



Hypertension Among General Population Visiting at South East Hospital and Research Center, Islamabad, Pakistan

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ABSTRACT

Introduction: High blood pressure has a more burden on public health in the middle aged to a older population. The incidence of newly developed hypertension is not well known than its prevalence. Objective: To assess high blood pressure among general population and to determine the risk factors associated with it.

Materials and Methods: It was cross sectional study conducted over a period of 06 months from April 2021-September 2021 at South East Hospital and Research Center, Islamabad, Pakistan. We enrolled a total of three hundred (n=300) participant in our study of both gender who visited South East Hospital by using Non-Probability convenient Sampling method technique. Individual having blood pressure exceeding to the normal limit or within normal limit at the time of visit to the hospital were included in our study and those individuals who had already diagnosed with hypertension were excluded.

Results: The mean age of the respondent was (37.44±12.669), mean systolic BP (164.50±21.176) and mean diastolic BP was (100.09±14.045). Blood pressure systole was significantly correlated with risk factors (Diabetic mellitus, family history and obesity) (r=.293***, p<0.01), Blood pressure diastole also positively correlated with risk factor and blood pressure systole (r=.266**, .896** and p<0.01). Conclusion: According to the result of our study it is concluded that high blood pressure among general population was assessed more. Most of the participants were diagnosed with high blood pressure through three consecutive reading at the first time visit to the South East Hospital. Risk factors e.g. diabetic mellitus, obesity and family history are closely interlinked with high blood pressure.

Key Words: Hypertension, Risk factor, Diabetic Mellitus, Incidence, World Health Organization, Epidemiology, Awareness, Assessment

INTRODUCTION

Hypertension has a more burden on general population in the middle aged to a older population and its more prevalence and low control rates make its objective for general well-being advancement. The frequency of recently diagnosed hypertension isn't notable than its prevalence. As per the aftereffect of study led in USA, data about the risk factors for the frequency of hypertension, which shows that it fluctuate forever.¹ In another nationwide review, public health epidemiological subsequent review, in which incidence of age specific expanded in more youthful age patients, 55-64 years old then, at that point, decline in more established age popu-

lation.² Occurrences rates vary in various ethnic populations, from African American, are double the worth of Caucasian population and reports have been information on frequency of hypertension and these issues still need to be explained.³

Most study population have been founded on ethnic groups and African American, there are numerous information given on these population.⁴ There was restricted information or the subsequent time for these groups.⁵ At last the criteria of hypertension in past examinations are outright and the impacts of pre-hypertension on the new beginning of hypertension characterized by the seventh joint public council are at this point unclear.⁶

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ISSN: 2231-2196 (Print) ISSN: 0975-5241 (Online)

Received: 04.01.2022

Revised: 19.02.2022

Accepted: 23.03.2022

Published: 20.05.2022

Cardiovascular diseases, including both stroke and coronary artery disease, are currently the main cause of death among most grown-ups population. Hypertension is a significant modifiable risk factor for cardiovascular diseases and all out mortality in the population.⁷ Since more than one-half of the population lives in rural region, changes in mortality that are because of cardiovascular disease have enormous public health and economic outcomes.⁸ Studies published during the 1980s and 1990s recommended that the prevalence and frequency of hypertension in rural China were exceptionally low. During the beyond twenty years, be that as it may, China rural and provincial China specifically, has been going through quick social changes.⁹ Rural residents periodically commute to urban regions, where they gain metropolitan and westernized ways of life and dietary propensities. These progressions are happening all over China, however they are especially articulated in the upper east and west, agricultural production is not high and growth of urban centers is accelerating.¹⁰

Hypertension is related with cardiovascular mortality and morbidity risk, with duplicates within the sight of diabetes along these lines exasperating T2DM cardiovascular confusions. The etiology of HTN is multifactorial and regularly can be found in can be seen in males as compared to female and more established gathering and in select ethnic groups.¹¹ It is likewise connected with the positive family history, obesity, alcohol, smoking, certain medications and high intake of salt. Past investigations showed that hypertension hazard increased with a higher BMI.¹²

However, the association between change in BMI and the incidence of hypertension is still unclear in many populations and it could be affected by changes in way of life or targeted interventions. Widely used among Western populations, the BMI cut of 25kg/m² for overweight has been recommended by the World Health Organization (WHO) as a worldwide rule.¹³ Nation specific and ethnicity specific BMI remove off, for it isn't suitable to utilize a single value to define overweight for all population because of the likely ethnic variety in body build and composition.¹⁴

Pakistan is a country with a total population of 191.7 million is facing a growing epidemic of cardiovascular illnesses.¹⁵ Hypertension is a notably highly prevalence disease in Pakistan and is growing daily. There is very little community based totally statistics on high blood pressure in Pakistan, consequently records received on the incidence of hypertension within the trendy population of Rawalpindi Islamabad is applicable.¹⁵ Hypertension is a major problem not only in Pakistan but in lots of other developed and underdeveloped countries. Although a massive wide variety of research have been carried out on hypertension medicinal drug and its risks factors, the prevalence is raising steadily. In Pakistan, bad eating habits and hygienic situations, lack

of training and different environmental factors are contributing to the elevated chance of high blood pressure.¹⁵

Hypertension is presented as a major public health problem in this era due to its high incidence and prevalence rate. There are many factors which contribute for increasing its risk among general population. These factors may also contribute to the particularly high incidence of hypertension. The current study had assessed the incidence of hypertension among general population and the factors affecting to increase its incidence rate. The aim of this study was to assess the high blood pressure among general population and to explore the risk factors associated with it. In Pakistan most of the population had a lack of knowledge about the risk factors and hypertension. Awareness regarding hypertension and its incident are not identifiable. Positive family history, obesity and diabetic mellitus are the common risk factors which can associate the incidence of hypertension. Regular blood pressure monitoring can be very helpful for the detection of newly case in this matter.

METHODOLOGY

Study Sample

Study was conducted over a period of 6 months, from May 2021 to October 2021. Data was collected through structured Performa with the help of previous studied which contain both open and close ended questions by using Non probability convenient sampling method. Three hundred (n=300) participant were included in our study. Participant was assessed with high blood pressure through three consecutive readings. Sample size was calculated by the Epi info at 95% C.I. The trial was conducted in compliance with the international on Harmonization guidelines for good clinical practices and according to the declarations of Helsinki.⁷

Study Setting

Study was conducted at South East Hospital and Research Center, Islamabad, Pakistan.

Inclusion Criteria:

Individuals having blood pressure exceeding to the normal limit or within normal limit at the time of visit to the hospital were included.

Exclusion Criteria:

Individuals who had already diagnosed with hypertension were excluded

Statistical Analysis:

The data were entered in SPSS version 22. Descriptive statistics was used to calculate means $\pm$ SD for quantitative variables i.e.

age. Frequencies with percentage were calculated for qualitative variables i.e. gender and other variables. Correlation was used to assess the relation among variables.

Ethical Consideration:

Ethical approval was taken from the Institutional review board committee of South East Hospital and Research center Islamabad (ERC-002-SEH). A written informed consent was also taken from the participant.

RESULTS

300 participants (n=300) were included in this study who had visited the South East hospital after meeting the inclusion criteria.

Demographics of the Respondents (n=300)

Characteristics	Frequency(n)	Percentage (%)
Gender of the respondent		
Male	130	43.3%
Female	170	56.7%
Marital Status of the respondent		
Unmarried	116	38.7%
Married	111	37%
Divorced	51	17%
Widow	22	7.3%
Education Level		
Uneducated	0	0%
Primary level	26	8.7%
Secondary level	140	46.7%
Higher education	134	44.7%
Risk Factors		
Diabetic Mellitus	52	17.3%
Dyslipidemia	24	8%
Family History	63	21%
Smoking	45	15%
Obesity	27	9%
Age	2	.7%
Both HTN and DM	46	15.3%
HTN, DM and Family history	30	10%
Presence of Hypertension		
Yes	169	56.3%
No	131	43.7%
Routine Checkup of blood pressure		
Monthly	51	17%
Weekly	45	15%
Daily	28	9.3%

When Needed	176	58.7%
Previous history of medication		
Yes	129	43%
No	171	57%

Duration of BP medicine usage

1 week	90	30%
2 weeks	51	17%
Never	159	53%

Family history of HTN

Yes	236	78.7%
No	58	19.3%
Not known	6	2%

Diabetic Mellitus History

No	191	63.7%
Type 1	82	27.3%
Type 2	27	9%

Health Goals and interest

Eating Better	18	6%
Losing Weight	48	16%
Exercising	44	14.7%
Reducing stress	95	31.7%
No interest	95	31.7%

Table 1 illustrate the demographics of the respondent which shows that 43.3% male and 56.7% were females in our study, marital status in which 38.7% were unmarried, 37% married and 17% were divorced. Education level was also good in which 46.7% were at primary level and 44.7% were at higher education level. When we assess the risk factor, which shows that 17.3% had risk factor diabetic mellitus, 21% family history, 15.3% of both hypertension, Diabetic mellitus and 6.7 had HTN, DM and family history, obesity and smoking were 9% and 15% respectively. 56.3% respondents were hypertensive and 43.7% were normotensive at the time of visit to South East Hospital.

Clinical presentations of the Respondent (n=300):

Characteristics	Mean	±SD
Age of the Respondent	37.44	±12.669
Pulse rate	91.86	±5.856
SPO ₂ level	97.25	±1.128
BP Systole (1 st reading)	144.20	±15.126
BP Diastole (1 st reading)	90.05	±1.035
BP Systole (2 nd reading)	150.10	±18.143
BP Diastole (2 nd reading)	95.07	±1.115
BP Systole (3 rd reading)	164.50	±21.176
BP Diastole (3 rd reading)	100.09	±14.045

Illustrate the mean age of the respondent was 37.44($\pm$ 12.669), mean systolic BP on 1st reading was 144.20($\pm$ 15.126) and mean diastolic BP was 90.05($\pm$ 1.035), mean systolic BP on 2nd reading was 150.50($\pm$ 18.143) and mean diastolic BP was 95.07($\pm$ 1.115) and mean systolic BP on 3rd read-

ing was 164.50($\pm$ 21.176) and mean diastolic BP was 100.09($\pm$ 14.045). It shows that most the respondent was diagnosed with high blood pressure at the time of visit to the South East Hospital.

Associations of risk factors (Diabetic mellitus, Obesity and family history) with high blood pressure and SPO2 level. (n=300)

Scales	1	2	3	4	5	6	7
RF	1						
BPS	.293**	1					
BPD	.266**	.896**	1				
SPO ₂	.128*	.139*	.168**	1			
Obesity	.170**	-.327**	-.236**	-.237**	1		
F_HTN	-.096	-.031	-.001	-.003	.207**		1
DM_ History	.285**	.151**	.114*	.009	-.168**	-.163**	.101

(Note, RF=Risk factors, BPS= systolic blood pressure, BPS= Diastolic blood pressure, HTN-Hx= Hypertension history, F-HTN=family history of hypertension, DM-Hx= Diabetic Mellitus History. (p<0.01, p<0.05))

Table 3.3 Illustrate that Blood pressure systole is significantly correlated with risk factor ($r=.293^{***}$, $p<0.01$), and blood pressure diastole. Oxygen saturation (Spo₂ level) is associated with risk factor, blood pressure systole and blood pressure diastole ($r=.128^*$, $.139^*$, $.168^*$, $p<0.01$) respectively.

DISCUSSION

Hypertension is an emerging and leading cause of coronary artery disease and now becoming the major public health problem throughout the world. This study is conducted at South East Hospital and research center among general population who visited for treatment of their family or self one. We enrolled three hundred respondents in our study which shows that most of them had the history of hypertension and few of them had knowledge about presence of hypertension. Incidence of hypertension is very efficient and effective method through which we can measure the newly diagnosed cases of any disease.¹⁵ It is very important to measure or role out at onset. Prevention is also very important for controlling and further investigations.

A study conducted in the remote rural region of Pakistan.¹⁵ which shows that a very few number of people (15%) had hypertension which was comparatively higher than the previous study which was conducted in rural Punjab (8%), but it was more consistent with the preliminary report of National Health Survey of Pakistan which shows that 16% prevalence of high blood pressure among adults.¹⁶ High prevalence of hypertension in this era is a serious public health problem as it can associate the risks of cardiovascular diseases mortality.

If the level of blood pressure increases from its optimal value e.g. more than 120 mmHg and diastolic 80 mmHg shows high risk of other associative diseases.¹⁷

According to the results of our study which shows that high blood pressure among general population was (56.3%) which is comparatively high from other studied. The reason is that there is lack of awareness about hypertension among those peoples who don't have any history of risk factors. High blood pressure was more among those who had the history of hypertension, diabetic mellitus and also the risk factors. Most of the people didn't monitor their blood pressure as they thought it is not necessary or they don't feel it's important. Obesity and smoking was also important factors which can associate the risks of hypertension. 15% respondent were obese and they never monitored their blood pressure. The reason of high blood pressure is that they didn't exercise and never control the eating habit. As dietary control is an important factor for controlling the obesity and maintain the BMI.

Another study was conducted by Nisha I. Parikh; they found that cigarette smoking was also a risk factor for the onset of hypertension in several studies.¹⁷ Many other analyses had demonstrated that individual who smokes may have similar or lower blood pressure measurement if they compared with non smokers.¹⁸ Many studies of ambulatory BP monitoring had found that the average daily blood pressure measurement of smokers were higher than non smokers.¹⁹ Although blood pressure on single occasion was similar or lower in smoker than in nonsmokers. It may be due to association between cigarette smoking and rising of blood pressure that is probably mediated by the mechanism that increases sympa-

thetic nervous system activation.²⁰ Smoking cessation is an important factor. The association between cigarette smoking and elevated blood pressure is probably mediated by mechanisms that increase sympathetic nervous system activation. Smoking cessation is important factors that may be related with increased blood pressure.²¹ Therefore lifestyle modifications aimed at reducing hypertension onset among individuals with high blood pressure and weight control.

High blood pressure can also relate with diabetic mellitus and high cholesterol level (15%) and (7%) respectively. In this study (58.7%) respondents monitored their blood pressure when they feel to need it and (9.3%) monitored their blood pressure daily which is a huge difference, the reason may be that most of them had no awareness level or lack of knowledge. (63.7%) respondents had no history of diabetic mellitus, (27.3%) had type-1 and (9%) type-II diabetic mellitus. DM directly relates to the incidence of high blood pressure as most of the patients present it at the time of visit to the hospital. If we discuss about the medication history of hypertension which shows that (43%) respondents had taken medicine and (57%) had no history of medicine previously. Duration of medicine was also assessed for those who were taking medicine which was assessed according to the weekly basis, 1, 2 and never. (30%) respondents used medicine with the duration of 1 week and (17%) for the duration of 2 weeks and (53%) never used any medicine. It shows that most of the respondents had detected the high blood pressure on very early stage and is controlled only by the use of medicine.

Weight loss is a crucial life style modification for obese and obese peoples for control of high blood pressure.²¹ The mechanism of the impact of weight reduction on BP is not clear and there are numerous ways for controlling of BP in distinctive pathways.²² The over activation of rennin angiotension aldosterone machine in obese human beings. Also the pastime of sympathetic anxious gadget is elevated in hypertensive and overweight peoples and it may result in obesity associated renal results.²³ In other words there can be the inhibition the naturetic peptide system of which the useful results of vasodilators and natriuresis.²⁴ Hyperinsulinemia and reduced insulin sensitivity as a part of metabolic syndrome will also be metabolic syndrome from a important hyperlink between weight problems and hypertension, although the interrelation is not fully recognized.²⁵

Participant has a positive family history of high blood pressure and diabetic mellitus, it also has a high risk for the development of hypertension of and diabetic mellitus unless prevention matters. Incidence of high blood pressure remains high among those individuals who have risk factors, e.g. smoking, family history, obesity diabetic mellitus and hypertension as well. Age is also an important factor which can contribute the elevation of blood pressure. In our study those participant who

had the risk factors of age and hypertension, most of them detected with high blood pressure level and few of them had diagnosed with it and on medication. Most of the respondent in a very young age had developed hypertension, the reason was that they had a strong positive family and some of them were smokers. Anxiety is another element which can initiate the level of blood pressure. As we didn't measure the anxiety level in our study but it is most important factors for the elevation of the level of blood pressure. Young populations are at high risk of anxiety level in this era. The cause may be whatever but there is a need to highlight the anxiety and some control measures should be taken for the control of high blood pressure and other diseases as well.

CONCLUSION

According to the result of our study it is concluded that high blood pressure among general population is more. Most of the participants were diagnosed with high blood pressure at the time of visit to the South East Hospital. It is due to the associative risk factors e.g. diabetic mellitus, smoking, family history and obesity. These factors are closely interlinked with the incidence of hypertension. The increases in hypertension are in all likelihood related to speedy social changes in our country and can apply to different regions of the growing world. These findings call for urgent improvements in high blood pressure prevention and control packages Pakistan.

Conflict of interest:

All authors hereby declare that there is no conflict of interest.

ACKNOWLEDGEMENT

The authors wish to thank the Aretha B, Pereira MA for their valuable literature, which helped us for citations our manuscript. Authors also grateful to journal of Ayub medical college and Pakistan medical journal for their great immense in literature search for our manuscript. All authors are grateful to the south east hospital and research center for their help and support in data collection.

Authors Contribution:

AM conceptualized, supervised and helped in study design. AHK wrote the first draft of the manuscript and performed the statistical analysis. AS helped in editing the manuscript. AAB, WH and ASA helped in collected the data. All Authors have read and approved the final version of the manuscript.

Funding:

This study did not receive any funding.

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