



THE NURSE'S ROLE AS AN EDUCATOR AND DIETARY ADHERENCE IN TYPE 2 DIABETES MELLITUS PATIENTS

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ABSTRACT

Background: Diabetes Mellitus (DM) requires long-term treatment to prevent further complications. Dietary adherence is useful for reducing the increase in blood sugar levels. However, many patients still do not adhere to the diet for various reasons, including a lack of knowledge. Nurses can provide information by carrying out their role as educators to increase patient knowledge. This study analyzed the correlation between the nurse's role as an educator and dietary adherence in type 2 DM patients. **Methods:** This study used an analytical observational design with a cross-sectional approach. A total of 112 respondents were selected using a consecutive sampling technique. Data were collected using the nurse's role as an educator and diet adherence questionnaires and were analyzed by the Spearman rank correlation test with a significance level of 0.05. **Results:** The median score of the nurse's role as an educator was 63 (min-max= 40-90), and the median value of dietary adherence was 26.5 (min-max= 18-40). The Spearman Correlation test showed a significant positive correlation between the nurse's role as an educator and dietary adherence (p-value: 0.032; r: 0.203). The better the nurse's role as an educator, the higher the patient's dietary adherence. **Conclusions:** This study implies the importance of the nurse's role as an educator to provide appropriate health education to encourage diet compliance in type 2 DM patients.

Keywords: Type 2 diabetes mellitus patients, Nurse's role as an educator, Dietary adherence

INTRODUCTION

The prevalence of diabetes mellitus in Indonesia continues to increase, so it has become a threat. The number of people with diabetes aged 20 to 79 years in Indonesia was 10.3 million. Indonesia was ranked sixth after China, India, the United States, Brazil, and Mexico (IDF, 2017)). There was a significant increase in diabetes, from 6.9% in 2013 to 8.5% in 2018. Diabetes is third in non-communicable diseases after asthma and joint (The Ministry of Health of the Republic of Indonesia, 2018).

Diabetes mellitus is a disease that requires long-term treatment. Management of diabetes mellitus consists of providing DM disease education to patients, nutrition or diet therapy, activities or exercise, and medical treatment such as taking hyperglycemic drugs (Perkeni, 2015). Diet management is required to prevent diabetes complications (Sami et al., 2017). One of the factors that influence dietary compliance in type 2 DM patients is knowledge. The existence of knowledge about diet management makes patients



more alert in consuming food to form a behavior of adherence to the diet (Handayani et al., 2017).

Adherence to diet in DM patients influences blood sugar control in order to minimize the occurrence of disease complications. However, it is influenced by knowledge, individual motivation, and family support (Novyanda & Hadiyani, 2017). There is a significant relationship between the level of nutritional knowledge with dietary compliance in patients with diabetes mellitus. The level of knowledge about nutrition affects dietary compliance in patients, so providing in-depth information about diabetes mellitus is very important (Fauziyah et al., 2016). Continuous health education can increase patient knowledge by providing the appropriate material and time. The role of nurses is very important to provide facilities regarding counseling and health education (Harwadi et al., 2015). Health education provided by nurses as educators can help patients know their health and procedures for nursing care that aim to restore and maintain health (Kozier et al., 2010).

The nurse's role is as an educator to help clients increase their knowledge of health and disease symptoms, which is expected to change the client's behavior after health education is carried out (Sulistyoningsih et al., 2018). The existence of correct information provided by nurses will be able to increase patient knowledge. In type 2 DM patients, there is often a low level of dietary compliance due to a lack of knowledge or information. The more patients get information, the higher the patient compliance with the diet (Restuning, 2015). This study aimed to analyze the correlation between the nurse's role as an educator and dietary adherence in type 2 DM patients.

METHODS

This study used an analytical observational design with a cross-sectional approach. The population of this

study was type 2 diabetes mellitus patients who visited the Internal Medicine Unit of Level III Baladhika Husada Hospital, Jember, East Java. The sample was determined by G* Power 3 application (α error probability: 0.05, power (1- β error probability): 0.90, standard effect size: 0.30) and obtained a sample of 112. A consecutive sampling technique was applied to determine the sample of this study. The inclusion criteria of respondents were diagnosed with type 2 diabetes, aged 20-79 years, duration of illness \geq 3 months, able to communicate verbally well, visits to the polyclinic $>$ three times, and willing to be respondents. The exclusion criteria were having physical limitations such as being blind, deaf, and other physical disabilities, and patients with comorbidities such as stroke.

Data were gathered using questionnaires on the nurse's role as an educator and dietary adherence. The nurse's role as educator questionnaire consists of 30 positive questions. It has six indicators: patient knowledge about DM, DM disease course, DM complications, blood sugar monitoring, health education, and self-care for DM patients. This questionnaire uses a Likert scale of 1-4 for each question, so the minimum score for this questionnaire is 30, and the maximum score is 120 (Fajrimi, 2013). The dietary adherence questionnaire consisted of 11 questions, namely eight positive and three negative questions, using a Likert scale of 1-4. This questionnaire has three indicators: the number of calories, meal schedule, and type of food. The minimum score of this questionnaire is 11, and the maximum score is 44 (Prananda, 2015).

Data collection was conducted on February 28 – March 20, 2020, at Level III Baladhika Husada Hospital, Jember. Bivariate analysis was performed using the Spearman-rank test with a significance value of 0.05. This research has been approved by the Health Research Ethics Commission of the Faculty of Dentistry,



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RESULTS

Characteristics of Respondents

Table 1. Characteristics of respondents.

Characteristics	n (%)	Median (min-max)
Age (years old)	-	61.5 (31-75)
Diabetes Duration (years)	-	5 (1-25)
Gender		
Male	46 (41.1%)	-
Female	66 (58.9%)	-
Education Level		
None	6 (5.4%)	-
Elementary School	22 (19.6%)	-
Junior High School	21 (18.8%)	-
Senior High School	45 (40.2%)	-
University	18 (16.1%)	-
Marital status		
Single	2 (1.8%)	-
Married	83 (74.1%)	-
Widow	27 (24.1%)	-
Employment status		
Housewife	27 (24.1%)	-
Farmer	2 (1.8%)	-
Civil servant	17 (15.2%)	-
Entrepreneur	21 (18.8%)	-
Unemployed	24 (21.4%)	-
Private employee	1 (0.9%)	-
Retired	20 (17.95)	-

Table 1 reveals that the median of the respondent's age was 61.5 years, ranging between 31-75 years. The range of illness duration was 1-25 years, with a median of 5 years. The number of females (58.9%) was more than males (41.1%). The most common educational background was Senior High School (40.2%). Most respondents were housewives (24.1%) and married (74.1%).

The Role of Nurse as an Educator in Type 2 DM Patients

Table 2. The Role of Nurse as an Educator in type 2 DM patients

Variable	Median	Min-max
The Role of Nurse as an Educator	63	40-90
Indicator of nurse's role as an educator		
Patient knowledge about diabetes mellitus	2	1-4
Diabetes mellitus disease course	2	1-4
Diabetes mellitus complications	1.9	1.1-3.1
Blood sugar monitoring	3	1.3-4
Health education	2	1-4
Self-care for diabetes mellitus patients	2.2	1.2-3.9

Table 2 shows that the median value of the nurse's role as an educator was 63 (min-max= 40-90). The indicator with the highest median value was blood sugar monitoring, while the lowest was the indicator of diabetes mellitus complications.

Dietary Adherence in Type 2 DM Patients

Table 3. Dietary adherence in type 2 DM patients

Variable	Median	Min-max
Dietary adherence	26.5	18-40
Indicator of dietary adherence		
The number of calories	3	1.3-4
Meal schedule	2	1-3.8
Type of food	2.8	1.3-4

Table 3 shows that the range value of dietary adherence was 18-40, with a median value of 26.5. The indicator with the highest median value was the number of calories, while the lowest was the meal schedule.



The Correlation between Nurse's Role as an Educator and Dietary Adherence in Type 2 DM Patients

Table 4. The correlation between nurse's role as an educator and dietary adherence in type 2 DM patients

Variable	Dietary adherence	
Nurse's role as an educator	r	0.203
	p value	0.032

Table 4 shows that there is a significant correlation between between nurse's role as an educator and dietary adherence in type 2 DM patients (p-value = 0.032, $r = 0.203$). A positive correlation indicates the better the nurse's role as an educator, the higher the patient's dietary adherence.

DISCUSSION

The Role of Nurse as an Educator

The result shows that the median value of the nurse's role as an educator was 63 (min-max= 40-90). The score of nurse's role as an educator is still not optimal because the value is closer to the minimum value than the maximum value. The minimum value that can be obtained from filling out the nurse's role as an educator questionnaire is 30, while the maximum value that can be obtained is 120 (Fajrimi, 2013). The nurse's role as an educator has not been optimal could be due to an obstacle that can affect the provision of education by nurses to patients, such as the lack of nurses. At the time of data collection, only two nurses were on duty at the internal medicine unit, namely nurses with undergraduate and vocational graduates. The workload will feel heavy due to the imbalance in the number of workers, unclear job descriptions, and an imbalance in the addition of knowledge and skills (Barahama et al., 2019). Several barriers to nurses providing education include the lack of nurse preparation, inadequate nurse education, the personal character of nurses,

and the lack of time to provide education (Bastable, 2002).

The indicator with the lowest score was DM complications. This indicator contains a statement on how the nurse explains the complications/further consequences of DM disease, explains the symptoms, causes, dangers, and how to cope if the glucose level is more than the normal limit and less than the normal limit. The lowest value in this indicator indicates that the role of nurses when providing education related to DM complications is still lacking. The lack of nurses on duty can cause this condition, so nurses do not have time to provide education. On the other hand, the indicator with the highest score in this study was the blood sugar monitoring indicator. This result shows that nurses often provide education related to blood sugar monitoring. Blood sugar monitoring indicators consist of statements about how nurses explain the importance of controlling and monitoring blood sugar, how to find out the results of checking blood sugar levels and normal values for blood sugar levels, and how to contact health workers and facilities. The importance of patients knowing about monitoring blood sugar levels is so that patients can maintain blood sugar levels within normal limits. Health education in DM patients is essential in controlling the patient's blood sugar levels (Sucipto & Fadlilah, 2017).

Dietary Adherence

The result shows that the range value of dietary adherence was 18-40, with a median value of 26.5. The results showed that the patient's dietary compliance still needs improvement. Several factors can influence dietary compliance, such as age, occupation, and DM duration. The results of this study obtained the median value of age is 61.50. With increasing age, dietary compliance decreases because most elderly have memory problems and decreased cognitive function (Parajuli, 2014). The results showed that most of the respondents



were housewives (24.1%) and unemployed (21.4%). Research by (Purba et al., 2010) states that most respondents are housewives, with the results of not complying with the diet. This condition is caused by inconsistent eating schedules every day, in contrast to working people whose work activities are limited by time, so adherence to the eating schedule can be regular. Another factor that can affect compliance is the length of DM. In this study, the median of DM duration was five years. There is a difference in adherence between patients recently diagnosed with DM and those diagnosed with DM for a long time. Patients with a longer duration of illness will feel bored and less follow the diet program (Yulia, 2015).

In this study, the number of calories had the highest median score compared to other indicators. This result indicates that the respondents in this study adhered to the diet related to the number of calories. This is supported by respondents' statements that they have reduced their consumption of foods or beverages that contain lots of sugar and have switched to using sugar substitutes such as corn sugar. In contrast, the meal schedule indicator had the lowest score. This indicator contains questions about the eating schedule according to the recommendations. Setting a meal schedule is very important for people with type 2 diabetes because by setting a meal schedule into small portions, and frequently, carbohydrates will be digested more slowly and steadily. The need for insulin also becomes low, and insulin sensitivity increases so that metabolism in the body can run well (Putro & Suprihatin, 2012). The meal schedule for DM patients is given 3 main meals and three snacks at a distance of 3 hours (Tjokroprawiro, 2006). This study found that the eating schedule indicator is the indicator with the lowest score compared to other indicators. This result indicates that the respondents in this study were less obedient to the eating schedule. This is supported by most

Wijatmiko, et al (2023)

respondents who say that they are not too concerned with eating schedules, and when they feel hungry, they will eat.

The Correlation between Nurse's Role as an Educator and Dietary Adherence in Type 2 DM Patients

The bivariate analysis showed a relationship between the role of nurses as an educator and dietary compliance in type 2 DM patients. The better the nurse's role as an educator, the higher the patient's dietary adherence. Their knowledge influences the compliance of DM patients in diet therapy because the actions taken by a person are based on their knowledge (Rahman et al., 2017). Patients can obtain support, encouragement, and information related to type 2 DM, one of which is from education provided by health workers. Education is a form of nursing intervention used to help clients, individuals, groups, and communities overcome health problems through learning activities, where nurses provide information to clients (Jasmani et al., 2016). Implementing the nurse's role as an educator properly can encourage type 2 DM patients to adhere to the recommended diet. The role of nurses as educators is to provide information related to DM disease, disease complications, and health education on how to properly manage DM so that it can motivate DM patients (Ilmah & Rochmah, 2015). Providing information related to diet-related management by nurses can affect the understanding of DM patients so that patients will comply with dietary recommendations (Senuk et al., 2013).

CONCLUSION

The result of the study showed a significant correlation between a nurse's role as an educator and dietary adherence in type 2 DM patients. Improving the nurse's role as an educator to provide appropriate health education is essential to encourage diet compliance in type 2 DM patients.



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