THE SOCIODEMOGRAPHIC FACTORS ASSOCIATED WITH MULTIMORBIDITY IN PATIENTS WITH DIABETES MELLITUS TYPE 2 IN DISTRICT HOSPITALSUKOHARJO CENTRAL JAVA

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ABSTRACT

Background: Multiple chronic diseases known as multimorbidity are one of the global public health challenges. Multimorbidity among older adults was more than 50% in different countries. This study aimed to analyze the sociodemographic factors associated with multimorbidity in patients with diabetes mellitus type 2 in District Hospital Sukoharjo Central Java.
Methods: This study used a cross-sectional approach utilizing medical record data of diabetes mellitus patients. Consecutive sampling was conducted, and 75 samples were included. A descriptive analysis was performed by reporting percentages. Bivariate analysis was conducted using Chi-square. Logistic regression with a 5% significance level was used to analyze the multivariable.
Results: The prevalence of multimorbidity was 33 (44%). The sociodemographic factors associated with multimorbidity were age (p=0.039), gender (p=0.032), education (p=0.028), status of employment (p=0.020), and length of stay (p=0.011). Logistic regression showed an association between length of stay (OR=3.93;95%CI=1.29-11,92; p=0.016) and multimorbidity.
Conclusion: Based on these findings, the sociodemographic factors associated with multimorbidity in patients with diabetes mellitus type 2 were: age, gender, education, status of employment, and length of stay. The programs to prevent multimorbidity should be formulated. Early detection and health promotion can be managed to decrease multimorbidity in patients with diabetes mellitus type 2.

KEYWORDS sociodemographic factors, multimorbidity, diabetes mellitus type 2

INTRODUCTION

Diabetes mellitus type 2 is still challenging to combat. The problem diverse by increasing the other chronic diseases in patients with diabetes mellitus type 2 (Pearson-Stuttard et al., 2022). Multiple chronic diseases (known as multimorbidity) are growing

globally causing 77% of global death (Cicek et al., 2021). Multimorbidity among older adults was more than 50% in different countries (Ioakeim-Skoufa et al., 2020).

Many factors are associated with multimorbidity. The major risk factors identified in Nepal were increasing age, urban residence, and lower literacy rate (Sinha et al., 2024). Furthermore, in India, the most frequent outcomes of multimorbidity were increased healthcare utilization, reduced health-related quality of life, physical, and mental functioning (Varanasi et al., 2024).

The study in Indonesia reported that the prevalence of multimorbidity was 18.6%, and the most commonly reported multimorbidity was hypertension (Griselda et al., 2023). It was also found that the multimorbidity including diabetes mellitus, cerebral ischemia, and ischaemic heart disease was increased annually (Husnayain et al., 2020).

Sociodemographic factors associated with multimorbidity in patients with diabetes mellitus type 2 in Indonesia have not been comprehensively explored. This study aimed to analyze the sociodemographic factors associated with multimorbidity in patients with diabetes mellitus type 2 in District Hospital Sukoharjo Central Java.

RESEARCH METHOD

This study used a cross-sectional approach utilizing medical record data of diabetes mellitus patients. Consecutive sampling was conducted and a total of 75 samples were included. The independent variable was multimorbidity (more than one chronic disease), which was obtained from the medical records. Dependent variables included gender (male/female) age (<45 years/≥ 45 years), education (primary school/ high school, undergraduate and postgraduate), employment status (employed/unemployed), health insurance (yes/no), and length of stay (< 5 days/≥5 days).

A descriptive analysis was performed by reporting percentages. Bivariate analysis was conducted using Chi-square. Logistic regression with a 5% significance level was used to analyze multivariable. Univariate, bivariate, and multivariate were performed using STATA software version 15.0 (Stata Corporation, College Station, Texas, USA).

RESULT AND DISCUSSION

Results

This study revealed that the prevalence of multimorbidity in patients with diabetes mellitus type 2 was 33 (44%). The highest prevalence of the multimorbidity was hypertension (36.4%), followed by chronic obstructive pulmonary disease (18.2%), chronic kidney disease (15.1%), dyslipidemia (9.1%), stroke (9.1%), chronic heart failure (6.1%), anemia (3.0%) and osteomyelitis (3.0%).

The sociodemographic characteristics of respondents are mostly female, ≥ 45 years, high school, undergraduate and postgraduate, employed, having health insurance, and length of stay in hospital was < 5 days (shown in table 1).

Table 1. The sociodemographic characteristics

Variables	n (%)
Gender	
Male	35(46.7)
Female	40(53.3)
Age	
<45 years	31(41.3)
≥ 45 years	44(58.7)
Education	
Primary School	37(49.3)

High School, undergraduate and postgraduate	38(50.7)
Employment status	
Employed	56(74.7)
Unemployed	19(25.3)
Health insurance	
Yes	72(96.0)
No	3(4.0)
Length of stay	
<5 days	44(58.7)
≥5 days	31(41.3)

The sociodemographic characteristics as determinants were associated with multimorbidity in patients with diabetes mellitus type 2. The association between the sociodemographic factors and multimorbidity showed that gender, age, education, employment status, and length of stay were statistically significant with multimorbidity (can be seen in Table 2).

The health insurance had an association with multimorbidity statistically not significant, the p-value was 0.420.

Table 2. The sociodemographic factors associated with multimorbidity

sociodemographic variables	**Multimorbidity**		**X^2**	**p**
	Yes	**No**		
	n (%)	**n (%)**		
Gender				
Male	20(57.14)	15(42.86)	4.60	0.032
Female	13(32.50)	27(67.50)		
Age				
<45 years	18(58.06)	13(41.94)	4.24	0.039
≥ 45 years	15(34.09)	29(65.91)		
Education				
Primary School	21(56.76)	16(43.24)	4.82	0.028
High School, undergraduate and postgraduate	12(31.58)	26(68.42)		
Employment status				
Employed	29(51.79)	27(48.21)	5.43	0.020
Unemployed	4(21.05)	15(78.95)		
Health insurance				
Yes	31(43.06)	41(56.94)	0.65	0.420
No	2(66.67)	1(33.33)		
Length of stay				
<5 days	14(31.82)	30(68.18)	6.41	0.011
≥5 days	19(61.29)	12(38.71)		

Note: statistically significant at a 5% level of significance

The logistic regression showed a strong association between length of stay and multimorbidity (OR=3.93;95%CI=1.29-11,92; p=0.016). It can be seen in Table 3.

Table 3. Logistic regression of the variables

sociodemographic variables	OR	95%CI	p
Gender	2.80	0.94-8.35	0.064
Age	2.56	0.83-7.86	0.099
Education	2.62	0.87-7.93	0.086
Employment status	2.51	0.64-9.81	0.183
Health insurance	0.52	0.03-8.09	0.642
Length of stay	3.93	1.29-11.92	0.016
Constanta	0.09	0.004-2.34	0.152

Note: statistically significant at a 5% level of significance

Discussion

Multimorbidity in patients with diabetes mellitus type 2 was still high (Khunti et al., 2023). One of the reasons is poor management and control of the disease. This study found that the highest multimorbidity in diabetes mellitus is hypertension. It is similar to previous studies (Cassell et al., 2018; Khan et al., 2022). Diabetes and hypertension are the most common comorbid due to micro and macrovascular complications. Furthermore, it can be caused by a poor healthy lifestyle (Valderas et al., 2019).

This study revealed that sociodemographic factors associated with multimorbidity were gender, age, education, employment status, and length of stay. The male is 4.6 times more associated with multimorbidity than the female. It is in line with the current studies that male is highest in multimorbidity than female (Stokes et al., 2021). Older age get multimorbidity due to degenerative patterns of the body (Suls et al., 2020).

Education (lower level of education) and employment status (employed) are associated with multimorbidity. Previous studies reported that lower education and being employed are factors increasing multimorbidity due to well-being and how to manage chronic disease (Ioakeim-Skoufa et al., 2020; Navickas et al., 2016).

The length of stay of the patients is associated with multimorbidity related to the rise of demand for the utilization of healthcare facilities (Costa et al., 2020). Multimorbidity faces the problem of health financing due to prolonged stays in the hospital (Picco et al., 2016). Quality of care in managing multimorbidity should be leveraged (Myint et al., 2019). It is important to prevent the increase of multimorbidity in chronic conditions by tailoring effective programs and promoting health(Navickas et al., 2016). How to raise awareness and control of disease by focusing on primary care (Patcharanarumol et al., 2018).

CONCLUSION

Based on these findings, the sociodemographic factors associated with multimorbidity in patients with diabetes mellitus type 2 were: age, gender, education, status of employment, and length of stay. The programs to prevent multimorbidity should be formulated. Early detection and health promotion can be managed to decrease multimorbidity in patients with diabetes mellitus type 2.

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