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QUALITY OF LIFE OF GERIATRICS PATIENT SUFFERING FROM HYPERTENSION WITH DIABETES MELLITUS COMORBID AND FACTORS THAT INFLUENCE IT

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ABSTRACT

Background: Elderly people are susceptible to degenerative diseases such as hypertension. Hypertension with comorbidities is one of the leading causes of death worldwide. One of the comorbidities of hypertension is diabetes mellitus. Hypertension with comorbidities can cause severe symptoms. The Elderly are also prone to decreased physical function, which can reduce their independence in performing daily activities, thus affecting their quality of life. **Objective:** To understand the characteristics, daily activities independence, polypharmacy prescribing, quality of life, and the relationships between factors, independence in daily activities, number of medications consumed, and quality of life in geriatric patients with hypertension and comorbid diabetes mellitus at RSD KRMT Wongsonegoro Semarang. **Methods:** This was a descriptive study with a cross-sectional approach employed. The instruments used were the WHOQOL-BREF and Katz Index questionnaires. The questionnaire was directly given to the patients. **Results:** From 75 respondents, the majority were female (61.3%), had a normal BMI (53.3%), had low-moderate education (70.7%), were married (54.7%), had high independence (93.3%), and received polypharmacy prescriptions (89.3%). Most of the respondents had good quality of life. Bivariate analysis results showed that type of sex, BMI, marital status, and independence of daily activities had significant correlations with quality of life (p-value <0.05). **Conclusion:** Most of the geriatric patients had a high quality of life, which was correlated with the type of sex, BMI, marital status, and independence of daily activities, and the factor that most influences the quality of life is independence in daily activities.

BACKGROUND

The elderly is defined as somebody who is aged equally or more than 60 years. The elderly are susceptible to degenerative diseases such as hypertension.[1] Hypertension accompanied by comorbidities can be the number one cause of death in the world. One of the comorbidities of hypertension is DM. Insulin resistance in DM patients can increase peripheral vascular resistance and vascular smooth muscle contractility. This condition causes an increase in blood pressure.[2] Hypertension with comorbidities can cause several severe symptoms such as persistent headaches, fatigue, excessive sweating, chest pain, double vision or blurry, and difficulty sleeping, which can lower the quality of life of the elderly.[3] Elderly people are also susceptible to decreased physical function, which can affect their independence in performing daily activities. The inability of the elderly to perform daily activities can affect their quality of life.[4] Quality of life is an essential indicator for evaluating interventions' success or health services' effectiveness. It is also used to maintain the diseases (as a prevention) and monitor the treatment. One of the instruments for measuring quality of life is WHOQOL-BREF. One of the instruments that can be used to measure the level of independence of daily activities is the Katz Index.[5]

METHODS

The research was conducted at the RSD KRMT Wongsonegoro, Semarang, from November 2023 - January 2024. The type of research used was analytical

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observational (non-experimental) with *the cross-sectional* method. The sampling technique used in this study was *nonprobability sampling* with a *purposive* sampling technique. The sample in this study were geriatric patients with hypertension and comorbid DM who received outpatient treatment in Geriatrics Ward RSD KRMT Wongsonegoro Semarang in 2023 with some inclusion criteria: patients willing to be interviewed and can communicate well. The exclusion criteria are patients who have hypertension with other comorbidities (other than DM, such as lipid disorders, hyperuricemia, pneumonia, asthma, hyperthyroidism, and hypothyroidism). The number of samples in this study was 75 patients. The study was conducted by administering the WHOQOL-BREF questionnaire and the Katz Index directly to patients. Data analysis was done using univariate, bivariate, and multivariate analysis using SPSS. Bivariate analysis was performed using Fisher's exact test, and multivariate analysis using the binary logistic regression test.

RESULTS

Ten patients were excluded from the 85 respondents because they had comorbidities other than DM; thus, the total number of records analyzed was 75.

The validation test results show that WHOQOL-BREF and the Katz Index are valid for measuring quality of life in this study because the value of r count > r table. The reliability test results also showed that the WHOQOL-BREF and the Katz Index are reliable for measuring the quality of life of respondents in this study.

Table 1. Basic Characteristics of Respondents

	Frequency	Percentage (%)
Sex		
Woman	46	61.3
Man	29	38.7
BMI		
Excessive and obesity	35	46.7
Normal	40	53.3
Level of education		
Low education	53	70.7
High education	22	29.3
Marital status		
Widow/Widower	34	45.3
Married	41	54.7

According to Table 1, most respondents were women with normal BMI (Body Mass Index), low education (elementary or junior high school graduate), and were married. For the respondents' independence (Table 2), only eating activity can be done independently by the respondents. The highest dependency is for continence; many respondents reported that they had difficulty controlling their bowel. According to the Index Katz, the level of dependency was divided into low and high levels of independence. If the respondents' answers were in Index Katz E, F, and G, they had low independence. However, if the respondents' answers were in Index Katz A, B, C, and D, they had a high level of independence. Table 3 shows that most respondents had a high level of independence. Based on the data obtained from the interview and medical record checking, data about how many medicines patients regularly consume (Table 3) showed that the majority of respondents consumed >5 types of drug (polypharmacy).

Table 2. Activity Independence Respondents

Activities	Independent		Dependent	
	(n)	(%)	(n)	(%)
Bathe	71	94.6	4	5.4
Getting dressed	73	97.3	2	2.7
To the toilet	63	84	12	16
Moving	63	84	12	16
Continence	60	80	15	20
Eating	75	100	0	100

Table 3. Level of Independence, Consumed Drug, and General Quality of Life of the Patients

	Frequency	Percentage (%)
Level of independence		
Low independency	5	6.7
High independency	70	93.3
Amount of drugs that are consumed		
Drug >5	67	89.3
Drug ≤5	8	10.7
Quality of life category		
Bad	7	9.3
Good	68	90.7

Results from the quality of life questionnaire are presented in Tables 3 and 4. Table 4 divides the results into four categories: physical health, psychology, social relations, and environment. Only physical health domain that most of the respondents had a low

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quality of life. Most of the respondents had a high quality of life for other categories. The overall quality of life score showed that 90,7% of respondents had a good quality of life (Table 3).

Table 4. Quality of Life Category by Domain

Domain	Quality of Life Category	(n)	(%)
Physical health	Bad	41	54.7
	Good	34	45.3
Psychology	Bad	11	14.7
	Good	64	85.3
Social relations	Bad	25	33.3
	Good	50	66.7
Environment	Bad	2	2.7
	Good	73	97.3

Table 5. Summary Results of Bivariate Analysis using Fisher Exact

Independent variable	*p-value*
Type of sex	0.041*
BMI	0.045*
Level of education	0.184
Marital status	0.042*
Independence of daily activities	<0.001*
Polypharmacy	0.562

Note: *: p-value < 0.05, means have a significant relationship

Table 5 shows the bivariate analysis results using Fisher's Exact to see whether the independent variables significantly affect the quality of life. It has significant affection if p-value <0.05. In this study, it was found that there was a relationship between gender, BMI, marital status, and independence of daily activity with the respondents' quality of life. However, there is no relationship between the level of education and the number of drugs consumed by quality life respondents.

DISCUSSION

Based on the results obtained in Table 1, most respondents were female. This is because this study is a research in geriatrics. Thus, most of the respondents in this study had entered menopause, which no longer produces estrogen hormones, making them more susceptible to hypertension. Estrogen deficiency can cause excessive RAAS activity.[6] Based on BMI, the majority of respondents had normal BMI. However, in this study, all respondents had comorbid diseases like diabetes mellitus. In patients with diabetes mellitus, hyperinsulinemia occurs, which can cause sodium retention. Sodium retention can cause swelling in the arteriole walls, increasing blood pressure.[7]

Based on education level (Table 1), most respondents had low education. The higher the education, the better the level of knowledge a person tends to have and the easier it is to look for information regarding health so that they can do their best for their health.[8] The majority of respondents are married. A person bound by marital status will get social support from their partner in all matters, including daily life, so as not to feel lonely. This should increase a person's enthusiasm for living his life, including maintaining health.[9]

Based on the data obtained in Table 2, all respondents have independence in eating activities (100%). Some respondents also depend on bathing, dressing, going to the toilet, moving, and continence. The activity with the lowest independence is continence; in other words, many respondents experienced difficulty controlling their bowels. This can happen because, for the elderly, there can be bladder instability, which causes incontinence. Incontinence is the temporary or permanent inability of the external sphincter muscle to control the release of urine from the urinary bladder and feces from the rectum. Incontinence is part of the aging process experienced by the elderly.[10] Based on the level of independence (Table 3), most respondents have high independence. Based on medical record searches, respondents in this study who have low independence are respondents with complications in the form of strokes that cause respondents to experience limitations in moving one side of their body, such as hands or feet. This causes patients to need assistive devices to carry out daily activities, such as wheelchairs or canes, and need help from others.

Polypharmacy (Table 3) that had been observed in this study can occur because the respondents have multi-pathology, including heart disease, kidney disease, nerves, and *stroke*, which are complications of hypertension. This follows the research of Martini and Zulkarnaini, which states that multi-pathology in geriatric patients causes an increase in the number of prescription drugs given to the patient.[11]

For the quality of life (Tables 3 and 4), most respondents have a low quality of life in the physical domain. This can happen because a large number of the respondents in this study reported pain. Most of the pain complained of by respondents was pain in the legs

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and chest. Pain is a symptom of the disease, which causes the respondents not to have vitality and enough energy to do activities. In addition, the pain experienced by respondents also caused respondents to be dissatisfied with their sleep time since it made them wake up during their bedtime and could not go to sleep again after that. For the psychology domain, most of the respondents have a good quality of life. This can happen because most of the respondents in this study have positive feelings and feel that they enjoy life. In addition, some respondents also admitted that they had never experienced negative emotions such as loneliness, despair, anxiety, and depression due to the disease they suffered. In the domain of social relations, the majority of respondents have a good quality of life. This happened because most of the respondents in this study said that their illness did not prevent them from interacting socially. Thus, they feel satisfied with their personal or social relationships. Some respondents also admit that interacting more with people can help them forget the pain. In addition, some respondents also admitted to being satisfied with the support they received from friends or family, which increased their enthusiasm to recover from their illness.

For the environmental domain, respondents also have a good quality of life. This can happen because some respondents in this study feel satisfied with the environment in which they live, satisfied with the availability of information for daily life, and confident with access to health services. The last one was because they became a JKN (Jaminan Kesehatan Nasional) or Indonesia National Health Insurance member. Most respondents said that with the existence of JKN, they did not need a lot of money to cure their illness, so their money could be used for other needs.

Based on the overall quality of life assessment (Table 3), most respondents had a high quality of life. These results follow Musnelina's research, which states that most hypertensive patients with DM comorbidities have a good quality of life.[12]

According to the results of the bivariate analysis, the type of sex had a significant relationship with quality of life. In this study, female respondents had a worse quality of life than male respondents because women and men have different responses when dealing with a problem. According to Chendra, men tend to think positively and believe that the disease they suffer from will be cured, while women tend to have more worries about the disease they suffer from.[13] Another corresponding factor with quality of life is BMI. Respondents with excessive B M I and obesity had a worse quality of life compared to respondents with normal BMI because most of them had heart disease, and some of them often experienced excessive chest pain. According to Ratu, excess BMI and obesity are risk factors for the occurrence of metabolic syndrome or a collection of symptoms that can increase the risk of developing various diseases such as DM, high blood pressure, heart disease, stroke, and dyslipidemia. If these diseases are suffered together, they can increase the symptoms experienced by patients, thereby reducing the quality of life.[14] Another factor is marital status. In this study, respondents with widow/widower status had a worse quality of life than respondents with married status. According to Retnowati, someone bound by a married status will get social support from their partner, including maintaining their health, which can improve their quality of life.[15] Independency in daily activities is also significantly related to quality of life. The respondents with low independence in this study had a worse quality of life because they were stroke patients; they admitted to being dissatisfied with their lives because they depended on others. According to Sutria, the dependence of the elderly can affect their psychology and influence the decline in quality of life.[16]

In this study, the education level and polypharmacy were not significantly related to the quality of life. According to Prastika, someone with a high level of education does not necessarily mean they are well-educated, and somebody with a level of education does not have shallow knowledge. Nowadays, knowledge can be accessed in schools and colleges and from various sources such as the Internet. In this study, the low and high-education respondents admit that they can use *mobile phones* to find information about their health. This causes a person's quality of life not to be determined by education level.[17] Then, the number of drugs consumed in this study was also not significantly related to quality of life. According to Dasopang, patients who consume drugs>5 (polypharmacy) have a better quality of life compared to patients who consume ≤5 drugs. The large number of drugs consumed by elderly patients

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can help control the disease they suffer from so that other complications do not occur. This can improve patients' quality of life because taking drugs regularly will also reduce the symptoms of the disease experienced. However, the greater the number of drugs consumed can also reduce patient compliance. In addition, consuming drugs more than five also can increase the risk of drug interactions.[18] Therefore, a person's quality of life cannot be determined based on the amount of medication consumed.

CONCLUSION

Geriatric patients with hypertension with DM comorbid at RSD KRMT Wongsonegoro Semarang are primarily female, have a normal BMI, have low education, are married, and have high independence in daily activities based on Index Katz. The majority of respondents received polypharmacy prescriptions (> 5 types of drugs). Based on quality of life, most of the respondents have a high quality of life. A relationship exists between gender, body mass index, marital status, and independence of daily life activity with quality of life. However, there is no relationship between the level of education, the number of drugs consumed, and the quality of life of the respondents.

ETHICAL APPROVAL

This research has got ethical clearance from Komisi Etik Penelitian Kesehatan (KEPK) RSD KRMT Wongsonegoro Semarang Number 008/Kom.EtikRSWN/VIII/2023.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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The following authors contributed equally to this paper: "conceptualization, RSD, and EA; methodology, RSD; software, VF; validation, VF, RSD, and EA; investigation, VF; data curation, VF; writing—original draft preparation, VF; writing—review and editing, RSD; visualization, VF; supervision, EA.

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