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Original Article

Stress and Medication Adherence in Elderly People with Hypertension in the Public Health Center of Kassi-Kassi, Makassar

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Abstract

Background: Stress that occurs in elderly people with hypertension will result in an increase in blood pressure, which will trigger hypertension. If stress is not treated immediately, it will trigger complications. The impact of stress on the elderly with hypertension greatly affects the quality of life, well-being, and self-care regarding medication compliance. Optimal treatment compliance is a contributing factor in controlling blood pressure in hypertension. Without medication compliance, taking anti-hypertension medication alone will not provide sufficient results in managing and controlling blood pressure.
Aim: This study aims to determine the relationship between stress levels and compliance with taking anti-hypertension medication in elderly people in the Kassi Kassi Public Health Center, in Makassar
Method: This is a quantitative study with a cross-sectional approach, the PSS-10 (Perceived Stress Scale), and MMAS-8 (Morisky Medication Adherence Scale) as questionnaire instruments, with a purposive sampling technique. The respondents in this study were 126 elderly people
Results: Based on the results of statistical tests using the Spearman rank test and a significance level of $\alpha = 0.05$, the p-value = 0.00 is smaller than α or $0.00 < 0.05$, which means there is a relationship between stress levels and compliance with taking antihypertensive medication in elderly people in the Kassi Kassi Public Health Center, Makassar.
Conclusion: It is concluded that there is a relationship between stress levels and compliance with taking antihypertensive medication in elderly people in the Kassi Kassi Public Health Center, Makassar.

INTRODUCTION

Over the past decades, many elderly people have suffered from hypertension worldwide. The global epidemic of this disease is largely uncontrolled and is the leading cause of death in non-communicable diseases worldwide (Burnier & Egan, 2019). In Indonesia, hypertension occurs as much as (31.6%) in the 31-44 year age group, (45.3%) in the 45-54 year age group and (55.2%) in the 55-64 year age group (Ministry of Health of the Republic of Indonesia, 2018). Based on Basic Health Research (2018, cited in the Ministry of Health of the Republic of Indonesia, 2018), the estimated number of hypertension cases in Indonesia is 63,309,620 people, with a death rate due to hypertension of 427,218 deaths. The prevalence of hypertension in Indonesia has increased from 25.8% to 34.11%. South Sulawesi ranks 13th in Indonesia with a prevalence of 31.68%.

Based on data from the South Sulawesi Province of Health Department in 2020 (cited in Susanti et al, 2022) Makassar City has the highest prevalence of hypertension (290,247 cases). The Health Department of Non-communicable Disease surveillance data shows that the highest prevalence of hypertension in 2021 occurred at the Public Health Center of Kassi-Kassi, Makassar. This is based on surveillance data from the Kassi-Kassi Health

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Center in Makassar City which shows an estimated number of hypertension sufferers of 1,250 cases in January-February 2022 (Susanti, 2022). Based on the initial data survey conducted, provisional data was obtained for elderly people with hypertension, namely 184 elderly people in March 2023 at the Kassi-Kassi Public Health Center, Makassar City.

Hypertension is an increase of blood pressure above the normal limit, namely systolic pressure ≥ 140mmHg and ≥ 90mmHg for diastolic pressure (Umar et al., 2023). The elderly are a group that is very vulnerable to hypertension. At this age, a person will experience the aging process where changes will occur over time such as a decrease in the ability of the body's organs due to physical changes during the aging process, a reduction in the ability to do work that is quite heavy so that it becomes unproductive (Sari et al., 2019). Hypertension can trigger other diseases such as heart attacks, strokes, and even death, and does not give the sufferer any symptoms beforehand (Kurniawan, 2019). Several factors cause hypertension in the elderly, namely daily habits, diet, and even psychology. Psychological factors that generally occur in the elderly include depression, anxiety, and stress (Sari et al., 2019).

Stress is a form of the body's response to changes, demands or burdens experienced. Stress can also be a trigger factor, cause, or consequence of a disorder or disease, one of which is hypertension. The relationship between stress and the incidence of hypertension is thought to be through sympathetic nerve activity. Increased nerves can increase blood pressure intermittently. Stress increases peripheral vascular resistance and cardiac output, stimulating sympathetic nerve activity (Ridho et al., 2021). Stressful conditions cause the body to produce more adrenaline hormones, thus making the heart work stronger and faster. The heart will beat abnormally and trigger an increase in systole and diastole which can increase blood flow to the muscles, so it can be concluded that stress will trigger hypertension (Sandy et al, 2020).

Based on the author's interviews with several elderly people suffering from hypertension, it was found that several elderly people said that their hypertension was caused by family history, excessive salt consumption, and prolonged stress. This follows research by Sandy et al (2020) which concluded that long-lasting stressful events cause the body to adjust to intermittent or erratic blood pressure, resulting in hypertension.

In elderly people with hypertension, if stress occurs it will increase blood pressure which in turn can trigger hypertension. Based on interviews conducted with elderly people with hypertension regarding conditions that can cause stress, it was found that several factors that can cause stress and thus affect their blood pressure are stress due to daily life, lots of thoughts related to disease and body condition, as well as unsupportive environmental conditions. Hypertension, which is a degenerative disease, will result in a decline in body function over time. This is what can cause stress in elderly people with hypertension.

Globally, 15% of the elderly population suffers from mental disorders, where stress is a major mental health problem that affects quite a large proportion, namely 10-15% of the elderly population. The prevalence of stress and anxiety among the elderly continues to gradually increase and is expected to double in the next decade (Seangpraw et al., 2019). According to research by Fitriyah (2021), it was found that out of 155 elderly people, 78 elderly people experienced severe stress, 41 elderly people experienced moderate stress and 46 elderly people experienced mild stress. Meanwhile, research by Kirana (2022) found that of 92 elderly people, 28 elderly people experienced severe stress, 39 elderly people experienced moderate stress and 25 elderly people experienced mild stress. Some elderly people experience severe stress, but there are still elderly people who experience moderate stress or mild stress. There are no definite figures regarding stress in the elderly in a region or Indonesia, so research related to stress in the elderly is important to carry out.

The stress that occurs in elderly people with hypertension causes the elderly to become anxious about their health condition, their bodies become weak so they have less appetite, feelings of sadness, and lack of interest in everything. The impact of stress on the elderly greatly affects the quality of life, well-being, and self-care regarding medication compliance in elderly people with hypertension (Fitriyah, 2021). As also stated by Zhao et al (2021) which states that someone who reports being stressed has a lower level of treatment compliance compared to someone who is not stressed (Zhao et al, 2021).

Compliance with hypertension treatment in this case is a form of the patient's attitude towards taking antihypertensive medication. Optimal treatment compliance is a contributing factor in controlling blood pressure in hypertension. Suboptimal compliance can be in the form of failure to start pharmacotherapy, to take medication according to recommended rules and to be able to persist in long-term therapy (Burnier & Egan, 2019). Based on interviews conducted by the author, it was found that some elderly people were not compliant with hypertension

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treatment therapy. This is based on statements from elderly people who do not take their medication because they feel they are fine. Other elderly people said that several conditions they experienced caused elderly people not to follow recommendations, namely reducing the recommendation to take medication per day or even not taking medication at all. Research by Wijayanti et al (2019) found that more than half of the respondents, namely 46 out of 83 or 55.6% of the elderly, were not compliant with hypertension treatment. This is similar to research conducted by Afina (2018) where 40 out of 63 elderly (63.5%) had low compliance.

Without medication compliance, taking anti-hypertension medication alone will not provide sufficient results in controlling and controlling blood pressure. Therefore, compliance with treatment is an important factor in managing hypertension sufferers (Makatindu et al., 2021). This is also stated in the Personal Symbol (2020) that there is a significant relationship between adherence to taking antihypertensive medication and blood pressure which concludes that there is a substantial relationship between the level of compliance with taking antihypertensive medication and controlled blood pressure (Pribadi, 2020).

Based on the above background, researchers are interested in conducting research regarding the relationship between stress levels and compliance with taking anti-hypertension medication in elderly people with hypertension in the Public Health Center of Kassi-Kassi, Makassar.

METHOD

This is a quantitative study with a correlational design and a cross-sectional approach. The sampling technique used was a non-probability sampling technique, namely purposive sampling. The sample was elderly people with hypertension who underwent medical therapy at the Public Health Center of Kassi-Kassi, Makassar with a total of 126 people. The instruments used in this study are the Respondent Characteristics questionnaire, the Perceived Stress Scale (PSS), and the Morisky Medication Adherence Scale-8 (MMAS-8) questionnaire, which has been tested for validity and reliability. Data analysis in this research is univariate and bivariate analysis**.**

RESULTS

Table 1 Frequency Distribution of Respondents' Characteristics (n=126)

Variable	(n)	%
Sex		
Male	46	36.5
Female	80	63.5
Age		
Elderly (60-74 years old)	99	78.6
Old Elderly (75-90 years old)	27	21.4
History of Hypertension		
<10 years	93	73.8
≥10 years	33	26.2
Drug Therapy		
Captopril	1	0.8
Amlodipine	94	74.6
Candesartan	21	16.7
More than one hypertension drugs	10	7.9
Education Background		
Elementary School	10	7.9
Junior High School	34	27.0
Senior High School	41	32.5
University-College	41	32.5
Occupation		
Housewife	48	38.1
Unemployment	31	24.6
Labor	5	4.0
Retired	42	33.3
Total	126	100

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Table 1 shows that there are more female respondents (63.5%) than male respondents (36.5%) with the majority of respondents in the elderly category (78.6%). Based on the length of time diagnosed with hypertension, it shows that the majority of respondents have been diagnosed with hypertension for <10 years (73.8%) with the majority taking the drug Amlodipine (74.6%). Furthermore, based on their latest education, the majority of respondents graduated from high school (32.5%) and tertiary institutions (32.5%). Apart from that, most respondents occupation is housewives (38.1%).

Table 2. Frequency Distribution of Stress Level and Compliance with Taking Antihypertension Medication (n-126)

Variable	(f)	%
Stress Level		
Low	22	17.5
Moderate	94	74.6
High	10	7.9
Compliance with Antihypertension Medication		
Low	73	57.9
Moderate	44	34.9
High	9	7.1
Total	126	100

Table 2 shows that moderate stress predominantly occurs among respondents with a percentage of 74.6% or as many as 94 respondents and the least is severe stress with a percentage of 7.9% or as many as 10 respondents. Based on table 2 it is found that the highest level of compliance with taking medication is low compliance with a percentage 57.9% or 73 respondents and at least high compliance with a percentage of 7.1% or 9 respondents.

Table 3. The Relationship between Stress Levels and Compliance with Taking Anti-Hypertension Medication (n=126)

Stress level	Compliance with Taking Anti-Hypertension Medication						Total		*p-value*
	Low		Moderate		High				
	f	%	f	%	f	%	f	%	
Low	1	0.8	12	9.5	9	7.1	22	17.5	*p-value* 0.000 rho = -0.560
Moderate	63	50.0	31	24.6	0	0.0	94	74.6	
High	9	7.1	1	0.8	0	0.0	10	7.9	
Total	73	57.9	44	34.9	9	7.1	126	100	

Table 3 shows that stress levels can influence compliance with taking antihypertensive medication in elderly people with hypertension in the working area of the Kassi-Kassi health center in Makassar City in 2023. This is because the significance value obtained is p <0.05, which means it influences or correlates with the rho value -0.560 which means the level of relationship strength is strong. The higher the stress level, the lower the level of compliance with taking anti-hypertension medication in elderly people with hypertension at the Public Health Center of Kassi-Kassi, Makassar City. The study also found that the highest percentage of stress levels is in moderate stress (94 respondents) and the highest level of medication compliance, is in the low level of compliance (73 respondents).

DISCUSSION

Stress level

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This study found that the highest level of stress was moderate and the lowest was severe. This is similar to research conducted by Situmorang (2020) in which about 40% of her study's respondents suffered from moderate stress. Moreover, the study also found that stress in the elderly occurs in the elderly due to everyday life, environmental conditions that are not supportive make the elderly often angry because of something unexpected and easily feel offended. There are so many thoughts related to illness and body condition that the elderly feel anxious and depressed. The elderly also feel unable to complete the things that must be done because the body's ability to carry out activities is reduced. Lack of interaction among the elderly has an impact on the elderly's inability to adapt to the changes. This is in line with the theory which states that stress is a form of physiological response from the body that occurs when a person is unable to adapt to the demands of the changes they face. If an elderly person cannot cope with these demands, it will cause stress in the elderly (Kirana, 2022).

Another theory also explains that age is also a factor that causes stress, the older the person is, the easier to get stress. This is because elderly people have experienced setbacks in various abilities (Tiastuty, 2021). The elderly also said they were afraid of complications that might arise due to hypertension considering their increasing age. Stress that is not resolved in the elderly causes the elderly to increasingly think and perceive negatively about the changes that occur to them. This situation can affect the quality of life of the elderly (Kaunang et al., 2019).

Compliance with Taking Medication

From the research results, it was found that the highest level of compliance with taking medication was low compliance and the lowest level of compliance with taking medication was high compliance. The results of this research are in line with research by Azzahra (2021) regarding the relationship between the level of compliance with taking antihypertensive medication and the blood pressure values of BPJS patients in the Kembang Health Center working area, Jepara Regency, which found that the highest level of compliance with taking medication among respondents was low compliance, namely 48 respondents. (71.6%).

This study found that low adherence to taking medication occurred because some respondents were still irregular in taking medication. Some respondents said that they sometimes forgot to take their medicine, while others said they did not take their medicine on purpose. After all, they felt bored and tired because they had taken the medicine for years. This might be caused by a lack of knowledge about treatment, making it difficult for elderly people to have good treatment compliance. Massa (2022) in his research stated that elderly people who take hypertension medication continuously will feel bored, and only take medication if symptoms such as headaches, dizziness, and body weakness appear, resulting in low compliance among elderly people in taking medication.

The involvement of family caregivers in taking care of elderly people with hypertension is therefore essential. The caregivers could become a supervisor and a motivator for them in medical adherence. Taking antihypertension medications used to be every day and an elderly person needs someone or their family to remind them many times. As stated in another study, family caregivers who have good knowledge and skills to take care of their elderly members could improve optimal health care and hypertension treatment (Sari, Syahrul, & Malasari, 2016).

Correlation between Stress and Compliance with Taking Medication Level

The study obtained that the highest percentage of stress levels was moderate stress and the highest level of medication compliance was low compliance. The results of statistical tests were carried out computerized using the Spearman rank test and it was found that there was a relationship between stress levels and compliance with taking antihypertensive medication in elderly people with hypertension in the working area of the Public Health Center of Kassi-Kassi, Makassar. The results of the tests carried out also showed that the rho value was negative with a strong level of relationship strength. A negative value means that the higher the stress level, the lower the level of compliance with taking medication in elderly people with hypertension at the Public Health Center of Kassi-Kassi, Makassar.

This study found that the majority of elderly people experienced moderate stress. From the research data obtained, this is caused by the condition of elderly people who find it difficult to control feelings of irritability, easily become angry due to unexpected things, as well as feelings of anxiety or depression. They also expressed fear of complications arising from hypertension considering their increasing age. Stress that usually occurs in the elderly is stress caused by daily life, lots of thoughts related to illness or body condition, as well as unsupportive environmental conditions. Elderly people have a bad perception of the disease they are experiencing and their body condition, which results in the elderly being unable to adapt to the changes

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they are experiencing, thereby reducing the interest and self-confidence of the elderly in getting a better quality of life. This is in line with the theory which states that a person's knowledge regarding the treatment they are taking is a factor that can influence compliance in taking their medication (Padaunan et al., 2022).

The level of stress that occurs in the elderly can affect patient compliance with hypertension treatment. Stress can cause a lack of interest in everything, which will result in decreased adherence to the treatment plan. In this case, elderly people are more likely to miss medication doses or not follow the doctor's instructions properly. This is in line with the theory which states that the stress experienced by elderly people with hypertension can have an impact on the quality of life, well-being, and self-care regarding medication compliance in elderly people with hypertension (Fitriyah, 2021).

The survey data obtained showed that of the 94 respondents who experienced moderate stress, the majority, or 63 respondents had low compliance, 31 respondents experienced moderate compliance and none had high compliance. Based on the results of the research data, it was found that less than optimal medication compliance occurred because elderly people did not take their medication regularly, forgot to take their medication or even deliberately did not take their medication. This is in line with the theory which states that elderly people who experience stress tend to have low medication adherence because stress can affect cognitive and emotional aspects. Stress can cause problems with concentration and memory thus elderly people may forget to take their medication according to schedule (Putra et al., 2023).

Other data obtained is that elderly people do not take medication according to the recommended rules and are unable to survive long-term therapy due to feelings of boredom, anxiety, or fatigue. The elderly said they felt bored and tired because they had been taking the drug for years. This is in line with the theory which states that elderly people who take hypertension medication continuously will feel bored, and will only take medication if symptoms appear (Massa, 2022).

Some elderly people also said that they deliberately did not take their medicine because they felt worried about their body organs if they took medicine continuously. The elderly feel anxious about their body's condition if they continue to take medication, so when the elderly feel that their blood pressure is at normal conditions, the elderly will not take medication and only take medication when their blood pressure is high enough. The elderly's lack of knowledge regarding the benefits of medication as well as the mechanism of action of the medication and how to take the appropriate medication can lead to non-compliance (Putra et al., 2023). This is in line with the theory which states that fear of side effects from medication due to taking medication too often can also affect a person's level of compliance with taking medication (Padaunan et al., 2022). Lack of knowledge about medication makes it difficult for elderly people to have good medication adherence. Without compliance with treatment, taking anti-hypertension drugs alone will not provide sufficient results in controlling or controlling blood pressure.

CONCLUSION

In conclusion, most elderly people with hypertension have moderate stress, and they have low compliance with taking antihypertension medication. There was also a relationship between stress levels and compliance with taking antihypertensive medication in elderly people with hypertension in the Public Health Center of Kassi-Kassi Makassar. It is suggested that the Public Health Center needs to hold activities for the elderly people to create more interaction among them to increase motivation and compliance with taking antihypertensive medication in the elderly with educational activities for the elderly regarding the importance of compliance in taking antihypertensive medication. It is also hoped that variables such as the level of knowledge regarding medication adherence can further research other causes that can influence medication adherence in the elderly and can serve as reference material for conducting further research.

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Ethical Clearance

The study, including its protocol, was approved by the Research Ethics Commission of the Faculty of Public Health, Hasanuddin University, with Ethical Clearance Number 4616/UN4.14.1/TP.01.02/2023. All study participants provided informed consent, and their anonymity was preserved.

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Declaration of Conflicting Interest

The authors have no conflict of interest.

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