

# MOTHER'S HEALTH EDUCATION TO PREVENT TODDLER'S ACUTE RESPIRATORY INFECTION IN MEDAN

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## Abstract

**Backgrounds:** Toddlers are a group that is vulnerable to health problems, and acute respiratory infections are a disease that often occurs. **Objective:** This research aims to analyze the effectiveness of health education in increasing the knowledge, attitudes, and behavior of mothers' toddlers in the care of acute respiratory tract infections. **Methods:** This research method uses a quasi-experimental design of a pre-test and post-test non-equivalent group with the control group. The research was conducted on 92 samples of 46 intervention group samples and 46 control group samples chosen randomly. Data collection was carried out by providing health education at a frequency of 3 times a week and analyzed using paired t-tests and independent t-tests. **Results:** The results of this study showed that there was a significant increase in the knowledge, attitudes, and behavior of mothers and toddlers in the care of acute respiratory tract infections after being given health education, with a significant value of 0.001. Educational discussions can increase the knowledge, awareness, and behavior of mothers of toddlers in treating upper respiratory tract infections. **Conclusion:** Mother's education for toddlers is effective in treating upper respiratory tract infections; health workers at community health centers can provide comprehensive health education.

**Keywords:** Acute Respiratory Infection; Education-Health; Mother's Toddler.

## INTRODUCTION

Toddler-aged children are very vulnerable to health problems, and one of the illnesses that often occurs in toddler-aged children is acute respiratory infections (Rudd, 2019). Children are more susceptible to acute respiratory infections because they do not yet have a perfect immune system (Saghir, 2017). In addition, acute respiratory infections are easily transmitted through saliva, blood, sneezes, and air. This disease is generally caused by bacteria, viruses, and various other microbes exacerbated by the rainy season, with the main symptoms being coughing and fever. Further symptoms arise if not treated promptly, namely shortness of breath and chest pain (Rudd, 2019).

The results of Basic Health Research (Ministry of Health of the Republic of Indonesia, 2020) show the number of deaths of children under five each year is 162,000 people (25.2%), and the number of children under five who die every day is 460 under five. The results of a household health survey in Indonesia show that acute respiratory infection is the second leading cause of death in children under five. The results of research by the Ministry of Health (2022), found that children under five in Indonesia experience acute respiratory infections relatively 4-6 times a year. The Case Fatality Rate in 2021 in the city of Medan is 2.47% and in 2022 it is 3.04%. The prevalence of children under five suffering from acute respiratory infection from year to year shows an increase, even though health promotion efforts have been made by the Ministry of Health, however, the number of morbidity among children under five caused by acute respiratory infection from year to year shows an increase (Samawati, 2024).

Mothers of toddlers are often given health education by the Ministry of Health using lecture methods and one-way communication, but mothers of toddlers find it difficult to understand the material provided because their education is still relatively low (Madu, YG, 2023). Integrated service cadres have never been given health education about the management of acute respiratory infections. The material provided cannot optimize the ability of mothers of toddlers to overcome the problem of acute respiratory infection in toddlers (Koofy, 2022). The health education methods provided by the Ministry of Health are ineffective, and there is no collaboration between health cadres for all groups with different education levels. The health education methods do not yet demonstrate two-way communication (Samaria, 2022).

Based on the problems above, researchers are interested in researching more deeply about the influence of education health towards increasing the knowledge, attitudes and behavior of mothers of toddlers in overcoming the problem of acute respiratory infection in Sei Kera Hulu Medan Perjuangan. The activities carried out are identifying children who have experienced acute respiratory infections in the last three months and assessing the ability of mothers of toddlers to carry out prevention and treatment of acute respiratory infections (Sethi, 2017). Assessing the mother's ability to carry out personal hygiene and cleanliness of the living environment and nutrition for children experiencing acute respiratory infection (Idris, 2023). Researchers provide health education on how to care for children under five who experience acute respiratory infections at home using existing resources in the community and adapting to community culture.

## **METHODOLOGY**

### **Research Design and Setting**

This research was quantitative study pretest and post-test quasi experimental design with the intervention and control group. The study carried out at two different place of mother's toddler in the Sei Kera district of Medan with the homogeneity of the population. This studied was conducted in June 2023 to December 2023.

### **Sample**

The population in this study were all mothers of toddlers in the Sei Kera Hulu sub-district, Medan. The research was conducted on 92 samples (46 intervention groups and 46 control group) were selected by simple random. The sample in this study were mothers of toddlers who were divided into two groups. Group one: the intervention group carried out health education. Group two: control group

### **Instrument**

The quantitative data collected was the average value of the pre-test and post-test results regarding the knowledge, attitudes and skills of mothers of toddlers who experienced acute respiratory infection. Apart from that, acute respiratory infection frequency measurements were also carried out in children under five. The data collection tools used were questionnaires, leaflets for health education. Data on age, gender, number of children in the family, economic status were collected through interviews using a questionnaire.

## **Intervention**

The intervention begins with measuring knowledge, attitudes and behavior. The intervention carried out is health education. Before health education is carried out, a pre-test is carried out first and a post-test is carried out after health education. After health education is carried out, final data is collected on knowledge, attitudes and behavior. The final intervention is collecting acute respiratory infection frequency data in the last 3 months.

## **Data Collection**

Based on the inclusion criteria, respondents were selected to identify their suitability to participate in this study. Informed consent was obtained before this research was conducted, and respondent were given an explanation about their voluntary participation without any pressure from other parties. Data collection was based on the intervention provisions carried out for 3 days a week for all respondents before and after the intervention.

This study was done by using a questionnaire. The intervention group received structured health education covering 3 aspects, namely: acut respiratory infection care, personal hygiene and environmental. Meanwhile, the control group continued to receive health care as usual. The post-test of data collection was carried out one month after the intervention.

All personal information obtained from data collection during research is kept confidential to protect the privacy and rights of respondents. Ethical measures were strictly maintained and adhered to throughout the research process to ensure the integrity and ethical soundness of the research

## **Data Analysis**

Data analysis carried out in this research was statistical analysis using a computerized system, this was to evaluate the impact of health education interventions on mother's toddlers' knowledge, attitude and practice scores regarding acut respiratory infection. There are several statistical tests used in this research, namely: the independent sample t-test was carried out to determine the comparison of the average scores of knowledge, attitudes and actions before and after health education in the intervention group versus the control group.

Then, a sample paired t-test was carried out to determine the comparison of the average scores of knowledge, attitudes and actions before and after health education in each intervention group and control group. Univariate descriptive statistics were used to present the frequency and percentage distribution of demographic data and respondent characteristics.

## **Ethical Consideration**

The involvement of mothers of toddlers in this research is very essential, so it is necessary to prepare a research ethics guarantee that protects respondents regarding ethical problems that may arise. Protection of respondents from ethical issues is obtained by obtaining ethical clearance from the Research Ethics Committee of the Faculty of Nursing, Universitas Sumatera Utara with the number 073/F.KEP/ETIK/2022.

## RESULTS AND DISCUSSION

The results of the study present the results of the equality test between the intervention and control groups, as well as the difference in mean scores pre-test and post-test in intervention and control group respondents after health education. Apart from that, there are differences in the average knowledge, attitudes, and behavior before and after training in dealing with acute respiratory infection problems for toddlers, as well as differences in the average knowledge, attitudes, and behavior between the intervention and control groups.

### Equality Test Results of Intervention Group and Control Group

**Table 1: Results of the Age Equality Test of Respondents and Respondents' Education Level in Medan (n=92)**

Number	Variable	Intervention (n=46)		Control (n=46)		P Value
		Total	Percent (%)	Total	Percent (%)	
1.	Age					0,179
	21-35	27	58	25	54	
	> 35	19	42	21	46	
2.	Educational					0,366
	Midle School	20	43	23	50	
	High School	21	45,6	17	37	
	Bachelor	5	11,4	6	13	

Table 1 shows that the mean age of respondents in the intervention group and control group is the same. This can be seen from the results of Leven's test, namely p value = 0.179 (>0.05). The results of the equality test on the respondent's education level show that there is equality between the intervention group and the control group. This can be seen from the results of Leven's test, namely p value 0.366 (> 0.05).

**Table 2: Results of Equivalence Test of Knowledge, Attitudes and Behavior of Respondents in Medan in (n=92)**

Number	Variable	Intervention (n=46)		Control (n=46)		P Value
		Mean	SD	Mean	SD	
1.	Knowledge	42,59	11,96	43,67	10,08	0,639
2.	Attitude	41,89	12,94	42,26	12,69	0,890
3	Behavior	40,72	12,18	41,52	10,82	0,739

Table 2 shows that the average knowledge of respondents about acute respiratory infection management in the intervention group is equivalent to that of the control group, which has the same equality.

This can be proven by p-value = 0.639 (> 0.05). The mean attitude of respondents regarding acute respiratory infection management in the intervention group was equivalent to that of the control group. This can be proven by the results of the Leven test p-value = 0.890 (> 0.05).

The mean behavior of respondents regarding acute respiratory infection management in the intervention group was equivalent to that of the control group. This can be proven by the results of the Leven test p-value = 0.739 (> 0.05). After conducting an equality test between the intervention group and the control group, health education was then carried out for the respondents. The results are presented below.

## Difference in Average Valuepre Test Andpost Test in The Intervention and Control Group Respondents after Health Education to Manage Acute Respiratory Infection

**Table 3: Difference in Mean Knowledge, Attitudes and Behavior of Respondents Before and After Health Education for acute respiratory infection Management in Medan (n=92)**

	Variable	Mean		Difference	SD	SE	P Value
		Before	After				
1.	Knowledge						
	Intervention	41,89	82,7	40,81	5,415	0,799	0,001
	Control	43,67	44,0	0,33	1,979	0,292	0,001
	Difference			40,48			
2.	Attitude						
	Intervention	41,89	81,35	39,46	3,178	0,469	0,001
	Control	42,26	42,74	0,02	10,951	1,615	0,001
	Difference			39,44			
3.	Behaviour						
	Intervention	40,72	80,37	41,09	6,432	0,954	0,001
	Control	41,52	41,6	0,08	9,779	1,442	0,001
	Difference			41,01			

Tables 3 that there is a difference in the mean of each respondent's knowledge, attitudes, and behavior regarding acute respiratory infection management in the intervention group compared to the control group ( $p\text{-value} = 0.001 < 0.05$ ) after health education for acute respiratory infection management was carried out. This means that there was an increase in knowledge, attitudes, and behavior in the intervention group after disaster management health education was carried out. This shows that the increase in knowledge, attitudes, and behavior was higher in the intervention group than in the control group after health education for managing acute respiratory infection was carried out.

## Frequency of Suffering from Acute Respiratory Infection in the Last 3 Months Toddlers after the Intervention

**Table 4: Frequency of suffering from acute respiratory infection in the last 3 months in the Intervention and Control Group in Medan (n=92)**

Variable	Before		After		P Value
	Total	%	Total	%	
Intervensi	4	8,6	42	91,4	0,01
Control	33	71,7	13	28,3	
Difference	29	63,1	29	63,1	

The analysis results in Table 4 show that there is a relationship between the frequency of suffering acute respiratory infection in toddlers after intervention in the intervention group. These results also show that the difference in the frequency of suffering from acute respiratory infections before and after the intervention is less in the intervention group than in the control group. The results of the analysis show  $p\text{-value} = 0.001 (<0.05)$ , meaning that there is a significant difference in the frequency of acute respiratory infections in the intervention group and the control group after health education was carried out.

The research results that were interpreted and discussed examined the influence of health education in overcoming the problem of acute respiratory tract infections. The

following will explain the influence of health education on knowledge, attitude, and behavior variables, which can ultimately overcome the problem of acute respiratory tract infections. The results of the study showed that knowledge about post-intervention acute respiratory infection problems was higher in the intervention group than in the control group. These results indicate an increase in knowledge about the problem of acute respiratory infection after health education was carried out.

The results of this research are in line with research by Khashaba, E (2024), which shows that from a total sample of 67 people, it is known that 95.6% of mothers of toddlers know about the problem of acute respiratory infections in toddlers. Previous data shows that 38.9% have not been able to overcome the problem of acute respiratory infection in children under five. This shows that the health education carried out can increase family knowledge by 56.7%.

The results of this research are in line with research conducted by Koofy, NM (2022), with the title Effectiveness of Health Education on Acute Respiratory Tract Infections Using

Media Booklet to increase knowledge of acute respiratory infection problems in mothers of toddlers. Before health education was carried out, a pretest was carried out to obtain a score of 54.1 and a post-test score of 71.56. The results of the study showed that after health education regarding the problem of acute respiratory infection, there was an increase in knowledge of 17.44 points. This shows that education about acute respiratory infections using booklets is effective in increasing knowledge about acute respiratory infections in mothers of children under five. The results of the difference analysis show that the difference in knowledge before and after health education has a p-value of 0.001 (<0.05). This means that there is a difference in knowledge about the problem of acute respiratory infection before and after health education.

The results of this study are in line with the results of Saghir, MA (2022), the title Analysis of Differences in Knowledge Levels of Mothers of Toddlers with Educational Interventions. The results of the study showed that before the health education intervention was carried out, family knowledge was in the poor 21 (58.3%), sufficient 15 (41.3%), and good 0 (0.0%) categories.

After educational intervention, family knowledge was in the poor 9 (25.0%), sufficient 17 (47.2%), and good 10 (27.8%) categories. This shows that there is an increase in knowledge in the good category; the amount of insufficient knowledge is getting smaller, and the amount of sufficient knowledge is also getting smaller. The results of this study show that education influences the level of family knowledge.

Idris, N (2023) said that health education is an effort to transform knowledge from a person to individuals, groups, and society. Health education is one way to increase a person's knowledge of the problem of acute respiratory infection. Health education is given to mothers of toddlers so that they are knowledgeable, willing, and able to overcome health problems and acute respiratory infections in toddlers. Health education about the problem of acute respiratory infection is counseling that is carried out continuously to assess the mother's ability to overcome the problem of acute respiratory infection.

According to Kierkegaard, A (2023), health education is defined as an effort to translate what is known about health into a desired behavior for individuals or society through the educational process. Counseling on acute respiratory infections can be provided for mothers of toddlers who want to maintain their children's health. Health education is an educational means to increase one's knowledge.

In a counseling session, the counselor and client analyze the problem and carry out problem-solving. Education about acute respiratory infections or health problems can be done through counseling or other methods, such as providing posters. Behavior can be changed by providing continuous health education.

According to Whright (2018), the aim of education on acute respiratory infection problems using a socialization approach is quite simple, namely providing the information the public needs regarding the acute respiratory infection problems they need. Society is seen as an intelligent society and does not need to be forced to do anything, but the approach to the problem of acute respiratory infection must remain active in health promotion.

The ultimate goal of health education is changes in human behavior that are carried out periodically. Health education is expected to provide an understanding of the importance of the problem of acute respiratory infection so that they want to behave and act by following the steps to overcome the problem of acute respiratory infection. Education and knowledge is an indirect factor that influences a person's behavior. The knowledge gained can be applied to families to avoid acute respiratory infections. The higher the education, the broader the knowledge.

According to researchers, health education is needed to increase client understanding and encourage clients to create solutions to their problems. Apart from that, health education about the problem of acute respiratory infections is also needed to change behavior. Behavior change requires great motivation and a supportive environment. The results of this research are in line with research conducted by Oresti, S (2024) entitled The Effect of Health Education on the Knowledge, attitudes and Behavior of Mothers of Children under Five, showing an increase in attitudes of 75% in the intervention group.

The results of the analysis showed that the control group experienced an increase in knowledge of 10%. The higher a person's level of knowledge, the better the development will be, so mothers who are knowledgeable will be more objective and open-minded in making decisions. Attitude changes are influenced by the extent to which the content of the communication or stimulus is noticed, understood, and accepted, resulting in a positive response.

The results of this study are in line with the results of Lifei, D (2024), showing that everyone is aware of the problem of acute respiratory infection (95.6%), but in its implementation, there are still many obstacles. Knowledge about the importance of acute respiratory infections, especially for children under five, appears to be quite good; this can be seen from the high level of concern for children under five, namely causing them to be in danger (70.3%).

Behavioral aspects related to health, the problem of acute respiratory infections, and the importance of toddler growth and development are quite high. This can be assessed from behavior regarding acute respiratory infections in toddlers.

The ultimate goal of health education is change in human behavior carried out educationally. According to Pender (2021), health education can change the behavior of people or society from unhealthy behavior to healthy behavior. According to Watson (2018), health education can change the behavior of people or society from unhealthy behavior to healthy behavior, including problem-solving behavior in toddlers.

## CONCLUSION

Knowledge, attitudes, and behavior of mothers of toddlers regarding acute respiratory infections were better in the intervention group than in the control group. There was an increase in the knowledge, attitudes, and behavior of mothers of toddlers regarding acute respiratory infections after being given health education.

It is recommended that the Health Service implement a disease prevention program against respiratory infection on an ongoing basis by involving community health center officers and health cadres and empowering mothers of toddlers. Furthermore, community health center nurses can provide nursing care for toddlers who experience acute respiratory infection by increasing the knowledge, attitudes, and behavior of mothers of toddlers.

### Credit Author Statement

The authors declare that they have no conflict of interests

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