The Effect of Video-Based Febrile Seizure Management Education on Knowledge of Families with Toddlers in Indonesia

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ABSTRACT
Febrile seizures pose a significant health concern in toddlers, and there is a need to improve family knowledge regarding the appropriate management of these seizures at home. This study aimed to investigate the effectiveness of video-based febrile seizure management education on knowledge of the family with toddlers. A quantitative pre-experimental design using a pre-test and post-test approach was employed. The research was conducted from April to August 2022. The study population consisted of families with toddlers who had a history of febrile seizures, and a consecutive sampling technique yielded a sample size of 15 participants. Data were collected using a modified Febrile Seizure First Aid Questionnaire with the Guttman scale. Univariate analysis was conducted to examine the central tendency of age, while gender, occupation, and education were presented as frequency distributions. Paired sample T-tests were used for bivariate analysis. The findings indicated that the average age of the respondents was 31.20 years, with 14 participants being female (93.3%). The majority of participants were unemployed (86.7%) and had completed high school education (80.0%). The pre-test knowledge score on febrile seizure management in toddlers was 8.67, which significantly increased to 14.73 in the post-test, with a P-value of 0.000 (<0.05). These results demonstrate the significant effect of video-based education on enhancing family knowledge of febrile seizure management in toddlers. This research recommends that nurses in public health centers integrate video-based educational programs to enhance knowledge and empower families in managing febrile seizures in toddlers.

INTRODUCTION
Fever is an irregular increase in body temperature above the normal range, caused by an imbalance between heat production and heat loss (Sodikin, 2012). A Febrile seizure is a seizure episode that occurs due to an elevated body temperature (rectal temperature above 38°C) resulting from an extracranial process without intracranial infection or other causes. Febrile seizures commonly occur in children between 6 months and 5 years of age, as their immune system is still developing and they are more susceptible...
Febrile seizure cases in children are estimated to be more than 21.65 million, with over 216,000 deaths reported. In Kuwait, there are 400 cases of febrile seizures among children aged 1 month to 13 years, and approximately 77% of these 400 children experience febrile seizures (Kristanto, 2017). The prevalence of febrile seizures in the United States and Western Europe ranges from 2% to 5% in children up to 5 years of age, with the peak incidence occurring between 12-18 months of age (Leung, Hon, & Leung, 2018). On the other hand, the incidence rates in Asia are recorded to be higher, such as in Japan with a 6-9% febrile seizure rate, 5-10% in India, and 14% in Guam, while China reports a rate of 0.5-1.5% (Tejani, 2018).

Based on data in Indonesia, febrile seizure cases are found in 2-4% of children aged 6 months to 5 years. Febrile seizures are most commonly observed in children between the ages of 1 and less than 2 years. Additionally, boys account for a higher percentage (66%) compared to girls (34%) (Susanti & Wahyudi, 2020). Data from Pekanbaru, specifically from the Inpatient Care of Tenayan Raya Public Health Center, which represents the highest visitation rate, revealed a total of 1814 sick toddlers, with 113 of them experiencing high fever that can trigger febrile seizures (Puskesmas Tenayan Pekanbaru, 2021).

The main cause of febrile seizures is the occurrence of convulsions in toddlers, often accompanied by a high body temperature and caused by infections outside the central nervous system. Improper management of febrile seizures can lead to disabilities, epilepsy, and even death (Faradila & Abdullah, 2020). The primary factors influencing the management of febrile seizures are knowledge and proper education. Having accurate knowledge and appropriate learning are essential foundations for handling febrile seizures (Ridha, 2014). Effective management of febrile seizures relies on accurate knowledge about the condition and requires education through both formal and informal channels (Dewi, Agustini & Wulansari, 2019).

According to the study conducted by Resti, Indriati, and Arneliawati, (2020) titled "Description of First Aid for Febrile Seizures Performed by Mothers on Toddlers," the results showed that 75% of mothers inserted something into the child's mouth during a seizure, and 100% of them immediately took their child to a doctor or health center. The findings of this study concluded that parents still lack knowledge in providing appropriate first aid for febrile seizures, as they tend to directly take their child to a hospital without administering first aid at home. Another study by Siregar and Pasaribu (2022) indicated that before receiving education on first aid for febrile seizure emergencies in children, 13 individuals (86.7%) had insufficient knowledge, while 2 individuals (13.3%) had sufficient knowledge.

The lack of family knowledge about febrile seizures, the factors that cause them, and the appropriate management before seeking medical care is one of the common reasons for errors in handling febrile seizures in children (Nuryani & Metti, 2020). Education is an activity or effort aimed at delivering health messages to individuals, communities, or groups to improve their health knowledge (Notoatmodjo, 2014). Providing education requires preparation and competence as it involves transmitting information to enhance an individual's understanding (Hockenberry & Wilson, 2013). Supportive media, such as videos, are necessary when delivering education (Khayati, Nabilla, & Suparti, 2019).

Videos are highly effective in enhancing an individual's learning outcomes. This is attributed to the fact that videos engage
According to Arsyad (2015), the use of appropriate media in health education is crucial because the media acts as a mediator to clarify and reduce information transfer errors. Several studies conducted by experts have indicated that the visual sense (sight) plays the largest role in delivering knowledge to the brain, accounting for 75%-87%. Knowledge conveyed through other senses accounts for only 13%-25%. By combining these senses, more knowledge can be absorbed. In line with the research by Lenzowski, Tung-Hahn, Higareda, McCormick, Markoff & Arffa et al. (2017), it has been found that audiovisual media is preferred and enables respondents to understand the information clearly.

A preliminary study was conducted by the researcher on the knowledge of febrile seizure management by families in March 2022, in the working area of Tenayan Raya Public Health Center, Pekanbaru. It was found that out of 5 mothers, 3 stated that they panicked when their child had a febrile seizure and did not have a thermometer at home, relying on hand touch to measure the child's temperature during fever. The management practices included inserting a spoon into the child's mouth, giving coffee, and applying a warm compress to the child. On the other hand, the remaining 2 mothers loosened the child's clothing, applied a compress to the child, and sought healthcare services after the seizure stopped. Based on the occurrence of febrile seizure incidents in children and the response given by parents, particularly mothers, to these incidents, the researcher became interested in exploring the influence of video education on febrile seizure management in toddlers at Tenayan Raya Public Health Center of Pekanbaru City.

**METHOD**

This study employed a quantitative method, specifically a pre-experimental one-group pretest-posttest design. The research was conducted at Tenayan Raya Public Health Center in Pekanbaru City. The population of this study consisted of families with toddlers who had experienced febrile seizures in the working area of Tenayan Raya Public Health Center in Pekanbaru. The inclusion criteria for this study included: Families with children aged 6 months to 5 years with a history of febrile seizures who visited the public health center and core family members (father or mother) who were willing to participate as respondents. The sample size was determined using a comparative numeric calculation formula (Dahlan, 2016). The formula was based on the study by Saleh, Pratikwo, Hartono, and Anonim (2022), resulting in a sample of 15 respondents. The sampling technique used nonrandom consecutive sampling. The independent variable in this study was education on the management of febrile seizures in toddlers using video, while the dependent variable was family knowledge (father/mother).

The questionnaire used in this study was adapted from the Febrile Seizure First Aid Questionnaire by Pebrisundari (2019). The original questionnaire has been validated and demonstrated reliability in previous research. In this study, the researchers made modifications by adding five additional items, resulting in a total of 20 items. All items in the questionnaire were reviewed and approved by two pediatric nursing specialist lecturers for use in the study. Each item in the questionnaire was scored with a value of 1 for a correct response and 0 for an incorrect response.
During the data collection phase, families who have toddlers with a history of febrile seizures who visit the Public Health Center were directed to the education room. The researchers explained the study's purpose and objectives and requested the families to provide informed consent. Subsequently, the families completed a pre-test questionnaire within a 10-minute timeframe, addressing febrile seizure management. Following this, the researchers instructed the families to watch a 4-minute and 20-second educational video on febrile seizure management in toddlers, utilizing a laptop as the medium. The researchers themselves developed the video, drawing upon reputable sources and having undergone review and approval by a supervisor. The video encompassed various topics, including the definition, causes, signs and symptoms, potential consequences, and management of febrile seizures in toddlers. Lastly, the families were requested to complete a post-test questionnaire within 10 minutes.

Univariate data, including gender, occupation, and education, were presented in the frequency tabulation. Age and family knowledge before and after watching the video on the management of febrile seizures in toddlers were presented using central tendency tables. The bivariate analysis utilized the Paired T-test with a 95% confidence interval since the pretest and posttest knowledge data were normally distributed. This study has obtained approval from the ethics committee of the Faculty of Health, Universitas Hang Tuah Pekanbaru, with the reference number: 461/KEPK/STIKes-HTP/VII/2022.

RESULTS
The research findings are as follows:
Tabel 1. Age of Respondent

<table>
<thead>
<tr>
<th>Variabel</th>
<th>Mean</th>
<th>SD</th>
<th>Min- Max</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responden's age</td>
<td>31,20</td>
<td>4,678</td>
<td>26-42</td>
<td>16</td>
</tr>
</tbody>
</table>

Based on Table 1, it was found that the average age of the parents of toddlers who have experienced febrile seizures at Tenayan Raya Public Health Center is 31.20 years. The lowest age among the families is 26 years, while the highest age is 42 years.

Table 2. Frequency Distribution Table of Respondents' Gender, Occupation, and Education

<table>
<thead>
<tr>
<th>No</th>
<th>The respondents' characteristics</th>
<th>F</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Male</td>
<td>1</td>
<td>6,7</td>
<td></td>
</tr>
<tr>
<td>b. Female</td>
<td>14</td>
<td>93,3</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Employed</td>
<td>2</td>
<td>13,3</td>
<td></td>
</tr>
<tr>
<td>b. Unemployed</td>
<td>13</td>
<td>86,7</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Junior High School</td>
<td>2</td>
<td>13,3</td>
<td></td>
</tr>
<tr>
<td>b. Senior High School</td>
<td>12</td>
<td>80,0</td>
<td></td>
</tr>
<tr>
<td>c. Higher Education</td>
<td>1</td>
<td>6,7</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Based on Table 2, the majority of respondents were female, with a total of 14 individuals (93.3%). Regarding occupation, most respondents were unemployed, with 13 individuals (86.7%). In terms of education, most respondents had completed high school, with 12 individuals (80.0%).

Table 3. The Influence of Video Education on Family Knowledge of Febrile Seizure Management in Toddlers

<table>
<thead>
<tr>
<th>Family Knowledge</th>
<th>Mean</th>
<th>SD</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>8,67</td>
<td>1,29</td>
<td>0,000</td>
</tr>
<tr>
<td>post-test</td>
<td>14,73</td>
<td>1,16</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 demonstrates the impact of video education on family knowledge of febrile seizure management in toddlers. The average knowledge score of the participants before receiving the video
education is 8.67, with a standard deviation (SD) of 1.29. The average knowledge score of the participants after receiving the video education is 14.73, with a standard deviation (SD) of 1.16. The p-value is reported as 0.000, indicating that it is less than the alpha level of significance. This suggests that there is a statistically significant effect of video education on family knowledge of febrile seizure management in toddlers. Based on the results, it can be concluded that there is a significant influence of video education on family knowledge regarding the management of febrile seizures in toddlers at Tenayan Raya Public Health Center, Pekanbaru.

DISCUSSION
1. Respondent Characteristics
a. Age
Based on the findings of this study, it was determined that out of 15 respondents, the average age was 31.20 years. According to Jahja (2011), adulthood is divided into three stages: early adulthood (21-40 years), middle adulthood (40-60 years), and late adulthood (60 years until death). Early adulthood is a period in which individuals strive to adjust to their new lifestyle. Biologically, this study aligns with previous research, as the majority of respondents were in the 26-35 age range and fall under the category of early adulthood.

Fitriani (2013) asserts that age influences knowledge acquisition, with personal experiences or experiences shared by others being one of the ways to acquire knowledge. Age also affects an individual's cognitive abilities, enhancing their capacity to comprehend and accumulate knowledge. This is consistent with the findings of a study conducted by Wahyudi and Zatihulwani (2021), which revealed that individuals with higher levels of knowledge are more likely to utilize available healthcare facilities.

In summary, the characteristics of the respondents in this study indicate that they belong to the early adulthood category, which can have an impact on their knowledge level and their likelihood of utilizing healthcare services.

b. Gender
Based on the findings of this study, the majority of respondents were female (14 individuals). This can be attributed to the fact that mothers (females) are more likely to bring their children to the health center. Mauliana and De Nanda (2017) suggest that gender can influence knowledge, with females tending to have better knowledge than males regarding disease management, particularly among certain respondents. When the majority of respondents are female, there may be variations in knowledge within a study. This can be attributed to various factors, such as females spending more time with their children and being more prompt in responding to their children's health conditions, as well as actively seeking information related to their children's well-being.

Based on the above discussion, it can be concluded that both males and females have equal opportunities to acquire knowledge about the management of febrile seizures in children, as both fathers and mothers are capable of handling such situations. However, females tend to absorb more knowledge about children due to spending more time with them compared to fathers (males) (Harianti & Amin, 2016). This study's results align with the fact that females constituted the majority of respondents and that their knowledge was influenced after receiving education on febrile seizure management through video materials.

c. Occupation
The findings of this study indicate that the majority of families were unemployed, with
mothers being unemployed. This is consistent with the research conducted by Mariyani & Sinurat (2022), which found that the majority of respondents were not employed (homemakers). Unemployed mothers have more time to spend with their children, providing them with opportunities to gather information from various sources. A study by Widaryanti (2019) also revealed that the majority of respondents were homemakers (not employed), which allowed them to accumulate a wealth of experience in childcare and access information from various sources. Based on the above discussion, it can be concluded that the employment status of families can influence knowledge, as unemployed mothers have more time to spend with their children and are more likely to seek information from various sources.

d. Education
The findings of this study indicate that the majority of the 15 respondents (families) in the Public Health Center of Tenayan Raya, Pekanbaru, had completed their education up to the high school level, indicating that most respondents had attained a secondary level of education. According to the Constitution of the Republic of Indonesia No. 20 of 2003 regarding the National Education System, education is categorized into three levels: primary education (elementary and junior high school), secondary education (high school), and tertiary education (college or university) Departemen Pendidikan Nasional, 2003). Education is crucial for acquiring information, particularly in areas that support health, thereby improving quality of life. Education can influence individuals, including their behaviors and patterns of thinking, particularly in motivating them to actively participate in building society. Generally, higher levels of education make individuals more receptive to information (Notoatmodjo, 2014).

This study aligns with the findings of Puspitasari, Nurhaeni, and Allenidekania (2020), who found that the level of education influences the knowledge level of parents, with the majority of respondents having basic education, which suggests that they may not be quick or responsive in seeking help or accessing healthcare facilities. Consistent with the research conducted by Arrasily and Dewi (2016), individuals with higher education are more likely to receive and possess better knowledge. Based on the above discussion, it can be concluded that education can influence an individual's knowledge, as individuals with higher education are more receptive to information and exhibit a more positive attitude. This finding is in line with the results of this study, indicating that the level of education influences the knowledge of respondents after receiving education on the management of febrile seizures using video.

2. The Influence of Video Education on Family Knowledge regarding Febrile Seizure Management in Toddlers

The results of this study demonstrate the influence of video-based education on the knowledge of families regarding the management of febrile seizures in toddlers. Following the intervention (post-test), the family's knowledge showed a significant increase, with an average score of 14.73 compared to the pre-test score of 8.57. The p-value of 0.000 indicates a significant difference in knowledge scores before and after the provision of video-based education.

These findings suggest that the use of video-based education has a positive impact on the knowledge of families regarding the management of febrile seizures in toddlers. By utilizing videos as an educational tool, information can be presented clearly and engagingly, effectively assisting families in understanding and retaining the provided knowledge. This study supports previous
assertions regarding the effectiveness of audiovisual media, such as videos, in health education and the enhancement of public knowledge.

According to Arsyad (2015), the selection of appropriate media for health education is crucial due to the role of media as an intermediary in clarifying information and reducing information transfer errors. Audiovisual media plays a significant role in behavior change, particularly in the aspects of information and persuasion. This finding is consistent with the research conducted by Lenzowski, Tung-Hahn, Higareda, McCormick, Markoff & Arffa et al. (2017), which suggests that audiovisual media is preferred and enhances clear understanding among respondents.

Based on previous research conducted by Saleh, Pratikwo, Hartono, and Anomin (2022) regarding the influence of health education using audiovisual media on family knowledge regarding the management of febrile seizures in children, the results showed a comparison of knowledge scores between the pre-test and post-test. The post-test results indicated an average increase in knowledge scores of 10.95. The bivariate test results for the pretest-posttest showed a value of 0.053, indicating a significant influence on the increase in knowledge scores.

This study is also consistent with the findings of Puspitasari, Nurhaeni, and Allenidekania (2020), who stated that the use of questionnaires and audiovisual media influences improving maternal knowledge in preventing febrile seizures. This opinion is further supported by the research conducted by Werang, Choeron, and Putri (2019), which indicates that education can enhance maternal knowledge in managing febrile seizures. The information provided to mothers serves as a foundation for safeguarding their children's health, underscoring the importance of using appropriate media for health education (Arsyad, 2015).

This study is in line with the research conducted by Sirvana, Sabur, and Umar (2021), which involved intervention in the form of providing audiovisual education to couples of reproductive age, and the results also showed a significant increase in knowledge. Meanwhile, according to Arsyati (2019), providing health education using audiovisual media can be effective when done gradually and regularly. Consistency is crucial during the learning process. Receiving a large amount of information at once has the potential to reduce focus, and even if the media used is effective, the information may not be optimally received. Therefore, educators also play an important role in maintaining consistency with the information recipients.

The provision of education using audiovisual media can enhance knowledge about health using providing information, in line with previous research conducted by Saleh, Pratikwo, Hertono, and Anomin (2022), which found that education using videos has an impact on family knowledge regarding the management of febrile seizures in children. This statement aligns with the findings of this study, where education using videos demonstrated an increase in family knowledge as indicated by the Paired T-Test results, which showed a significant improvement in knowledge following the use of video-based education regarding the management of febrile seizures in toddlers.

This study also utilized video media to deliver health information, with a duration of 4 minutes and 20 seconds. According to Nurjanna, Abrar, and Mutmainna (2020), video media is effective in providing information due to the inclusion of moving images accompanied by sound. Videos contain accurate information, demonstrate processes, teach skills, and save time. Moreover, video media is also an effective
communication tool as it is easily understood by individuals. The inclusion of videos in health education provided by the researchers tends to have a significant impact on the respondents' level of knowledge. These findings support the use of audiovisual media as a valuable tool in health education, emphasizing the need for appropriate media selection and consistent delivery of information to enhance knowledge acquisition and promote positive behavioral changes, especially for improving family knowledge regarding the management of febrile seizures in toddlers.

Overall, this study highlights the effectiveness of education using video media in improving family knowledge regarding the management of febrile seizures in toddlers. The findings support the use of audiovisual media as a valuable tool in health education, emphasizing the need for appropriate media selection and consistent delivery of information to enhance knowledge acquisition and promote positive behavioral changes.

CONCLUSIONS AND RECOMMENDATION
The conclusion of the study is as follows: The majority of respondents had an average age of 30.21 years, with the majority being female. The most common employment status was unemployed, and the highest level of education attained was high school. The average knowledge score of families regarding febrile seizure management in toddlers before receiving video-based education was 8.67, which significantly increased to 14.73 after the video-education intervention with P-Value 0.000. There was a significant influence of video education on family knowledge regarding the management of febrile seizures in toddlers.

Healthcare professionals in public health centers need to consider incorporating video-based educational programs as part of their comprehensive approach to febrile seizure management in toddlers. This approach has the potential to improve the overall management of febrile seizures and contribute to better outcomes for affected children.

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