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Depressive Disorder in The Elderly with Comorbidity: Cross-sectional Study in Prima Medika Clinic, Semarang

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Abstrak

Background: Diabetes Mellitus and hypertension patients have higher risks of experiencing mental disorders such as depression and or anxiety. Objective: assess the frequency and severity of depression as well as identify the risk factors of patients with chronic disease and also other factors influencing depression in PROLANIS patients in Prima Medika Primary Clinic, Semarang Indonesia. Method: A cross-sectional study, targeting PROLANIS patients registered at Prima Medika Primary Clinic in Semarang, Indonesia. Participants were selected through purposive sampling, during a period from February to May 2021. Participants targeted were DM, Hypertension, or a combination of hypertension and diabetic type 2 patients. The Indonesia Ministry of Health Clinical Criteria was used for the Metabolic Syndrome assessment. Result: Among 68 respondents, 15 (22.05%) respondents suffered from mild depression and 6 (8.82%) respondents suffered from major depression. Mostly, their education level is High School (55.9%), are married (73.5%), have fixed income (55.8%), and are non-smokers. The number of participants suffering from hypertension is larger than those who suffer from DM and DM + Hypertension. Correlation test results find a relationship between disease diagnosis and the case of depression in PROLANIS participants (p-value < 0.05). Conclusion : Depression, DM, and hypertension are diseases in which the number of cases keeps increasing. Early detection of depression needs to be improved to promote the successful management of diabetes and hypertension.

Keywords: depression, hypertension, diabetes mellitus, elderly, comorbidity.

INTRODUCTION

Non-communicable diseases (NCDs) such as Diabetes Mellitus (DM) and Hypertension (HT) are proven to be associated with depressive disorder cases in patients and this condition keeps improving every year. DALYs loss caused by NCDs was increasing from the fifth rank in the year of 1990 to the first rank in the year of 2017, with an increase of 93.4% (MoH, 2019). The significant increase in DALYs loss from the year 1990 to 2017 could be seen especially in DM (157.1%), ischemic heart disease (113.9%), and lung cancer (113.1%) (Nascimento et al., 2020). One of the major risk factors of NCDs is a metabolic factor (high blood pressure, high blood sugar, obesity, dyslipidemia, kidney function disorder). Results of Basic Health Research (Riskesdas) in Indonesia show that there was an increased prevalence of hypertension from 25.8% in 2013 to 34.1% in 2018 (Riskesdas, 2018). The prevalence of DM among aged 15 years and over has increased from 6.9% in 2013 to 8.5% in 2018 (Riskesdas 2018). In fact, using the Indonesian Association of Endocrinology (PERKENI) consensus in 2015, the prevalence of DM in 2018 was 10.9%. This condition shows the tendency for continuous DM increase if there is a lack of serious action in controlling DM.

DM or hypertension patients have higher risks of experiencing mental disorders such as depression and or anxiety. Almost half (49.6%) of DM patients in the hospital's outpatient clinic and two-thirds (66.7%) of Chronic Diseases Management Program (PROLANIS) hypertension patients suffer from depression (MoH, 2019).

The World Mental Health Survey conducted in17 countries found that on average about 1 in 20 people reported having an episode of depression. In the previous experience, depression is not only a major global public health concern, but also common comorbidity among patients with chronic diseases, such as cancer, stroke, heart disease, diabetes, and chronic obstructive pulmonary disease. Individuals with chronic illnesses are more likely to experience depressive symptoms (Alkhathami et al., 2017; Li et al., 2018. The prevalence of depression in primary care is 13% (4-23%). This condition is caused by doctors in primary care usually only focusing on the physical aspect, while some are reluctant to explore further about

the patient's psychosocial condition so that the patient's mental condition is sometimes undiagnosed (Li et al., 2018).

In 2017, there were mental disorders that were predicted to be faced by Indonesian people; one of them was depression. For three decades, depression was the first rank of mental disorder in Indonesia (Arroll et al., 2018). Depression is a mental disorder with symptoms of depressive effects, losing interest and fun, guilty and worthless feelings, sleeping and eating disorders, powerlessness, and losing focus (Pramesonaa & Tanceepanichskul, 2018). Depressive disorder is experienced by almost all ages. However, teenagers are the starting age to be vulnerable to depression with a prevalence of 6.2%. This trend keeps increasing along with the increasing age with the biggest prevalence of 8.9% at the age of > 75, 8.0% at the age of 65-74, and 6.5% at the age of 55-64 (An et al., 2018).

Depression proves to have negative effects on the increase of morbidity risk and mortality due to several chronic diseases. Early detection of depression also good control and management of depression are extremely needed to prevent the major disease from getting worse. Individuals who are able to accept their mental conditions positively will help in their disease management and decrease the severity of their major disease. Assessment of the condition of this depression depends on the severity and perception of each individual (Hohls et al., 2019).

Several studies show that depressive disorder can also cause an increase in diabetic risk and poor blood sugar control (Liu et al., 2017; Bădescu et al., 2016). Depression also increases uncontrollable hypertension (Kahn et al., 2011). This study aimed to assess the frequency and level of depression severity as well as to identify the risk factors of patients with chronic disease and also other factors influencing depression in PROLANIS patients in Klinik Pratama Prima Medika, Semarang Indonesia.

METHODS

This cross-sectional study targeted PROLANIS patients registered at Klinik Pratama Prima Medika (n=68) in Semarang City, Central Java Indonesia. Data were collected from February until May 2021. The participants were selected through purposive sampling. The inclusion criteria were DM, Hypertension, or a combination of hypertension and diabetic type 2 patients. The exclusion criteria were the patients getting anti-depression therapy

and patients with chronic diseases asides from hypertension and DM. The Indonesia Ministry of Health Clinical Criteria was used for the Metabolic Syndrome assessment.

Explanatory Variables

Information about sociodemographic and clinical data variables such as age; sex; level of education; income; marital status; body mass index (BMI) (weight in kilograms divided by height in meters square); diagnosis of DM disease, hypertension, also the combination of DM and hypertension was obtained from the participant medical record. The variables of overweight and obesity followed the WHO criteria for Asian people such as BMI 23 - <27.5 kg/m2 was categorized as overweight and BMI > 27.5 kg/m2 was categorized as obese. The operational definition of DM was patients with a fasting blood glucose level above 126 mg/dL, a current blood glucose level above 200 mg/dL, or undergoing diabetic treatment using antidiabetic drugs. Smokers were defined as patients who had smoked at least 100 cigarettes in their lifetime and currently smoke, and nonsmokers were defined as those who have no history of smoking before or they had stopped smoking more than one year ago.

Outcome Variables

In this study, the depression variable is defined as a mental disorder characterized by depressive effects, losing interest and fun, guilty and worthless feelings, sleeping and eating disorder, powerlessness, and losing focus (Pramesonaa & Taneeppanichskul, 2018).

Instruments and Data Collection Technique

Data collection were used in two methods, first a self-administered questionnaire and medical records review for patient clinical status. The questionnaire consists of two parts; the first part contains the information about demographic characteristics: Body Mass Index (BMI) (weight in kilograms divided by height in meters square); diagnosis of DM disease, hypertension, also the combination of DM and hypertension. The second part of the questionnaire was Geriatric Depression Scale (GDS). GDS is a clinical scale that was used to asses outpatient depression. GDS consists of 30 questions. Score range from 0 to 1 in every question, and the total score range from 0-30. The result of the score interpretation is, that the higher the score, the worse the symptoms. Scores are classified as follows: normal (0-9), mild

depression (10-20), and major depression (21-30). The GDS questionnaire follows the validated questionnaire developed by Blink et al (1982). The questionnaire was filled out by respondents through interviews conducted by trained doctors. Informed consent was obtained from all patients. The study was approved by the Medical and Health Research Ethics Committee (MHREC) Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada - Dr. Sardjito General Hospital.

Analysis and Data Presentation

We used descriptive statistics including deviation standard, average, and percentage to describe categorical data. An independent T-Test was used to compare continuous data. Univariate and bivariate analyses were performed to determine which factors are significantly associated with depression in patients. P value < 0.05 was considered statistically significant. We used Stata version 16.

RESULTS

Total of 68 respondents, the proportion of male and female respondents is 50%. More than half respondents are 60-70 years old and from 68 respondents, there are 15 (22.05%) respondents who suffer from mild depression and 6 (8.82%) respondents who suffer from major depression. The biggest proportion of the education level is High School (55.9%), and most are married (73.5%). They mostly have a fixed income (55.8%), the proportion of respondents with obesity is 0.42; most respondents are non-smokers and the proportion of them who suffer from hypertension is higher than those who suffer from DM and DM + Hypertension. Sociodemographic and clinical characteristics are summarized in Table 1.

Table 1. Respondent's Sociodemographic and Clinical Characteristics

Characteristics	Frequency (N= 68)	Percentage (%)
Sex		
Male	34	50%
Female	34	50%
Level of Education		
Primary School (SD)	4	5,9%
Junior High School (SMP)	16	23,5%
Senior High School (SMA)	38	55,9%

Bachelor	10	14,7%
Marital Status		
Married	50	73,5%
Single	3	4,4%
Divorced / Widow/Widower	15	22,05%
Income		
Yes	38	55,8%
No	30	44,2%
BMI		
Underweight	2	2,9%
Healthy Weight	27	39,7%
Overweight	10	14,7%
Obese	29	42,7%
Smoking Status		
Smoker	7	10,3%
Non-smoker	61	89,7%
Diagnosis		
DM	27	39,7%
Hypertension	32	47%
DM + Hypertension	9	13,3%

The analysis result of the relationship between demographic variables and clinical characteristics with depression in respondents is presented in table 2.

Table 2. The association between demographic variables and clinical characteristics with depression in respondents

Characteristics	Depression	P *value*
Age	Average (SD)	0,367
Sex		0.447
Male	34 (50%)	
Female	34 (50%)	
Tingkat Pendidikan		0.174

Primary School (SD)	4 (5,8%)	
Junior High School (SMP)	15 (22,05%)	
Senior High School (SMA)	38 (55,8%)	
Bachelor	10 (14,7%)	
Others	1 (1,47%)	
Marital Status		0.555
Married	50 (73,5%)	
Single	3 (4,4 %)	
Widow/widower	15 (22,05%)	
Income		0.369
Yes	38 (55,8%)	
No	30 (44,2%)	
BMI		
Underweight	2 (2,9%)	0.770
Healthy Weight	27 (39,7%)	
Overweight	10 (14,7%)	
Obese	29 (42,7%)	
Smoking Status		0.168
Smoker	7 (10,3%)	
Non-smoker	61 (89,7 %)	
Diagnosis		0,043*
DM	27 (39,7%)	
Hypertension	32 (47%)	
DM + Hypertension	9 (13,3%)	

Correlation test results find a relationship between disease diagnosis and the case of depression in PROLANIS participants. Meanwhile, age, gender, education level, marital status, income, BMI, and smoking status are not correlated with the depression case (p-value > 0.05).

DISCUSSION

The result of this research shows that patients with DM and hypertension are related to depression. Our finding is in line with Al Khathami et al. (2017) which proves that there is a correlation between depression and anxiety suffered by patients with DM and hypertension in primary

health care. Like other chronic conditions, DM is often associated with depression. Previous studies report that depression suffered by DM patients reaches 40% (MoH, 2019). One of 4 DM patients shows significant depressive symptoms. While 10-15% of DM patients are diagnosed with depression. The comorbidity of diabetes and depression is a challenging and under-recognized clinical problem. This is because depressive symptoms affect up to a third of diabetics and not only impair quality of life but also increase difficulty in diabetes self-management (Rubio-Guerra et al., 2013). A previous study by Gonzales et al (2008) also found a significant relationship between depression and medication non-adherence in patients with diabetes. Medication non-adherence is an important cause of the association between depression and poorer diabetes clinical outcomes (Holt et al., 2014). Furthermore, depression in diabetics is associated with an increased risk of macrovascular and microvascular complications in diabetic patients. On the other hand, complications of diabetes also increase the risk of developing depressive disorders (Gonzales et al., 2008).

Patient with DM has 2-4 times more risk of facing depression. Depression among DM patients is caused by the increase of HbA1c and also the higher level of complications and mortality. That association is worsened by lack of treatment, a low level of obedience to medication, and pathophysiology mechanisms. Besides that, DM patient with a low level of depression tends to ignore the treatment (Nouwen et al., 2019).

Furthermore, Bădescu et al (2016) found that depression in many sufferers is undiagnosed. If this condition is ignored, then the co-occurrence of DM with depression remains a clinical challenge that is rarely realized even though it may both affect the patient's quality of life and complicate diabetic therapy itself (Bădescu et al., (2016). Besides DM, a meta-analysis study also proves the association between hypertension and depression (Li et al., 2018). Guerra et al. found that depression also affects uncontrolled hypertension and the control of hypertension itself (Rubio-Guerra et al., 2013). The research conducted by Kessing et al proves that there is an effect caused by some antihypertension drugs on the risk of depression in inpatients. So that this becomes a concern in prescribing antihypertensive drugs in patients with a tendency to depression (Mushtaque et al., 2016). In this study, a relationship is

found between depression and hypertension in PROLANIS patients in a private clinic. If it is not treated immediately, it is possible that the prevalence of depression will increase and it will also increase the risk of CHD. Previous studies have reported that mental stresses such as depression affect diurnal variations in blood pressure and risk of coronary artery disease, risk of myocardial infarction, and death (Kessing et al., 2020; Dhar et al., 2016). A study conducted by Wu et al, 2015 found that an increase in blood pressure will increase the risk of CVD and mortality in older adults (Wu et al., 2015). Depression in hypertensive patients is also associated with poorer health status, including lower quality of life, increased medical sources, lower rate of treatment compliance, and even increased mortality (Li et al., 2018). Our study shows that depression in chronic disease sufferers becomes a new challenge for the medical staff in primary health care to have early detection of DM and hypertension patients to immediately get holistic treatment. The appropriate and timely diagnosis and treatment can increase the life quality of DM and hypertension sufferers. Besides that, in the Indonesian context, this matter may reduce the burden of chronic disease and health care costs.

This research has limitations such as being conducted only in one private clinic so that the result cannot be generalized to describe the condition of a private clinic in Semarang; the researcher does not consider some risk factors such as salt intake, alcohol consumption, physical activities and obedience in consuming antihypertension drugs. However, the result of this research recommends strengthening efforts to detect depression in elderly patients in private clinics since the older the age, the higher the risk for more depression cases (Arroll et al., 2018). This effort is also important because the burden of comorbidity (DM and HT) is higher among the elderly. The increasing number of depression in elderly patients with DM and hypertension will worsen the control of patients' blood sugar and blood pressure which will cause some risks in complications due to DM and hyper-tension.

CONCLUSION

Depression, DM, and hypertension are non-communicable diseases in which the number of cases keeps increasing with the age. Undetected depression in the early stage can worsen the control of blood

sugar and blood pressure in the elderly. Failed therapy for diabetes and hypertension will encourage the increasing complication of those two diseases. This will increase the burden of treatment costs. Early detection of depression in FKTP as the spearhead of health services needs to be improved so that it can help the successful management of diabetes and hypertension.

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