

Effectiveness of Educational Videos in Improving Mothers' Attitudes Toward Pneumonia Prevention in Toddlers

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ABSTRACT

Introduction: Pneumonia is one of the leading causes of morbidity and mortality among children under five years old, particularly in developing countries. Mothers play a crucial role in early prevention efforts through improved knowledge and appropriate attitudes. Innovative health education media, such as educational videos, have the potential to enhance mothers' understanding and attitudes toward pneumonia prevention.

Objective: This study aims to determine the effectiveness of an educational video on pneumonia in improving mothers' attitudes toward pneumonia prevention among children under five years old.

Methods: This research employed a quasi-experimental design with a *pretest-posttest with control group* approach. The respondents were mothers of children under five, divided into intervention and control groups. The intervention group received structured pneumonia prevention education through an educational video, while the control group received conventional health counseling. Mothers' attitudes were measured using a validated questionnaire administered before and after the intervention. Data were analyzed using paired *t*-tests and independent *t*-tests to assess differences in attitude scores before and after the intervention.

Results: The findings revealed a significant improvement in mothers' attitude scores toward pneumonia prevention in the group that received the educational video, while no significant change was observed in the control group. After the intervention, mothers in the intervention group demonstrated more positive attitudes compared to those in the control group. The mean difference in attitude scores between the two groups after the intervention showed a *p*-value of 0.002. Statistical analysis indicated a significant difference in mothers' attitudes toward pneumonia prevention between the intervention and control groups after the educational intervention ($p < 0.05$).

Conclusion: Health educational videos are proven effective in improving mothers' attitudes toward pneumonia prevention in children under five. This method can serve as an innovative strategy in public health promotion to strengthen pneumonia prevention efforts at the family level.

Keywords: pneumonia, educational video, mothers' attitudes, prevention, children under five

INTRODUCTION

Childhood is a period characterized by rapid organ maturation and motor development, requiring optimal environmental support. Optimizing the developmental environment during this stage serves as a key investment in determining a child's future quality and productivity. During childhood, susceptibility to infectious diseases is high because viruses and bacteria can easily enter the body and affect the immune system (Putri et al., 2025). Achieving optimal health during childhood is a fundamental right for every child born across the world. Children with poor health conditions are more vulnerable to infectious diseases, including respiratory infections such as pneumonia, which is caused by viruses or bacteria (Yantari, 2019).

The challenges in preventing and controlling *Mycoplasma pneumoniae* infection are complex, particularly due to significant gaps in understanding the family's role in managing the health of infected children. Family members, who often serve as the first line of defense, play a crucial role in early detection, treatment adherence, and the overall prognosis of pediatric patients (Kajungu et al., 2023). Family education thus plays an essential role in the control and prevention of *M. pneumoniae* infection (Liang et al., 2025), especially within households and among children, where close contact facilitates transmission (Zhuge et al., 2018).

In Indonesia, pneumonia remains a leading cause of death among children under five. In 2018, an estimated 19,000 children died from pneumonia. Global estimates indicate that approximately 71 children in Indonesia contract pneumonia every hour (Ministry of Health of the Republic of Indonesia, 2021). The detection and management of pneumonia cases among children under five in Central Java reached 81,616 cases (63.7%) in 2024, showing an increase compared to 2023, which recorded 41% (Central Java Health Office, 2024).

A growing body of research has demonstrated that audiovisual media are effective in improving health knowledge, attitudes, and behaviors because they can convey information in a more engaging and interactive manner. However, studies that specifically examine the effectiveness of educational videos in influencing mothers' attitudes toward pneumonia prevention in children under five remain limited (Murphy et al., 2024).

Therefore, this study aims to determine the effectiveness of pneumonia educational videos in influencing mothers' attitudes toward pneumonia prevention among children under five years old. The results of this study are expected to serve as a scientific basis for healthcare professionals and policymakers in designing innovative, technology-based health promotion strategies for pneumonia prevention at both family and community levels.

MATERIALS AND METHODS

This study employed a quasi-experimental design with a *pretest–posttest with control group* approach. This design was used to evaluate the effectiveness of an educational video on pneumonia in changing mothers' attitudes toward pneumonia prevention in children under five, both before and after the intervention, and to compare the results with those of the control group.

The study population consisted of all mothers with children under five years old residing in Lerep Village, Semarang Regency. The sampling technique used was *purposive sampling* with the following inclusion criteria: mothers who have children under five, are able to read and write, and are willing to participate as respondents. The exclusion criteria were mothers currently enrolled in a similar health education program or those with children who have a history of chronic lung disease. The sample size was determined using the formula for comparing two means, with a 95% confidence level and 80% power, resulting in a total of 40 participants — 20 in the intervention group and 20 in the control group.

The intervention group received a 10-minute educational video on pneumonia containing information about the definition, early signs and symptoms, risk factors, prevention strategies, and the importance of seeking early medical care. The video was presented in Indonesian with simple visual

illustrations and narration to enhance comprehension. The control group received a printed leaflet on pneumonia prevention in children under five.

The instrument used in this study was a validated questionnaire assessing mothers' attitudes toward pneumonia prevention, which had previously undergone validity and reliability testing (Cronbach's $\alpha > 0.7$). The questionnaire consisted of several statements measured using a Likert scale to assess respondents' agreement with various aspects of pneumonia prevention attitudes. The study obtained ethical clearance under approval number 674/KEP/EC/UNW/2025.

Data collection was conducted in three stages: Pretest : Mothers in both groups completed the attitude questionnaire on pneumonia prevention before the intervention. The intervention group watched the pneumonia educational video for approximately 15 minutes. Posttest: Both groups completed the questionnaire again after the intervention to assess changes in attitudes.

Data analysis involved testing for normality using the *Shapiro-Wilk test* with a p -value > 0.05 indicating normal distribution. Univariate analysis was used to describe respondents' characteristics, while bivariate analysis employed the *paired t-test* to examine changes in attitudes before and after the intervention within each group, and the *independent t-test* to compare differences in attitude score changes between the intervention and control groups. The level of significance was set at $p < 0.05$.

RESULTS

1. The characteristics of respondents in this study are as follows:

Table 1. Frequency Distribution of Respondent Characteristics (n = 40)

Variabel	Characteristics	Total	Percentage
Mother's Age	20-40	26	65
	41-60	14	35
	Total	40	100
Education	Elementary School	2	5
	Junior High School	8	20
	Senior High School	17	42,5
	Bachelor's Degree	13	32,5
Child's Age	0-3 years	26	65
	3-5 years	14	35
	Total	40	100
Child's Gender	Male	15	37,5
	Female	25	62,5
Total		40	100

The characteristics of respondents based on maternal age showed that the majority were between 20–40 years old, accounting for 26 respondents (65%). Most mothers had a senior high school education, with 17 respondents (42.5%). Regarding the characteristics of the children under five, the majority were aged 0–3 years, totaling 26 respondents (65%), and female children were predominant, comprising 25 respondents (62.5%).

2. Overview of Mothers' Attitudes Toward Pneumonia Prevention in Children Under Five

Table 2. Overview of Mothers' Attitudes Toward Pneumonia Prevention in Children Under Five

Variable	Group	Phase	Mean	SD	Min - max
Mothers' Attitude	Control group	Before	19,05	2,70	15 – 24
		After	19,70	2,36	16-24
	Intervention group	Before	18,85	2,96	12-24
		After	21,75	2,44	16-26

Table 2 shows the mean scores of mothers' attitudes toward pneumonia prevention in children under five before and after the intervention. In the control group, the mean attitude score before the intervention was 19.05 (SD = 2.70; 95% CI: 15–24), which increased slightly after the intervention to 19.70 (SD = 2.36; 95% CI: 16–24). In the intervention group, the mean attitude score before the intervention was 18.85 (SD = 2.96; 95% CI: 12–24), and it increased notably after the educational intervention to 21.75 (SD = 2.44; 95% CI: 16–26).

3. Description of Data Normality Covering Mothers' Attitude Scores Toward Pneumonia Prevention Before and After the Intervention in Both Control and Intervention Groups

Table 3. Data Normality Test

Variable	Group	Phase	Mean	SD	p-value	Decision
Mothers' Attitudes Toward Pneumonia Prevention	Control group	Before	19,05	2,70	0,168	<i>normal</i>
		After	19,70	2,36	0,345	
	Intervention group	Before	18,85	2,96	0,590	<i>normal</i>
		After	21,75	2,44	0,060	

The description of data normality in Table 3 indicates that mothers' attitude scores toward pneumonia prevention in children under five, both before and after the educational intervention in the control and intervention groups, were normally distributed (p-value > 0.05). Therefore, the paired t-test was appropriately used as a parametric test in this bivariate analysis.

4. Bivariate Analysis

a. Differences in Mothers' Attitudes Toward Pneumonia Prevention Before and After the Educational Intervention in the Control and Intervention Groups

Table 4. Differences in Mothers' Attitudes Toward Pneumonia Prevention Before and After the Educational Intervention in the Control and Intervention Groups

Variable	Group	Phase	Mean	SD	Mean Difference (95%CI)	p-value
Mothers' Attitudes Toward Pneumonia Prevention	Control Group	Before	19,05	2,70	-0,650	0,001
		After	19,70	2,36		
	Intervention Group	Before	18,85	2,96	-2,900	0,0001
		After	21,75	2,44		

Table 4 shows that the mean score of mothers' attitudes toward pneumonia prevention in the control group before the intervention was 19.05 (SD = 2.70), while after the intervention it increased slightly to 19.70 (SD = 2.36). The mean difference in the control group was -0.65, with a p-value of 0.001. Based on the analysis, there was a significant difference in mothers' attitudes before and after the intervention in the control group ($p < 0.05$).

Table 4 also shows that the mean score of mothers' attitudes toward pneumonia prevention in the intervention group before the educational session was 18.85 (SD = 2.96), and it increased to 21.75 (SD = 2.44) after the intervention. The mean difference in the intervention group was 2.90, with a p-value of 0.0001. The results indicate a significant difference in mothers' attitudes toward pneumonia prevention before and after the educational intervention in the intervention group ($p < 0.05$).

b. Differences in Mothers' Attitudes Toward Pneumonia Prevention After the Educational Intervention Between the Control and Intervention Groups

Table 5. Differences in Mothers' Attitudes Toward Pneumonia Prevention After the Educational Intervention Between the Control and Intervention Groups

Variable	Group	Mean	SD	Mean Difference (95%CI)	p-value
Mothers' Attitudes Toward Pneumonia Prevention	Kontrol group	19,70	2,36	-2,050	0,002
	Intervensi group	21,75	2,44		

Table 5 shows that the mean score of mothers' attitudes toward pneumonia prevention after the educational intervention in the control group was 19.70 (SD = 2.36), while in the intervention group, the mean score was 21.75 (SD = 2.44). The mean difference in mothers' attitude scores between the control and intervention groups after the intervention was -2.05, with a p-value of 0.002. Based on the analysis results, there was a significant difference in mothers' attitudes toward pneumonia prevention between the intervention and control groups after the educational intervention ($p < 0.05$). These findings indicate that the animated educational video on pneumonia prevention provided to the intervention group was effective in improving mothers' attitudes toward pneumonia prevention in children under five.

DISCUSSION

Based on the study results, most respondents were aged 20–40 years (65%), and the majority of them had a senior high school education (17 mothers; 42.5%). In the intervention group, the mean score of mothers' attitudes toward pneumonia prevention before the intervention was 18.85 (SD = 2.96; 95% CI: 12–24), which increased to 21.75 (SD = 2.44; 95% CI: 16–26) after receiving the educational intervention. The intervention group was provided with an animated educational video on pneumonia prevention, which effectively improved mothers' attitudes after viewing the video.

This finding is consistent with the study by Saing (2025), which demonstrated that the use of visual media such as videos and posters was effective in improving knowledge and changing mothers' attitudes toward stunting prevention. Attitude is defined as a feeling that arises in an individual toward an object, either before or after observing, experiencing, or engaging with that object (Nurfitriyani, 2023). Good knowledge and positive attitudes are associated with effective family health management in caring for children with acute respiratory infections (Yulianita et al., 2023). The mean difference in mothers' attitude scores in the intervention group was 2.90, with a p-

value of 0.0001, indicating a significant improvement in mothers' attitudes toward pneumonia prevention before and after the intervention ($p < 0.05$).

Parents often prefer animated videos over other educational formats because they are engaging and easy to understand. A study on educational materials for community-acquired pneumonia found that caregivers favored animated videos due to their attractive visuals and simple language (Murphy et al., 2024). Parental attitude is one of the key factors influencing pneumonia prevention efforts. Maintaining and enhancing a positive attitude is crucial for mothers in preventing pneumonia among children under five. Mothers with negative attitudes tend to show poorer preventive efforts compared to those with positive attitudes. Factors influencing preventive attitudes include smoking behavior, physical environment, maternal knowledge, and maternal health practices. A positive attitude toward pneumonia prevention is an important factor often correlated with good knowledge and effective preventive actions (Liang et al., 2025).

The results of this study indicate that providing health education through video media is effective in improving mothers' attitudes toward pneumonia prevention in young children. After the intervention, there was a significant increase in mothers' attitude scores, particularly in awareness of maintaining environmental hygiene, recognizing early signs of pneumonia, and engaging in preventive actions such as immunization and exclusive breastfeeding. These findings demonstrate that audiovisual media can serve as an efficient educational tool to influence attitudes and strengthen mothers' commitment to preventive health behaviors (Sari et al., 2019). Health education activities have generally been conducted through conventional methods such as direct counseling or printed media. These traditional approaches often fail to capture attention and have limitations in providing a deep understanding, particularly among communities with low health literacy levels. With the advancement of information technology, digital media such as educational videos have emerged as more effective alternatives for health promotion. Videos combine visual and auditory elements in an engaging way, making health messages easier to understand and remember (Wenxia et al., 2024).

Furthermore, the analysis revealed a significant difference in mothers' attitudes toward pneumonia prevention between the intervention and control groups after the educational intervention ($p\text{-value} = 0.002 < 0.05$). This result aligns with previous studies showing that video-based media can deliver health messages more engagingly and comprehensibly compared to conventional methods such as lectures or leaflets (Handayani & Suparman, 2023). The combination of visual and audio elements reinforces memory retention and improves comprehension, especially among populations with low health literacy. In addition, videos provide concrete examples through visual demonstrations, enabling mothers to easily replicate and apply preventive behaviors in their daily lives.

CONCLUSIONS

This study demonstrates that the use of educational video media is effective in improving mothers' attitudes toward pneumonia prevention in children under five. Educational videos are capable of delivering health messages in a more engaging, comprehensible, and memorable way through the combination of visual and audio elements. The findings revealed an increase in mothers' positive attitudes toward pneumonia prevention behaviors, such as maintaining environmental hygiene, providing exclusive breastfeeding, ensuring complete immunization, and being vigilant about early symptoms of the disease.

Video media has been proven to be an effective alternative to conventional health education methods, particularly in communities with varying levels of health literacy. Therefore, educational videos hold great potential as an innovative health promotion strategy at both the family and community levels.

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