

## Original Research

### A Study of Prevalence of Anxiety among Patients of Hypertension

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#### ABSTRACT:

**Aims** Various studies found a high correlation among pathological anxiety and hypertension. Like patients with other chronic medical conditions patients suffering from hypertension experience many profound psychological symptoms which increase their risk for the development of mental health disorders particularly anxiety and depression. Literature suggests anxiety is highly prevalent among patients diagnosed with hypertension. We evaluated the prevalence of excessive anxiety among patients of hypertension. **Methods** It was a cross sectional observational study carried out amongst the outpatients of a tertiary care teaching hospital in eastern India. A semi-structured questionnaire especially designed for the study was used to collect the data of the patients. HADS ( Hospital Anxiety and Depression Scale, Zigmond, AS; Snaith, RP, 1983) was used to rate the anxiety symptoms of the patients. **Results** The study sample consisted of 142 subjects with mean age of 45.85±7.98 years, the mean duration of hypertension was 6.95±3.72 years and mean body weight of the patients in the sample was 73.69 ±7.04 kg. Based on the HADS scores, 40 patients of hypertension were classified as patients suffering from excessive levels of anxiety, which constituted 28.16 % of the total sample size. **Conclusions** This study found a prevalence of excessive anxiety in 28.16 % of the patients of hypertension.

**Keywords** Anxiety, Hypertension, Prevalence.

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#### INTRODUCTION

With the growth of non-communicable diseases burden worldwide, hypertension has emerged as a prime risk factor for cardiovascular diseases and a prime cause of death globally [1,2,3]. About 80% of these deaths were recorded in low and middle-income countries and projections indicate that the highest non-communicable mortality rates would be recorded in these countries by 2020 [3]. Hypertension is one of the the most vital risk factor for chronic disease burden in India. Studies from various parts of our country have documented high rates of prevalence of hypertension. These studies have also reported that hypertension is increasing and the awareness levels are low. Two recent studies that were conducted with uniform tools and nationwide sampling attempted to work out the true prevalence of hypertension within the country.

The National Family Health Survey measured

hypertension with a big population based sample (n = 799,228) and reported a prevalence of hypertension in 13.8% men vs. 8.8% women (total 11.3%) in those aged between 15–49 years and 15–54 years respectively. More representative data (age > 18 years, n = 1,320,555) in District Level Household Survey which reported hypertension in 25.3% with greater prevalence rates in men (27.4%) than women (20.0%). This means 20.7 crore persons (men 11.2 cr, women 9.5 cr) with hypertension in India.

The Global Burden of Diseases study has reported that hypertension resulted in 16.3 lac deaths in India in 2016 as compared to 7.8 lac as of 1990 (increased by 108%). The disease burden, disability adjusted life years (DALYs), attributable to hypertension increased from 21 million in 1990 to 39 million in 2016 (+89%). Social and economic progress also have a role o play and states with increasing urbanization, development have greater rates of

hypertension. There is poor association of hypertension prevalence with healthcare availability although there seems to be a clearly positive association with healthcare access and quality. The health system in India should focus on better hypertension screening and control to reduce cardiovascular morbidity and mortality. [1,4,5,6]

A world wide prevalence of 26% is projected to increase to 29% by 2025. Hypertension is very prevalent worldwide and has a wide range and variety of etiology that may be categorized as genetic as well as psychosocial and environmental factors.[7,8]

It is a well known fact that cardiovascular system is regulated by the autonomic nervous system and emotional states may have a profound influence on the cardiovascular system, including blood pressure. Anxiety is one of the most common psychiatric illnesses in adults and is a major public health problem in many countries.[9,10] People suffering from depression and or anxiety are at two to three times higher risk of developing hypertension.[11]

Many epidemiological studies have been conducted to address this association, with differing results reported, few in favor and few against this association. Few studies support that anxiety is associated with hypertension, [12,13] and some studies do not support the role of anxiety symptoms in the development of hypertension [14,15]. This scenario warrants need to investigate the associative relationship between anxiety and hypertension. Recognizing and quantifying the risk factors of hypertension that can be modified will surely be very important public health measures.

Available literature suggests anxiety is present in about 20% to 25% of patients diagnosed with a cardiovascular disease, including hypertension, even in the absence of adverse cardiac events or invasive interventions. [16] Symptoms of anxiety and depression have been included among psychological factors associated with development of hypertension. Anxiety produces symptoms and responses which can result in a rise of the blood pressure levels. Numerous studies from all over the world have investigated the links between anxiety disorders and hypertension with mixed results. A strong association has been found between presence of hypertension and anxiety neurosis and major clinical depression among U.S veterans. Another study extracted from The Danish Psychiatric Central Research Register revealed that patients with anxious distress had higher rates of hypertension compared to the overall Danish population. While a study among adults in Hong Kong showed that hypertension was related to anxiety but not with depression. A review of evidence linking psychological factors with the risk of developing hypertension from 2002 showed moderate degree of support for psychological factors as predictors for hypertension, with the most robust support for anger, anxiety, and depression variables. Wei and Wang in their study reported that 12% of known patients of hypertension have symptoms of anxiety. Female gender, the duration of hypertension, and the history of hospitalization were showed to be

associated with the occurrence and severity of anxiety symptoms in patients with hypertension. [20-25]

Anxiety is known to be associated with heightened sympatho-adrenal activity, suggesting a biological pathway through which anxiety could increase coronary heart disease (CHD) risk. Anxiety affects the cardiac function in additional ways than simply increasing the pulse rate. Physically fit and not under medication Major Depression patients with or without co-morbid anxiety symptoms showed reduced heart rate variability (HRV) which is generally considered to be associated with an increased incidence of CHD, while patients with co-morbid generalized anxiety disorder were found to show the greatest reductions in HRV. Patients with phobic anxiety had lower HRV suggesting that phobic anxiety is related to altered cardiac autonomic control, and hence increased risk of sudden cardiac death. Compared with men reporting no anxious symptoms, men reporting two or more anxiety symptoms had elevated risks of fatal CHD. [20, 26, 27, 28, 29, 30]

A study of 735 men over 60 years of age without a history of CHD or diabetes mellites who showed the presence of anxiety symptoms significantly predicted the risk of having a myocardial infarction during a mean follow-up of 12.4 years. Studies have also demonstrated a relationship between hostility or anger and measurements of subclinical atherosclerosis and have also linked hostility to progression of atherosclerosis during serial coronary angiography.[26]

In a population-based sample of 726 subjects of both gender who were healthy at baseline, Paterniti and colleagues showed that increased levels of sustained anxiety were independently related to increased progression of atherosclerosis over a 4-year period, as measured by changes in common carotid artery intima media thickness.[20,31-34]

Haines and colleagues conducted a study in which they followed 1457 healthy men for approximately 10 years. Subjects with the high levels of phobic anxiety had a greater risk of dying from CHD than those men who did not have anxiety. Further, a more recent study from US showed that anxiety was related with 60% increased risk of CHD among persons irrespective of gender. [20, 35]

A meta-analysis of data from the US, Asia and Europe from twenty different studies with an around 2.5 lac subjects followed over a mean of 11.2 years looking for the relationships between anxiety and CHD in healthy individuals indicated that anxious persons were at greater risk of CHD.[20, 36]

In a Swedish national survey of 49,321 young Swedish men it was found that those with diagnosed anxiety disorder were two times more likely to develop CHD and acute myocardial infarction.[34] The Nurses' Health Study of 72,359 women and the Framingham Offspring Study revealed that anxiety in men and in women were significantly related to overall mortality. [20, 37] Thus with all this literature in the background we planned this study to evaluate

the prevalence of anxiety among hypertensive patients in our own socio cultural background.

## MATERIALS AND METHOD

The aim of the present study was to assess the prevalence of anxiety among patients of hypertension. This study was conducted at the medical out patients department of Hi-Tech Medical College and Hospital, Bhubaneswar, which is a tertiary care medical college hospital of Odisha, India. The study protocol was approved by the institutional review board of Hi-Tech Medical College and Hospital, Bhubaneswar. It was a cross-sectional, observational non-interventional study carried out over a six months period (December 2017 – May 2018). All consenting patients who attended this hospital for follow up for management of hypertension formed the study group. All recruited subjects satisfied the inclusion criteria for the study and presence of any other major comorbid medical or other illness was kept as exclusion criterion. Included patients were examined clinically after taking detailed history and their socio demographic variables. They were required to complete a questionnaire to collect their socio-demographic data and the questionnaire of HADS. Details of family history of hypertension, diabetes, and other relevant history of any medical illness were also collected.

### Tools

**Socio-demographic data sheet:** The socio demographic data sheet included age, religion, occupation, education and clinical information like duration of hypertension and other medical history. **Hospital Anxiety and Depression Scale (HADS)** [17]: This is very widely used validated scale to assess anxiety and depression among hospital based patients. It consists of 14 questions, 7 scoring anxiety and 7

scoring depression. Patients were asked to read each question and place a tick mark against the reply that came closest to how they had been feeling that day. Each answer was scored 0, 1, 2 or 3. The range of scores may be between 0 to 21, with higher scores indicating greater levels of anxiety. Score of 0-7 is considered normal, scores of 8-10 is borderline abnormal and scores of 11-21 is abnormal.

### Statistical analysis

The collected data of all patients was statistically analyzed, using Statistical Package for Social Sciences (SPSS, Inc., Chicago, Illinois) version 10.0. Data analysis included means and standard deviations for complete sample. Frequency analysis was used to determine the prevalence of anxiety among patients of hypertension.

## RESULTS

A total of 142 subjects were included in the study. Table 1 summarizes the sample characteristics. The mean age of the sample was  $45.85 \pm 7.98$  years with minimum age of 29 years to a maximum age of 65 years in our sample. The mean duration of hypertension was  $6.95 \pm 3.72$  years and mean weight of the sample was  $73.69 \pm 7.04$  kg (Table).

Among the total sample size of 142 patients 80 patients (56.3 %) reported their occupation as office going class, and 43.7 % were agricultural or manually working class (n=62). There was history of smoking or smokeless tobacco use among 47 (33.1%) of the sample and there was family history of diabetes among 29(20.4%) of the sample. Based on the HADS scores 40 people were identified as cases of excessive anxiety, which constituted 28.16%. of the study sample. (Table)

**TABLE : Sociodemographic and clinical features of the sample**

	Mean $\pm$ SD	Min	Max
Age	45.85 $\pm$ 7.98	29	65
Weight	73.69 $\pm$ 7.04	59	90
HADS Anxiety total	12.00 $\pm$ 3.61	04	19
		<b>n</b>	<b>%</b>
Gender	Male	74	52.1
	Female	68	47.9
Occupation	Official worker	80	56.3
	Manual Worker	62	43.7
Fam H/O HTN	No	87	61.3
	Yes	55	38.7
Fam H/O Diabetes	No	113	79.6
	Yes	29	20.4
H/O Tobacco use	Yes	47	33.1
	No	95	66.9
HADS Anxiety score	No (below 10)	142	82.5
	Yes ( above 10)	40	28.16 %

## DISCUSSION

We found a prevalence of 28.16 % of anxiety among 142 patients of hypertension. In our study we found slightly higher prevalence of anxiety, as compared to many other studies reporting prevalence rates for anxiety ranging between 20 to 25 % among hypertensive patients. However, the findings of an Ethiopian study were in accordance with our result, as they reported a prevalence of anxiety among 28.5 % hypertensive patients [17,18,19]. This finding variation in prevalence may be attributable to sample selection and different tools, cut off values or different criteria used. However the Ethiopian study [18] which used HADS to measure anxiety similar to our study.

In our study we also found very high prevalence of positive family history of hypertension and diabetes that is 38.7 % and 20.4 % respectively. People with positive family history for essential hypertension may be associated with excessive cardiovascular reactivity and characterized by denial and unwillingness to admit feelings of anxiety or aggressiveness exhibited exaggerated blood pressure reactivity to experimental tasks.[18]

Longitudinal studies with larger samples and matched control groups along with simultaneous assessment of quality of life, disability and burden of various other cardiovascular problems are needed to confirm the findings of our study.

## CONCLUSION

The present study found that 28.16% of the patients of hypertension suffered from abnormal or excessive anxiety which may need clinical attention and intervention. Anxiety disorders and hypertension are very common and often co-morbid conditions which are usually treated by primary care physicians. Psychiatrists and cardiologists need to be aware of the links between anxiety disorders and CHD to prevent mortality and unfavorable outcomes in terms of both mental and physical health. A growing evidence base suggests that a more collaborative approach amongst treating physicians is the best way to tackle this twin epidemic.

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