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THE RELATIONSHIP BETWEEN ANXIETY LEVEL AND SLEEP QUALITY IN HYPERTENSIVE PATIENTS IN THE HAEMODIALYSIS UNIT

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ABSTRACT
Haemodialysis patients with hypertension often face complex mental and physical health challenges, including impaired anxiety and sleep quality. This has a profound effect on the individual's life. Objective: This study aims to analyse the relationship between anxiety levels and sleep quality in hypertensive patients undergoing haemodialysis. Quantitative with a cross-sectional approach with a total sampling method of 30 hypertensive patients in the haemodialysis unit of PKU Aisyah Boyolali Hospital. This study was conducted in September - November. The instruments for data collection included the Hamilton Anxiety Rating Scale (HARS) to assess anxiety levels and the Pittsburgh Sleep Quality Index (PSQI) to evaluate sleep quality. Spearman's test was used for data analysis due to the non-normal distribution of the data. The results of the Spearman statistical test on hypertensive patients in the Hemodialysis Unit of PKU Aisyah Singkil Boyolali Hospital showed a p value = 0.044 > α = 0.05. the main findings (past tense). The results showed a significant relationship between anxiety levels and sleep quality in hypertensive patients at the Hemodialysis Unit of PKU Aisyah Singkil Boyolali Hospital. Researchers suggest examining other variables that affect sleep quality, such as physical activity, diet, and adherence to medication. Qualitative research methods can also be employed to investigate the personal experiences of patients and a broader range of individuals, allowing for more generalized findings.

Keywords: anxiety level; haemodialysis unit; hypertension; sleep quality

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INTRODUCTION

Non-communicable diseases (NCDs) are important medical conditions in Indonesia. Hypertension is one of the most common non-communicable diseases. Hypertension is a condition marked by a substantial rise in blood pressure that exceeds normal levels, commonly referred to as high blood pressure. Because it cannot be transmitted from one person to another, it is also known as a non-communicable disease. Patients with this disease are often asymptomatic and unaware that they have hypertension (Marbun & Hutapea, 2022). The World Health Organisation (WHO) claims that. The ideal range for diastolic blood pressure is typically maintained between 80 and 90 mmHg, while the systolic blood pressure should ideally fall within 120 to 140 mmHg. When an individual's blood pressure readings exceed 140/90 mmHg, they are generally considered to have hypertension. Meanwhile, people over 18 years old who have a blood pressure between 140 and 159 mmHg in systolic and 90 and 99 mmHg in diastolic are considered to have stage I hypertension, according to JNC VII 2003When the diastolic blood pressure exceeds 100 mmHg and the systolic blood pressure rises above 160 mmHg, the individual is categorized as experiencing stage II hypertension. Furthermore, if the diastolic pressure surpasses 116 mmHg while the systolic pressure is higher than 180 mmHg, the condition is considered more severe, the patient is classified as having stage III hypertension (Apriza Yanti & Muliati, 2019).

According to the Indonesian Ministry of Health's 2019 report, high blood pressure is a global health problem that significantly increases the risk of cardiovascular disease. Because it cannot be transmitted from one person to another, hypertension is also referred to as a non-communicable disease. One condition known as hypertension is abnormally high blood pressure (Furngili & Kustriyani, 2023) Riskesdas 2018 data. In Indonesia, an estimated 34.1% of the population suffers from hypertension, totalling 63,309,620 cases. The age group of 65 to 74 years has a high prevalence of hypertension (63.2). 8,070,378 people or 37.5% of the population suffer from hypertension in Central Java. In people aged 55-64 years (22.3%), 65-74 years (29.5%), and older than 75 years (33.6%), the prevalence of hypertension was found. Tegal had the highest percentage (18.4%), Cilacap had the lowest (12.03%), and Semarang Regency had the third highest (13.97%) (Y. Pratama et al., 2020). Based on data from the Central Java Health Office (2019), with a percentage of 64.83% of 1,593,931 reported cases, hypertension is the most common non-communicable disease. The percentage of elderly people in Central Java with hypertension has also increased, from 26.4% to 34.6%. Data from the Boyolali District Health Office shows that the prevalence of hypertension in Boyolali District is 28.5%, which means that the estimated number of people with hypertension in Boyolali District is 219,000, of which 132,354 people have been diagnosed and reported (Hamidah, 2022).

Anxiety, stress, high-salt diet, family history, lifestyle choices, poor eating habits, smoking, age, gender, race, and irregular sleeping patterns are risk factors that trigger hypertension. If left untreated, hypertension can lead to other diseases, including brain damage, heart disease, and chronic kidney failure. Available treatments for individuals with chronic renal failure include haemodialysis, kidney transplantation and peritoneal dialysis. However, most renal failure patients prefer peritoneal dialysis and haemodialysis therapy. Haemodialysis is a replacement treatment for impaired kidney function. Haemodialysis patients may experience biological and psychological disorders if treated for a long period of time (Anisah & Maliya, 2021). One of the psychological disorders that occurs in hypertensive patients undergoing haemodialysis is anxiety. Both anxiety about the threat of death and the economy. And from excessive anxiety, if not overcome quickly, it can cause disturbances during sleep which affect the quality of sleep of hypertensive patients (Setiyorini & kalbuningrum, 2019).

Anxiety is one of the mental emotional disorders or feelings that often arise due to a person's concern about the emergence of new problems with hypertension. A person experiences these emotions as a result of their fear and ignorance of what the future holds. A person with hypertension may experience anxiety because the condition tends to require prolonged treatment, potential complications, and life-threatening consequences (Setyoadi et al., 2024). Therefore, someone who suffers from hypertension usually has high worries and fears that cause thoughts that can make anxiety increase (Oktaviana & Syamdarniati, 2022).

Uncontrolled anxiety can lead to poor sleeping habits and disrupt one's sleep pattern or quality. Sleep patterns are another unusual factor that some people tend to overlook. Sleep has a homeostatic function that helps the body feel refreshed. In addition, sleep is essential for the body's energy storage. Everyone needs to get a good night's sleep as sleep deprivation can alter the heart rate (Utama et al., 2021). When a person is satisfied with their sleep, they are less likely to show signs of fatigue, lethargy, restlessness, dark eye bags, puffy eyelids, headaches, and frequent yawning (Freeska et al., 2021). Emotional changes (fear, depression, anxiety) are one of the factors causing sleep disturbances in hypertensive patients. Anxious people will find their sleep quality decreases (Sulistiani et al., 2024).

The ability to stay asleep and achieve the right stages of REM and NREM sleep is referred to as sleep quality. The type of sleep a person needs in order to wake up feeling refreshed and fit. The average person needs 7-8 hours of sleep per day, but each person has different sleep needs. The majority of people with hypertension are highly susceptible to sleep disturbances caused by aging and amplified by additional risk factors such as disease (Nainar et al., 2022). Results From a preliminary study conducted by researchers in July 2024 at PKU Aisyiyah Boyolali Hospital, there were 64 patients undergoing haemodialysis and 30 of them were caused by hypertension. The majority of patients undergo haemodialysis twice a week. Based on the results of interviews with 7 respondents, 4 patients felt anxious about their condition and 3 patients felt that their sleep was disturbed and not soundly.

If this condition is not handled immediately, hypertensive patients who are undergoing haemodialysis will experience worsening conditions. "This condition ultimately affects the overall quality of life. Based on the explanation outlined earlier, the researcher has decided to explore this topic further through a dedicated study 'the relationship between anxiety levels and sleep quality in hypertensive patients in the haemodialysis unit of PKU Aisyiyah Boyolali Hospital'. This study aims to determine the relationship between anxiety levels and sleep quality in hypertensive patients in the haemodialysis unit.

METHOD

This research is quantitative research that uses correlational methods. The research involves collecting information to ascertain whether two or more variables are interconnected (Indrianingsih et al., 2018). This study was conducted in September - November. In this study the population was patients with a history of hypertension in the haemodialysis unit at PKU Aisyiyah Boyolali Hospital as many as 30 people. In this study, sampling used a total sampling technique. The total sampling method refers to a technique in which the entire population is used as the sample, ensuring that the number of samples matches the total population size exactly. The number of samples was 30 patients with a history of hypertension in the haemodialysis unit of PKU Aisyiyah Boyolali Hospital.

In this research there are 2 variables, namely anxiety level (independent variable) and sleep quality (dependent variable). The instrument used to measure anxiety levels is that researchers use a questionnaire with the Hamilton anxiety rating scale (HARS) method. In this questionnaire there are 14 groups of questions and the assessment is from 0-4. The highest score is 56 and 0 as the lowest score. While the instrument used to measure sleep quality in this study is using the Pittsburgh Sleep Quality Index (PSQI). PSQI is a very useful tool for assessing adult sleep patterns and quality. On the instrument there are 18 questions on 7 components and scoring answers based on a Likert scale from 0-3: (0) very good, (1) quite good, (2) quite bad, (3) very bad. The highest score is 21 and 0 is the lowest score. In this study, a validity test was also carried out on the Hamilton Anxiety Rating Scale (HARS) Questionnaire developed by the Jakarta Biological Psychiatry Group (KPBJ) in the form of Anxiety Analogue Scale (AAS) which has a validity range of r = 0.57-0.84, while the Pittsburgh Sleep Quality Index (PSQI) questionnaire developed by Contreras et al. (2014) and tested for validity in Indonesian by Arifin (2011) has a validity value of r count 0.73, with both declared valid because r count is greater than r table. As for the reliability test on the Hamilton Anxiety Rating Scale (HARS) Questionnaire with a reliability value of 0.894 and the Pittsburgh Sleep Quality Index (PSQI) with a reliability value of 0.83 declared reliable based on the Cronbach's alpha test, which indicates a reliable instrument if the value is more than 0.70 for HARS and more than 0.6 for PSQI. This research has received approval from the Research Ethics Committee of the Faculty of Medicine, Universitas Muhammadiyah

Surakarta with letter number 5295/B.1/KEPK-FKUMS/IX/2024.

RESULT

Respondents were observed at PKU Aisyiyah Hospital located in Boyolali, using descriptive methods and a quantitative approach of 30 respondents. The majority of hypertensive patients undergoing haemodialysis are female, with a total of 17 people (56.7%). In the age range category 20 to 40 years, while 19 people (63.3%). The last education of the majority was found to be 10 respondents (33.3%) with junior high school education. For the duration of suffering from hypertension, most patients, namely 15 respondents (50.0%), have suffered from hypertension for 1-5 years and Distribution regarding the length of time undergoing haemodialysis, 19 respondents (63.3%) have undergone this procedure for 1-5 years. The majority of respondents' classification, found 11 respondents (36.7%) with grade 2 hypertension.

Table 1.
Demographic Characteristics of Respondents (n=30)

Demographic Data	f	%
Gender		
Male	13	43.3
Female	17	56.7
Age		
20 – 40 years	5	16.7
41 – 60 years	19	63.3
>60 years	6	20
Educational History		
Not attending school	1	3.3
Elementary school	8	26.7
Junior high school	10	33.3
Senior high school	9	30
College	2	6.7
Duration of Hypertension		
< 1 year	1	3.3
1 – 5 years	15	50
>5 years	14	46.7
Duration of Haemodialysis		
< 1 year	7	23.3
1 – 5 years	19	63.4
>5 years	4	13.3
Classification of Hypertension		
high-normal	1	3.3
Degrees 1	9	30
Degrees 2	11	36.7
Degrees 3	9	30

Table 2.
Distribution Analysis of Anxiety Level and Sleep Quality of Respondents (n=30)

Variable	f	%
Anxiety Level		
Medium (21-27)	3	10
Heavy (28-41)	8	26.7
Very Heavy (42-56)	19	63.3
Sleep Quality Level		
Good (≤ 5)	3	10
Bad (>5)	27	90

According to the findings of the research, it was revealed that a significant portion of the participants, amounting to 19 individuals (63.3%), suffered from extremely high levels of anxiety, then moderate anxiety with a total of 8 respondents (26.7%), and moderate anxiety with a total of 3 respondents (10%).

Table 3.
Relationship between Anxiety Level and Sleep Quality in Hypertensive Patients (n=30)

Variabel	p-value	Correlation Coefficient
Relationship between Anxiety Level and Sleep Quality in Hypertensive Patients in the Hemodialysis Unit of PKU Aisyah Singkil Boyolali Hospital	0.044	0.370

The results of the Spearman statistical test on hypertensive patients in the Hemodialysis Unit of PKU Aisyah Singkil Boyolali Hospital showed a p value = 0.044> α = 0.05. This outcome indicates the rejection of H0 and the acceptance of Ha. Therefore, it can be concluded that a correlation exists between anxiety levels and the quality of sleep in patients with hypertension in the Hemodialysis Unit of PKU Aisyah Singkil Boyolali Hospital.

DISCUSSION

Demographic Characteristics of Respondents

The findings of this research revealed that the majority of participants who took part in the study were women, with a total of 17 people (56.7%), while male respondents totalled 13 people (43.3%). This research is reinforced by research conducted by (Sari et al., 2023) which states that women have a greater risk of hypertension due to hormonal factors, particularly changes that occur during the life cycle. The dominant estrogen hormone in young women tends to provide protection against high blood pressure. However, after menopause, oestrogen levels drop dramatically, which contributes to an increased risk of hypertension. In addition, women are more prone to pregnancy-related hypertension, such as preeclampsia, which can impact long-term cardiovascular health. Other factors such as obesity, use of hormonal contraceptives, and a higher tendency to experience psychosocial stress also increase the risk of hypertension in women (Kementerian Kesehatan RI, 2020).

This study revealed that of the total respondents, 5 people (16.7%) were in the age range of 20-40 years, 19 people (63.3%) were in the age range of 41-60 years, and 6 people (20%) were more than 60 years old. Individuals aged 40-60 years are prone to hypertension due to a combination of physiological, lifestyle, and environmental factors. According to research conducted by (Nurhayati et al., 2020) mentioned that naturally, the elasticity of blood vessels decreases with age, leading to increased vascular resistance. Lifestyles such as a high-salt diet, lack of physical activity, chronic stress, and smoking exacerbate this condition. In addition, the accumulation of risk factors such as obesity, metabolic disorders and family history also contribute. At this age, metabolism slows down, making blood pressure control more difficult if not balanced with a healthy lifestyle (Hasibuan & Hasna, 2021).

In this research, respondents were categorized based on their highest level of education completed. Among them, one individual (3.3%) had not completed formal schooling, eight participants (26.7%) had attained an elementary school education, ten individuals (33.3%) had finished junior high school, nine respondents (30.0%) had completed high school, and two participants (6.7%) held a college degree. This research is reinforced by research (I. B. A. Pratama et al., 2020) Individuals with low education tend to have limited access to health information, quality medical services and understanding of chronic disease prevention. In addition, jobs with low levels of education often involve high stress, limited physical activity or exposure to less healthy work environments, all of which contribute to increased blood

pressure. This combination of factors makes education an important determinant in cardiovascular health (Ndapaole et al., 2020).

In this study, the highest results were obtained for the duration of hypertension patients, 15 respondents (50.0%), had suffered from hypertension for 1-5 years. This research is reinforced by (Oktaviana & Syamdarniati, 2022) because chronic hypertension can trigger interconnected physiological and psychological disorders. Uncontrolled hypertension leads to increased sympathetic nervous system activity, which can trigger feelings of anxiety due to tension in the body. This anxiety then interferes with the individual's ability to relax, thereby affecting sleep quality through sleeplessness, frequent awakenings or restless sleep. Conversely, sleep deprivation can worsen blood pressure and reinforce the vicious cycle between hypertension, anxiety, and sleep disturbances.

In this study, the highest results were obtained for the duration of haemodialysis with a duration of 1-5 years as many as 19 respondents (63.3%). This research is strengthened by (Wagiyanto, 2022) which mentions that the prolonged process of haemodialysis often triggers ongoing emotional distress and physical discomfort. The procedure not only demands strict daily schedule and lifestyle adjustments, but also increases patients' concerns of health complications, machine dependency, as well as uncertainty of long-term prognosis. In addition, the accumulation of uremic metabolites that are not fully eliminated, hormonal disturbances such as elevated cortisol, and blood pressure fluctuations during or after dialysis may disrupt circadian rhythms, thus affecting sleep quality (Kementerian Kesehatan RI, 2020).

In this study, the results of hypertension classification were found, 1 respondent (3.3%) had normal-high blood pressure, 9 respondents (30.0%) with grade 1 hypertension, 11 respondents (36.7%) with grade 2 hypertension, and 9 respondents (30.0%) who were classified as grade 1 hypertension. This research aligns closely with or reflects similar findings to those of (Nurhayati et al., 2020). The classification of hypertension is closely related to high levels of anxiety and poor sleep quality in hypertensive patients due to the complex interactions between the nervous system, hormones, and the body's physiological response to stress (World Health Organization, 2021). Hypertension often triggers overactivation of the sympathetic nervous system and increased levels of stress hormones, such as cortisol, which can exacerbate anxiety. High levels of anxiety can further disrupt sleep patterns through brain hyperactivation and disruption to circadian rhythms. Conversely, poor sleep quality, such as insomnia or inadequate sleep, can raise blood pressure as the body does not have sufficient time to restore cardiovascular function, exacerbating hypertension.

Anxiety Levels and Sleep Quality

This research is in line with (Astuti et al., 2021) which states that high levels of anxiety in hypertensive patients are often related to worries about their health condition that can affect quality of life. Hypertension, known as the ‘silent killer,’ is often asymptomatic in its early stages, leaving patients feeling anxious about possible long-term complications, such as heart attack or stroke. This anxiety can worsen their physical condition, as emotional stress can increase blood pressure levels, creating a vicious cycle that is difficult to break. Research shows that anxiety in hypertensive patients is higher in individuals who have a history of heart disease or other risk factors, and can worsen the management of this condition. On the other hand, anxiety also affects patient adherence to medication and medical treatment. Anxious patients tend to have lower adherence to treatment, both in terms of taking medication regularly and following lifestyle change recommendations, such as a healthy diet

and regular exercise. This can lead to suboptimal blood pressure control, worsen hypertension, and increase the risk of complications.

The output of this study showed poor sleep quality with 27 respondents (90%) and good quality only 3 respondents (10%). This research is reinforced by research conducted by (Kholidatin, 2017) It is highlighted that individuals with hypertension frequently experience poor sleep quality, which significantly affects their ability to manage blood pressure and maintain overall long-term health. Various sleep disorders, including insomnia, obstructive sleep apnoea, and inadequate sleep, are known to heighten the activity of the sympathetic nervous system and trigger the release of stress-related hormones, such as cortisol, which contribute to increased blood pressure (Naamani et al., 2021). In addition, chronic sleep deprivation can affect metabolic regulation and vascular function, ultimately worsening hypertension. Research shows that hypertensive patients with poor sleep quality tend to have higher levels of treatment resistance, making it difficult to achieve optimal blood pressure targets (World Health Organization, 2022).

Inadequate sleep quality has been linked to an increased likelihood of developing cardiovascular complications, such as coronary heart disease and stroke, in hypertensive patients. Several risk factors that worsen sleep quality, such as obesity, psychological stress, and sedentary lifestyle, are often also found in individuals with hypertension. Therefore, evaluation of sleep patterns and management of sleep disorders are important components in the holistic management of hypertension. Interventions such as cognitive-behavioural therapy for insomnia, weight loss, and stress management can help improve sleep quality while increasing the effectiveness of hypertension therapy.

Relationship between Anxiety Level and Sleep Quality in Hypertensive Patient

High levels of anxiety have a close relationship with sleep quality in hypertensive patients because anxiety affects the autonomic nervous system, which plays a role in regulating body functions such as blood pressure and heart rate (Nurhayati et al., 2020). When a person experiences anxiety, the sympathetic nervous system is stimulated, which increases the production of stress hormones such as adrenaline and cortisol. These hormones trigger a ‘fight or flight’ reaction that can increase blood pressure and heart rate. These physical effects often lead to difficulty sleeping as the body remains in a state of alertness, despite the brain's desire to rest (Naamani et al., 2021).

In hypertensive patients, anxiety-induced sleep disturbances may become more severe. Poor sleep quality, such as insomnia or fragmented sleep, may exacerbate their hypertensive condition (Adelia & Supratman, 2023). Lack of quality sleep can increase the body's response to stress and exacerbate inflammatory processes in the body, which in turn can lead to increased blood pressure. In addition, poor sleep makes it difficult for the body to repair and regulate the cardiovascular system, making it difficult to control blood pressure (Ayanaw et al., 2022). The link between anxiety and sleep quality also functions as a mutually exacerbating cycle. Hypertensive patients who sleep poorly will be more anxious because they feel exhausted and stressed, which makes them even more worried about their health (Yang et al., 2021). This can create a vicious cycle where anxiety interferes with sleep, and poor sleep further exacerbates anxiety and hypertension (Sulkarnaen et al., 2022). Therefore, it is important to manage anxiety with a comprehensive approach, including stress management, relaxation therapy, and appropriate medication to improve sleep quality and reduce the risk of complications in hypertensive patients (World Health Organization, 2022).

CONCLUSION

The characteristics of respondents in respondents have female gender, the majority of ages range from 41-60 years, based on junior high school education level, based on the length of time suffering from hypertension with 1-5 years, the length of time undergoing Hemodialysis category 1-5 years, and most suffer from grade 2 hypertension. Anxiety Level in Hypertensive Respondents who undergo Blood Wash in the Hemodialysis Unit of PKU Aisyah Singkil Hospital, Boyolali, is at a very severe level of anxiety with 19 respondents. The level of sleep quality in hypertensive respondents who undergo dialysis at the Hemodialysis Unit of PKU Aisyah Singkil Hospital, Boyolali, is at a bad level as many as 27 respondents. The results of the Spearman statistical test showed that there was a significant relationship between anxiety level and sleep quality in hypertensive patients at the Hemodialysis Unit of PKU Aisyah Singkil Boyolali Hospital. Future researchers can examine other variables that affect sleep quality in hypertensive patients, such as physical activity levels, diet, or adherence to medication. The use of qualitative research methods can explore patients' subjective experiences related to anxiety and sleep quality. Research can be conducted in a more diverse population, such as patients with other chronic diseases or haemodialysis patients in different hospitals to obtain more general results.

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