Relation Between Self-Efficacy And Quality Of Life Domain In Patients With Type 2 Diabetes Mellitus (A Case Study Of Public Hospitals Type B In Semarang)

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Abstract: *The prevalence of patients with Type 2 Diabetes Mellitus (T2DM) increases every year. The quality of life of diabetic patients is worse than the general population. Self-efficacy can be a consistent predictor of the quality of life. It is an important factor which leads to behavioral and mindset changes to minimize the symptoms and improve the quality of life. This study aimed to determine the relationship between self-efficacy and quality of life in patients with T2DM. This study used a correlational analytical design with a cross sectional approach. The respondents were patients with T2DM (n=189) who visited the medical polyclinics in Semarang City Public Hospital and Tugurejo Hospital in Semarang. The self-efficacy was assessed using a questionnaire of Diabetes Management Self-Efficacy Scale (DMSES), while the quality of life was assessed using a questionnaire of Audit of Diabetes-Dependent Quality of Life (ADDQOL). The data were analyzed using a chi-square test. The results indicated a relationship between self-efficacy and quality of life in patients with T2DM with a p-value of 0.016. Furthermore, there was a relationship between self-efficacy with 4 out of 18 domains of quality of life, including sex life, physical appearance, self-confidence, and worries about the future. There was no relationship between self-efficacy and age, sex, duration of DM, diabetic complications, and economic status. Self-efficacy assessment can help nurses acquire necessary information about the patients' readiness to engage in behavioral changes towards the improvement of their disease condition and self-management which will further enhance their quality of life.*

Keywords: *Type 2 Diabetes Mellitus, Self-efficacy, Quality of life*

I. Introduction

DMT2 was epidemic that affected 285 million people in the world.[1]Survey in several countries show that 6,4% or 285 million people experience DM in 2010 and this number predicted will be increase to 7,7% or 439 million in 2030. *World HealthOrganization* (WHO) says that Indonesia is biggest 4th DM's contributor with prevalance reaching 1,1% and predicted will be reaching 21,3 million people in 2030 which 80% is DMT2 patient.[2,3]DMT2 prevalence increase rapidly because elderly population and lifestyle changes.[4]

DM treatment start from changing lifestyle, such as dietary habit and exercise. If the glucose has not reach the target in normal range, then it can be given pharmacological intervention. Generally DM treatment consist of 5 pillars that is education, medical nutrition therapy, physical exercise, pharmacological intervention and blood sugar check independently. Wrong DM treatment can impact DM disease physically and psychologically. DM complication can appear in 5 – 10 years after the diagnosis is established. Wrong management can causes serious complication in DMT2 such as heart disease, nephropathyi, retinopathy and neuropathyi. Complication can causes daily life becomes more difficult that causes prolonged sadness. Stress condition in blood sugar control of patient DM can also causes decrease of patient quality of life.[5,6, 7,8]

Quality of life often used to measure how much chronic disease interfere someone's daily life.[9] Quality of life patient with DM was worse than people in general.[10] This was because DM will accompany patient for their whole life with uncontrolled complication so that affect patient's quality of life physically, psychologically, social and environment.[10,11]

Patient obedience to regimen treatment of chronic disease, generally low. That was one of obstacles in achievement of treatment goals so that the target of treatment not achieved. Diabetic management was integral of behavior that shows in daily life so that their life can be more qualified because quality of life is individual's needs. Patient's faith so that they can perform behaviors that support the improvement of the disease and increase self management is called self-efficacy. Self-efficacy is the main thing in health behavior's model have

important role in changing behaviors.[12,13]Clinical fact shows that enhancement of Self-efficacy will increase self management behavior. Self-efficacy can be a consistent predictor for quality of life short-term and long-term. Self-efficacy talks about ability in specific behavior or changing certain mindset for minimize symptom and increase quality of life through experiences technique, modeling, verbal persuasion and strengthening physically and psychologically.[14,15]

Study about effect of self-efficacy in health continue to be developed, this is remind that self-efficacy is important predictor in the success of health promotion.[16]This study will examine about relation between self-efficacy and quality of life domain in DMT2 patient. Self-efficacy generally involved as support of quality of life, but the relation between some domain in quality of life has not been studied so it still unclear.

II. Methodology

The type of this study was an analytical correlation research by using cross sectional method. The population of this study are DMT2 patient who came to the internist clinic of RSUD Kota Semarang and RSUD Tugurejo Semarang. The sample of this study were 189 patient by using inclusion and exclusion criteria. Inclusion criteria in this study was DMT2 patient with ages > 16 years old who came to the internist clinic. Exclusion criteria was patient with definitif cognitive disorders. Assessment for cognitive disorders was using Mini Mental State Examination (MMSE). This study was held in September until November 2016. Questionnaire that used in this study was close ended questions which the respondents should answered accordance with the guidelines that already set. Questionnaire that used in this study ware patient's demographics questionnaire, MMSE (Mini Mental State Examination) questionnaire for assess cognitive disorders in potential respondents, Self-efficacy questionnaire by using DMSES (Diabetes Management Self-Efficacy Scale), quality of life questionnaire by using Audit of Diabetes-Dependent Quality of Life (ADDQOL) developed by Professor Clare Bradley from Psychology Department London University in 1994 that revised in 1998.[17]Research ethics that used was based on the principle benefits, the principle of respect for human rights, and principle of justice.

III. Results

Patient in middle aged at 45-59 years old (51,9%) were more than old patient (60-74) as well as elderly patient (75-90). Most of the patient were women (68,3%), with most level of education was high school (27,5%). Beside most of the patient still has income (69,8%). Patient with DM duration >5 years (53,4%) were more than patient with DM duration <5 years, while DM complication in DMT2 patient mostly has more than one (49,2%).

Frequency distribution nutrition sub variable in self-efficacy questionnaire show that patient who has good nutrition control (dietary habit) (54%) were more than patient who has bad nutrition control. Frequency distribution weigh and physical exercise sub variable in self-efficacy questionnaire show that most of patient could control their weigh and their physical exercise well (62,4%). Frequency distribution medical treatment sub variable in self-efficacy questionnaire show that most of patient could undergo medical treatment well (86,2%). Frequency distribution blood sugar and feet assessment sub variable in self-efficacy questionnaire show that patient who could control their blood sugar and took more feet assessment (54,5%) than patient who couldn't control their blood sugar and didn't took feet assessment. Self-efficacy distribution in DMT2 patient show that patient who has good self-efficacy (52,4%) were more than patient who has low self-efficacy (47,6%).

Quality of life domain that has highest impact to DMT2 patient was domain of freedom eating with -1,67±1,17 value. The lowest impact domain in DMT2 patient was domain of sex life with -0,61±1,01 value. The highest importance rating for DMT2 patient was family life with 2,14±0,46 value. The lowest importance rating for DMT2 patient was sex life with 1,19±1,06 value. Quality of life evaluation by using ADDQOL refers to the score of Averaged Weight Impact (AWI). AWI score in this study was -3,06±1,72 mean. Quality of life distribution in DMT2 patient show that patient who has high quality of life (50,3%) were more than patient who has low quality of life (49,7%).

Table. 1: Frequency distribution based on impact and importance rating in each quality of life domain in DMT2 patient (n = 189) at internist clinic of RSUD Kota Semarang and RSUD Tugurejo Semarang

Quality of Life Domain	Impact rating	Importance rating	Weighted Impact Score (WIS)
Career	-1,46±1,11	2,03±0,59	-3,19±2,73
Family life	-1,36±1,11	2,14±0,46	-3,11±2,72
Social life	-1,13±1,16	2,02±0,58	-2,50±2,71
Sex life	-0,61±1,01	1,19±1,06	-1,34±2,37
Physical appearance	-1,62±1,09	2,06±0,39	-3,46±2,58
Physical activities	-1,58±1,10	2,10±0,46	-3,51±2,73
Holiday activities	-1,22±1,11	1,94±0,47	-2,51±2,36
Far travel and near travel	-1,63±1,07	2,01±0,51	-3,49±2,56
Self confidence	-1,49±1,10	2,11±0,41	-3,32±2,63
Motivation	-1,47±1,08	2,08±0,57	-3,30±2,63
Public reaction	-0,87±1,10	2,06±0,36	-1,92±2,59
Worries about the future	-1,30±1,07	2,03±0,32	-2,74±2,42
Financial condition	-1,23±1,16	2,11±0,40	-2,74±2,77
Dependence on others	-1,35±1,15	2,07±0,37	-2,99±2,74
Life condition	-1,58±1,12	2,10±0,36	-3,49±2,76
Freedom of eating	-1,67±1,17	2,05±0,42	-3,61±2,72
The pleasure of eating	-1,65±1,14	2,09±0,44	-3,65±2,80
Freedom of drinking	-1,35±1,20	2,06±0,46	-2,99±2,89

High quality of life proportion in good self-efficacy group (60,6%) was more than low self-efficacy group. Chi Square test show that *p value* = 0,016, this was show that both of them has meaningful relation. Chi Square test between self-efficacy and 18 quality of life domain show that 4 domain with *p value*< 0,05, so self-efficacy has relation with that. The four domain were domain of sex life, domain of physical appearance, domain of confidence, and domain of worries about future. As for the other 14 domain has *p value*> 0,05, so self-efficacy has no relation with that 14 domain.

Table. 2: Analysis Relation between Self-Efficacy and Quality of Life in DMT2 Patient (n=189) at Internist Clinic RSUD Kota Semarang and RSUD Tugurejo Semarang

Self Efficacy	Quality of Life					Total		P value
	High			Low				
	n	%	n	%	n		%	
Good	57	60,6%	42	44,2%	99		52,4%	0,016
Low	37	39,4%	53	55,8%	90		47,6%	
Sum	94	100%	95	100%	189		100%	

High quality of life proportion in middle age group (52,6%) was more than old age group (42,1%) and elderly group (5,3%). Low quality of life proportion in old age group (47,9%) was more than old age group who has high quality of life. This was different with middle age group and elderly group that has more high quality of life proportion than low quality of life. Spearman test show that *p value* = 0,946, so that this variable has no meaningful relation with quality of life. High quality of life proportion in women group (67,4%) was more than men group (32,6%), but low quality of life proportion in women (69,1%) was more than low quality of life proportion in men (30,9%). Between gender and quality of life has no relation (*p value* = 0,794). High quality of life proportion in patient who still has income (good economic status) (65,3%) was more than patient who has no income group (34,7%), and has no relation (*p value* = 0,170). High quality of life proportion in patient with more than one complication group (44,2%) was more than patient without complication or has one kind complication. Spearman test show *p value* = 0,223, so that both of them has no relation.

IV. Discussion

Self-efficacy strongly associated with healthy diet and burning calories through physical activities.[18] Result of the study compatible with this study which DMT2 patient who has good self-efficacy in nutrient management (54%) were more than patient who has low self-efficacy in nutrient management. Nutritional therapy was important thing to DM patient such as the importance of regularity eat like feeding schedule, kind and amount of the food. Physical exercise in addition to keep fit and also to lose the weight and correction of insulin sensitivities so it can corrected blood glucose control.[19] This study result show that DMT2 patient who

has good self-efficacy, weight management and physical exercise (62,4%) were more than DMT2 patient who has low self-efficacy, weight management and physical exercise (37,6%). Clinical fact show that enhancement of self-efficacy could increase self management behavior including medical treatment. This could be measure by self-efficacy medical treatment. Medical treatment Sub variable of Self-Efficacy in this study show that DMT2 patient who undergo good medical treatment (86,2%) were more than DMT2 patient who undergo low medical treatment (13,8%).

Self-Efficacy assessment in patient with diabetes could be the first step to developed specific individual intervention. Result of this study show that there is relation between self-efficacy and quality of life (*p value* = 0,016). This result compatible with the study of Mishali, et al that measure of self-efficacy could be used as diagnostic tools for diabetes patient that could help medical professional to get information that needs about patient readiness to involved in changing behavior.[19]

The effort of diabetes management by changing behavior for minimize the symptoms could be support by diabetes education. Education was the most important task in diabetes management. This applies to newly diagnosed patient as well as patient who have long diagnosed. Based on these measure and enhancement self-efficacy could become one of component in diabetes educational materials.

Self-Efficacy theory from Bandura says that one of self-efficacy source is verbal persuasion. Verbal persuasion could influence how someone act and behave and got suggestion that they can resolve their problems.[23] Verbal persuasion in this case could achieve by right diabetes educational.

This study show that diabetes has highest impact in freedom of eating domain with -1,67±1,17 mean, this was similar with the study of Athanasia, et al which diabetes has highest impact in freedom of eating domain with -1,7±1,0 mean.[20]Previous study show that there is relation between quality of life of diabetes patient and dietary behavior. Diabetes was chronic metabolic disorder characterized by high blood sugar level and accompanied by metabolism disorder of carbohydrate, lipid protein as effect of insulin insufficiency. This condition causes improper food intake can lead to hyperglycemia. Diabetes impact in patient freedom of eating indicated that dietary intervention is needed as good move to increase DMT2 patient's quality of life.[21] Highest negative impact in DMT2 patient was in freedom of eating domain which in this case indicated that dietary restriction in diabetes patient has strong effect in quality of life.

Result of study show the domain that has the lowest impact for DMT2 patient was sex life with -0,61±1,01 value. This was related that this domain was "non-applicable" (unselected) domain by 80 respondent so it didn't calculated in quality of life score. DMT2 patient in this study mostly in >50 years old and mostly was menopause women. It become one of the factor the patient was reluctant to reveal the condition of the fulfillment of sex with their partner. Fulfillment of sex was often become a problem to patient with chronic disease. This is of course recognized by the patient, but with conservative attitude and lack of knowledge about that thing it became restriction to nurse in assessment of their sex need problem. The study of Tal Moo Hoo says that nurse didn't give enough knowledge about sex health of the patient, so the recommendation to nurse is to increase the care and to understand the importance of health sex and the effect of chronic disease at fulfillment of sexuality disorder can lead distress.[22]

Furthermore, highest level of importance ADDQOL in this study was family life compatible with the study of Athanasia, et al which show the same result. Quality of life often used to measure how much chronic disease interfere daily activities of DMT2 patient including their family.[14] Lowest level of importance was sex need, this was because mostly DMT2 patient was menopause women.

Diabetes management was integral part from behavior that shows in daily routine so that life could get more quality because quality of life is individual need.[21] Bivariate test result show that there is significant relation between self-efficacy and quality of life (*p value* = 0,016).

Furthermore analysis test using Chi Square between self-efficacy and quality of life domain produce some domain has relation and some other has no relation. Some of quality of life domain has significant relation with (*p value*< 0,05) was domains of quality of life, including sex life, physical appearance, self-confidence, and worries about the future. While some of quality of life domain which has no significant relation with (*p value*> 0,05) was domain of working life, domain of family life, domain of social life, domain of physical activities, domain of holiday activities, domain of travel (far or near), domain of self confidence, domain of motivation, domain of public reaction, domain of financial condition, domain of dependence on others, domain of life condition, domain of freedom of eating, domain of the pleasure of eat, domain of freedom of drink. Bivariate test result show that age gender, educational level, income, DM duration and complication has no significant relation with quality of life of DMT2 patient (*p value* =>0,05).

V. Conclusion

There is a relation between self-efficacy and quality of life in DMT2 patient with *p value* = 0,016. The most influential impact at DMT2 patient in their quality of life domain is domain of freedom eating, while the most important domain in DMT2 patient is domain of family life. Furthermore, there was a relationship between

self-efficacy with 4 out of 18 domains of quality of life, including sex life, physical appearance, self-confidence, and worries about the future. There was no relationship between self-efficacy and age, sex, duration of DM, diabetic complications, and economic status.

Evaluation of self-efficacy and quality of life is a basic in nursing care management interventions for DM patient. Enhancement of self-efficacy and quality of life in nursing care can accomplished with collaboration with other medical personnel such as nutritionist in reviewing factors that affect patient's eating patterns, such as disease status, emotional and cultural factors. Physiotherapist when nurse and patient decided the goals of physical activities then physiotherapist in charge to decide the frequency level, duration and the right intensity of physical activities.

Self-efficacy is the management that focus on the patient. Self-efficacy is need to know by medical personnel who handle chronic patient in general and DM patient especially. Self-efficacy Intervention of enhancement self-efficacy can be done in Puskesmas as well as hospital so that patient or society can actively participate in that programs. For example is educating patient especially patient with low educated about how to check and control glucose when it in the abnormal range.[23]Education by the approach that focus on patient involve comprehensive planning for reduce DM risk by controlling blood pressure and lipid, smoking prevention, weight management, and choice of healthy lifestyle.[24]

This study can be developed by better theme and method, such as impact of self-efficacy to quality of life domain in chronic disease other than DM or experimental research about enhancement self-efficacy intervention in DM patient population.

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