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Determinants Of Self-Empowerment In Type 2 Diabetes Mellitus Patients In A Provincial Hospital Of Aceh, Indonesia

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Abstract:
Background: *Type 2 diabetes mellitus is a chronic disease that requires the client's ability to manage the disease. Patient type 2 diabetic have a responsibility to care for their disease. The client's ability to have control over their own life and make choices regarding health is called self-empowerment. The study purposes to determine the determinants of self-empowerment in type 2 diabetes mellitus patients at Banda Aceh hospital, Indonesia.*
Materials and Methods: *A correlation study with a cross sectional design was conducted. The population in this study were type 2 diabetes mellitus outpatients who visited the Endocrinology Polyclinic. The purposive sampling of 226 respondents was conducted. Data collection used questionnaires consisting of sociodemographics, social support (MSPSS Instrument) and self-empowerment (DES-SF). Analysis data used the chi-square test (χ2 test) and multiple logistic regression by using computer sottware.*
Results*: The study results showed that there was a relationship between age (ρ=0.000), gender, education level (ρ = 0.006), length of disease duration (ρ = 0.000), history of DM education (ρ = 0.000), social support (ρ = 0.000) and there is no relationship between patients' income (ρ = 0.821) and comorbidity factors (ρ = 0.055) with self-empowerment in type 2 diabetes mellitus patients. The dominant factor has high coefficient correlation with self-empowerment was social support (ρ=0.000 and Ods ratio =5.716).*
Conclusion*: Patients with high social support have a 5.7 times chance of increasing self-empowerment so that with good social support, type 2 diabetes mellitus patients could improve their health status.*
Keywords*: Self-empowerment, diabetes mellitus, social support*

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I. Introduction

American Diabetes Association (ADA) defines diabetes mellitus as a metabolic disease characterized by hyperglycemia caused by problems with insulin secretion, insulin action or both. Chronic hyperglycemia in diabetes can have an impact on long-term damage, dysfunction of the body's organs in the eyes, kidneys, nerves, heart and blood vessels which can cause complications of vision problems, kidney failure, cardiovascular disease and neuropathy.(ADA, 2020)

According to the International Diabetes Federation (2020), there are 10 countries with the largest prevalence of DM throughout the world, including Indonesia which is in seventh place with 10.7 million sufferers and this is expected to increase every year.(IDF Diabetes Atlas 10th Edition, 2021). Basic health research (Riskesdas) reports that the prevalence of type 2 DM in Indonesia in the population aged ≥15 years is 2%. This figure shows an increase compared to 2013 with a prevalence of 1.5%. In Aceh province, the prevalence of type 2 DM is 2.4% and Banda Aceh is the city with the highest case rate, namely 2.3% (Riskesdas, 2018).

Type 2 DM is a health problem that requires continuous medical care from various disciplines. Strategies to reduce risk through glycemic control, patient self-management, education and early detection and ongoing support are needed to prevent acute complications from diabetes and to reduce the risk of long-term complications (WHO, 2016). Therefore, the importance of self-empowerment in DM patients is so that patients can manage their diabetes.

Self-empowerment is an individual's ability to build confidence, increase self-esteem and develop coping mechanisms and improve personal skills to make choices regarding health.(Woodall et al., 2010)So it can be concluded that self-empowerment is a person who has the ability to believe in managing a disease problem.

Generally, patients with type 2 DM have problems managing their behavior and diet patterns over self-control. Good self-empowerment in type 2 DM patients aims to increase control over the disease by increasing self-confidence and motivation so as to increase the ability to carry out physical activity, improve diet patterns and promote better mental health and prosperity.(Darjono et al., 2019).

DM complications must be watched out for and can cause a person's death if they are not alert and do not maintain their lifestyle. For example, one of the complications of DM that is often encountered is diabetic foot, which can manifest as ulcers, infections and gangrene. DM sufferers have a 15% risk of developing diabetic foot ulcers during their lifetime(ElSayed et al., 2022). DM sufferers who are able to care for their feet well know how to care for their feet, so diabetic foot complications can be prevented. DM sufferers also tend to experience visual disturbances and this can cause vision loss due to retinopathy(Husna & Putra, 2020.)So self-empowerment in DM patients is very necessary to prevent all of this.

In recent years, several studies have shown the importance of good self-empowerment to maintain and improve self-efficacy and diabetes management such as glycemic control and prevention of complications. Several factors influence self-empowermentType 2 DM patients who have been identified are age, gender, income level (Hara et al., 2014), length of disease duration, comorbid factors, social support (Isaksson et al., 2015), level of education and history of DM education. (Tol A, et al., 2012).

Referring to the high prevalence of type 2 DM in Aceh Province and Dr. Zainoel Abidin Banda Aceh which is the referral hospital for Aceh Province, a preliminary survey needs to be carried out. From the survey, data was obtained on type 2 DM patients who went to endocrine polyclinics, namely in January 2023 - March 2023, totaling 1284 patients. The author has conducted field observations and informal interviews as one of the initial data collection methods. The results of short interviews with type 2 DM patients showed that of the 10 patients, all of them had itgood self-empowerment and having social support in the family which helps patients in carrying out daily activities and all patients interviewed were able to control blood sugar levels through medication and adjusting diet patterns, but the author does not yet know the dominant factors that influence self-empowerment in patients DM type 2.

Efforts to increase sufferer involvement in managing DM are by first knowing what dominant factors influence self-empowerment. Prevention of complications is much better than cure and it is appropriate that through health education, the implications of this research for self-empowerment need to be improved. Through health promotion, which is one of the best ways to increase the knowledge and skills of DM sufferers to carry out self-care. Based on the description of this phenomenon, the author wants to conduct research related to the analysis of the determinants of self-empowerment in type 2 diabetes mellitus patients at RSUD dr. Zainoel Abidin Banda Aceh.

II. Methods and Materials

Research design: Cross-Sectional study

Research sites: This study was conducted at a provincial hospital of Banda Aceh, Indonesia.

Research time: 28 October to 28 November 2023.

Sample Size: 226 Respondents.

Sample Size measurement: To find out the number of samples in this study using the Lameshow formula from 550 population to 226 samples.

Sampling technique: The sampling technique is using purposive sampling, namely a technique for taking samples by setting criteria according to the needs of this research.

Instrument: The data collection process uses an instrument in the form of a questionnaire. The questionnaire used in this research consists of:

1. Sociodemographics of respondents consisting of; age, gender, education level, income level, length of disease duration, comorbid factors and educational history of DM.
2. The social support variable uses the Multidimensional Scale of Perceived Social Support (MSPSS) instrument. This instrumentconsists of 12 question items, each item uses a Likert scale with seven points starting from point 1 (strongly disagree) to point 7 (strongly agree).
3. The self-empowerment variable uses the diabetes empowerment scale-short form (DES-SF) instrument. This instrumentconsists of 8 question items, answers are assessed on a scale of 1-5, where the lowest score is strongly disagreed, namely 1 and the highest is 5, strongly agree. The higher the score, the higher the level of self-empowerment you have.

Inclusion Requirements:

1. Patients suffering from type 2 DM ≥6 months
2. Patients aged ≥ 35 years
3. The patient is able to communicate verbally in composmentis awareness.
4. Patients are willing to be respondents and sign informed consent when collecting data.

Procedure

Researchers met respondents directly at the Endocrine Polyclinic outpatients. The respondents were given an explanation of the research objectives, benefits, and procedures, and asked whether they were willing to participate as research participants. Respondents who wish to participate in the study are asked to sign an informed consent form before completing the questionnaire. The study has approval from ethical clearence of dr. Zainoel Abidin of Banda Aceh hospital (approval number: 211/ETIK-RSUDZA/2023).

Statistic analysis

After the data was collected, it was coded and analyzed using a computerized program after re-checking the completeness of the filling in all parts of the research instrument that were collected individually. Descriptive statistics were used in data analysis, including frequencies and percentages of each variable. The Chi-square test is used to determine statistical significance and whether there is a relationship or not. The logistic regression test was used to determine the most dominant variable related to the level of self-empowerment in type 2 DM patients

III. Results

Table 1 shows that the majority of respondents in this study were 94 respondents (41.6%) of early elderly age (46-55 years), 124 respondents (54.9%) of female gender, 102 respondents (45%) with middle /secondary education (45.1%), high income level of 127 respondents (56.2%), disease duration >5 years as many as 113 respondents (50%), presence of comorbidities as many as 142 respondents (62.8%), had a history of DM education of more than 1 time as many as 193 respondents (85.4%), social support 197 respondents (87.2%) and high self-empowerment 183 respondents (81%)

Table 1. Univariate Analysis

No	Characteristics	Frequency	Percentage
1	Mean Age±elementary school	56.75±8,630	
	Late adulthood (36-45 years)	22	9.7
	Early elderly (46-55 years)	94	41.6
	Advanced late (56-65 years)	61	27
	Seniors (>65 years)	49	21.7
2	Gender		
	Male	102	45.1
	Female	124	54.9
3	Level of education		
	Higher education	59	26.1
	Middle education	102	45.1
	Basic education	36	15.9
	No school	29	12.8
4	Income level		
	High (≥Rp. 3,166,460)	127	56.2
	Low (<Rp. 3,166,460)	99	43.8
5	The duration of the disease		
	6 months-1 year	18	8
	1-5 years	95	42
	> 5 years	113	50
6	Comorbid factor		
	No	84	37.2
	Yes (hypertension, heart desease, mild stroke)	142	62.8
7	DM Education History		
	Have >1 time	193	85.4
	Once	22	9.7
	Never	11	4.9
8	Social Support		
	High	197	87.2
	Medium	21	9.3
	Low	8	3.5
9	Self-empowerment		
	High	183	81
	Medium	43	19

Table 2. Bivariate Analysis

No	Characteristics	Self-Empowerment				p-value
		High		Middle		
		n	%	n	%	
1	Age (year)					0.000
	Late adulthood (36-45)	12	54.5	10	45.5	
	Early elderly (46-55)	85	90.4	9	9.6	
	Advanced late (56-65)	52	85.2	9	14.8	
	Seniors (>65)	34	69.4	15	30.6	
2	Gender				27.5	0.006
	Male	74	72.5	28	12.1	
	Female	109	87.9	15		
3	Level of education					0.000
	Higher education (university)	50	84.7	9	15.3	
	Middle education (high school)	90	88.2	12	11.8	
	Basic education (primary and secondary school)	29	80.6	7	19.4	
	No school	14	48.3	15	51.7	
4	Income level					0.821
	High	104	81.9	23	18.1	
	Low	79	79.8	20	20.2	
5	The duration of the disease					0.000
	6 months-1 year	8	44.4	10	55.6	
	1-5 years	76	80	19	20	
	> 5 years	99	87.6	14	12.4	
6	Comorbid factor					0.055
	No	74	88.1	10	11.9	
	Yes	109	76.8	33	23.2	
7	DM Education History					0.000
	Have >1 time	174	90.2	19	9.8	
	Once	6	27.3	16	72.7	
	Never	3	27.3	8	72.7	
8	Social Support					0.000
	High	171	87.3	25	12.7	
	Medium	10	47.6	11	52.4	
	Low	1	12.5	7	87.5	

Multivariate Analysis

Selection of candidate variables

The results of the feasibility test of the model as presented can be concluded that age, gender, level of education, length of disease duration, history of DM education and social support have a significant value of <0.05, so it can be concluded that these six variables have a relationship in the bivariate test and It is feasible to continue with multivariate testing with multiple logistic regression models

Table 3. The Results of Phase I Multiple Logistic Regression Test

No	Predictor	OR	P-value	95%CI	
				Lower	Upper
1	Age	1.657	0.144	0.841	3.265
2	Gender	0.303	0.014	0.117	0.784
3	Level of education	0.592	0.035	0.363	0.964
4	Length of disease Duration	0.386	0.052	0.148	1.010
5	DM's educational history	0.139	0.000	0.059	0.323
6	Social support	4.777	0.000	1.712	13.329

Based on table 3 there were 2 variables have p-value is >0.05, namely age and length of disease duration, so these variables were excluded from further modeling.

Table 4. The Results of Phase II Multiple Logistic Regression Test

No	Predictor	OR	p-value	95%CI	
				Lower	Upper
1	Gender	0.288	0.009	0.113	0.737
2	Level of education	0.574	0.024	0.354	0.928
3	DM Education History	0.113	0,000	0.113	0.240
4	Social Support	5,716	0,000	2,150	15,194

Table 4 shows that the social support was factor that most dominantly correlation with self-empowerment in type 2 DM patients (p=0.000 <0.05) with an Odds Ratio (Exp. B) of 5.716. The study showed high social support have a 5.7 times high correlation on high self-empowerment compared to other factors.

IV. Discussion

Relationship between Age and Self-Empowerment in Type 2 Diabetes Mellitus patients

Based on the results of this study, it was found that there was a relationship between age and self-empowerment in type 2 DM patients at the hospital (p=0.000). This is in line with research conducted in the Bendo Community Health Center area, Kediri Regency, the results of the study showed that the majority of respondents were aged 51-60 (34.3%) years and had good self-empowerment (Afrian et al., 2014).

The results of this study are in line with previous studies in Turkey which obtained a p value = 0.003, which means that there is a significant relationship between age and self-empowerment and there is a decrease in scores in older respondents.(Sürücü & Besen, 2017). Previous studies also reported the same results where there was a higher level of self-empowerment in the 40–49-year age group compared to respondents of other ages, where the level of diabetes literacy decreased at older ages (D'Souza et al., 2015)

Apart from that, Anderson also revealed in his research that type 2 DM sufferers had lower scores at older ages, due to differences in their medical conditions, younger diabetes patients viewed diabetes from a more sensitive perspective when compared to older diabetes patients. (Anderson et al., 2003)

*Self-empowerment*closely related to self-care, one of the factors that influences it is age. Increasing age is often associated with various limitations and damage to sensory function. The need for self-care will increase with increasing age and abilities due to a decrease in body function (Alligood, 2014), so that with good self-empowerment it is hoped that self-care will also increase.

The results of this study prove that the reason for the decline in self-empowerment in older respondents is because with increasing age there is a decline in cognitive and diabetes literacy. Another reason is because younger diabetes patients have different perceptions of the disease so that as a result of the age difference, younger diabetes sufferers are more sensitive to things that can improve their health. The age factor also determines an individual's ability to have their own control over their decision to choose the best health alternative for them. Elderly individuals will have cognitive abilities affected in analyzing the best options for their health and have limited physical abilities when seeking care from health facilities and health workers.

The relationship between gender and self-empowerment in Type 2 Diabetes Mellitus patients

Based on the study results, it was found that there was a relationship between gender and self-empowerment in type 2 DM patients at Dr. Zainoel Abidin Regional Hospital (p=0.006). This is in line with previous studies in Iran showing that the majority of female respondents had higher empowerment scores than men with a value of p = 0.007, which means that there is a relationship between gender and the level of self-empowerment in type 2 DM patients (Tol et al., 2012)

The study conducted by Sürücü reported the results of a regression model test on the gender variable, there was a statistically significant positive relationship between empowerment and gender (R=13). This is in line with the results of research by Gautam et al, (2009) in India explaining that Most type 2 DM patients are female and have problems related to their ability to manage their disease (Sürücü & Besen, 2017).

*Self-empowerment*It is also closely related to self-care. One of the factors that influences it is gender. Gender has an important contribution to self-care abilities. Men will have more health irregularities such as lack of weight management and smoking habits than women (Alligood, 2014), so that in this case men also tend to have no better self-empowerment than women

The results of this research explain that psychosocial problems are the same for all genders, but women prioritize emotional rather than rational, so that when facing a problem women tend to use feelings and related to this, women also maintain better health and good coping than men, this This is proven by the fact that more men have a smoking habit than women.

The relationship between education level and self-empowerment in Type 2 Diabetes Mellitus patients

Based on the research results, it was found that there was a relationship between education and self-empowerment in type 2 diabetes mellitus patients (ρ=0.000). This research is in line with a study conducted by Afrian (2014) that the higher a person's education level, the higher the person's self-empowerment score. From the results of his research, the result was p = 0.000, which means there is a relationship between education level and self-empowerment (Afrian et al., 2014).

This is also in line with research by Tol A et al., (2012) which states that the level of education has a significant relationship with the elements contained in the diabetes empowerment scale (DES) including management of psychosocial aspects of diabetes (r = 0.078, p = 0.04), assessment of dissatisfaction and

readiness to change (r = 0.076, p = 0, 04) as well as setting and achieving goals for people with diabetes (r=0.09, p=0.01) (Tol et al., 2012).

This is in line with research by Mier et al., (2008) found that some of the respondents had low education and the majority had low empowerment scores. Likewise in the research of Goz et al., (2006), in research at the Diabetes Polyclinic Hospital in Turkey, where the majority of respondents had low education and had low levels of self-empowerment. According to Nurhayani 2014, people who have a higher level of education are more oriented towards preventive action, know more about health problems and have better health status (Nurhayani et al., 2021).

This proves that the higher the education of a person with diabetes, the better their self-empowerment will be. The intellectual abilities possessed by an individual will influence the individual's ability to accept something. Individuals will be more mature towards the change process within themselves so that they can more easily accept positive external influences so that their readiness to change is better. According toErwina (2016), higher education can make it easier for someone to receive information, so that the knowledge they have increases.

The relationship between income level and self-empowerment in Type 2 Diabetes Mellitus patients

Based on the research results, it was found that there was no relationship between income level and self-empowerment (ρ=0.691). The results of this research are in line with a study conducted by Khowaja (2023) in Pakistan regarding factors related to self-empowerment in type 2 DM patients with 451 respondents, it was found that there was no relationship between socio-economic status (income level) (p = 0.085) so that It can be concluded that there is no relationship between income level and aspects of self-empowerment which consist of psychosocial diabetes, assessment of dissatisfaction and readiness to change (Khowaja et al., 2023).

Apart from that, in another study conducted by Sürücü (2017), type 2 DM patients who had jobs had a higher level of self-empowerment. Studies in related literature reveal that patients with work status and chronic illnesses have higher levels of self-efficacy, social competence, self-management (Frain et al., 2009), and self-confidence (Varekamp, 2006).

It was also found that working diabetes patients had better glycemic control (Varekamp et al., 2006). It could be concluded that the level of income is not related to the level of self-empowerment of individuals with type 2 DM, but working and non-working status can influence the level of self-empowerment in these individuals so that work is considered to increase motivation, self-confidence and independence in diabetes.

The results of this study proved that a person's income may reflect the social status, education and health status of individuals in a population group. Total income is also a predictor of health status and can determine a person's ability to manage health and efforts to cure disease. However, in this case working and non-working status have more influence on glycemic control in type 2 DM patients, because people with working status have different activities. It is thought to increase motivation, self-confidence and diabetes independence.

The relationship between the length of disease duration and self-empowerment in Type 2 Diabetes Mellitus patients

Based on the research results, it was found that there was a relationship between the duration of the disease and the level of self-empowerment in type 2 diabetes mellitus patients at the hospital (ρ = 0.000). This is in line with research conducted by Afrian (2015) in the Bendo Community Health Center area, Kediri Regency, the results of the study showed that respondents who had suffered from DM for 6-10 years had a good level of self-empowerment (p=0.003) so it can be concluded that there is a significant relationship. long duration of illness with self-empowerment (Afrian et al., 2014).

Furthermore, other studies also explain that there is a significant relationship between the length of the disease duration experienced by type 2 DM patients and self-empowerment. On average, patients who have had type 2 DM for more than 10 years have good self-empowerment due to the greater experience and knowledge gained in caring for and controlling their own blood sugar.

The results of this study are also in line with a study by Tol A et al., (2012) which states that the duration of suffering from DM has a significant relationship with aspects of assessing dissatisfaction, readiness to change, setting and achieving diabetes goals (Tol et al., 2012). This research proves that the longer a person suffers from DM, the stronger the individual's readiness to change. Individuals have received more education and experience in managing their disease, thereby increasing self-empowerment which will later influence the prevention of complications and health status.

Relationship between comorbidities and self-empowerment in Type 2 Diabetes Mellitus patients

Based on the research results, it was found that there was no relationship between comorbidities and self-empowerment in type 2 diabetes mellitus patients (p=0.055). This research is in line with a study conducted

by Rosyida explaining that there is no statistical relationship between type 2 DM patients who have comorbidities and the level of self-empowerment of type 2 DM patients (p=0.061) (Rosyida, 2020).

Apart from that, a previous study conducted by Zhu in Malaysia explained that one of the 3 aspects of self-empowerment assessment, namely assessing dissatisfaction and readiness to change, had no relationship with self-empowerment in type 2 DM patients who had problems with ischemic heart disease and p value = 0.104, which means that there is no relationship between comorbidities and self-empowerment in the aspect of assessing dissatisfaction and readiness to change (Zhu et al., 2019)

From the several studies that have been described, it can be concluded that comorbid factors have no statistical relationship with the self-empowerment of type 2 DM patients, but of course comorbidities will influence the prognosis of DM. A patient having one or more comorbid factors will result in a worse prognosis compared to patients who do not have comorbid factors and this can still be prevented through good disease management and adaptation to comorbidities.

Relationship between history of DM education and self-empowerment in Type 2 Diabetes Mellitus

Based on the research results, it was found that there was a relationship between a history of DM education and self-empowerment in type 2 diabetes mellitus patients (ρ=0.000). This is in line with previous studies which explain that type 2 diabetes sufferers who have received diabetes education have a much higher level of self-empowerment than those who do not have a history of education (p=0.000), which means there is a significant relationship between history of DM education and level of self-efficacy (D'Souza et al., 2015).

The results of other studies conducted bySürücüin Turkey explained that there was a significant relationship between patients who had previously received diabetes education and the level of self-empowerment (p=0.001) where it was found that diabetes sufferers who had previously received education about how to manage DM and diet management had higher self-empowerment assessment scores. better so that education about DM becomes the main factor that can increase the empowerment of DM patients(Sürücü & Besen, 2017).

DM education is closely related to increasing knowledge regarding how to control blood sugar levels. Research by Husna & Putra (2020) reported that there was a significant relationship between knowledge and the ability of type 2 DM patients to detect early blood sugar levels. DM education is an effort to increase individual health knowledge at least regarding the management of disease risk factors and life behavior in an effort to improve health status, prevent the recurrence of disease and cure disease (Khowaja et al., 2023).

The results of this study prove that the results of diabetes education programs previously received by diabetic individuals are considered to be that patient empowerment develops along with increased literacy and their ability to set and achieve goals, self-confidence, autonomy and responsibility in managing their disease and it can also be concluded tThe more often people with type 2 DM receive education about their disease, the better their self-empowerment will be.

Relationship between Social Support and self-empowerment in Type 2 Diabetes Mellitus patients

Based on the research results, it was found that there was a relationship between social support and self-empowerment in type 2 diabetes mellitus patients (ρ = 0.000). This is in line with studies conducted by Sürücü in Turkey that there is a significant relationship between social support and the level of self-empowerment in type 2 DM patients with the majority of patients with good social support having a high level of self-empowerment (Sürücü & Besen, 2017).

The results of this research prove that someone who receives social support becomes more independent and responsible for their illness because they receive support through family, special people, relatives, children and others compared to someone who does not receive social support. Morever, Zhu (2019) revealed that someone who has social support tends to be better prepared to maintain health status and maintain behavior in maintaining their health (Zhu et al., 2019).

The Most Dominant Factor influencing self-empowerment in Type 2 Diabetes Mellitus patients.

Based on the results of multiple logistic regression tests on the variables age, gender, level of education, length of disease duration, history of DM education and social support, it was found that the variable that had a strong relationship with self-empowerment in type 2 DM patients was good social support with a coefficient (ρ=0.000). These results also obtained an Ods Ratio (Exp. B) value of 5.716, which means that social support has the opportunity to increase self-empowerment to a higher level of 5.716 times in the aspects found in self-empowerment, namely assessing dissatisfaction, readiness to change, setting and achieving diabetes goals so that self-empowerment increases, the health status of patients in managing their diabetes at this hospital. The result of this study is in line with the Cohen (2012) explained that social support is the resources provided by other people to individuals which can influence the individual's psychological well-being and a form of comfort, both physical and psychological, provided by family members or close friends.

Humans as social creatures cannot live alone without the help of others. Primary, social and psychological needs cannot be met without the help of other people. Especially if the person is facing problems. At times like that, a person will seek social support from the people around him, so that he feels appreciated, cared for and loved.

Social support was found to be a factor that increases self-empowerment. When the social support felt by DM patients is good, self-empowerment increases along with it. Hara (2014), in research conducted in Japan, reported that family support has an important influence on patient self-empowerment (Hara et al., 2014). Patient experience and open communication that patients experience in social support are considered important factors in the diabetes self-empowerment process (Sigurdardottir & Jonsdottir, 2018). In another study, the results of regression analysis showed that empowerment in diabetes increased as perceptions of support from relatives increased (Isaksson et al., 2015).

This research proves that type 2 DM patients who receive high social support from family, relatives, close friends, special people and others as well as other people around them will make DM patients think that they are valuable, have a positive outlook on life, and are more capable. in managing diabetes. In this research, social support was found to be a factor that increases empowerment. The support provided can be in the form of support in helping with medical costs and patient care, emotional support, information support and appreciation support, namely providing solutions to solve problems that arise during the treatment of diabetes mellitus patients.

Someone who gets social support becomes more independent and responsible for their illness because they get support from family, special people, relatives, children and others compared to someone who doesn't get social support. Zhu revealed that someone who has social support tends to be better prepared to maintain health status and maintain behavior in maintaining their health (Zhu et al., 2019).

V. Conclusion

Based on the results of the logistic regression test, it was found that the variable that had a strong relationship with self-empowerment in type 2 diabetes mellitus patients was the social support with a coefficient of (ρ=0.000). The Ods Ratio (Exp. B) results for social support were 5.716, which means that high social support has a 5.7 times chance of increasing self-empowerment in type 2 diabetes mellitus patients.

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