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Comparison of blood pressure levels across the spectrum of hypertension related signs and symptoms in out patients.

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ABSTRACT… Objectives: To compare the blood pressure levels across the categories of hypertension related signs and symptoms among outpatients aged up to 45 years. **Study Design:** Cross Sectional study. **Setting:** Sindh Government Urban Health Centre Karachi. **Period:** July 2017 to February 2018. **Material & Methods:** A cross-sectional survey was organized in the outpatient department of a secondary care hospital of Karachi. Patients aged up to 45 years with self-reported history of hypertension and taking anti-hypertensive medication were included in the study. All patient related data was recorded by interviewing using the study questionnaire whereas the blood pressure levels were measured through a sphygmomanometer with stethoscope. Data were analyzed on SPSS version 20. **Results:** The study results showed that systolic blood pressure level was significantly different across categories of headache history (p=0.045), sleep apnea (p=0.043) and palpitation (p=0.03) where for headache history patients without whereas for sleep apnea and palpitation patients with these signs and symptoms had higher mean rank of systolic blood pressure levels. Moreover, the diastolic blood pressure level was not significantly different across categories of any of the sign and symptom of hypertension. **Conclusion:** Blood pressure levels were found to be significantly different across categories of a number of clinical manifestations of hypertension. Moreover, the observed differences differed among patients with different durations of hypertension.

Key words: Blood Pressure, Outpatients, Signs & Symptoms.

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INTRODUCTION

Hypertension or elevated blood pressure is a serious disease that considerably increases the risks of heart, brain, kidney and other systematic diseases.[1] The systolic and diastolic blood pressures are the two important components of arterial blood pressure, representing pressure in blood vessels when the heart contracts or beats and the pressure in the vessels when the heart rests between beats, respectively.[1] Hypertension is diagnosed when the systolic blood pressure reading is ≥140 mmHg and the diastolic blood pressure reading is ≥90 mmHg on two different occasions or days.[1,2] Literature reports several risk factors for hypertension and cardiovascular diseases. Obesity, high salt intake, sedentary life style family history of hypertension, tobacco smoking high cholesterol levels and lack of physical activity are major risk factors for hypertension.[1-4] Most of the time patients with hypertension remain undiagnosed due to lack of any warning signs or symptoms.[1-3] The occult nature of disease make it important to screen the at risk individuals for hypertension even in absence of any relevant clinical signs and symptoms. Hence, regular evaluation of systolic and diastolic blood pressure by a trained health professional is important for assessment of risk and associated conditions.[3,5] However, a wide spectrum of symptoms may occur as the disease progresses including early morning headaches, nosebleeds, irregular heart rhythms, vision changes, and buzzing in the ears. The rise in intensity of hypertension can cause fatigue, nausea, vomiting, confusion, anxiety, chest pain, and muscle tremors.[1-3] Pakistan is a developing

country which is facing a consistently increasing burden of non-communicable diseases including hypertension and other cardiovascular diseases.[6] In Pakistan, increased genetic susceptibility, environmental factors, female gender, urbanization, obesity and sedentary life style particularly among middle age population, cultural practices promoting sedentary life style in females are major risk factors for hypertension.[7,8] However, studies from Pakistan identify gaps in knowledge related to hypertension irrespective of disease status. Nevertheless, people suffering from hypertension have relatively better knowledge and understanding about the risk factors and the disease.[9,10]

A hospital based study conducted in Tehsil Head Quarter (THQ) Hospital of Hassan Abdal, Pakistan identifiedsevere lack of awareness among population presenting at clinics. The study found a considerable proportion of adult patients visiting in clinics were unaware of their diseases status. Similarly, poor complianceto hypertension treatment was reported by hypertensive patients aware of their diagnosis.[11] Studies advocate that community perception about the hypertension as a disease, knowledge about signs and symptoms of hypertension and its complications are key factors in improving health seeking behaviour, self-care as well as disease outcomes.[12-14]

Moreover, knowledge regarding possible signs and symptoms related to hypertension can be crucial in improving health outcomes as that rise in blood pressure levels or its severity can be associated with specific signs and symptoms.[15-19] Early identification and recognition of such signs and symptoms may result in reduction in hypertension related morbidity and mortality. Hence, this study aims to compare the blood pressure levels across the categories of hypertension related signs and symptoms among the patients of hypertension presenting in outpatients; aged up to 45 years.

MATERIAL & METHODS

A cross-sectional survey was conducted among patients aged up to 45 years of age presenting in out-patient department of a secondary care hospital in Karachi, Pakistan. The study included all those patients who reported history of hypertension and were taking anti-hypertensive medications at the time of survey using convenient sampling technique. However, hypertensive patients were excluded from the study if they found to have any of the co-morbids; such as morbid obesity, diabetes mellitus, ischemic heart disease, neurological disorders, cluster headache, gastrointestinal disease, history of visual problems and epistaxis before being diagnosed with hypertension. Study participants were interviewed to collect the required information using structured questionnaire. The blood pressure of the study participants was also recorded with the help of sphygmomanometer and stethoscope. Data was collected using trained healthcare providers who were also well trained in blood pressure measurement. Informed consent was obtained from each study participant at the time of data collection. The approval for the conduct of this study in the hospital was directly obtained from the hospital administration while ethical approval was also obtained from Ethics Review Committee. This study was completed in a duration of 8 months.

Data was analyzed using SPSS version 20.After checking normality, Mann Whitney U test was applied to identify any statistically significant differences in blood pressure levels among patients reporting selected clinical signs and symptoms in comparison to those who didn't report those symptoms. A sub-group analysis was also applied by dividing study participants divided into two groups on the basis of their duration of illness i.e. hypertensive with a diagnosis of five years or lesser duration and hypertensive with a diagnosis older than 5 years.

RESULTS

The study obtained data from 141 patients of hypertension. Among all the study participants 57.4% (n=81) were females. This study found that overall systolic blood pressure levels of study participants were significantly varied across the categories of history of headache (p=0.045), sleep apnea (p=0.043) and palpitation (p=0.03). However, patients with history of headache

had relatively higher mean rank for systolic blood pressure as compared to patients with no history of headache. On the contrary, study participants with sleep apnea and palpitation had higher mean rank of systolic blood pressure levels as compared to those who didn't had those symptoms. Moreover, the diastolic blood pressure levels were not significantly different among hypertensive patients as categorized on the basis of specified clinical signs and symptoms of hypertension (Table-I).

Variables (n=141)	Systolic Blood Pressure	P-Value	Diastolic Blood Pressure	P-Value
	Mean Rank		Mean Rank	
Smoking History				
Yes	89.64	0.208	85.36	0.331
No	70.03		70.25	
History of Headache				
Yes	67.62	0.045	69	0.235
No	84.62		79.05	
Vertigo				
Yes	69.62	0.673	69.97	0.751
No	72.48		72.11	
Edema				
Yes	68.96	0.603	71.55	0.888
No	72.51		70.59	
Chest Pain				
Yes	68.1	0.512	62.85	0.065
No	72.7		75.76	
Vision Problems				
Yes	75.18	0.226	75.77	0.167
No	66.99		66.43	
Dyspnea				
Yes	72.61	0.641	71.33	0.923
No	69.46		70.68	
Epistaxis				
Yes	86	0.513	87.67	0.466
No	70.67		70.64	
Increased Urinary Frequency				
Yes	71.92	0.846	67.5	0.456
No	70.53		72.81	
Nausea				
Yes	78.41	0.265	63.17	0.238
No	69.08		73.03	
Sleep Apnea				
Yes	83.89	0.043	76.92	0.352
No	67.37		69.33	
Palpitation				
Yes	81.69	0.03	73.88	0.559
No	65.99		69.65	
Fatigue				
Yes	71.93	0.664	72.81	0.394
No	68.66		66.42	
Confusion				
Yes	72.68	0.547	68.95	0.461
No	68.53		74.02	

Table-I. Blood pressure levels and clinical manifestations of hypertension (Overall).

The sub-group analysis for the patients of hypertension with a diagnosis of five years or lesser duration this study found that systolic blood pressure levels were significantly varied across categories of sleep apnea (p=0.021) and palpitation (p=0.045) where patients with these clinical signs and symptoms had higher mean rank of systolic blood pressure levels. Moreover, the diastolic blood pressure level was significantly varied across the hypertensive with and without the symptom of chest pain (p=0.048), Moreover, patients who didn't report the complain of chest pain were found to have higher mean rank of diastolic blood pressure levels (Table-II).

Furthermore, the sub-group analysis for the patients of hypertension with a diagnosis of more than five years found that the systolic and the diastolic blood pressure levels were not significantly different varied for any of the clinical sign and symptom included in this study (Table-III).

DISCUSSION

This study was a cross-sectional survey which was conducted in hospital setting in Karachi. This study assessed any significant variation in mean levels of blood pressure across the study participants who reported specific clinical sign and symptom in comparison to those who didn't report that clinical sign or symptom. This study particularly assessed these variations in mean blood pressure levels in relation toclinical symptoms such as; headache, palpitations, dyspnea, epistaxis, fatigue, neurological disorders, cluster headache, gastrointestinal disease, history of visual problems and epistaxis. This study found that history of headache, sleep apnea and palpitation were significantly reported by the hypertensive with relatively higher mean systolic blood pressures. Moreover, the diastolic blood pressure levels were not significantly different among hypertensive patients as categorized on the basis of specified clinical signs and symptoms of hypertension (Table-I). These findings are supported by previous studies.[20,17] A study found significant differences in frequency of clinical symptoms among hypertensive.[20]

Variables (n=110)	Systolic Blood Pressure	P	Diastolic Blood Pressure	P
	Mean Rank		Mean Rank	
Smoking History				
Yes	65.33	0.427	61.67	0.62
No	54.93		55.14	
Headache History				
Yes	53.91	0.211	53.58	0.132
No	64.21		66.03	
Vertigo				
Yes	55.67	0.954	54.7	0.782
No	55.32		56.36	
Edema				
Yes	56.03	0.871	56.61	0.734
No	55.06		54.58	
Chest Pain				
Yes	53.35	0.569	48	0.048
No	56.83		60.13	
Vision Problems				
Yes	61.7	0.062	60.83	0.11
No	50.52		51.22	
Dyspnea				
Yes	58.81	0.283	54.91	0.848
No	52.42		56.05	
Epistaxis				
Yes	68.67	0.494	70.33	0.438
No	55.13		55.08	
Increased Urinary Frequency				
Yes	56	0.899	53.1	0.543
No	55.21		56.87	
Nausea				
Yes	61.7	0.258	49.36	0.265
No	53.68		57.31	
Sleep Apnea				
Yes	70.05	0.021	56.18	0.915
No	52.27		55.35	
Palpitation				
Yes	64.41	0.045	56.25	0.867
No	51.51		55.16	
Fatigue				
Yes	56.57	0.592	57.43	0.333
No	53.12		51.18	
Confusion				
Yes	58.08	0.324	53.45	0.436
No	52.17		58.15	

Table-II. Blood pressure levels and clinical manifestations of hypertension (Up to 5 years duration).

Variables (n=31)	Systolic Blood Pressure	P	Diastolic Blood Pressure	P*
	Mean Rank		Mean Rank	
Smoking History				
Yes	29	0.194	28.5	0.194
No	15.57		15.58	
Headache History				
Yes	14.1	0.123	16.5	0.699
No	19.45		15.09	
Vertigo				
Yes	14.72	0.423	15.69	0.861
No	17.37		16.33	
Edema				
Yes	12.55	0.147	16.05	0.983
No	17.64		15.98	
Chest Pain				
Yes	15.45	0.819	15.85	0.95
No	16.26		16.07	
Vision Problems				
Yes	15.1	0.476	15.3	0.583
No	17.64		17.27	
Dyspnea				
Yes	14.66	0.401	16.66	0.682
No	17.43		15.3	
Epistaxis				
Yes	…..	…..	…..	…..
No	…..		…..	
Increased Urinary Frequency				
Yes	16.38	0.912	15.56	0.877
No	15.87		16.15	
Nausea				
Yes	18.12	0.629	15	0.842
No	15.69		16.15	
Sleep Apnea				
Yes	16.5	0.823	18.23	0.317
No	15.72		14.78	
Palpitation				
Yes	18.05	0.359	17.41	0.528
No	14.88		15.22	
Fatigue				
Yes	15.92	0.942	15.82	0.827
No	16.33		16.75	
Confusion				
Yes	15.7	0.781	15.52	0.654
No	16.72		17.17	

*Exact Significance

Table-III. Blood pressure levels and clinical manifestations of hypertension (>5 years duration).

A study conducted in Germany also supports that symptoms like dizziness and headache are closely related to blood pressure levels in untreated and treated hypertensive. However, these findings are contrary to a previous study conducted by Noel and colleagues who failed to find no relation between hypertension and clinical symptoms of headache, epistaxis, and tinnitus.[21] The variable findings in different studies can be explained by the differences in study methodologies, particularly differences in inclusion and exclusion criteria. Furthermore, in this study high mean of systolic blood pressure can attributed to white coat or Labile hypertension as the data was conducted from patients in hospital settings during follow-up visit.[22,23]

This study has some methodological limitations. First, this study was conducted in hospital settings where patients coming to OPD were invited to participate in the study. The use of convenient sampling while selecting of follow-up patients from OPD might have introduced volunteer bias resulting in enrolling patients who were more concerned and responsive towards any kind of clinical symptoms ever experienced by them despite currently ell controlled blood pressures. This might have resulted in failure to find any statistically significant differences among most of comparison groups compared on the basis of reporting presence or absence of a specified clinical sign and symptom. Secondly, the blood pressure readings of study participant were recorded only once by trained health care workers. However, taking more than one reading and using mean of two or more measurements taken at the same time reduces the intra-observer bias and any misleading blood pressure recording by chance.[24] Furthermore, hypertensive patients with the history of under nutrition, specifically common vitamin deficiencies such as Vitamin A and Vitamin B deficiencies were not excluded from the study which might have resulted in over reporting of related clinical signs and symptoms. Further research is required with more robust scientific methodology to assess the possible relation between blood pressure levels and occurrence of various systematic clinical manifestations.

CONCLUSION

Blood pressure levels were found to be significantly different across categories of a number of clinical manifestations of hypertension. Moreover, the observed differences differed among patients with different durations of hypertension.

Conflict of Interests

The authors report no conflict of interests.

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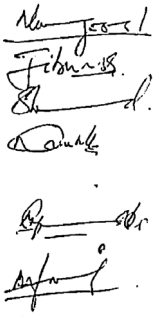
1	Imtiaz Manzoor	Writing of the article	
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