seeking behaviors and practices in Uganda—A systematic review (Part II). *Acta Trop* 2015;152:269–81.
- 52 Olaogun AAE, Brieger WR, Ayoola AB, et al. Mother-father concordance on treatment choices in the care of sick children under five years of age in Osun state, Nigeria. *Int Q Community Health Educ* 2005;25:283–93.
- 53 Noordam AC, Sharkey AB, Hinssen P, et al. Association between caregivers' knowledge and care seeking behaviour for children with symptoms of pneumonia in six sub-Saharan African Countries. *BMC Health Serv Res* 2017;17:1–8.
- 54 Dougherty L, Gilroy K, Olayemi A, et al. Understanding factors influencing care seeking for sick children in Ebonyi and Kogi states, Nigeria. *BMC Public Health* 2020;20:1–11.
- 55 Ohashi A, Higuchi M, Labeeb SA, et al. Family support for women's health-seeking behavior: a qualitative study in rural southern Egypt (upper Egypt). *Nagoya J Med Sci* 2014;76:17–25.
- 56 Mazumdar S, Mazumdar PG, Kanjilal B, et al. Multiple shocks, coping and welfare consequences: natural disasters and health shocks in the Indian Sundarbans. *PLoS One* 2014;9:e105427.
- 57 Van Damme W, Van Leemput L, Por I, et al. Out-Of-Pocket health expenditure and debt in poor households: evidence from Cambodia. *Trop Med Int Health* 2004;9:273–80.
- 58 Health Policy Development and Planning Bureau, Department of Health, Philippines. National objectives for health Philippine, 2017–2022. Available: <https://www.hpdpbplanning.doh.gov.ph/> [Accessed 20 Jun 2020].
- 59 PhilHealth. PhilHealth Stats & charts, 2013. Available: http://www.philhealth.gov.ph/about_us/statscharts/snc2013.pdf [Accessed 25 Oct 2019].
- 60 Querri A, Ohkado A, Kawatsu L, et al. The challenges of the Philippines' social health insurance programme in the era of universal health coverage. *Public Health Action* 2018;8:175–80.
- 61 Bredenkamp C, Buisman LR. Financial protection from health spending in the Philippines: policies and progress. *Health Policy Plan* 2016;31:919–27.



- 62 Rehman A, Shaikh B, Ronis KA. Health care seeking patterns and out of pocket payments for children under five years of age living in Katchi Abadis (slums), in Islamabad, Pakistan. *Int J Equity Health* 2014;13:30–6.
- 63 Ferdous F, Dil Farzana F, Ahmed S, *et al.* Mothers' perception and healthcare seeking behavior of pneumonia children in rural Bangladesh. *ISRN Family Med* 2014;2014:690315:1–8.
- 64 Anaba U, Hutchinson PL, Abegunde D, *et al.* Pneumonia-related ideations, care-seeking, and treatment behaviors among children under 2 years with pneumonia symptoms in northwestern Nigeria. *Pediatr Pulmonol* 2020;55 Suppl 1:S91–103.
- 65 Marsh A, Hirve S, Lele P, *et al.* Determinants and patterns of care-seeking for childhood illness in rural Pune district, India. *J Glob Health* 2020;10:010601.
- 66 Hameed Khaliq I, Mahmood HZ, Sarfraz MD, *et al.* Pathways to care for patients in Pakistan experiencing signs or symptoms of breast cancer. *Breast* 2019;46:40–7.