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Maternal knowledge of childhood respiratory infection prevention following video education

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Abstract

Background: Maternal knowledge of childhood respiratory infection prevention is relevant to caregiving decisions and the use of health information in primary healthcare settings.
Purpose: To compare maternal knowledge scores regarding childhood acute respiratory infection (ARI) prevention before and after video-based health education.
Method: A one-group pretest–posttest study was conducted among 40 mothers of children aged 0–59 months recruited through purposive sampling at Community Health Center Kedaton, Bandar Lampung, Indonesia. Knowledge was assessed before and after a digital educational video covering ARI risk factors, symptoms, consequences, and prevention. Data were analysed using descriptive statistics and the Wilcoxon signed-rank test.
Results: The mean knowledge score increased from 8.15 ± 1.528 before the intervention to 14.85 ± 0.483 afterward, representing a mean increase of 6.70 points. The difference between paired scores was statistically significant ($Z = -5.539$, $p < 0.001$).
Conclusion: Maternal knowledge scores were higher after video-based education. The findings may inform supplementary health education for caregivers in primary healthcare settings. However, the study did not measure psychological well-being or caregiving confidence, and its uncontrolled design does not establish causality.

Keywords: Caregiving; Childhood Respiratory Infection; Health Education; Health Literacy; Maternal Knowledge.

INTRODUCTION

Childhood acute respiratory infections (ARI) remain an important concern in maternal and child healthcare. Mothers and other caregivers need to recognize respiratory symptoms, understand preventive measures, and identify situations that require professional medical assessment. Respiratory infections during early childhood may also have implications for longer-term respiratory health, as a systematic review reported associations between early childhood respiratory infections, pneumonia, and lung function later in life (Collaro et al., 2023). These concerns highlight the importance of accessible health information that helps caregivers understand childhood respiratory infections and their prevention.

Maternal knowledge is an important component of caregiver preparedness for childhood ARI prevention. Previous research has examined maternal knowledge, attitudes, and practices in caring for children with ARI, identifying areas in which caregivers may require additional information about symptoms, treatment, and appropriate care practices (Manh et al., 2023). Research conducted in Indonesia has also investigated maternal knowledge following health education on ARI prevention, demonstrating the continued relevance of caregiver education in community healthcare settings (Tunny et al., 2020; Salma et al., 2024). Other studies have explored educational approaches for improving maternal knowledge and attitudes concerning childhood

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respiratory infections, including booklet-based education and structured health education programmes (Joshy et al., 2018; Agustia & Lala, 2026; Sutopo et al., 2025). Together, these studies provide a basis for examining educational approaches that address mothers' informational needs regarding childhood ARI prevention.

Video-based health education offers one approach to presenting health information through visual and spoken explanations. Previous research has investigated video-assisted teaching for knowledge of respiratory infection management and prevention among parents of children under five years of age (Dharmarajlu et al., 2022). Educational videos have also been examined in relation to maternal attitudes toward pneumonia prevention, while research on educational videos and maternal self-efficacy has addressed other areas of maternal and child health (Wijayanti et al., 2025; Joventino et al., 2017). These studies provide relevant context for the use of video as an educational medium, although findings concerning attitudes or self-efficacy should not be interpreted as direct evidence of changes in maternal knowledge of ARI prevention. Research comparing video and booklet-based education has further highlighted the use of different media in maternal health education (Santia & Umar, 2021). However, the present study did not compare video education with other educational formats.

In addition to the choice of educational medium, the accessibility and clarity of health information are relevant to maternal health education. Research on maternal health literacy and digital interventions for parents caring for acutely ill children provides broader context for developing caregiver-oriented educational resources (Smith & Carroll, 2017; Carey et al., 2025). Evidence concerning digital interventions for infection prevention and control also indicates that digital resources have been investigated in household and community settings (Gold et al., 2021). Nevertheless, health literacy, caregiving confidence, and psychological well-being are distinct constructs and cannot be inferred from knowledge scores alone.

In the working area of Community Health Center Kedaton, Bandar Lampung, preliminary observations indicated a continuing burden of ARI among children under five and limited previous exposure to video-based ARI education among some mothers. These observations provided the local context for examining maternal knowledge following an educational session. Accordingly, this study aimed to compare maternal knowledge scores regarding childhood ARI prevention before and after video-based health education among mothers of children aged 0–59 months at Community Health Center Kedaton. The study focused specifically on knowledge scores and did not assess maternal psychological well-being, mental health, caregiving confidence, preventive behaviour, or subsequent childhood ARI outcomes.

RESEARCH METHOD

This study employed a quantitative approach using a pre-experimental one-group pretest–posttest design. Maternal knowledge regarding acute respiratory infection (ARI) prevention was measured before and after video-based health education in a single group without a control group. The study was conducted at Community Health Center Kedaton, Bandar Lampung, Indonesia, from December 26, 2025, to January 1, 2026.

The study population consisted of 496 mothers of children under five years of age recorded in the relevant service population. A total of 40 respondents were recruited through purposive sampling according to the study's inclusion and exclusion criteria. Eligible participants were mothers of children aged 0–59 months who visited Community Health Center Kedaton, were able to read and write and complete the questionnaire, provided informed consent, and were willing to participate in the video-based educational session. The exclusion criteria were incomplete pretest or posttest participation, conditions that interfered with questionnaire completion, or receipt of intensive ARI education during the preceding month.

The independent variable was video-based health education on ARI prevention, and the dependent variable was maternal knowledge regarding ARI prevention. The educational video covered the definition of ARI, its causes and risk factors, signs and symptoms, potential consequences, and preventive measures, including clean and healthy living behaviours. Maternal knowledge was assessed using a questionnaire administered before and after the educational session. A respondent characteristics form was also used to collect demographic information. The available study documentation did not provide sufficient details to report the

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questionnaire's number of items, scoring range, validity, or reliability; these properties therefore cannot be specified without confirmation from the study authors.

Data collection began with an explanation of the study objectives, procedures, potential benefits, and participation requirements. Eligible mothers who agreed to participate provided written informed consent. The pretest was administered to assess baseline knowledge, after which participants received the digital educational video on ARI prevention. The same knowledge questionnaire was administered following the intervention. Completed questionnaires were checked for completeness and consistency before analysis.

Univariate analysis was used to describe respondent characteristics and maternal knowledge scores before and after the educational session. The Shapiro–Wilk test was used to assess the distribution of pretest and posttest knowledge scores. Because the reported scores did not meet the normality criterion, the Wilcoxon signed-rank test was used to compare paired pretest and posttest scores. Statistical significance was set at $\alpha = 0.05$, with $p < 0.05$ considered statistically significant. The study documentation states that participants received an explanation of the research and provided informed consent. Participation was voluntary, and confidentiality and privacy were maintained during data collection and the handling of research data. Information confirming review and approval by a research ethics committee, including an approval number, was not available in the documentation provided for this revision. Accordingly, no formal ethics approval is claimed in this report.

RESEARCH RESULTS

Table 1. Characteristics of Respondents (N= 40)

Variable	Results
Age (n/%)(Mean±SD)(Range)(Year)	**(26.7±3.8)(20-40)**
20-30	33/82.5
31-40	7/17.5
Education (n/%)	
Junior High School	5/12.5
Senior High School	26/65.0
University	9/22.5
Occupation (n/%)	
Laborer	7/17.5
Farmer	14/35.0
Entrepreneur	12/30.0
Tailor	3/7.5
Civil Servant	4/10.0

Table 1 shows the characteristics of the 40 respondents. The mean age was 26.7 ± 3.8 years, with an age range of 20–40 years. Most respondents were aged 20–30 years (33/82.5%). Regarding education, the majority had completed senior high school (26/65.0%), followed by university education (9/22.5%) and junior high school (5/12.5%). In terms of occupation, most respondents were farmers (14/35.0%), followed by entrepreneurs (12/30.0%), laborers (7/17.5%), civil servants (4/10.0%), and tailors (3/7.5%).

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Table 2. Mean Maternal Knowledge Score

Variable	Minimum	Maximum	Mean	SD
Pretest	5	11	8.15	1.528
Posttest	13	15	14.85	0.483

Table 2 shows the mean maternal knowledge scores before and after the intervention. The mean pretest score was 8.15 ± 1.528, with scores ranging from 5 to 11. After the intervention, the mean score increased to 14.85 ± 0.483, with scores ranging from 13 to 15.

Table 3. Results of the Normality Test

Maternal Knowledge Level	Shapiro–Wilk		
	Statistic	df	Sig.
Pretest	0.937	40	0.028
Posttest	0.346	40	<.001

Table 3 presents the results of the Shapiro–Wilk normality test for maternal knowledge scores. The significance values for both the pretest ($p = 0.028$) and posttest ($p < 0.001$) were below 0.05, indicating that the data were not normally distributed. Therefore, a non-parametric statistical test was used to compare maternal knowledge scores before and after the intervention.

Table 4. Comparison of Maternal Knowledge Scores Before and After the Intervention

Measurement	Mean	SD	Range	Mean Difference	Z	P-value
Pretest	8.15	1.528	5-11	-	-	-
Posttest	14.85	0.483	13-15	6.7	-5.539	< 0.001

Table 4 shows the difference in maternal knowledge scores before and after the intervention. The mean score increased from 8.15 ± 1.528 at pretest to 14.85 ± 0.483 at posttest, with a mean difference of 6.70 points. The Wilcoxon signed-rank test showed a statistically significant difference between pretest and posttest maternal knowledge scores ($Z = -5.539$, $p < 0.001$).

DISCUSSION

This study identified a statistically significant difference between maternal knowledge scores before and after video-based health education. The mean score increased from 8.15 ± 1.528 before the session to 14.85 ± 0.483 afterward, representing a mean difference of 6.70 points ($Z = -5.539$, $p < 0.001$). These findings indicate that maternal knowledge scores were higher after the educational session; however, because the study used a one-group pretest–posttest design without a control group, the change cannot be attributed solely to the video intervention. The result is consistent in topic with previous investigations of video-assisted teaching for knowledge of respiratory infection management and prevention among parents of children under five (Dharmarajlu et al., 2022). It also complements studies examining maternal knowledge following health education for ARI prevention and video-assisted education for childhood respiratory infection prevention (Salma et al., 2024; Malla et al., 2026).

The findings can also be considered alongside studies using other educational formats. Research on booklet-based education has examined mothers' knowledge of home management of respiratory tract infections and knowledge and attitudes concerning childhood ARI (Joshy et al., 2018; Agustia et al., 2026). Research comparing booklet and video media has focused on mothers' knowledge of ARI prevention, while audiovisual media have also been compared with leaflets in education about childhood

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diphtheria (Santia & Umar, 2021; Hidayat et al., 2025). These studies provide relevant context for the use of different educational media, but the present study did not compare video education with a booklet, leaflet, or usual care. Therefore, it cannot establish that video is superior to other educational approaches. Research on video-based education for pneumonia prevention has also examined maternal attitudes, which are a separate outcome from the knowledge scores assessed in this study (Wijayanti et al., 2025).

Maternal knowledge is relevant to caregiving because parents need to interpret health information and understand recommendations for preventing and managing childhood illness. Observational research has examined mothers' knowledge, attitudes, and practices during care of children with ARI, as well as the association between maternal knowledge and childhood ARI (Manh et al., 2023). These findings provide a rationale for health education that addresses mothers' informational needs. Nevertheless, a higher knowledge score does not necessarily demonstrate that a mother changes her caregiving practices or that childhood ARI incidence decreases. The present study did not measure these outcomes, and its findings should be interpreted as evidence of a difference in knowledge scores rather than evidence of changes in health behaviour or clinical outcomes. Broader nursing education research and studies of maternal health literacy can help contextualize the importance of accessible health information, but they do not replace direct assessment of the outcomes of interest (Ali et al., 2025; Prawesti et al., 2018).

Digital education may provide an additional means of communicating health information to caregivers. A systematic review has examined digital interventions designed to support parents caring for acutely ill children at home, while another review assessed digital interventions for household and community infection prevention and control (Carey et al., 2025; Gold et al., 2021). Such work supports consideration of digital resources as part of broader health-education strategies, although the effectiveness of any particular resource depends on its content, audience, accessibility, and implementation. Evidence on video education for maternal self-efficacy in preventing early childhood diarrhoea further illustrates that video interventions have been studied in other areas of maternal and child health, but self-efficacy related to diarrhoea prevention is not equivalent to knowledge of ARI prevention (Joventino et al., 2017). Similarly, the wider concept of maternal health literacy can inform the design of understandable educational materials, but literacy itself was not measured in this study (Smith & Carroll, 2017).

For community nursing practice, video-based education may be considered a supplementary resource for communicating childhood ARI-prevention information to mothers. It can be combined with direct counselling, opportunities to ask questions, and guidance on recognizing symptoms that require professional assessment. Health education studies conducted in community settings have addressed mothers' knowledge of ARI prevention, supporting the relevance of caregiver-oriented information within primary healthcare services (Tunny et al., 2020; Salma et al., 2024; Sutopo et al., 2025). Clinical guidance for severe acute respiratory infections may be relevant when discussing the importance of appropriate assessment and management of serious respiratory illness, but guidance specific to suspected COVID-19 should not be treated as direct evidence for the effectiveness of maternal video education (World Health Organization, 2020). Further research is needed to determine whether knowledge gains are retained and whether they are associated with changes in preventive practices or healthcare-seeking decisions.

The study also has implications for how caregiving and psychosocial context should be interpreted. Research on maternal health literacy and maternal self-efficacy suggests that health information and caregiver-related outcomes are relevant areas of investigation, but these constructs should be distinguished from knowledge (Smith & Carroll, 2017; Joventino et al., 2017). The present study did not measure anxiety, stress, psychological well-being, caregiving confidence, or family support. It therefore cannot determine whether the observed knowledge-score difference was accompanied by changes in maternal psychological experiences. Future studies could examine these outcomes using validated instruments alongside knowledge assessments, while considering family support and access to healthcare as potentially relevant contextual factors.

Several limitations should be considered when interpreting the findings. The one-group pretest–

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posttest design did not include a control group; therefore, testing effects, exposure to other information, and other uncontrolled influences cannot be excluded. Purposive sampling of 40 mothers from one healthcare setting also limits generalizability. Knowledge was assessed after the educational session, and long-term retention was not examined. The study did not assess maternal anxiety, stress, psychological well-being, caregiving confidence, family support, subsequent preventive behaviour, or childhood ARI outcomes. Consequently, no conclusions can be drawn about mental health outcomes, sustained behaviour change, or the causal effectiveness of the video. Future controlled studies could compare video-based education with other educational formats and include follow-up assessments of knowledge retention, preventive practices, and relevant caregiver outcomes.

CONCLUSION

Maternal knowledge scores regarding childhood ARI prevention were higher after video-based health education, increasing from a mean of 8.15 to 14.85, with a mean difference of 6.70 points ($Z = -5.539$, $p < 0.001$). Video-based education may serve as a supplementary resource for caregiver-oriented health education in primary healthcare settings. However, the uncontrolled design limits causal interpretation, and the study did not assess maternal mental health, psychological well-being, or subsequent preventive behaviour. Further research should examine whether changes in knowledge are sustained and how caregiver education relates to behavioural and psychosocial outcomes.

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