

DEPRESSION RELATIONSHIP WITH BLOOD PRESSURE IN THE ELDERLY AT THE TRESNA WERDHA KHUSNUL KHOTIMAH SOCIAL HOME PEKANBARU IN 2018

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ABSTRACT

Introduction: Depression is a common mental disorder characterized by constant sadness and loss of interest in activities that are usually liked, accompanied by an inability to carry out daily activities. The Elderly group experiences depression due to physical changes and environmental social conditions. Other risk factors that can cause depression in the elderly include biological factors, marital status, and psychosocial factors. Biological and psychosocial factors have a relationship with changes in the levels of hormones and neurotransmitters in the body. Changes in hormone levels and neurotransmitters can cause changes in blood pressure. Blood pressure is normal if the systolic blood pressure is less than 120 mmHg and the diastolic blood pressure is less than 80 mmHg and high blood pressure if the systolic blood pressure is more than 140 mmHg and the diastolic blood pressure is more than 90 mmHg.

Purpose: To determine the relationship of depression to blood pressure in the elderly at the Tresna Werdha Social Home Khusnul Khotimah Pekanbaru in 2018.

Method: The method used in this study is analytic observation with a cross-sectional design. The sampling technique used the total sampling method, where in this study, the population was a sample, but after the exclusion, the number of samples obtained was 41 respondents. Data collection was carried out by observations made by interviewing respondents using questionnaires and blood pressure measurements using a Sphygmomanometer and stethoscope.

Results: Obtained p values (Sig.) Systolic blood pressure and diastolic blood pressure showed several 0.021 and 0.019. This p (Sig.) The value is small of 0.05, and this indicates a significant relationship of depression to blood pressure in the elderly at the Tresna Werdha Khusnul Social Home Khotimah Pekanbaru in 2018.

Conclusion: There is a significant relationship between blood pressure depression in the elderly at PSTW Khusnul Khotimah Pekanbaru in 2018.

Keywords: depression, elderly, blood pressure.

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INTRODUCTION

According to Law Number 13 of 1998 concerning Elderly Welfare, an older person has reached the age of 60 years and over. According to the World Health Organization (WHO), old age is divided into the following four criteria: middle age is 45-59 years, elderly is 60-74 years old, elderly is 75-90 years

, very old age is over 90 years. With increasing age, the elderly will experience a degeneration process which can affect the health status of the elderly. One of the factors that affect the health status of the elderly is the mental health of the elderly (Ministry of Health of the Republic of Indonesia (Kemenkes RI), 2013). Mental health problems of the elderly is still a significant problem in the world, including in Indonesia. One of them is depression (Irawan, 2013).

An observational theory suggests that stress accompanies the first episode of depression, resulting in changes to the functional state of various neurotransmitters. The biological factors that can cause depression are mood disorders, which are caused by dysregulation of norepinephrine, serotonin, dopamine (Kaplan and Sadock, 2014). Biological and psychosocial factors are associated with changes in hormones and neurotransmitters in the body. Changes in hormone levels and neurotransmitters can cause changes in blood pressure (Gozali, 2016).

Based on the initial interview with one of the officers at UPT PSTW Khusnul Khotimah Pekanbaru, the elderly at UPT PSTW Khusnul Khotimah Pekanbaru are elderly who live alone and far from their families, who are also more vulnerable to various diseases. The elderly are also considered difficult to carry out activities, so they are more likely to experience depression. Depression is one of the factors that can affect changes in blood pressure. From the description above, researchers are interested in researching the relationship of depression with blood pressure in the

elderly at the Tresna Werdha Khusnul Khotimah Social Home Pekanbaru in 2018. Based on the background, the problem in this study can be formulated as follows: Is there a relationship between depression and blood pressure in the elderly at the Tresna Werdha Khusnul Khotimah Social Home in 2018?

According to Kaplan and Sadock (2014), the causes of depression are divided into three factors, namely biological, genetic, and psychosocial factors. Biological factors are based on many studies reporting the hypothesis that mood disorders are caused by metabolite abnormalities or heterogeneous dysregulation of biogenic amines (norepinephrine and serotonin). An observational theory explains psychosocial factors, that stress accompanies the first episode of depression, results in lasting changes in the biology of the brain and results in changes to the functional state of various neurotransmitters. Stress that often causes depression is environmental stress, loss of parents/family, loss of a partner, and job loss are three times more likely to experience symptoms of a major depressive episode than people that have jobs.

Based on the increasing age of the individual, there will be many physical and mental changes, especially a decline in the various functions and abilities that they have had. Physical appearance as part of the normal ageing process includes decreased sensory acuity and decreased immunity. In addition, the elderly still have to deal with changing roles, social positions, and separating from their loved ones. These conditions make the elderly more susceptible to mental problems (depression). Some of the psychobiological aspects caused by parallel ageing processes that occur in depression, including malfunctioning of one or more monoamines, act as synaptic neurotransmitters in the CNS (norepinephrine, dopamine, and serotonin). Research conducted by Yusup (2010) in Priyoto (2017) explains that the impact caused by depression in the elderly is

cardiovascular disorders, namely hypertension. Based on Priyoto's (2017) research on the relationship between depression and hypertension, it was found that 30 elderly who experienced depression mainly also experienced hypertension, namely 24 elderly (80%). As for the 16 elderly who were not depressed, 12 elderly (75%) did not experience hypertension. The physiological mechanism that underlies the relationship between depression and hypertension is an imbalance of neurotransmitters as an introductory compound, resulting in an increase in serotonin, dopamine, and norepinephrine which affect blood pressure regulation.

The purpose of this study is to find out about the relationship between depression and blood pressure in the elderly at the Tresna Werdha Khusnul Khotimah Social Home in 2018.

METHOD

This research is an analytic observational study with a cross-sectional approach. The data collection tool used in this study was the GDS-15 (Geriatric Depression Scale) questionnaire, which will be used to measure depression. This questionnaire was taken from Njoto's (2014) research sourced from the PB PERGEMI Multicenter research (Indonesian Medical Gerontology Association). In addition, the instruments used in this study were a mercury sphygmomanometer and a stethoscope, which were used to measure blood pressure. The population in this study were all elderly at the Tresna Werdha Khusnul Khotimah Social Home in Pekanbaru in 2018. The elderly population in this study was 73 people. The sampling technique in this study uses the total sampling method. In this study, the population is a sample, but the number of samples obtained in as many as 41 respondents after exclusion. The data analysis used was univariate and bivariate analysis using the Spearman test.

RESULTS

1. Univriate Analysis

Table 1. Univariate Analysis Results of Research on the Relationship of Depression with Blood Pressure in the Elderly at the Tresna Werdha Khusnul Khotimah Social Home in 2018.

Characteristics		f	%
Age	60-74 years old	28	68,3%
	75-90 years old	13	31,7%
Total		41	100%
Sex	Male	23	56,1%
	Female	18	43,9%
Total		41	100%
Depression	Not depressed	15	36,6%
	Depressed	26	63,4%
Total		41	100%
Systolic Blood Pressure	<120 mmHg	2	4,8%
	120-139 mmHg	17	41,4%
	140-159 mmHg	18	43,9%
	≥160 mmHg	4	9,7%
Total		41	100%
Diastolic Blood Pressure	<80 mmHg	18	19,5%
	80-89 mmHg	15	36,5%
	90-99 mmHg	17	41,4%
	≥100 mmHg	1	2,4%
Total		41	100%

2. Bivariate Analysis

Table 2. Spearman Test Research on the Relationship between Depression and Blood Pressure in the Elderly at the Tresna Werdha Khusnul Khotimah Social Home in 2018.

Variable	Depression	Systolic Blood Pressure
N	41	41
Correlation coefficient	0,318	
P-value	0,021	

Variable	Depression	Diastolic Blood Pressure
N	41	41
Correlation coefficient	0,324	
P-value	0,019	

Table 3. Cross Tabulation of Depression and Gender Research on the Relationship between Depression and Blood Pressure in the Elderly at the Tresna Werdha Khusnul Khotimah Social Home in 2018.

	Sex		Total
	Male	Female	
Not depressed	8	7	15
Depressed	15	11	26
Total	23	18	41

Table 4. Cross Tabulation of Systolic Blood Pressure and Gender Research on the Relationship between Depression and Blood Pressure in the Elderly at the Tresna Werdha Khusnul Khotimah Social Home in 2018.

	Sex		Total
	Male	Female	
< 120 mmHg	1	1	2
120-139 mmHg	7	10	17
140-159 mmHg	12	6	18
≥160 mmHg	3	1	4
Total	23	18	41

Table 5. Cross Tabulation of Diastolic Blood Pressure and Gender Research on the Relationship between Depression and Blood Pressure in the Elderly at the Tresna Werdha Khusnul Khotimah Social Home in 2018.

	Sex		Total
	Male	Female	
< 80 mmHg	6	2	8
80-89 mmHg	7	8	15
90-99 mmHg	10	7	17
≥100 mmHg	0	1	1
Total	23	18	41

Table 6. Cross Tabulation of Depression and Systolic Blood Pressure. Research on the Relationship between Depression and Blood Pressure in the Elderly at the Tresna Werdha Khusnul Khotimah Social Home in 2018.

	Depression		Total
	Not depr	Depressed	
80-89 mmHg	5	10	15
90-99 mmHg	5	12	17
≥100 mmHg	0	1	1
Total	15	26	41

Table 7. Cross Tabulation of Depression and Diastolic Blood Pressure Research on the Relationship between Depression and Blood Pressure in the Elderly at the Tresna Werdha Khusnul Khotimah Social Home in 2018.

Tresna Werdha Khusnul Khotimah Social Home in 2018.

	Depression		Total
	Not depr	Depressed	
Diastolic Blood Pressure <80 mmHg	5	3	8
80-89 mmHg	5	10	15
90-99 mmHg	5	12	17
≥100 mmHg	0	1	1
Total	15	26	41

DISCUSSION

1. Overview of Depression in the Elderly at the Tresna Werdha Khusnul Khotimah Social Home Pekanbaru in 2018. According to the cross-tabulation of depression and age, most respondents who experienced depression were between the ages of 60-74 years old, consisting of 14 respondents (34,1%). This result follows the study conducted by Sari (2012); namely, the highest incidence rate of depression occurs in the elderly (at the age of 60-74 years old). Age 60-74 years old is the initial age of the elderly to generally begin to experience physical, psychological, economic, and social deterioration. This period is the initial period for the elderly to adapt to these changes. According to Sorzeri (2012), older age with extensive life experience can overcome stress factors, while in old age, environmental stress often causes depression and decreased adaptability.

Based on the cross-tabulation of depression and gender, it was found that most respondents were male, amounting to 15 respondents (57.69%). This result is also per the research conducted by Sari (2012), which discovered that male elderly experienced more depression than female elderly. Study by Nurrahmawati et al. (2003) stated that coping behaviour in female elderly is better than in male elderly. Older women often use coping behaviour in the form of

emotional focused (e.g. by telling themselves that the problem that happened is someone else's fault) and seeking support (e.g. looking for someone who is a professional to help solve the problems, praying to surrender to Allah SWT), so that when elderly women experience depression, it is easier for them to find solutions and help to overcome their depression. In contrast to what Irawan (2013) stated, in his study, the prevalence of depression in the elderly population was around 1-2%, where the prevalence of women was 1.6%, more than men, which

was 0.4%. This difference may be due to several other factors that influence depression, such as the death of a spouse, previous history of depression, and personality type (Canadienne et al., 2006).

2. Overview of Blood Pressure in the Elderly at the Tresna Werdha Khusnul Khotimah Social Home Pekanbaru in 2018 Based on research conducted on the elderly at the Tresna Werdha Khusnul Khotimah Social Home Pekanbaru in 2018, the results showed that the most respondents were respondents with systolic blood pressure 140-159 mmHg, consisting of 18 respondents (43.9%), and respondents with diastolic blood pressure 90-99 mmHg, consisting of 17 respondents (41.4%). Hypertension in the elderly is influenced by several factors, one of them is age. Increasing age can result in increased blood pressure. This is due to the thickening of the artery walls in the elderly, caused by the accumulation of collagen in the muscle layer so that the blood vessels will gradually become narrow and stiff (Novitaningtiyas, 2014). This is in accordance with Asari's research (2017), which states that most hypertension occurs in the age group ≥ 60 years old, namely 51.9%. Increasing age causes a decrease in physiological function and immunity due to the ageing process. It can cause a person to be susceptible to diseases, one of which is hypertension (Kemenkes RI, 2013).

Based on the cross-tabulation between blood pressure and gender, it was found that the majority of older adults with hypertension were male, namely 15 respondents (36.5%) with systolic blood pressure and ten respondents (24.3%) with diastolic blood pressure. This is in accordance with Amanda and Martini's (2018) study, which states that the majority of respondents who experience hypertension are male (73.1%). Hypertension in men is caused by problems they tried to relieve from by smoking, drinking alcohol, and eating unhealthy foods; the resulting impact is high blood pressure. The results of this study are

different from the research conducted by Susiati (2016), which states that women are more likely to have high blood pressure due to hormonal changes that occur in women. According to Anggraini et al. (2009) in Novitaningtiyas (2014), said that women who enter old age (menopause) will have reduced levels of estrogen, which causes women to become more susceptible to hypertension, the estrogen hormone plays an important role in increasing levels of High-Density Lipoprotein (HDL). A high HDL level is a protective factor in preventing the occurrence of atherosclerosis.

3. The Relationship between Depression and Blood Pressure in the Elderly at the Tresna Werdha Khusnul Khotimah Social Home Pekanbaru in 2018 Based on the cross-tabulation between depression and blood pressure, it shows that the respondents who experienced the most depression were 12 respondents with a systolic blood pressure of 140 to 159 mmHg (29.2%) and respondents who experienced the most depression were respondents with a diastolic blood pressure of 90 up to 99 mmHg by 12 respondents (29.2%). The statistical test results show that the p-value (Sig.) shows 0.021 and 0.019. This p-value (Sig.) is smaller than 0.05. This indicates a significant relationship between depression and blood pressure in the elderly at the Tresna Werdha Khusnul Khotimah Social Home, Pekanbaru, in 2018.

The results of this study are in accordance with the results of research by Gozali (2016) on the elderly at Griya Seni Tua Santo Yosef Surabaya, which states that there is a relationship between the level of depression and blood pressure in the elderly with a p-value (Sig.) of 0.048. The results of this study are also under the results of Priyoto's (2017) research on the elderly in the Technical Implementation Unit for Elderly Social Services in Selosari District, Magetan Regency, which states that there is a relationship between depression and the incidence of hypertension in the elderly with a p-value (Sig.) of 0.001. Out of the 46

older adults, there were 30 older adults who experienced depression, 80% of them experienced an increase in blood pressure/hypertension. According to Lina et al. (2015), depression can cause regulatory dysfunction of the hypothalamic-pituitary-adrenal axis of the autonomic nervous system, which can increase blood vessel tone and resistance to blood pressure control. According to Hartini et al. (2015), the physiological mechanism underlying the relationship between depression and hypertension is an imbalance of neurotransmitters as an introductory compound, resulting in an increase in serotonin, dopamine, and norepinephrine which affect blood pressure regulation, as well as disorders of the sympathetic nervous system which result in arteriolar constriction so that the body compensates by increasing blood flow. In addition, other factors that support the occurrence of hypertension in the elderly are psychological. The elderly tend to experience depression or stress. This can be caused by occupational status or not working anymore (unemployed). Also, someone with low income does not take advantage of the existing health services, so they rarely obtain good treatment when suffering from hypertension (Hafiz et al., 2016). According to Azkia (2016), the study results by several experts show that depression is associated with arterial vasoconstriction, thereby increasing the risk of cardiovascular disease 2-4 times. According to Aaron et al. (2012), the diagnosis of hypertension is increased in patients with depression and anxiety than in patients with good mental health conditions. The same thing was also stated by Guerra et al. (2013), where patients with depression and hypertension experienced an increase in sympathetic tone and increased secretion of adrenocorticotropic hormones and cortisol.

CONCLUSION

Based on the results of this research on the Relationship between Depression and

Blood Pressure in the Elderly at the Tresna Werdha Social Home (PSTW) Khusnul Khotimah Pekanbaru in 2018, the following conclusions can be drawn:

1. There is a relationship between depression and blood pressure, both systolic blood pressure ($p = 0.021$) and diastolic blood pressure ($p = 0.019$) in the
2. elderly at the Tresna Werdha Social Home (PSTW) Khusnul Khotimah Pekanbaru in 2018.
3. Overview of depression in the elderly at the Tresna Werdha Social Home (PSTW) Khusnul Khotimah Pekanbaru in 2018, namely 26 people (63.4%) experienced depression, and 15 people who did not experience depression (36.6%).
4. Overview of systolic blood pressure in the elderly at the Tresna Werdha Social Home (PSTW) Khusnul Khotimah Pekanbaru in 2018, namely two people (4.8%) had blood pressure less than 120 mmHg, 17 people (41.4%) had blood pressure 120 to 139 mmHg, 18 people (43.9%) had a blood pressure level of 140 to 159 mmHg and four people (9.7%) had blood pressure greater than 160 mmHg.
5. Overview of diastolic blood pressure in the elderly at Tresna Werdha Social Home (PSTW) Khusnul Khotimah Pekanbaru in 2018, namely eight people (19.5%) had blood pressure less than 80 mmHg, 15 people (36.5%) had blood pressure 80 to 89 mmHg, 17 people (41.4%) had a blood pressure of 90 to 99 mmHg and one person (2.4%) had blood pressure greater than 100 mmHg.

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1. Tresna Werdha Khusnul Khotimah Social Home Pekanbaru.
2. Faculty of Medicine of Abdurrah University.

REFERENCES

1. Aaron K. HO., Carolyn T. T., Nancy P., Mari P., Maureen A. S., Heather M. J, et al. Association of Anxiety and Depression with Hypertension Control: A U.S. Multi-Disciplinary Group Practice Observational Study. *J Hypertens.* 2012;33: 2215–2222.
2. Amanda, D dan Martini, S. Hubungan Karakteristik Dan Obesitas Sentral Dengan Kejadian Hipertensi. Jawa Timur. FKM Universitas Airlangga; 2018.
3. Azkia, Q. A. Hubungan Gejala Depresi Dengan Tekanan Darah Pada Penderita Hipertensi Lanjut Usia Di Poliklinik Penyakit Dalam RSUD dr. Zainal Abidin Banda Aceh. Aceh. FK Universitas Syiah Kuala Darussalam Banda Aceh; 2016.
4. Canadienne, C. et al. National Guideline For Senior. Mental Health The Assessment and Treatment of Depression; 2006.
5. Gozali, F. S. Hubungan Tingkat Depresi dengan Tekanan Darah Di Santo Yosef Surabaya. Surabaya: Universitas Katolik Widya Mandala; 2016.
6. Guerra, F. A., Lopez, R. L., Ayala, F. G., Ramirez, H. S., Serna, C. D. Depression Increases The Risk For Uncontrolled Hypertension. *Exp Clin Cardiol*, 2013;18(1), 10–12.
7. Hartini, R. S., Nuripah, G., Suryani, Y. D., Garna, H., Ratnawati, Y., Kharisma, Y. Hubungan Depresi Dan Kejadian Hipertensi Pada Lansia. Jawa Barat. FK Universitas Islam Bandung; 2015.
8. Hafiz, M., Weta, I. W., Ratnawati, N. L. K. A. Faktor-Faktor yang berhubungan dengan kejadian hipertensi pada kelompok lanjut usia di wilayah kerja UPT Puskesmas Petang I Kabupaten Bandung Tahun 2016. Jawa Barat. FK Universitas Udayana; 2016.
9. Irawan H. Gangguan Depresi Pada Lanjut Usia. *Kalbemed*; 2013. Diunduh dari: http://www.kalbemed.com/Portals/6/06_210Gangguan%20Depresi%20pada%20Lanjut%20Usia.pdf [Diakses 14 Agustus 2018]
10. Kaplan dan Sadock. *Buku Ajar Psikiatri Klinis (Edisi 2)*. Jakarta: EGC; 2014.
11. Kementerian Kesehatan RI. *Gambaran Kesehatan Lanjut Usia di Indonesia, Data dan informasi kesehatan*. Jakarta : Badan Penelitian dan Pengembangan Kementerian Kesehatan RI; 2013 Diunduh dari : [file:///C:/Users/win8/Downloads/buletin-lansia%20\(2\).pdf](file:///C:/Users/win8/Downloads/buletin-lansia%20(2).pdf) [Diakses 14 Agustus 2018]
12. Lina Ma, Zhe T, Fei S, Lijun D, Yun L, Jieyu W, Ming F, Yuying Q. Risk factors for depression among elderly subjects with hypertension living at home in China. *J Clin Exp Med.* 2015;8(2): 2923–2928. Diunduh dari: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4402903/> [Diakses 14 Agustus 2018].
13. Njoto E. N. Mengenali Depresi pada Usia Lanjut Penggunaan Geriatric Depression Scale (GDS) untuk Menunjang Diagnosis. *Kalbemed*; 2014. Diunduh dari: http://www.kalbemed.com/Portals/6/32_217Opini_Mengenali%20Depresi%20pada%20Usia%20Lanjut%20Penggunaan%20Geriatric%20Depression%20Scale.pdf [Diakses 14 Agustus 2018]
14. Novitaningtyas, T. Hubungan Karakteristik (Umur, Jenis Kelamin, Tingkat Pendidikan) Dan Aktivitas Fisik Dengan Tekanan Darah Pada Lansia Di Kelurahan Makamhaji Kecamatan Kartasura Kabupaten Sukoharjo, Jawa Tengah. Fakultas Ilmu Kesehatan Universitas Muhammadiyah Surakarta; 2014.
15. Priyoto P. Hubungan depresi dengan kejadian hipertensi pada lansia di unit pelaksana teknis pelayanan sosial lanjut usia. Jawa Timur. Madiun: STIKES Bhakti Husada Mulia; 2017.
16. Sari, Kartika. (2012). *Gambaran Tingkat Depresi Pada Lanjut Usia (Lansia) di Panti Sosial Tresna*

- Werdha Budi Mulia 01 & 03 Jakarta Timur. Jakarta : FIK UI; 2012.
17. Sozeri, Gulfizar. Depression in the Elderly: Clinical Features and Risk Factors. *Aging and Disease*. 2012;3 (6):465-471.
 18. Susiati, I. *Perbandingan Pengaruh Terapi Musik Tradisional Dan Terapi Tertawa Terhadap Penurunan Tekanan Darah Pada Penderita Hipertensi Di Panti Werdha Mojopahit Mojokerto* Tesis tidak diterbitkan. Yogyakarta: FKM UMY; 2014.