



THE RELATIONSHIP BETWEEN HEALTH CONDITION AND RESILIENCE IN TYPE 2 DIABETES MELLITUS PATIENTS IN DENPASAR, BALI

Ni Made Candra Yundarini*¹, Noorhamdani², Heri Kristianto³

¹Master of Nursing Student, Postgraduate Program, Faculty of Medicine, Universitas Brawijaya, Malang, Indonesia.

²Department of Microbiology, Faculty of Medicine, Universitas Brawijaya, Malang, Indonesia.

³Department of Nursing, Faculty of Medicine, Universitas Brawijaya, Malang, Indonesia.

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Corresponding author: Ni Made Candra Yundarini

Master of Nursing Student, Postgraduate Program, Faculty of Medicine, Universitas Brawijaya, Malang, Indonesia.

ABSTRACT

Background: Type 2 diabetes was believed to increase the risk of psychological disorders in comparison to the general population. Based on preliminary studies carried out in Denpasar, 70% of type 2 diabetes mellitus patients revealed the difficulty in adjusting with their illness. Resilience as patient's ability to adapt and to bounce back from stressors was needed in order to overcome this problem. Health condition was believed to be one of the factors that related to resilience in type 2 diabetes mellitus patients.

Objective: The purpose of this study was to analyze the relation between health condition and resilience in type 2 diabetes mellitus patients in Denpasar, Bali. **Methods:** This quantitative study used analytic observational design with cross-sectional approach. 125 samples obtained by cluster random sampling technique were used. This research was conducted in four selected public health centers (*Puskesmas*) in Denpasar, Bali. Descriptive univariate analysis was used to find the frequency distributions of respondent's characteristics and research variables. Pearson Product Moment test was used for bivariate analysis to determine the relationship between health condition and resilience in patients with type 2 diabetes mellitus. **Results:** Univariate analysis results showed that the mean score for health condition was 79.44. The mean score for resilience was 5.45. From bivariate analysis, *r* value found was -0.475 (*p*=0.00).

Conclusion: There was a significant relationship between health condition and resilience in patients with type 2 diabetes mellitus in Denpasar, Bali.

KEYWORDS: Type 2 diabetes mellitus, resilience, health condition.

INTRODUCTION

Diabetes mellitus is a metabolic disease characterized by an increase in blood sugar levels due to persistent disturbances in insulin secretion and interference in insulin action process.^[1] Based on data from the World Health Organization (WHO), as many as 422 million people or 8.5% of the adult population worldwide suffered from diabetes mellitus in 2014.^[2] It was also stated that countries in Asia contributed as much as 60% of the diabetes mellitus patients population in the world. It was estimated that as many as 96 million people in Southeast Asia suffered from this disease.^[3,4] Ministry of Health of Republic of Indonesia stated that in 2013 there were 6.9% of the 176 million Indonesian populations aged 15 years and over suffered from diabetes mellitus. Based on the data obtained in Denpasar Health Department, there were 7174 visits to public health centers from diabetes mellitus patients. Type 2 diabetes

was believed to increase the risk of psychological disorders in comparison to the general population. Diabetes mellitus patients had been proven to be seven times more likely to experience depression than people who do not suffer from this disease.^[5] The ability owned by patients to deal with their condition is assumed to be related to depression symptoms occurred. In such case, the proper nursing approach should be used in order to treat patient and prevent both physical and psychological complication of the disease.

One of the most well-known nursing theory approaches is Roy adaptation model which was proposed by Sister Callista Roy. Roy adaptation model can be used in order to describe patient's ability to adjust with disease owned. Resilience as the ability to adapt and bounce back against stressors was required in order to be able to face the stressors occurred. Resilience owned by individuals referred to the dynamic capacity in managing

stress and promoting adaptation to a significant stressor in order to achieve emotional balance.^[6] Results from previous study about chronic disease showed a negative relationship between resilience and emotional distress experienced by cancer patients.^[7] There are several factors related to the formation of resilience in chronic disease patient. As stated before, Roy adaptation model can be used in order to find factors related to resilience in type 2 diabetes mellitus. Based on this model, there are four modes of adaptation that may affect the formation of resilience. These four modes are physiological mode, self-concept mode, role function mode, and interdependence mode.^[8] One of the modes mentioned in the Roy adaptation model is physiological adaptation mode. Physiological adaptation mode can be connected with the patient's recent health condition referring to the symptoms experienced by patients after diagnosed with type 2 diabetes mellitus.

Individual's health condition affects his or her functional degree of physiological, psychological, and sociocultural aspects of his or her life. Health condition is defined as individual's general state of physical, mental and emotional stability.^[9] Health conditions which affect resilience were the symptoms associated with this disease.^[10] Recent health condition of the patients had been proven to correlate significantly with their resilience skills.^[11] Preliminary study conducted in all health centers all over Denpasar showed that of 10 patients interviewed, 70% of patients with diabetes mellitus type 2 revealed the difficulty in adapting to the disease. This condition was associated with the limitations that must be faced by patients after being diagnosed with type 2 diabetes mellitus. Based on these problems, researchers were interested in examining the relationship between health condition and resilience in patients with diabetes mellitus type 2 in Denpasar, Bali.

MATERIALS AND METHODS

Study design

This study was a quantitative research using observational analytic design with cross-sectional approach. The independent variables studied were health condition. The dependent variable of this study was resilience in patients with type 2 diabetes.

Setting

This research was conducted in four selected public health centers (*Puskesmas*) in Kota Denpasar. The selected public health centers are Puskesmas I North Denpasar, Puskesmas II East Denpasar, Puskesmas III West Denpasar, and Puskesmas II South Denpasar on January 14th, 2018 - February 18th, 2018.

Research subject

Respondents used in this study were type 2 diabetes mellitus patients in four selected public health centers in Denpasar, Bali. The number of sample used was 125 respondents selected by cluster random sampling technique.

Instrument

The instruments used in this study were questionnaires about characteristics of the respondents. Connor-Davidson Resilience Scale-2 (CD-RISC-2) and Diabetes Symptom Checklist-Revised (DSC-R) instruments were adapted in order to measure resilience and health condition respectively.^[12,13] The questionnaire about characteristics of the respondents consists of age, gender, occupation, and education of the respondents. CD-RISC-2 and DSC-R instruments consisted of two and 34 items that employed four-point-likert-scale response respectively. All of the instruments have been translated into Indonesian for the purpose of this study. These instruments have been tested for validity and reliability and stated that the results were valid and reliable.

Ethical consideration

Prior to data collection, ethical approval was obtained from Research Ethics Committee of Sanglah Hospital/Faculty of Medicine, Udayana University (Number: 68/UN.14.2/KEP/2018). Informed consent and explanation of the research process were given to all respondents before data collection started. Respondents filled out a questionnaire given assisted by researchers or research assistants. The data collection process took approximately 20 – 30 minutes for each respondent.

Data analysis

Descriptive univariate analysis was used to analyze socio demographic characteristics and each research variables. Pearson Product Moment test was used for bivariate analysis in order to determine the relationship between health condition and resilience in patients with type 2 diabetes mellitus.

RESULTS AND DISCUSSION

Univariate analysis results of characteristics of respondents taken from Puskesmas I North Denpasar, Puskesmas II East Denpasar, Puskesmas III West Denpasar, and Puskesmas II South Denpasar are shown in Table 1.

Table 1: Univariate Analysis Results of Characteristics of Respondents.

No	Variable	(n)	(%)	Mean	SD	Min	Max	95% CI
1.	Age			59.4	9.88	40	85	57.65 - 61.15
2.	Gender							
	- Male	64	51.2					
	- Female	61	48.8					
3.	Education							
	- Not graduated from elementary school	5	4.0					
	- Elementary School	24	19.2					
	- Junior High School	23	18.4					
	- Senior High School	42	33.6					
	- College	31	24.8					
4.	Occupation							
	- Unemployed	25	20.0					
	- Entrepreneur	31	24.8					
	- TNI/POLRI	9	7.2					
	- Civil Servant	12	9.6					
	- Pensioner	34	27.2					
	- Private Employee	14	11.2					

Based on the results of the univariate analysis, it was found that distribution of respondents in this study have the average age of 59.4 years with the youngest and the oldest ones were revealed to be 40 years old and 85 years old respectively. The results of the frequency distribution analysis showed that majority of respondents with type 2 diabetes mellitus patients in this study were male, with the number of male respondents were 64 people (51.2%).

The majority of respondents in this study were high school graduates with the number of respondents were 42 people (33.6%), It was also found that the majority of respondents of this research were pensioners, with the number of respondents were 25 people (27%). Univariate analysis results of study variables are shown in Table 2 below.

Table 2: Univariate Analysis Results of Study Variables.

No.	Variabel	Mean	SD	Min	Max	95% CI
1.	Health Condition	79.44	16.94	49	111	76.45 – 82.45
2.	Resilience	5.45	1.62	2	8	5.16 – 5.74

In addition to the analysis of the characteristics of respondents, univariate analysis of independent variable and dependent variable of the study was also conducted. Distribution of respondents based on health condition of patients with type 2 diabetes variabel results found that the mean scores for this variable was 79.44. The lowest and the highest scores for this variable were 49 and 111 respectively. Distribution of respondents based on resilience in patients with type 2 diabetes mellitus variable results found that the mean scores for this variable was 5.45. The lowest and the highest scores for this variable were 2 and 8 respectively. Bivariate analysis results between independent and dependent variables are shown in Table 3.

Tabel 3 shows the bivariate analysis results between health condition and resilience in type 2 diabetes mellitus patients. The relationship between independent variable and dependent variable was determined with Pearson Product Moment Test. Based on this results, the r value and p value found were -0.475 and 0,000 respectively. From these results, it could be stated that there was a significant relationship between health condition and resilience in type 2 diabetes mellitus patients in Denpasar. It also could be concluded that there was a negative relationship between these two variables, so that the higher the score of patient’s health condition or symptoms experienced, the lower the score of resilience in type 2 diabetes mellitus patients.

Table 3: Bivariate Analysis Results between Health Condition and Resilience In Type 2 Diabetes Mellitus Patients in Denpasar, Bali.

Independent Variable	Dependent Variable	r	p-value
Health Condition	Resilience	-0.475	0.000

The formation of resilience in chronic disease patients is related to several factors, one of them is health condition. Health conditions are more likely to be associated with disease symptoms occurred both psychologically and physically. Health condition scores were obtained through the accumulation of 34 questions given to the patient. The results of this study stated that there was a significant relationship between health condition and resilience in type 2 diabetes mellitus patients in

Denpasar. This statement was supported by another study that proved a significant relationship between health condition and resilience in patients with chronic disease.^[11] In this study, health conditions affected the formation of resilience was referred to symptoms that occurred during the disease. These symptoms are assumed as the general overview of the situation related to the disease.^[10] A study conducted in 2017 stated that disease symptoms were highly related to the level of resilience in patients.^[14] In addition, another study showed that self-reported health conditions of the patients based on their current situation were stated to be related to their resilience.^[15] From the view of sociodemographic aspects, respondents in this study were mostly middle age men, while the majority of respondents' educational background were high school graduates. According to research conducted in 2013, chronic diseases were mostly found in the middle age population. The same study found that middle age men with chronic disease tend to have low physical activity, this would result in the the more severe disease symptoms occurred.^[16] Health condition of patients had been proven to be influenced by their educational background. Patient with higher educational background tend to have healthier lifestyle and to receive preventive care, thus supporting the formation of a good health condition.^[17]

Based on Roy adaptation model, patient's health condition can be associated with physiological adaptation mode. In this adaptation mode, health condition became one of the most important variables related to the formation of the resilience in patients. Biological responses in individual could affect resilience formed that was built to face the disease. The relationship between health condition and resilience owned by patients were believed to be influenced by the increasing of psychological stress after patients were diagnosed with this disease. Physiological mode associated with the physical reaction is caused by a person's response to a stimulus experienced.^[18] Psychological stress occurred when the individuals were overwhelmed with burden from the environment, or when the individuals were not able to deal with stimulus experienced. Individuals with poor health condition had been seeing their illness as a stressor. The deterioration of their health condition could result in greater psychological burden to the patients. This would affect their ability to overcome such stressors.

High stressors along with poor health condition would cause in low resilience in patients.^[18] Stimulus faced by patients can influence their physical condition as well. Chronic stress experienced by patients could worsen patient's health condition. Chronic stress activates HPS-axis and the sympathetic nervous system, resulting in the increasing production of cortisol in the adrenal cortex as well as the excretion of adrenaline and noradrenaline in the adrenal medulla. Chronic hypercortisolemia and the prolong activation of the sympathetic nervous system

increase insulin resistance, visceral obesity, and may lead to metabolic syndrome and type 2 DM symptoms.^[19] Patients who experience more severe disease symptoms usually have difficulty in adjusting with the current situation. The disability of individuals in building resilience may increase the risk for depression. Chronic disease diagnosis such as type 2 diabetes mellitus can be seen as a severe stressor for patient. This statement indicates that having chronic disease and physical limitation can affect person's mental health and cause the increasing in depression in chronic disease patients. Therefore, controlling the symptoms of Type 2 Diabetes Mellitus is very important to do to improve resilience, overcome problems, and to avoid depression that can be experienced by the patient.

CONCLUSION

From this study, it can be concluded that there is a significant relationship between health condition and resilience in type 2 diabetes mellitus patient in Denpasar. there was a negative relationship between these two variables, so that the higher the score of patient's health condition or symptoms experienced, the lower the score of resilience in type 2 diabetes mellitus patients. Following the results of this study, further research is needed in order to analyze factors related to resilience in type two diabetes mellitus patient.

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