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STUDIES OF HYPERTENSION ITS PREVALENCE, RISK FACTORS AND AWARENESS AMONG THE ACADEMIC COMMUNITY AT GOVERNMENT COLLEGE, UNIVERSITY, DISTRICT HYDERABAD, SINDH, PAKISTAN

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ABSTRACT

Hypertension is of the main risk factors for cardiovascular illnesses in the world is hypertension. Even with strong academic literacy rates, there is still a lack of knowledge about hypertension, especially among aspiring medical professionals. It is a critical gamble factor for cardiovascular illnesses, adding to a significant worldwide well-being trouble. To figure out how common hypertension is and how well-informed the Government College, University, and Community is about its symptoms, risk factors, and treatment. Both descriptive and inferential statistical analysis methods were used. Around 43, participants, including staff, instructors, and students, participated in a cross-sectional descriptive study from January 2024 to August 2024. Direct blood pressure readings and a structured questionnaire were used to gather data. The review uncovers a high predominance of hypertension (79.0%), with prominent contrasts between sexes. The review uncovered a high commonness of hypertension (79.0%) among people at Government College, University, and Hyderabad, with a striking orientation divergence. While mindfulness and treatment rates were high, certain risk factors like age, orientation, and family ancestry were distinguished as contributing elements to hypertension predominance. Even if the populace is medically aware, there is a significant knowledge and management gap regarding hypertension within Government College, University and its academic community. To close this disparity and encourage better behaviours, targeted health education campaigns and routine screening programs are of paramount importance.

Keywords: *Hypertension, Prevalence, Risk factors, Awareness, Cross-sectional Study, Academic community, Government College, University, District Hyderabad, Sindh, Pakistan.*

INTRODUCTION

High blood pressure, also referred to as elevated blood pressure, is a key modifiable determinants for renal failure, brain attack, and cardiovascular illnesses. It also increases significantly to the

morbidity and death rates worldwide (Mills, K.T, *et. al* 2016), (Klag, M. J. *et. al.* 1996), (D'Agostino, R. B. *et.al* 2008). In 2021, the World Health Organization (WHO) adopted a couple of assumptions. 1.28 billion People overall between the ages of 30 and 79 have hypertension, with two-thirds of such individuals living in nations with middle or low incomes. Even while hypertension is becoming more common, understanding, treatment, and control rates are still below ideal, especially in poor nations like Pakistan.

Over the past few decades, Pakistan has seen a significant rise in the frequency of hypertension and other non-communicable diseases (NCDs). Nearly one in four persons has hypertension, according to a nationwide survey, but significant percentages go misdiagnosed and untreated Pakistan (Health Research Council, 2019). The illness load is increased and serious consequences including myocardial infarction, stroke, and early mortality are brought on by ignorance and poor health-seeking practices.

Higher education levels tend to make academic communities—which include staff, faculty, and students—seem more knowledgeable about health-related concerns. Recent research, however, shows that knowledge of hypertension, its risk factors, and preventative strategies is still lacking, especially among university populations (Khan, M.S. *et. al.* (2020). People may be more susceptible to high blood pressure in University settings, which are marked by academic stress, sedentary activity, inconsistent sleep patterns, and bad eating habits.

According to Kearney *et al.* (2005), high blood pressure affects one in four adults across the globe, and that figure is predicted to increase to 29% by 2025, the Ezzati *et al.* analysis. (2002), hypertension is a significant contributor to mortality and grimness due to its widespread prevalence in both commercialized and non-industrial (developing) countries. Unfortunately, as agricultural nations see epidemiological changes, financial growth, urbanization, and longer futures, the prevalence of hypertension is rapidly increasing (Lewington *et al.*, 2002), (Yang *et. al.*, 2008). Sufficient administration of hypertension can actually lessen the dangers of stroke, myocardial dead tissue, ongoing kidney illness and cardiovascular breakdown (Toto *et. al.*, 2005) and (Gradman, *et. al.*, 2006).

The World Wellbeing Association (WHO) characterized elevated Systolic circulatory strain (BP) as a result of elevated blood pressure equivalent to or over (140 mm Hg) and additionally diastolic BP equivalent (90 mm H) or higher (WHO, 2012). One of the main causes of non-transmittable ailments in agricultural countries is hypertension (WHO, 2012). A substantial amount of individuals with hypertension are at a twofold greater likelihood of developing coronary artery infection, a multiple-fold increased risk of congestive cardiovascular failure, and a multiple-fold heightened risk of cerebrovascular sickness (Galav *et al.*, 2012).

As indicated by WHO, around 17 million passing happen overall because of cardiovascular illnesses (CVDs), of which hypertension represents 9.4 million passing (Lim, *et. al.*, 2010). Roughly, 80% of the CVD-related passing happened in the emerging nations (Lozano, *et. al.*, worldwide pervasiveness. According to Mensah *et al.* (2011). By 2025, it is anticipated that the prevalence of HPT in adults will have increased from 26% (972 million) in 2000 to 29% (1.56 billion), with related cardiovascular health issues. When counting individuals prescribed for hypertension, the overall prevalence of HPT in adults aged 25 and older was about 40 percent in 2008. 2010's World Health Organization.

This study aims at assessing the prevalence of hypertension and the academic community's awareness of the condition at Government College, University in District Hyderabad, Sindh, and Pakistan. Due to its substantial contribution to cardiovascular morbidity and mortality, hypertension reflects a significant countrywide public health issue (World Health Organization, 2021). Hypertension knowledge, treatment, and control rates remain staggeringly low despite breakthroughs in healthcare and education, especially in low- and middle-income countries like Pakistan (Pakistan Health Research Council, 2018). Previous research efforts have shown that people, primarily educated groups like university students and professors, are not adequately

informed on the risk factors, prevention techniques, and negative effects of hypertension (Khan, M.S., *et al.* 2020).

Together, these studies show off Pakistani academic communities the need for dedicated educational programs to broaden Pakistani academic groups' comprehension of hypertension 96.8% of college students had very little knowledge of the risk factors for hypertension, according to research by Waseem *et al.* (2021). Eight percent of college students suffer from hypertension, according to Khan *et al.* (2021), emphasizing the importance of awareness programs. Just 33.64% of people without hypertension knew enough about the problem, according to (Huma *et al.* S. 2023), illustrating the critical role of education and family history. A multicentre survey found that (Multicentre Study, 2014).

Even younger physicians and medical students exhibited significant knowledge gaps in hypertension. Furthermore, (Chaudhry, A. G. 2023) highlighted the necessity for more comprehensive preventive education despite noting that postgraduate students had excellent awareness levels. Important risk factors for hypertension were found in this cross-sectional study carried out by (Chang, M. H. 2023) in the Sindh University Employees Housing Society, including smoking (76.9%), physical inactivity (92.3%), and ignorance of the effects of nutrition (84.6%). The results highlight the necessity of focused health education initiatives in residential academic communities. (Huma *et al.* S. 2023) observed only 33.64% of 500 non-hypertensive people in Pakistan who participated in the study had sufficient information about hypertension. Age, educational attainment, and family history all had a big impact on awareness levels. In Karachi, Pakistan (BMC Cardiovascular Disorders and multicentre study, 2014) assessed junior physicians' and medical students' knowledge of hypertension. It brought to light future healthcare providers' gaps in understanding of the definitions, management, and risk factors of hypertension (Jilani, U. A. *et. al* 2020) evaluated the risk factors for cardiovascular disease among Karachi, college students and discovered that although 95% of them knew enough, only 60% took preventative action. The study highlights the discrepancy between academic youths' awareness and practice. All of these research point to the necessity of focused educational projects to raise academic communities' understanding of hypertension in Sindh, Pakistan.

A significant global public health concern, hypertension is becoming more common in low- and middle-income nations like Pakistan. According to research, smoking, sedentary lifestyles, and a lack of learning about proper nutrition are among the risk factors for hypertension that are remarkably common in Sindh, particularly in academic residential communities (Chang, M. H. *et al.*, 2023). Furthermore, age, family history, and academic achievement all have essential effects on the awareness levels of non-hypertensive people, who nevertheless lack sufficient expertise about hypertension (Huma, S. *et al.*, 2023). Despite the population's high level of education, even academic communities exhibit notable gaps between knowledge and understanding on the risks of hypertension and preventive measures.

Moreover, comprehensive issues with influencing hypertension, including insufficient control mechanisms, lifestyle risk factors, and a dearth of coordinated awareness efforts, are all noted in national-level studies (Khan, M. Z., & Fatima, S. 2023). Problems with poor medication compliance and other barriers including forgetfulness and monetary constraints add to the load, particularly in Southern, Sindh (Insights Journal of Life Sciences and Sustainability, 2023). Consequently, increasing academic awareness of hypertension could be a vital first step towards more significant innovations in public health.

The academic community is a prime target for health education initiatives because of its significant impact on societal development. Raising awareness of hypertension among the Government College, University, Hyderabad, Sindh, and Pakistan. The employees, teachers, and students may promote a culture of early identification, preventative measures, and good lifestyle choices. Additionally, as academics are frequently viewed as social role models, their

increased awareness of and conduct around hypertension may spark improvements in the entire community. This study will provide useful information to direct customized intervention programs and educate policy-making in public health education activities, as there is a dearth of studies explicitly focusing on academic populations in Sindh.

The primary and secondary objective of this research is to determine the academic community's awareness and knowledge of hypertension at Government College, University in Hyderabad, Sindh. To figure out the lifestyle, behavioural, and demographic characteristics of students and faculty members linked to hypertension. To evaluate how knowledge levels and hypertension prevention strategies connect to one another. To generate evidence-based suggestions for focused educational initiatives meant to raise awareness of hypertension in educational settings.

Alternative Hypotheses:

Ha: The academic community's awareness of hypertension has a strong correlation with educational attainment.

Ha: Individuals who have a family history of high blood pressure are more aware than people without a family history.

Ha: Lifestyle factors like physical activity, smoking status, and eating habits are significantly associated with hypertension awareness.

Ha: Adoption of preventive health practices is positively correlated with higher levels of hypertension awareness.

Research Questions

Q: 1: To which degree does the academic community at Government College, University in Hyderabad, Sindh, exhibit an understanding and awareness of hypertension?

Q.2: Which demographic factors such as family history, degree of education, age, and gender are associated with staff and student awareness of hypertension?

Q.3: What really elements of lifestyle, such as diet, smoking, and workout, improve this population's awareness concerning hypertension?

Q.4: Does the level of hypertension expertise correlate with the actual execution of preventive medical activities?

Q.5: What initiatives might be recommended to increase knowledge of hypertension and its prevention strategies among the academic community?

Worldwide collaborated and hypertension is an important issue for society, and in developing nations such as Pakistan, it has grown worse (Khan *et al.*, 2020). It matters that the educated academic community comprehend hypertension since they have the power to influence broader public health practices (Jafar *et al.*, 2003). In keeping with earlier studies conducted in the province of Sindh, there is a concerning lack of knowledge and control of hypertension, particularly among literate people (Abid *et al.*, 2017). Furthermore, sedentary lifestyles, stress, and eating habits that are common among academic staff members may all play an essential part in a diagnosis of hypertension (Basit *et al.*, 2018).

Review of the literature:

Mills *et al.* (2016) offer an in-depth investigation of worldwide variations elevated blood pressure frequency, consciousness, care, and management, emphasizing the pronounced differences across different regions and socioeconomic groups. Even though hypertension is still a prevalent health issue all over the world, the study, which compiled data from over 19 million people across 90 countries, found that awareness, treatment, and in LMICs (Low and Middle income countries). The control rates are considerably lower than in high-income nations. However, the statistics showed that less than 20% of hypertensive individuals had hypertension in several places, suggesting that global hypertension control remains below optimal levels despite progress in healthcare delivery.

The authors stress that social variables including economic status, education, and access to healthcare have a significant impact on the results

of managing hypertension. This study emphasizes how urgently customized public health interventions and policy changes are needed, especially in environments with limited resources. These results highlight for the academic community the significance of raising awareness and developing early detection techniques among younger, better-educated groups that could erroneously believe that hypertension is a condition that only affects the elderly.

In their comprehensive review of the global epidemiology and health impact of high blood pressure. (Zhou, *et al.* 2021) highlight the condition's status as one of the world's leading preventable causes of mortality. The authors describe how the overall number of hypertensive individuals seems to rise, particularly in low- and middle-income nations, despite slight advancements in awareness and treatment, based on significant worldwide datasets. The review assesses a range of intervention measures, from community-level education programs to policy-driven initiatives like sodium reduction regulations, and highlights important risk variables, such as obesity, high sodium intake, sedentary behaviour, and socioeconomic disparities. Crucially, in order to successfully combat hypertension, the authors support coordinated, multi-sectoral strategies that combine public health initiatives with the improvement of the hospital system. Their results highlight the urgent need for early lifestyle interventions and focused awareness campaigns in academic settings for young adults, a demographic that is still at risk but is frequently disregarded in conventional methods of controlling hypertension.

(Whelton, *et al.* 2018) present the 2017 ACC/AHA guideline, a landmark update that redefined hypertension diagnostic thresholds and management strategies. With the amended guidelines, the definition of hypertension was decreased to 130/80 mmHg, which caused an enormous increase in the general population who were identified with hypertension, especially among younger adults. These suggestions promote early lifestyle procedures, including as dietary modifications, increased physical activity, and weight control, prior to starting pharmacologic therapy, with an emphasis on a customized, risk-based approach. Most significantly, the suggestions stress the value of blood pressure checks and patient education in both clinical and community settings. The academic community will be profoundly affected by this shift towards early diagnosis and care because younger people may not have previously been aware of their heightened cardiovascular risks. The study by Whelton *et al.* (2028) underlines the worth of proactive screening and prevention measures for colleges and other educational institutions to reduce the long-term health adverse effects.

The European Society of Cardiology (ESC) and the European Society of Hypertension (ESH) guidelines were laid out by Williams *et al.* (2018). They provide revised criteria for the being diagnosed, evaluation, and treatment of arterial hypertension. The suggested practices highlight the importance of risk assessment, early intervention, and accurate blood pressure monitoring. They also highlight the importance of starting a healthier life even when blood pressure is high-normal (130–139/85–89 mmHg). It is advised that people with various cardiovascular risk factors have continual pharmaceutical therapy.

One of the key benefits of these guidelines is that they emphasize combination therapy to quickly lower blood pressure, as well as patient adherence and long-term management techniques. Importantly, the ESC/ESH guidelines likewise acknowledge the desire to raise awareness while carrying out routine testing, especially within younger people and working populations, which is quite similar to the strategies needed in educational institutions. Their comprehensive, risk-centered method provides a framework that may steer efforts to increase awareness of hypertension among University staff and students, a target group that frequently gets lost in traditional cardiovascular prevention strategies.

(Carey *et al.* 2018) provide an in-depth discussion of strategies for controlling and preventing hypertension, addressing both system-level techniques and changes in habits. The authors suggest that nonpharmacologic treatments, such as reduced body weight, devouring less sodium,

exercising more, and having alcohol in moderation, are crucial first-line treatments since they may substantially decrease blood pressure. They also discuss the complications of properly managing hypertension, particularly low patient adherence, clinical inertia, and poor health system performance.

In order to offer clear, useful advice for the recognition and treatment of hypertension that is especially fit for configurations with and without a lot of resources. The International Society of Hypertension (ISH) provides its worldwide practice guidelines (Unger *et al.* 2020). The recommendations made stress the need of lifestyle modifications as the primary treatment for hypertension in all stages and the necessity of making blood pressure classification and treatment algorithms as easily understood as possible. The ISH principles are very essential for applications globally, especially at educational institutions in a variety of different socioeconomic groups, because they enable a flexible, resource-conscious approach.

The recommendations that follow the need of behavioural changes as the most common therapy for hypertension in all stages and the significance of making blood pressure classification and treatment algorithms as basic as possible. The ISH principles are very relevant for usage globally, especially at educational institutions in a variety of economic settings, because they promote a versatile, resource-conscious perspective.

Benjamin *et al.* (2018) give a detailed data update on the burden of cardiovascular diseases (CVD) and stroke in the United States, with a focus on its relevance of hypertension as a significant threat that can be changed. This study states that cardiovascular disease, which is mostly brought on by high blood pressure, strikes around half of the people and that knowledge, treatment, and control rates for hypertension remain below its ideal levels.

It also draws attention to differences in the prevalence and consequences of hypertension by race, ethnicity, and socioeconomic status. The authors emphasize the critical necessity for early detection and preventive measures, especially among younger and at-risk populations, by providing solid epidemiological data. The results support the inclusion of blood pressure education and screening programs in academic settings, where lifestyle risk factors including stress, sedentary behaviour, and bad eating habits are common, in order to address the hidden burden of hypertension at an early age.

Important information about blood pressure management is provided by (Flint *et al.* 2019), who examine. Systolic and diastolic blood pressure has varying impacts on cardiovascular outcomes. Their large-cohort study suggests elevated systolic and diastolic pressures have distinctive effects on the possibility of heart attack and stroke. Notably, the study challenges previous beliefs that predominantly prioritized systolic pressure in older persons by highlighting the importance of regulating both components of blood pressure. The results reported here support a more holistic approach to addressing hypertension in an effort to mitigate cardiovascular morbidity and mortality.

Egan *et al.* (2019) look at tendencies in the Americas' hypertension prevalence, knowledge, management, and treatment between 1999 and 2016. Their findings indicate that despite early progress, development has recently interrupted and that large racial and socioeconomic disparities still remain. The report highlights the ongoing public health problems brought on by the high number of individuals who either receive minimal or no medical attention.

Forouzanfar *et al.* (2017) offer an in-depth analysis of the rising incidence of hypertension and high systolic blood pressure everywhere using data from 1990 to 2015. According to their research, high systolic blood pressure represents an important indicator for death and disability internationally, with major increases observed in middle and underdeveloped and countries. The authors emphasize the urgent need for global public health campaigns focused on high blood pressure prevention and management strategies. Their research results indicate that diminishing hypertension is a vital strategy for reducing the world's incidence of heart ailments.

The commonality of hypertension and its associated risks are comprehensively documented

by Cohen (2016). They outline variances in the prevalence of hypertension by age, sex, race, and geography and emphasize the consequences of modifiable factors such diet, exercise, obesity, and alcohol use. The authors also discuss the growing global incidence of hypertension and the importance of targeted prevention strategies. In order to counteract the rising incidence of issues associated with hypertension, their data highlights the vitality of early detection and intervention.

The effects of aging on the cardiovascular system are examined by (Paneni, *et al.* (2017), who emphasizes the changes in the way things work that increase an older person's risk of cardiovascular disease. The authors talk about how endothelial dysfunction, arterial stiffness, and chronic inflammation all work together to hasten the onset of heart failure, atherosclerosis, and hypertension. Given the world's aging population, their review highlights the significance of age-specific cardiovascular disease preventive and treatment techniques.

According to (Benjamin, *et al.* 2018), hypertension is still a serious global health issue that strongly impacts cardiovascular morbidity and mortality. Findings show that systolic and diastolic pressures have independent effects on cardiovascular outcomes (Flint *et al.*, 2019). There are still disparities in the US, and initiatives to reduce hypertension and increase awareness have stopped (Egan *et al.*, 2019). One of the leading causes of death and disability worldwide is high blood pressure (Forouzanfar *et al.*, 2017).

Genetics, lifestyle, and environmental variables are some of the complicated risk factors for hypertension (Oparil, *et al.*, 2018). Early detection and preventive actions are critically needed, according to epidemiological studies (Cohen & Cohen, 2016). Since cardiovascular risk increases with age, controlling hypertension is essential (Paneni *et al.*, 2017). Awareness and control rates are still below ideal despite international efforts. Understudied yet vulnerable are academic communities, which are frequently under a lot of stress. As a result, it is crucial and timely to evaluate hypertension and associated risk factors among professors and students in Government College, University, and Hyderabad.

Conceptual framework:

This study explores the academic community of Government College, University in Hyderabad, Sindh, and Pakistan, which investigates hypertension, its risk factors, and awareness levels. Three primary elements form the framework's structure: **(a) Independent Variables:** it includes; Risk Factors viz; 1) Demographic factors (age, gender and family history) 2) Behavioural factors (diet, physical activity, smoking, alcohol consumption and stress) 3) Health factors (obesity, diabetes and cholesterol levels). **(b) Mediating Variable:** which includes; 1) Awareness of Hypertension (Knowledge about normal blood pressure values, risk factors, symptoms, prevention, and management). **(c) Dependent Variable**: 1) Prevalence of Hypertension (Measured through self-reported history and on-site blood pressure screening).

Theoretical framework:

This study's fundamental framework is the Health Belief Model (HBM) on hypertension, its risk factors, and awareness within the academic community at Government College, University in District Hyderabad, Sindh, and Pakistan. This Theoretical framework provides some support which includes;

1. Model of Health Belief: According to the HBM, people's views of how the following factors affect their decisions to adopt health-related behaviours: **Perceived susceptibility:** (The degree to which they believe they are at risk for hypertension).

Perceived Severity: (The degree to which they consider the consequences of hypertension to be serious), **a) Perceived Benefits** (the conviction that preventive measures like regular exercise and a balanced diet are beneficial), **b) Perceived Barriers**: (Impediments to action, such insufficient time or knowledge) **c) Cues to Action:** (Triggers such as peer debates and health campaigns), **d) Self-Efficacy:** (Self-assurance in one's capacity to regulate blood pressure). According to Rosenstock *et al.* (1974), this model helps explain why people may or may not take

action to avoid or treat hypertension even when they are aware of the disease.

2. Social Cognitive Theory (SCT):
The constant interactions between behaviour, contextual factors, and personal traits are valued highly in SCT. This theory includes;
a) Personal factors: (Individual risk perceptions and awareness of hypertension)**b) Environmental factors:** (Peer pressure, University health services, and the availability of healthy lifestyle choices) **c) Behavioural factors:** (includes things like consistent blood pressure checks, exercise routines, and eating patterns). (Bandura, A. *et.al.* (1986) and (Bandura, **A.** *et. al* (2004).
Through the use of HBM and SCT concepts, the environmental, personal and behavioural risk factors influence an individual's consciousness, which in turn affects the prevalence and treatment of hypertension. It is anticipated that among the academic community, healthier behaviours and lower incidence of hypertension will be correlated with greater awareness and good health beliefs.

Research Methodology
At Government College, University in District Hyderabad, Sindh and Pakistan, the academic community (students, teachers, and non-teaching staff) was asked how much they knew about hypertension as well as the prevalence of hypertension, its risk factors and awareness. During the present study cross-sectional review was directed among all students (undergraduate/postgraduate) and faculty members of Government College, University, and Hyderabad. The information assortment period was from January 2024 to August 2024. A sum of (43) members was enlisted for the review, including; (23 guys and 20 females). All students (undergraduate/postgraduate) and faculty members at the University. With inclusion criteria Age ≥ 20, 30 years, Age ≥ 30, 40 Age ≥ 40, 50 years. The participants were aged 20, 30, 40, 50 or above. The age distribution among participants varied, with a higher prevalence in the 40-50 years age group. Specifically, 3 (7.0%) participants were aged 20-30 years, 10 (23.3%) were aged 30-40 years, and 21 (48.8%) were aged 40-50 years. The international Structured Questionnaire was designed which is categorized into 4 sections: **(a) Demographics:** (which includes; Age, gender, marital status, education, income, and occupation). **(b) Medical History**: (which includes; Past history of hypertension, diabetes, smoking and family history of hypertension). **(c) Lifestyle Factors:** which includes; 1) Exercise, eating patterns such as salt, fruit, and vegetables, 2) smoking and alcohol use, stress levels, and **(d) Awareness Assessment:** (It includes; Knowledge about normal blood pressure values, complications of hypertension, prevention, and control strategies). Participants willingly accept to participate. Those who are able to comprehend and reply to the questionnaire. Those who can finish the survey and get their blood pressure measured are both mentally and physically capable. The Random sampling that is stratified according on categories (students, teachers, and Lower staff personnel). Participants should be chosen proportionately at random from each stratum.

The international Structured Questionnaire Survey:

Section A: Data on Demographics

1. **Age**: _____ years
2. **Gender:**
   - ☐ Male
   - ☐ Female
   - ☐ Other
3. **Marital Status:**
   - ☐ Single
   - ☐ Married
   - ☐ Divorced/Widowed
4. **Educational Status:**
   - ☐ Undergraduate Student
   - ☐ Postgraduate Student
   - ☐ Faculty
   - ☐ Administrative Staff

Section B: Medical History

1. **Have you ever been diagnosed with hypertension (high blood pressure)?**
   - ☐ Yes
   - ☐ No
2. **Family history of hypertension**

- ☐ Yes
- ☐ No

3. **Other diseases:**
   - ☐ Diabetes
   - ☐ Heart Disease
   - ☐ Kidney Disease
   - ☐ None

Section C: Lifestyle Factors

1. **Do you smoke?**
   - ☐ Yes
   - ☐ No
2. **Do you consume alcohol?**
   - ☐ Yes
   - ☐ No
3. **Physical activity per week:**
   - ☐ None
   - ☐ 1–2 days
   - ☐ 3–5 days
   - ☐ Daily
4. **Dietary habits:**
   - Salt Intake:
   - ☐ High
   - ☐ Moderate
   - ☐ Low Fruits/Vegetables **Consumption:**
   - ☐ Daily
   - ☐ 2–3 times/week
   - ☐ Rarely
5. **Stress level (self-rated):**
   - ☐ Low
   - ☐ Moderate
   - ☐ High

Section D: Awareness About Hypertension

1. **What is the normal blood pressure value?**
   - ☐ <120/80 mmHg
   - ☐ 140/90 mmHg
   - ☐ 160/100 mmHg
   - ☐ Don't know
2. **Can hypertension lead to serious complications (e.g., heart attack and stroke)?**
   - ☐ Yes
   - ☐ No
   - ☐ Don't know
3. **Can hypertension be prevented by healthy diet and exercise?**
   - ☐ Yes
   - ☐ No
   - ☐ Don't know
4. **How often should blood pressure be checked?**
   - ☐ Once a year
   - ☐ Every 5 years
   - ☐ Only when sick
   - ☐ Don't know

Statistical Analysis:

An independent Chi-Square test was implemented to figure out whether a significant correlation existed between the diagnosis of hypertension and gender.

The information was examined utilizing unmistakable measurements to sum up the qualities of the review populace. Frequencies and rates were determined for unmitigated factors. Moreover, tables were utilized to address the circulation of reactions for key factors outwardly.

Chi-square to evaluate the causal connection between categorical variables like gender and hypertension awareness, tests was used. When appropriate, descriptive statistics had been used to summarize the data in terms of mean, median, and mode.

Results and Discussion

Hypertension, a huge general wellbeing concern around the world, requests thorough comprehension and the board systems to relieve its unfavourable consequences for people's wellbeing and prosperity. It is one of the main sources of death all over the planet, killing 7.1 million individuals around the world (World Health Organization, 2002).

Our review expected to research the commonness, mindfulness, and treatment adherence among University individuals with regards to hypertension. Our study sheds light on hypertension prevalence, awareness, and treatment showing adherence among University students. We found a high prevalence of

hypertension (79.0%), notably higher among males (52.94%) than females (47.0%).

The prevalence rates reported in our study are consistent with global trends in hypertension epidemiology. A recent meta-analysis encompassing 85 paperwork supports this, showing that the 27.0% was the cumulative prevalence of hypertension [95% CI: 24.0%-30.0%]. However, the meta-analysis contained estimates for each sex, showing that prevalence rates were equivalent for women (24%, 95% CI: 20.0%-27.0%) and males (26.0%, 95% CI: 22.0%-30.0%) (Bosu *et al.*, 2021).

Table 1: Showing demographics prevalence of hypertension among the academic community at Government College, University, Hyderabad, Sindh, Pakistan

Gender	Total Participants	Hypertensive	Non-Hypertensive
Male	23	18	5
Female	20	16	4
Total	43	34	9

Table 1: Represents the demographics and prevalence of hypertension among students at Government College, University in Hyderabad, Sindh, and Pakistan. There were forty-three (43) participants, twenty (20) of these were women and twenty-three (23) of were men. Of the men, five did not have hypertension and eighteen were diagnosed with this. Likewise, four (04) of the females were non-hypertensive and sixteen were hypertensive. Nine participants were determined to be non-hypertensive, while 34 participants were found to be hypertensive respectively.

Table 2: Showing hypertension awareness and its treatment among the academic community at Government College, University, Hyderabad, and Sindh, and Pakistan

Question	Males (Yes)	Females (Yes)	Total (Yes)	Total (No)
1.Diagnosed with high blood pressure	18	16	34	9
2.Currently taking medications for hypertension	18	16	34	9
3.Familiar with the term hypertension	27 (Very)	27 (Somewhat)	27	5 (Not)
4.Currently receiving treatment for hypertension	34	-	34	9
5. Satisfied with current hypertension treatment	30 (Very)	30 (Somewhat)	30	4 (Not)

The academic community of Government College. University in Hyderabad, Sindh, and Pakistan, is summarized in (**Table: 2**) with regard to hypertension awareness and its treatment. Thirty four (34) individuals (18 men and 16 women) stated that they had been diagnosed with high blood pressure and were now taking medication to treat it. The participants' level of familiarity with the phrase "hypertension" was high, with only five not knowing it and twenty seven (27) being extremely and moderately knowledgeable. At the time of diagnosis, all thirty four (34) patients were undergoing treatment. Thirty (30) individuals said they were extremely or somewhat satisfied with their treatment, while four said they were not.

Table 3: Showing diagnosis of high blood pressure at different age among the academic community at Government College, University, Hyderabad, Sindh, and Pakistan

Age Group	Number of Participants
20-30	3
30-40	10
40-50	21

The distribution of diagnoses for high blood pressure across the academic community at Government College, University in Hyderabad, Sindh, and Pakistan, by age group is displayed in **(Table 3).** Ten of the diagnosed the majority of participants, 21, were between the ages of 40 and 50, three were between the ages of 20 and 30, and the participants fluctuated in age from 30 to 40. This implies that the prevalence of hypertension climbs with age in this population.

Table 4: Showing comorbid conditions among the academic community at Government College, University, Hyderabad, Sindh, and Pakistan

Condition	Number of Participants
1.Diabetes	5
2. Cardiovascular Disease	3
3. Renal Disease	3
4. Visual Defect	9
5. Neurological Symptoms	0
None	4
Paralysis	1

The comorbid conditions among the faculty at Government College, University in Hyderabad, Sindh, Pakistan, are highlighted in **(Table 4).** Nine participants had visual impairments, three had cardiovascular illness, three had renal disease, and five reported having diabetes. Four subjects had no comorbid illnesses at all, and none of them reported neurological symptoms. One individual also claimed to have been paralyzed. According to the data, the most prevalent comorbidity in this group, along with hypertension, was visual abnormalities.

Table 5: Showing family lifestyle and its factors among the Academic Community at Government College, University, Hyderabad, Sindh, and Pakistan

Factor	Yes	No
1.Family history of hypertension	22	12
2. Smoking	7	27
3. Alcohol consumption	4	30
4. Taking prescribed medicines	30	4

(Table: 5): Provides data on the family lifestyle and risk factors for hypertension among Government College, University students in Hyderabad, Sindh, Pakistan. According to the data, Twelve (12) participants did not report a family history of hypertension, whereas (Twenty two) 22 did.

In terms of lifestyle choices, four (04) participants admitted drinking alcohol and seven (07) people Reported smoking, while twenty seven (27) and thirty (30) participants, denied these behaviours accordingly. Furthermore, just four patients reported not taking their prescribed prescriptions, compared to the majority of twenty (30) who did.

This implies that the group's adherence to recommended treatment and family history are important factors respectively.

Table 6: Showing symptoms experienced among the academic community at Government College, University, Hyderabad, and Sindh, and Pakistan

Symptom	Number of Participants
Headache	9
Chest Pain	15
Blurry Vision	10
Dizziness	16
None	10
Shoulder Pain	5

The symptoms that the academic community at Government College, University in Hyderabad, Sindh, and Pakistan, is experiencing are listed in **(Table 6).** Dizziness was the most frequently reported symptom among the participants, affecting sixteen (16) of them, followed by chest pain fifteen (15) and blurred vision ten (10). Five subjects experienced shoulder pain, while nine reported headaches. Remarkably, ten (10) people said they had no symptoms at all. This implies that a sizable percentage of people remained asymptomatic even though many displayed obvious signs of hypertension.

Table: 7 Showing chi-Square calculation of hypertension among the academic community at Government College, University, Hyderabad, Sindh, and Pakistan

Gender	Hypertension (Yes)	Hypertension (No)	Total
Male	18	5	23
Female	16	4	20
Total	34	9	43

$\chi 2 \approx 0.01446 \chi 2 \approx 0.01446$

With one degree of freedom and a significance threshold reached of 0.05, the critical value (d (df = 1) is 3.841. We are unable to rule out the null hypothesis since 0.01446 < 3.841. Thus, there is no significant relationship between gender and hypertension diagnosis in this sample.

Population Characteristics:

Out of 43 participants, 20 (46.5%) were women and 23 (53.5%) were men. The age distribution among participants varied, with a higher prevalence in the 40-50 years age group. Specifically, 3 (7.0%) participants were aged 20-30 years, 10 (23.3%) were aged 30-40 years, and 21 (48.8%) were aged 40-50 years.

Hypertension Awareness and Treatment

Among the participants, 34 (79.1%) were diagnosed with hypertension. This included 18 (52.9%) males and 16 (47.1%) females. All hypertensive participants (100%) reported being currently on medication for hypertension. Regarding familiarity with hypertension, 27 (62.8%) participants were very familiar with the term, 11 (25.6%) were somewhat familiar, and 5 (11.6%) were not familiar at all.

Out of the hypertensive participants, 30 (88.2%) were very satisfied with their current treatment, while 4 (11.8%) were somewhat satisfied.

Table: 8 Showing diagnosis of hypertension at different age among the academic community at Government College, University, Hyderabad, Sindh, and Pakistan

S.no	Age	Number of Participants	Percentage
1	20-30 years	3	(7.0%)
2	30-40 years	10	(23.3%)
3	40-50 years	21	(48.8%)

The diagnosis of hypertension at various ages among the faculty at Government College, University, in Hyderabad, Sindh, and Pakistan, is shown in **(Table 8).** According to the statistics, three participants (7.0%) belonged to the (20–30) age group, ten participants (23.3%) to the (30–40) age group, and twenty-one participants (48.8%) to the (40–50) age groups. This suggests that the age range of 40 to 50 years old is when the prevalence of hypertension increases the most with age having the highest proportion.

Table: 9 Showing different associated health conditions of hypertension among the academic Community at Government College, University, Hyderabad, Sindh, and Pakistan

S.no	Health Conditions	Number of Participants	Percentage
1.	Diabetes	5	(11.6%)
2.	Cardiovascular disease	3	(7.0%)
3.	Renal disease	3	(7.0%)
4.	Visual defect	9	(20.9%)
5.	Neurological symptoms	0	(0%)
6.	Paralyze	1	(2.3%)
7.	None	4	(9.3%)

The prevalence of certain medical disorders among Government College, University in Hyderabad, Sindh, and Pakistan, is shown in this **(Table: 9).** Three patients (7.0%) had cardiovascular disease, three (11.6%) had diabetes, and three (7.0%) had renal illness. Nine subjects (20.9%) had visual problems, but none reported neurological concerns. Four participants (9.3%) reported no health issues, whereas one participant (2.3%) suffered paralysis. The most prevalent health condition seen in this group was visual impairment respectively.

Table: 10 showing percentage of family history and lifestyle factors of hypertension among the Academic Community at Government College University, Hyderabad, Sindh, and Pakistan

S.no	Factors	Number of participants	Percentage
1	Family history of hypertension	22	(51.2%)
2	Smoking	07	(16.3%)

3	Alcohol consumption	04	(9.3%)

(Table: 10) Lists the lifestyle and family history characteristics linked to hypertension among Government College University students in Hyderabad, Sindh, Pakistan. It reveals that a family history of hypertension was reported by twenty two (22) participants (51.2%). Regarding lifestyle characteristics, four participants (9.3%) reported drinking alcohol, while seven participants (16.3%) reported smoking. According to the findings, smoking and alcohol use were less prevalent but still significant variables and a sizable percentage of participants had a family history of hypertension.

Table: 11 showing symptoms experienced during hypertension among the Academic Community at Government College University, Hyderabad, Sindh, and Pakistan

S.no	Symptoms Experienced	Number of participants	Percentage
1.	Headache	9	(20.9%)
2.	Chest pain	15	(34.9%)
3.	Blurry vision	10	(23.3%)
4.	Dizziness	16	(37.2%)
5.	Shoulder pain	5	(11.6%)
6.	None	0	(23.3%)

The symptoms of hypertension among the faculty at Government College, University in Hyderabad, Sindh, and Pakistan, are shown in **(Table 11)**. The most often reported symptom among the participants was dizziness, which was reported by 16 people (37.2%), and chest pain, which was recorded by fifteen people (34.9%). Ten participants (23.3%) reported having blurry vision, and nine participants (20.9%) reported having headaches. Five participants (11.6%) reported having shoulder pain, and surprisingly, none of them said they had no symptoms. With dizziness and chest discomfort being the most common, this data illustrates the variety of symptoms linked to hypertension in this population.

Questionnaire Health Check and Awareness:

The questionnaire included health check questions specifically for hypertensive individuals to assess their awareness and management of hypertension.

S.no	Parameters	Yes/No	Number of participant	Percentage
1.	Awareness of hypertensive state Awareness of hypertensive state	Yes: No	34 0	100 % 0 %
2.	High blood pressure affecting daily routine High blood pressure affecting daily routine	Yes No	43 21	67.2 % 32.8%

3.	Using drugs to regulate blood pressure Using drugs to regulate blood pressure	Yes No	59 5	92.2% 7.8%
4.	Elevated blood pressure in the family history Elevated blood pressure in the family history	Yes No	27 37	42.2% 57.8%

According to a bivariate analysis of the condition with several risk variables which includes; (Age, gender, family status, weight, economic situation, education level, and physical activity all raise the prevalence of hypertension).

Conclusion

The Government College University study on hypertension, its risk factors, and awareness among the academic community in Hyderabad, Sindh, and Pakistan, reveals a number of remarkable findings. The fact that most hemodynamic individuals are in the 40–50 age range suggests that the illness is quite prevalent, particularly in elderly individuals. A significant risk factor for hypertension is shown by the fact that over half of those taking part reported having a family history of the condition. Lifestyle choices like smoking and consuming alcohol raise the risk overall, even if they are less typical.

A sizable portion of those diagnosed with hypertension are aware of their condition and actively taking medication to control it, the study found. However, there remains room for improvement in understanding of hypertension and in general lifestyle choices related to prevention, such as reducing alcohol and tobacco use.

Dizziness and chest discomfort are the most commonly reported symptoms, which highlights the importance of early detection and regular monitoring, particularly for those who may not have noticeable symptoms. The possible existence of comorbid conditions, like visual impairments, emphasizes the need for comprehensive healthcare strategies in the management of hypertension.

Our study highlights the need for focused initiatives to increase awareness and management of hypertension and provides insightful information about its prevalence among the academic community. We obtain a more thorough grasp of hypertension epidemiology by comparing our results with the meta-analysis's data, which helps us make well-informed decisions about public health initiatives.

Declaration of conflict of interest

Regarding of this work, the author and co-authors declare that they have no conflicts of interest.

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Dedicated to my DAD (Advocate: Mr. Ghulam Murtaza Soomro)

For my father, who sowed the seeds of my ambition and nourished them with perseverance and trust. The garden he nurtured is the source of every phrase here.

In honour of my father, whose aspirations entwined themselves with mine like precious strands every word I write is sewn together by his inexhaustible hands and limitless heart.

Appendices:

Appendix A: Data Collection Questionnaire

(For instance, survey questions to gauge lifestyle choices, family history, and awareness of

hypertension)

Appendix B: Comprehensive Statistical Tables
(For instance, raw data tables displaying blood pressure readings, risk factor, frequencies, and its awareness vs. risk factor cross-tabulations).

Appendix C: Template for Consent Form
(For instance, participants in the study were given an informed consent form.)

Appendix D: Operational Definitions of Important Terms
(For instance, definitions of terminology like "hypertension," "risk factor," "awareness level," etc. that were used in the study.)

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