

PRACTICAL SKILLS OF CARE FOR CHILDREN WITH ACUTE RESPIRATORY INFECTION AMONG MOTHERS OF CHILDREN BELOW 5 YEARS IN TAM THANH COMMUNE, VU BAN DISTRICT, NAM DINH PROVINCE

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ABSTRACT

Objective: To examine mothers' practical skills in caring for children with ARIs in Tam Thanh commune, Vu Ban district, Nam Dinh province. **Participants and methods:** A cross-sectional descriptive study from September 2020 to June 2021 on 194 mothers with children under 5 years old in Tam Thanh commune, Vu Ban district, Nam Dinh province. **Results:** Practical skills in caring for children with ARIs achieved an average score of $14.3 \pm 5.2/28$ points and only 15.5% of mothers who achieved all 3 practical skills. In which, the temperature measurement technique had the average score of $6.3 \pm 1.97/10$ points and 43.8% of mothers who passed practice skills. There were 17.5% of mothers who properly dried their children's armpits and 42.8% of mothers who checked the thermometer with the correct technique. The technique of applying warm compress to reduce fever for children had a low average score of 5.8 ± 1.86 per 9 points and 58.2% of mothers who passed the practice skill. 49% of mothers did the right thing when checking the temperature of the water before applying heat to the baby. 33% of mothers applied the towel in the correct procedure. The chest percussion technique had the lowest average score of 2.1 ± 2.38 per 9 points and 10.8% of mothers who passed the practice skill. The majority of mothers performed the correct posture when pacing the baby's chest with a rate of 62.9%. However, only 15.5% of mothers performed the correct technique of patting and moving their hands on the baby's back. Most mothers did not perform the steps of the vibrating procedure correctly. **Conclusion:** Practical skills in measuring temperature, applying warm compresses to reduce fever, and patting the chest in the care of children with ARIs of mothers were still low.

Keywords: Acute respiratory infection, care practice skills, mothers, children under 5 years old.

1. INTRODUCTION

Acute respiratory infection (ARI) is a common disease in children, especially children under 5 years old, occupying the leading position in morbidity and mortality in the world [1], [2]. In Vietnam, ARIs have high morbidity and mortality rates. In particular, pneumonia ranks first in the 10 most common diseases and second in

the 10 diseases with the highest mortality rate in the country [3]. Maternal care practices for children with ARIs play an important role in the care and prevention of severe complications of the disease [4],[5]. Body temperature monitoring is an important clinical procedure in the care of the children, especially those under 5 years of age, because many

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Received: Sep 29, 2022
Accepted: Dec 25, 2022
Published: Dec 26, 2022

conditions present with fever [6]. Besides, respiratory percussion in the treatment of pneumonia is a therapy performed in many countries around the world. In Vietnam, along with the development of physical therapy, respiratory percussion therapy is increasingly being applied in the treatment of lung diseases. The right respiratory percussion therapy will minimize these consequences while reducing the time and cost of treatment for children. Some studies showed the effectiveness of improving the respiratory disease status of children after performing the respiratory percussion therapy [7], [8]. Techniques for measuring temperature, applying warm compresses to reduce fever, and respiratory percussion for children techniques are quite simple, inexpensive and easy to apply at home when caring for the children. Currently, studies on assessing mothers' practical skills in caring for children with ARI in the community, in which, skills in temperature measurement, fever-reducing warm compresses and respiratory percussion for children are still rarely implemented. Especially, the evaluation of the practice of caring for children with ARI through observation by checklists for mothers with children under 5 years old in the community. Therefore, the research was conducted with the objective to evaluate the practical skills of measuring temperature, applying warm compresses to reduce fever and respiratory percussion in the care of children with ARIs of mothers in Tam Thanh commune, Vu Ban district, Nam Dinh province.

2. PARTICIPANTS AND METHODS

2.1. Research participants

Mother with children under 5 years old in Tam Thanh commune, Vu Ban district, Nam Dinh province.

***Selection criteria:** Mothers with children under 5 years old in Tam Thanh commune, Vu Ban district, Nam Dinh province during the period from October 2020 to December 2020.

The mother consented to participate in the study.

***Exclusion criteria:** The mother had severe physical and mental health problems.

2.2. Study design: A cross-sectional descriptive study.

Research content on practical skills: temperature measurement, fever-reducing warm compresses and respiratory percussion for children with ARIs of mothers with children under 5 years old.

2.3. Samples and sampling methods

- Sampling method: Select the whole sample.

- The research team collected data for 3 months with a sample size of 194 eligible mothers.

2.4. Data collection

***Steps to collect data:**

- Step 1: Select research participants according to selection criteria.

- Step 2: Persuading mothers to participate in the study, providing information and research purposes to mothers with children under 5 years old. The study participants then signed the consent form.

- Step 3: Evaluate mothers' care practice skills through observation using a instructed checklist. Mothers practice temperature measurement, fever-reducing warm compresses and respiratory percussion on their children at the commune health center or at their home for about 30 minutes.

***Data collection questionnaire:**

The technical checklist for measuring temperature and applying warm compresses to reduce fever for children was developed by the research team based on the Ministry of Health guidelines [9], [10]. The respiratory percussion checklist was built based on the National Children's Hospital guidelines in 2017 [11]. Then, the checklist was validated by 5 pediatric experts with CVI = 0.98. Evaluation of reliability through a sample of 30 mothers with a Cronbach Alpha score of 0.85. The score of similarity between 5 investigators on 3 technical process checklists is 0.97. In which, the technique of temperature measurement, warm compress and respiratory percussion had consensus scores of 0.98, 0.97; 0.97 respectively.

***Rating Criteria:** 3 checklists include 28 steps, each step with correct technique is 1 point, not performed or performed incorrectly is 0 point. The corresponding technical scores were converted to the average values. The average score is calculated for each skill and the sum of all steps of 3 skills.

The cut off score was 70% to classify practice as pass and fail. In which, the

checklist for assessing temperature measurement skills has 10 steps, each step is done correctly 1 point, the maximum score is 10 points. Performance assessment was achieved when the mother correctly performed at least 7 per 10 steps.

The assessment checklist for fever-reducing warm compresses for children has 9 steps, each step is performed correctly, 1 point is achieved, and the practice assessment is achieved when the mother performs at least 6 per 9 steps correctly.

The assessment checklist for respiratory percussion for children has 9 steps, each step is performed correctly, 1 point is achieved, and the practice assessment is achieved when the mother correctly performs at least 6 per 9 steps.

2.5. Data analysis: Data was entered and analyzed on SPSS 25.0 and use medical statistical tests.

2.6. Research ethics: The study was approved by the Ethics Committee of Nam Dinh University of Nursing. The rights and personal information of the participants are protected in accordance with the provisions of the Council.

3. RESEARCH RESULTS

3.1. General characteristics of research subjects

Table 1. Demographic characteristics of study subjects (n = 194)

Characteristics		Frequency	Percentage
Mother's age	25 years old	36	18.6
	From 26 to 35 years old	123	63.4
	From 36 to 45 years old	33	17.0
	Over 45	2	1.0
Academic level	Middle School	48	24.7
	High School	88	45.4
	≥Intermediate	58	29.9

Characteristics		Frequency	Percentage
Job	Civil servants	25	12.9
	Worker	111	57.2
	Farmers	ten	5.2
	Housewife	32	16.5
	Other	16	8.2
Number of children of the mother	1 child	32	16.5
	From 2 children or more	162	83.5

The majority of mothers were between the ages of 26 and 35, accounting for 63.4% and had a high school education, accounted for 45.4%. Mothers mainly had 2 or more children (83.5%), with the highest percentage of working as a worker. 57.2%, in which mothers who were officers accounted for 12.9%.

3.2. Practical skills of caring for children with ARIs among mothers

**Table 2. Practice of temperature measurement technique for children (n = 194)
(Measure the temperature in the armpit with a mercury thermometer)**

CONTENT	Right performance	
	n	%
Put the child in a comfortable position	178	91.8
Use a soft, dry towel to dry the armpits	34	17.5
Check the thermometer (hold the thermometer body, hand support the mercury bulb, gently shake the mercury column down to <35 °C)	83	42.8
Place the mercury bulb in the right armpit of the child	177	91.2
Arm close to the body, forearm perpendicular to the arm, mother holds the child's hand just tight enough.	133	68.6
Leave for 5 minutes	98	50.5
Take the thermometer out of the armpit, hold the thermometer body	148	76.3
Read the correct result	162	83.5
Wipe the thermometer clean, hold the thermometer body, hold the mercury bulb with the hand to gently shake the mercury column down to <35°C	42	21.6
Put the thermometer in the box, let the baby lie comfortably	175	90.2

The results showed that the mothers performed the posture when measuring the child's temperature well, the majority of mothers placed the mercury bulb of the thermometer correctly. However, the percentage of mothers who followed the correct steps of using a towel to dry the armpits, check the thermometer, and take the time to measure the temperature and clean the thermometer was still low.

Table 3. Practice of warm compressing techniques to reduce fever in children (n = 194)

CONTENT	Right performance	
	n	%
Prepare the watered towel		
Pour water into the basin, add hot water	184	94.8
Check the temperature of the hot water	95	49.0
Dip a soft towel into a basin of water squeezed dry just right	163	84.0
Fold the towel wide enough for the child's forehead (armpits/inguinals,...)	122	62.9
Apply the watered towel on the body		
Let the baby lie comfortably on the bed	182	93.8
Place the towel on the child's forehead (armpit/guinal). While applying on the forehead, not cover children eyes, fontanelle, or both temples.	64	33.0
2-3 minutes turn over the towel, monitor 10-15 minutes, change the towel	57	29.4
After applying, remove towel to dry the area.	83	42.8
Place the child in a comfortable position. Wear loose, airy clothes for the child when the temperature returns to normal	178	91.8

49% of mothers did the right procedure when checking the temperature of the water before applying heat to the baby. 33% of mothers put a towel on their child's forehead correctly. There were 29.4% of mothers who performed the towel flipping and followed the application on time.

Table 4. Practice of respiratory percussion technique (n = 194)

CONTENT	Right performance	
	n	%
Put the child in the right position	122	62.9
Respiratory percussion		
Use the hand to pinch the fingers, cup the palm	89	45.9
Hands pat evenly on the chest wall or back, so that the edges of the hands are in contact with the chest wall or back (if back) using only the force of the hands, working the wrist joints.	45	23.2
Gently pat, moving from the outside to the inside and from the bottom to the upper back	30	15.5
Clap continuously for 10 to 15 minutes. Note: Avoid patting too hard, avoid patting when the baby has just eaten.	44	22.7

CONTENT	Right performance	
	n	%
Vibration technique		
The vibrator’s hand is in close contact with the child’s chest and back	23	11.9
Fully flex your wings, forearms and push gently throughout as you exhale	16	8.2
Repeat 5 vibrations in one position on the ribcage.	17	8.8
After performing the technique, help the child return to a comfortable position.	29	14.9

The majority of mothers performed the correct posture when pacing the baby’s chest with the rate of 62.9%. There were 45.9% of mothers who did it correctly when pinching their fingers and cupping their palms before performing the technique. However, only 15.5% of mothers performed the correct technique when clapping their hands. The skill of respiratory percussion was still poor with low correct performance rates.

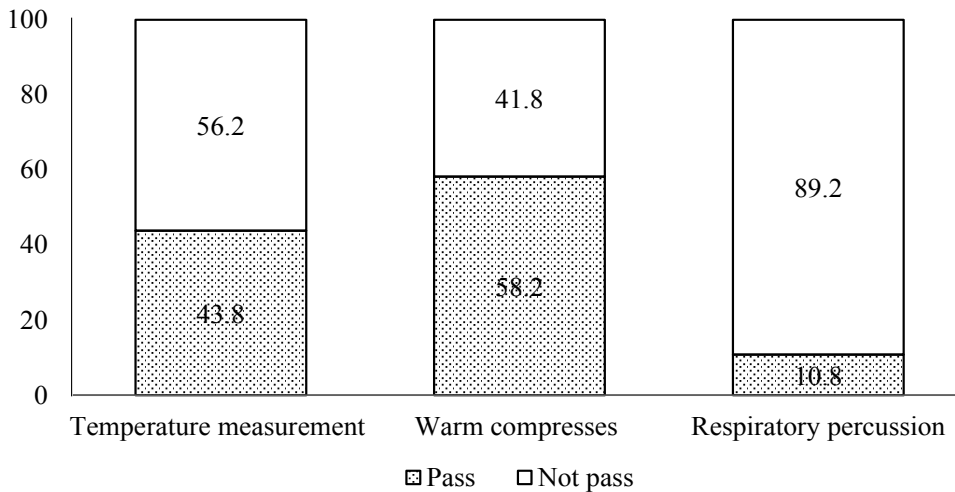


Figure 1. Classification of mothers’ child care practice skills

The skill of practicing warm compresses to reduce fever for children had the highest practice rate of 58.2%. The percentage of mothers with poor practice in temperature measurement skills was still high, accounting for 56.2%. Only 10.8% of mothers had successful practice of respiratory percussion technique for babies.

Table 5. Total score of mothers’ practical skills in ARI

Content	Mean ± SD	Min	Max
Temperature	6.3 ± 1.97	1	10
Warm compress to reduce fever for children	5.8 ± 1.86	0	9
Chest fluttering	2.1 ± 2.38	0	9
total score	14.3 ± 5.2	1	28

The highest average value of temperature measurement was $6.3 \pm 1.97/10$ points. The respiratory percussion technique had the lowest average score with $2.1 \pm 2.38/9$ points.

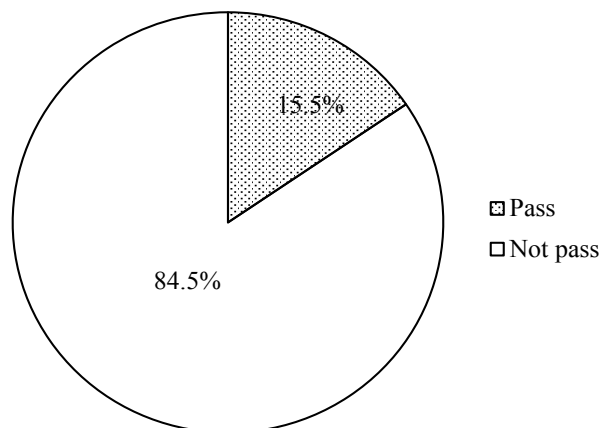


Figure 2. Total classification of mothers' 3 child care practice skills

Practical skills in caring for children with ARIs were still low with the percentage of practice achieving 3 skills of temperature measurement, fever-reducing warm compresses and respiratory percussion were at 15.5%.

4. DISCUSSION

Study to evaluate the practical skills of caring for children with ARIs (ARIs) of mothers with children under 5 years old in terms of temperature measurement, fever-reducing warm compresses and chest vibration. These were practical techniques commonly applied by mothers in home care. In particular, children with ARIs often had fever. Mercury thermometers were a reliable tool for monitoring the body temperature of the children. This type of thermometer are commonly used in hospitals and at home. However, the use of this thermometer to measure the child's temperature needs to follow the correct technical procedures to ensure safety and provide accurate measurement results. The analysis results showed that the average point value of temperature measurement practice was 6.3 ± 1.97 . Mothers practice good posture when measuring the baby's temperature, Most mothers knowed how to put the mercury

pot in the right armpit of the baby. However, the percentage of mothers who followed the correct technique of steps such as using a towel to dry the armpits, checking the thermometer, taking the time to measure the temperature and cleaning the thermometer after performing the technique was still low. This result reflects the errors that mothers often make when taking temperature for babies. Therefore, here are the points to keep in mind when instructing mothers to measure their baby's temperature at home. In addition to practicing temperature measurement to check and monitor the child's temperature, mothers need to provide fever-reducing care for sick children. Therefore, here are the points to keep in mind when instructing mothers to measure their baby's temperature at home. In addition to practicing temperature measurement to check and monitor the child's temperature, mothers need to provide fever-reducing care for the children. In addition to practicing temperature measurement to check and

monitor the child's temperature, mothers need to provide fever-reducing care for the children. Research by Patrícia indicated that the warm compress technique was more effective in reducing fever than other methods [12]. The technique of applying warm compresses to reduce fever for children achieved a low average score of $5.8 \pm 1.86/9$ points. In which, 49% of mothers performed correctly when checking the temperature of the water before giving it to their children. There were many mothers who did not know how to fold the towel and place the towel on the child's forehead with the correct technique with the rate of 37.1% and 67%, respectively. 70.6% of mothers did not apply the warm to the child on time. Evaluation of respiratory percussion technique showed that the majority of mothers performed the correct posture when pacing the baby's chest with a rate of 62.9%. There were 45.9% of mothers who did it correctly when pinching their fingers and cupping their palms before performing the technique. However, most mothers did not perform the right technique when clapping the hand movement and time of clapping. In particular, the technique of thoracic vibration was still poor with high rates of failure or improper implementation. In fact, when children had ARI, they often had a fever and cough with a lot of sputum. For young children, because they do not have the ability to actively cough and spit and have a sense of cooperation in treatment, when they have a respiratory disease, there is often a stagnation of sputum, which can lead to severe disease, making treatment difficult. Therefore, mothers who perform the chest vibration technique will help release sputum from the lungs, clearing the airways for children. This is a simple measure, helping to minimize complications, reduce time, and reduce treatment costs. In Vietnam, this

method is more and more applied due to its simplicity and efficiency. Research by author Hoang Thi Nguyet showed the effectively improve respiratory status before and after respiratory percussion in children with bronchitis - lung disease under 2 months of age. After respiratory percussion, the child's chest indrawn condition improved by 25.9%, the child's wheeze improved 44.8%, the tachypnea improved 43.1%, the SpO₂ index improved, improved 74.2% compared to before shaking. The difference was statistically significant with $p < 0.05$ [7]. The analysis results showed that mothers' practical skills in caring for children with ARIs were still low with an average total score of: $14.3 \pm 5.2/28$ points. In which, the technique of performing respiratory percussion reached the lowest value of $2.1 \pm 2.38/9$ points. This result is consistent with the evaluation of studies on the status of mothers' practice of taking care of children with ARI [13], [14]. Techniques for measuring temperature, applying warm compresses to reduce fever, and respiratory percussion for children techniques are quite simple, inexpensive and easy to apply at home when caring for sick children. Therefore, these are necessary skills that mothers need to master to take better care of their children. Health workers need to strengthen instruction in practical skills of caring for mothers, focusing on more specific instructions on the steps that mothers often make mistakes such as checking the thermometer, taking the temperature, checking the temperature. Apply water, how to place a towel at the place of application and perform respiratory percussion for the child with the correct technique.

5. CONCLUSION

Mother's practice skills in caring for children with ARI were still low with the

average score average of $14.3 \pm 5.2/28$ points and only 15.5% of mothers who achieved all 3 practice skills. The highest average score was the temperature measurement technique with a value of 6.3 ± 1.97 per 10 points and 43.8% of mothers who passed the practice procedure. The average score of warm compress technique to reduce fever was $5.8 \pm 1.86/9$ points and 58.2% of mothers who passed the practice procedure. The respiratory percussion technique had the lowest average score of 2.1 ± 2.38 per 9 points and 10.8% of mothers who passed the practice procedure.

Recommendation: Health workers should strengthen counseling and guidance for mothers on practical skills in caring for children with ARIs. In particular, practical skills to take care of children at home such as measuring temperature, applying warm compresses to reduce fever and percussion technique.

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