BMJ Open

# Factors affecting mothers' intentions to visit healthcare facilities before hospitalisation of children with pneumonia in the Philippines: A qualitative study



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|---|---|
| Journal: | *BMJ Open* |
| Manuscript ID | bmjopen-2019-036261 |
| Article Type: | Original research |
| Date Submitted by the Author: | 10-Dec-2019 |
| Complete List of Authors: | Sato, Mari; Tohoku University, Department of Virology<br>Oshitani, Hitoshi; Tohoku University, Department of Virology<br>Tamaki, Raita ; JICA, Nairobi, Kenya<br>Oyamada, Nobuko; Tohoku University, Department of Maternal Nursing<br>Sato, Kineko; Tohoku University, Department of Maternal Nursing<br>Nadra, Alkaff; Tohoku University, Department of Virology<br>Landicho, Jhoys; Research Institute for Tropical Medicine, Epidemiology and Biostatics<br>Alday, Portia; Research Institute for Tropical Medicine, Epidemiology and Biostatics<br>Lupisan, Socorro ; Research Institute for Tropical Medicine, Epidemiology and Biostatics<br>Tallo, Veronica; Research Institute for Tropical Medicine, Epidemiology and Biostatics |
| Keywords: | Public health < INFECTIOUS DISEASES, QUALITATIVE RESEARCH, Community child health < PAEDIATRICS, Quality in health care < HEALTH SERVICES ADMINISTRATION & MANAGEMENT |
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# Factors affecting mothers' intentions to visit healthcare facilities before hospitalisation of children with pneumonia in the Philippines: A qualitative study

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Word count: 3,982

Reference count: 53

**Abstract**

**Objectives**: Despite a substantial reduction in the mortality rate of children under 5 years in the past decades, pneumonia remains the leading cause of child death worldwide. This study aimed to identify visited facilities and factors influencing mothers' intention to seek care before the hospitalisation of children with pneumonia.

**Design:** A qualitative research design was employed, and individual semi-structured interviews were carried out in Philippines. We used the theory of planned behaviour as a framework for the analysis.

**Participants**: 11 mothers whose children under 5 were hospitalised with severe pneumonia were interviewed.

**Results:** Mothers brought their sick children to multiple facilities, and 1‐19 days 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. They 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. They also felt relieved by children's recovery after admission.

**Conclusion:** Children took several days to be hospitalised because they visited several healthcare facilities, including traditional healers. Improving the quality of care at healthcare facilities and reducing financial and care burdens may reduce the hospitalisation delay of children with pneumonia.

Key Words: Public health, QUALITATIVE RESEARCH, Community child health, Quality in health care

## Article Summary

### Strengths and limitations of this study

- We conducted a qualitative study to identify various factors that influenced mothers' intentions to seek care before hospitalisation for 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 for the early hospitalisation of sick children still exist.
- This study was conducted in a single rural municipality in the Philippines for only 11 mothers, which may not be generalisable to other areas.

## BACKGROUND

The global mortality rate of children aged under 5 years has fallen by more than half from 93 deaths per 1,000 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 1,000 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 leading cause of death for children under 5. It was estimated that approximately 2,400 children died because of pneumonia every day in 2016.[6]

In the Philippines, the under-5 mortality rate markedly decreased from 48 per 1,000 live births in 1998 to 27 per 1,000 in 2017.[7] Pneumonia is the second most common cause of death after prematurity among children under 5 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. 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 healthcare 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 even though free and reliable care was 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 that indicate 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.[11,15] In the present study, we analysed the factors that affected mothers' intention to visit healthcare facilities for their children with pneumonia. 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.[16-20] The TPB is a commonly used model to identify decision-making processes that can translate into actions. It posits that three belief-based constructs determine an individual's behaviour: attitude, subjective norms, and perceived behavioural control.[21-23] Attitude towards a behaviour is the feeling of favourableness or unfavourableness towards it. Subjective norms involve perceived social pressures from others and the community (e.g. if someone's family members or friends think that one should perform a behaviour, one's intention to do so will 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.[21-24]

The objective of this study was to reveal the chronological order of visited facilities before children were hospitalised with pneumonia and the factors influencing mothers' intentions to seek care before children's hospitalisation.

## MATERIAL AND METHODS

### Study design

This was 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 (RITM) 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.[25] There are three levels of public health 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. The study was conducted in the paediatric department of BPH. We divided participants' place of residence into two categories: Naval and outside Naval. It takes more than 30 minutes to reach BPH from most households outside Naval using any kind of transportation.

**Study participants**

Mothers whose under-5 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.[26] 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**

We did not involve our participants in the development of the research questions, design of recruitment, conducting the study, or dissemination of the study findings.

**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 19–42 minutes (mean = 30.4 minutes).

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.[27, 28] The SES total scores could range from 0 to 100, with a lower score

indicating lower SES. Interviews were conducted in English 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. 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**

First, we identified 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.[29-32] The interviews were transcribed in the local language, and the transcription was translated into English by the interpreter. The English translation was back-translated into local languages by a nurse who was fluent in both local languages and English to verify accuracy. English-transcribed interviews were checked by the nurse and interpreter several times to ensure their accuracy. 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, 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.[33-35] Finally, the results were collated and summarised to link the themes and data. Themes were defined and finalised through discussion (MS, HO), and all researchers agreed on the final analysis, interpretation, and reporting. We used the SRQR reporting guidelines.[36]

**Ethical approval**

Ethical approval for the study was obtained from the Ethics Committee of Tohoku University Graduate School of Medicine (No. 2014-1-790) and the Institutional Review Board of RITM (No. 2015-06, No. 2016-25).

**RESULTS**

Socio-demographic characteristics of the participants are shown in Table 1. We interviewed 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 (i.e. the national poverty threshold), indicating that their income was under the minimum level of resources necessary for living in the Philippines.[27,28]

Table 1. Demographic characteristics of mothers of children hospitalised with pneumonia in Biliran Provincial Hospital (Philippines)

| Demographic Characteristic | Mean (SD) | n | % |
|---|---|---|---|
| Age (range 17–41 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 |
| Competed 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: 1–10) | 2.9 (2.6) | | |
| 1 | | 3 | 27.3 |
| 2 | | 2 | 18.2 |
| 3 | | 4 | 36.4 |
| ≥ 4 | | 2 | 18.2 |
| Simple Poverty Score card (12–52) | 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 (25 days 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 |

**Facilities visited before hospitalisation**

Visited facilities 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. Eight children visited traditional healers before hospitalisation. All children who came to BPH by ambulance were referred from RHU and lived outside Naval.

**Table 2.** Visited facilities by children with pneumonia before hospitalisation

| | 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 |
| **Days from 1st 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 ↓ 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 |

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

**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 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 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.<br>Mothers applied home remedies. |
| Expecting the child to have necessary assessment and treatment | Mothers understood the location and functions of each healthcare facility.<br>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.<br>Mothers expected their children to be assessed and treated at the Rural Health Unit. |
| Accepting advice to visit a healthcare facility or be referred to a hospital | Mothers accepted the advice when healthcare facility staff referred their child to a hospital.<br>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,<br>Mothers coped with the double burden of providing hospital care and completing housework.<br>Mothers felt relieved when they saw their children recovering while in hospital. |

**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 breastfeeding, 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 6pm, 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 health facility when they selected a facility 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 health 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 health 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 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 healthcare facility or 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 8am. 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 double 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.[37, 38] 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.[39,40] Another study investigating children with diarrhoea indicated that having the nearest health facilities within a 15-minute walk was a significant factor of health-seeking behaviour.[41] Hospital accessibility may be an important factor for delayed hospitalisation and might be associated with childhood mortality.[39,40]

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,[42,43] which might be associated with a delay in hospitalisation and fatal outcome of severe pneumonia.[44] However, our participants remembered the initial symptoms and some unusual symptoms in the later stages of the illness, as also shown in previous studies.[45,46] 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.[47] 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 fathers,[11] 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.[16]

Our results showed that mothers accepted the advice from family members to decide which healthcare facilities to visit and from RHU staff about a referral to a hospital. Such advice functioned as a strong subjective norm for mothers' intention for action. Interestingly, mothers did not bring their children to traditional healers after referral to BPH was recommended by RHU staff. Although it is not easy to change traditional beliefs, the advice from healthcare staff might be important as a subjective norm for caregivers to take their children to a hospital without delay.

The double 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.[48] In addition, mothers' main concerns when their children were advised to be hospitalised were found to be financial issues in previous studies.[11,49,50] 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.[51, 52] However, out-of-pocket expenditure on healthcare has increased between 2000 and 2012.[53] It has also been difficult to enrol low-income earners in PhilHealth,[52] 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.

Although some mothers hesitated to take their children to hospital, they felt relieved to see their recovery after hospital treatment. This relief may work as positive perceived behavioural control to encourage mothers to take proper action for early hospitalisation of their children in the future.

This study had some limitations. First, it was conducted in one provincial hospital on a small island, and the sample size was small. Therefore, it is not possible to generalise our findings to the whole country. 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. Various factors influenced Mothers' decisions to visit healthcare facilities. 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 advice from family members. At the same time, mothers took children to traditional healers because they wanted to know if they had 'piang', which is a strong cultural belief. Although this may be difficult to change, mothers and families may be more likely to visit public healthcare facilities if the quality of care provided improves. Financial issues and mothers' double burden of housework and hospital care were identified as major obstacles for hospitalisation. Reducing the financial burden associated with hospitalisation and establishing a system to support mothers of hospitalised children may reduce hospitalisation delays. Timely and appropriate advice of healthcare staff, especially from doctors, may also be key to ensure prompt hospitalisation of children with pneumonia.

**Acknowledgements**

The authors would like to thank the participants who generously shared their time and experiences with us and the supporting staff who assisted as interpreter and translator.

**Author Contributions**

MS and HO were involved in study design and inception. MS, ARN and RT were involved in study implementation. MS, NO, KS, and HO conducted data analysis and interpretation. JL, PPA, SL, and RT provided background information on the study site. MS, NO and HO drafted the manuscript. VLT critically revised it for important cultural and intellectual content. All authors reviewed the manuscript and contributed to its writing.

**Funding**

This study was funded by JSPS KAKENHI Grant Number17K09189, Science and Technology Research Partnership for Sustainable Development (SATREPS) from Japan Agency for Medical Research and Development (AMED) and Japan International Cooperation Agency (JICA) under Grant Number JP16jm011000, and Japan Initiative for Global Research Network (J-GRID) from AMED under Grant Number JP19fm010813. The funder had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

**Competing interests**

The authors declare no conflict of interest.

**Ethical approval**

Ethical approval for the study was obtained from the Ethics Committee of Tohoku University Graduate School of Medicine (No. 2014-1-790) and the Institutional Review Board of RITM (No. 2015-06, No. 2016-25).

**Data sharing statement**

Unpublished data from the study can be made available upon request from the corresponding author on reasonable request.

**Provenance and peer review**

Not commissioned; externally peer reviewed.

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# Reporting checklist for qualitative study.

Based on the SRQR guidelines.

## Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

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| | Reporting Item | Page Number |
|---|---|---|
| **Title** | | |
| #1 | Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended | P1 |

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|---|---|---|---|
| **Abstract** | | | |
| | #2 | Summary of the key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results and conclusions | P3 |
| **Introduction** | | | |
| Problem formulation | #3 | Description and signifcance of the problem / phenomenon studied: review of relevant theory and empirical work; problem statement | P5-6 |
| Purpose or research question | #4 | Purpose of the study and specific objectives or questions | P6 |
| **Methods** | | | |
| Qualitative approach and research paradigm | #5 | Qualitative approach (e.g. ethnography, grounded theory, case study, phenomenolgy, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g. postpositivist, constructivist / interpretivist) is also recommended; rationale. The rationale should briefly discuss the justification for choosing that theory, approach, method or technique rather than other options available; the assumptions and limitations implicit in those choices and how those choices influence study conclusions and transferability. | P6-7 |

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| | | As appropriate the rationale for several items might be discussed together. | |
| Researcher characteristics and reflexivity | #6 | Researchers' characteristics that may influence the research, including personal attributes, qualifications / experience, relationship with participants, assumptions and / or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results and / or transferability | P7-8 |
| Context | #7 | Setting / site and salient contextual factors; rationale | P6-7 |
| Sampling strategy | #8 | How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g. sampling saturation); rationale | P7 |
| Ethical issues pertaining to human subjects | #9 | Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues | P8 |
| Data collection methods | #10 | Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources / methods, and modification of procedures in response to evolving study findings; rationale | P7-8 |

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|---|---|---|---|
| Data collection instruments and technologies | #11 | Description of instruments (e.g. interview guides, questionnaires) and devices (e.g. audio recorders) used for data collection; if / how the instruments(s) changed over the course of the study | P7-8 |
| Units of study | #12 | Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results) | P8-9 |
| Data processing | #13 | Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymisation / deidentification of excerpts | P8 |
| Data analysis | #14 | Process by which inferences, themes, etc. were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale | P8 |
| Techniques to enhance trustworthiness | #15 | Techniques to enhance trustworthiness and credibility of data analysis (e.g. member checking, audit trail, triangulation); rationale | P8 |
| **Results/findings** | | | |
| Syntheses and interpretation | #16 | Main findings (e.g. interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory | P8-15 |

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| Links to empirical data | #17 | Evidence (e.g. quotes, field notes, text excerpts, photographs) to substantiate analytic findings | P19 |
| **Discussion** | | | |
| Intergration with prior work, implications, transferability and contribution(s) to the field | #18 | Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application / generalizability; identification of unique contributions(s) to scholarship in a discipline or field | P15-18 |
| Limitations | #19 | Trustworthiness and limitations of findings | P18 |
| **Other** | | | |
| Conflicts of interest | #20 | Potential sources of influence of perceived influence on study conduct and conclusions; how these were managed | P19 |
| Funding | #21 | Sources of funding and other support; role of funders in data collection, interpretation and reporting | P19 |

BMJ Open

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

| | |
|---|---|
| Journal: | *BMJ Open* |
| Manuscript ID | bmjopen-2019-036261.R1 |
| Article Type: | Original research |
| Date Submitted by the Author: | 30-Jun-2020 |
| Complete List of Authors: | Sato, Mari; Tohoku University, Department of Virology<br>Oshitani, Hitoshi; Tohoku University, Department of Virology<br>Tamaki, Raita ; Japan International Cooperation Agency, Nairobi, Kenya<br>Oyamada, Nobuko; Tohoku University, Department of Maternal Nursing<br>Sato, Kineko; Tohoku University, Department of Maternal Nursing<br>Nadra, Alkaff; Tohoku University, Department of Virology<br>Landicho, Jhoys; Research Institute for Tropical Medicine, Epidemiology and Biostatics<br>Alday, Portia; Research Institute for Tropical Medicine, Epidemiology and Biostatics<br>Lupisan, Socorro ; Research Institute for Tropical Medicine, Epidemiology and Biostatics<br>Tallo, Veronica; Research Institute for Tropical Medicine, Epidemiology and Biostatics |
| Primary Subject Heading: | Qualitative research |
| Secondary Subject Heading: | Public health |
| Keywords: | QUALITATIVE RESEARCH, PUBLIC HEALTH, Quality in health care < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, Community child health < PAEDIATRICS |
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# 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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Word count: 4,181

Reference count: 66

## 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 1–19 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.


Key Words: Public Health, Qualitative Research, Community child health, Quality in Health Care

## Article Summary

### 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 1,000 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 1,000 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 2,200 children died because of pneumonia every day in 2018.[6]

In the Philippines, the under-5 mortality rate markedly decreased from 48 per 1,000 live births in 1998 to 27 per 1,000 in 2017.[7] Pneumonia is the second most common cause of death after prematurity among children under 5 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 healthcare 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 (RITM) 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 healthcare 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 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 19–42 minutes (mean = 30.4 minutes).

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 (e.g. 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, 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, 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 (i.e. the national poverty threshold), indicating that their income was under the minimum level of resources necessary for living in the Philippines.[20, 21]

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: 17–41 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 |
| Competed 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: 1–10) | 2.9 (2.6) | | |
| 1 | | 3 | 27.3 |
| 2 | | 2 | 18.2 |
| 3 | | 4 | 36.4 |
| ≥ 4 | | 2 | 18.2 |
| Simple Poverty Score card (range: 12–52) | 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 |

**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.

**Table 2.** Number of days from 1st 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 1st 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 ↓ 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 |

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

**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 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.<br>Mothers applied home remedies. |
| Expecting the child to have necessary assessment and treatment | Mothers understood the location and functions of each healthcare facility.<br>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.<br>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.<br>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,<br>Mothers coped with the double burden of providing hospital care and completing housework.<br>Mothers felt relieved when they saw their children recovering while in hospital. |

**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 breastfeeding, 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 6pm, 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 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 8am. 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-minute 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 fathers[11] 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.

**Acknowledgements**

The authors would like to thank the participants who generously shared their time and experiences with us and the supporting staff who assisted as interpreter and translator.

**Author Contributions**

MS and HO were involved in study design and inception. MS, ARN and RT were involved in study implementation. MS, NO, KS, and HO conducted data analysis and interpretation. JL, PPA, SL, and RT provided background information on the study site. MS, NO and HO drafted the manuscript. VLT critically revised it for important cultural and intellectual content. All authors reviewed the manuscript and contributed to its writing.

**Funding**

This study was funded by JSPS KAKENHI Grant Number17K09189, Science and Technology Research Partnership for Sustainable Development (SATREPS) from Japan Agency for Medical Research and Development (AMED) and Japan International Cooperation Agency (JICA) under Grant Number JP16jm011000, and Japan Initiative for Global Research Network (J-GRID) from AMED under Grant Number JP19fm010813. The funder had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

**Competing interests**

The authors declare no conflict of interest.

**Ethical approval**

Ethical approval for the study was obtained from the Ethics Committee of Tohoku University Graduate School of Medicine (No. 2014-1-790) and the Institutional Review Board of RITM (No. 2015-06, No. 2016-25).

**Data sharing statement**

Unpublished data from the study can be made available upon request from the

corresponding author on reasonable request.

**Provenance and peer review**

Not commissioned, externally peer reviewed.

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Supplementary File: Consolidated criteria for reporting qualitative studies (COREQ) 32-item check-list

| | | |
|---|---|---|
| Domain 1: Research team and reflexivity | | |
| Personal Characteristics | | |
| 1 | Interviewer/facilitator | The interviewer was the first author (MS) (p.7). |
| 2 | Credentials | We wrote the credentials for all authors in the title page (p.1-2). |
| 3 | Occupation | We wrote the occupation for all authors in the title page (p.1-2). |
| 4 | Gender | We did not write female or male in the manucript, however, HO and RT are male and others are female. |
| 5 | Experience and training relationship with participants | We explained the experience and training relationship with participants in p.7. |
| 6 | Relationship established | We wrote the relationship established in p.7-8. |
| 7 | Participant knowledge of the interviewer | We wrote participant knowledge of the interviewer in p.7. |
| 8 | Interview characteristics | We explained the interview characteristics in p.7-8. |
| Domain 2: study design | | |
| Theoretical framework | | |
| 9 | Methodological orientation and theory | We used the Theory of Planned Behaviour (p.8). |
| Participants selection | | |
| 10 | Sampling | We use the purposive sampling method (p. 6-7). |
| 11 | Method of approach | We conducted a face-to-face interviews (p.7-8). |
| 12 | Sample size | Sample size (11) (p.7). |
| 13 | Non-participation setting | We did not exclude any participants. One participant was 17-years-old, we obtained consent from her husband and mother and asked her husband to be present during the interview. (p.7). |
| 14 | Setting of data collection | All interviews were conducted at Biliran Provincial Hospital (p.7). |
| 15 | Presence of non-participants | 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 (p.7). |
| 16 | Description of sample data collection | We showed the important characteristics of the sample in Table 1 (p.9-10). |
| 17 | Interview guide | We wrote the interview questions in p.7-8. |

| | | |
|---|---|---|
| 18 | Repeat interviews | We conducted the interview once per a participant (p.8). |
| 19 | Audio/visual recording | The interviews were audio recorded (p.8). |
| 20 | Filed notes | The assistant interpreter recorded filed notes (p.7-8). |
| 21 | Duration | The interviews lasted for 19–42 min (p.7). |
| 22 | Data saturation | We explained about the data saturation in p.8. |
| 23 | Transcripts returned | We did not retune the transcripts to participants. However, we tried to summarize the findings with each participant at the end of the interviews and confirmed reliability (p.7-8). |
| Domain3: analysis and findings | | |
| Data analysis | | |
| 24 | Number of data codes | Three researchers coded the data (p.8). |
| 25 | Description of the coding tree | We did not construct the coding tree, however, we showed themes and categories in table 3 (p.13). |
| 26 | Derivation of themes | Themes were derived from the data. (p.8) |
| 27 | Software | We did not use any software for the analysis, Instead, we discussed during analyzing process through e-mail. |
| 28 | Participant checking reporting | We could not receive feedback on the finding. We have included the following sentence in the limitations. 'Finally, we could not confirm the transcripts with the participants, as it was difficult to contact them again' (p.19). |
| Reporting | | |
| 29 | Quotations presented | Quotations presented in the results (p.8-16). |
| 30 | Data and findings consistent | We have included the following sentence in the limitations. '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' (p.19). |
| 31 | Clarity of major themes | We showed major themes in the results (p.13-16). |
| 32 | Clarity of minor themes | We wrote categories in the results (p.13-16). |

## Standards for Reporting Qualitative Research (SRQR) check list

| No. | Topic | Item | Check |
|---|---|---|---|
| **Title and abstract** | | | |
| S1 | Title | Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach or data collection methods is recommended. | P1 |
| S2 | Abstract | Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, result and conclusion. | P3 |
| **Introduction** | | | |
| S3 | Problem formulation | Description and significance of the problem/phenomenon studies; review of relevant theory and empirical work; problem statement. | P5-6 |
| S4 | Purpose or research question | Purpose of the study and specific objectives or questions. | P6 |
| **Methods** | | | |
| S5 | Qualitative approach and research paradigm | Qualitative approach and guiding theory if appropriate; identifying the research paradigm is also recommended; rationale | P6 |
| S6 | Researcher characteristics, reflexivity | Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, result, and/or transferability. | P7 |
| S7 | Context | Setting/site and salient contextual factors; rationale. | P6-7 |
| S8 | Sampling strategy | How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary; rationale | P6-7 |
| S9 | Ethical issues pertaining to human subjects | Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues. | P20 |
| S10 | Data collection methods | Types of data collected; details of data collection procedures including start and stop dates of data collection and analysis, interactive process, triangulation of sources/methods, and modification of procedures in response to evolving study | P7-8 |

| | | | |
|---|---|---|---|
| | | findings; rational. | |
| S11 | Data collection instruments/technologies | Description of instruments and devices used for data collection; if/how the instruments changed over the course of the study. | P7-8 |
| S12 | Units of study | Number and relevant characteristics of participants, documents, or events included in the study; level of participation | P9-10 |
| S13 | Data processing | Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding and anonymization/deidentification of excerpts. | P8 |
| S14 | Data analysis | Process by which inferences themes, etc., were identified and developed including the researchers involved in data analysis usually references a specific paradigm or approach; rationale. | P8 |
| S15 | Techniques to enhance trustworthiness | Techniques to enhance trustworthiness and credibility of data analysis; rationale. | P8 |
| **Results/findings** | | | |
| S16 | Synthesis and interpretation | Main findings; might include development of theory or model, or integration with prior research or theory. | P8-16 |
| S17 | Links to empirical data | Evidence to substantiate analytic findings | P20-21 |
| **Discussion** | | | |
| S18 | Integration with prior work, implications, transferability, and contribution(s) | Short summary of main findings; explanation of how findings and conclusion connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution to scholarship in a discipline or field. | P17-19 |
| S19 | Limitations | Trustworthiness and limitations of findings | P19 |
| **Other** | | | |
| S20 | Conflicts of interest | Potential source of influence or perceived influence on study conduct and conclusions; how these were managed. | P20 |
| S21 | Funding | Source if funding and other support; role of funders in data collection, interpretation and reporting. | P20 |