SURVEY REPORT

Hypertension and obesity in community of Nain-Sukh

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Abstract

Objectives: To determine the frequency of factors related to hypertension in a peri-urban community.

Method: It was a cross-sectional survey conducted from January to August, 2016, in Nain Sukh, Sheikhupura, near Lahore comprised household individuals of either gender aged 15-69 years. Data was collected through interviews by using a structured questionnaire focussing on socio-demography, history and factors associated with hypertension, like body mass index and lifestyle modifications. Hypertensive patients were identified by using clinical and medication history. SPSS 21 was used to analyse data.

Results: Of the 1080 subjects, 871(80.6%) were females and 209(19.4%) were males. The overall mean age was 33.5±14 years. Hypertension was found in 307(28.4%) subjects. Hypertension was significantly associated with lifestyle modification factors, like weight reduction, reduction in salt intake and smoking cessation ($p<0.05$), and with body mass index categories ($p<0.05$).

Conclusion: Hypertension was found to be significantly high among overweight and obese participants, especially females.

Keywords: Hypertension, Obesity, Special diet, Exercise. (JPMA 70: 683; 2020) **https://doi.org/10.5455/JPMA.3318**

Introduction

Hypertension (HTN) is considered the silent killer and is a substantial public health problem.[1] Its worldwide prevalence is about 40.8% with estimated a billion people suffering from HTN and the number is expected to be doubled by 2025.[1,2] According to the Global Burden of Disease (GBD) study, hypertension causes 1 in 5 deaths, and contributes 7% to the disability burden.[3] Uncontrolled HTN leads to many comorbidities, like stroke, coronary heart diseases and renal failure.[4] Despite advancements in the field of HTN management, including early diagnosis and treatment, a large number of patients are still suffering from HTN worldwide.[5]

Pakistan is the sixth most populous country of the world[3]. One in four adult over the age of 18 years is suffering from HTN.[3,4] HTN prevalence in Pakistan in people aged 45 years was reported to be 33%, 34.4% in rural areas of central Punjab and 29.22% in urban areas.[5] Worldwide, prevalence has been shown to be 30.8% in the United Arab Emirates (UAE), 29.6% in China, 29.8% in India, 41.8% in Iran while 32% in United States (USA).[6]

The global HTN burden is increasing with every passing year.[7] The contributing factors can be population growth, agcing and changing behavioural pattern among the people.[7] Moreover, many other factors, like obesity, sedentary lifestyle, unhealthy eating habits and smoking, are now considered contributing factors for the increasing burden.[7]

The current study was planned to determine the frequency of factors related to HTN in a peri-urban community near Lahore.

Subjects and Methods

The cross-sectional study was conducted from January to August, 2016, in Nain Sukh, Sheikhupura, near Lahore, Pakistan, and comprised households in the Nain Sukh locality, which falls under the jurisdiction of the Union Council of Sheikhupura with an estimated population of 10,000.

After obtaining approval from the institutional ethics review board of the Fatima Memorial Hospital (FMH) College of Medicine and Dentistry, Lahore, the sample size was calculated by using World Health Organisation (WHO) health sciences software version 2.0.21[8] by keeping the power of the study at 80% and confidence interval (CI) 95%. The prevalence was kept at 10%.

Before data collection, each house was numbered and the required number was approached using the lottery method. In order to address probable non-response, an additional 80 households were included.

From within the selected households, individuals of either gender aged 15-69 years had been residing in the locality for atleast six months and willing to participate

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were enrolled.

Data was collected using a structured questionnaire filled up through interviews. Socio-demographic profile was generated including age, gender and educational and marital statuses. Family history of HTN, and lifestyle choices, like undertaking exercise, habit of smoking, salt intake and weight management, were noted. BP measurements were done following the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure (JNC-8) guidelines;[9] those having a resting systolic blood pressure (SBP) >140mmHg or Diastolic Blood Pressure (DBP) >90mmHg were declared hypertensive and the history of anti-hypertensive medication was taken. Two BP readings were taken at 10-minute interval in sitting position. Other measurements like height and weight were taken to calculate body mass index (BMI) by following the Asian cut-off.[10] Participants with BMI of 23kg/m^2 or more were declared as overweight while those with 27kg/m^2 or more as obese.[10,11]

Data was analysed using SPSS 21. Mean and standard deviations (SDs) for quantitative variables, and frequencies and percentages for the qualitative variables were calculated. To determine the relationship between HTN and factors like obesity and overweight, chi-square test was used.

Results

Of the 1080 subjects, 871(80.6%) were females and 209(19.4%) were males. Overall, mean age was 33.5±14 years, 939(86.9%) had education upto Quran or seminary level, 736(68%) were married and 815(75.5%) were unemployed (Table-1).

Hypertension was found in 307(28.4%) subjects. Among

Table-1: Socio-demographic profile.

Mean age (years)		33.5±14 years	
Gender	Male	209	19.40%
	Female	871	80.60%
Marital status	Married	736	68%
	Unmarried	307	28.40%
	Widowed	30	2.80%
	Separated	1	0.10%
	Divorced	6	0.60%
Education	Quran	939	86.90%
	Madrassah	141	13.10%
Working status	Unemployed	815	75.50%
	Government job	78	7.20%
	Non-government job	187	17.30%

Table-2: Lifestyle modification and hypertension (HTN) among household individuals.

Variables	Normal Blood pressure	HTN	Total	p-value
	773(72)			
Advice to reduce salt intake	72	104 (59.1)	176	0.0001
Advice to reduce weight	52	70 (57.1)	122	0.0001
Advice to stop smoking	19	19 (50)	38	0.005
Advice to do more exercise	55	83(60.6)	138	0.0001
Advice to take special diet	67	83 (55.7)	62	0.0001

P value <0.05 considered as significant.

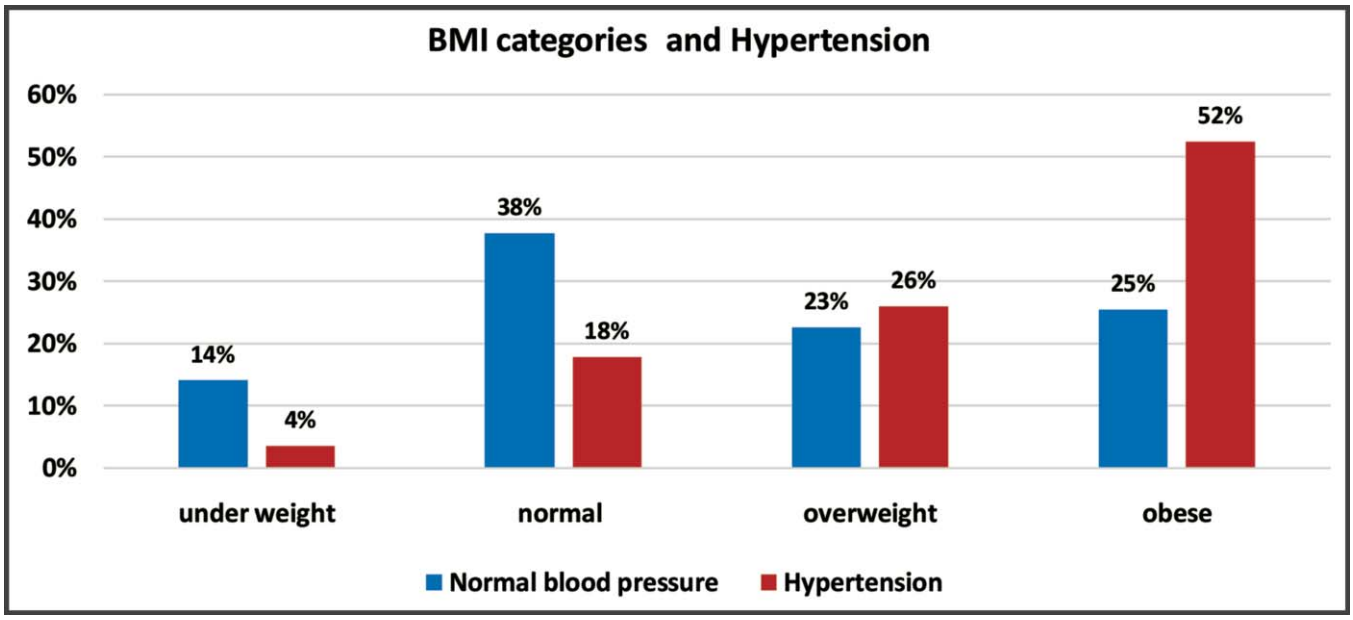

Figure: Body mass index (BMI) categories and hypertension (HTN) in the subjects.

Table-3: Relation between body mass index (BMI) categories and hypertension among (HTN) in male and female subjects.

	Males				Females			
	Normal 155(74)	HTN 54(26)	X^2	p-value	Normal 618(71)	HTN 253(29)	X^2	p-value
≤ 18kg underweight	41(26.5)	4(7.4)	23.5	0.000	68(11)	7(2.8)	76.6	0.0001
19-23kg (normal weight)	72(46.5)	17(31.5)			220(35.6)	15(38)		
24-27kg (over weight)	26(16.8)	16(29.6)			149(24)	64(25.3)		
≥ 27kg (obese)	16(10.3)	17(31.5)			181(29.3)	144(56.9)		
Total	155	54			618	253		

P value <0.05 considered as significant.
X^2 chi-square measure of association.
HTN: Hypertension

them, 105(34%) had family history of HTN, 161(52%) had obesity, with BMI ≥ 27kg/m^2 (Figure). Also, 104(34%) of the hypertensive patients were advised to reduce salt intake, 70(23%) were advised to lose weight, 19(6%) to stop smoking and 83 (27%) to do more exercise and take special diet (Table-2).

Of the female hypertensive subjects, 144(56.9%) were obese compared to 17(31.5%) of the males with HTN (Table-3).

Discussion

Worldwide, the increasing HTN burden is a major health challenge.[12] According to WHO estimates, 7.5 million deaths were attributed to HTN, which was around 12.8% deaths worldwide.[13] It accounted for 57 million disability-adjusted life years (DALYS) or 3.7% of total DALYS.[8] In the present study, HTN prevalence was 28.4% which was higher than figures stated in the 1990-94 National Health Survey.[3,4] A study conducted in rural areas of central Punjab reported a prevalence of 34.4% and in urban settings, it was 29.22%[5] which is comparable to our results.[5] Elsewhere, the prevalence in UAE, China, India, and Iran has been reported to be 30.8%, 29.6%, 29.8% and 41.8% respectively.[5-7] In the USA, 75 million (32%) adults had high BP.[14] The increasing figures are indicative of the fact that there were several contributing factors,[15] including the fact that data had been collected from different geographical regions through different sampling techniques.[15] Other related factors could be unhealthy lifestyle, lack of exercise and unhealthy eating habits, especially among the females. Moreover, the lack of education plays a negative role in terms of early screening, prevention and control.[16] Perhaps, the higher reported figures of HTN in the current study may be due to the fact that majority of participants were females and had only received home-based education, practicing sedentary lifestyle with little knowledge about screening as they were dependent on their male family members for decision- making.

Literature supported the role of BMI in a number of metabolic disorders, including HTN regardless of gender.[17] The results of the current study are in line with this assertion. Various studies have reported that obesity and HTN had been growing epidemics and major sources of unsustainable health cost, morbidity and mortality[18] even though the exact pathogenesis responsible for obesity-related HTN is still under investigation.[19] The proposed mechanism by which obesity leads to HTN could be the activation of the sympathetic nervous system, the amount of intra-abdominal and intra-vascular fat, sodium retention causing increased renal absorption and activation of the renin-angiotensin system.[20] Therefore, health education of the masses about the importance of lifestyle modification, including healthy diet, regular exercise, smoking prohibition and early screening, can help in decreasing the burden of this growing epidemic.[21]

The current study had its limitations as it had a female predominance and data regarding males was lacking. Also, the study did not address the effect of the possible confounders, like age, which could have been addressed by matching and stratification of the sample.

Longitudinal studies with controls are recommended for the determination of the association between HTN and factors like obesity.

Conclusion

HTN was significantly high among overweight and obese subjects, especially females. Basic prevention can play an important role in reducing HTN burden at a young age.

Disclaimer: None.

Conflict of Interest: One of the authors has been the chair of the institutional review board of FMH College of Medicine and Dentistry, Lahore, which approved the study.

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