

## THE FACTORS AFFECTING SELF CARE OF TYPE-2 DIABETES PATIENTS IN MEDAN JOHOR

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### Abstract

Self care of type 2 diabetes patient is the patients' ability to do a self care to meet their basic needs as well as to maintain their health. The main purpose of self care of type 2 diabetes patient to control a good metabolic status, minimize complication and achieve a good quality of life. The aimed of this research was to analyze factors affecting the self care of type 2 diabetes patients. This study was a cross sectional analytic, recruited 50 respondents which was chosen by accidental sampling technique. Statistical analysis used for this study was spearman correlation for bivariate analysis and multiple linear regression for multivariate analysis. The results showed that the period of suffering, complication, knowledge, family supports were not associated with self care of type 2 diabetes patient's. There were relationships between self efficacy and self care (p value 0,001). Self-efficacy became the main factor which affected self care. People with good self efficacy had chance 0.6 times more to show a good self care than people with average self-efficacy. A type 2 diabetes patients with high self-efficacy able to perform self-care behaviors, and self-care behavior will directly be able to control blood glucose levels. It is recommended that nurses would be able to enhance self care of type 2 diabetes patients while providing nursing treatment by trying to increase patients' self efficacy through developing structured educational programmes and facilitating the social support.

**Keywords** : self-care, self-efficacy, type 2 diabetes

### BACKGROUND

Based on existing data, not only worldwide but also in Indonesia that the number of people with Type 2 diabetes mellitus is increasing every year. This is because the risk factors for Type 2 diabetes are age, obesity factor, and the factor of lack of physical exercise is increasing every year (Yusra, 2010). DM is a chronic metabolic disease, and if not done the proper care and treatment can result in a dangerous condition may even cause complications (Yusra, 2010)

To prevent complications and to reduce the high mortality rate due to type 2 diabetes is necessary for an action that is

doing self-care for patients. Mc Collum et al (2005 in Bai, Chiou, & Chang, 2009) emphasizes that the effectiveness of self-care is the most important component of diabetes care. Effective control of Type 2 diabetes is dependent on self-care are diet, exercise, glucose monitoring, and management of drug (Sousa & Zauszniewski, 2005)

ADA (2008) states that Type 2 diabetes self-care can reduce further the effects of DM type 2. Based on the ADA report (2008) on the decline due to complications of Type 2 diabetes is as much as 90% decrease blindness associated with diabetic retinopathy, as much as 50%

reduction in kidney disease as a cause of renal failure, as much as 90% decrease vascular disease as a cause of amputation, as much as 40% decrease mortality associated with cardiovascular disease (Gumbs, 2012).

In Medan there are few studies directly related to self-care behavior of patients with type 2 diabetes. Rachmawaty (2005) found that more than 50% of people with Type 2 diabetes don't know the further complications of the disease, so come to the hospital with high glucose levels. In addition, the results of research Soebari, et al (2003 in Hendro 2010) found that 75% of people with Type 2 diabetes do not adhere to the recommended diet and as much as 50% of control levels have poor blood glucosa.

Diabetes self-care were low indicating that there are factors which influence the type 2 diabetes patients in performing self-care. Some researchers conducted a study to find the relationship of factors influencing self-care in type 2 diabetes such as demographic variables, knowledge about diabetes, self-efficacy, health beliefs, and feelings will be healthy (Xu, Toobert, Whitmer, & Pan, 2008)

The purpose of this study was to identify the factors that influence self-care patients with Type 2 diabetes mellitus in the district of Medan Johor.

## METHODS

This study used a descriptive research design correlation with cross-sectional study. The population in this study were all patients with type 2 diabetes mellitus in the district of Medan Johor. The sample was 50 respondents with accidental sampling technique. Research instrument was a questionnaire consisting of a demographic questionnaire, the family support questionnaire modified from Hensarling Diabetes Family Support Scale (HDFSS), diabetes knowledge questionnaire modified from the Diabetes Knowledge Test developed by Fitzgerald, et al. (1998), self-efficacy questionnaire modified from the Diabetes Management Self-efficacy Scale developed by McDowell, J., Courtney, M., Edwards, H., & Shortridge-Baggett, L., (2004), self-care questionnaire modified from the Summary of Diabetes Self-Care Activities (SDSCA) developed by Glasgow, Hampson, and Toobert (2000).

Statistical methods for the analysis of the data used the univariate analysis to analyze of respondent characteristics, family support, knowledge of diabetes, self-efficacy, and self-care. Bivariate analysis non-parametric Spearman test was used to examine the relationship between long-suffering diabetes, complications of diabetes, family support, knowledge of diabetes, self-efficacy with self-care. Multivariate Analysis of Multiple Linear Regression Test was used to analyze the

factors that most influence the self-care of patients with Type 2 diabetes.

## RESULTS

### 1. Univariate Statistic Result

Table 1. Respondent characteristics (n=50)

Characteristics	n	%
<b>sex</b>		
men	17	34
women	33	66
<b>Education level</b>		
Low education	24	48
High education	26	52
<b>Complication</b>		
Yes	30	60
No	20	40
<b>Meried Status</b>		
Meried	49	98
Not Meried/widow 1	2	
<b>Characteristics</b>	<b>Mean</b>	<b>95% CI</b>
Age (year)	59.78	57.17-62.39
income(million)	1.07	0.682-1.46
Duration (year)	5.8	4.2-7.5

Table 2. Family Support and Diabetes

Knowledge of Type 2 Diabetes Patients in Distric Medan Johor (n=50)

Variable	n	%
<b>Family Support</b>		
Supportive	30	60
Not supportive	20	40
<b>Diabetes Knowledge</b>		
Good	35	70
Not Good	15	30

Table 3. Self-Efficacy, and Self-Care of Type 2 Diabetes Patients in Distric Medan Johor (n=50)

Variabel	Mean	95% CI
Self-efficacy	97	90.68-103.32
Self-care	39.16	36.37-41.95

### 2. Bivariate Statistic Result

Table 4. Relationship of length suffering,

complication, knowledge, family support and self efficacy whit Self Care in Distric Medan Johor (n=50)

Variabel	r	p value
Duration	-0.041	0.776
Complication	0.164	0.254
knowledge	0.15	0.299
Family support	0.084	0.564
	0.438	0.001*

\*Significant ( <0.05)

### 3. Multivariate Statistic Result

Tabel 5. Hasil Pemodelan Variabel Bebas dan Perawatan Diri Pasien DM Tipe2 (n=50)

Variabel	Beta	R <sup>2</sup>	PValue
Self efficacy	0.602	0.349	0.000

## DISCUSSION

Type 2 diabetes is a type of diabetes that most with presentation between 90-95% of all people with diabetes and is experienced by adults over 40 years Smeltzer & Bare (2008). Age is closely associated with the rise in blood glucose levels. Changes in anatomical, physiological, and biochemical will take place after the age of 30 years due to the aging process. WHO declared after the age of 30 years, the blood glucose level will rise 1-2 mg/dl/year at the time of fasting and going to ride 5.6-13 mg/dl at 2 hours after a meal (Suyono, 2006; Yusra, 2010).

The analysis showed the majority of respondents were female that 33 (66%). This is consistent with several studies showing that the majority of type 2 diabetic patients are female. According Yusra

(2010) states that some risk factors, such as obesity, lack of activity/exercise, age and a history of diabetes during pregnancy, leading to high incidence of diabetes in women (Radi, 2007)

The results showed that the average length of the respondents suffered from type 2 diabetes is 5.8 years. Results interval estimation can be concluded that the average length of type 2 diabetes is 4.2-7.5 years.

This is in contrast to research conducted by Toljamo and Hentinen (2001) on adherence to self-care and social support in Finland that the average length of 16 years suffer from diabetes dalah. While the study Pan, Liu, and Xu (2010) on the practice of self-care Management of type 2 diabetic patients were Chinese nationals in the United States the average long-suffering respondent was 20.9 years old. The results of the analysis of the relationship between long-suffering with self-care showed a negative relationship that the longer suffering from diabetes, it will decrease the respondents self-care, but the relationship is not strong. Statistical test results further concluded that there was no significant association between long-suffering with self-care respondents value (p value 0.776).

The results of this study showed no significant relationship between duration of diabetes with self-care. DM did not specify the long-suffering type 2 diabetes patients'

adherence to self-care. Although research conducted Bai, Chiou and Chang (2009) states that patients who had been suffering from diabetes over 11 years it will be easier to learn the self-care of the disease process and treatment experiences long enough, so the longer suffer from diabetes should self-care diabetic patients is increasing.

The results show the number of respondents who experienced more complications 30 (66%) than those who did not experience complications 20 (40%), there was no significant relationship between diabetes knowledge whit self-care of patients with type 2 DM. This is consistent with research Pan, Savage, Toobert, Whitner, and Xu (2008) that diabetes knowledge does not directly affect self-care, but the influence of self-efficacy. However, research Harith, et al (2011) stated that the respondents' knowledge about diabetes will be associated with the value of glycemic load and will affect the self-care of type 2 diabetes patients.

The results of further analysis it was found that there was no significant relationship between family support with self-care. It states that both family support made no difference in performing self-care. Research Murphy, et al (1994 in Toljamo & Hentinen, 2001) shows that the support of the family will not give effect to control the metabolic state. It is also submitted by Rosland, et al (2008) that family support

would not be associated with diabetes self-care patient is taking medications, diet plan, physical exercise, and examine the foot. This is in line with research Pan, Savage, Toobert, Whitner, and Xu (2008) which states that social support including family would not provide a direct link to self-care.

Analysis of the relationship between self-efficacy with self-care patterns show a positive relationship ( $r = 0.438$ ), meaning that the higher the value of self-efficacy, the higher the value of self-care respondents. This is consistent with the statement Pajares (2002 in Hunt, Wilder, & Steele, 2012) that a person with a value of high self-efficacy will have expectation of achieving the desired objectives, and will be different from someone who has a value of low self-efficacy, they have doubts about their ability to achieve the intended purpose.

The results of further analysis suggests that there is a significant relationship between self-efficacy with self-care patients with diabetes mellitus ( $p$  value 0.001). This is consistent with research Pan, Liu, and Xu (2008) which states that self-efficacy is a factor directly affecting self-care. Gao, Wang, Zheng, Haarddorfer, Kegler, Zhu, and Fu (2013) also states that self-efficacy will directly affect the type 2 diabetes patient self-care. Sigurdadottir (2005) also stated that the factors that most influence the care of patients with diabetes

is self-efficacy. Self self-efficacy is an individual's ability and confidence to do something to achieve a goal.

Self-efficacy has been demonstrated as an important factor in the self-management of diabetes mellitus (Mishali, Omer, & Heymann, 2011). Self-efficacy is a construct of certain behaviors that play a major role in the change process behavior. Individual's perception of his ability will overcome the difficulties on specific tasks in the future in which the individual will try to engage in more challenging behaviors associated with the task (Mishali, Omer, & Heymann, 2011). Management of self-care such as physical activity, diet management, blood sugar control is some special behavior, so it needed a special motivation to perform the behavior. One of the most important motivation in self-care management of patients with diabetes is self-efficacy (Mishali, Omer, & Heymann, 2011).

A type 2 diabetic patients who have high self-efficacy related to self-care behavior, and self-care behavior will directly be able to control the state of glycemic load (Gao, Wang, Zheng, Haarddorfer, Kegler, Zhu, & Fu, 2013).

Regression test results showed that self-efficacy is a factor that affects self-care as much as 35% is influenced by other factors. In addition, each increase of one unit of self-efficacy will increase by 60.2%

self-care means any individual who has a good self-efficacy, 0.6 times the chance of having a good self-care. This is consistent with research Hunt, Wilder, and Steele (2012) that self-efficacy is the factor that most affects the self-care of patients with Type 2 diabetes mellitus after mediated by factors of social support and social problem solving. In addition, research Pan, Savage, Toobert, Whitner, and Xu (2008) also stated that one of the factors that directly affect self-care self-efficacy is controlled by a variable after knowledge, long-suffering, social support and communication of health care team

This is similar to the statement Gao, Wang, Zheng, Haardrdorfer, Kegler, Zhu, and Fu (2013) that one of the major factors in achieving active self-care is self-efficacy. Brooks et al (2002 in Mishali, Omer, & Heymann, 2011)) found that self-efficacy relates to adherence to self-care, can reduce levels of HbA1c in diabetic patients Tipe1, can improve the quality of life better and can reduce depression.

## CONCLUSION

Most respondents had a good knowledge of DM (70%), the majority of respondents were supportive family support (60%). With the average value of the 97 self-efficacy showed high values. And the

value of the average treatment himself 39.16 which shows the value being.

There is no relationship between the long-suffering, complications, knowledge, and support families with self-care. There is a relationship between self-efficacy with self-care. 35% of self-efficacy influence self-care patients with diabetes mellitus type 2. Any individual who has a good self-efficacy, likely 0.6 times conduct themselves pearwatan good.

The results of this study can serve as the foundation in providing nursing care to patients with type 2 DM seeks to improve the self-efficacy of patients through health education is structured and scheduled. However, before providing nursing care to improve the patient's self-efficacy, socialization needs to be done in advance of self-efficacy, for example by conducting seminars or training. In addition, it is hoped that this research is the basis for further research to continue research in the form of qualitative research such as phenomenology study how self-care of patients with diabetes mellitus.

## REFERENCES

- Aditama, W. (2011). *The relationship of self-care, self efficacy, and social support with glycemic control (hba1c) among type-2 diabetes mellitus patients in banyudono 1 and ngemplak public health centres in boyolali district central java province.*

- Retrieved July 12, 2013 from [http://www.ph-gmu.org/test/wisuda/publikasi/online/foto\\_berita/wiwitaditama.pdf](http://www.ph-gmu.org/test/wisuda/publikasi/online/foto_berita/wiwitaditama.pdf)
- American Diabetes Association. (2012). Standards of medical care in diabetes 2012. *Diabetes Care*, 35(1).
- Anggina, L.L., Hamzah, A., & Pandith. (2010). Hubungan antara dukungan sosial keluarga dengan kepatuhan pasien diabetes mellitus dalam melaksanakan program diet di poli penyakit dalam rsud cibabat cimahi. *Jurnal Penelitian Kesehatan Suara Forikes*, 1, 1-9. Retrieved July 12, 2013 from <http://suaraforikes.webs.com/volume1%20nomorkhusus-HKN.pdf#page=3>
- Bai, Y. L., Chiou, C. P., & Chang, Y. Y. (2009). Self-care behavior and related factors in older people with type 2 diabetes. *Journal of Clinical Nursing*, 18, 3308-3315. Retrieved October 23 2012 from <http://dx.doi.org/10.1111/j.1365-2702.2009.02992.x>
- McDowell, J., Courtney, M., Edwards, H., & Bagget, L.S. (2005). Validation of australian / english version of the diabetes management self-efficacy scale. *International Journal of Nursing Practice*, 11, 177-184. Retrieved October 23 2012 from <http://dx.doi.org/10.1111/j.1365-2702.2009.02992.x>
- Fitzgerald, J.T., Anderson, R.M., Funnell, M.M., Hiss, R.G., Hess, G.E., Davis, W.K., Barr, P.A., (1998). The reliability and validity of a brief diabetes knowledge test. *Diabetes Care*, 21(5), 706-710. Retrieved November 19, 2012 from <https://www.google.com/url>
- Gao, J., Wang, J., Zheng, P., Haadrerfer, R., Kegler, M.C., Zhu, Y., & Fu, H. (2013). Effect of self-care, self-efficacy, social support on glycemic control in adults with type 2 diabetes. *BMC Family Practice*, 16 (66). Retrieved July 11, 2013 from <http://www.biomedcentral.com/147-2296/14/66>
- Glasgow, R. E., Hampson, S. E., & Toobert, D. J. (2000). The summary of diabetes self-care activities measure. *Diabetes Care*, 23(7), 943-949. Retrieved November 19, 2012 from <http://search.proquest.com>
- Gumbs, J. M. (2012). Relationship between diabetes self-management education and self-care behaviors among african american women with type 2 diabetes. *Journal of Cultural Diversity*, 19 (1). Retrieved October 23, 2012 from <http://web.ebscohost.com/ehost/pdf>
- Harith, K.A., Sulaiman, S.A., Hassali, M.A., Shafie, A.A., Sundram, S., Al-Nuri, R., & Saleem, F. (2011). Diabetes knowledge, medication adherence and glycemic control among patients with type 2 diabetes. *Int J Clin Pharm*, 33, 1028-1035. Retrieved July 11, 2013 from <http://dx.doi.org/10.1007/s11096-011-9582-2.x>
- Hu, J., Gruber, K.J., Liu, H., Zhao, H., & Gracia, A.A. (2013). Diabetes knowledge among older chinese adults with diabetes in beijing, china. *Journal of Clinical Nursing*, 22 (1-2), 51-60. Retrieved July 11, 2013. <http://dx.doi.org/10.1111/j.1365-2702.2012.04273.x>
- Hunt, C. W., Wilder, B., & Steele, M. M. (2012). Relationships among self-efficacy, social support, social problem solving, and self-management in a rural sample living with type 2 diabetes mellitus. *Research and Theory for Nursing Practice : An International Journal*, 26 (2), 126-141. Retrieved July 11, 2013 from <http://dx.doi.org/10.1891/1541-6577.26.2.126>
- Mishali, M., Omer, H., & Heymann, A.D. (2011). The importance of measuring self-efficacy in patients with diabetes. *Family Practice*, 28, 82-87. Retrieved July 11, 2013 from

- <http://dx.doi.org/10.1093/fampra/cmqq086>
- Pan, W., Savage, C., Toobert, D., Whitner, K., & Xu, Y. (2008). Factors influencing diabetes self-management in chinese people with type 2 diabetes. *Research in Nursing & Health, 31*, 613-625. Retrieved 16 November 2012 from <http://web.ebscohost.com/ehost/pdf>
- Pan, W., Liu, H., & Xu, Y. (2010). Self-management practices of Chinese Americans with type 2 diabetes. *Nursing and Health Sciences, 12*, 228-234. Retrieved November 19, 2012, from <http://dx.doi.org/10.1111/j.1442-2018.2010.00524.x>
- Rosland, A.M., Kleffer, E., Israel, B., Cofield, M., Palmisano, G., Sinco, B., Spencer, M., & Heiler, M. (2008). When is social support important? The association of family support and professional support with specific diabetes self-management behaviors. *J Gen Intern Med 23*,(12), 1992-1999. Retrieved July 12, 2013 from <http://dx.doi.org/10.1007/s11606-008-0814-7>
- Sigurdardottir, AK. (2005). Self care in diabetes : model of factors affecting self-care. *Journal of Clinical Nursing, 14*, 301-3014. Retrieved October 23, 2012 from <http://web.ebscohost.com/ehost/pdf>
- Smeltzer, S.C., & Bare, G.B. (2008). *Buku ajar keperawatan medikal bedah brunner & suddart*. Jakarta : EGC
- Sousa, V. D., & Zauszniewski, J. A. (2005). Toward theory of diabetes self-care management. *The Journal of Theory Construction & Testing, 9*(2), 61-67. Retrieved October 23, 2012 from <http://web.ebscohost.com/ehost/pdf>
- Toljamo, M., & Hentinen, M. (2001). Adherence to self –care and sosial support. *Journal of Nursing, 10*, 618-627. Retrieved November 16, 2012 from <http://web.ebscohost.com/ehost/pdf>
- Yusra, A. (2010). *Hubungan antara dukungan keluarga dengan kualitas hidup pasien dm tipe 2 di poliklinik penyakit dalam rumah sakit umum pusat fatmawati jakarta*. Diambil pada 10 November 2012 dari <http://www.google.co.id/lontar.ui.ac.id>