

Original Research Article

Depression and its determinants among hypertensive subjects from the primary health care centres at Tirunelveli district, Tamil Nadu

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ABSTRACT

Background: Depression among elderly persons has become a serious health problem. Despite an increasing number of research studies exploring prevalence of depression among hypertensive patients in high income countries, limited data is available from low and middle income countries particularly in India. People with chronic diseases are more likely to have depression than those without any chronic diseases.

Methods: This was across-sectional study. Totally 496 subjects were selected from 4 different Primary Health Centres (PHCs) who attended outpatient department during the study period. The patient health questionnaires (PHQ-9) were used to estimate the prevalence of depression among hypertensive subjects. Basic demographic and behavioral details were also collected. This study was carried out from April to August in 2016 in Tirunelveli district, Tamilnadu, India.

Results: The study show 5.8% of subjects had no depression, 42.1% subjects with mild depression, 45.3% had moderate and 6.6% had high depression among hypertensive subjects. Totally 94% hypertensive subjects had depression.

Conclusions: The high depression has found more in male, employed, illiterate, non-vegetarian, drinkers, and smokers subjects then compare to other subjects.

Keywords: Hypertension, Depression, Patient health questionnaire

INTRODUCTION

Hypertension is a highly prevalent disease globally and is increasing in India. In most countries, 15% to 30% of the adult population and more than 50% of the elderly population reported high blood pressure which shows the disease as a marked public health problem globally. The hypertension is an important risk factor for cardiovascular diseases along with smoking, diabetes and dyslipidemia which are responsible for about 30% of deaths worldwide.¹⁻⁶

Depression occurs at any point of life and progress as age increases. However, it develops most frequently in the mid-twenties. Depressive mood in young people is a risk factor for depression in later life.⁷ Depression among elderly persons has become a serious health problem as it becomes the risk factor for major long term health problems such as stroke and arterial problems. Depression occurs mainly in those with chronic diseases such as cardio vascular disease, diabetes and cognitive disabilities which cause mental illness. Its incidence and prevalence doubles at the age of 70 to 85 years. With high rate of degeneration, depression is widely

characterized as a chronic disorder along with diabetes, hypertension and asthma. Approximately half of depressive patients have relapse within two years and more than 80% got relapse within 5-7 years. Relapse is the major reason for increased mortality among depression patients.⁸⁻¹⁰

Depression may be an important barrier for effective hypertension management. Patients with depression are more likely to have higher macro vascular and micro vascular complications.¹¹ Compared to patients with hypertension alone; patients with depression and hypertension have been shown to have poorer self-management and poor result for anti-diabetic, lipid-lowering treatment. Depression patients are more likely to have higher cardiovascular risk factors like smoking, obesity, sedentary lifestyle, and uncontrolled hyperglycemia that leads to higher mortality and higher morbidity rates.^{12,13}

While depression may contribute to poor hypertension-related outcomes, hypertension and its complications may also contribute to poor depression outcomes.¹⁴⁻¹⁶ The available data regarding the prevalence of depression in hypertension patients in India are limited. We investigated the prevalence and determinants of depression in patients with hypertension attending the Primary health care centres (PHCs) in Tirunelveli district, Tamil Nadu.

METHODS

Study design

This was a cross-sectional quantitative study. The patient health questionnaires (PHQ-9) were used to obtain the details about depression among hypertensive subjects. The study subjects selected randomly from the PHCs. The questionnaire was administered after getting informed consent. This study was carried out from April to August in 2016 in 4 different PHCs at Tirunelveli district.

Study population:

Totally 496 subjects were enrolled purposively in the selected PHCs who attended outpatient ward during the study period. The inclusion and exclusion criteria were followed to enroll the subjects for the study.

Exclusion and inclusion criteria

Only outpatients above 25 years of age and previously diagnosed with hypertension for a duration of at least 6 months were included in the study. Patients with complications such as hypertensive retinopathy, nephropathy, encephalopathy and women who were pregnant were excluded from the study. Patients with a prior history of clinically diagnosed depression, medically diagnosed psychiatric illness in the past, any

form of cognitive impairment such as dementia or mental retardation or currently taking anti-depressant medication and unable to give consent were excluded from the study.

Data variables and collection

Data collection

Socio-demographic characteristics were collected as exposure variables. Current smoking was defined as one or more cigarettes smoked in the last month and current alcohol drinking as any alcohol taken at any time in the last month.

The outcome variable was obtained by using a PHQ-9.²⁰ Respondents were asked questions about their feeling and thoughts Over the last 2 weeks, how often have you been bothered by any of the following problems on a 4-point scale that ranged from 0 (Not at all) to (Nearly every day). Hypertension defined as systolic blood pressure (SBP) ≥ 140 mmHg and/or diastolic blood pressure (DBP) ≥ 90 mmHg or taking anti-hypertensive drugs or previously diagnosed.

Statistical analysis

Excel (2007) was used for data entry and SPSS-20 software was used for data processing and analysis. Statistics parameters used in the study were: frequencies, percentages, mean, and standard deviation (SD). The Depression was categorized based on PHQ-9 score: Depression Severity: 0-4 none, 5-9 mild, 10-14 moderate, 15-19 moderately severe, 20-27 severe. Chi-square test was used to study the association between socio-demographic and clinical depression levels.

Instruments

Patient health questionnaire (PHQ-9 item)

The PHQ-9 is a 9-item self-reported questionnaire designed to evaluate the presence of depressive symptoms during the prior 2 weeks. The nine items of the PHQ-9 are based directly on the nine diagnostic criteria for major depressive disorder in the DSM-IV (Diagnostic and Statistical Manual Fourth Edition). This can help track a patient's overall depression severity as whether the specific symptom(s) are improving or not, with treatment. As a severity measure, scores can range from 0 (absence of depressive symptoms) to 27 (most severe depressive symptoms). Each of the 9 items, by asking for each of the DSM-IV symptoms, can be scored from 0 (not at all) to 3 (nearly every day). As a diagnostic measure, major depression is diagnosed if 5 or more of the 9 depressive symptoms have been present for at least "more than half, the days" (i.e. a score of 2) during the past 2 weeks, and if one of the symptoms is depressed mood. In addition, before making a final diagnosis, causes of acute depression due to a recent physical

problem, bereavement and/or a history of manic disorder, have to be ruled out.¹⁷

RESULTS

The demographic characteristics of the study population were shown in Table 1. Of 496 hypertension subjects 282 (56.9) males and 214 (43.1) females were assessed for this study. Around 45% of the respondents were unemployed, non-vegetarian 106 (89.1%), never smoked 237 (47.8%), never consumed alcohol 218 (44.0%) and 225 (45.3%) with moderate depression.

The mean age of the respondent was 55.1 (SD ± 6.7) for males and 51.5 (SD ± 5.2) for females and duration of hypertension was 7.7 (SD 4.8) years for male and 5.3 (SD 3.02) for female. Table 2 and Table 3 show the association between depression and socio-demographic variables of the hypertensive subjects. The high depression has found more on male, employed, illiterate, drinkers and smokers. The results also show that depression increases with increased age of the subjects. Table 3 also shows that there is no difference is seen in never smokers and smokers among high depression subjects.

Table 1: Socio-demographic characteristics of hypertensive patients attending the PHCs in Tirunelveli, Tamil Nadu, India from April to August in 2016.

Factor	Category	N (%) (N=496)
Age	Mean	53.5 \pm 6.4
Sex	Male	282 (56.9)
	Female	214(43.1)
Occupation	Professional/big business	0 (0)
	Sales/small business	28 (5.6)
	Skilled manuals	129 (26.0)
	House hold/domestic work	117 (23.6)
	Unemployed	222(44.8)
Education	Illiterate	327 (65.9)
	Primary	138 (27.8)
	Higher secondary	28 (5.6)
	Under graduate	3 (0.6)
Diet	Vegetarian	54 (10.9)
	Non-vegetarian	442 (89.1)
Smoke	Never	237 (47.8)
	Past	138 (27.8)
	Current	121 (24.4)
Alcohol	Never	218 (44.0)
	Past	207 (41.7)
	Current	59 (11.9)
BP-average years		9.1 \pm 5.334

Table 2: Characteristics of hypertensive patients with depression level attending the PHCs in Tirunelveli, Tamil Nadu, India from April to August in 2016.

		Normal n=29	Mild n=209	Moderate n=225	High n=33	Total n=496	P value
		N (%)	N (%)	N (%)	N (%)	N (%)	
Age (Mean \pm SD)		49.5 \pm 0.9	53.5 \pm 5.1	54.2 \pm 7.4	53.2 \pm 7.5	53.5 \pm 6.4	0.002
Sex	Male	29 (100)	135 (64.6)	118 (52.4)	0	282 (56.9)	0.000
	Female	0	74 (35.4)	107 (47.6)	33 (100)	214 (43.1)	
Occupation	Professional/big business	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0.001
	Sales/small business	0 (0.0)	16 (7.7)	12 (5.3)	0 (0.0)	28 (5.6)	
	Skilled manuals	18 (62.1)	67 (32.1)	44 (19.6)	0 (0.0)	129 (26.0)	
	House hold/domestic work	0 (0.0)	31 (14.8)	73 (32.4)	13 (39.4)	117 (23.6)	
	Unemployed	11 (37.9)	95 (45.5)	96 (42.7)	20 (60.6)	222 (44.8)	
Education	Illiterate	11 (37.9)	141 (67.5)	163 (72.4)	12 (36.4)	327 (65.9)	0.001
	Primary	18 (62.1)	52 (24.9)	47 (20.9)	21 (63.6)	138 (27.8)	
	Higher secondary	0 (0.0)	16 (7.7)	12 (5.3)	0 (0.0)	28 (5.6)	
	Under graduate	0 (0.0)	0 (0.0)	1 (1.3)	0 (0.0)	3 (0.6)	

Continued.

		Normal n=29	Mild n=209	Moderate n=225	High n=33	Total n=496	P value
		N (%)	N (%)	N (%)	N (%)	N (%)	
Diet	Vegetarian	0 (0.0)	22 (10.5)	24 (10.7)	8 (24.2)	54 (10.9)	0.020
	Non-vegetarian	29 (100.0)	187 (89.5)	201 (89.3)	25 (75.8)	442 (89.1)	
Smoke	Never	0 (0.0)	90 (43.1)	114 (50.7)	33 (100)	237 (47.8)	0.001
	Past	21 (72.4)	57 (27.3)	60 (26.7)	0 (0.0)	138 (27.8)	
	Current	8 (27.6)	62 (29.7)	51 (22.7)	0 (0.0)	121 (24.4)	
Alcohol	Never	0 (0.0)	78 (39.6)	107 (47.6)	33 (100)	218 (45.0)	0.005
	Past	29 (100.0)	81 (41.1)	97 (43.1)	0 (0.0)	207 (42.8)	
	Current	0 (0.0)	38 (19.3)	21 (9.3)	0 (0.0)	59 (12.2)	
BP- years (Mean ±SD)		5.2±2.4	9.0±5.8	9.7±5.1	9.6±3.6	9.1±5.3	0.001

Table 3: Characteristics of hypertensive patients with depression level attending the PHCs in Tirunelveli, Tamilnadu, India from April to August in 2016.

		Mild n=209	Moderately high n=225
		N (%)	N (%)
Sex	Male	135 (64.6)	118 (52.4)
	Female	74 (35.4)	107 (47.6)
Employment	Employed	114 (54.5)	129 (57.3)
	Unemployed	95 (45.5)	96 (42.7)
Education	Illiterate	141 (67.5)	163 (72.4)
	Educated	68 (32.5)	62 (27.6)
Diet	Vegetarian	22 (10.5)	24 (10.7)
	Non-Vegetarian	187 (89.5)	201 (89.3)
Smoke	Never	90 (43.1)	114 (50.7)
	Smokers	119 (56.9)	111 (49.3)
Alcohol	Never	78 (39.6)	107 (47.6)
	Drinkers	131 (60.4)	118 (52.4)

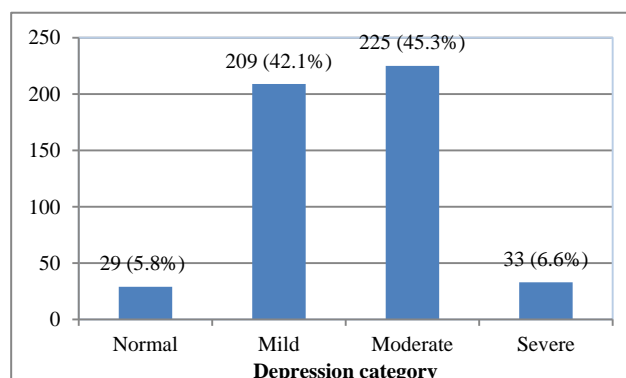


Figure 1: Depression level among hypertensive subjects at the primary health centres (PHCs) in Tirunelveli, Tamil Nadu.

Totally 94% hypertensive subjects had depression and rest of 5.8% subjects had no depression. 42.1% subjects had mild depression, 45.3% had moderated and 6.6% had high depression level (Figure 1).

DISCUSSION

In our study we found that high depression have found more on Male, employed, illiterate, and never smoke and

never alcoholic subjects. The results also show that depression increases based on duration of diabetes and subjects age.

Many studies have estimated the prevalence of depression in community and it varied from 1.7 to 74 per thousand populations. A meta-analysis which was done by Reddy and Chandrasekhar included 13 studies on epidemiology of psychiatric disorders reported prevalence of depression to be 7.9 to 8.9 per thousand populations and the prevalence rates were nearly twice in the urban areas.^{18,19} The findings with regard to prevalence in urban population are in line with the findings of a survey done on the entire adult population of an industrial township, which showed that the prevalence rate for depression to be 19.4 per thousand.²⁰

The following various studies which were conducted in many places in India shows similar finding like this study. A recent study reveals that 32.4% of individuals were suffering from depression and depression in elderly is associated with poor socio economic status, unemployment, disrupted marital status, illiteracy, and substance abuse.²¹ A study titled psychiatry of old age in India shows that the depression in different socioeconomic-demographic group wise is 39.04% in

city. In which 20% aged in severe depression need institutional treatment.²² An study conducted in Chittoor district, India shows that prevalence of depression was 47%. The depression was high among the elderly and it is also correlated with gender, literacy and poverty.

A study in Nepal found that age, sex, smoking, education and antihypertensive medication were associated with higher BDI score and found that smoking was a strong predictor of depression. Indeed, there is evidence to suggest that nicotine dependence may lead to an increased risk of depression.^{24,25} The study shows that percentage of male patients having moderately high depression is higher than in females. The employed, illiterate, non-vegetarian, never alcoholic drinker has high depression compare to other groups.

Limitations

Due to the use of subjective self-report measures, participants may give responses that are considered socially acceptable, instead of providing actual practices. Mental health self-reports are sometimes subject to bias because of a general community stigma towards mental illness. Our study would have underestimated or overestimated, as the chronic illness subject can exaggerate. The study has been conducted only in 4 PHCs. This preliminary work to be studied in detail.

CONCLUSION

The result of the study shows that more number of patients had mild and moderately high depression. Of those mild and moderate depressed patients male, employed, illiterates, non-vegetarian, drinkers and smokers have significantly higher depression level compared to other group.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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