Vietnam Journal of Community Medicine, Vol. 66, English version No. 2, 154-158

# KNOWLEDGE AND PRACTICES OF HEALTH EDUCATION AMONG PEDIATRIC NURSES FOR FAMILY MEMBERS OF PATIENTS WITH RESPIRATORY SYNCYTIAL VIRUS INFECTION AT THE VINMEC HOSPITAL SYSTEM IN 2025

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Received: 29/10/2025
Revised: 29/11/2025; Accepted: 19/12/2025

## ABSTRACT

**Introduction:** Health education (HE) provided by pediatric nurses is a key intervention, given that Respiratory Syncytial Virus (RSV) constitutes a leading burden of disease in children. This study aims to describe pediatric nurses' knowledge and practices regarding HE for RSV disease.

**Subjects and Methods:** A descriptive cross-sectional survey was conducted from 04/2025 to 10/2025 on 89 pediatric nurses at seven hospitals within the Vinmec system.

**Results:** The study sample possessed high professional qualifications (88.8% University/ Postgraduate) and extensive experience (73.0% seniority > 5 years). 100% had received HE updates. The overall knowledge achievement rate was 61.8%, with a mean score of 22.7 ± 2.1; the "Disease prevention knowledge" domain had the lowest mean score (2.6 ± 0.6). The overall practice achievement rate was 61.8%, with a mean score of 50.2 ± 8.8. The skills "Listening" (4.7 ± 1.2) and "Encouraging" (4.6 ± 1.2) had the lowest mean scores. The Formal training group had a higher practice achievement rate (70.0%) than the Articulation (upgrading) group (44.8%).

**Conclusion:** The achievement rates for both knowledge and practice of HE on RSV among nurses were 61.8%. Despite a strong professional background, the study identified gaps in prevention knowledge and the practice of deep communication skills. The Formal group practiced more effectively than the Articulation group, indicating the need for specialized and focused training programs.

***Keywords:*** Knowledge, Practice, Health Education, Pediatric Nurses, Respiratory Syncytial Virus (RSV), Vinmec.

## 1. INTRODUCTION

Communication - Health Education (HE) is an inseparable part of the modern healthcare system, playing a pivotal role in improving public health through behavioral change. In the field of pediatrics, this role becomes exceptionally crucial. Pediatric nurses, as the most direct and frequent caregivers for pediatric patients and their families, not only execute medical orders but also serve as primary health educators. They are the essential bridge, translating medical knowledge into practical care guidelines, helping families understand the illness, adhere to treatment, and effectively prevent complications [1],[2].

Acute respiratory infection (ARI) is one of the leading disease burdens among children worldwide and in Vietnam, serving as the primary cause of hospitalization and mortality in children under 5 years old [3]. Among the causative agents, Respiratory Syncytial Virus (RSV) is the main culprit, particularly dangerous for young children. According to global statistics, RSV causes over 3 million hospitalizations and nearly 60,000 deaths annually in children under 5. RSV is the leading cause of bronchiolitis and pneumonia, accounting for over 80% of acute lower respiratory tract infections in children under 1 year old [3],[4]. In Vietnam, studies indicate that RSV accounts for 32-48% of community-acquired pneumonia cases in children under 2, and the RSV positivity rate at central

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pediatric hospitals can reach up to 50% during peak seasons, placing a heavy burden on the healthcare system [5].

To mitigate the disease burden of RSV, especially in the absence of specific antiviral treatments, HE activities for patients' families have become a vital public health intervention. However, in practice, a significant "gap" remains in the literature regarding studies that systematically and concurrently evaluate both the knowledge and practice aspects of HE among pediatric nurses themselves, particularly regarding RSV. This lack of foundational data hinders managers' ability to develop continuing education programs and standardize care processes. Therefore, a study investigating this situation within the Vinmec Hospital system, a private healthcare system that adheres to international standards, is essential. The research findings will provide authentic scientific evidence, serving as a basis for improving training quality, optimizing HE processes, and ultimately enhancing the comprehensive quality of care for pediatric patients with RSV. Stemming from these reasons and this urgency, we conducted the study: "Knowledge and practices of health education among pediatric nurses for family members of patients with respiratory infections due to Respiratory Syncytial Virus at the Vinmec Hospital system in 2025" with the objective: To describe the knowledge and practices of pediatric nurses regarding health education for family members of patients with acute respiratory infections caused by RSV at the study site.

## 2. SUBJECTS AND METHODS

### 2.1. Study Subjects

- The study subjects were pediatric nurses working full-time in the Pediatric Departments of hospitals within the Vinmec International General Hospital system.

- Inclusion criteria:

+ Nurses with a professional practice certificate and an official (full-time) labor contract.

+ Currently participating directly in the care of pediatric patients at the Pediatric Department of one of the study hospitals.

+ Minimum of 06 months of work experience in the department (as of the study period).

+ Voluntarily agreed to participate in the study.

- Exclusion criteria:

+ Nurses in management roles (Head Nurse, Deputy Head) are not directly involved in patient care.

+ Nurses in probationary periods, apprenticeships, or on long-term leave (maternity, sick leave, etc.) during the study period.

### 2.2. Study Location and Time

- Location: The Pediatric Departments of 07 hospitals within the Vinmec International General Hospital system, including: Vinmec Times City, Vinmec Smart City, Vinmec Central Park, Vinmec Da Nang, Vinmec Nha Trang, Vinmec Phu Quoc, and Vinmec Dong Bac.

- Time: From April 2025 to October 2025.

### 2.3. Research Methods

#### *2.3.1. Study Design*

A cross-sectional descriptive study design was used.

#### *2.3.2. Sample Size and Sampling Method*

The study surveyed the entire population of pediatric nurses who met the inclusion criteria at the 07 study sites during the data collection period. In reality, we included 89 nurses who met the selection criteria.

#### *2.3.3. Variables*

- Independent variables: Included demographic information (age, gender, professional qualifications, etc.) and information on the nurses' HE training (HE knowledge updates, HE implementation status, etc.).

- Dependent variables: HE knowledge of nurses (achieved and not achieved) and HE practices of nurses (achieved and not achieved).

#### *2.3.4. Study Procedure*

After approval from the Ethics Committee of the Vinmec Health System, the research team contacted the leadership of the Pediatric Departments at the hospitals. Researchers were trained on the study's purpose, content, and data collection procedures. Nurses meeting the inclusion criteria were clearly informed about the study, signed consent forms, and given a self-administered questionnaire (coded) to ensure anonymity.

#### *2.3.5. Assessment Criteria*

The study used an information collection method consisting of a pre-designed questionnaire and an observation checklist of nursing practice. This toolset was developed in 03 main parts: General information of the nurse (10 items), nurse's HE knowledge for patient families (20 items), and an observation checklist of the nurse's HE practices (30 items). The toolset was adapted from the study by Phan Thi Dung et al., with the tool's Cronbach's Alpha index reaching 0.885 [6].

- For knowledge: Question 1, selecting the correct answer, received 1 point; multiple-choice questions received 1 point for each correct option. The maximum total score for this section was 32 points. Nurses were assessed as having "achieved" knowledge if they scored 23 points or more.

- For practice: A 3-level scale was used: "Yes (correct, complete)" received 2 points; "Yes (incorrect, incomplete)" received 1 point; "No" received 0 points. The total score ranged from 0 to 60. Nurses were assessed as having "achieved" practice if their total score was 48 or more.

#### *2.3.6. Data Analysis*

Data were collected, synthesized, and processed using SPSS 22.0 software.

For descriptive statistics: Frequencies (n), percentages (%); Mean ± SD for variables following a normal

distribution; Median (Interquartile Range) for variables not following a normal distribution.

#### 2.3.8. Ethics

The Ethics Committee in Biomedical Research of the Vinmec Health System approved the study. All study subjects were clearly informed of the purpose and procedures, ensuring participation was voluntary. All collected information was coded, kept confidential, and used only for the study's purpose.

## 3. RESULTS

**Table 1. General characteristics of nurses (n=89)**

| Characteristics | Frequency | Percentage (%) |
|---|---|---|
| **Age group** | | |
| < 30 years | 22 | 24.7 |
| ≥ 30 years | 67 | 75.3 |
| **Gender** | | |
| Male | 1 | 1.1 |
| Female | 88 | 98.9 |
| **Professional qualification** | | |
| College | 10 | 11.2 |
| University | 70 | 78.7 |
| Postgraduate | 9 | 10.1 |
| **Training type** | | |
| Formal | 60 | 67.4 |
| Articulation | 29 | 32.6 |
| **Work experience** | | |
| < 1 year | 9 | 10.1 |
| 1 to < 5 years | 15 | 16.9 |
| > 5 years | 65 | 73.0 |
| **Daily patient load** | | |
| 1-5 patients | 34 | 38.2 |
| 6-10 patients | 53 | 59.6 |
| > 10 patients | 2 | 2.2 |
| **Received HE updates** | | |
| Yes | 89 | 100 |
| No | 0 | 0.0 |

Table 1 describes the characteristics of the 89 nurses participating in the study. The subjects were predominantly female (98.9%) and aged 30 or older (75.3%). Regarding professional qualifications, the majority held a university degree (78.7%) and were trained through a formal program (67.4%). Most nurses had over 5 years of work experience (73.0%). The most common daily patient care load was 6-10 patients (59.6%). All (100%) of the study subjects reported having received updates on HE knowledge.

**Table 2. Mean knowledge scores in HE domains (n=89)**

| Knowledge domain | $\bar{X}$ ± SD | Min | Max |
|---|---|---|---|
| General disease knowledge | 6.9 ± 1.0 | 3 | 8 |
| Clinical & subclinical knowledge | 6.8 ± 1.0 | 3 | 9 |
| Intervention and care knowledge | 6.4 ± 0.8 | 4 | 7 |
| Disease prevention knowledge | 2.6 ± 0.6 | 1 | 3 |
| Total knowledge score | 22.7 ± 2.1 | 15 | 27 |

The results in Table 2 show that the mean total knowledge score of the nurses was 22.7 (SD=2.1), with scores ranging from 15 to 27. When examining specific domains, the highest mean scores were in "General disease knowledge" (6.9 ± 1.0) and "Clinical & subclinical knowledge" (6.8 ± 1.0). The "Disease prevention knowledge" domain had a mean score of 2.6 ± 0.6.

**Table 3.3. Assessment of HE knowledge by training type**

| HE Knowledge Assessment | | | | | |
|---|---|---|---|---|---|
| Formal (n=60) | | Articulation (n=29) | | Total (n=89) | |
| n | % | n | % | n | % |
| **Achieved** | | | | | |
| 38 | 63.3 | 17 | 58.6 | 55 | 61.8 |
| **Not achieved** | | | | | |
| 22 | 36.7 | 12 | 41.4 | 34 | 38.2 |

Table 3 presents the classification rates for HE knowledge. The overall knowledge achievement rate for the entire sample was 61.8%, while 38.2% were at the "Not achieved" level. When analyzed by training type, the achievement rate in the formal training group was 63.3%, and in the articulation (upgrading) group, it was 58.6%.

**Table 4. Mean practice scores in HE domains (n=89)**

| Practice domain | $\bar{X}$ ± SD | Min | Max |
|---|---|---|---|
| Building rapport with patients | 5.8 ± 0.6 | 3 | 6 |
| Patient observation | 7.2 ± 1.2 | 4 | 8 |
| Listening | 4.7 ± 1.2 | 2 | 6 |
| Asking questions | 1.,3 ± 3.3 | 5 | 16 |
| Explaining | 10.6 ± 21 | 2 | 12 |
| Using HE materials | 5.0 ± 1.5 | 0 | 6 |
| Encouraging, motivating, praising | 4.6 ± 1.2 | 2 | 6 |
| Total practice score | 50.2 ± 8.8 | 29 | 60 |

The results in Table 3.4 show that the mean total practice score of the nurses was 50.2 (SD=8.8), on a 60-point scale

(Min=29, Max=60). Among the seven practice domains, "Building rapport with patients" (5.8 ± 0.6) and "Patient observation" (7.2 ± 1.2) achieved high mean scores. The domains "Listening" (4.7 ± 1.2) and "Encouraging, motivating, praising" (4.6 ± 1.2) had lower mean scores.

**Table 5. Assessment of HE practices by training type**

| HE Practice Assessment | | | | | |
|---|---|---|---|---|---|
| Formal (n=60) | | Articulation (n=29) | | Total (n=89) | |
| n | % | n | % | n | % |
| Achieved | | | | | |
| 42 | 70.0 | 13 | 44.8 | 55 | 61.8 |
| Not achieved | | | | | |
| 18 | 30.0 | 16 | 55.2 | 34 | 38.2 |

Table 5 shows that the overall HE practices achievement rate ("Achieved") was 61.8%. This rate was 70.0% in the formal training group, while in the articulation group, it was 44.8%.

## 4. DISCUSSION

In our study of 89 nurses, we observed common characteristics of high experience and educational levels, with 73.0% of nurses having over 5 years of seniority and 88.8% holding University degrees or higher. In terms of experience, our sample is similar to that of Le Van Hoc et al. (2021) (mean seniority 8.77 years) [7] and has higher experience than the sample of Phan Thi Dung and Nguyen Viet Tien (2022) (73.3% under 30 years old) [6]. Regarding qualifications, the 88.8% University/ Postgraduate rate is significantly higher than the study at Thien An Obstetrics and Gynecology Hospital (33.3% University) [6]. High seniority and education are favorable factors, as previous studies (Trinh Thi Tuyết et al., 2022; Lipponen, 2006) indicate that they are associated with better HE knowledge [8],[9].

A key factor is that 100% of nurses had received HE updates, which is higher than at Nhan Ai Hospital (89.4%) (Le Van Hoc et al., 2021) [7]. Training is highly significant, as studies by Trinh Thi Tuyet et al. (2022) (OR=13.1) [8] and Nguyen Tat Thang (2021) (OR=5.1) [10], both affirm that training increases the likelihood of achieving knowledge. However, workload (59.6% caring for 6-10 patients/day) is a potential barrier. This was pointed out by Trinh Thi Tuyet et al. (2022), where caring for many patients was associated with lower knowledge achievement (OR=3.4), possibly due to a lack of time to practice HE [8].

Our research results show that nurses have a solid foundation of professional knowledge (mean score: 22.7/32), especially in content related to "Intervention and care" (6.4/7). Direct comparison is limited due to methodological differences; our study focused on professional content (pathology), whereas the studies by Phan Thi Dung and Nguyen Viet Tien (2022) [6] or Trinh Thi Tuyet et al. (2022) [8] focused on knowledge of HE skills (such as listening, asking questions). However, a similarity can be observed: nurses often master basic skills/knowledge (like listening or clinical interventions) but are weaker in more complex areas. In our study, "Disease prevention knowledge" (2.6/3) had the lowest mean score, suggesting this content needs to be emphasized in training.

Our study recorded the overall HE knowledge achievement rate among nurses at 61.8%. Analysis also showed that the Formal training group had a higher achievement rate (63.3%) than the Articulation group (58.6%).

This 61.8% rate is considerably lower than the study by Ha Thi Lien et al. (2023) at Ha Dong General Hospital (89%) [11] and Le Van Hoc et al. (2021) at Nhan Ai Hospital (90.4%) [7]. The trend of the Formal group having higher results supports the findings of Ha Thi Lien et al. (2023) (OR = 3.11 for University level and above) [11] and Lipponen (2006) [9] which suggested that higher education levels are associated with greater knowledge.

Furthermore, this result also presents a paradox: 100% of the sample had received knowledge updates, whereas studies by Trinh Thi Tuyet et al. (2022) (OR=13.1) [8] and Nguyen Tat Thang (2021) (OR=5.1) [10] both affirmed training as a powerful predictor of knowledge achievement. The "Achieved" rate of only 61.8% suggests that the content or quality of the current HE updates may not be sufficiently specialized to meet the specific RSV knowledge threshold set by this study.

The study results also show the mean HE practice score of nurses was 50.2 ± 8.8 (on a 60-point scale), equivalent to an 83.7% level. This score is significantly higher than in studies by Tran Thi Hang Nga et al. (2018) (66.8%) [12] or Nguyen Thai Quynh Chi et al. (2018) (62.5%) [13], but slightly lower than Le Van Hoc et al. (2021) (91.3%) [7].

This good practice result can be explained by the workforce's foundation of high qualifications, seniority, and a very high rate of HE training, which Nguyen Tat Thang's (2021) study affirmed as favorable factors [10].

Detailed analysis shows nurses performed very well in basic skills, such as "Building rapport" (96.7%), but were weaker in deep interaction skills, such as "Listening" (78.3%) and "Encouraging" (76.7%). This indicates a gap between knowledge and practice (Phan Thi Dung and Nguyen Viet Tien, 2022) [6] possibly due to workload and time constraints.

In assessing nurses' practice, we found that 61.8% achieved HE practice. Notably, this rate in the Formal group was 70.0%, significantly higher than the Articulation group (44.8%). This 61.8% rate is lower than Le Van Hoc et al. (2021) (91.3%) [7] but similar to Tran Thi Hang Nga et al. (2018) (66.8%) [12].

The discrepancy between the 61.8% achievement rate and the high mean practice score (83.7%) can be explained by our very strict "Achieved" threshold (>= 80%).

The most important finding is the difference between the Formal (70.0%) and Articulation (44.8%) groups. This supports the study by Ha Thi Lien et al. (2023) that formal, systematic training is related to better practice [11].

In summary, the 61.8% practice rate reflects a rigorous assessment threshold, and the type of training (Formal) is a clear influencing factor on HE practice ability.

## 5. CONCLUSION

The study found that 61.8% of nurses achieved knowledge and 61.8% achieved practice in HE regarding RSV. Despite a decent professional foundation (mean practice score 50.2/60), the study identified gaps: knowledge of "disease prevention" (mean score 2.6/3) and the practice of deep communication skills, such as "listening" (4.7) and "encouraging" (4.6), remain weak. The Formal group (70.0%) practices better than the Articulation group (44.8%). There is a need to strengthen specialized training on communication and prevention skills, especially for the articulation group.

## REFERENCES


[1] Pereira A. F., J. J. J. Escola, C. M. T. Almeida, et al. (2023). Health education provided by nurses to children and young people: parents' assessment. BMC Nurs, 22(1): 287.

[2] MacKay Lyndsay Jerusha, Una Chang, Elizabeth Kreiter, et al. (2024). Exploration of trust between pediatric nurses and children with a medical diagnosis and their caregivers on inpatient care units: A scoping review. Journal of Pediatric Nursing, 78: e1-e30.

[3] Du Y., R. Yan, X. Wu, et al. (2023). Global burden and trends of respiratory syncytial virus infection across different age groups from 1990 to 2019: A systematic analysis of the Global Burden of Disease 2019 Study. Int J Infect Dis, 135: 70-76.

[4] Kim Taeeun and Sang-Ho Choi (2024). Epidemiology and Disease Burden of Respiratory Syncytial Virus Infection in Adults. Infect Chemother, 56(1): 1-12.

[5] Do L. A. H., N. T. N. Le, S. Mahmud, et al. (2023). Impact and cost-effectiveness of strategies to prevent respiratory syncytial virus (RSV) disease in Vietnam: A modelling study. Vaccine, 41(46): 6782-6790.

[6] Phan Thi Dung and Nguyen Viet Tien (2022). Characteristics of knowledge and health education skills of nurses and midwives at Thien An Obstetrics and Gynecology Hospital. Journal of Disaster and Burn Medicine, 2: 47-57.

[7] Le Van Hoc, Tran Kim Anh, and Nguyen Duc Long (2021). Knowledge and practices of nurses in health education for patients at Nhan Ai Hospital, 2021. Vietnam Journal of Infection, 38(2): 94-101.

[8] Trinh Thi Tuyet, Tran Ngoc Luong, Nguyen Thi Minh Chinh et al. (2022). Status of health education knowledge among nurses and related factors at the National Hospital of Endocrinology in 2022. Journal of Nursing Science, 5(4): 191-200.

[9] Lipponen Kaija, Helvi Kyngäs and Maria Kääriäinen (2006). Surgical nurses' readiness for patient counselling. Journal of Orthopaedic Nursing, 10(4): 221-227.

[10] Nguyen Tat Thang and Tran Nhu Nguyen (2021). Status of knowledge on health communication and education among nurses in clinical departments at K Hospital. Vietnam Journal of Nursing, 36: 76–83.

[11] Ha Thi Lien, Pham Thi Thu Huong, Bui Thi Cham et al. (2023). Status of health education knowledge among nurses and related factors at Ha Dong General Hospital in 2023. Journal of Community Medicine, 66(10): 130-136.

[12] Tran Thi Hang Nga and Nguyen Thi Minh Chinh (2018). Evaluation of health education activities by nurses at Quang Tri Provincial General Hospital and related factors - 2018. Journal of Nursing Science, 1(3): 28-34.

[13] Nguyen Thai Quynh Chi and Phan Thi Anh Mai (2018). Evaluation of the implementation of counseling and health education tasks for patients in the Department of Internal Medicine - Cardiology - Geriatrics, Khanh Hoa Provincial General Hospital in 2018. Journal of Public Health, 3(2): 46-52.