

Prevalence and Factors Associated with Anxiety among Uncontrolled Hypertensive Patients in Public Health Centers in Lhokseumawe, Aceh, Indonesia

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Abstract

Background: Patients with hypertension frequently experience intense emotions in addition to the physiological effects of the disease, which tend to increase the risk of developing mental health issues such as anxiety. However, the connection between hypertension and anxiety remains uncertain. This study aimed to evaluate the prevalence and factors associated with anxiety in uncontrolled hypertensive patients in public health facilities.

Methods: This cross-sectional study was conducted in four public health centers in Lhokseumawe City, Aceh Province, Indonesia. Subjects were selected using consecutive sampling. Data on sociodemographic factors and comorbid conditions were obtained. Blood pressure was recorded, and severity was classified according to the JNC-7 guidelines. The Hamilton Rating Scale for Anxiety (HRS-A) was used to detect anxiety in each participant. Data were analyzed using the chi-square test.

Results: Of the 60 respondents consisting of men (31.7%) and women (68.3%), 34 (56.7%) had mild anxiety, 22 (36.7%) had moderate anxiety, and 3 (5%) had severe anxiety. There was a significant association ($p=0.007$) between anxiety and duration of hypertension. On the contrary, no association in age, gender, level of education, and type 2 diabetes comorbidities ($p>0.05$).

Conclusions: Anxiety is common among hypertensive patients in primary healthcare settings and is associated with the duration of hypertension. Primary care physicians should be on the front lines in finding anxiety disorders, and making the necessary referrals or therapy.

Keywords: Anxiety, type 2 diabetes, uncontrolled hypertension

Introduction

Hypertension accounts for the highest mortality rate worldwide as a significant modifiable risk factor for cardiovascular disease.¹ In 2010, hypertension affected one-third of the global adult population. The prevalence of hypertension globally is expected to rise to 29% by 2025.² High blood pressure is estimated to cause 7.5 million deaths, about 12.8% of the total of all deaths worldwide. This accounts for 57 million disability adjusted life years (DALYS) or 3.7% of total DALYS.³

According to the 2018 Basic Health Research Survey, the national prevalence of hypertension was 34.1% for Indonesians and 9.32% for Acehnese, population from Aceh.⁴ Furthermore, in Lhokseumawe City, 27.43% of people over 18 years old and 26.45% of

the Acehnese have been diagnosed with hypertension.⁵ Consequently, hypertension is becoming a significant public health issue.

Patients with hypertension, like other chronic medical diseases, often have strong emotions beyond the physiological effects of the disease, increasing their probability of developing mental health problems such as anxiety.^{6,7} Furthermore, a two-way relationship exists between anxiety and high blood pressure; hypertensive patients are more likely to experience anxiety, while adults with anxiety are at risk of high blood pressure.⁸

There is a high degree of multimorbidity between mental disorders such as anxiety and other non-communicable conditions, including hypertension. It makes their co-management in primary care a logical choice. Therefore, this study aimed to determine the

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prevalence and factors associated with anxiety among hypertensive patients visiting public health centers in Lhokseumawe City, Aceh, Indonesia.

Methods

A cross-sectional study was conducted in four public health centers (*Pusat Kesehatan Masyarakat, Puskesmas*) in Lhokseumawe City, Aceh province, namely Puskesmas Blang Mangat, Puskesmas Muara Dua, Puskesmas Mon Geudong, Puskesmas Muara Satu, and Puskesmas Banda Sakti. The approval and ethical clearance were obtained from the Faculty of Medicine of the University of Muhammadiyah Sumatera Utara (No:832/KEPK/FKUMSU/2022, 30 June 2022).

A consecutive sampling method to select uncontrolled hypertensive patients in these primary care settings was used. The inclusion criteria were uncontrolled hypertensive

patients over 18 years old. Patients who had controlled blood pressure, who denied participation and those who could not communicate were excluded. De-identification of patients were used to ensured that the information remained completely confidential.

The questionnaire was distributed among the patients to collect the following data: sociodemographic characteristics (age, sex, educational status) and disease information (family history of hypertension, duration of hypertension diagnosis, and comorbidities).

Information related to comorbid conditions were obtained from the patient medical report, included type 2 diabetes and stroke). The Hamilton Rating Scale for Anxiety (HRS-A), a 14-item module, was used to assess the anxiety levels of each participant. Scores 0–17, 18–24, and 25–30 represent mild, moderate, and severe anxiety, respectively. The reliability of the HRS-A questionnaires was 0.756.⁹ The reliability’s test conducted toward the

Table 1 Sociodemographic Characteristics of the Study Participants (n=60)

Characteristics	n	Percentage (%)
Age; mean (SD)	49.85 (8.2)	
Gender		
Male	19	32
Female	41	68
Education level		
Low	31	52
High	29	48
Duration of hypertension		
5 year	7	12
> 5 years	53	88
Family history of hypertension		
Yes	60	100
No	0	0
Type 2 diabetes		
Yes	14	23
No	46	77
Stroke		
Yes	0	0
No	60	100
Grade of hypertension		
Stage 1	35	58
Stage 2	25	42
Anxiety		
Normal	1	2
Mild	34	56
Moderate	22	37
Severe	3	5

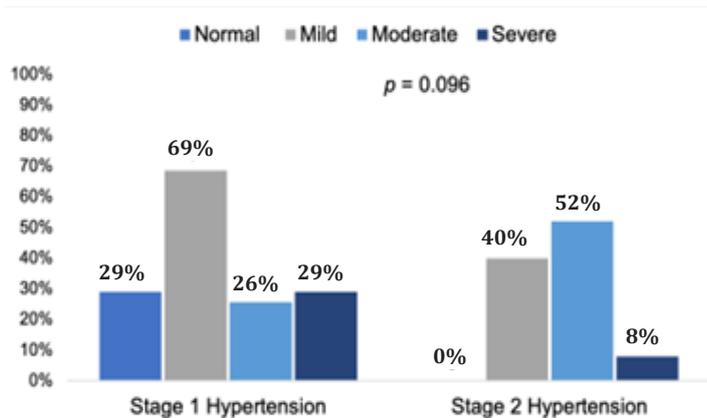


Figure 1 Distribution of Anxiety among the Hypertensive Patients (n=60)

translated version with Cronbach's Alpha value of 0.793.¹⁰

Blood pressure was measured using a mercury column sphygmomanometer for catheterizing blood pressure control. Our study determined the severity using the JNC-7 guidelines¹¹ as follows: pre-hypertension (systolic blood pressure (SBP) 120–139 mmHg and diastolic blood pressure (DBP) 80–89 mmHg), stage 1 hypertension (SBP 140–159 mmHg, and DBP 90–99 mmHg), and stage 2 hypertension (SBP 160–179 mmHg and DBP 100–109 mmHg).

The data obtained were analyzed using computer statistical software (SPSS). Each variable was calculated and represented as a number (percentages) in the table and figure. Chi square test analysis was performed to determine if there were significant associations between study variables and anxiety classification. The significance (p-value) was set at 0.05.

Results

Of the total 60 patients, 41 (68%) were women, with the mean age of the entire population of 49.8 ± 8.3 years. Among educational status, most of the population had low levels of education, which was elementary to junior high school (n=31, 52%). The data showed that 58% (n=35) of the patients had stage 1 hypertension, and only (25) 42% had stage 2 hypertension. Information related to comorbid conditions were obtained from the patient reported. Approximately 46 (77%) of the participants did not have comorbidities other than hypertension, while 14 (23%) had type

2 diabetes. All subjects had a family history of hypertension (Table 1).

About 56% (n=34) of the respondents had mild anxiety, while only 5% (n=3) had severe anxiety. Approximately 69% (n=24) of the patients with stage 1 hypertension exhibited mild anxiety, and 29% had severe anxiety. On the contrary, 52% (n=13) and 8% (n=2) of stage 2 hypertensive patients reported moderate and severe anxiety, respectively. However, there was no significant association between grade of hypertension and anxiety (p=0.096) (Figure 1).

Table 2 summarized the association of several sociodemographic and clinical factors with anxiety. Only the duration of the hypertension diagnosis was associated with anxiety (p=0.007). No other significant relationships were found with other variables among study subjects.

Discussion

In this study, anxiety was common among patients with hypertension receiving primary care. Most of the patients had mild to moderate anxiety. More than 50% of our patients with stage 1 and 2 hypertension experience mild to severe anxiety; as shown in study from Nepal, that reported over 80% of hypertensive adult patients had mild anxiety.¹²

The presence of a significant prevalence of mental health disorders in PHC patients with chronic conditions, as documented by the World Health Organization and the World Organization of Family Doctors¹³, supports the findings of our study. The high percentage of the anxiety prevalence was supported by

Table 2 Factors Associated with Anxiety among Patients with Hypertension (n=60)

Variables	Category	Anxiety				p-value
		Normal	Mild	Moderate	Severe	
Age (year)	≤ 49.85	1 (4.5)	16 (72.7)	4 (18.2)	1 (4.5)	0.087
	> 49.85	0	18 (47.4)	18 (47.4)	2 (5.3)	
Gender	Male	0	10 (52.6)	9 (47.7)	0	0.423
	Female	1 (2.4)	24 (58.5)	13 (31.7)	3 (7.3)	
Education	Low	0	16 (51.6)	12 (38.7)	3 (9.7)	0.237
	High	1 (3.4)	18 (62.1)	10 (34.5)	0	
Type 2 diabetes	Yes	0	7 (50.0)	6 (42.9)	1 (7.1)	0.848
	No	1 (2.2)	27 (58.7)	16 (34.8)	2 (4.3)	
Course of hypertension (years)	≤ 5	1 (14.3)	6 (85.7)	0	0	0.007*
	> 5	0	28 (52.8)	22 (41.5)	3 (5.7)	
Grade of hypertension	Stage 1	1 (2.9)	24 (68.6)	9 (25.7)	1 (2.9)	0.096
	Stage 2	0	10 (40)	13 (52)	2 (8)	

Note: *p <0.05

a study conducted in Pakistan which found more than 50% of the patients identified with uncontrolled hypertension presented with an anxiety.¹⁴

In our study, hypertensive patients are prone to anxiety. According to the distribution of anxiety among the hypertension, only 1.7% participant is without anxiety or normal. However, the relationship was not statistically significant between grade of hypertension and anxiety (p=0.096). A study conducted in primary care clinics in Saudi Arabia reported no significant relationship between anxiety and hypertension, which aligns with our findings. However, it was indicated that the presence of hypertension increases the probability of developing a psychological disorder. It also highlighted that approximately 29% of hypertensive patients had achieved adequate blood pressure control, which could explain why the association between hypertension and developing anxiety did not reach statistical significance in their study.¹⁵ High levels of anxiety and depression are frequently associated with chronic diseases such as high blood pressure in adults.¹⁶ Anxiety symptoms are an independent risk factor for incident hypertension.⁸

The course/duration of uncontrolled hypertensive patients is the only factor significantly associated with anxiety in our study (p=0.007). This result is consistent with research on depression and diabetic patients as chronic diseases. Long-term diabetes has increased the probability of experiencing depression by 5.4 times.¹⁷ In a study conducted in Gondar, Ethiopia, the duration of a patient's disease was a significant predictor

of depression. Furthermore, previous research has shown that an increased risk of complications and healthcare costs with the duration of DM may increase the probability that diabetic patients may acquire psychological disorders. The symptoms of anxiety have been associated with a diagnosis of hypertension assessed 5 years later, although the mechanisms underlying these associations remain to be determined.¹⁸ Our findings contradict previous study reported that the course of hypertension did not affect the incidence of anxiety.¹⁹ The variation might be due to the difference in sample size, study design and a data collection tool to measure anxiety.

Women have a higher prevalence of anxiety than men in the general population and patients with hypertension. However, we found that gender was not significantly associated with anxiety. This result is similar to a study conducted among Nepalese hypertensive adult patients who reported a non-significant association between gender and anxiety.¹² However, a study from Ethiopia and Afghanistan showed a relationship between female patients and anxiety.^{19,20} Female patients were 4.25 times more likely to have anxiety than males among hypertensive patients.¹⁹ This link may be partially explained by the fact that anxiety has been attributed to hormonal changes associated with pregnancy, postpartum, and menopause.²¹

This study findings have not shown a significant correlation between anxiety and educational level. Our present result confirmed the study conducted in the south of the Netherlands.²² Our finding also differs

from the study conducted in Ethiopia; Illiterate (incapable of reading and writing) were 2.72 times more likely to develop anxiety than patients with secondary and tertiary education.¹⁹ Moreover, other study has shown that adult hypertensive patients who cannot read or write are 7.89 times more likely to have anxiety.²³ This could be because patients with low educational levels have poor perception and treatment of health. The observed difference could be because of previous studies were not specifically among uncontrolled hypertensive patients and included patients with controlled hypertension as well and different scales used to assess anxiety.

Type 2 diabetes contributes to the development of anxiety disorders in hypertensive patients. All our patients with comorbid diabetes had moderate to severe anxiety. However, we found no association between comorbid diabetes mellitus and anxiety. Previous studies suggest an association between hypertensive diabetic patients and anxiety.^{19,20,24} Patients with comorbid diabetes mellitus were 2.98 times more likely to experience anxiety compared to patients without other comorbid conditions.¹⁹

Hypertension and anxiety are interrelated. On the one hand, anxiety can increase the incidence and progression of hypertension and the risk of cardiocerebrovascular disorders. On the other hand, hypertension tends to exacerbate anxiety.⁸ Therefore, examining the factors that influence anxiety in hypertensive patients were crucial to preventing and treating hypertension and improving patients' quality of life.

The limitations of this study is among others the study design, that is cross-sectional study. Therefore, the findings cannot establish a connection between anxiety and characteristics associated with uncontrolled hypertensive patients. Further studies are needed on the other factors between high blood pressure and the development of anxiety. The cause of anxiety is widely varied, and can not all be identified in this study. Therefore, the association between anxiety and hypertension should be carefully considered. Furthermore, the sample is small since some respondents refused to participate. Anxiety is probably diagnosed among patients who refuse to participate.

In conclusion, a high prevalence of anxiety in hypertensive patients in public health centers in Lhokseumawe, Aceh, with a significant association of anxiety with the duration of hypertension. The screening for anxiety

disorders among uncontrolled hypertensive patients in primary care should be considered to start the referral or therapy.

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