Original Article

Mental health of hypertensive patients and its association with their blood pressure in a rural area of Kancheepuram District, Tamil Nadu

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Abstract

Introduction: Chronic diseases, such as type 2 diabetes mellitus and hypertension, are often associated with psychiatric comorbidities such as anxiety, depression, and somatization. Approximately, one-fourth of the adults were diagnosed with hypertension, and the proportion will reach about one-third by 2025. The prevalence of hypertension throughout India is 29.8% and the burden of hypertension in a rural area of Tamil Nadu is 25.2%. The compliance of drug intake depends on the mental health of the patient and this study intends to take care of patients with chronic illnesses. This study is designed to assess the mental health of hypertensive patients and its association with their blood pressure. **Materials and Methods:** A cross-sectional descriptive study was conducted among hypertensive patients in the field practice of a tertiary care medical college in the Kancheepuram district for a period of 3 months using a semi-structured validated schedule after obtaining the informed consent. The depression anxiety stress scale (DASS) scale was used to assess the mental health of hypertensive patients. Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 23.0. **Results:** Most hypertensive patients were found in the age group of 40 to 60 years. About 53.4% of hypertensive patients with normal blood pressure were suffering from depression. In addition, about 44.6% of pre-hypertensive patients and 44.6% of stage II hypertensive patients were found to have severe depression. **Conclusion:** Overall, pre-hypertensive patients were suffering from depression when compared to other hypertensive patients. Family history and tobacco and alcohol intake were other factors associated with depression in hypertensive patients.

Keywords: Blood pressure, hypertension, mental health

Introduction

Chronic diseases such as type 2 diabetes mellitus and hypertension are often associated with psychiatric comorbidities such as anxiety, depression, and somatization.[1] Hypertension is strongly associated with overall cardiovascular risk. Increased blood pressure contributes to cardiovascular and cerebrovascular endpoints, such as myocardial infarction, heart failure, stroke, and even death. Approximately, one-fourth of the adults were

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diagnosed with hypertension, and the proportion will reach about one-third by 2025.[2] The overall prevalence of hypertension in India is 29.8%[3] and the burden of hypertension in a rural area of Tamil Nadu is 25.2%.[4] Because systemic hypertension, which is also called a silent killer, affects the quality of life of each patient. Many studies have revealed that people with hypertension have a poor quality of life indicator than people without hypertension.[5] The compliance of drug intake depends on the mental health of the patient and this study intends to take into account those types of patients with chronic illness. Although there are many studies on hypertension and mental health, not enough studies have been done on relating mental health with hypertensive patients and its association with their blood pressure levels, especially in the rural population. The key advantage of delivering mental health care through primary care is that it is easily accessible, affordable, and acceptable. Also, it helps their families to ensure continuity of care.[6] Hence, this study was planned to assess the mental health of hypertensive patients and its association with their blood pressure.

Materials and Methods

This was a cross-sectional descriptive study conducted in the Kancheepuram district. The duration of the study was 3 months and a universal sampling technique was used, in which a sample size of 300 was derived from a previous study where the prevalence of hypertension was found to be 25.2% with a 5% error. All patients who were diagnosed with hypertension and those who were willing to participate were included in the study and all bed-ridden patients and those who were not willing to participate in the study were excluded. Data collection was done using a semi-structured schedule prepared based on the study objectives. Participants were interviewed face-to-face using a semi-structured questionnaire after obtaining their informed consent, which was back-translated in the local language. The study variables were included to collect the information regarding sociodemographic details of the patient, details of hypertension, and predictors of mental health. The modified B.G. Prasad scale of socioeconomic status classification was used to classify the socioeconomic class. The DASS scale was used to assess the mental health of hypertensive patients. Institutional ethic clearance was obtained and written informed consent was obtained from the study participants before obtaining any information from them.

Operational definition

Hypertension, also known as high or raised blood pressure, is a condition in which the blood vessels have persistently raised pressure. Blood is carried from the heart to all parts of the body in the vessels. Each time the heart beats, it pumps blood into the vessels. Blood pressure is created by the force of blood pushing against the walls of blood vessels (arteries) as it is pumped by the heart. The higher the pressure, the harder the heart has to pump the blood.[7] Data entry and statistical analysis were done using SPSS version 23. Frequency distribution was calculated for all the variables and the Chi-square test was used to find the relationship between various variables.

Results

A total of 301 hypertensive patients were included as the study population. According to age distribution, people above 40 to 60 years were found to be hypertensive patients when compared to other age groups. The hypertensive participants were equally distributed. Nearly more than three-fourth were Hindus and 8% of them were Christians and 4.3% were Muslims. Among the study participants, 79.7% belonged to nuclear families and 20.3% belonged to joint families [Table 1].

Duration of hypertension of fewer than 5 years was observed in 70.8% and more than 5 years in 29.2%. Most of them took anti-hypertensive drugs and 9% took anti-hypertensive drugs along with a salt-restricted diet. The knowledge about the seriousness of hypertension was asked to all the study participants, nearly 46.5% of them considered it was very serious and 43.5% expressed it was not a serious disease; meanwhile, 10% felt the disease was very serious and its ill effects are more. Even though the treatment was regular in nearly 74.4%, 17.3% took the drugs timely and 7.3% of them were irregular in taking the drugs. So, the compliance of treatment among the participants was good [Table 2].

In [Table 3], the classification of hypertension was compared with the mental health score used by the DASS scale. The mental health score was extremely severe among 53.4% in normal blood pressure value participants as they were already known cases of hypertension. Meanwhile, in the pre-hypertensive stage, the depression was extremely severe in 44.6% of participants; on the other side, 66.7% of the participants who were falling in stage II of hypertension had mild depression. In contrast, 45.8% had mild depression and 44.6% had extremely severe depression in the participants who were belonging to the pre-hypertensive category. Overall, pre-hypertensive patients had extremely severe depression compared to other stages of hypertension. The stages of hypertension were found to be statistically significant with depression.

Among the study participants, 39.5% had a family history of hypertension, even though 18.9% of them had the practice of

Table 1: Sociodemographic details

Variables	Frequency	Percentage
Age		
24-40 years	35	11.6
41-60 years	180	59.8
Above 60 years	86	28.6
Sex		
Male	159	52.8
Female	142	47.2
Religion		
Hindu	264	87.7
Christian	24	8
Muslim	13	4.3
Type of family		
Nuclear family	240	79.7
Joint family	61	20.3

doing exercise and a very few participants had the habit of using tobacco and 14.6% had a habit of alcohol intake [Figure 1].

Discussion

The present study was done in the Kancheepuram district among hypertensive patients to assess the mental status of the patients. A total of 301 participants who had hypertension were included in the study.

In the current study, hypertension was present in 59.8% of the participants belonging to 40 to 60 years of age, whereas Taneja *et al.*,[1] in their study, found that 37.6% of hypertensive patients belonged to the age group of 60 years and above. The prevalence of depression was 52.2% in our study, meanwhile Li *et al.*[8] found 41 studies on the same topic and summarized the prevalence of depression among hypertensive was 26.8%. Prathibha *et al.*[9] in her study found that the prevalence of depression among hypertensive individuals was found to be 33.3% The prevalence of mental health status in our study was 42.2% among men compared to women; meanwhile in another study by Taneja *et al.*[1], depression was found to be higher among female participants. Another study conducted in South India showed the prevalence of depression as 25% among the hypertensive participants.[10] Kulkarni *et al.*[11] reported the prevalence of depressive symptoms to be 29.1% among the study participants. Mahmood in his study observed that the prevalence of depression among older people in developing countries could be attributed to mental healthcare services to prevent the early diagnosis and treatment of depression at a young age because it can prevent mental health progression and control its severity among older people.[12] In Ashok *et al.*'s[13] study, the prevalence of depression was found to be 41%, with severity being mild in 28.5%, moderate in 7%, and moderately severe in 3%, and 2.5% had severe depression. They also reported that the female gender, people belonging to lower socioeconomic strata, and people with a positive family history of depression were all statistically significant with hypertension.[13] Adherence to anti-hypertensive medication was only 8.3% in our study; meanwhile, in Kretchy *et al.*[14] reported very poor adherence to medication that was nearly 93% among his study participants. Alcoholism was also found to be significantly associated with depressive episodes in a study conducted by Sullivan *et al.*[15] Meanwhile, in our study, 14.6% of the participants had the habit of alcohol intake. In another study on adolescents from the United States revealed that healthy body mass index and control of hypertension helped in maintaining the mental health of the younger population.[16] Xue *et al.*[17] in his study indicated that uncontrolled hypertension and those who were above 70 years of age had odds of significant depressive symptoms compared with other age group participants. A study conducted in China showed that subjects with mental health disorders had higher odds of taking treatment; however, in reality, with more co-occurring physical conditions, the odds of treatment adherence and having adequate treatment would decline. In our study, only 7.6% participants were compliant with the treatment[18] and 16.5 had an unhealthy lifestyle. Boima *et al.*[19] in his study mentioned that young hypertensive patients, who had an unhealthy lifestyle, were more likely to be depressed, whereas it is the reverse for older hypertensive patients. Doctors in public primary care clinics may spend less time educating patients on

Table 2: Hypertension-related determines

Variables	Frequency	Percentage
Duration of hypertension		
>5 years	213	70.8
More than 5 years	88	29.2
Type of medication		
AHTN drugs	274	91
AHTN drugs + salt restriction	27	9
Consideration about hypertension		
Very severe	30	10
Severe	140	46.5
Not severe	131	43.5
Compliance with the treatment		
Timely	52	17.3
Regular	224	74.4
Delayed	2	0.7
Irregular	23	7.6

AHTN drugs, antihypertensive drugs.

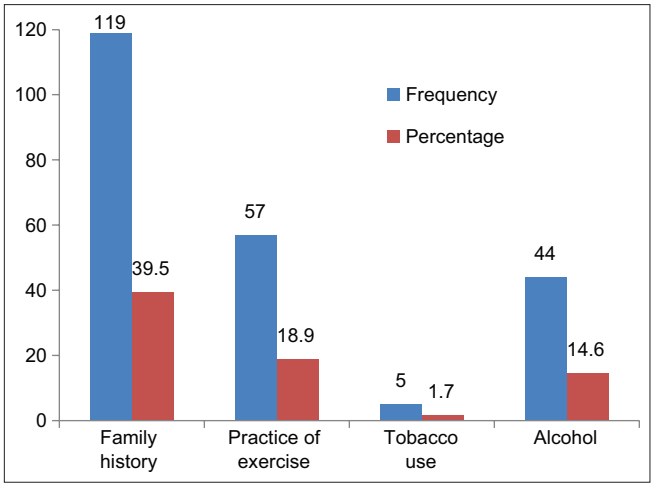

Figure 1: Social factors contributing to hypertension among the study participants

Table 3: Assessing classification of hypertension with mental health score

Stages of hypertension	Normal 1 *n* (%)	Mild 2 *n* (%)	Moderate 3 *n* (%)	Severe 4 *n* (%)	Extremely severe 5 *n* (%)	*P*
Normal	12 (20.7)	14 (24.1)	0 (0)	1 (1.8)	31 (53.4)	0.002
Pre-hypertensive	45 (22.3)	45 (22.3)	13 (6.4)	9 (4.4)	90 (44.6)	
Stage I hypertension	8 (22.9)	16 (45.8)	3 (8.5)	4 (11.4)	4 (11.4)	
Stage II hypertension	0 (0)	4 (66.7)	0 (0)	0 (0)	2 (33.3)	

the importance of good hypertension control when they need to focus on other vascular co-morbidities as well. With more co-morbidities, the burden of having more medications to adhere to may affect patients psychosocially, leading to less adherence. Adherence to multiple medications may also be affected by poorer health literacy, which was not explored in our study. This finding is a grave concern because patients with more vascular co-morbidities had a greater cardiovascular risk.[20] Controlling for age, education, and other relevant variables, women were more likely to adhere to both types of hypertension self-care. Older age was associated with a higher level of adherence to recommended lifestyle modifications.[21]

Conclusion

The participants who were in the pre-hypertension stage were found to have severe depression. Those diagnosed as hypertensive had good adherence to antihypertensive medication, indicating a good knowledge among the public about the disease. It is also found that stages of hypertension and the severity of depression are statistically significant, thus giving us a good picture of the association that exists between increased blood pressure and the mental health of the patients.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

References

1. Taneja N, Adhikary M, Chandramouleeswaan S, Kapoor SK. Prevalence of common mental disorders among patients with diabetes mellitus and hypertension in an urban east Delhi slum – A cross sectional study. Telangana J Psychiatry 2015;1:27-32.
2. Mittal BV, Singh AK. Hypertension in the developing world: Challenges and opportunities. Am J Kidney Dis 2010;55:590-8.
3. Anchala R, Kannuri NK, Pant H, Khan H, Franco OH, Di Angelantonio E, *et al.* Hypertension in India: A systematic review and meta-analysis of prevalence, awareness, and control of hypertension. J Hypertens 2014;32:1170-7.
4. Subburam R, Sankarapandian M, Gopinanth DR, Selvarajan SK, Kabilan L. Prevalence of hypertension and correlates among adults of 45-60 years in a rural area of Tamil Nadu. Indian J Public Health 2009;53:37-40.
5. Li W, Liu L, Puente JG, Li Y, Jiang X, Jin S, *et al.* Hypertension and health-related quality of life: An epidemiological study in patients attending hospital clinics in China. J Hypertens 2005;23:1667-76.
6. World Health Organization. Available from: https://www.who.int/docs/default-source/primary-health-care-conference/mental-health.pdf?sfvrsn=8c4621d2_2.
7. World Health Organization. Hypertension. Available from: www.who.int/topics/hypertension/en/.
8. Li Z, Li Y, Chen L, Chen P, Hu Y. Prevalence of depression in patients with hypertension: A systematic review and meta-analysis. Medicine (Baltimore) 2015;94:e1317.
9. Prathibha MT, Varghese S, Dev GV, Jincy J. Prevalence of depression among hypertensive individuals in urban Trivandrum: A cross sectional study. Int J Community Med Public Health 2017;4:2156-61.
10. Ramachandran V, Parikh GJ, Srinivasan V. Depression in hypertensive subjects. Indian J Psychiatry 1983;25:260-3.
11. Kulkarni V, Chinnakali P, Kanchan T, Rao A, Shenoy M, Papanna MK. Psychiatric Co-morbidities among patients with select non-communicable diseases in a coastal city of South India. Int J Prev Med 2014;5:1139-45.
12. Mahmood S, Hassan SZ, Tabraze M, Khan MO, Javed I, Ahmed A, *et al.* Prevalence and predictors of depression amongst hypertensive individuals in Karachi, Pakistan. Cureus 2017;9:e1397.
13. Ashok VG, Ghosh SS. Prevalence of depression among hypertensive patients attending a rural health centre in Kanyakumari. Natl J Community Med 2019;10:172-5.
14. Kretchy IA, Owusu-Daaku FT, Danquah SA. Mental health in hypertension: Assessing symptoms of anxiety, depression and stress on anti-hypertensive medication adherence. Int J Ment Health Syst 2014;8:25.
15. Sullivan LE, Goulet JL, Justice AC, Fiellin DA. Alcohol consumption and depressive symptoms over time: A longitudinal study of patients with and without HIV infection. Drug Alcohol Depend 2011;117:158-63.
16. Tevie J, Shaya FT. Association between mental health and comorbid obesity and hypertension among children and adolescents in the US. Eur Child Adolesc Psychiatry 2015;24:497-502.
17. Xue J, Chen S, Bogner HR, Tang W, Li L, Conwell Y. The prevalence of depressive symptoms among older patients with hypertension in rural China. Int J Geriatr Psychiatry 2017;32:1411-7.
18. Zhang Z, Sum G, Qin VM, Zhao Y, Haregu TN, Oldenburg B, *et al.* Associations between mental health disorder and management of physical chronic conditions in China: A pooled cross-sectional analysis. Sci Rep 2021;11:5731.
19. Boima V, Tetteh J, Yorke E, Archampong T, Mensah G, Biritwum R, *et al.* Older adults with hypertension have increased risk of depression compared to their younger counterparts: Evidence from the World Health Organization study of Global Ageing and Adult Health wave 2 in Ghana. J Affect Disord 2020;277:329-36.
20. Kang GC, Koh EY, Tan NC. Prevalence and factors associated with adherence to anti-hypertensives among adults with hypertension in a developed Asian community: A cross-sectional study. Proc Singapore Healthcare 2020;29:167-75.
21. Adinkrah E, Bazargan M, Wisseh C, Assari S. Adherence to hypertension medications and lifestyle recommendations among underserved African American middle-aged and older adults. Int J Environ Res Public Health 2020;17:6538.