

Original Article

Frequency of Psychological and Social Influences of Depression in Patients of Essential Hypertension

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Abstract

Objective: To determine the frequency of depression in patients with essential hypertension and psychosocial determinates of depression in patients with essential hypertension.

Methods: This cross-sectional study was conducted at Psychiatry Department, Sheikh Zayed Hospital, Lahore from 13-11-2023 to 13-05-2024. A total of one hundred and fifty patients having essential hypertension and fulfilling selection criteria were recruited for the study. Patients were evaluated by using Patient Health Questionnaire-9. If the score was ≥ 10 , depression was noted. All determinants including gender, age, education, employment, socioeconomic status, physical activity, smoking and family history of hypertension were also noted. Data was recorded in proforma and analyzed in SPSS version 25.

Results: The mean age of participants noted was 57.8 ± 12.23 years, including 46.0% male and 54.0% female. The mean PHQ-9 score was 8.75 ± 5.58 . Out of 150, depression was found in 69 (46.0%) patients, and it was found to be significantly associated with female gender ($p = 0.001$), lower educational status ($p = 0.001$), and physical inactivity ($p = 0.040$). However, no significant association was observed with smoking ($p = 0.050$) or family history of hypertension ($p = 0.240$).

Conclusion: The prevalence of depression is high among hypertensive patients and it is found to be significantly associated with female gender, lower educational status, and physical inactivity. However, no significant association of depression was observed with smoking or a family history of hypertension.

Keywords: Essential Hypertension, Depression, Psychosocial Determinates, Patient Health Questionnaire

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Introduction

According to the 2024 data, an average of 1.4 billion adults worldwide have hypertension, while in Pakistan, approximately 32.2 million adults in the same age group are living with hypertension.¹ Hypertension is a major risk factor for cardiovascular diseases.^{2,3} The incidence of depression among adults with hypertension is also high, with multiple contributing risk factors.⁴ However, Herrera et al, in their study, found no expected bidirectional relationship between hypertension and depression.⁵

Although vascular responses are rooted in evolutionary physiological mechanisms, growing evidence shows that chronic psychological stress contributes to onset and progression of cardiovascular diseases.^{6,7} Limited information is available from low and middle income nations, despite an increasing number of research inves-

tigating the prevalence of depression among hypertension patients in high income countries.⁸ Variations in assessment methods might be the cause of the observed difference in the prevalence of depression in hypertension. When evaluating the existence of depression, self-report measures should exercise caution. Thus, around one-third of hypertension patients suffer from depression as described by an interview.⁹ Shah et al, highlights that health-related quality of life among hypertensive patients is reduced and influenced primarily by gender, education level, physical activity, and blood pressure (BP) control.¹⁰

Hypertension and depression are closely interrelated, with each potentially influencing progression of the other. Given the growing burden of hypertension in Pakistan and the limited availability of local data, there is a pressing need to explore this relationship further.

By identifying the frequency of depression in hypertensive patients and its psychosocial determinates, this study aims to highlight the importance of integrating mental health screening and management into hypertension care, ultimately improving treatment outcomes and patients' overall quality of life.

Methods

From November 2023 to May, 2024, this cross-sectional research was carried out at Sheikh Zayed Hospitals Psychiatry Department in Lahore. With 95% confidence level, 8% margin of error, and proportion of depression taken as (40.1%) in patients with essential hypertension, a sample size of 150 patients was determined.¹¹ All the patients who fulfilled selection criteria were enrolled by applying the non-probability consecutive sampling technique.

Patients aged 20 to 60 years, of either gender presenting with essential hypertension (blood pressure >140/90 mmHg due to obesity, family history and unhealthy diet on history) taking anti-hypertensive medication for at least 3 years were included in the study. Patients with a history of myocardial infarction, chronic endocrine disease, TSH>5 IU, taking treatment for depression before diagnosis of essential hypertension, or other psychiatric disorders including schizophrenia, obsessive compulsive disorder were excluded from the study.

Patients were recruited for our study from the medical OPD. An informed consent and demographics of patients were obtained from attendants. Patients were evaluated by using Patient Health Questionnaire-9 for assessment of depression. If the score was ≥ 10 , depression was noted. All determinants including being female (gender), age less than 45 years, uneducated, unemployed, low socioeconomic status, sedentary lifestyle or physically inactive, smoking history and family history of hypertension were also obtained. All this data was recorded on pre-structured proforma and analyzed via SPSS 25. Depression and psychosocial determinants were presented as frequency and percentage. Determinants were compared in patients with or without depression by using chi-square test, p-value ≤ 0.05 was considered as significant.

Results

As shown in table 1, mean age of participants with essential hypertension calculated was 57.8 ± 12.23 years, 69 (46.0%) were males and 81 (54.0%) females. The mean duration of hypertension and its treatment duration noted was 8.85 ± 6.05 years and 8.85 ± 6.07 years, respectively. The mean of patient's health questionnaire-9 score found was 8.75 ± 5.58 .

Table 1: Basic demographics of hypertensive patients (n=150)

Variable		n (%) or Mean $\pm$ SD
Age (years)		57.8 $\pm$ 12.2
Gender	Male	69 (46)
	Female	81 (54)
Duration of HTN (years)		8.85 $\pm$ 6.05
HTN Treatment Duration (years)		8.85 $\pm$ 6.07
PHQ-9 score		8.75 $\pm$ 5.58

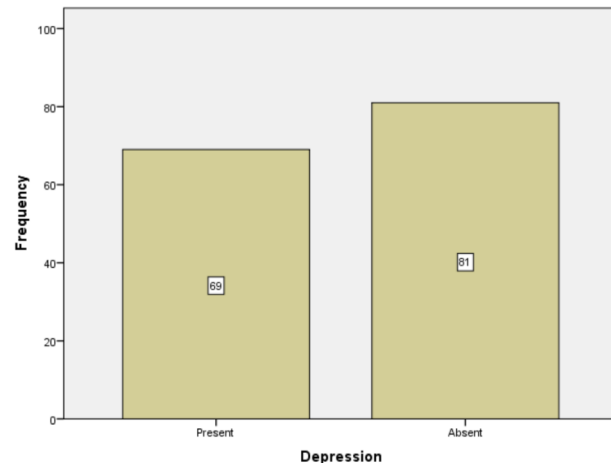


Figure 1: Depression observed in hypertensive patients
Out of 150 participants, depression was found in 69

Table 2: Psychosocial determinates of depression in patients of essential hypertension

Determinants	n (%)
Female gender	80 (53.3)
Age <45 years	18 (12.0)
Uneducated	80 (53.3)
Unemployed	106 (70.7)
Low socioeconomic status	5 (3.3)
Physically inactive	76 (50.7)
History of smoking	22 (14.7)
Family history of HTN	62 (41.3)

(46.0%) patients as shown in Figure 1.

In this study, several psychosocial factors were identified among patients with essential hypertension as shown in Table 2, majority were female (53.3%), uneducated (53.3%), and unemployed (70.7%). A smaller proportion were younger than 45 years (12.0%) and from low socioeconomic backgrounds (3.3%). In terms of lifestyle factors, 50.7% were physically inactive, 14.7% had history of smoking, and 41.3% reported a family history of hypertension.

As shown in table 3; depression was significantly more

prevalent among females (58.8%) compared to males ($p = 0.001$) and among uneducated patients (58.8%) compared to educated participants ($p = 0.001$). Patients with physically inactive lifestyle also showed a higher rate of depression (53.9%, $p = 0.040$). Although depression was more frequent among younger patients aged <45 years (55.6%), unemployed individuals (48.1%), and those with low socioeconomic status (60%) had associations that were not statistically significant ($p > 0.05$). Interestingly, depression was less common among smokers (27.3%) ($p = 0.050$) and also showed no significant association with family history of hypertension ($p = 0.240$)

Table 3: Comparison of determinants in patients with and without depression

	Depression		p-value
	Present	Absent	
Female gender	47 (58.8%)	33 (41.3%)	0.001
Age <45 years	10 (55.6%)	8 (44.4%)	0.380
Uneducated	47 (58.8%)	33 (41.3%)	0.001
Unemployed	51 (48.1%)	55 (51.9%)	0.420
Low socioeconomic status	3 (60%)	2 (40%)	0.520
Physically inactive	41 (53.9%)	35 (46.1%)	0.040
History of smoking	6 (27.3%)	16 (72.7%)	0.050
Family history of hypertension	25 (40.3%)	37 (59.7%)	0.240

Discussion

In the current study, the mean patient's health questionnaire-9 score was 8.75 ± 5.58 . A study done by Ramos-Vera et al confirmed the PHQ-9's reliability among hypertensive adults, identifying bifactorial structure that includes somatic and cognitive/affective factors.¹² Out of 150 participants, depression was found in 46.0% patients, among them 53.3% patients were educated, only 3.3% patients had low socioeconomic status, 50.7% were physical inactive, 14.7% had history of smoking and 41.3% had family history of hypertension. In contrast, study conducted in Malaysia by Loke and Ching found depression in only 16.2% hypertensive patients. However, they found similar determinants of psychological distress among hypertensive patients included physical inactivity, unemployment, lack of formal education, and low household income.¹³ Abubakar et al, conducted a study in Nigeria, and found a higher prevalence of depression (70%) among hypertensive patients.¹⁴ Dutta et al, conducted an analysis in South India and found depression among 44.7% hypertensive patients.¹⁵ A study conducted in KPK, found significantly higher rates of hypertension among patients suffering from depression (69.24%) compared to those without

depression (60.46%), $p=0.006$.¹⁶ This variation in the reported prevalence of depression among hypertensive patients across different studies may be attributed to differences in ethnic background, cultural factors, and population characteristics among the study populations.

Rayamajhi et al, demonstrated a significant association between factors such as age, marital status, education level, employment status, and monthly income showing strong links to depressive symptoms.¹⁷ Similarly, in our study, a noteworthy relationship was also observed between sociodemographic factors, particularly education, physical inactivity and female gender. Tasew et al, supporting the current findings, also reported that female patients with limited social support were significantly associated with depression among hypertensive patients.¹⁸ Yousuf et al, however, found no significant association between depression and hypertensive crisis, regardless of age or gender.¹⁹ This difference in results may arise from the fact that hypertensive crisis patients were not assessed in our study separately. Gebre et al. and Ashok et al. discovered strong correlation between depressive symptoms and family history of depression, indicating that genetic inheritance may have a role in it.^{20,21} Mehmood et al, in their study conducted at Karachi found depression in 40.1% patients with essential hypertension, factors which had significant association with depression found were female gender ($p = 0.009$), age <45 years, ($p = 0.035$), educational status ($p = 0.000$), employment status ($p = 0.047$), socioeconomic status ($p = 0.027$), physical activity ($p = 0.016$), smoking ($p = 0.031$), and family history of hypertension ($p=0.002$).²²

In the present study, patients were not classified according to the stages or severity of hypertension. Consequently, depression was not analyzed across hypertensive subgroups. Future studies should consider subgroup classification to better understand the relationship between hypertension severity and depressive symptoms.

Conclusion

The results of current study suggest that depression is highly prevalent among patients with essential hypertension, and found to be significantly associated with female gender, lower educational status, and physical inactivity, while younger age, unemployment, and low socioeconomic status showed higher but non-significant trends. However, no significant association was observed with smoking or family history of hypertension.

Ethical Approval: The IRB/EC approved this study via letter no. 2-TERC/NHRC-SZH/Int-SC/682 dated March 25, 2025.

Conflict of Interest: None

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Authors' Contribution

SAA: Conceptualization of the project

NI, SA: Design of the work.

FB, MB, MSUB: Data acquisition, analysis, or interpretation.

FB, MB, MSUB, SA: Draft the work.

SAA, NI: Critical review of important intellectual content.

All authors approve the version to be published.

All authors agree to be accountable for all aspects of the work.

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