# Knowledge and Practice of Mothers with Children Under 5 Suffering from Acute Respiratory Infections at Hai Phong Medical University Hospital in 2024

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**ABSTRACT**

This study aims to: Investigate the knowledge and practices of mothers regarding the children care with acute respiratory infections (ARI) at the Pediatrics Department of Hai Phong University Hospital in 2024 and identify certain factors relate to their knowledge and practices. A cross-sectional descriptive study was conducted with a total of 218 participating mothers. The results showed that: 72.5% had adequate knowledge, and 60.2% had adequate practices. Mothers with non-agricultural occupations were 4.27 times more likely to have adequate knowledge compared to mothers working in agriculture job (p = 0.019). Mothers with education levels above high school were 1.84 times more likely to have adequate practices compared to those with lower education (p = 0.028).

***Keywords:*** *Acute respiratory infections, materal knowledge and practice, risk factors, children under 5 years old*

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## INTRODUCTION

According to reports from many countries, Acute Respiratory Infections (ARI) are common illnesses among children, with the highest morbidity rate incidence and mortality rates observed in children under 5 years of age [1, 2]. UNICEF statistics from 2020 indicated that approximately 10.6 million children under 5 years old die each year. Among these, over 2 million children die annually from pneumonia, accounting for 18% of child deaths worldwide [3]. In Vietnam, the mortality rate due to ARI among children represents about one-third (30–35% of overall mortality) [4]. Given the importance of this issue, in 1982, WHO developed the "Program for the Prevention of Acute Respiratory Infections in Children" (ARI program). The main objective of the program is to reduce mortality due to ARI, primarily from pneumonia. According to this strategy, in addition to training healthcare professionals, the knowledge of caregivers, particularly mothers, plays a crucial role [5]. Children with ARI can only receive early treatment if the mother has adequate knowledge to recognize early signs and knows how to care for the child. Therefore, we decided to conduct this study: "Knowledge and Practices of Mothers with Children Under 5 Suffering from Acute Respiratory Infections at Hai Phong University Hospital in 2024" with the following two objectives:

1. To investigate materal knowledge and practice regarding ARI care at the Pediatrics Department of Hai Phong Medical University Hospital in 2024.
2. To identify factors related to the knowledge and practices of mothers regarding the care of children under 5 with ARI at the Pediatrics Department of Hai

Phong Medical University Hospital in 2024.

## MATERIALS AND METHODS

**Studied Subjects**

Mothers with children under 5 years old who were diagnosed with acute respiratory infections (ARI) and are receiving inpatient treatment at the Pediatrics Department of Hai Phong Medical University Hospital.

*Inclusion Criteria*

Mothers with children under 5 years old who are receiving inpatient treatment for ARI at the Pediatrics Department of Hai Phong Medical University Hospital.

Mothers who agree to participate in the study.

*Exclusion Criteria*

Mothers disagreed to participate in the study.

**Location and Duration**

Pediatrics Department of Hai Phong Medical University Hospital from January 1st to May 31th, 2024.

**Research Design**

Research method: Cross-sectional and descriptive study.

**Sample Size**

Sample size: The study includes 218 mothers who met the selection criteria during the study period.

**Sampling Process Method**

It was a convenience sampling method

**Variables and Indices**

***Table 1***. *Variables and Indices*

| Objective | Variable name | Variable Definition | Data collection method |
|---|---|---|---|
| **Assess the knowledge and practices of mothers regarding ARI care** | **Mothers' knowledge**<br>- Cough.<br>- Fever or hypothermia<br>- Rapid breathing.<br>- Chest indrawing<br>- Stridor at rest<br>- Wheezing.<br>- Poor feeding. | - Cough is a reflex of the respiratory tract to expel phlegm<br>- Fever is defined when the temperature is ≥ 37.5°C; hypothermia is defined when temperature is less than 35°C<br>- Rapid breathing is defined as:<br>+ 0 –<2 months: >= 60 breaths/min<br>+ 2 months–<1 year: ≥ 50 breaths/min<br>+ 1 year–<5 years: ≥ 40 breaths/min<br>- Chest indrawing refers to the inward movement of the upper ribs or below the breastbone during inspiration.<br>- Stridor: A harsh, rough sound heard when a child inhales<br>- Wheezing: A softer sound compared to stridor, heard during exhalation. | - Direct interviews with mothers using a pre-prepared questionnaire..<br>The questionnaire includes four sections:<br>- **Section 1**: Information about children under 5 years old (age, gender, current weight, diagnosis, vaccination s tatus, etc.).<br>- **Section 2**: General information about mothers with children under 5 years.<br>- **Section 3**: Mothers' knowledge and practices regarding ARI, assessing recognition of ARI signs, treatment, and prevention practices. |

| | | |
|---|---|---|
| | - Lethargy.<br>- Convulsions.<br>- Prevention of ARI<br><br>**Mothers' practices**<br>- Counting breaths<br>- Feeding and hydration<br>- Monitoring symptoms<br>- Using Medication. | - Poor feeding refers to a child consuming less than half of their usual intake.<br>- Lethargy is defined as difficulty waking the child, or the child only opens their eyes briefly and appears drowsy..<br><br>- Count when the child is calm and not crying, over 1 minute<br>- Monitoring cough, fever, breathing rate, eating, breastfeeding, and drinking during ARI episodes<br>- Self-medication, following healthcare providers' advice, or other methods |
| **Identify factors related to materal knowledge and practice** | **Child-related factors**<br>- Age<br><br><br><br><br>- Gender<br>- Diagnosis<br><br>- Vaccination status | <br>- Four age groups:<br>+ <2 months<br>+ 2 months–≤1 year<br>+ >1–3 years<br>+ >3–5 years<br>- Male or female<br>- Diagnoses include pneumonia, bronchitis, tracheitis, rhinitis, etc.<br>- Vaccination status:<br>+ Fully and timely vaccinated: Receiving the correct number of doses and vaccine types for the child's age at the time of the survey.<br>+ Incomplete or untimely vaccination: Not meeting one of the three conditions of full doses, appropriate vaccine types, or correct timing. |

| | |
|---|---|
| **Mother-related factors:**<br>- Educational level | + Primary: Completed grade 4/10 or 5/12<br>+ Secondary: Completed grade 7/10 or 9/12<br>+ High school: Completed grade 10/10 or 12/12 |
| - Maternal age | + Age groups: ≤25 years, 26–35 years, ≥36 years |
| - Maternal occupation<br>- Number of children | |

**Measurement and data collection**

*Data Collection Tool*

A pre-designed questionnaire based on research indicators.

*Evaluation Criteria*

According to the study by author Nguyen Thi Thanh Huyen [6], mothers' knowledge includes 9 questions corresponding to 10 points. A mother scoring ≤ 3 points is rated as poor, 4–6 points as average, and ≥ 7 points as good. Knowledge is considered adequate when the mother scores at an average or good level.

Similarly, in Nguyen Thi Thanh Huyen's study [6], mothers' practices include 7 questions corresponding to 10 points. A mother scoring ≤ 3 points is rated as poor, 4–6 points as average, and ≥ 7 points as good. Practices are considered adequate when the mother scores at an average or good level.

**Data Analysis**

Data entering and analysis were performed using SPSS software version 22.0.

Descriptive statistics, comparision were applied. Tow percentages were compared using chi square test, the differcence was statistically significantly different when p-value was less than 0,05. OR and 95% CI were used to assess the association between risk factors and maternal knowledge and practice at p-value level was less than 0,05.

**Ethical Consideration**

The study was approved by the Faculty of Nursing and the Scientific Committee of Hai Phong University of Medicine and Pharmacy.

Mothers were fully informed about the purpose and content of the study. The research did not impact the health of participants. Personal information was respected and kept confidential as requested by the participants.

## RESULTS

***Table 2.*** *Demographic Characteristics of Subjects (n = 218)*

| Characteristic | | n | Percentage (%) |
|---|---|---|---|
| Age | ≤ 25 years | 34 | 15.6 |
| | 26-35 years | 116 | 76.1 |
| | ≥ 36 years | 18 | 8.3 |

| | | | |
|---|---|---|---|
| Occupation | Farmer | 10 | 4.6 |
| | Worker | 48 | 22.0 |
| | Officer | 84 | 38.5 |
| | Business | 34 | 15.6 |
| | Housewife | 42 | 19.3 |
| | Others | 0 | 0 |
| Education | Illiterate | 0 | 0 |
| | Primary School | 0 | 0 |
| | Secondary School | 14 | 5.6 |
| | High School | 98 | 45.0 |
| | College and higher | 106 | 48.6 |
| Number of children | 1 child | 84 | 38.5 |
| | 2 children | 104 | 47.8 |
| | 3 children | 26 | 11.9 |
| | > 3 children | 4 | 1.8 |

Table 2 shows that among mothers with children under 5 suffering from respiratory infections, 76.1% are aged 26–35, 15.6% ≤ 25, and 8.3% ≥ 36. Most mothers are civil servants (38.5%), followed by workers (22%), homemakers (19.3%), traders (15.6%), and farmers (4.6%). Regarding education, 48.6% hold college/university degrees, 45% high school, and 5.6% secondary school. Family size includes 38.5% with one child, 47.7% two, 11.9% three, and 1.8% more than three.

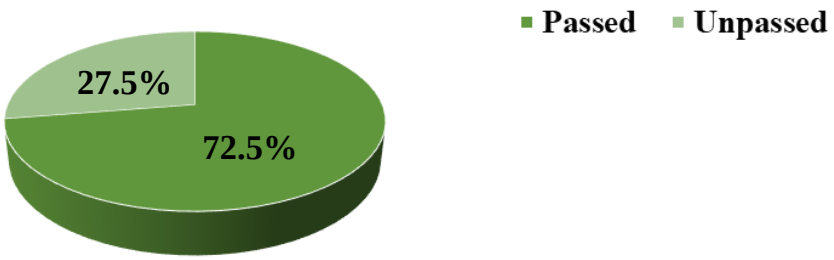


***Figure 1.*** *Percentage of Mothers with Adequate Knowledge about Respiratory Infections in Children Under 5 Years Old (n = 218)*

Figure 1 showed that The percentage of mothers with adequate knowledge is 72.5%. The percentage of mothers with inadequate knowledge is 27.5%.

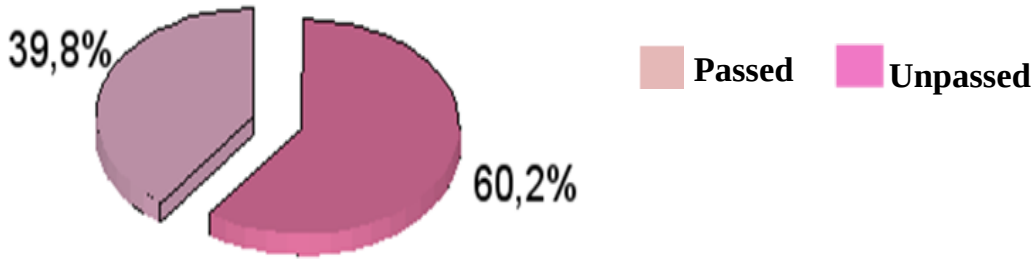


***Figure 2.*** *Percentage of Mothers with Adequate Practices Regarding Respiratory Infections in Children Under 5 Years Old (n = 218)*

Figure 2 showed the percentage of mothers with adequate practices is 60.2%. The percentage of mothers with inadequate practices is 39.8%.

***Table 3.*** *The Relationship Between Knowledge and Practice*

| **Content** | | **Knowledge** | | **OR (95% CI)** | **p** |
|---|---|---|---|---|---|
| | | **Passed (n)** | **Unpassed (n)** | | |
| Practice | Passed | 90 | 41 | 0.61 (0.327 – 1.150) | 0.126 |
| | Unpassed | 68 | 19 | | |
| Total | | 158 | 60 | | |

Table 3 showed that There is no relationship between knowledge and practice among mothers with children under 5 years old suffering from pneumonia.

***Table 4.*** *The Relationship Between maternal knowledge and some risk factors*

| **Content** | | **Knowledge** | | **OR (95% CI)** | **p** |
|---|---|---|---|---|---|
| | | **Passed (n)** | **Unpassed (n)** | | |
| Age | ≥ 26 years | 133 | 47 | 1.47 (0.322 – 1.436) | 0.310 |
| | < 26 years | 25 | 13 | | |
| Occupation | Other | 154 | 54 | 4.27 (0.064 – 0.860) | **0.019** |
| | Agriculture | 4 | 6 | | |
| Education level | High school | 69 | 89 | 0.829 (0.457 – 1.504) | 0.537 |
| | Above high school | 29 | 31 | | |
| Current number of children | More than 1 child | 96 | 36 | 1.032 (0.528 – 1.778) | 0.918 |
| | 1 child | 62 | 24 | | |

The table 4 shows that knowledge is related to the occupation of mothers. This relationship is statistically significant when $p < 0.05$. However, there is no relationship between knowledge and the other characteristics.

***Table 5.*** *The Relationship Between maternal practice and some risk factors*

| **Content** | | **Practice** | | **OR (95% CI)** | **p** |
|---|---|---|---|---|---|
| | | **Unpassed (n)** | **Passed (n)** | | |
| Age | < 25 years | 23 | 15 | 1.022 (0.5 – 2.091) | 0.952 |
| | ≥ 25 years | 108 | 72 | | |
| Occupation | Farmer | 8 | 2 | 2.764 (0.573 – 13.33) | 0.188 |
| | Other | 123 | 85 | | |
| Education level | High school | 80 | 40 | 1.84 (0.313 – 0.939) | **0.028** |
| | Above high school | 51 | 47 | | |
| Current | 1 child | 81 | 51 | 1.14 | 0.635 |

| | | | | |
|---|---|---|---|---|
| number of children | More than 1 child | 50 | 36 | (0.503 – 1.521) |

The table 5 shows that practice is related to the maternal education level. This relationship was statistically significant with $p < 0.05$. However, there was no relationship between maternal practice with some risk factors.

## DISCUSSIONS

**Characteristics of the subjects**

The results from the study involving 218 mothers indicate that the highest proportion of mothers with children under 5 years old are in the age group of 26 to 35 years, accounting for 76.1%. This result is higher compared to the study of 120 mothers with children under 5 years old suffering from pneumonia conducted by Nguyễn Thị Thanh Huyền (2022) in Nam Định province [6]. Among mothers of children under 5 years old with pneumonia, the highest educational level is found in those with a college/university degree, representing 48.6%, followed by high school at 45%, and secondary school at 5.6%. Most mothers are state employees, accounting for 38.5%. The majority of mothers with children under 5 years old suffering from pneumonia usually have two children in the family, comprising 47.7%, while those with one child represent 38.5%, and those with more than three children account for 1.8%. According to the study by Đỗ Thị Phương (2021) in Lâm Đồng province, most mothers have a high school education at 40.0%, secondary school at 30.6%, and the majority are farmers, representing 55.1%. Families with two or more children account for 55.3%, while those with one child represent 44.7%, which is higher than the results found in our study [7].

**Maternal Knowledge**

The study involving 218 mothers shows that 89% of mothers are aware of pneumonia in children, primarily receiving information from social media (67.9%) and healthcare staff (56.9%). A significant 95.4% of mothers believe that the causes of pneumonia are bacteria and viruses. This result is higher than the study by Nguyễn Hồng Gấm (2017), which reported that 68% of mothers were aware of pneumonia, and 80% did not know the causes of the disease [8]. Analysis reveals that mothers recognize cough (83.5%) and fever (71.6%) as the most noticeable symptoms of pneumonia. In contrast, seizures and lethargy are recognized by only 17.4% and 16.5%, respectively, despite being typical signs of pneumonia. According to Nguyễn Hồng Gấm's study (2017) involving 50 mothers of children under 5 with pneumonia, 74% recognized the signs of pneumonia, and 42% considered seizures a dangerous systemic sign, which is higher than the results of our study [8]. The research results show that 88.1% of mothers believe pneumonia can be prevented, similar to the findings of Trần Thị Ngọc Bích (2022), where 76.8% of mothers thought pneumonia was preventable [9].

**Maternal Practices**

Results indicate that 42.2% of mothers know how to count a child's breaths but are not proficient, while 41.3% can count them correctly. However, 11.9% of mothers do not know how to count breaths. In Nguyễn Hồng Gấm's study (2017), 56% of mothers recognized rapid breathing in children, while 44% did not know how to identify it [8]. Thus, a significant proportion of mothers are unaware of how to count their child's breaths, indicating a need for further training for healthcare staff to educate mothers on monitoring their child's condition.

According to the research by Hà Thị Hồng Thanh and Nguyễn Phương Toại (2023), the proportion of mothers taking their children to hospitals and health centers was 35.2%, while 36% took them to pharmacies [10], which is lower than the results of our study where 58.7% of mothers chose hospitals, 51.4% chose health centers, and 13.8% purchased medications for treatment when their children suffered from pneumonia.

The study also shows that when children have pneumonia, 70.6% of mothers feed their children normally, and 58.8% increase their water intake. This rate is comparable to the research by Hà Thị Hồng Thanh and Nguyễn Phương Toại (2023), where 35.4% of mothers ensured their children drank more water, and 53.3% increased the frequency of feeding and breastfeeding [10].

**Relationship Between maternal Knowledge and maternal Practices**

Based on the analysis, there is no relationship between the knowledge and practices of mothers with children under 5 with pneumonia ($p = 0.126$). This finding is consistent with the results from Dương Hồng Danh and Phạm Văn Lình (2023), indicating that the relationship between knowledge and practices of mothers with children under 5 with pneumonia is not statistically significant ($p = 0.198$) [11].

**Relationship Between Knowledge and Characteristics of Mothers with Children Under 5 with Pneumonia**

The study recorded that the occupation of mothers is related to their knowledge. Mothers with other professions (civil servants, workers, business owners, housewives) have a higher level of knowledge, with an odds ratio of 4.27 compared to mothers in agriculture job ($p < 0.05$). This result aligns with the study by Đỗ Thị Phương (2021), which found that mothers in other professions had a higher correct knowledge rate, at 2.74 times more than those in agriculture ($p < 0.05$) [7].

**Relationship Between Practices and Characteristics of Mothers with Children Under 5 with Pneumonia**

Data analysis results indicate that education level is related to the practices of mothers. Mothers with education above high school have a practice achievement rate 1.84 times higher than those with a high school education ($p < 0.05$). This result is consistent with the study by Đỗ Thị Phương (2021), which found that mothers with education above high school had a practice achievement rate 5.82 times higher than those who only completed high school ($p < 0.05$) [7].

## CONCLUSIONS

A survey of mothers' knowledge and practices regarding pneumonia care at the Pediatrics Department of Hai Phong University of Medicine in 2024 found 72.5% of mothers had adequate knowledge and 60.2% had adequate practices regarding pneumonia care.

Adequate knowledge was linked to occupation ($p < 0.05$) but not to age, education, or number of children. Adequate practices were associated with education level ($p < 0.05$) but not with age.

## RECOMMENDATIONS

Based on the research results, recommendations are made to further enhance the effectiveness of the acute respiratory infection prevention program for children as follows:

Regular training and retraining of grassroots healthcare staff and hospital personnel on knowledge and prevention measures for pneumonia.

Strengthen health education and promotion through traditional methods combined with modern techniques to convey essential knowledge about the pneumonia program during child care.

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