CORRELATION BETWEEN DEPRESSION LEVELS AND HYPERTENSION INCIDENCE AT THE RESILIENT ELDERLY SCHOOL (SELANTANG) IN PASURUAN CITY, EAST JAVA

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ABSTRAK

Hipertensi merupakan masalah kesehatan global, terutama pada lansia, yang dapat dipengaruhi oleh faktor psikologis seperti depresi. Penelitian ini bertujuan untuk mengkaji hubungan antara tingkat depresi dan kejadian hipertensi pada lansia di komunitas SELANTANG, Kota Pasuruan. Menggunakan desain penelitian potong lintang, sebanyak 175 lansia dari total populasi 240 orang dilibatkan. Data dikumpulkan pada Agustus 2023 melalui Skala Depresi Geriatri (GDS) dan pengukuran tekanan darah. Hasil menunjukkan sebagian besar responden mengalami hipertensi sistolik terisolasi, dengan rata-rata tekanan sistolik 142,58 mmHg dan diastolik 83,00 mmHg. Meskipun skor depresi rata-rata responden tergolong normal (skor 2), analisis Spearman menunjukkan tidak ada hubungan yang signifikan antara tingkat depresi dan kejadian hipertensi (p = 0,885 dan p = 0,901). Temuan ini menunjukkan bahwa pengelolaan hipertensi pada lansia perlu difokuskan pada faktor lain seperti pola makan, gaya hidup, dan aktivitas fisik.

ABSTRACT

Correlation Between Depression Levels and Hypertension Incidence at The Resilient Elderly School (Selantang) in Pasuruan City, East Java. Hypertension is a global health issue, particularly among the elderly, and can be influenced by psychological factors such as depression. This study investigated the relationship between depression and hypertension among the elderly in the SELANTANG community, Pasuruan City. Utilizing a cross-sectional design, the research involved 175 elderly participants from a total population of 240. Data were collected in August 2023 using the Geriatric Depression Scale (GDS) and blood pressure measurements. Results showed that most participants had isolated systolic hypertension, with an average systolic pressure of 142.58 mmHg and diastolic pressure of 83.00 mmHg. Despite a normal average depression score of 2, Spearman's rank analysis indicated no significant correlation between depression levels and hypertension (p = 0.885 and p = 0.901). These findings suggest that hypertension management in the elderly should prioritize factors such as diet, lifestyle, and physical activity.

INTRODUCTION

Hypertension is a global health issue that frequently affects the elderly[6]. According to WHO data, around 1.13 billion individuals worldwide have hypertension, and its prevalence is increasing with age. Hypertension is a degenerative condition in Indonesia that significantly adds to morbidity

and mortality rate.[1] According to the 2023 Indonesian Health Survey (SKI), the proportion of hypertension based on measurement results in the population aged >18 years throughout Indonesia was 30.8%, or 566,883.[14] Pasuruan City, East Java, is no exception, with a significant number of hypertension cases, particularly among the elderly, according to the 2023 Indonesian Health Survey (SKI), with a 34.3% prevalence of hypertension based on measurement results in the population aged >18 years for East Java province, or 89,343 people.[14]

Hypertension is influenced by biological and psychosocial factors, including age, weight, and family history.[17] Depression is one of the psychological elements that is receiving increased attention in the literature. According to the 2023 Indonesian Health Survey (SKI), the proportion of depressed individuals in the population aged >15 years throughout Indonesia was 1.4%, or 630,827 people, while the proportion of depressed individuals in the last two weeks in the population aged >15 years in East Java province was 0.7%, or 97,746 people.[14] Depression not only lowers the quality of life in the elderly, but it also increases the risk of hypertension through mechanisms such as sympathetic nervous system hyperactivity, elevated cortisol levels, and inflammatory system disorders (Amasi-Hartoonian et al., 2022; Dewi & Purnomosidi, 2019). The elderly are particularly sensitive to depression due to a variety of life changes, including diminished physical function, loss of a partner, and social constraints.[8, 19, 28] Several studies have found that depression can cause hypertension via autonomic dysfunction, sympathetic nervous system hyperactivity, and an elevated systemic inflammatory response.[13]

The Resilient Elderly School or in Indonesian called *Sekolah Lansia Tangguh* (SELANTANG) program in Pasuruan City is designed to improve the quality of life of the elderly through an empowerment education approach and health activities.[24] However, a few studies have been conducted to investigate the association between depression levels and the prevalence of hypertension among the program's older participants. Understanding this relationship is critical for establishing comprehensive interventions that address not only the medical care of hypertension but also the mental health of the elderly.

Although the association between depression and hypertension has been extensively researched worldwide, studies that specifically investigate this relationship in the senior population using a community-based strategy such as SELANTANG are still scarce, particularly in Indonesia. Most earlier studies focused on the general population or employed clinical settings with small sample sizes, making them unsuitable for broad generalization. Furthermore, approaches that combine psychological components and community education for managing hypertension in the elderly have not been extensively researched, particularly at the local level in Pasuruan City.

This study, using a community-based method, helps to explore the association between depression levels and the occurrence of hypertension among the elderly. The SELANTANG program, as a model of resilient elderly intervention, enables researchers to assess this correlation in a unique context that incorporates education, empowerment, and health components. The study's findings are expected to provide new insights for health policy and program makers, particularly in developing comprehensive hypertension control management including psychological and social dimensions.

METHOD

This is a descriptive correlation study that uses a cross-sectional research design to examine the correlation between depression levels and hypertension occurrence in senior people at the

Resilient Senior School in Pasuruan City, East Java. The study's population consisted of all elderly people who attended the Resilient Elderly School in Pasuruan City, East Java, which included eight sub-districts: Karanganyar Village, Kandang Sapi Village, Bakalan Village, Krampyangan Village, Karangketug Village, Krapyakrejo Village, Purworejo Village, and Pohjentrek Village. The overall population consisted of 240 old persons. This study used a purposive sampling strategy with a 5% error rate, yielding a sample size of 175 elderly individuals determined using the Slovin formula.

The data was collected in August 2023 at the Resilient Elderly School in Pasuruan City, East Java. During this time, the researcher screened the elderly for depression using the Geriatric Depression Scale (GDS) questionnaire instrument, which was administered after learning. Blood pressure measurement in the elderly uses digital tension before the learning content is presented. This study used Spearman's rank test analysis to investigate the link between depression and hypertension; this test applies to both quantitative data that are not normally distributed.

RESULT AND DISCUSSION

3.1 Results

Table 1 Frequency Distribution of Respondent Characteristics at the Resilient Elderly School in Pasuruan City, East Java

Category	Frequency (f)	Percentage (%)
Age		
45-54 (Pre elderly)	10	5.7
55-64 (Elderly)	70	40,0
>65 (Old elderly)	95	54,3
Gender		
Male	44	25,1
Female	131	74,9
Education		
No School	15	8,6
Primary School	41	23,4
Secondary School (SHS-JHS)	76	43,4
Higher Education	43	24,6
Total	175	100

According to Table 1, the majority of respondents in this study were elderly people over the age of 65, with 95 (54.3%) respondents; the majority of respondents were female, with 131 (74.9%) respondents; and nearly half of the respondents had secondary education (junior high school-high school), with 76 (43.4%) respondents.

Table 2 Overview of Depression with Systolic and Diastolic Blood Pressure in Students of the Resilient Elderly School in Pasuruan City, East Java (n = 175)

Variable	Mean	SD	Min-Max
Depression	2.00*	2.703	0-15
Systolic	142.58	22.507	98-247
Diastolic	83.00*	12.507	55-137

*The data were not normally distributed

According to the results of Table 2, the examination discovered a level of depression with a mean value of 2.00, a systolic average of 142.58 mmHg, and a diastolic average of 83.00 mmHg.

Table 3 The Correlation Between Depression and Blood Pressure

	P-value	
Variable	Systolic	Diastolic
Depression	0.885	0.901

The Spearman's rank analysis test on the relationship between the level of depression and systolic and diastolic blood pressure yielded p-values of 0.885 and 0.901 (> 0.05), indicating that H0 is accepted, implying that there is no relationship between the level of depression and the incidence of hypertension in the elderly at the Pasuruan City Resilient Elderly School in East Java.

3.2 Discussion

Table 1 shows the findings of a study conducted on 175 senior persons at the Pasuruan City Smart Senior Resilient Senior School. It can be noted that the majority of the respondents are over the age of 65, with 95 (54.3%) responding. In the elderly, changes occur in the cardiovascular system, causing blood vessels to thicken, stiffen, and lose their flexibility, resulting in high blood pressure. This is consistent with Wang and Cai's findings, which reveal that people over the age of 65 are more likely to develop hypertension due to aging in the cardiovascular system, which promotes stiffness in the major arteries and the reflection of arterial waves to the heart.[30]

The results showed that the majority of responders were female, with 131 (74.9%). This is supported by Connelly's research, which shows that in women, blood pressure rises more quickly, leading to a higher prevalence of hypertension, which is impacted by pregnancy factors, hormonal changes, and age.[9] According to Li's research, women are more susceptible to hypertension during pregnancy and postmenopause due to biological changes such as decreased estrogen levels, excessive activation of the sympathetic nervous system, and changes in vascular function (Li et al., 2024). In this research, the elderly who followed the school of toughness owned significant difference between male and female. Most of the male elderly had the occupation as a farmer, this makes them difficult to follow the school of toughness (SELANTANG). Different from female elderly who tend to have occupation as a housewife that has more spare time until they could follow the school of toughness (SELANTANG).

The majority of respondents, namely 76 respondents (43.4%) had a secondary education level (junior high school). This is in accordance with Baringbing's research which states that individuals who have a lower level of education will have a greater risk of developing hypertension compared to highly educated individuals because highly educated individuals are better at receiving and managing health information and are more receptive to a healthy lifestyle such as a healthy diet, exercise and managing ideal body weight.[5] Furthermore, Chimberengwa's research indicates that individuals with a low level of secondary education have a significant impact on hypertension because they have insufficient or inadequate knowledge about hypertension, which influences attitudes and practices of blood pressure management.[7]

Table 2 demonstrates that the elderly at the Pasuruan City Resilient Elderly School have an average depression score of 2.00. According to the Geriatric Depression Scale (GDS), a score of 0-4 indicates normal depression, which means no symptoms of depression or anxiety.[12] Normal levels

of depression are caused by several factors such as having positive relationships with peers and attending the Senior Smart Resilient Elderly School in Pasuruan City. This study is in line with Tamansyah who stated that there is a significant relationship between social support from peers and family can reduce the level of depression in the elderly.[27] At the Resilient Elderly School, in addition to getting positive support, there are also health education and therapy activities such as gymnastics, spiritual therapy, art therapy, cognitive therapy, and other therapies. This is also reinforced by research by Alhawari and Pratiwi stating that there is a significant decrease in the level of depression in the elderly with group activity therapy.[2] According to the findings of the study by Smail et al., physical activity has a positive impact on mood and depression in the elderly.[25]

The average systolic blood pressure was 142.58 mmHg. According to the Joint National Committee's Seventh Report, stage 1 hypertension is defined as systolic blood pressure between 140 and 159 mmHg. The average diastolic blood pressure was 83.00 mmHg. According to the Joint National Committee's Seventh Report, diastolic blood pressure between 80 and 89 mmHg is considered pre-hypertension.[29] This indicates that some elderly persons have a predisposition to hypertension in their systolic blood pressure levels. According to Wang and Cai's research, the elderly are more likely to experience isolated systolic hypertension with systolic blood pressure >140 mmHg and diastolic blood pressure <90 mmHg. This is due to age, aging of the cardiovascular system, stiffness in the large arteries, and reflection of arterial waves to the heart.[29]

According to Table 3 of the Spearman's rank test, the p-value findings were 0.885 (>0.05) and 0.901 (>0.05), indicating that there was no correlation between the level of depression and the incidence of hypertension in the elderly at the Pasuruan City Resilient Elderly School in East Java. The results of this study are in line with the research of Putra et al. which stated that there was no relationship between depression and hypertension and vice versa.[23] Hypertension itself can be caused by factors such as old age >65 years, genetics, obesity, lack of physical activity, diets such as a high-salt diet, and unhealthy lifestyles such as consuming alcohol, smoking, and unhealthy diets.[4, 11, 16, 26] Nurbaiti's research confirms that lifestyle factors such as passive and active smoking, alcohol drinking, and irregular sleep patterns are more important than stress in the development of hypertension.[20] East Java is a province known for its salty cuisine.[1] This type of cuisine, of course, raises the risk of hypertension in the elderly. This is consistent with Mega's research, which found that in addition to an unhealthy lifestyle, a high-salt diet contributes significantly to hypertension.[18]

In this research, Sefriantina et. Al who conducted her research in Depok, West Java, stated that the depression level had contribution to the increase of blood pressure in elderly where the higher the depression then the tendency for hypertension will be higher as well.[31] In the contrary, the research results conducted in Pasuruan City, East Java showed that there was correlation between the depression level and hypertension occurrence in elderly. This showed that there were other factors influencing hypertension. The weakness of the research which had been conducted was that this research did not have inclusion criteria related to diet, the physical activity, and social support.

CONCLUSION

Based on the findings of the research, it is possible to draw the following conclusions:
Elderly people at the Smart Senior Resilient Elderly School have an average depression value of 2 (normal), an average systolic blood pressure of 142.58 mmHg (hypertension), and an average diastolic blood pressure of 83.00 mmHg (pre-hypertension), indicating that isolated systolic

hypertension occurs in the elderly. This study found no correlation between depression and the prevalence of hypertension in the elderly at the Resilient Elderly School in Pasuruan City, East Java.

SUGGESTION

Based on the findings of this study, these suggestions can be considered:

The need for additional blood pressure monitoring in the elderly, as well as intensive preventive measures for the elderly at the Senior Smart Resilient Elderly School in Pasuruan City, to address the potential for increased hypertension among the elderly by modifying a healthier lifestyle such as limiting salt intake, quitting smoking, not consuming alcohol, exercising regularly, and managing sleep patterns. Government, community, and health institutions must work together to implement programs, particularly for hypertension and mental health among the elderly. Thus, it is hoped that the elderly's quality of life will improve overall.

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