

# Family Knowledge and Attitudes in Diabetes Mellitus Prevention Via Electronic Media Education (Animated Video)

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## ABSTRACT

One of the main challenges in managing diabetes mellitus (DM) is the low level of public knowledge. Adequate knowledge about DM, both among patients and non-patients, can influence attitudes and help individuals control their condition, thereby promoting a better quality of life. Health education is one of the most effective approaches to increase knowledge and attitudes regarding DM prevention. This study aimed to analyze the effect of diabetes mellitus education using electronic media (animated video) on family knowledge and attitudes. This study employed an experimental quantitative design with simple random sampling. A total of 57 respondents were included. Data were collected using questionnaires and observation sheets. Statistical analysis was performed using the Wilcoxon signed-rank test with SPSS. The results showed a significant difference in knowledge levels before and after the intervention ( $p = 0.000$ ). Similarly, attitudes significantly improved after the intervention ( $p = 0.000$ ). It can be concluded that animated video education on diabetes mellitus prevention significantly increased family knowledge and attitudes.

**Keywords:** Attitude, Diabetes Mellitus, Education, Knowledge

## BACKGROUND

Diabetes mellitus (DM) is one of the most prevalent chronic diseases globally. The World Health Organization (WHO) estimates that more than 346 million people are living with diabetes, and the number may double by 2030 without proper intervention. According to the International Diabetes Federation (IDF), Indonesia ranks seventh in the world in terms of diabetes prevalence, with cases projected to increase to 28.57 million by 2045, compared to 19.47 million in 2021.

Low public knowledge is a major factor contributing to the increasing prevalence of DM (Amilia, 2018). The prevalence of diabetes remains high, particularly, where nearly 50% of families are affected. A preliminary study revealed that half of the families lacked adequate knowledge and healthy behaviors related to DM prevention, including dietary control and physical activity.

Educational interventions are essential to improve knowledge and encourage positive attitudes toward DM prevention. Electronic media, particularly animated videos, provide an engaging and effective method to deliver health education as they combine visual and auditory stimuli that are easy to understand and retain. This study investigated the impact of animated video education on family knowledge and attitudes regarding DM prevention.

## **METHODS**

This study employed an experimental quantitative design to evaluate the effectiveness of animated video education on improving family knowledge and attitudes toward diabetes mellitus (DM) prevention. The experimental approach was chosen because it allows for systematic measurement of changes before and after the intervention, thereby providing more reliable evidence of causal relationships. By applying this design, the study sought to assess not only whether knowledge and attitudes changed, but also the significance of those changes.

The study sample consisted of 57 respondents who were selected using a simple random sampling technique. This sampling method was chosen to minimize selection bias and ensure that every individual in the target population had an equal opportunity to participate. A sample size of 57 was considered adequate to represent the population while still being manageable for detailed observation and analysis within the scope of the study.

Data collection was carried out using two primary instruments: questionnaires and observation sheets. The questionnaires were designed to assess the respondents' knowledge of DM prevention, covering aspects such as risk factors, dietary management, physical activity, and general awareness of the disease. Meanwhile, observation sheets were utilized to evaluate respondents' attitudes, focusing on behavioral tendencies, willingness to adopt preventive measures, and openness to lifestyle modifications related to DM prevention.

The intervention involved the use of animated video education, which was specifically developed to convey key messages about DM prevention in a clear, engaging, and easily understood manner. The videos included visual explanations, storytelling elements, and practical examples to enhance comprehension and retention. Each respondent was exposed to the video intervention within a structured setting to ensure consistency in delivery and to avoid external distractions that might affect the learning process.

To evaluate the effectiveness of the intervention, data were collected at two points: before the animated video was presented (pre-test) and after the intervention was completed (post-test). This pre- and post-test design enabled the researchers to identify changes attributable to the intervention rather than to external factors. The responses were then coded, scored, and prepared for statistical analysis.

Data analysis was performed using the Wilcoxon signed-rank test with the help of the Statistical Package for the Social Sciences (SPSS). The Wilcoxon test was selected because it is a non-parametric test suitable for comparing paired data when the distribution is not assumed to be normal. By applying this test, the study was able to determine whether the differences in knowledge and attitudes observed before and after the intervention were statistically significant. This rigorous approach ensured the reliability and validity of the study findings.

## **RESULTS**

Respondent characteristics showed that 33% were aged 51–60 years, 44% had completed senior high school, and 54% had no history of diabetes.

Before the intervention, 47.4% of respondents had moderate knowledge and 56.1% demonstrated poor attitudes toward DM prevention. After the animated video intervention, 68.4% achieved good knowledge levels and 66.7% demonstrated adequate attitudes.

The Wilcoxon signed-rank test showed significant differences in both knowledge ( $p = 0.000$ ) and attitudes ( $p = 0.000$ ) before and after the intervention. All respondents showed improved knowledge, while 53 respondents demonstrated improved attitudes, with four respondents showing no change.

**Table 1.** Respondent Characteristics

<b>Variable</b>	<b>Percentage (%)</b>
Age 51–60 years	33
Education (Senior High)	44
No history of diabetes	54

Based on Table 1, the characteristics of the respondents show that 33% were aged between 51 and 60 years, indicating that most participants were in the middle to older age category, which is generally a group at higher risk for developing diabetes. Furthermore, 44% of the respondents had completed senior high school, suggesting that nearly half of them had a moderate educational background that may influence their ability to understand health information. In addition, 54% of respondents reported no history of diabetes, either personally or within their families, which implies that more than half of the participants had limited direct experience with the disease. These characteristics provide an important context in understanding the baseline knowledge and attitudes of the respondents prior to the intervention.

**Table 2.** Knowledge and Attitudes Before and After Intervention

<b>Variable</b>	<b>Before Intervention (%)</b>	<b>After Intervention (%)</b>
Knowledge	Moderate (47.4)	Good (68.4)
Attitudes	Poor (56.1)	Adequate (66.7)

Based on Table 2, it can be seen that prior to the intervention, 47.4% of respondents had only a moderate level of knowledge regarding diabetes prevention, while 56.1% demonstrated poor attitudes. This reflects a lack of adequate understanding and limited awareness about preventive measures. However, after the intervention using animated video education, there was a substantial improvement, with 68.4% of respondents achieving good knowledge and 66.7% demonstrating adequate attitudes. These results highlight the effectiveness of the animated video in enhancing both knowledge and attitudes, showing that audiovisual health education can positively influence awareness and readiness to adopt preventive behaviors against diabetes.

**Table 3.** Wilcoxon Signed-Rank Test Results

<b>Variable</b>	<b>p-value</b>	<b>Findings</b>
Knowledge	0.000	Significant improvement
Attitudes	0.000	Significant improvement

Based on Table 3, the Wilcoxon signed-rank test showed a p-value of 0.000 for both knowledge and attitudes, indicating statistically significant improvements after the intervention. This means that the increase in knowledge and the positive change in attitudes observed among respondents were not due to chance, but rather the direct impact of the animated video education. The findings confirm that the intervention was effective in enhancing both cognitive and behavioral aspects related to diabetes prevention.

## **DISCUSSION**

The characteristics of the respondents showed that one-third were in the age range of 51–60 years, nearly half had completed senior high school, and more than half had no history of diabetes. These characteristics suggest that the respondents were mostly in the middle to older age group, with a

relatively modest level of education and limited prior exposure to diabetes, either personally or within their families. Such characteristics may influence baseline knowledge and attitudes, as age and education are often associated with health literacy and awareness of disease prevention.

Before the intervention, the majority of respondents had insufficient knowledge and poor attitudes toward diabetes prevention. Specifically, 47.4% of respondents showed only moderate knowledge, while 56.1% demonstrated poor attitudes. These findings indicate that prior to receiving targeted health education, families lacked both adequate understanding and motivation to implement preventive measures. Factors such as limited access to health information, low educational background, and prevailing lifestyle habits may have contributed to these limitations.

After the intervention using animated video education, there was a notable improvement in both knowledge and attitudes. A total of 68.4% of respondents achieved good knowledge levels, and 66.7% demonstrated adequate attitudes. This change illustrates that animated videos can serve as an engaging and effective medium for health education. Respondents not only gained knowledge about diabetes prevention but also showed improvements in their outlook and readiness to adopt healthier lifestyles.

The results of the Wilcoxon signed-rank test confirmed that these improvements were statistically significant, with p-values of 0.000 for both knowledge and attitudes. All respondents showed improved knowledge following the intervention, while 53 respondents demonstrated improvements in their attitudes, and only four respondents showed no change. These outcomes provide strong evidence that animated video education is a powerful tool to bring about positive changes in both cognitive and affective aspects of health behavior.

The findings indicate that animated video education effectively influenced family awareness and encouraged preventive behaviors such as reducing the consumption of sugary foods, increasing physical activity, and adopting healthier daily practices. This approach addresses the gaps in traditional health education by presenting information in a more accessible and relatable format. By combining visual elements, clear explanations, and engaging storytelling, animated videos simplify complex health messages and make them easier to remember and apply.

These findings are consistent with previous studies (Hidayati, 2016; Sayekti, 2019; Aprianti, 2021), which reported that audiovisual media significantly enhanced knowledge and attitudes regarding diabetes prevention. The use of animated videos is particularly effective because they attract attention, increase interest, and improve comprehension compared to conventional educational methods. Overall, the intervention demonstrates that animated video education can be an innovative strategy to enhance family health literacy and foster positive behavioral changes toward diabetes prevention.

## **CONCLUSION**

Based on the findings, it can be concluded that prior to the intervention, almost half of the respondents had only moderate knowledge and most demonstrated poor attitudes toward DM prevention. However, following the intervention, the majority of respondents showed good knowledge and adequate attitudes. The Wilcoxon test further confirmed significant differences in both knowledge ( $p = 0.000$ ) and attitudes ( $p = 0.000$ ) before and after the intervention. These results indicate that animated video education is an effective strategy to enhance family knowledge and attitudes in the prevention of DM.

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