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Psychological distress and its associated factors in the hypertensive patient (HTN-Pt) in Ludhiana, Punjab: A questionnaire-based retrospective study

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ABSTRACT

An elevation in blood pressure is an important risk factor of cardiovascular disease and several factors that can contribute to hypertension induce psychological distress. This study was aimed at estimating the prevalence of psychological distress and to assess general awareness regarding disease, concomitant substance abuse, and use of herbal drugs among hypertensive patients (HTN-Pt) at Satguru Pratap Singh (SPS) Hospitals, Ludhiana. The psychological distress was assessed using the standard Kessler-10 scale along with face-to-face interview among 275 outpatient department (OPD) HTN-Pt on follow-up. 15.30% (n=33) of total participants (n=213) had alcohol use disorders and 8.80% (n=19) of them were addicted to smoking habits. K10 scale results in patients, showed 46.9% (100) patients were suffering from psychological distress out of which 26% (n=56) were having mild, 17% (n=36) moderate and 4% (n=8) patients were having severe psychological distress. Highest percentage (33.80%) of patients with psychological distress were from age group 31-60 years of age (p value=0.003, COR= 0.240, 95% CI 0.072, 0.584). Many HTN-Pt were consuming the herbal supplements out of which 92 % of patients consuming grapes were found to have psychological distress (p value=0.034, COR= 0.380, 95% CI 0.155, 0.930). The results of the study indicated that there was a high prevalence of psychological distress in HTN-Pt belonging to age group of 31-60 years of age and patients involved in the consumption of grapes. This study asks for supervision on the concomitant administration of herbal supplements with allopathic medicines in HTN-Pt to avoid psychological distress.

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INTRODUCTION

Hypertension (HTN) (140/90 mmHg), now and then called vascular hypertension, is a ceaseless clinical condition in which the strain due to circulation in the veins is raised. At rest, normally, systolic blood pressure (BP) is within the range of 100–140 mm Hg and 60–90mmHg diastolic (Nandhini, 2014). HTN is one of the most common prevailing diseases in adult aged groups of people (Muammar *et al.*, 2019). The burden of various sorts of chronic diseases in India is found to be associated with HTN, the prevalence of

HTN in India is increasing day by day and less awareness and control are identified reasons from various studies done across India (Gupta *et al.*, 2019).

The significant prevalence in HTN patients is found to be associated with an increase in psychological distress and raised the level of systolic BP, more commonly in females than males (Ojike *et al.*, 2004; Hu *et al.*, 2015). A substantial body of evidence supports the role of psychosocial factors, and psychological distress are primary risk factors for HTN (Cuffee *et al.*, 2014; Awuah *et al.*, 2019). Psychological distress and hypertension share a significant association (Ugwu *et al.*, 2021). Obesity, high alcohol intakes, physical inactivity, tobacco use and emotional stress are some of the other factors which are said to be associated with HTN (Go *et al.*, 2014). A survey conducted among 396 HTN-Pt which were on follow-up at Jimma University, Teaching Hospital, located in Ethiopia (2017) reported the 31.6% prevalence of psychological distress among single patients more likely as compared to the married and in participants, who were illiterate than who were capable of reading and writing. Also, 7.8% of them had disorders firmly associated with consumption of alcohol, and 19.9% were consuming khat or indulge in substance abuse on a daily basis (Soboka *et al.*, 2017). However, another study on herbal extracts by Wong *et al*. 2016, included grape seed, green tea, and ginkgo and ingredients in Brain, suggested a significant association with psychological distress. In that study, 46.47% out of 85% of patients who were consuming grapes were suffering from psychological distress. (Wong *et al.*, 2016).

So, as Psychological status in HTN-Pt was found to be affected by various socio-demographic, clinical and lifestyle factors in previous studies done at other locations, there is a need to explore this association in the North-India region, too as there is a paucity on related literature. To address the lacuna, this study was designed to explore the association of various factors (socio-demographic factors, perception about disease, lifestyle, clinical background and usage of herbal supplements) affecting psychological status in HTN-Pt in Ludhiana, Punjab, India.

MATERIALS AND METHODS

Study Design

The retrospective cohort study was conducted at SPS Hospital, Ludhiana, comprising of 213 patients satisfying the selection criteria:

1. Patients with primary and secondary hypertension
2. Age more than 18 years
3. Both the gender
4. Patient suffering from a disease (not less than 1 year)
5. Both IPD and OPD patients who appeared for treatment of hypertension except the pregnant women and patients having genotype-specific hypertension.

The study was carried out over a period of a 1-month period from June 2017 to July 2017. All participants provided written informed consent. Ethics approval under protocol number (SPS 01/2017) was obtained from the SPS Hospitals review committee.

Measures

The background information was collected using authentic sciences article search engines, like Google Scholar, Medline Plus, Google, PubMed and other journal sources covering the recent information on the topic till 2019. Patients' data was collected using a hard copy version questionnaire by face-to-face interview.

Socio-Statistic Qualities

A qualitative questionnaire was utilized to estimating socio-statistic qualities of members (age, sexual orientation, married status, educational status, occupation, religion, place of living arrangement), utilization of liquor or cigarette, patient's clinical information on and about hypertension, and self practices, i.e. a way of life factors (work out, salt use and utilization of herbal options).

Psychological distress using Kessler 10-Scale

A quantitative questionnaire, i.e. the Kessler Psychological Distress Scale (K10), is a basic tool to measure mental or psychological distress (Soboka *et al.*, 2017; Wong *et al.*, 2016). It comprises ten questions for which response is recorded at five different levels, i.e. the frequency of experiencing symptoms that a common person has encountered in the latest 4-week time frame.

The total score ranges from 10 to 50. The total score was interpreted as follow: well (10 to 19), mild (20 to 24), moderate (25 to 29) and severe psychological distress (30 to 50).

Data collection procedures

Information gathering was done after the surveys were pretested on a small sample (5% of the aggregate sample) of the patients with HTN going to the cardiac OPD at SPS Hospital.

Table 1: Socio-Demographic Characteristics

Variable	Frequency	Percent (%)
Gender		
Male	105	48.8
Female	109	50.7
Residence		
Rural	74	34.4
Urban	140	65.1
Occupation		
Daily Labor	22	10.2
Farmer	13	6.0
Housewife	74	34.4
Merchant	68	7.0
Teacher	15	99.5
Retired	7	3.3
Other	68	31.6
Marital Status		
Single	14	6.5
Married	165	76.7
Divorced	5	2.3
Widowed	30	14.0
Education Status		
Illiterate	13	6.0
Read & Write	22	10.6
Undergraduate	98	45.6
Graduate	81	37.7
Religion		
Hindu	90	41.9
Muslim	11	5.1
Sikh	109	50.7
Orthodox	4	1.9

The patients included in the pre-test were excluded from the fundamental examination. Self-collection of data in the form of questionnaires and software *Akhil Systems Pvt. ltd (health care IT partner), 1mg, MedPlus mart, Mims* was done.

Data analysis

Information was interpreted utilizing the Statistical Package for Social Sciences (SPSS) form 22 using bivariate logistic regression analysis, keeping in mind the end goal to appraise the quality of affiliation utilizing odds ratios (COR). All factors related with mental distress with a *p value*<0.05 were considered as altogether relate. All factors related with psychological distress with a *p value*<0.05 under 0.25 were analysed using multivariable logistic regression for adjusting potential confounders. Ages, hypersensitivity, utilization of grapes and patients' perception were investigated as constant factors.

Ethical considerations

Ethical approval was received from the Human Ethic board of trustees of SPS Hospitals, Ludhiana, Punjab. Informed consent was also retrieved from every participant before information accumulation. Confidentiality was maintained at all phase of information preparing and examination.

Table 2: Awareness and perception of patients regarding hypertension

Variable	Frequency	Percent (%)
Is HTN Curable?		
Yes	13.5	62.8
No	79	36.7
Is HTN Deadly?		
Yes	92	42.8
No	122	56.7
Do you smoke?		
Yes	19	8.8
No	195	90.7
Do you exercise?		
Yes	95	44.2
No	119	55.3
Do you have junk food?		
Yes	53	24.7
No	161	74.9
Do you follow salt restrictions?		
Yes	24	11.2
No	190	88.4
Do you practice yoga?		
Yes	45	20.9
No	169	78.6
Do you consume alcohol?		
Yes	33	15.3
No	181	84.2

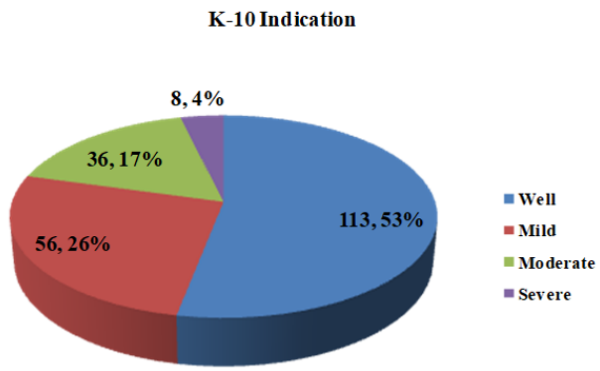

Figure 1: Prevalence of psychological distress in HTN-Pt

RESULTS AND DISCUSSION

Socio-demographic characteristics of Hypertensive patient:

A total of 275 patients were taken into this study and 213 patients agreed to participate with a response rate of 77.45%. The mean age of patients was 50.97±1.051 years and ranged from 18 to 86 years. Table 1 shows that out of total participants, female HTN-Pt were in the majority, majorly belonging to Sikh religion, followed by Hindus residing in an urban area, and were retired from occupation. Most of HTN-Pt were married and educationally sounded, i.e. graduate or undergraduates.

Table 2 shows the percentage responses of an unstructured questionnaire, which was framed to assess the perception and awareness of the patients regarding hypertension and its maintenance.

The prevalence of alcohol use in this study, 15.3%, was higher than the similar study performed in Southwest Ethiopia (7.8%) but lower than the findings from a community-based study done in Jimma town (62.4%), Gurage Zone (21%) (Bissa *et al.*, 2014).

Clinical status

During the filling up of questionnaires, the vital of the patients were also measured to assess their current clinical status. The mean BMI of patients was 25.274±0.339 (Overweight) and ranged from 20 to 50. An analysis of mean systolic and diastolic pressures among the Urban Indian population in the age range between 40-49 years showed an increase of

Table 3: Association of use of herbal alternatives with the prevalence of psychological distress

Variables	Psychological Distress		p-value	OR	95 % CI	
	Yes	No			Lower	Upper
	N (%)	N (%)				
L-arginine						
Yes	40(44.9)	49(55.1)	.889	1.043	.578	1.884
No	60(48.4)	64(51.6)		Reference		
Garlic						
Yes	88(48.4)	94(51.6)	.615	.809	.353	1.851
No	12(38.7)	19(61.3)		Reference		
Grapes						
Yes	92(50.5)	90(49.5)	.034	.380	.155	.930
No	8(25.8)	23(74.2)		Reference		
Olive						
Yes	29(41.4)	41(58.6)	0.75	1.856	.939	3.669
No	71(49.7)	72(50.3)		Reference		
Green Tea						
Yes	50(53.2)	44(46.8)	0.91	.583	.311	1.091
No	50(42.0)	69(58.0)		Reference		
Vitamins						
Yes	79(47.9)	86(52.1)	.566	.816	.408	1.634
No	21(43.8)	27(56.3)		Reference		
Do you use Herbal medicines?						
Yes	18(46.2)	21(53.8)	.893	1.123	.205	6.168
No	82(47.1)	92(52.9)		Reference		
Because they are Cheap?						
Do not use	84(47.2)	94(52.8)	.314	5.982	.184	194.644
Yes	8(34.8)	15(65.2)	.098	4.867	.749	31.630
No	8(66.7)	4(33.3)		Reference		
Because they are effective?						
Do not use	84(47.2)	94(52.8)				
Yes	10(43.5)	13(56.5)	.921	.914	.153	5.459
No	6(50.0)	6(50.0)		Reference		
Because they have lesser side effects?						
Do not use	84(47.2)	94(52.8)				
Yes	10(41.7)	14(58.3)	.551	1.732	.285	10.531
No	6(54.5)	5(45.5)		Reference		
Because they are popular?						
Do not use	84(47.2)	94(52.8)				
Yes	10(47.6)	11(52.4)	.861	.851	.141	5.140
No	6(42.9)	8(57.1)		Reference		

mean systolic pressure 120.4 mmHg and mean diastolic pressure 73.2 mm of Hg in 1942 to 128.7/84.2 mm of Hg in 1985, 128.8/83.2 mm of Hg in 1995 and 141/85 mm of Hg in 2005. A higher prevalence of hypertension is often indicated by a rise in mean systolic and diastolic pressure (Hamer *et al.*, 2010).

In this study, the mean pulse rate of patients was 91.04/min (ranged from 70-100 beats/min), and the mean Blood Pressure of HTN-Pt was 93.74±7.4 mm of Hg (Diastolic)/137.05±7.14 mm of Hg (Systolic).

Prevalence of Psychological distress

The Kessler – 10 ten items questionnaire was administered to patients to record the rate of psychological morbidity. As per the collected data, the commonness of psychological distress was found to be 46.9 %. As per the indications, 53 % of the patients were well, 26 % were suffering from mild distress, 17% from moderate psychological distress and 4% were severely affected (Figure 1).

The present study findings revealed that the prevalence of psychological distress (46.9%) was higher than the findings of community-based studies done among HTN-Pt in England (15.7%) and former the Soviet Union (9.9%) (Footman *et al.*, 2013). Psychological distress was found to be highly prevalent among HTN-Pt on follow-up at Jimma University Hospital.

Similarly, the prevalence of psychological morbidity found in this study was higher than the finding of a similar study done in Southwest Ethiopia (36.6%) (Soboka *et al.*, 2017). The discrepancy between the four studies might be due to the difference in the tools used to assess psychological morbidity (Kessler-10, Kessler-6 and GHQ-12).

Association of socio-demographic and several other factors governing awareness, patients' perception, lifestyle and clinical background with psychological distress

Data obtained using the questionnaire was entered stepwise and analyzed using the Statistical Package for Social Sciences (SPSS). The outcome and explanatory variables were entered into a bivariate logistic regression analysis, one by one, in order to estimate the strength of association using odds ratios (OR). The data with a p-value<0.05 were considered significant.

Highest percentage (33.80%) of patients with psychological distress were associated with the age group 31-60 years of age *(p value=0.003, COR= 0.240, 95% CI 0.072, 0.584)*. Table 3 shows the response received from the patients regarding the use of herbal formulations and supplements, significant association was found with the use of grapes and the occurrence of psychological distress. Table 3 shows that patients having diet enriched with grapes has 0.380 times (62%) more likely to have psychological distress compared to the patients not consuming grapes *(p value=0.034, COR= 0.380, 95% CI 0.155, 0.930)* or patients not eating grapes are 2.63 times more likely not to have psychological morbidity. However, there was no association between substance use and psychological morbidity.

Most of the herbal therapies used by the participants of this study are similar to those reported from other studies in the literature. Garlic, grapes, green tea, olives and some of the vitamins are natural foods recommended for healthy nutrition. However, they may be harmful when consumed in higher amounts and they may interact with drugs used for hypertension treatment (Edwards *et al.*, 2005).

In this study, most of the hypertensive subjects perceived herbal therapies or formulations containing garlic, grapes, green tea and vitamins. It has been suggested in the literature that minerals and vitamins present in garlic, grape juice, green tea, etc., play a role in reducing blood pressure (Bahar *et al.*, 2013).

However, another study on herbal extracts included grape seed, green tea, and ginkgo, ingredients in Brain Awake and Brain Support. These and several other herbs were found to inhibit sulfotransferase 1A3, a phase II detoxifying enzyme in the intestinal epithelium that modulates dopamine sulfation, thus increasing the bioavailability of dopaminergic drugs. With the effect of elevated dopamine levels in psychosis, the ability of these herbal interactions to modulate dopamine metabolism and reuptake may have contributed to Mr A's psychotic symptoms. In this study, 85% of patients using herbal formulations were using grapes and out of which 50.50% patients were suffering from psychological distress (Wong *et al.*, 2016).

CONCLUSION

The prevalence of psychological distress among HTN-Pt was 46.9% of the total participants, incorporating those who had alcohol use disorders and were addicted to smoking habits. Patients with age (31-60 years) and those who were using herbal alternatives containing grapes were more likely to have psychological distress. However, no association with substance abuse, clinical background, and patient's perception and awareness was found. The effects of alternative herbal substances on blood pressure needs further investigation.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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