Impact of Audio-Visual Education on Knowledge of Diabetes Patients

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Abstract

Introduction: Diabetes mellitus is a chronic metabolic disease with a rapidly increasing prevalence worldwide and remains a major public health challenge due to its long-term complications and management demands. Effective diabetes self-management education, particularly through audio-visual approaches, is essential to improve patients' knowledge and support optimal disease control.

Objective: The purpose of this study was to determine the effect of audiovisual education on Diabetes Self-Management Education (DSME) on improving the knowledge of diabetes mellitus patients at Junjung Besaoh Regional Hospital, South Bangka in 2025.

Method: This study used a pre-experimental study with a one-group pretest-posttest design. The sampling technique used purposive sampling with 18 respondents. Data collection used the 24-question DKQ 24 (Diabetes Knowledge Questionnaire). Data analysis used the Wilcoxon test

Result: The results of this study demonstrate that the mean knowledge score of respondents before receiving DSME education through audiovisuals was 43.02 (SD=7.569). After the education, the mean knowledge score of respondents increased to 82.13 (SD=5.425), with a difference of -39.117 (SD=7.847) between the pre- and post-education levels. There was an effect of Audiovisual Diabetes Self-Management Education (DSME) on improving the knowledge of diabetes mellitus patients at Junjung Besaoh Regional Hospital, South Bangka in 2025 (p<0.05).

Conclusion: The results of this study suggest that healthcare services can adopt DSME audiovisual media as a primary strategy in diabetes education, especially for complex materials such as DSME. This media has proven effective in improving respondents' understanding and can be applied in various healthcare services.

Keywords: education, dsme, diabetes mellitus, knowledge

Introduction

Diabetes Mellitus (DM) is a metabolic disease characterized by elevated blood glucose levels above normal, caused by defects in insulin secretion, insulin function, or both (Habibah et al., 2019). DM is generally classified as type 1 DM, or Insulin-Dependent Diabetes Mellitus (IDDM), and type 2 DM, or Non-Insulin-Dependent Diabetes Mellitus (NIDDM). Type 2 DM occurs when pancreatic β-cells produce insufficient amounts of insulin or experience insulin resistance. Type 1 DM accounts for 5-10% of people with diabetes, and type 2 DM accounts for 90-95% of people with diabetes worldwide (ADA, 2020).

The World Health Organization (WHO) categorizes diabetes mellitus as a non-communicable disease (NCD), a leading cause of poor health worldwide. Non-Communicable Diseases (NCDs) rank seventh among the ten leading causes of death worldwide, with a higher prevalence in low- and middle-income countries (WHO, 2018). According to data from the World Health Organization (WHO), in 2020, 463 million adults worldwide suffered from diabetes, with a global prevalence of 9.3 percent. This number is expected to continue to grow in the coming years (WHO, 2020). Data from the International Diabetes Federation (2021) indicates that 537 million adults (20-79 years old) worldwide are living with diabetes. Data from 2022 indicates that approximately 422 million people worldwide suffer from diabetes (WHO, 2022). Data from 2023 indicates that approximately 529 million people worldwide suffer from diabetes (WHO, 2023).

Indonesia is the fifth-highest country with the highest number of diabetes patients worldwide. In 2021, the number of people with diabetes mellitus experienced a rapid increase of 81.8%, reaching 19.47 million (Ministry of Health of the Republic of Indonesia, 2021). Data from 2022 showed the number of people with diabetes mellitus had increased to 41.8 million (Ministry of Health of the Republic of Indonesia, 2022). Data from 2023 showed the number of people with diabetes mellitus had reached 45.3 million (Ministry of Health of the Republic of Indonesia, 2023).

According to the 2007 Basic Health Research (Riskesdas), the prevalence of diabetes mellitus in Indonesia was 0.7% (Riskesdas, 2007). Data from 2013 showed the prevalence of diabetes mellitus in Indonesia was 1.5% (Riskesdas, 2013). Meanwhile, the 2018 Riskesdas reached 2.0%, meaning the prevalence of diabetes mellitus in Indonesia increased by 0.5%. This was accompanied by an increase in the prevalence of DM in Indonesia, based on blood tests among residents aged 15 years and older, from 6.9% to 8.5% in 2018. This figure indicates that there were new cases of diabetes in approximately 25% of people with diabetes (Riskesdas, 2018). Based on data from the 2023 Indonesian Health Survey (SKI), the prevalence of diabetes mellitus in Indonesia decreased to 2.2%, with 638,178 newly diagnosed patients (SKI, 2023).

The prevalence of diabetes mellitus in the Bangka Belitung Islands Province fluctuated between 2019 and 2023. In 2019, the number of diabetes mellitus patients in Bangka Belitung was recorded at 25,818 patients. In 2020, the number of diabetes mellitus patients in Bangka Belitung was recorded at 25,112 patients. In 2021, the number of diabetes mellitus patients in Bangka Belitung was recorded at 25,112 patients. In 2022, there were 28,555 patients, and in 2023, the number increased to 28,555 patients (Profile of the Bangka Belitung Islands Provincial Health Office, 2022).

South Bangka Regency is one of the regencies in the province with a relatively high number of diabetes cases. Data from the South Bangka Health Office showed that there were 3,132 cases of diabetes in 2021, 3,375 in 2022, 3,389 in 2023, and 4,005 in 2024 (data from the South Bangka Health Office).

Data on diabetes mellitus patients at Toboali Regional Hospital, South Bangka Regency, fluctuated between 2022 and 2024. Data from 2022 showed 1,169 cases, 2,187 cases in 2023, and 1,400 cases in 2024 (medical records from Toboali Regional Hospital, South Bangka Regency). A person with diabetes mellitus is characterized by high blood glucose levels due to impaired insulin production or utilization (Arania et al., 2021). The main signs and symptoms of diabetes mellitus (DM) include increased thirst (polydipsia), frequent urination (polyuria), excessive hunger (polyphagia), unexplained weight loss, fatigue, and blurred vision (Ariyanti et al., 2023).

Factors that can influence DM treatment adherence include low socioeconomic status, patient knowledge and perceptions of DM, underutilization of health services, poor health literacy, depression, and lack of family support for effective DM management (Siddique et al., 2017). DM remains a challenge, as poor health education about DM consistently hinders successful disease management for DM patients. Evidence has shown that patient awareness of various aspects of DM is crucial for disease prevention, management, and control (Nansseu et al., 2019).

Diabetes self-management is considered an optimal way to improve self-management of the disease. This includes providing health education to people with diabetes, explaining healthy lifestyle modifications such as diet, physical activity, smoking cessation, and dietary adjustments. This education program aims to increase awareness and knowledge about diabetes, and eliminate prejudice against people with diabetes by evaluating those with low levels of knowledge. DSME is a method used to improve knowledge and has been proven effective in improving clinical outcomes and quality of life for people with diabetes (Lengga Marti, 2023). DSME is an organized process designed to facilitate the knowledge, skills, and abilities necessary for self-care in people with diabetes. Many educational methods can be used to implement this education. Audiovisual methods are one such method. Audiovisuals are tools used by educators to convey health messages through visual aids, such as television, video cassettes, or DVDs (Habibah et al., 2019).

According to research by Lengga (2023), DSME significantly impacts the knowledge level of diabetes mellitus patients in the Cibiru Community Health Center area of Bandung City. Furthermore, research by Harahap et al. (2024), which used the PRISMA method as the standard for conducting systematic reviews, found that video-based DSME significantly impacts the knowledge level of diabetes mellitus patients, leading to improved self-care and blood sugar control.

Based on a preliminary survey conducted by researchers through brief interviews with 10 diabetes patients on December 5, 2024, data from 2024 was collected from the inpatient ward, specifically the adult ward, at Junjung Besaoh Regional Hospital, South Bangka, totaling 142 cases of diabetes mellitus. The interviews revealed a lack of knowledge in self-management among diabetes mellitus patients after being administered the DKQ-24 questionnaire.

Objective

The purpose of this study was to determine the effect of audiovisual education on Diabetes Self-Management Education (DSME) on improving the knowledge of diabetes mellitus patients at Junjung Besaoh Regional Hospital, South Bangka in 2025.

Method

This study employed a quantitative pre-experimental design using a one-group pretest–posttest approach to evaluate changes in patients' knowledge before and after the intervention. The study aimed to assess the effect of audio-visual–based Diabetes Self-Management Education (DSME) on the knowledge level of patients with diabetes mellitus, without the inclusion of a control group.

The study population consisted of adult inpatients diagnosed with diabetes mellitus during the study period. A purposive sampling technique was applied, resulting in a total of 18 respondents. Inclusion criteria included patients diagnosed with diabetes mellitus, being conscious and cooperative, able to communicate effectively, and willing to participate in the study. Patients with cognitive impairment or clinical conditions that prevented participation in the educational intervention were excluded.

The intervention consisted of audio-visual DSME, which provided structured educational content covering the definition of diabetes mellitus, dietary management, physical activity, medication adherence, blood glucose monitoring, and prevention of diabetes-related complications. The educational session was delivered in a single structured session with a predetermined duration.

Data collection was conducted in two stages: pretest and posttest. Patients' knowledge levels were measured using the Diabetes Knowledge Questionnaire (DKQ-24), which consists of 24 items and has been widely used to assess diabetes-related knowledge. Knowledge scores were calculated based on the number of correct responses.

Statistical analysis was performed using the Wilcoxon Signed Rank Test, as the data were not normally distributed and the test is appropriate for comparing paired observations. A p-value < 0.05 was considered statistically significant.

Result

Table 1. The Effect of Audio-Visual DSME on Improving Knowledge of DM

Test Statistics[a]	After Audio-Visual Diabetes Self-Management Education (DSME) - Before Audio-Visual Diabetes Self-Management Education (DSME)
Z	-3.725[b]
Asymp. Sig. (2-tailed)	< .001
a. Wilcoxon Signed Ranks Test	
b. Based on negative ranks.	

Table shows that the Wilcoxon Signed Ranks Test results show a p-value of <0.001 <0.05. Therefore, it can be concluded that there is an effect of Audio-Visual DSME in the adult inpatient ward at Junjung Besaoh Regional General Hospital, South Bangka in 2025.

Discussion

DSME is a health education program for self-management of diabetes that facilitates the knowledge and skills necessary to enable self-care for diabetes patients. DSME is a form of education used and proven effective in improving clinical outcomes and quality of life for DM patients (Lengga Marti, 2023).

The results of this study indicate that the mean knowledge score of respondents before receiving audio-visual DSME education was 43.02 (SD=7.569). After the education, the mean knowledge score increased to 82.13 (SD=5.425). The Wilcoxo statistical test results showed a p-value of <0.001 <0.05, thus concluding that there was an effect of audio-visual Diabetes Self-Management Education (DSME) in the adult inpatient ward of Junjung Besaoh Regional Hospital, South Bangka in 2025.

Audiovisual media is media that includes both sound and visual elements. This type of media has superior capabilities because it includes both sound and visual elements. Audiovisual media is a type of media used in learning activities that simultaneously involve hearing and sight in a single process or activity. Messages and information conveyed through this media can be verbal and nonverbal, relying on both sight and hearing (Ardiyanti Melda, 2019). Some examples of audiovisual media, according to Asyhar, include films, videos, and television programs.

The advantages of audiovisual media include: Films and videos can complement participants' basic experiences; they can accurately depict a process and can be watched repeatedly if necessary; they also encourage and enhance motivation; they instill attitudes and other affective aspects; films and videos containing positive values can stimulate thought and discussion within groups; they can depict events that would be dangerous if viewed directly; they can be shown to large or small groups, heterogeneous or homogeneous groups, or to individuals; and films that normally take a week can be shown in one or two minutes.

Lengga's (2023) study found that DSME significantly impacted the knowledge level of diabetes mellitus patients in the Cibiru Community Health Center (Puskesmas) in Bandung City. This is in line with the findings of Harahap et al. (2024), who used the systematic review literature search method (PRISMA) as the standard for conducting systematic reviews. Video-based DSME delivery impacted the knowledge level of diabetes patients, leading to improved self-care and blood sugar control. This research, supported by Lengga Marti (2023), used a counseling program (SAP) that explained the procedures for implementing DSME using audiovisual videos and a questionnaire comprising respondent demographic data and the DKQ-24 questionnaire. The health education lasted 60 minutes, with a 15-minute pre-test, 30 minutes of material delivery and discussion, and a 15-minute post-test. Audiovisuals were deemed more effective than printed brochures in increasing respondents' knowledge.

The researchers assumed that the increase in respondents' knowledge about DSME after receiving audiovisual education occurred because audiovisual media was able to convey information in an engaging, easy-to-understand, and interactive manner. Audiovisuals utilize a combination of visuals, audio, and narrative, which can increase engagement and help respondents understand DSME concepts more clearly than conventional educational methods. Furthermore, audiovisuals present information in a step-by-step and structured manner, allowing the audience to easily follow the learning flow.

Conclusion

The findings of this study indicate a substantial improvement in patients' knowledge following the implementation of Audio-Visual DSME. Prior to the intervention, respondents demonstrated relatively low knowledge levels; however, after receiving the audio-visual DSME, their mean knowledge scores increased markedly. The observed difference between pre-intervention and post-intervention scores reflects a significant enhancement in understanding of diabetes management. Overall, these results confirm that Audio-Visual

DSME is effective in improving the knowledge of diabetes mellitus patients at Junjung Besaoh Regional Hospital, South Bangka.

Conflict of Interest

No declare.

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