

# The Influence of Complication Events on the Empowerment Selfcare of Diabetes Mellitus Patients

Andalia Roza<sup>1</sup>, Lora Marlita<sup>2</sup>, Mulyanti Roberto<sup>3</sup>, Uly Astuti Siregar<sup>4</sup>

<sup>1</sup>Nursing, FFIK, Abdurrah University

<sup>2</sup>Nursing, FFIK, Abdurrah University

<sup>3</sup>Nursing, Faculty of Nursing, Andalas University

<sup>4</sup>Medical, Medical Faculty, Abdurrah University

**Abstract:- Self care according to Orem (2001) is a learned behavior to maintain and improve health status and well-being. Empowerment self care diabetes is an important indicator of diabetic disease management. Diabetes mellitus will also affect the quality of human resources and have an increased risk of complications if not given proper treatment and control. This can be overcome if the patient has good knowledge and ability to perform self-care for his illness. The aim of this study was to determine the effect of the incidence of complications of diabetes mellitus on the empowerment of self-care in patients with diabetes mellitus. The research design used is descriptive correlation, the sampling technique used is non-probability sampling using purposive sampling, namely by taking samples based on certain criteria, and obtaining 160 respondents. The research instrument used was patient demographic data questionnaire data sheets and the Summary of Diabetes Self-Care Activities (SDSCA) instrument, which would later be statistically processed in a univariate and bivariate manner with the help of the SPSS application. The results of the study showed that there was a significant relationship between the incidence of complications and Empowerment Self Care for DM patients with a p-value of 0.000 (p-value <0.05). It is hoped that the government will further optimize the empowerment of self-care for diabetes mellitus patients in order to prevent the occurrence of complications.**

**Keywords:- Diabetes Mellitus, Complications, Selfcare.**

## I. INTRODUCTION

Diabetes Mellitus (DM) is a serious public health problem facing the world. The prevalence and incidence of this disease have increased drastically in newly industrialized countries and developing countries, including Indonesia. The World Health Organization (WHO) predicts an increase in DM sufferers in Indonesia from 2000 of 8.4 million to around 21.3 million in 2010. 2030 [1]. Diabetes mellitus (DM) is a metabolic disorder disease caused by a function of an organ that cannot produce enough insulin or cannot use the insulin that is produced effectively. So there is an increase in blood sugar levels or also known as hyperglycemia. Diabetes mellitus is still a global health problem. The number of DM sufferers from year to year tends to increase [2].

The results of a report from the International diabetes federation (IDF, 2014) state that there are around 382 million sufferers of DM and it is estimated that this will increase to 592 million people in 2035. Of these 382 million sufferers, 175 million sufferers are undiagnosed, so they are at risk of experiencing complications without realizing it or not. without prevention[2] .

Diabetes mellitus will also affect quality human resources and have an increased risk of complications if not given proper handling and control. This can be overcome if the patient has good knowledge and ability to carry out self-care for the disease [3].

Activities that support DM management are self care. Self care according to Orem (2001) is a learned behavior to maintain and improve health status and well-being. The implementation of proper management is supported by adequate control of blood sugar, insulin and anti-diabetic drugs (OAD), meal planning, efforts to carry out sports/physical exercise, and immediate treatment of hypoglycemia (La Greca, 2005). Self care inventory revised version (SCI-R) is a form of measurement used to determine the extent to which a DM client has implemented a DM management plan one to two months earlier [4].

Empowerment self care diabetes is an important indicator of diabetic disease management, this is in line with research which states that diabetic self care is a model in diabetes patient health education for diabetes control [5]. Sustainable self-care can basically shape a person's way of life in preventing, recognizing, and managing his illness, so it is hoped that good and sustainable self-care behavior will increase the degree of one's well-being because he carries out appropriate care according to his own conditions (Kusniah, 2010), good self-care behavior has an important role in diabetes management, especially in preventing diabetes complications. Complications make diabetes more severe and require a long time to recover and increasing health costs. The American Diabetes Association suggests that people with diabetes who receive less education about self-care have a four times greater risk of experiencing complications than those who receive good education (Holt et al., 2013). A diabetic sufferer has at least a self-care score that is at a moderate level, therefore it is important to pay attention to the determinants of good diabetes self-care including race, social support, having a companion or family during the period of illness, knowledge,

and diabetes microvascular complications [6]. According to Orem (2001), self care is an individual effort, an act of learned behavior and is a deliberate action to maintain and improve health status and well-being (Kusniyah et al., 2010). Self care for diabetes patients at this time is crucial (very important). Based on existing data, it is known that 98% of diabetes care is self care (Mohebi et al., 2013). Behaviors that reflect self care include: blood sugar control, diet planning, physical activity, use of drugs or insulin (Jalilian et al., 2014, Tol et al., 2012, Ayele et al., 2012, Mohebi et al., 2013). According to the American Association of Diabetes Educators (AADE, 2014), there are 7 behaviors that are essential for self care, namely: healthy eating (healthy diet), being active (sufficient physical activity), monitoring (control of blood sugar levels), taking medicine anti-diabetic or insulin), problem solving (problem solving), healthy coping (healthy coping) and reducing risk (reducing risk). The implementation of these seven behaviors has a positive correlation with controlled blood sugar levels, reducing complications and improving the quality of life of diabetic patients. The results of other studies show the relationship between social support and increasing self-care behavior support in type 2 diabetes patients is effective in improving glycemic control [7].

Type II of DM can be managed effectively by losing excess weight, adopting a healthy lifestyle with a balanced diet and sufficient physical activity, checking blood sugar regularly and taking diabetes medication regularly. If diabetics do not manage diabetes properly, it will cause complications. Complications due to diabetes can attack all parts of the body. Continuously high blood sugar levels can affect the heart, blood vessels, eyes, kidneys and nerves. Research by Solomon and colleagues in 2017, the results of this study show that the determinants of nephropathy in diabetics include non-compliance with monitoring blood sugar at home (OR=6.8), poor glycemic control (OR=2.7) and being overweight (OR=2.7) [8].

Based on the results of a research study conducted by researchers of 8 people who experienced complications in diabetes mellitus, there were four people who had poor self-care empowerment. And based on the description above, the researcher is interested in examining the effect of complications of diabetes mellitus on the empowerment of self-care in patients with diabetes mellitus.

The aim of this study was to determine the effect of the incidence of complications of diabetes mellitus on the empowerment of self-care in patients with diabetes mellitus.

## II. LITERATURE REVIEW

### A. Diabetes Mellitus

Diabetes mellitus is a chronic condition characterized by an increase in blood glucose concentration accompanied by the appearance of the main characteristic symptom, namely large amounts of sweet-tasting urine [9]. Diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action or both [10]. So it can be concluded that diabetes mellitus is a metabolic disease characterized by increased blood glucose

levels that occur due to impaired insulin secretion, insulin action or both.

### B. Complications of Diabetes Mellitus

Complications due to diabetes mellitus can be acute or chronic. Acute complications occur if a person's blood glucose levels increase or decrease sharply in a relatively short time. Blood glucose levels can drop dramatically if the patient is on a diet that is too strict. Big and sudden changes can be detrimental. Chronic complications in the form of blood vessel disorders which can eventually lead to heart attacks, kidney, nerves, and other serious illnesses. Acute complications such as hypoglycemia, diabetic ketoacidosis, and non ketotic hyperosmolar coma while chronic complications include cardiovascular disease, kidney disease, eye disease, nerve damage and diabetic foot [11].

### C. Empowerment Self Care for Diabetes Mellitus Patients

Empowerment is: a reciprocal relationship between health professionals and patients where patients develop skills, knowledge, and confidence to determine the focus of their health care [12]. Empowerment in chronic illness is a process that both nurses and patients share. Nurses must feel empowered, communicate effectively and exert control over the empowerment process. Patients must be motivated to change and have special competencies in order to be involved in the empowerment process. Patients with chronic diseases need to be given appropriate information about their condition, so they can recognize symptoms and find solutions to problems. Patient empowerment and patient responsibility are part of health care. Empowerment is a process by which people gain greater control over decisions and actions that affect and aim to mobilize resources by providing access to health information [13].

The American Association of Diabetes Educators (AADE) issued AADE7 Self-Care Behaviors as an educational framework for centralized management of diabetes patients and their services. There are seven important self-care behaviors for the success and effectiveness of diabetes self-management, namely (AADE, 2014): 1) Healthy food patterns 2) Increasing physical activity 3) Monitoring blood sugar levels 4) Taking medication according to the rules 5) Problem solving skills 6) Behave healthily 7) Reduce the risk. Self-care activities are related to behaviors such as diet planning, avoiding high fat, increasing exercise, monitoring blood sugar levels and foot care [14].

## III. METHOD

The research design used is descriptive correlation where the independent variable is self care and the dependent variable in this study is the incidence of complications in DM patients, zero hypothesis ( $H_0: \rho = 0$ ) There is no relationship between the level of self-care and the incidence of complications in patients with type 2 DM. Alternative hypothesis ( $H_a: \rho \neq 0$ ) There is a relationship between the level of self-care and the incidence of complications in patients with type 2 DM. The population in the study This is a patient with diabetes mellitus.

The sampling technique used is non-probability sampling using purposive sampling, namely by taking samples based on certain criteria. The research instruments used were patient demographic data questionnaire data sheets and the Summary of Diabetes Self-Care Activities (SDSCA) instrument.

Research analysis was carried out up to bivariate analysis, this was used to determine whether there was a relationship between self care variables and the incidence of complications, so calculations were used using chi square with the help of the SPSS program.

#### IV. ANALYSIS

Table 1. Univariate Data Distribution

No	Variables and Categories	Frequency	Percentage
1	Complication Events		
	- No complications	64	40
	- Complications	96	60
	Amount	160	100
2	Empowerment Self care		
	- Good self-care empowerment	72	45
	- Empowerment self care is not good	88	55
	Amount	160	100

The results of the analysis in table 1 for univariate variables show that 40% of respondents, namely 64 people, had complications in diabetes mellitus and as many as 60%, namely 96 people, had no complications in diabetes mellitus that they suffered from. While the frequency distribution of respondents based on empowerment self care for DM disease showed that 72 respondents (45%) had good empowerment self care and 88 respondents (55%) had poor empowerment self care.

Table 2 Relationship Between Complications and Empowerment Self Care for DM Patients

Complication Events	Empowerment Self Care				Total		p-value
	Good		Not Good				
	N	%	N	%	N	%	
No complications	50	69.4	14	15.9	64	40	0.000
Complications	22	30.6	74	84.1	96	60	

The results of the analysis in table 2 for biivariate variables obtained as many as 96 respondents who experienced complications in diabetes mellitus, there were 74 respondents who had poor empowerment self care and 22 respondents who had good empowerment self care. As for the respondents who did not have complications, there were 64 respondents, of the 64 respondents, 50 respondents had good empowerment self-care and 14 respondents had poor empowerment self-care. And the p value obtained in the above analysis is 0.000, which means the p-value  $\leq 0.05$ , which means that there is a significant relationship between the

incidence of complications and empowerment self care in diabetes mellitus patients.

#### V. DISCUSSION

##### A. Complications events

Based on the results of the above study, the majority of patients with diabetes mellitus had complications, namely 96 respondents (60%). This data shows that patients who do not have type 2 diabetes mellitus complications because they can maintain a better lifestyle, are shown from the results of the above study. The results of the study found that female clients demonstrated better diabetes Self Care behavior compared to males. At the time of the study, women seemed to care more about their health, so they made optimal efforts to take care of themselves for their illnesses.

Complications are additional diseases or advanced disease from the previous disease. Some research results explain that gender makes a real contribution to diabetes self-care. It was explained that clients with female gender showed better diabetes Self Care behavior compared to male clients. Diabetic Self Care activities must be carried out by both male and female diabetic clients, it's just that in reality women seem to care more about their health so they try optimally to carry out independent care of the disease they are experiencing [15].

Jiang and Associate (2003) said that the majority of DM patients who received treatment at the hospital, 90% came from cardiovascular complications, 23% kidney disease complications, and 40% complications in the lower extremities due to DM. Complications that occur in type 2 DM patients can increase in severity, and cause longer time to recover. Most type 2 DM patients who have entered the aging process in life will experience changes both anatomically, physiologically and biochemically towards a point of maximum life as a human being [4].

Complications that appeared in this study included: hypoglycemia, cerebrovascular complications, diabetic nephropathy, diabetic ulcers, cardiovascular complications, neuropathy, retinopathy and HNNK which were sorted by highest frequency. Hypoglycemia can appear when we are not aware of it. Signs of hypoglycemia begin to appear when blood glucose is  $<50$  mg/dl, although hypoglycemia reactions can be seen at higher blood glucose levels. The causes of hypoglycemia are oral hypoglycemic drugs of the sulfonylurea class, especially glibenclamide. Hypoglycemia is also common with insulin treatment, but is usually mild. This incident often arises because the patient does not know the effect of several changes on his body [4].

##### B. Empowerment Self Care DM patients

Based on the results of the above study, it was concluded that empowerment self care in patients with diabetes mellitus was not good, namely 88 respondents (55%). Self-care is self-care to maintain life, health and welfare. Self-care as an evolutionary process of developing knowledge or awareness with learning to survive the complex nature of diabetes in a social context. Because most of the day-to-day care in diabetes is handled by the patient or family[15]. This research is not in

line with research conducted by Hartono (2019) and Silvia Junianty (2018) that the respondents' empowerment self care obtained was also good self care.

Several research results explain that age level has a positive relationship to diabetes Self Care. An increase in age causes an increase in a person's maturity or maturity so that the client can think rationally about the benefits that will be achieved if the client carries out diabetes Self Care activities adequately in his daily life but in the elderly due to increasing age, it decreases to do Self Care activities diabetics [15].

The implementation of self care is important because the domain contained in it is in accordance with the DM pillars that must be obeyed by the client. Nurses play a role in increasing patient understanding of the importance of maintaining DM management at home through self care. Different levels of self care can occur. Orem (2001) states that what makes self care is one's knowledge. The habit of self-care in adult patients is influenced by specific knowledge in its application. In implementing self care at home, there are several domains that become sub-variables in self care. Domains that become subvariables in self care include (1) controlling blood sugar; (2) insulin and OAD; (3) meal planning; (3) sports; and (4) treatment of hypoglycemia. These five things are efforts that DM clients can make in improving self-care in handling hypoglycemia. These five things are efforts that DM clients can make in improving self care [4].

Blood sugar control is an important domain in the management of DM to find out whether the therapeutic goals have been achieved, to make adjustments to drug doses if the therapeutic goals have not been achieved. Insulin and OAD are pharmacological therapies that can support the blood sugar range within normal limits if non-pharmacological therapy has not been achieved. Non-pharmacological therapy that is highly recommended for people with DM includes meal planning.

Difficulty in adhering to the diet may be one of the complications in the meal planning domain that causes results that are not much different in this domain. Clients often have difficulty implementing a diet even though they already know what foods are allowed to be eaten. In addition, the difference in determining the amount of food that may be consumed is also not based on recommendations, but on desires.

Daily exercise and regular physical exercise (3-4 times a week for about 30 minutes), is one of the important pillars in the management of DM which is often overlooked. The principles of exercise in DM patients are the same as the principles of physical exercise in general [4].

### *C. The Effect of Complications on Empowerment Self Care in DM Patients*

Based on the results of the analysis of the bivariate statistical test research conducted using the chi square test method, it was found that the p-value  $\leq 0.05$ , which is 0.00, this indicates that there is a significant relationship between the incidence of complications and empowerment self care in diabetes mellitus patients with an odds ratio of 12.013, which

means people who having good empowerment self care 12 times more to avoid complications of Diabetes Mellitus.

Self care is a daily regimen carried out by DM sufferers to manage DM. In practice, self care is a form of nursing service that can be carried out by individuals in meeting their basic needs with the aim of maintaining life, health and well-being in accordance with the state of health and illness, willing and able to apply self care [4].

According to Ayele Ketema, (2012) Treatment is carried out for DM patients in preventing or minimizing acute or chronic complications, especially by following self-care practices which include exercise, recommended diet, self-sufficiency which includes exercise, medication and blood glucose monitoring. Although behavioral self-care is crucial for controlling the disease and its complications, self-care is very challenging because there are several factors including knowledge, physical skills, emotional factors, self-efficacy and perceptions from others that influence self-care behavior [16].

In this study, self care has a relationship with the incidence of complications in patients with diabetes mellitus, this is in accordance with the theory that the incidence of complications is influenced by whether or not the patient performs self care, the better the patient who performs self care, the less complications will occur in diabetic patients. This is because diabetes Self Care is an action taken by an individual to control diabetes which includes treatment and prevention of complications, so Self Care that is done properly can minimize acute or chronic complications, especially by following self-care practices which include the recommended diet, self-sufficiency. which includes exercise, medication and blood glucose monitoring. It can be concluded that Diabetes Self Care is an independent action carried out by diabetic clients in everyday life with the aim of controlling blood sugar which includes the activity of regulating diet (diet), physical exercise (exercise), monitoring blood sugar levels, taking medication, doing insulin injections and foot care (medication).

This research is in line with research conducted by Silvia Junianty (2019) and research conducted by Dodik Hartono (2018), who said there was a significant relationship between the incidence of complications and empowerment self care in diabetes mellitus patients. However, this research is not in line with research conducted by Antania Sasombo, et al (2021) [17].

## **VI. CONCLUSION**

Based on the results of the study, it was shown that there was a significant influence between the incidence of complications and Empowerment Self Care in DM Patients with a p-value of 0.000 (p-value <0.05).

## REFERENCES

- [1]. L. R. Putri, “Gambaran Self Care Penderita Diabetes Melitus (DM) di Wilayah Kerja Puskesmas Gamping I Sleman Yogyakarta,” *Skripsi*, no. Dm, pp. 1–180, 2017, [Online]. Available: [http://eprints.undip.ac.id/59801/1/SKRIPSI .pdf](http://eprints.undip.ac.id/59801/1/SKRIPSI.pdf).
- [2]. Arifin, “Hubungan Strategi Pemberdayaan Dengan Empowerment Pada Penderita Diabetes Melitus Tipe 2 Di Wilayah Kerja PUSKESMAS SIBELA KOTA SURAKARTA,” *Fak. Ilmu Kesehat.*, 2017.
- [3]. U. Kumalasari, “Hubungan Tingkat Self Care dan Kepatuhan Terhadap Outcome Terapi Pada Pasien Diabetes Mellitus Tipe 2 Rawat Jalan di RSUD Dr. Moewardi Surakarta Februari-Maret 2017,” pp. 1–12, 2017.
- [4]. S. Junianty, “HUBUNGAN TINGKAT SELF CARE DENGAN KEJADIAN KOMPLIKASI PADA PASIEN DM TIPE 2 DI RUANG RAWAT INAP RSUD,” Padjajaran, 2018.
- [5]. D. Press, “Determinants of activation for self-management in patients with COPD,” pp. 1757–1766, 2016.
- [6]. S. Suhaila *et al.*, “Diabetes self-care and its associated factors among elderly diabetes in primary care,” *J. Taibah Univ. Med. Sci.*, vol. 5, no. June, pp. 4–11, 2017, doi: 10.1016/j.jtumed.2017.03.008.
- [7]. Z. Mohebi, S., Parham, M., Sharifirad, G., & Gharlipour, “social support and self - care behavior study.,” 2018.
- [8]. V. Triana, “HUBUNGAN MANAJEMEN SELF-CARE DENGAN KEJADIAN KOMPLIKASI PADA PENDERITA DIABETES MELITUS TIPE II DI PUSKESMAS ANDALAS TAHUN 2019,” Andalas, 2019.
- [9]. R. Bilous, R. & Donnelly, *Buku Pegangan Diabetes Edisi Ke 4*. Jakarta: Bumi Medika, 2015.
- [10]. PERKENI, *Konsensus Pengelolaan dan Pencegahan Diabetes Melitus Tipe 2 di Indonesia*. Jakarta: PERKENI, 2015.
- [11]. R. Novitasari, *Diabetes Melitus*. Yogyakarta: Nuha Medika, 2013.
- [12]. R. Disler *et al.*, “Empowerment in people with COPD,” *Patient Intell.*, no. January, p. 7, 2015, doi: 10.2147/pi.s61195.
- [13]. P. M. Disler, R., Appleton, J., Smith, T., Hodson, M., Inglis, S., Donesky, D., & Davidson, *Empowerment in people with COPD. Patient Intelligence*. 2015.
- [14]. S. et Al, “Role of Self Care in Management of Diabetes Mellitus,” *J. Diabetes*, 2013.
- [15]. D. Hartono, “Hubungan Self Care Dengan Komplikasi Diabetes Mellitus Pada Pasien Diabetes Mellitus Tipe Ii Di Poli,” vol. 4, no. 2, pp. 111–118, 2019.
- [16]. L. Ayele, K. Tesfa, B. & Abebe, “Self Care Behavior among Patients with Diabetes in Harari,” 2012, [Online]. Available: [www.plosone.org](http://www.plosone.org).
- [17]. A. Sasombo, mario E. Katuuk, and H. Bidjuni, “, Mario Esau Katuuk,” *Hub. Self Care Dengan Komplikasi Diabetes Mellitus Pada Pasien Dengan Diabetes Mellitus Tipe 2 Di Klin. Husada Sario Manad.*, vol. 9, no. 2, pp. 54–62, 2021.