

The Relation Between *Health Locus of Control* and Compliance of Diet Management Type II of Diabetes Mellitus in Piru Hospital, Western Part of Seram Regency 2016

M. Taufanfan Umasugi¹, Ira Sandi Tunny², Yohannis Tappang³, Ulima Asni⁴

^{1,2&3} Lecturer of STIKes (Colleges of Health Science) Maluku Husada, Indonesia

⁴Student of Nursing Study Program of STIKes Maluku Husada, Indonesia

Email: umasugit@yahoo.com

Abstract

Diabetes Mellitus is a medical disorder that is marked by a collection of symptoms caused by elevated levels of blood sugar (glucose) due to deficiency or insulin resistance. The factors that can affect blood sugar levels are dietary compliance and *health locus of control* that is a believe or person's effort in improving their health. This study aims to figure out the relation between *health locus of control* and compliance of diet management Type II of Diabetes Mellitus in Piru Hospital western part of Seram Regency in 2016. This research is a quantitative study, where the researcher wanted to know the relation between *health locus of control* and compliance of diet management Type II of Diabetes Mellitus by the number of respondents as much as 32 person. The sampling technique uses accidental sampling with *chi square* test. The result of statistical tests shows that the value of $p = 0,000 (<0.05)$. It means that there is a significant relationship between *health locus of control* with compliance of diet management Type II of Diabetes Mellitus. Respondents who have internal *health locus of control* are 13 person (40.6%), those who state and have internal scale of less *health locus of control* are 19 persons (59.4%). Respondents who have external scale of good *health locus of control* are 10 persons (31.2%), and the external scale of less *health locus of control* are 22 people (68,8%). In addition, the respondents who state that they are obedient are 14 persons (43.8%), and the respondents who state that they are not obedient are 18 persons (56.2%). Therefore it can be concluded that there is a relationship between *health locus of control* and compliance of diet management Type II of Diabetes Mellitus.

Keywords: *Health Locus of Control, Compliance of Diet Management Type II of Diabetes Mellitus*

I. INTRODUCTION

Diabetes Mellitus is a medical disorder that is marked by a collection of symptoms caused by elevated levels of blood sugar (glucose) due to deficiency or insulin resistance. This disease has long been known, especially in families, especially large-bodied family (overweight) with a high lifestyle or modern (Bustan, 2015). Women are more in risk of diabetic because physically women have an increased chance of a greater body mass index, monthly cycle syndrome (premenstrual syndrome), post-menopausal makes easy distribution of body fat accumulates as a result of the hormonal process so that women are at risk of experiencing Diabetes Mellitus Type II (Trisnawati, 2013). Diabetes Mellitus is a major health problem. The data from a global study showed that the number of people with Diabetes Mellitus in 2011 had reached 366 million people. If there no action the number estimated will rise to 552 million by 2030 (*International Diabetes Federation*, 2014). Diet is the basis of management (Diabetes Mellitus), which aims to provide all of the essential food elements, achieving and maintaining the weight, filling the energy needs and prevent fluctuations in blood glucose levels (Smeltzer and Bare, 2004 in Adnyani 2015). *Health locus of control* is a theory that is related to health. The beginning of health locus of control theory is derived from the theory of social cognition of Julian Rotter. Health locus of control is a set of personals beliefs about themselves that have influence on health and is one of the factors that affect dietary compliance (Diabetes Mellitus). HLOC can be divided into two parts that is internal and external HLOC. An individual with a high HLOC will have better health because an individual tend to take action to improve their health (Theofilau, 2012). Internal HLOC is a person's belief that the events of their life are determined primarily by the ability of theirself. Internal HLOC is determined by locus of control scale with the scale of ability, interest and effort. While external HLOC is a person's belief that events in life is determined by the strength outside themselves that is measured using the economic social scale and the influence of others (Grace 2012). Arsana (2011) mentioned that glycemic control of patients is influenced by patient adherence to recommended diet includes the type, number and schedule of food in consumption, and non-compliance is one of the obstacles to the achievement of treatment goals. Compliance is appropriate behavior level of an individual with a medical or health advice, long-term diet compliance is one of the most aspects pose a challenge in the management of Diabetes Mellitus (Siregar Adnyani et.al 2006 in 2015). Dietary compliance level of blood sugar shows that diet compliance has a strong relationship with a controlled patient's blood sugar. The compliance of diabetic diet can be influenced by several psychosocial factors such as stress, health locus of control, attitude, support systems and self-efficacy (Reloith Adnyani et.al 2004 in 2015). Poor compliance to the diet of patients is influenced by patient's belief that control of

health in their life is determined by others rather than by themselves. If the patient has an external confidence, thus the nurse tries to shape internal confidence in the patient, so that the patient will happily obey and change their behavior for the sake of the healing (Bieber 2014).

According to WHO, the world is now inhabited by 171 million people with Diabetes Mellitus (2013) and will increase twice 366 million by 2030. The number of Diabetes Mellitus patients in Indonesia were 8,554,155 people in 2013 including 7 ranking in the world and in 2014 were 8,995,135 people, while in 2015 reached up to 9.1 million people, thus it made Indonesia became the world 5 ranking of Diabetes Mellitus (Ministry of Health, 2015). The report from the research and health development of the health ministry (RISKESDAS) in 2013 mentioned there was an increase in the prevalence of Diabetes Mellitus that obtained by interviews of 1.1% in 2012 up to 1.5% in 2013 while the prevalence of Diabetes Mellitus based on physician's diagnosis or symptoms in 2013 was 2.1%, with the highest prevalence of physician diagnosed in Maluku (11.1% and the lowest was in the west Java region (0.5%), the prevalence of Diabetes Mellitus patients tend to increase in women compared to men and an increase in the prevalence of Diabetes Mellitus in accordance with the increasing of age, yet begin from the age of 65 years tend to decline and is likely to be higher for people who live in urban areas compared to rural areas. If seen from education according RISKESDAS the prevalence of Diabetes Mellitus tend to be higher in society with higher education levels as well as with a high index of ownership (RISKESDAS, 2013). The high number of diabetic proves that it is a serious public health problem and if it does not treated properly can cause complication. Complications of Type II may be prevented through the management of Diabetes Mellitus which consists of four main pillars namely education, medical nutrition therapy (diet), physical exercise and pharmacological interventions (PERKENI, 2011).

Based on preliminary studies that were obtained from Piru Hospital in patients with Type II Diabetes Mellitus data showed that the number of patients in 2013 were 15 people, in 2014 were 16 people, in 2015 were 29 people and in 2016 in the month of January- April were 38. Based on the increasing data of Diabetes Mellitus patients in Piru Hospital, the researcher wanted to investigate regarding the relationship between health locus of control and compliance of diet management type II of Diabetes Mellitus in Piru Hospital.

II. METHOD

The research design used in this study is a quantitative study that is to figure out the relationship between variables with cross sectional approach that is a study to investigate the dynamics of the correlation between the risk factors and the effects by using approach, observation or data collection at once at a time (Notoatmodjo 2013). Population is the whole object of study or research objects (Notoatmojo, 2013). The population in this study is infinite namely a population that cannot be predicted / ascertained the numbers, or populations with an unlimited number. The instrument used in this study is a questionnaire. This questionnaire consists of four parts. The first section provides demographic data of respondents, the second part consists of nine closed questions about internal scale of health locus of control, the third part consists of nine closed questions about external scale health locus of control, and the fourth part consists of 7 closed questions about dietary compliance of Diabetes Mellitus type II. Questions are made using Guttman scale with a choice of answers, if it is "yes" answer it will be given 1 mark and if the answer is "no" it will be given 0 mark. The procedures of collecting data in this study are as follows:

- 1) *Determining the client as research subjects and seeking for an approval (informed consent)*
- 2) *Completion of the questionnaire of health locus of control and dietary compliance of Diabetes Mellitus patients type II*
- 3) *Interviewing patients to know what kind of food consumed by the respondents*
- 4) *Analyzing the amount of food consumed by the respondents*
- 5) *Checking the completeness of the data that has been collected.*
- 6) *Performing data classification.*

After the data are collected, then the data are described. Results of HLOC divided into two, internal and external, and the results of the compliance management of diet divided into two, obedient and disobedient. Furthermore, the data are tabulated and entered to frequency distribution table and then interpreted. To analyze the relationship between HLOC and diet compliance management of type II Diabetes Mellitus patients, it is used the chi-square test, because the cells that the expected value is less than five namely 75% the number of cells with a significance level of $p < 0.05$.

III. RESULTS

A. Characteristics of Respondents

Table 1. Distribution of respondents by age in Piru Hospital western part of Seram regency 2016.

Age (Years)	Frequency	%
40-45	11	34,4
46-51	3	9,4
52-57	7	21,9
58-63	6	18,6
64-69	2	6,2
70-75	3	9,4
Total	32	100

Based on the above table the characteristics of respondents by age earned more respondents in range of 40-45 year as many as 11 people (34.4%), while the least respondents are in range of 64-69 years numbered 2 people (6.2).

Table 2. Distribution of respondents by gender in Piru Hospital, western part of Seram regency 2016

Sex	Frequency	%
Male	13	40,6
Female	19	59,4
Total	32	100

Based on the above table the characteristics of respondents by sex of the respondents, male as many as 13 people (40.6%), while female as many as 19 people (59.4%).

B. Internal scale of Health Locus of Control

Table 3. Distribution of respondents by internal scale of HLOC in Piru Hospital western part of Seram regency 2016

Internal scale of HLOC	Frequency	%
Good	13	40,6
Less	19	59,4
Total	32	100

Based on the above table the characteristics of respondents based on internal scale of HLOC known that the respondents who have a good internal scale of Health Locus Of Control (HLOC) as many as 13 people (40.6%), expressed and have a less internal scale Health Locus Of Control (HLOC) as many as 19 people (59.4%).

B. External Scale of Health Locus of Control

Table 4. Distribution of respondents by Scale External of HLOC in Piru Hospital, western part of Seram regency 2016

External scale of HLOC	Frequency	%
Good	10	31,2
Less	22	68,8
Total	32	100

Based on the above table the characteristics of respondents by good external scale of Health Locus Of Control (HLOC), as many as 10 people (31.2%), and have a less scale external Health Locus Of Control (HLOC) as many as 22 people (68.8%).

C. Diet Compliance Type II of Diabetes Mellitus

Table 5. Distribution of respondents based on dietary compliance Type II of Diabetes Mellitus in Piru Hospital, western part of Seram regency 2016

Dietary Compliance Diabetes Mellitus Type II		
	Frequency	%
Comply	14	43,8
Non- comply	18	56,2
Total	32	100

Based on the above table the characteristics of respondents based on dietary compliance Diabetes Mellitus type II, known that the respondents who state comply as many as 14 people (43.8%), non- comply as many as 18 people (56.2%).

D. The relationship of internal scale of Health Locus of Control and dietary compliance type II of Diabetes Mellitus

Internal scale of HLOC	Dietary compliance MD type II				Total	%	Sig(p)
	Comply		Non-comply				
	N	%	N	%			
Good	11	34,4	2	6,2	13	40,6	P= 0,000
Less	3	9,4	16	50	19	59,4	
Total	14	43,8	18	56,2	32	100	

Based on the table 6 above shows that of the 13 respondents that has good internal scale of Health Locus Of Control (HLOC), be comply to diet of Diabetes Mellitus Type II as many as 11 people (34.4%), and not comply as many as 2 people (6.2%). Meanwhile, from 19 respondents who have a less scale internal of Health Locus Of Control (HLOC), be comply as many as 3 people (9.4%), and non-comply as many as 16 people (50%). Statistical test results shows that the value of $p = 0.000$ ($p < 0.05$) means that the alternative hypothesis is accepted because there is a significant relationship between internal scale of Health Locus Of Control (HLOC) with dietary compliance of Diabetes Mellitus type II in Piru Hospital, western part of Seram regency.

E. The relationship of external scale of Health Locus of Control and dietary compliance of Type II of Diabetes Mellitus

External scale of HLOC	Dietary Compliance of Diabetes Mellitus Type II				Total	%	Sig(p)
	Comply		Non-comply				
	n	%	N	%			
Good	10	31,2	0	0	10	31,2	P= 0,000
Less	4	12,6	18	56,2	22	68,8	
Total	14	43,8	18	56,2	32	100	

Based on the table 7 above shows that from 22 respondents that has good external scale of Health Locus of Control (HLOC), all become adherent to diet Diabetes Mellitus type II as many as 10 people (31.2%). Meanwhile, from 22 respondents who have a less Scale Internal of Health Locus Of Control (HLOC), be obedient as many as four people (12.6%) and poor adherence on Diabetes Mellitus Type II as many as 18 people (56.2%). Statistical test results shows that the value of $p = 0.000$ ($p < 0.05$) means that the alternative hypothesis is accepted because there is a significant relationship between external scale of Health Locus Of Control (HLOC) and diet compliance Diabetes Mellitus type II in Piru Hospital western part of Seram regency.

IV. DISCUSSION

A. Characteristics of Respondents

In this study, the age factor influenced the occurrence of diabetic and patient compliance. According to Suyono (2009), cases of Type II Diabetes Mellitus in Indonesia usually rises above 40 years of age. In the case of DM, age has an influence on compliance to non-pharmacologic therapies, one of them is the diet (Isnarian, 2006). Dietary compliance will be higher in the productive age because it can more easily accept and implement the recommendations of the health personnel (Tera, 2012). In various studies, age has the association with Type II diabetic diet compliance (Ellis, 2010). Based on the study, ages turned out to play a role in compliance management of diet Diabetes Mellitus type II, the more age is increase, the more decreasing in hearing, vision and memory of a patient so that in elderly patients, they would be difficult to receive information, and ultimately misunderstood the given instructions (Angina et.al, 2010 in a sustainable 2012). The occurrence of diabetic type II is also influenced by sex that most of it can be found in women compared with men (Jelantik, et al 2014). The amount of fat in man adult average between 15-20% of total body weight, and in women about 20-25%, the risk factors of diabetic in women 3-7 times higher than men, namely 2- 3 times (Soeharto, 2003 in Jelantik, et al 2014). Women are more at risk to have diabetic because physically women have a chance of the increasing of greater body mass index, monthly cycle syndrome (premenstrual syndrome), post-menopause which makes the distribution of body's fat becomes easy to accumulate as a result of hormonal processes. Thus women are at risk of having Diabetes Mellitus type II (Trisnawati, 2013). Based on the research results of woman gender in patients with Diabetes Mellitus type II is more than the men with the number of 19 people or 59.4% and men numbered 13 people or 40.6%.

B. The relationship of internal scale of Health Locus of Control and the diet management compliance of Diabetes Mellitus type II

An individual with a high internal of HLOC will have better health because people tend to take action to improve their health (Theofilau, 2012). Based on the result it shows that more respondents have a less Internal Scale of Health Locus of Control (HLOC) that is 59.4%. Diabetes mellitus dietary compliance can be influenced by several psychosocial factors such as stress, Health Locus of Control, attitude, support systems and self-efficacy (Reloith Et.Al Adnyani 2004 in 2015). Based on the results of statistical chi-square test, $p = 0.000$ this means that there is a significant relationship between internal scale Health Locus Of Control (HLOC) with dietary compliance Diabetes Mellitus type II in RSUD western part of Seram regency. Empirical research shows that HLOC plays an important role in determining people's health behavior (Bonichini et al, 2009). According to Kreitner & Kinichki (2009) individuals who have tendency of an internal locus of control are individuals who have confidence to control events and consequences that impact their lives. The results revealed that there are two people who have good internal scale of HLOC but not obedient. It can be caused due to the lack of support of the people around the patient such as low family support, the far of health facilities as well as lower economic levels of patients, thus the patients cannot regulate foods that fit with the rules of Diabetes Mellitus diet type II. This can be seen from the number of food consumed, the economic limitations caused clients to increase consumption of carbohydrates that will aggravate bad condition of the disease. Also from the research result shows that there are three people who have less internal scale of HLOC but comply in doing diet of Diabetes Mellitus type II. This is due to the good support of others so that patients could be helped in the diet. In addition the health workers also often provide health education for Diabetes Mellitus diet management. Furthermore, the patients also come from a good economic level thus they able to pay for the diet financial.

C. The relationship of external scale of Health Locus of Control and the compliance of diet management of Diabetes Mellitus type II.

External HLOC is a person's belief that the events in life are determined by the strength outside himself (Iskandarsyah 2013). Based on the results, it reveals that more respondents have a less external scale of Health Locus of Control (HLOC) that is 68.8%. Another results of statistical chi-square test, $p = 0.000$ this means that there is a significant relationship between external scale of Health Locus Of Control (HLOC) and dietary compliance of Diabetes Mellitus type II in Piru Hospital, western part of Seram regency. Empirical research shows that HLOC plays an important role in determining people's health behavior (Bonichini et al, 2009). According Kreitner & Kinichki (2009) individuals who have external Locus of Control more believes that the events in their life depend on power from other parties, particularly health workers. The results reveals that there are four people who have less external scale HLOC but comply to diet management of Diabetes Mellitus type II. This can happen because of a strong belief of self-healing. Thus, patients take the initiative, has a strong interest and strive to be obedient to the diet management of Diabetes Mellitus type II. Family support and health workers are very important for patients with Diabetes Mellitus, as it will

help patients to improve diet management, so it is in accordance with diet rules and be obedient to the dietary management of Diabetes Mellitus type II.

V. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusion

It is known that statistical test results shows the value of $p = 0.000$ ($p < 0.05$) means that the alternative hypothesis is accepted because there is a significant relationship between Health Locus Of Control and diet compliance of Diabetes Mellitus type II in Piru Hospital, western part of Seram regency.

B. Suggestion

The researcher would express some advices such as: nurses can watch patients HLOC and change the control of patients become more positive by educating the patient that the importance of control and self-awareness to take action aims to improve health condition. The researcher also expects nurses to provide evaluation and nutrition education on an ongoing basis to patients and to educate the patient's family about the diet management of Diabetes Mellitus.

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