Jurnal Keperawatan *Priority*, Vol 9 No.1, Januari 2026
ISSN 2614-4719

Exploring Anxiety Levels in Hypertensive Patients with Headache: A Cross-Sectional Study

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ABSTRACT

Hypertension is a chronic "silent killer" that affects over 1.4 billion people globally. Besides physical symptoms, hypertensive patients often experience anxiety, especially when accompanied by headaches. This study aimed to identify anxiety levels among hypertensive patients with headache and their implications for holistic nursing care. A descriptive quantitative study with a cross-sectional design was conducted at Puskesmas Ngawi Purba from February to May 2024. Forty-three hypertensive patients aged 35–55 years experiencing headaches were selected by accidental sampling. Anxiety was measured using the Hamilton Anxiety Rating Scale (HARS) and pain using the Numeric Rating Scale (NRS). Most respondents were female (69.8%), elderly (60.5%), and obese (44.2%). Moderate anxiety was found in 30.2% of participants, with 79.1% having stage 2 hypertension and 62.8% reporting moderate pain. Hypertensive patients with headache mostly experience moderate anxiety. Holistic nursing care addressing both physical and psychological aspects is essential to enhance blood pressure control and patient well-being.

Keywords: anxiety, headache, hypertension

INTRODUCTION

Hypertension is a chronic medical condition characterized by high blood pressure, which globally affects approximately 1 billion individuals and is projected to increase to 1.5 billion by 2025 (Rohmah et al., 2023). This condition is often referred to as a "silent killer" because hypertension usually doesn't show obvious symptoms, so sufferers are often unaware of its presence (Amelia et al., 2022; Suciana et al., 2020). Although it may not show any obvious symptoms initially, hypertension can lead to serious complications such as stroke, heart disease, and kidney failure if not promptly and properly managed (Setyawan & Hasnah, 2020). Therefore, a thorough understanding of the physical and psychological condition of hypertensive patients is crucial to ensure appropriate and effective management. One of the common physical complaints among hypertension patients is headaches, which not only cause discomfort but can also trigger emotional reactions such as anxiety (Rohmah et al., 2023). The interaction between physiological symptoms like headaches and psychological states such as anxiety in hypertensive patients requires further research to inform comprehensive care strategies (Norkhalifah & Mubin, 2022).

According to the World Health Organization (WHO) in 2024, the World Health Organization (WHO) reports that around 1.4 billion adults aged 30–79 suffer from hypertension, constituting 33% of this age group globally, with nearly two-thirds in low- and middle-income countries. About 44% of affected individuals are unaware of their condition, while another 44% are diagnosed and treated, but only 23% have controlled blood pressure. Hypertension remains a leading cause of premature death, highlighting the urgent need to meet the global target of reducing uncontrolled hypertension prevalence by 25% by 2025 (World Health Organization (WHO), 2025). In Indonesia, data from the 2018 Basic Health Research (Riskesdas) recorded a hypertension prevalence of 34.1% among the population aged 18 and over. Meanwhile, the latest 2023 Riskesdas survey shows a slight decrease in prevalence to 30.8%, but this figure is still quite high and a major concern. At the local or regional level, the prevalence of hypertension also shows a significant trend, confirming the importance of full attention in managing this disease (Aungsuroch et al., 2021; Fatmawati et al., 2021; Widiyono et al., 2021). The high prevalence of hypertension globally and nationally indicates an urgent need to address various aspects of patients' health, not only physical conditions but also psychological states such as anxiety, especially in patients experiencing headaches.

Hypertension can cause headaches thru mechanisms of increased blood pressure leading to vasoconstriction of blood vessels and increased intracranial pressure (Cahyadi & Rejeki, 2024). This condition causes headaches, which are a common complaint among hypertensive patients and can significantly affect their quality of life (Mauliddia et al., 2022). Beside physical manifestations, anxiety often appears as a psychological response to discomfort and concerns about disease complications (Syukri, 2019). This anxiety, in turn, can worsen hypertensive conditions thru the activation of the sympathetic nervous system, which increases heart rate, cardiac output, and peripheral vascular resistance, thus creating a vicious cycle that exacerbates both blood pressure and anxiety levels (Mustika & Dewi, 2022). The impact of anxiety can also interfere with patient adherence to treatment and blood pressure control, ultimately decreasing overall quality of life. Therefore, attention to psychological aspects, particularly anxiety, is crucial in managing hypertensive patients experiencing headaches to ensure effective and comprehensive treatment.

Previous studies have shown a significant relationship between hypertension and anxiety levels in patients (Norkhalifah & Mubin, 2022; Rohmah et al., 2023). Hypertensive patients often express concerns and fears related to their high blood pressure condition, especially if the diagnosis is newly discovered and there have been no previous routine check-ups. This concern

can temporarily trigger an increase in blood pressure, even in individuals without a history of hypertension (Inayati & Ayubbana, 2017). Additionally, the frequent headaches experienced by hypertensive patients, particularly tension-type headaches, are also closely linked to psychological stress and tension in the head muscles as a response to emotional pressure (Mauliddia et al., 2022). Physical symptoms such as dizziness, headaches, and even blurred vision are frequently reported by hypertension sufferers, strengthening the link between physical condition and psychological response. However, most previous studies have focused more on the general relationship between hypertension and anxiety or headaches with stress, without specifically describing the level of anxiety in hypertensive patients who specifically complain of headaches. In fact, the clinical manifestations of hypertension, including dizziness and neck pain, can worsen unstable emotions, trigger sleep difficulties, and irritability, which can further lead to stress (Rimadia & Khoiriyah, 2023). Chronic stress, in particular, can elevate sympathetic nervous system activity, contributing to the development and exacerbation of hypertension (Tiatulrami et al., 2025).

From the study, it is evident that there is a research gap regarding the description of anxiety levels in hypertensive patients with headache as the primary complaint. More in-depth and specific studies on this are still limited. Therefore, this study aims to determine the level of anxiety in hypertensive patients with headaches in the working area of the Puskesmas Ngawi Purba, in order to provide more focused and relevant data for more effective nursing interventions. Sociodemographic and clinical variables such as sex, age, body mass index (BMI), history of hypertension, and education level were included because these factors have been shown to influence both anxiety levels and blood pressure regulation. This understanding is crucial for developing targeted nursing strategies that address both the physiological and psychological aspects of their condition, thereby improving overall patient outcomes.

METHODS

Research design

This study employed a descriptive quantitative design with a cross-sectional approach. This design was chosen to describe the anxiety levels among hypertensive patients presenting with headache symptoms at a single point in time without any intervention. The cross-sectional framework allowed the researchers to obtain a comprehensive overview of patients' psychological conditions and to identify potential implications for holistic nursing care practice.

Participants

Participants in this study were hypertensive patients experiencing headache symptoms**,** as the research aimed to explore their anxiety levels and implications for holistic nursing care**.** Participants were recruited using an accidental sampling technique, involving individuals who met the inclusion criteria and were available during the data collection period. Eligible participants were adults aged 35–55 years classified as early adulthood (35–45 years) and late adulthood (46–55 years) who had been diagnosed with hypertension (≥140/90 mmHg) by a medical doctor and were experiencing headache at the time of data collection**.** Only participants who provided informed consent were included. Individuals were excluded if they did not complete the study procedures or had comorbid conditions that might influence their anxiety levels. This population was chosen to capture a more accurate representation of the psychological response to physical discomfort in hypertensive patients, particularly focusing on how headache symptoms may relate to anxiety and inform holistic nursing interventions**.**

Data collection

Data collection was conducted from February to May 2024 using validated measurement tools and standardized procedures. The primary instrument used to assess pain intensity was the Numeric Rating Scale (NRS)**,** which allows participants to rate their headache severity on a scale from 0 (no pain) to 10 (worst possible pain)**.** The Hamilton Anxiety Rating Scale (HARS) was employed to measure participants' anxiety levels. The total HARS score was categorized as follows: mild anxiety (≤17), moderate anxiety (18–24), and severe anxiety (≥25)**,** in accordance with established scoring guidelines. Blood pressure was measured using a digital sphygmomanometer following standard procedures, with participants in a seated position after at least five minutes of rest.

Ethical consideration

This study adhered to established research ethics standards, obtaining informed consent from all participants before inclusion. Ethical approval was granted by the Health Research Ethics Committee of STIKES Bhakti Husada Mulia (Approval No. 009/E-KEPK/STIKES/BHM/VI/2024). Participants were informed of their right to withdraw at any time without penalty, and confidentiality and anonymity were upheld throughout the research process. Moreover, the study ensured that no physical or psychological harm occurred to participants during the intervention procedures.

Data analysis

Data were analyzed using descriptive and inferential statistical methods to examine anxiety levels among hypertensive patients experiencing headache. Prior to analysis, all data were checked for completeness and accuracy. Descriptive statistics including frequency, and percentage were used to summarize participants' demographic characteristics, headache intensity, and anxiety scores. These respondent characteristics were included to explore potential factors that may influence anxiety levels and blood pressure regulation, as previous studies have indicated that sociodemographic and clinical profiles play a significant role in the psychological responses of hypertensive patients. Results were presented in both tabular and narrative formats to provide a comprehensive understanding.

RESULTS

Table 1. Respondent Characteristics (n=43)

Characteristics	n (%)
Gender	
Male	13 (30.2)
Female	30 (69.8)
Age	
Early adult	2 (4.7)
Late adult	15 (34.9)
Old age	26 (60.5)
Education	
Elementary school	28 (65.1)
Junior high school	9 (20.9)
Senior high school	5 (11.6)
Higher education	1 (2.3)
Occupation	
Employed	30 (69.8)
Unemployed	13 (30.2)
Body Mass Index	
Normal weight	14 (32.6)
Overweight	10 (23.3)
Obese	19 (44.2)
History of Hypertension	
Yes	31 (72.1)
No	12 (27.9)

The majority of respondents were female (69.8%) and in the early elderly age category (60.5%). The majority had a basic education level (65.1%) and were employed (69.8%). Based on body mass index, the largest proportion of respondents fell into the obese category (44.2%).

Additionally, most respondents had a history of hypertension (72.1%). These findings indicate that the respondents were predominantly elderly women with low education, an obese nutritional status, and a high prevalence of hypertension.

Table 2. Anxiety Levels, Blood Pressure and Pain Levels of Hypertensive Patient with headache (n=43)

Variable	n (%)
Anxiety level	11 (25.6)
No Anxiety	
Mild anxiety	12 (27.9)
Moderate anxiety	13 (30.2)
Severe anxiety	7 (16.3)
Blood Pressure	
Stage 2 hypertension	34 (79.1)
Severe hypertension	9 (20.9)
Pain level	
Mild	7 (16.3)
Moderate	27 (62.8)
Severe	9 (20.9)

Most respondents had moderate anxiety (30.2%) and stage 2 hypertension (79.1%), with moderate pain being the most reported (62.8%). Overall, participants predominantly exhibited elevated blood pressure accompanied by moderate anxiety and pain levels.

DISCUSSION

The majority of respondents are female. This aligns with research showing that most hypertension patients are female, a demographic pattern often observed in studies on chronic conditions (Nurhasanah et al., 2024). This gender difference may be due to hormonal fluctuations and lifestyle factors that are more common in women. Furthermore, anxiety levels, which are often associated with hypertension, tend to be higher in women, especially if accompanied by headaches (Mustika & Dewi, 2022). This observation aligns with previous research highlighting increased vulnerability in women to hypertension and anxiety disorders, indicating a complex interaction between physiological and psychosocial factors (Rohmah et al., 2023). The higher prevalence of hypertension and anxiety observed in women may be influenced by biological factors, including postmenopausal hormonal changes, and psychosocial stressors that disproportionately affect women.

Most respondents were in the early elderly category (60.5%). Advancing age is a well-established risk factor for hypertension due to vascular stiffness and reduced baroreceptor

sensitivity (Amanda et al., 2024). Additionally, older adults often face increased psychosocial stressors, such as chronic health issues, social isolation, and financial concerns, which can elevate anxiety levels and exacerbate hypertension (Nurhasanah et al., 2024). This demographic also frequently experiences comorbidities, such as headaches, which can further complicate their health status and necessitate comprehensive nursing interventions.

A large proportion of respondents had a basic education level (65.1%), which can impact their understanding of health information and adherence to treatment regimens (Patonengan et al., 2023). Limited educational attainment is associated with lower health literacy, reduced adherence to treatment, and inadequate self-care behaviours (Mustika & Dewi, 2022). This demographic characteristic also often correlates with a higher prevalence of stress and anxiety due to socioeconomic factors and limited access to resources, further impacting their overall health and well-being. This may contribute to difficulties in understanding hypertension management and coping with associated anxiety symptoms (Adiyasa & M Cruz, 2020). The employment status of the majority of respondents further complicates this, as work-related stress can exacerbate both hypertension and anxiety, especially in environments with demanding psychological effects (Fandinata & Ernawati, 2020).

Most respondents are employed (69.8%), indicating that many remain economically active despite their health conditions. This aligns with research indicating that the majority of respondents' occupations are employees (Basir et al., 2020). These findings underscore the need for workplace interventions and support systems to reduce work-related stress and promote healthy behaviours among working hypertensive individuals (Fernandes et al., 2024). However, work stress and physical workload can worsen increased blood pressure and psychological strain, thereby increasing anxiety levels.

Nearly half of the respondents were categorized as obese (44.2%). Obesity is a significant risk factor for hypertension, contributing to increased blood volume and arterial stiffness, and is also linked to higher levels of psychological distress and anxiety (Loke & Ching, 2022). This comorbidity can lead to a vicious cycle where obesity-related health concerns amplify anxiety, which in turn can negatively impact weight management efforts (Loke & Ching, 2022). This research aligns with findings from a comprehensive review of 25 studies, which established a strong correlation between obesity/overweight and heightened anxiety levels (Laila et al., 2024). Specifically, an increase in body mass index has been associated with an approximately 25% increase in the prevalence of anxiety disorders (Juan et al., 2018).

Most respondents had a previous history of hypertension (72.1%). This history indicates a prolonged exposure to the physiological and psychological stressors associated with the condition, which likely contributes to the elevated anxiety levels observed in the study population (Fernandes et al., 2024). Chronic exposure to elevated blood pressure can lead to persistent physiological arousal and heightened anxiety sensitivity. Meta-analytic evidence suggests that individuals with hypertension are more likely to experience anxiety, reinforcing the importance of psychological assessment in this group. Recurrent headaches among hypertensive patients may further reinforce anxiety due to perceived health threats and fear of complications, consistent with studies reporting significant correlations between anxiety anda headache intensity in patients with hypertension, particularly tension-type headache (Fitri et al., 2025). According to the researcher's assumption, the interplay between uncontrolled hypertension and recurrent headaches could establish a feedback loop that intensifies psychological distress, including anxiety.

CONCLUSION

Most respondents experienced moderate anxiety, accompanied by elevated blood pressure and moderate pain intensity. These findings suggest a close interaction between psychological and physiological responses among hypertensive patients with headache. The results highlight the need for holistic nursing interventions that address both emotional and physical aspects to optimize blood pressure control and overall well-being. Future research should delve into the efficacy of specific anxiety-reducing interventions on blood pressure regulation and headache intensity in this vulnerable population. Furthermore, understanding the mechanisms through which anxiety exacerbates hypertension and headache can inform targeted pharmacological and non-pharmacological interventions

LIMITATION

This study has several limitations. The cross-sectional approach cannot demonstrate causal links between anxiety, headache, and hypertension. The limited sample size (n = 43) from a single health facility restricts the generalization of findings. Data were based on self-reported measurements, which may involve response bias. Anxiety and pain levels may have been impacted by uncontrolled variables such lifestyle, social support, and medication adherence. To gain a deeper understanding, future studies with bigger sample sizes and longitudinal or mixed-method designs are advised.

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