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ORIGINAL RESEARCH

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FACTORS RELATED TO RESILIENCE IN TYPE 2 DIABETES MELLITUS PATIENTS IN DENPASAR BASED ON SELF-CONCEPT MODE OF ROY ADAPTATION MODEL

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Abstract

Background: Patients with type 2 Diabetes mellitus are impaired both physically and psychologically. Based on preliminary studies carried out in public health centers in Denpasar, Bali, out of 10 patients interviewed, 70% of the patients with type 2 diabetes mellitus expressed their difficulties in adapting to the current state of the disease. One of the capabilities that must be owned by the patients to be able to adapt to the stressor is resilience. Roy adaptation model could be used in order to explain factors associated with resilience in patients with type 2 diabetes mellitus.

Objective: To analyze the factors associated with resilience in patients with type 2 diabetes mellitus in Denpasar based on self-concept mode of Roy adaptation model.

Methods: It used an observational analytic design with cross-sectional approach. Respondents used in this study were type 2 diabetes mellitus patients in four selected public health centers in Denpasar, Bali. 125 samples obtained by cluster sampling technique were used in this study. Connor-Davidson Resilience Scale-2 (CD-RISC-2), Illness Identity Questionnaire (IIQ) and Functional Assessment of Chronic Illness Therapy-Spiritual Well-being (FACIT-Sp) questionnaires were used in order to measure resilience, self-concept, and spirituality respectively. Pearson Product Moment test was used for bivariate analysis to determine the relationship between self-concept and spirituality and resilience in patients with type 2 diabetes mellitus. Multiple Linear Regression was used for multivariate analysis in order to find the most dominant factor related to resilience based on self-concept mode of Roy adaptation model.

Results: The results of this study showed a significant relationship between self-concept and spirituality with resilience in patients with type 2 diabetes mellitus ($p = 0.000$). These two variables have r values equal to 0.599 and 0.597 respectively. Multiple linear regression showed that self-concept was the dominant factor related to resilience based on self-concept mode of Roy adaptation model with beta value equals to 0.687.

Conclusion: There was a significant relationship between factors associated with resilience in patients with type 2 diabetes mellitus in Denpasar based on self-concept mode of Roy adaptation model.

Keywords: Roy adaptation model; resilience; type 2 diabetes mellitus

INTRODUCTION

According to data from the World Health Organization (WHO), 422 million people or 8.5% of the adult population worldwide suffer from diabetes in 2014 ([WHO, 2016](http://www.who.int/diabetes/factsheet.html)).

Countries in Asia contribute approximately 60% of the diabetic patient population in the world and it is estimated that around 96 million people in Southeast Asia suffer from

this disease ([Cousins, 2017](#); [Ramachandran, Snehalatha, Shetty, & Nanditha, 2012](#)). Based on data from Indonesian Health Department in 2013, there are 6.9% of the 176 million Indonesian population aged 15 years and over who suffer from diabetes mellitus. In Bali, the number of patients with type 2 diabetes mellitus who visited public health centers in 2016 was 7174. On December in the same year, Denpasar Health Department reported 322 new cases of type 2. In addition to causing physical impacts, diabetes mellitus was also found to increase the risk of psychological disorders in the patients when compared to the general population. Research conducted by Chowdhury, et al. found that patients with diabetes are seven times more likely to experience depression than people who do not suffer from the disease. It is associated with the patients' ability to adapt to the disease. A proper mental health nursing approach mechanism is needed so that patients could face the stressors ([Chowdhury et al., 2017](#)).

Nursing theory approach proposed by Callista Roy could be used in the efforts to improve the adaptation to the illness of patients. One of the capabilities that must be owned by the patients to be able to adapt to the stressor is resilience. Resilience refers to the dynamic capacity in managing stress and promoting adaptation to a significant stressor in order to achieve emotional balance ([Robinson, Hanna, Raine, & Robertson, 2017](#)). Research conducted by Min, et al. (2013) showed that there is a negative relationship between resilience and emotional distress experienced by cancer patients. In this study the operation definition of resilience was the ability to bounce back from stressors and to continue the same social function as before ([Min et al., 2013](#)).

The formation of resilience in patients with chronic disease is related to several factors. The factors related to resilience are associated with Roy adaptation model that could be applied in professional nursing practice. According to this theory, there are four modes of adaptation that may affect the formation of resilience. The four modes include physiological mode, self-concept mode, role

function mode, and interdependence mode ([Alligood, 2013](#)).

Self-concept mode includes the components of the physical self, such as body image and body sensation as well as the personal self, including self-consistency, self-ideal, and moral-ethical-spiritual self. From that concept, both self-concept and spirituality factors were linked with self-concept mode of Roy adaptation model ([Masters, 2012](#); [Roy & Andrews, 2008](#)). These factors were believed could increase the resilience of patients with type 2 diabetes mellitus ([Martins & Neto, 2016](#); [Ozawa et al., 2017](#)).

In this study, the operational definition of self-concept is the way patients perceived themselves including personality traits and physical appearance based on the comparison with another person. Spirituality is defined as the condition when someone experience something that was beyond visibility and how a person define their presence in relation with others. Research conducted in all public health centers in Denpasar showed that out of 10 patients interviewed, 70% of patients with type 2 diabetes expressed their difficulties in adapting to the current state of the disease. It is related to the limitations that must be faced by the patients after being diagnosed with this disease.

Based on these problems, the researchers are interested in examining factors associated with resilience in patients with type 2 diabetes mellitus in Denpasar based on self-concept mode of Roy Adaptation Model.

METHODS

Study design

This study was a quantitative research using observational analytic design with cross-sectional approach. The independent variables studied were self-concept and spirituality. 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.

Sample

Respondents used in this study were type 2 diabetes mellitus patients in four selected public health centers in Denpasar, Bali. The number of samples used was 125 respondents selected by cluster random sampling technique. The inclusion criteria were patients with the capability of writing and reading and patients who have been diagnosed with type 2 diabetes mellitus for at least 6 months. The exclusion criteria for this study was patients who refuse to take part of this study.

Instrument

The instruments used in this study were questionnaires about characteristics of the respondents, Connor-Davidson Resilience Scale-2 (CD-RISC-2) to measure resilience ([Vaishnavi, Connor, & Davidson, 2007](#)), Illness Identity Questionnaire (IIQ) to measure self-concept ([Oris et al., 2016](#)), and Functional Assessment of Chronic Illness Therapy-Spiritual Well-being (FACIT-Sp) to measure spirituality ([Bredle, Salsman, Debb, Arnold, & Cella, 2011](#)). The questionnaire about characteristics of the respondents consists of age, gender, occupation, and education of the respondents. CD-RISC-2, IIQ, and FACIT-Sp instruments consist of two, twenty-seven, and twelve items that employ four-point-Likert-scale response respectively. The instruments were modified and translated into Indonesian in language center for the purpose of this study. These instruments have been tested for validity and reliability and stated that the results were valid and reliable. The validity and reliability test were conducted in Badung Regency using 30 respondents with the results of the test stated that these instruments were valid to use ($r_n > 0.361$). Cronbach's alpha values for CD-RISC-2, IIQ, and FACIT-Sp

were 0.730, 0.961, and 0.874 respectively, so that these instruments were reliable to use.

Ethical consideration

This study was approved by the Research Ethics Committee Sanglah Hospital / Faculty of Medicine, Udayana University (Number: 68/UN.14.2/KEP/2018). Prior to the research, informed consent and explanation of the research process were given to all respondents. 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 to determine the relationship between self-concept and spirituality and resilience in patients with type 2 diabetes mellitus. In addition, Multiple Linear Regression was used for multivariate analysis in order to find the most dominant factor related to resilience based on self-concept mode of Roy adaptation model.

RESULTS

The result of the respondent characteristic was taken from Puskesmas I North Denpasar, Puskesmas II East Denpasar, Puskesmas III West Denpasar, and Puskesmas II South Denpasar.

Table 1 presents data on the characteristics of respondents, such as age, gender, education, and occupation. These findings show that the respondents with type 2 diabetes mellitus had the average age of 59.4 years and most of them were pensioners. The majority of the respondents were male (51.2%) with their most recent education being at senior high school (33.6%).

Table 1 Frequency distribution of characteristics of the respondents (N=125)

Variable	(n)	(%)	Mean	SD	Min	Max	95% CI
Age			59.4	9.88	40	85	57.65 - 61.15
Gender							
Male	64	51.2					
Female	61	48.8					
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					
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					

Table 2 Results of Bivariate Analysis (N=125)

Independent Variables	Dependent Variables	r	p-value
Self-Concept	Resilience	0.599	0.000
Spirituality	Resilience	0.597	0.000

Table 3 Results of Multivariate Analysis (N=125)

Factors	B	Std. Error	Beta	R Square	p-value
Self-Concept	0.077	0.013	0.687	0.663	0.000
Spirituality	0.028	0.023	0.140		0.000

The results of the bivariate analysis between self-concept and spirituality with resilience in Type 2 diabetic patients are presented in Table 2. The bivariate analysis result presented in Table 2 showed that self-concept and spirituality both have p values equal to 0.00 so that H_0 is rejected. It can be concluded that there is a relationship between self-concept and spirituality with resilience in patients with type 2 diabetes mellitus in Denpasar.

From findings showed in table 3, it could be concluded that among these two factors based on self-concept mode of Roy adaptation, self-concept factor was the most dominant factor related to resilience in type 2 diabetes mellitus patient.

DISCUSSION

In the present study, we investigated the factors associated with resilience in type 2

diabetes mellitus patient in Denpasar based on self-concept mode of Roy adaptation model. According to the results, both self-concept and spirituality as factors linked with self-concept mode of Roy adaptation model were significantly related to resilience in type 2 diabetes patients. These findings proved that self-concept was the most dominant factor related to resilience based on self-concept mode of Roy adaptation model. Previous study reported that one's self concept was significantly related to his or her resilience skill ([Martins & Neto, 2016](#)). Another study also found that there was a positive relationship between spirituality and resilience ([Jones, Simpson, Briggs, & Dorsett, 2016](#)). Study conducted by Redondo-Elvira, et al (2017) showed that there was a positive correlation between spirituality and resilience in chronic patients. Similar to the previous study, a study conducted by Ozawa, et al. showed that one's spirituality and religiosity

both were significantly related to his or her resilience skill ([Ozawa et al., 2017](#)).

According to sociodemographic aspects, respondents in this study were mostly middle age patients that were no longer actively working. Pensioners tend to have lower self-concepts in comparison with individuals who are still actively working. In addition to the age of patients, gender also plays an important role in the formation of self-concept. Findings showed that respondents in this study were mostly male adults. A study proved that gender was related to the formation of self-concept. In the previous study, it was stated that men tend to have a better self-concept than women ([von Soest, Wagner, Hansen, & Gerstorf, 2017](#)). Person's degree of education was also related to the formation of self-concept ([Zahra, Arif, & Yousuf, 2010](#)).

Self-concept is described as one of the adaptation modes in Roy adaptation model. The concept is an internal element of individuals that can affect resilience. Self-concept owned by individuals affects the existence aspect in the concept of resilience. The existence in this context is described as an individual's ability to respect all of his or her uniqueness. If the individual has a good self-concept, she or he has a form of acceptance and confidence ([Hartati, Erlamsyah, & Syahniar, 2013](#)). Self-acceptance helps individuals to adapt to the problems faced. Someone who has poor self-acceptance tends to view the issue as a burden and choose to ignore the problem. In contrast, individuals with good self-acceptance tend to think positively and seek resolution of the problems.

Self-acceptance forms optimism and the belief that the individual is able to bounce back after facing problems. Optimism as one component of resilience forms a positive belief and realistic thought in dealing with problems. Optimism owned by patients could help patients overcome the problems by changing the view of the situation as a condition that must be faced and resolved, and set realistic goals ([Matthews & Cook, 2009](#)).

Based on Roy adaptation model, spirituality is linked with the self-concept mode. Spirituality is described as an internal force that helps the patient cope with stressors ([Mizuno et al., 2018](#)). In general, spirituality described the ability to understand deeply about life and the ability to maintain internal and external peace without being bothered by any stimulus. Spirituality is able to increase resilience in patients by affecting their relationships in life ([Smith, Ortiz, Wiggins, Bernard, & Dalen, 2012](#)). Spirituality helps one build self-control even when they are sick and help develop adaptation in facing chronic illness. Relationship with God or a higher power is seen as an important component in spirituality. Spiritual practices could result in feelings of calm, secure, reduce anxiety, and decrease the level of stress ([Reis & Menezes, 2017](#)).

In Bali, the spiritual practice done by people is closely related to culture. Spiritual practices such as ritual activities are believed to be able to solve the problems, so that they will have a sense of peace in their lives. Balinese people are predominantly Hindu and according to their culture, the solutions to overcome psychological problems is through religious and spiritual ceremonies with a belief that all events that occur depend on the will of God ([Lesmana, Suryani, Tiliopoulos, & Jensen, 2010](#)). This belief in religion and spirituality helps patients seek the meaning of the situation or stressors experienced and consider them as part of God's great plan. The spirituality of patients is also able to reduce their psychological stress and decrease the desire to give up on the state ([Reis & Menezes, 2017](#)).

Age collaborated with the cultural concept is able to improve one's awareness of spiritual needs and to stimulate the interest in spiritual experience. Someone who has retired appeared to have a good quality of life if it is accompanied by a good spirituality ([Earl, 2010](#)). Another study stated that individuals with high levels of education considered the use of spirituality to help them face the stressors experienced ([Yuzefo, 2015](#)). Male adults use their spirituality to get emotional

comfort, diversion from stressors, and as a transition factor that connects them with a better life ([Schroeder & Frana, 2009](#)). These statements are important things for patients with type 2 diabetes, because they have to change their lifestyle in accordance with the management of the disease treatment. Person with a high score of spirituality could rely on his or her internal power to face any problem so that the person is more likely to have a good resilience skill as well ([Khosravi & Nikmanesh, 2014](#)).

This study was based on Roy adaptation model as the nursing approach. This was the strength of this study because this approach could help nurses to view patients as bio-psycho-socio-spiritual unit ([Alligood, 2013](#)). As a limitation, this study only took place in urban area without comparing with the results found in rural area. This comparison could be done in order to find whether the sociodemographic factors were also associated with resilience in type 2 diabetes patients. This study was also only used observational analytic design with cross-sectional approach, so that there were no follow-up on the respondents and there were no intervention given to the respondents. Mental health nurses should be able to choose the proper nursing intervention to increase resilience score of the patients. Further research should study more about the intervention that could be use in order to increase the resilience score of the patients while comparing those results in urban and rural area.

CONCLUSION

Based on this study, there was a significant relationship between self-concept and spirituality with resilience in patients with type 2 diabetes mellitus in Denpasar. Among these two factors, self-concept was the most dominant factor related to resilience. For further research, the differences between the factors associated with resilience in patients with type 2 diabetes mellitus in urban and rural areas can be analyzed.

Declaration of Conflicting Interest

None declared.

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Author Contribution

All authors contributed equally in this study.

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