

PREVALENCE AND PERCEPTION OF CONSEQUENCES OF HYPERTENSION IN UNDERGRADUATE STUDENTS OF UNIVERSITIES IN LAHORE

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ABSTRACT:

BACKGROUND:	<i>Hypertension is a fatal but modifiable risk factors that notably increases the risk for heart and renal diseases.</i>
AIMS & OBJECTIVE:	<i>This study sought to provide information about hypertension in undergraduate students in different universities in Lahore.</i>
MATERIAL & METHODS:	<i>This was a cross-sectional study with non-probability convenience sampling technique. Objective of this study was to determine the prevalence of hypertension among undergraduate students of universities in Lahore.</i>
RESULTS:	<i>The results indicate that there is a statistically significant association between blood pressure and BMI categories at a significant level of 0.05. The study found that approximately 8% of the participants were hypertensive, and there was a higher prevalence among male students. However, lack of physical exercise was not found to be correlated with hypertension.</i>
CONCLUSION:	<i>The study highlights the importance of educating young adults about the consequences of hypertension and promoting healthy lifestyle habits. There is a low prevalence of hypertension in undergraduate students of universities in Lahore. Whereas higher BMI is related with prevalence of hypertension. Most of the students perceive that hypertension can lead to diabetes and cardiovascular diseases</i>
KEY WORDS:	<i>Hypertension, Nutrition, Dietary Choices</i>

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INTRODUCTION:

Hypertension is a common health condition, which is affecting 1.28 billion people worldwide. With the increasing prevalence of hypertension, it is essential to conduct research that can identify risk factors, preventive measures, and treatment options. It is a severe but modifiable problem that notably increases the risk for Heart and renal diseases¹. Data from WHO indicate that heart diseases were the seed of death for about 30% of the whole world which contribute to about 15 million deaths every year, the majority in emerging nations. It is a non-communicable disease that is becoming more common in adults nowadays due to increased consumption of unhealthy diets, overweight, obesity, not being physically active, high salt intake².

Hypertension has two types: primary hypertension and secondary hypertension. Primary hypertension is the most common type and is often due to lifestyle factors such as unhealthy diet (Increase intake of saturated fat, trans fat, high salt intake, processed food), lack of physical activity, and stress. Primary hypertension it tends to progress steadily over many years. Plaque buildup in the arteries, called atherosclerosis, increases the risk of high blood pressure. Secondary hypertension is caused by an underlying health condition, such as diabetic nephropathy, polycystic kidney disease, renovascular hypertension, fibro-muscular dysplasia, aldosteronism, thyroid problem and cushing syndrome³. It can be measured at public health levels and with low-cost treatment which may effectively control hypertension. Prevalence of hypertension is somehow increasing in males than females due to hormonal changes in males in early stages. Hypertension is also considered to be higher in some ethnic groups of the world for example in the black Caribbean than in Pakistanis⁴.

However, 18.9% of Pakistanis over the age of 15 are hypertensive, according to the National health survey of Pakistan (NHSP). Pakistanis eat a diet that is high in calories, salt, and saturated fats but low in fruits and vegetables due to their high

rate of urbanization. Numerous studies have also suggested that hypertension is more common in urban than rural communities⁵.

There are several theories and models of health which explains causes of hypertension including medical and psychological aspects, like health belief model state that individual perception of health will determine the health of an individual, theory of planned behavior explains the impact of people's attitudes towards managing their hypertension, social norms surrounding managing their hypertension, and their perception⁶. In addition to this there are medical models for example Renin-Angiotensin-Aldosterone System (RAAS) Model and Sodium-Potassium Balance Theory which explains causes of hypertension⁷.

Treatment of hypertension involves lifestyle changes such as regular exercise, a healthy diet, and stress management, as well as medications prescribed by a healthcare professional. It is important to manage hypertension effectively to prevent complications and improve overall health⁸.

This study aimed at investigating the prevalence, risk factors, and awareness of hypertension in undergraduate students across different universities in Lahore, to identify potential interventions to prevent and manage this condition among this population. Although several studies have explored the prevalence and risk factors of hypertension in the general population and specific subgroups, such as healthcare professionals and office workers, limited research has been conducted on hypertension among undergraduate students in Pakistan, particularly in the context of different universities in Lahore.

MATERIAL AND METHODS:

The research design of this study is observational cross sectional study. Nonprobability convenience sampling was used. The data was collected from University of Management and Technology, University of Lahore and other universities i.e., Government college University, Superior Gold Campus, South Asia University. The sample size consisted of

222 participants and the data was obtained using a self-administered questionnaires. Inclusion criteria was age 18 years to 25 years, both genders and who are not previously diagnosed with hypertension. The questionnaire included questions related to salt intake, stress management, consequences of high blood pressure, physical activity and alcohol intake. In addition to questionnaire BMI of the participants was calculated and blood pressure was recorded using CC Blood Pressure Monitor TD-4333. Data was in a hard form questionnaire which was then compiled by software on computer. For

this, graphs and charts were made by using SPSS software.

RESULTS:

A sample of 222 participants was collected from different universities of Lahore. Out of the 222 participants included in the study, 110 (49.5%) were females, and 112 (50.5%) were males (Table 1). Whereas (Table 2) shows the distribution of anthropometric data and lifestyle measures among 222 participants, BMI, blood pressure level, waist/hip ratio, smoking status, alcohol drinking status, and physical exercise habits. Data on knowledge about hypertension among the

Table-1: Age and sex of the participant.		
	Frequency n=222	Percentage (%)
Gender		
Female	110	49.5
Male	112	50.5
Age		
>25	29	13.2
18-20	46	20.7
21-22	85	38.2
23-24	62	27.9

Table-2: Shows anthropometric and lifestyle measures of the participants.		
BMI		
Normal weight	150	67.5
Obese	10	4.5
Overweight	62	27.9
BP level		
Hypertensive ($\geq 130/90$)	18	8.1
Hypotensive ($< 90/60$)	29	13.1
Waist/hip ratio < 0.99 Or 0.9	85	38.3
> 1	9	4.1
> 2	2	.9
Smoking	83	37.4
Alcohol drinking	0	0
Physical exercise	92	41.4

Table 3: Data on knowledge about hypertension among the study participants.

	Frequency n=112	Percentage (%)
How much salt should be taken per day?		
< 1 teaspoon	94	42.3
1-2 teaspoon	78	35.13
2-4 teaspoon	48	21.62
4-6 teaspoon	40	18.01
Consequences of hypertension?		
Cholesterol	16	7.2
Diabetes	82	36.9
Heart Disease	72	32.4
Stress can increase BP?	52	23.4

study participants is showed in (Table 3), including salt intake and consequences of blood pressure.

DISCUSSION:

The purpose of this study was to determine the prevalence of hypertension among undergraduate students at universities in Lahore because of the rise of hypertension in older adults increasing day by day so it's important to diagnose early and give proper management and treatment and also educate young adults about the consequences of hypertension. Recent studies suggest that hypertension increased progressively in undergraduate students which leads to increased morbidity and mortality among young adults.

In the study population of 222 participants, the participant's gender was found to be strongly associated with the systolic blood pressure and diastolic blood pressure, study reveals that a higher percentage of hypertensive participants were found among males than in females. Aliana Santosa, Yue Zhang (2020) reported that the occurrence rate of hypertension is more in men (43% in Sweden, 39% in China) than in female (29 and 36%), respectively⁹.

Hayon Michelle Choi in 2018 conducted research among Korean adults to find Sex differences in prevalence of hypertension and found that females are more likely to be hypertensive than male with the age because of the menopause¹⁰.

In the following study, most of the students do physical exercise and we find that lack of exercise is not associated with hypertension

and there is no correlation between physical exercise and hypertension because most of the students who are hypertensive do physical exercise but Das et al reported that the prevalence of hypertension was fewer (12.5%) among those who exercised and more among those (13.3%) who had not any good habit of exercise like walking, jogging, etc¹¹.

Similarly Balami A. D et al reported that in Malaysia University the students with low level of physical activity the hypertension rate was high (54.3%) as compared to those who do some kind of physical activity among the students¹².

From the findings it is concluded that there is an important relationship between obesity and hypertension. The students with overweight have a more risk of high blood pressure than those with normal weight. Similarly, Hana T. Al-Majed et al reported that in Kuwait 42.3% students with BMI > 25kg/m² have normal blood pressure, 62.1% had prior hypertensive and 75% were hypertensive. 18 Das et al reported in college students a higher prevalence of high blood pressure in overweight (15.9%) and obese (40.7%) than others¹³.

CONCLUSION:

There is a low prevalence of hypertension in undergraduate students of universities in Lahore. Whereas higher BMI is related with prevalence of hypertension. Most of the students perceive that hypertension can lead to diabetes and cardiovascular diseases.

References:

1. Basit A, Tanveer S, Fawwad A, Naeem N, Members N. Prevalence and contributing risk factors for hypertension in urban and rural areas of Pakistan; a study from second National Diabetes Survey of Pakistan (NDSP) 2016–2017. *Clinical and Experimental Hypertension*. 2020;42(3):218-24.
2. Zhou B, Danaei G, Stevens GA, Bixby H, Taddei C, Carrillo-Larco RM, et al. Long-term and recent trends in hypertension awareness, treatment, and control in 12 high-income countries: an analysis of 123 nationally representative surveys. *The Lancet*. 2019;394(10199):639-51.
3. Lim L-F, Solmi M, Cortese S. Association between anxiety and hypertension in adults: a systematic review and meta-analysis. *Neuroscience & Biobehavioral Reviews*. 2021;131:96-119.
4. Bello NA, Zhou H, Cheetham TC, Miller E, Getahun D, Fassett MJ, et al. Prevalence of hypertension among pregnant women when using the 2017 American College of Cardiology/American Heart Association blood pressure guidelines and association with maternal and fetal outcomes. *JAMA network open*. 2021;4(3):e213808-e.
5. Mubarak S, Malik SS, Mubarak R, Gilani M, Masood N. Hypertension associated risk factors in Pakistan: A multifactorial case-control study. *J Pak Med Assoc*. 2019;69(8):1070-3.
6. Shen Y, Wang T-T, Gao M, Hu K, Zhu X-R, Zhang X, et al. Effectiveness evaluation of health belief model-based health education intervention for patients with hypertension in community settings. *Zhonghua yu fang yi xue za zhi [Chinese journal of preventive medicine]*. 2020;54(2):155-9.
7. Latic N, Zupcic A, Frauenstein D, Erben RG. Activation of RAAS signaling contributes to hypertension in aged Hyp mice. *Biomedicines*. 2022;10(7):1691.
8. Jones NR, McCormack T, Constanti M, McManus RJ. Diagnosis and management of hypertension in adults: NICE guideline update 2019. *British Journal of General Practice*. 2020;70(691):90-1.
9. Conrad BR. Sigma Pi Sigma—A Departmental Legacy of Fellowship Part 3: Developing Community (1930s & '40s). *RadiationsF ALL*. 2020:22.
10. Choi HM, Kim HC, Kang DR. Sex differences in hypertension prevalence and control: analysis of the 2010-2014 Korea National Health and Nutrition Examination Survey. *PloS one*. 2017;12(5):e0178334.
11. Shah SN, Munjal Y, Kamath SA, Wander GS, Mehta N, Mukherjee S, et al. Indian guidelines on hypertension-IV (2019). *Journal of Human Hypertension*. 2020;34(11):745-58.
12. Idham A. Impact of Diabetes and Hypertension Control on Work Performance among Employees in Malaysia. *Research Berg Review of Science and Technology*. 2022;2(1):1-15.
13. Madkhali A, Sabai A, Himli E, Mathkooor S, Gohal T, Suwaydi S, et al. Prevalence Of Pre-Hypertension And Hypertension Among Secondary School Students In Samtah City, Saudi arabia. *World Journal of Pharmaceutical Research* 2022; 11(13): 67-79.