RISK BASED STRATIFICATION OF HYPERTENSION IN TEACHERS OF UNIVERSITY OF PESHAWAR

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ABSTRACT

Introduction: Among the many risk factors for hypertension in the general population, sedentary and stressful lifestyle is a major known risk factor. Based on previous studies, the teaching profession is known for maintaining sedentary and stressful lifestyles, thereby suffering from higher than expected prevalence of hypertension. The objective of this study was to find the known risk factors associated with hypertension in teachers of University of Peshawar.

Materials & Methods: A Cross Sectional study was conducted from June 2010 to August 2010 in all colleges inside Peshawar University campus, which included Khyber Medical College, Khyber College of Dentistry, Peshawar University (all departments), University of Engineering and Technology, Jinnah College, Institute of Management Studies, Islamia College University and Agriculture University. Five hundred teachers of University of Peshawar were selected through random sampling technique. A closed-ended questionnaire was employed for collection of data. The data were analyzed using the computer software SPSS version 17.0, then presented in tabulated and graphical forms.

Results: Of the 500 teachers interviewed, 353 (70.6%) were male and 147 (29.4%) were female; 128(25.6%) teachers reported hypertension. Age above 40 years showed higher association with hypertension (110/128, 85.9%) as also a positive family history of hypertension (33%). Among overweight, 38.3% & among obese, 55.6% were found to be hypertensive; 29.3% of smokers were hypertensive as compared to 25.4% of non-smokers. All the hypertensive patients seemed to be stressed in one way or the other. Sedentary lifestyle also contributed towards development of hypertension as 39.5% of those living a sedentary lifestyle were hypertensive.

Conclusion: Multiple modifiable risk factors contributed to the prevalence of hypertension in teachers of Peshawar University. Teachers would likely benefit from lifestyle modifying measures to reduce hypertension.

Key Words: Hypertension; Life Style; Faculty; Sedentary Lifestyle; Smoking; Obesity.

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INTRODUCTION

Hypertension is the largest risk factor for cardiovascular diseases growing virtually everywhere.[1] Detection of hypertension and blood pressure control are critically important for reducing the risk of heart attacks and strokes.[2] Non pharmacological intervention provides an effective means to lower blood pressure and has been emphasized increasingly as a useful method for both prevention and treatment of high blood pressure.[3] For 23 years the National High Blood Pressure Education Program has attempted to increase public and professional awareness regarding the detection, evaluation, treatment, and control of hypertension.[4] The benefits of treating High Blood Pressure (HBP) were well established in randomized trials during 1970s and early 1980s; however, because persons over age 65 were under represented in these studies and because most studies focused on the benefit of lowering blood pressure, there was a prevailing skepticism regarding the value and safety of lowering blood pressure in particular systolic blood pressure in older patients.[5]

It is well known that there is an increasing prevalence of hypertension with age in adult population in United States, some 15% of adults population have hypertension with a much higher prevalence noted for blacks.[6] Furthermore, adverse longitudinal changes in adiposity, Systolic Blood Pressure (SBP), Diastolic Blood Pressure (DBP) were independently associated with prehypertension status and adverse changes in adiposity, SBP, DBP, HOMA-IR, triglycerides, HDL cholesterol, and LDL cholesterol with hypertension status.[7] Ethnic differences in resting blood pressure may not emerge until late

adolescence or early adulthood and increase with advancing age.

These data have generally indicated favorable trends. i.e., improvements in hypertension prevalence awareness, treatment, and control rates.[9] Hypertension is likely the single most risk factor for cardiovascular disease, yet blood pressure control (<140/90 Hg) is reported in just over one third of all hypertensive participants, with widening disparities among treated African Americans.[10]

In the developed world the detection, treatment, and control of hypertension have been characterized by the rule of halves although recent evidence suggests that there has been a general improvement. However, in much of Sub-Saharan Africa, due to scarce resources and inadequate healthcare provision, detection, treatment, and control are very poor.[11] Blood pressure (BP) data obtained during a BP screening program were analyzed to determine which medical evaluation and intervention are recommended. These results show that significant hypertension is uncommon in pre-high-school students and confirm the need for repeated BP measurements to make an accurate diagnosis of hypertension.[12]

MATERIALS & METHODS

The setting for this study was the University of Peshawar campus. Located about 10 km north-west from the center of the city on the main Grand Trunk road leading towards Torkham (Pak-Afghan border), it covers a sprawling 1050 acres of land. It is the mother University of the Province, founded in October 1950, being essentially a residential university with a total population of approximately 35,000. Apart from its constituent departments many other colleges are also present inside the campus. The total teaching staff of the university, its constituent departments and all other colleges inside the campus is close to 2000. The present study was carried out from June to August 2010, in Khyber Medical College, University Of Engineering, Agriculture University, Jinnah College for Women, Economics College for Women, Institute Of Management Sciences, Islamia College and Peshawar University (all Departments).

The study population was the teachers of Peshawar University campus. The sample size was 500 out of the total 2000 teachers selected through simple random sampling.

The study design was cross sectional and descriptive; data were collected through a questionnaire having both open ended and close ended questions, distributed among the teachers. Primary variables were Personal data (Age, gender, etc), Knowledge of Hypertension, Blood pressure queries, Habits and Related diseases (any disease/diseases in family). Prior to the main survey a pilot study was conducted. The questionnaire was pretested in order to find any deficiencies in the questionnaire or to make it easier, convenient and understandable for the teachers and to make the project feasible.

One institution was selected at a time for field work. Each subject was informed of particular aims of study, the method for completing the questionnaires, and also blood pressure (BP) measurement techniques.

After informed consent, teachers were given questionnaires to fill. In addition to the questionnaire, the subjects' BP, height and weight were measured at the end of each interview. Blood pressure was measured with aneroid sphygmomanometer after the participant had been seated and rested for 5 minutes. Two measurements were taken at an interval of 2 minutes between readings, and the average of the 2 recordings was accepted as the subject's BP. Height was taken with measuring tape, and weight measured with a home type of weighing machine.

A subject was said to be hypertensive if systolic blood pressure (SBP) was ≥ 140 mmHg and/or diastolic blood pressure (DBP) ≥ 90 mmHg

and/or if the subject was taking antihypertensive agents. Patients were considered as overweight (pre-obese) if their BMI was between 25 kg/m2 and 30 kg/m2, and obese when it was greater than 30 kg/m2; 18.5-24.9 kg/m2 were considered to be normal. Collected data were analyzed using the computer software Statistical Package for Social Sciences (SPSS, Chicago, Il, USA) for Windows, version 17.

RESULTS

The demographic data of 500 teachers are shown in Table 1.

Table 1: Demographic data of subjects (n=500)

#	Demographic variables	No.(%)
1.	**Gender**	
	Male	353(70.6)
	Female	147(29.4)
2.	**Age Groups (years)**	
	<30	55(11)
	30-40	109(21.8)
	41-50	183(36.6)
	51-60	139 (27.8)
	>60	14(2.8)
3.	**Marital status**	
	Single	115(23)
	Married	361(72.2)
	Other (divorced, widowed)	24(4.8)
4.	**Designation**	
	Intern	22(4.4)
	Demonstrator	108(21.6)
	Lecturer	161(32.2)
	Assistant Professor	92(18.4)
	Associate Professor	79(15.8)
	Professor	38(7.6)

In order to assess the knowledge of teachers regarding different aspects of hypertension, a number of questions were asked. These included knowledge of normal blood pressure, hypertension as a disease, the various causes of hypertension, the effects of the disease on various parts and organs of the body and the duration of treatment needed for hypertension. They were also asked if they were aware of personally having hypertension and any treatment given to them for it. Responses are listed in Table 2.

Table 2: Knowledge of teachers regarding hypertension (n=500)

#	Knowledge Variables	No.(%)
1.	**Normal BP Values known**	
	Yes	397(79.4)
	No	103(20.6)
2.	**Which disease is silent killer?**	
	Diabetes	205(41%)
	Hypertension	192(38.4)
	Heart Failure	101(20.2)
	Blindness	02(0.4)
3.	**Major causes of hypertension**	
	Salt intake	94(18.8)
	Obesity	32(6.4)
	Smoking	24(4.8)
	Lack of exercise	21(4.2)
	All of the above	329(65.8)
4.	**Organ affected by hypertension**	
	Eyes	25(05)
	Kidneys	55(11)
	Heart	86(17.2)
	Brain	13(2.6)
	All of these	51(10.2)
	No answer	270(54)
5.	**Duration of treatment**	
	One dose	219(43.8)
	Life long	126(25.2)
	Till BP reduces	133(26.6)
	One year	14(2.8)
	One month	08(1.6)
6.	**Personally hypertensive?**	
	Yes	79(15.8)
	No	421(84.2)
7.	**Treated for hypertension?**	
	Yes	56(11.2)
	No	444(88.8)

BP checking practices adopted by teachers are shown in Table 3.

Table 3: BP checking practices by teachers (n=500)

#	BP Checking Practices	No.(%)
1.	**Regular BP checking**	
	Yes	158(31.6)
	No	342(68.4)
2.	**BP Checking Frequency**	
	Daily	46(09.2)
	Weekly	38(07.6)
	Fortnightly	93(18.6)
	Monthly	98(19.6)
	Infrequently	225(45.0)

Teachers were questioned about possible risk factors for hypertension that they may be exposed to; data are shown in Table 4.

Table 4: Exposure to possible risk factors for hypertension among teachers (n=500)

#	Possible Risk Factors	No.(%)
1.	**Family history of disease**	
	Diabetes	116(23.2)
	Heart disease	89(17.8)
	Renal disease	26(5.2)
	Hypertension	103(20.6)
	Psychiatric disease	02(0.4)
2.	**Smoking**	
	Yes	133(26.6)
	No	367(73.4)
3.	**Diet**	
	Mixed diet	409(81.8)
	Vegetable & Fruit	79(15.8)
	Predominantly Meat	12(02.4)
	Mild salt	21(04.2)
	Moderate salt	389(77.8)
	Excessive salt	03(0.6)
4.	**Lifestyle**	
	Active	143(28.6)
	Average	319(63.8)
	Sedentary	38(07.6)
5.	**Exercise**	
	Regular	94(18.8)
	Not regular	406(81.2)
6.	**Stressed or Tense**	
	Yes	418(83.6)
	No	82(16.4)

Upon checking blood pressures of teachers, it was found out that 25.6% (128) of the teachers were hypertensive while 74.4% (372) of the teachers were normotensive. None of the teachers were found to be hypotensive. By calculating BMI it was found out that 6.4% (32) of the teachers were underweight, 66.8%(334) were of normal weight and 21.4% (107) were found to be overweight while 5.4% (27) were found to be obese Out of the 353 male teachers, 27.5% (87 of 353) were found to be hypertensive whereas 72.5% (266 of 353) of the male teachers were found to have normal blood pressure. Out of the 147 female teachers, 27.9% (41 of 147) were found to be hypertensive, 72.1% (106 of 147) of the female teachers had normal B.P.

DISCUSSION

The worldwide prevalence of hypertension is more than 20% of the general population. It is a globally growing problem. A few reasons for its high and increasing prevalence are given in the literature. One of the foremost causes for this is said to be the advances in medicine. These medical advances have greatly decreased the prevalence of infectious and communicable diseases. The increased emphasis in the field of preventive medicine has greatly reduced the incidence of these diseases, especially in the developed countries. With the decrease in communicable diseases the non-communicable diseases are coming to the front as major health problems. Hypertension is one of the most common problems in medicine not only in the developed countries but it is also becoming highly prevalent in the developing countries. The reasons are given for its rapidly increasing prevalence include increasingly stressful life, sedentary lifestyle, smoking, obesity, diabetes, ageing and imbalanced diet. The National Health Survey of Pakistan (NHSP), conducted from 1990 to 1994, showed that hypertension affects 18% of adolescents above 15 years of age and 33% of adults above 45 years of age; less than 3% hypertensive patients, however, have their BP controlled to 140/90 mmHg or below and more than 70% of all hypertensive patients (85% in rural areas) in Pakistan are not even aware of their disease. This paints a very grim picture for the future. Teachers as a population are on one hand better educated and more likely to be aware of general health problems and preventive measures that can be taken for them, but on the other hands they are more prone to the disease because of their predominantly sedentary lifestyle and having a highly stressful job. According to the present study the prevalence of hypertension in teachers of Peshawar University is 25.6%. This value is slightly higher than the worldwide prevalence but as compared to the prevalence within the country

(33%) it is less than the general population. Many factors may be involved in this but mainly as mentioned above teachers being well educated are more aware of general health problems and take preventive measures but at the same time they lead a predominantly sedentary lifestyle and have a high-stress job. Gender wise prevalence did not reveal any difference; out of 353 males, 27.5% were hypertensive while out of 147 females, 27.9% were hypertensive. Age-wise distribution though revealed a totally different story. Teachers in age group less than 30 years had a prevalence of 10.9%; in age group 30-40 years prevalence of hypertension was 11%. Among 40-50 years old prevalence was 28.5% and in 50-60 years age group this prevalence rose to 31.7%. Above 60 years the prevalence was 64.3%. This shows a direct relation between old age and hypertension prevalence.

Familial trend was also observed in the results. Among those with a family history of hypertension (103 out of 500) the prevalence was 42.7% as opposed to 21.4% prevalence in those with no family history of hypertension. Obesity also showed a relation with hypertension. Of the 107 overweight subjects prevalence of hypertension was 38.3% as compared to 21% among the normal BMI subjects. In obese subjects the prevalence was 55.6%. This shows that obesity has a very large role in development of hypertension. Smoking was another factor which was studied in relation to hypertension. Among the smokers (133) prevalence of hypertension was 29.3% while among non-smokers prevalence dropped to 24.3%. This shows a not so marked but still significant difference. Mental stress and tension also acts as a contributing factor for development of hypertension. According to our study results prevalence of hypertension in teachers who said they had highly stressful life was 26.8% as opposed to 19.5% among those who led a stress free life. This is more so important because in habits section of questionnaire when

asked about stress, 418 out of 500 (83.6%) subjects answered that they did indeed suffer from high mental stress. This is an important factor and should be looked at in the future. Having a sedentary or inactive lifestyle also contributes to hypertension. Among those leading active life prevalence was 15.4%; among those having normal average lifestyle, prevalence was 28.6% while those leading a sedentary life were having a prevalence of 39.5% which shows a significant role of sedentary lifestyle in development of hypertension. The knowledge section of the questionnaire was mainly designed to determine the awareness level of the population towards this particular problem. Being a well-educated class the teachers' awareness about the problem was satisfactory, but more efforts should be done to further improve the situation. Awareness about the basic problem was sufficient but was lesser about the prevention and treatment of this problem. More can be and should be done in this connection. Regular medical checkups should be encouraged because only 31.6% of the subjects answered that they got BP checked regularly. Efforts should be done to improve this figure because hypertension is called "Silent Killer" as it is not identified or diagnosed until it causes some complication. Regular BP check can help in early detection and treatment of the disease before any complication can occur. Efforts should also be done to improve personal habits. 26.6% of subjects were smokers at one or another time in their lives. Only 28.6% of the subjects answered that they led an active life. This should be improved. Smoking should be discouraged. And a healthier lifestyle should be advised.

Conclusions

Multiple factors are responsible for the prevalence of hypertension including advanced age, obesity, lack of exercise, increased salt intake, stressful life, smoking, sedentary lifestyle etc. Prevalence was high among teachers above 40 years of age, smokers and those having a stressful routine.

Recommendations

It is recommended that to avoid hypertension, one should adopt an active lifestyle, minimize the use of salt, keep one's weight in check, eat a balanced diet and abstain from smoking.

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