

THE RELATIONSHIP BETWEEN ANXIETY LEVEL AND BLOOD PRESSURE MEASUREMENT RESULTS AMONG HYPERTENSIVE PATIENTS UNDERGOING DRUG THERAPY

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ABSTRACT

High blood pressure is a condition that requires long-term management and consistent therapeutic adherence. A common problem is that many hypertensive patients experience anxiety toward their blood pressure measurement results, even though they routinely take antihypertensive medication. This anxiety, known as anticipatory anxiety, arises before the measurement takes place because patients anticipate results that may be worse than expected (Riyada et al., 2023). This descriptive-correlational study aimed to identify the relationship between anxiety level and blood pressure measurement results among hypertensive patients undergoing drug therapy. A quantitative cross-sectional design with a total sampling technique was used, involving 60 respondents from the Prolanis program in the working area of UPT Puskesmas Sooko, Mojokerto Regency. Anxiety was measured using the Short Health Anxiety Inventory (SHAI-18) and blood pressure was measured with a digital sphygmomanometer. Data were analyzed using Spearman's rank correlation test. The results showed that 51.7% of respondents experienced mild anxiety and 48.3% experienced moderate anxiety, while 53.3% had Stage 2 blood pressure. The correlation test yielded $p = 0.000$ ($p < 0.05$) and $r = 0.759$, indicating a strong, significant, and positive relationship between anxiety level and blood pressure measurement results.

Keywords: *Anxiety Level, Blood Pressure, Hypertension, Drug Therapy, Anticipatory Anxiety*

INTRODUCTION

Lately, the whole world has struggled with hypertension, a chronic condition that requires long-term management and consistent therapeutic adherence. A problem frequently encountered is that many hypertensive patients experience anxiety toward their blood pressure measurement results, even though they routinely take antihypertensive medication. This condition is referred to as anticipatory anxiety, that is, anxiety that arises before a person faces a situation because they anticipate a result or consequence that may occur. In hypertensive patients, this anxiety emerges from worry that the blood pressure result obtained will indicate a worse condition than expected (Riyada et al., 2023). Anxiety itself is a state that is often accompanied by feelings of fear and uncertainty, functioning as an awareness signal of an approaching threat that prompts a person to prepare for potential danger, and in turn can affect both physical and psychological health (Asfar, 2025).

The incidence of white coat hypertension (WCH), or anxiety experienced during medical examination, is estimated at around 10-30% among patients diagnosed with hypertension (Novtariansyah, 2025). Data from the 2023 Indonesian Health Survey show that the prevalence of hypertension in Indonesia remains high, reaching 34.5% among the population above 18 years of age (BPAFK Surakarta, 2026). Based on the recapitulation of Mojokerto District Health Office data, the number of hypertension sufferers who received blood pressure examination services in Mojokerto Regency in 2024 reached 80,573 people (Dinkes Mojokerto, 2024).

A preliminary survey conducted by the researcher at the research site in April found that eight patients reported occasionally feeling anxious about tension results that did not match their expectations, indicating that some patients still experience anxiety regarding their health condition. This anxiety is suspected to be influenced by a lack of knowledge, perception of the disease, and the patients' own experiences during their illness.

Predisposing factors of hypertension include age, sex, and genetic history, in which individuals with a family history of hypertension face a higher risk, while modifiable factors relate to lifestyle, such as obesity, smoking habits, alcohol consumption, excessive salt intake, lack of physical activity, and psychological stress and anxiety, all of which can trigger increased blood pressure (Yunaria et al., 2025). Increased blood pressure results from the interaction of various physiological and behavioral factors affecting cardiac output and peripheral resistance. Anxiety during a health examination can raise blood pressure, a phenomenon known as White Coat Hypertension (WCH), which occurs when a person feels anxious at a health facility or during blood pressure measurement, often triggered by anticipatory anxiety, the fear that the measurement result will be worse than expected. This anticipatory anxiety activates the sympathetic nervous system, releasing stress hormones that increase heart rate and constrict blood vessels (Townsend & Cohen, 2024).

Errors that may occur in establishing a hypertension diagnosis include overdiagnosis and inaccurate assessment of ongoing therapy's success. Such conditions also risk inappropriate therapy, whether unnecessary antihypertensive medication or inappropriate dosage adjustment. Anxiety that is not properly identified can affect the overall quality of hypertension management and potentially increase the long-term risk of cardiovascular complications (Townsend & Cohen, 2024). Various solutions have been used to address anxiety-induced increases in blood pressure, requiring a comprehensive approach that combines pharmacological and non-pharmacological therapy. Stress management and lifestyle modification are important components of hypertension management because psychological stress can increase sympathetic nervous activation and trigger a rise in blood pressure (World Health Organization, 2025). Psychoeducation is one intervention that can be given to hypertensive clients with anxiety; through health education about hypertension and anxiety, such as relaxation exercises, distraction, deep breathing techniques, progressive muscle relaxation, and positive affirmation, patients can improve their knowledge and ability to manage both their physical and psychological condition (Utami et al., 2024).

Based on the description above, anxiety is understood to play a role in influencing blood pressure measurement results among hypertensive patients. This indicates that increased blood pressure is not only caused by physiological factors but also by psychological factors that can influence clinical measurement outcomes. Therefore, it is important to further examine the relationship between anxiety level and blood pressure measurement results, particularly among hypertensive patients undergoing drug therapy. Based on this problem, this study was conducted to identify the relationship between anxiety level and the results of blood pressure measurement among hypertensive patients undergoing drug therapy at the Prolanis program in the working area of UPT Puskesmas Sooko, so that information about the influence of anxiety on blood pressure measurement can help minimize diagnostic errors among hypertensive patients.

METHOD

This study used a quantitative method with an analytic design and a cross-sectional approach, aiming to determine the relationship between the studied variables at a single point in time (Abduh et al., 2023). The population consisted of hypertensive patients registered in the Prolanis program (Karangkedawang and Sambiroto Villages), within the working area of UPT Puskesmas Sooko, totaling 60 people. The sampling technique used was total sampling, in which the entire population meeting the inclusion criteria was taken as respondents (Trianasari et al., 2025). Resulting in a sample of 60 respondents. Inclusion criteria were: patients formally diagnosed with hypertension (not based on a single check), patients who routinely underwent examination or treatment at the research site, and patients willing to become respondents. Exclusion criteria were: patients taking sedatives or antidepressants that could suppress anxiety levels, patients experiencing severe pain or a medical emergency, and patients unwilling to participate.

The independent variable in this study was anxiety level, measured using the Short Health Anxiety Inventory (SHAI-18) questionnaire, an ordinal-scale instrument categorized as mild (score 0-18), moderate (score 19-36), and severe (score 37-54). The dependent variable was blood pressure measurement results, measured with a digital sphygmomanometer and categorized as Normal (<120/<80 mmHg), Elevated (120-129/<80 mmHg), Hypertension Stage 1 (130-139/80-89 mmHg), and Hypertension Stage 2 (>140/>90 mmHg), consistent with current blood pressure classification guidelines (Comparisons et al., 2022).

Data collection began after obtaining permission from the Mojokerto District Health Office and the head of Puskesmas Sooko. Respondents who agreed to participate signed an informed consent form, then completed the SHAI-18 questionnaire; a structured interview was offered for respondents who needed assistance. Blood pressure was subsequently measured using a digital sphygmomanometer. Collected data were processed through editing, coding, scoring, and tabulating, then analyzed using univariate analysis to describe the characteristics of each variable (Ridha, 2017). Bivariate analysis using the Spearman rank correlation test, an appropriate statistical method for identifying relationships between ordinal-scale variables (Nurhalijah et al., 2024). Research ethics were upheld throughout the study, including informed consent, anonymity, and confidentiality of respondents' data (Sari et al., 2023).

FINDING AND DISCUSSION

RESEARCH RESULT

PARTICIPANT CHARACTERISTICS

Table 1. Distribution of Respondents' General Characteristics in Prolanis, May 2026

Tabel 4.1: Frequency Distribution of Respondent Characteristics

Karakteristik Usia	Frekuensi	Presentase (%)
60-64	24	40.0
65-69	35	58.3
>69	1	1.7

Jenis Kelamin	Frekuensi	Presentase (%)
Laki-laki	21	35.0
Perempuan	39	65.0
Pendidikan	Frekuensi	Presentase (%)
Tidak bersekolah	1	1.7
SD	37	61.7
SMP	17	28.3
SMA	5	8.3
Total	60	100

Source: General Data, 2026

Table 4.1 presents the frequency distribution of respondent characteristics. As shown in Table 1, the majority of the 60 respondents were aged 65-69 years (58.3%), predominantly female (65.0%), and most had an elementary-school education (61.7%).

STUDY VARIABLES

Table 2. Distribution of Respondents Based on Anxiety Level in Prolanis, May 2026

Tabel 4.2: Frequency Distribution of Distribution of Respondents Based on Anxiety Level

Tingkat Kecemasan	Frekuensi	Presentase (%)
Ringan	31	51.7
Sedang	29	48.3
Berat	0	0.0
Total	60	100.0

Source: General Data, 2026

Table 4.2 shows that of the 60 respondents, the majority experienced mild anxiety (31 respondents, 51.7%), while 29 respondents (48.3%) experienced moderate anxiety. No respondent experienced severe anxiety or was free of anxiety.

Table 3. Distribution of Respondents Based on Blood Pressure Measurement Results in Prolanis, May 2026

Tabel 4.3: Frequency Distribution of Based on Blood Pressure Measurement

Tekanan Darah	Frekuensi	Presentase (%)
Normal	8	13.3
Elevated	15	25.0
Stage 1	5	8.3
Stage 2	32	53.3
Total	60	100.0

Source: General Data, 2026

Table 4.3 shows that the majority of respondents had Stage 2 blood pressure (32 respondents, 53.3%), followed by Elevated (15 respondents, 25.0%), Normal (8 respondents, 13.3%), and Stage 1 (5 respondents, 8.3%).

Table 4. Cross-Tabulation of Anxiety Level and Blood Pressure Measurement Results

Tabel 4.3: Cross-Tabulation

Tingkat Kecemasan	Tekanan Darah									
	Normal		Elevated		Stage 1		Stage 2		Total	
	N	%	N	%	N	%	N	%	N	%
Ringan	8	13.3%	14	23.3%	4	6.7%	5	8.3%	31	51.7%
Sedang	0	0.0%	1	1.7%	1	1.7%	27	45.0%	29	48.3%
Total	8	13.3%	15	25.0%	5	8.3%	32	53.3%	60	100.0%
<i>p</i> value 0,000 <i>r</i> 0,759										

Source: General Data, 2026

The Spearman correlation test produced a *p*-value of 0.000 ($p < 0.05$), meaning H_0 was rejected and H_1 accepted, indicating a significant relationship between anxiety level and blood pressure measurement results among hypertensive patients undergoing drug therapy. The correlation coefficient (*r*) of 0.759 indicates a strong, positive relationship, meaning that the higher a respondent's anxiety level, the higher their blood pressure measurement tended to be. Among the 29 respondents with moderate anxiety, 27 (45.0%) were in Stage 2 and none were Normal, whereas the 31 respondents with mild anxiety were distributed across all blood pressure categories.

DISCUSSION

The anxiety identified among all respondents is presumed to stem from anticipatory anxiety, which forms before the examination due to worry that the blood pressure result will be worse than expected (Aqobah et al., 2022). Respondent characteristics dominated by those aged 65-69 years, with elementary-level education, and predominantly female increase vulnerability to anxiety, explaining why no respondent was entirely free of anxiety. The predominance of mild anxiety (51.7%) over moderate anxiety (48.3%), with no severe cases, may be explained by habituation: as Prolanis participants, respondents underwent monthly blood pressure checks, so repeated exposure to the measurement procedure made them more accustomed to it and prevented escalation to higher anxiety levels. The group setting of Prolanis, accompanied by health workers and peer social support, likely also helped dampen anxiety from developing into a severe level, so the mild anxiety experienced by most respondents can be interpreted as adaptive vigilance toward their hypertensive condition rather than a concerning psychological disorder (Jufdikes et al., 2021).

Regarding blood pressure results, the high proportion of Stage 2 blood pressure among a population actively undergoing drug therapy can be explained by several factors working simultaneously. First, the anticipatory anxiety mechanism that triggers White Coat Hypertension (WCH), in which anticipatory anxiety prematurely activates the sympathetic nervous system, releasing epinephrine and norepinephrine, increasing cardiac output, causing vasoconstriction, and increasing renal sodium retention, all of which directly contribute to elevated measured blood pressure (Pan et al., 2021). Second, pharmacological therapy factors: although all respondents routinely underwent drug therapy, its effectiveness among elderly patients is influenced by duration, dosage, and adherence, which vary between individuals, so being 'on routine treatment' does not always mean blood pressure is controlled (Amanda, 2024). Third, biological factors such as vascular aging among the majority of

respondents aged 65-69 years, where reduced arterial elasticity and increased vascular stiffness physiologically make blood pressure harder to control even with ongoing drug therapy, and postmenopausal hormonal changes among the predominantly female sample, where decreased estrogen directly increases peripheral vascular resistance independently of anxiety (Sulistya et al., 2023).

The strong, significant, positive correlation ($r = 0.759$; $p = 0.000$) between anxiety level and blood pressure measurement results is consistent with the mechanism by which anticipatory anxiety prematurely activates the sympathetic nervous system, releasing stress hormones that raise cardiac output, constrict blood vessels, and increase renal sodium retention, thereby elevating measured blood pressure at the time of examination (Pan et al., 2021). Anxiety functions as an independent risk factor that not only worsens blood pressure control but also lowers medication adherence and increases the long-term risk of cardiovascular complications (Jiang et al., 2024). Uncontrolled anxiety causes unpredictable blood pressure fluctuations, making it difficult for patients to achieve a normal blood pressure target despite medication adherence (Winarti et al., 2024). This strong but imperfect relationship indicates that anxiety is a dominant predictor but not the sole determinant of blood pressure in this population, reflecting the multifactorial nature of hypertension, in which vascular aging and hormonal factors also act independently. Consequently, the management of anticipatory anxiety through psychoeducation, relaxation techniques, and therapeutic communication needs to be integrated routinely into Prolanis services as a complement to pharmacological therapy.

CONCLUSION

Based on the results obtained from 60 hypertensive respondents undergoing drug therapy in the Prolanis program of UPT Puskesmas Sooko in May 2026, it can be concluded that the majority experienced mild anxiety (51.7%) and nearly half experienced moderate anxiety (48.3%), with no respondent found to be free of anxiety, indicating that anticipatory anxiety is a widespread phenomenon in this population. The majority of respondents had Stage 2 blood pressure (53.3%), followed by Elevated (25.0%), Normal (13.3%), and Stage 1 (8.3%), indicating that pharmacological adherence alone is not sufficient without concurrent management of psychological factors. A significant relationship was found between anxiety level and blood pressure measurement results ($p = 0.000$; $r = 0.759$), reflecting a strong, positive relationship mediated by anticipatory anxiety through the White Coat Hypertension phenomenon.

Health workers are encouraged to integrate routine psychological screening, particularly for anticipatory anxiety, into Prolanis services before blood pressure measurement, along with therapeutic communication such as brief explanations about the fluctuating nature of blood pressure, deep-breathing techniques, or an adequate rest period before measurement. Patients are encouraged to increase awareness of their psychological condition and apply simple relaxation techniques before examination. Future research is recommended to include confounding variables such as duration of hypertension, lifestyle, dietary adherence, physical activity, and comorbidities, to measure pharmacological therapy aspects more specifically, and to employ longitudinal or experimental designs to evaluate the effectiveness of anticipatory anxiety management interventions on blood pressure outcomes.

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