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The Effect of Audiovisual Media Education on Diabetes Mellitus Prevention Behavior in Adolescents at State Senior High School 2, Bukittinggi City 2026

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ABSTRACT

Diabetes mellitus is one of the non-communicable diseases that has become a global health problem. The International Diabetes Federation estimates that there are 1.85 million adolescents under 20 years of age living with diabetes worlwide. Diabetes mellitus does not only affect adults but has also become increasingly prevalent among adolescents. In Bukittinggi City, diabetes mellitus remain one of five major priority health problems. This study aimed to determine the effect of audiovisual media education on diabetes mellitus prevention behavior among adolescents at SMA Negeri 2 Bukittinggi. This study was conducted from April to July 2026 using a quantitative method with a pre-experimental one-group pretest

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posttest design. The study population consisted of 358 eleventh-grade students, with a sample of 44 respondents selected through purposive sampling. The research instrument was a questionnaire that had been tested for validity and reliability and was administered before and after the audiovisual media intervention. The results showed a significant increase in the mean score of diabetes mellitus prevention behavior, from 38.84 before the intervention to 50.80 after the intervention. The Paired Sample t-Test analysis yielded a p-value of 0.000 ($p < 0.05$), indicating a significant effect of audiovisual media education on adolescents' diabetes mellitus prevention behavior. It can be concluded that audiovisual media education is effective in improving diabetes mellitus prevention behavior among adolescents. It is recommended that future researchers conduct studies on the use of audiovisual media in diabetes mellitus prevention education with a large sample size

INTRODUCTION

Adolescence is a formative period in which dietary patterns, physical activity, and other health-related behaviours are established. The World Health Organization (WHO) defines adolescence as the period from 10 to 19 years of age and emphasizes that behaviours adopted during this stage can either protect health or increase health risks later in life. This developmental period therefore

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provides an important opportunity for health-promotion interventions that encourage balanced nutrition, regular physical activity, and reduced sedentary behaviour. Diabetes mellitus (DM) is a group of metabolic disorders characterized by chronic hyperglycaemia resulting from impaired insulin secretion, insulin action, or both. Although type 2 diabetes is more commonly associated with adulthood, diabetes is also relevant to children and adolescents. Importantly, the estimate of 1.85 million people younger than 20 years living with diabetes in 2025 refers specifically to type 1 diabetes, not to all forms of diabetes; this distinction is necessary when interpreting global estimates. Several modifiable behaviours are relevant to the prevention of type 2 diabetes, including dietary quality, physical activity, and the avoidance of prolonged sedentary behaviour. Evidence among adolescents indicates that knowledge and dietary practices are associated with diabetes risk. A cross-sectional study of junior high school students examined the relationship between knowledge and dietary patterns in adolescents at risk of diabetes mellitus. Similarly, Nirmalasari and Supriatin (reported an association between adolescents' knowledge and attitudes concerning balanced diets and their diabetes-prevention practices. These findings support the importance of addressing not only knowledge but also the everyday behaviours through which risk factors may be modified. Health education is one strategy for supporting healthier choices. Audiovisual materials combine spoken information, images, and moving visuals, potentially making health messages more accessible and engaging for adolescent audiences. Research in Indonesia has examined audiovisual education for diabetes-related topics. for example, evaluated audiovisual education in relation to adolescents' knowledge of diabetes mellitus. Hartaty also described audiovisual education as a medium for communicating balanced-nutrition messages to adolescents. However, outcomes such as knowledge or attitudes should not automatically be interpreted as evidence of sustained behavioural change. Studies that directly measure prevention behaviours are therefore important for assessing whether educational interventions translate into practical health actions. The local context further supports the need for adolescent-focused prevention. The thesis source reports that the

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Bukittinggi City Health Office recorded 1,573 diabetes mellitus cases in 2025, distributed across seven community health centres, with the highest counts reported at Tigo Baleh (412 cases) and Guguak Panjang (358 cases) (Dinas Kesehatan Kota Bukittinggi, 2025). These figures are taken from the local administrative data cited in the thesis and should be checked against the original Dinas Kesehatan report before journal submission, particularly the report title, reporting period, population denominator, and definition of a recorded case. The thesis also reports preliminary observations involving 10 students at SMA Negeri 2 Bukittinggi. The observations identified frequent consumption of fast food and sweetened drinks, low levels of physical activity, and prolonged sitting. The school's preliminary information also referred to two students with elevated body weight and blood glucose; these observations are descriptive and should not be interpreted as a confirmed diagnosis of diabetes. Although previous Indonesian studies have explored diabetes education and audiovisual media, the cited studies do not all measure the same outcome. Some focus on knowledge, attitudes, general nutrition education, or populations other than adolescents. This leaves a practical need to evaluate whether audiovisual education is associated with measurable changes in diabetes-prevention behaviours among senior high school students in a specific local setting. The present study addresses this issue by examining prevention-behaviour scores before and after an audiovisual education intervention among students at SMA Negeri 2 Bukittinggi. The study used a pre-experimental one-group pretest–posttest design and aimed to determine the effect of audiovisual education on adolescents' diabetes mellitus prevention behaviours.

METHODS AND IMPLEMENTATION

This study used a quantitative approach with a pre-experimental one-group pretest–posttest design. It was conducted at SMA Negeri 2 Bukittinggi City from April to July 2026. The study population comprised 358 eleventh-grade students, while the sample consisted of 44 respondents selected through purposive sampling. Data were collected using a diabetes mellitus prevention behavior

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questionnaire that had undergone validity and reliability testing. Measurements were taken before the intervention (pretest) and after respondents received education through an audiovisual video about diabetes mellitus prevention. The video was presented using a laptop and a screen/projector. The material focused on preventive behaviors, particularly dietary habits and physical activity. Questionnaire scores before and after the intervention were analyzed descriptively to obtain minimum, maximum, mean, and standard deviation values, and inferentially using a paired-samples t-test. The Shapiro–Wilk test was used to assess data normality. The research followed respondent consent procedures as described in the thesis.

This article was prepared based on the data and descriptions in the source thesis. Technical details not clearly specified in the available source, such as the exact duration of the video and the details of each session, have not been added

RESULTS AND DISCUSSION

A total of 44 respondents participated in the study. The results showed an increase in the mean diabetes mellitus prevention behavior score after audiovisual education.

Tabel.1 Rerata skor perilaku pencegahan diabetes mellitus sebelum dan sesudah edukasi Audiovisual.

Measurement	n	Minimum	Maximum	Mean
Before Intervention	44	30	49	38.84
After Intervention	44	42	57	50.80

Before the intervention, the respondents' mean behavioral score was 38.84, with a minimum score of 30 and a maximum score of 49. Following the educational intervention, the mean score increased to 50.80, with a minimum score of 42 and a maximum score of 57. The mean difference

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of approximately 11.96 points indicates a positive change in behavioral scores after the respondents received the educational intervention. At the initial assessment, the questionnaire responses still reflected several risk-related behaviors, including the consumption of sugary foods and beverages and suboptimal levels of physical activity. Following the intervention, the behavioral scores increased.

Tabel.2 The result of the Paired Sample t-Test

Comparison	Mean Difference	SD	SE	Sig (2 talled)
Pretest-Posttest	-11.955	6,054	0,913	0.000

The results of the Paired Sample t-Test presented in the thesis showed a significance value of 0.000 in the SPSS output, which was lower than 0.05. Therefore, there was a statistically significant difference between the behavioral scores before and after the audiovisual educational intervention. These findings support the conclusion that audiovisual education had an effect on the diabetes mellitus prevention behavior scores of the study respondents. However, because the study design did not include a control group, the results should be interpreted as changes observed following the intervention in the study group, rather than as evidence that the intervention was the sole factor responsible for the observed changes. According to the researcher's interpretation, the increase in scores may be associated with the simultaneous presentation of visual and auditory messages, which may have helped respondents follow the material on dietary habits and physical activity more easily. Audiovisual media can also be reused in School Health Unit (UKS) activities or school health promotion programs. A supporting factor for implementing this program is the availability of educational materials that can be played for groups of students. However, one limitation noted in the thesis is that the animated video created using Canva did not consist entirely

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of moving elements, as some sections contained static images. Furthermore, the study was conducted at only one school with 44 respondents; therefore, the generalizability of the findings should be interpreted with caution.

clear explanations from healthcare professionals, opportunities for patients to ask questions, medication schedule reminders, family involvement, and periodic monitoring of medication adherence.

CONCLUSION

The mean score for diabetes mellitus prevention behavior among adolescents at SMA Negeri 2 in Bukittinggi City increased from 38.84 before the intervention to 50.80 after audiovisual education. The Paired Sample t-test showed a statistically significant ($p < 0.001$). These findings indicate that audiovisual education had an effect on diabetes mellitus prevention behaviour scores in the group of respondents studied. Schools may consider incorporating audiovisual media into School Health Unit (UKS) activities and ongoing health promotion programs. Future research is recommended to involve a larger number of respondents, multiple schools, a comparison group, and follow-up measurements to assess the sustainability of behavioral changes.

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