



THE EFFECTIVENESS OF HEALTH EDUCATION ON SELF-AWARENESS OF DIABETES MELLITUS PATIENTS IN REDUCING BLOOD SUGAR LEVELS IN ROYAL PRIMA HOSPITAL MEDAN

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Abstract

Diabetes mellitus (DM) affects public health at global, national, regional and local levels as it is a non-communicable disease. Clinical outcomes and self-management of diabetes mellitus are negatively correlated with low levels of self-awareness of the disease. As newly diagnosed patients and long-standing patients with diabetes mellitus differ in their level of self-awareness, it is important to educate them on how to better control their blood sugar levels. This study aims to determine how effective health education on self-awareness of diabetes mellitus patients is in reducing blood sugar levels at RSU Royal Prima Medan in 2024. Quantitative method was used in this study. A pre-experimental one group pre-test and post-test design approach was used. The study involved 62 respondents. The results of the study using the Wilcoxon Sign Rank test showed that health education on self-awareness of diabetes mellitus patients contributed to lower blood sugar levels, with a p-value of 0.000 < 0.05. H_a data is accepted, but H_o data is rejected. Both data show a significant correlation between health education on self-awareness of diabetes mellitus patients and a decrease in blood sugar levels.

Keywords: Health Education; Self-Awareness; Diabetes Mellitus

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INTRODUCTION

One form of non-communicable disease (NCD) that affects people globally, across borders, and across nations is diabetes mellitus (DM) (Karamoy & Dharmadi, 2019). The interaction between genetic factors and environmental exposures leads to diabetes mellitus, which in turn damages many body systems, especially nerves and blood vessels. Individuals who are prone to diabetes will be identified by genetic factors (Nababan et al., 2020). One of the first symptoms of diabetes mellitus is a high blood sugar level that exceeds 200 mg/dl (Kementrian Kesehatan Republik Indonesia, 2020). Chronic hyperglycemia is the main symptom of heterogeneous metabolic disorders known as diabetes mellitus (Petersmann et al., 2019).

Chronic hyperglycemia has been associated with cancer, as well as long-term damage and impaired function of several organs and tissues, such as the heart, kidneys, blood vessels, neurons, and eyes. It also causes abnormalities in insulin secretion and/or effects. Classic symptoms including polyuria, polydipsia, weariness and impaired function, inexplicable weight loss, visual abnormalities, and vulnerability to infections through ketoacidosis or non-ketoacidosis, a hyperosmolar syndrome with coma risk, are brought on by severe hyperglycemia (Harreiter & Roden, 2023).

The World Health Organization (WHO, 2020), predicts that by 2020, 422 million people worldwide will have diabetes mellitus, with the majority of sufferers coming from low- and middle-income countries. As a result, the growing number of cases and prevalence of diabetes is responsible for 1.6 million deaths caused by the disease.

According to the Basic Health Research (Rikesdas, 2018), compared to 2013, diabetes mellitus based on physician diagnosis in people older than fifteen years increased to 2% in 2018. NTT province had a prevalence of diabetes mellitus of 0.9%, while DKI Jakarta province had the highest prevalence at 3.4%, and North Sumatra at 2%.

According to researchers Kasana et al., (2019) a person's capacity to assimilate information will be impacted by their educational attainment, as education is directly correlated with knowledge. This causes the respondents' self-awareness to be low, which means they do not know how to manage diabetes mellitus properly.

Low self-awareness about diabetes mellitus can lead to poor self-management and impact clinical outcomes. Health education should be given to patients with diabetes mellitus to reduce blood sugar levels because self-awareness in new and old patients is different.

Health education is a tool that can be used to improve people's knowledge about health. Several studies have found that health education is very effective in increasing respondents' knowledge. The results of the study Haryono et al., (2018) showed an increase in respondents' knowledge about the diabetes diet program. Health education about dietary food has an effect in reducing blood sugar levels in patients with diabetes mellitus (Bachrun & Putri, 2022). Health education can also be done in preventing tuberculosis transmission (Putri et al., 2022). Research by Siwi & Prasetyorini, (2019) states that there is an effect of health education on self-improvement of cancer and chemotherapy patients.

Based on the data above, it can be seen the importance of the benefits of health education to improve health. Previous studies have examined health education on reducing blood sugar levels, preventing transmission of turbulence and self-improvement of cancer and chemotherapy patients, but health education research on self-awareness in reducing blood sugar levels has never been done. This study sought to ascertain if health education on diabetes mellitus patients' self-awareness was beneficial in lowering blood sugar levels at RSU Royal Prima Medan in 2024.

RESEARCH METHODE

This study used quantitative methods with a pre-experimental one group pre-test post-test design approach. The research was conducted at the Endocrine Metabolic Diabetes Subspecialist Polyclinic of RSU Royal Prima Medan with a research period of December 04 2024 to January 04 2025. In this study using a sample of 62 respondents. This study used purposive sampling technique in selecting samples with inclusion and exclusion criteria. Inclusion criteria in sample selection are: (1) patients suffering from diabetes mellitus, (2) willing to become respondents in the study, (3) can communicate well, (4) do not have hearing impairment. Exclusion criteria are: (1) patients who do not suffer from diabetes mellitus, (2) are not willing to be respondents in the study, (3) cannot communicate well, (4) have hearing impairment.

The measurement aspects in this study used poster media for health education and self-awareness questionnaires, with 20 questions using a Guttman scale with assessment categories: low self-awareness score (0-13), moderate self-awareness (14-27), high self-awareness (28-40). The self-awareness questionnaire in reducing blood sugar levels is a tool used in data collection. After testing the validity of the self-awareness instrument, the results obtained with the value of r count > r table, Cronbach alpha value of 0.97 which means reliable. The analysis used was univariate analysis and bivariate analysis using the Wilcoxon Sign Rank test. Research ethics from the Prima Indonesia University Health Research Ethics Commission (KEPK) with number 083/KEPK/UNPRI/XI/2024 dated November 25, 2024.

RESULTS AND DISCUSSION

Results

Univariate Analysis

Table 1. Frequency Distribution of Respondents Based on Self-Awareness in Reducing Blood Sugar Levels Before Health Education

Self-Awareness Level	Frequency (n)	Percentage (%)
Low	39	62,9
Medium	17	27,4
High	6	9,7
Total	62	100

According to the study's findings in Table 1 above, 39 respondents (62,9%) had poor self-awareness in lowering blood sugar levels before to health education, 17 respondents (27,4%) had moderate self-awareness, and 6 respondents (9,7%) had high self-awareness.

Table 2. Frequency Distribution of Respondents Based on Self-Awareness in Decreasing Blood Sugar Levels After Health Education

Self-Awareness Level	Frequency (n)	Percentage (%)
Low	7	11,3
Medium	15	24,2
High	40	64,5
Total	62	100

Based on Table 2 above, after receiving health education, 7 respondents (11,3%) showed low self-awareness in reducing blood sugar levels, 15 respondents (24,2%) showed moderate self-awareness, and 40 respondents (64,5%) showed high self-awareness.

Bivariate Analysis

Table 3. Effectiveness of Health Education on Diabetes Mellitus Patients' Self-Awareness in Reducing Blood Sugar Levels

Health Education	Self-Awareness Level						Total	Z	P value	
	Low		Medium		High					
	n	%	n	%	n	%				
<i>Pre-test</i>	39	62,9	17	27,4	6	9,7	62	100	-6.344 ^b	0,000
<i>Post-test</i>	7	11,3	15	24,2	40	64,5	62	100		

Using the Wilcoxon Sign Rank test, the study's findings in table 3 above indicate that $Z = -6.344^b$ with a p value of $0.000 < 0.05$. The acceptance of H_a data and rejection of H_o data suggest a strong relationship between diabetes mellitus patients' self-awareness and health education in reducing their blood sugar levels.

Discussion

Self-awareness of diabetes mellitus patients in reducing blood sugar levels before health education

The study's findings indicate that, prior to health education, 39 (62.9%) of the respondents low levels of self-awareness. This is in line with research by Bachrun & Putri, (2022) stated that the respondents' irregular diet and ignorance of the food they consume were the main causes of their

elevated blood sugar, so health education is very useful in lowering blood sugar levels.

Long-term self-awareness of diabetes mellitus plays an important role in lowering blood sugar levels. Sukma et al., (2023) menyatakan stated that someone with good self-awareness of their disease has good knowledge to prevent prediabetes. Some people tend to feel fear and anxiety when they find out that they have complications other than the disease they are currently suffering from, and this becomes a stressor for someone who will make self-awareness in themselves decrease. Possible efforts include controlling blood sugar levels and conducting regular health checks.

Researchers hypothesized that patients with low self-awareness in lowering blood sugar levels did not receive education about lowering blood sugar.

Self-awareness of diabetes mellitus patients in reducing blood sugar levels after health education

In light of the study's findings, it shows that the majority of respondents with high self-awareness were 40 (64.5%) after health education. Research by Rani Padmanabha et al., (2019) showed the prevalence of type 2 diabetes and prediabetes due to lack of physical activity, obesity, genetic history, and hypertension proved to be significant risk factors, health education as an intervention method showed a significant reduction in blood sugar during exercise. Health education is often used by nurses as a health service because it is very important to improve public health. One important factor in diabetes management is health education because it teaches diabetic patients how to maintain a healthy lifestyle even though they have diabetes (Arimbi et al., 2020). Juniartati í et al., (2025) states that there is an effect of health education through audio-visual media on the knowledge and attitudes of patients with diabetes mellitus in stroke prevention.

Based on the data obtained, the majority of respondents with a high level of self-awareness. The researchers argued that respondents' self-awareness to reduce blood sugar levels was influenced by the health education they received.

Effectiveness of health education on self-awareness of diabetes mellitus patients in lowering blood sugar levels

Analysis using the Wilcoxon Sign Rank test resulted in a value of $Z = -6.344b$ and a p value of $0.000 < 0.05$ which is the result of the study, it leads to acceptance of H_a and rejection of H_o , which indicates that there is a significant correlation between health education and self-awareness of diabetes mellitus patients in reducing blood sugar levels.

Research by Bachrun & Putri, (2022) which found that patients with diabetes mellitus whose health educators focused on nutrition were able to reduce their blood sugar levels. Research by Kasana et al., (2019) stated that patients with type 2 diabetes mellitus who have high self-awareness tend to have lower blood glucose levels. One of the effective media for health communication because of its attractive appearance, attractive colors, and useful message content for readers is poster media (Astuti, 2018).

According to (Hariyanto & Muhlisin, 2025) the health education program helps patients understand the correct foot exercise technique, so that they are more motivated to do the exercise routinely and regularly. Observed positive impacts include decreased blood glucose levels, improved blood circulation in the foot area, and reduced risk of diabetic complications, especially those related to peripheral neuropathy.

According to the researcher's hypothesis based on the study's findings, the majority of respondents had low self-awareness in lowering blood sugar levels prior to health education, but the majority of respondents had high self-awareness in lowering blood sugar levels following health education. This shows that health education in diabetic patients is proven to increase self-awareness in reducing blood sugar levels, because the education provided with poster media is easily understood by patients. In addition, the education provided to patients also increases understanding to people with diabetes mellitus that it is important to improve the quality of life for the better.

CONCLUSION

Based on the results of research on the effectiveness of health education on self-awareness of diabetes mellitus patients in reducing blood sugar levels, it can be concluded that there are differences in self-awareness before health education, the majority of respondents experience low self-awareness and after health education, the majority of respondents experience high self-

awareness. This is because health education can increase patient self-awareness in controlling blood sugar levels.

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