



## AVIGATING THE HYPERTENSION EPIDEMIC: A CROSS-SECTIONAL EXAMINATION OF PREVALENCE, RISK FACTORS, AND LIFESTYLE INFLUENCES IN A DIVERSE ADULT COHORT

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### ABSTRACT

**Background:** Hypertension (HTN) is a considerable public health concern worldwide, significantly contributing to cardiovascular diseases and mortality. Hypertension ranks third amidst cardiovascular risk factors, substantially expanding heart disease, stroke, and renal failure risks.

**Aim:** This study aims to evaluate the prevalence of hypertension and its associated risk factors among adults aged between 18-65.

**Methodology:** A cross-sectional study was organized by using a structured questionnaire administered via Google Forms. Data from the questionnaire were analyzed using Excel. Percentages were used to summarize the data and to evaluate the prevalence of HTN.

**Results:** The study included 300 participants, covering various demographic factors such as age, gender, weight, marital status, residency, family system, and employment status. The survey also assessed risk factors including family history, dietary habits, physical activity, smoking, alcohol consumption, and stress levels. Additionally, the study evaluated the duration of hypertension, symptom prevalence, lifestyle modifications, and the impact of concomitant diseases on hypertension.

The survey revealed that 32.3% of participants were male and 67.8% female, with the majority aged between 18-24 years. Weight distribution showed significant variability, with most participants falling within the 40-60 kg range. The majority were unmarried (81.4%) and resided in urban areas (38.1%). Regarding risk factors, 41% had a family history of hypertension, 32.2% had unhealthy dietary habits, and 53.7% engaged in moderate physical activity. High salt intake and stress were recognized as major contributors to hypertension. Among those diagnosed with hypertension, symptom prevalence included dizziness (26.3%), headaches (34.2%), and shortness of breath (5.3%). Treatment adherence varied, with 63.2% following prescribed lifestyle modifications.

**Conclusion:** The study shows that among every 100 people 11 people are HTN patients. Lifestyle

elements contributing to hypertension was family history of hypertension, moderate physical activity, smoking, alcohol consumption, stress and high salt intake was primarily recognized as a factor to hypertension. Based on the results public health campaigns, lifestyle interventions, improved screening, patient education and incorporated health care are suggested to tackle hypertension prevalence.

**Keywords:** Hypertension, Sympathetic nervous system, RAAS, Endothelial dysfunction, Risk factors, Vasoactive substances, Lifestyle modifications, Concomitant diseases, Demographic data, Cross-sectional survey, Dietary habits, Physical activity, Stress levels, Family history, Smoking, Alcohol consumption, Symptom prevalence, public health, Urban vs rural, young adults, Blood pressure, Health management.

## 1. Introduction

Hypertension is an utmost modifiable risk factor, tremendously contributes to Coronary atherosclerosis, heart insufficiency, cerebrovascular disorder, and persistent renal failure. Known as a "silent killer" due to its lack of preliminary symptoms and high mortality rates, it affects one-quarter of the global adult population, with projections suggesting an increase to 29% by 2025 (Shah et al., 2018). Its high prevalence in among developed and developing countries highlights its consequential role in mortality and morbidity (Ibrahim & Damasceno, 2012).

### 1.1 Definition

WHO interprets the HTN as, Hypertension (high blood pressure) is when the pressure in your blood vessels is too high (140/90 mmHg or higher) (Nugroho et al., 2022; Organization & Group, 2003). Hypertension (HTN), in accordance with American Heart Association (AHA), is elucidated based on blood pressure readings. The AHA categorizes blood pressure levels as follows: (Normal) Systolic < 120 mm Hg and diastolic < 80 mm Hg. (Elevated) Systolic between 120-129 mm Hg and diastolic < 80 mm Hg. (Hypertension Stage 1) Systolic between 130-139 mm Hg or diastolic between 80-89 mm Hg. (Hypertension Stage 2) Systolic at least 140 mm Hg or diastolic at least 90 mm Hg. (Hypertensive Crisis) Systolic > 180 mm Hg and/or diastolic > 120 mm Hg, requiring immediate medical attention (Flack & Adekola, 2020; Ihm et al., 2019).

### 1.2 Causes

Primary HTN also called essential hypertension mainly because of stress (Balwan & Kour, 2021), genetics, age, poor diet, lack of physical activity, obesity (De Lorenzo et al., 2019), and alcoholism (Deshmukh & Acharyya, 2021) are momentous contributors. (Setters & Holmes, 2017).

Secondary hypertension, an oppressive and unanticipated form of high blood pressure, arises from underlying conditions like adrenal tumors (Rodríguez-Gutiérrez et al., 2013), congenital heart defects (Cingolani, 2019), specific medications, illegal drugs, CKD, sleep apnea (Pedrosa et al., 2011), and thyroid issues. (Oparil et al., 2018; Pullalarevu et al., 2014).

### 1.3 Pathophysiology of HTN (Delacroix et al., 2014)

Table 1. Pathophysiology of HTN

Systems	Effects		
<b>Sympathetic nervous system</b> (Delacroix et al., 2014)	The renal sympathetic nervous system substantially contributes to hypertension by influencing blood pressure through both efferent and afferent pathways.		
	<table border="0"> <tr> <td style="vertical-align: top;"><u>Efferent pathway</u> The efferent pathway dispatches signals from the sympathetic nervous system to the kidneys, increasing renin release and activating the</td> <td style="vertical-align: top;"><u>Afferent pathway</u> The afferent pathway counter to receded renal blood flow by radiating signals to the sympathetic nervous system, further augmenting sympathetic</td> </tr> </table>	<u>Efferent pathway</u> The efferent pathway dispatches signals from the sympathetic nervous system to the kidneys, increasing renin release and activating the	<u>Afferent pathway</u> The afferent pathway counter to receded renal blood flow by radiating signals to the sympathetic nervous system, further augmenting sympathetic
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<p><b>Renin-angiotensin-aldosterone system (RAAS):</b> (Steckelings &amp; Unger, 2019)</p>	<p>RAAS system, which augments sodium and water retention and hike blood pressure.</p>	<p>activity and alleviating high blood pressure.</p>
<p><b>Endothelial dysfunction</b> (Konukoglu &amp; Uzun, 2017)</p>	<p>RAAS effect the blood pressure in two sorts of stimuli, Low renal blood flow and low salt intake.</p>	<p><u>Low salt intake</u> Insufficient salt intake activates the RAAS, provoking the adrenal glands to release aldosterone, which increases salt recapture and hydro retention, thereby alleviating blood pressure.</p>
<p><b>Vasoactive substances</b> (Guzik &amp; Touyz, 2017)</p>	<p><u>Low renal blood flow</u> These stimuli elicit the release of renin, which converts angiotensinogen to angiotensin I and through ACE into angiotensin II, the active constituent of this series and a Highly active vasoconstrictor. That increase PVR and eventually BP.</p>	
	<p>The mechanism behind endothelial dysfunction witnessed in HTN is the subsidence in accessibility of nitric- oxide (NO), results in heightened oxidative stress that cause the vasoconstriction resulting in elevated PVR and BP.</p>	
	<p>Endothelin, a powerful vasoconstrictor, plays a significant role in regulating vascular tone. It is produced by endothelial cells and exerts its effects through endothelin-1 (ET-1), leading to elevated blood pressure.</p>	

### 1.4 Complications

Arterial Hypertension is a leading stimulus of CKD (Palomo-Piñón et al., 2024), atrial fibrillation (Manolis et al., 2012), stroke and heart failure (Vachiéry et al., 2013) that vary from person to person.

### 1.5 Nonpharmacological treatment (Delacroix et al., 2014)

The details of non-pharmacological treatment are illustrated in the tables 2 and 3.

**Table 2.** Nonpharmacological treatment

Lifestyle improvements
<b>Weight:</b> Maintaining a healthy body weight within the Body mass index range of 18.5–24.9 kg/m <sup>2</sup> .
<b>Sodium consumption:</b> Decrement of dietary Na <sup>+</sup> to < 100 mmol per day (2.4 grams Na <sup>+</sup> or 6 grams NaCl).(Dahl, 1972; He et al., 2020)
<b>Physical exertion:</b> Sustaining robust physical vitality necessitates the integration of consistent aerobic exertion, amounting to a minimum of 30 minutes per day on the majority of the week's days.(Pescatello et al., 2004)
<b>Optimal nutrition plan:</b> Consuming the suggested portions of fruits and vegetables, while minimizing both saturated and overall fat intake in your diet..(Appel et al., 2006)
<b>Alcoholic drink consumption:</b> Reduction of alcohol consumption to fewer than 2 drinks per day for men and fewer than 1 drink per day for women. (Roerecke et al., 2017)
<b>Use of tobacco products:</b> Refraining from smoking for a week in cases of compulsive smoking..(Viridis et al., 2010)

**Table 3.** DASH eating plan to recess HTN

Nutritional category	Portions	Samples
Whole meal grains	6 to 8 times daily	One Piece of whole grain loaf.

Nutritional category	Portions	Samples
Veggies	4 to 5 times daily	One cup of Uncooked greens.
Fresh fruits	4 to 5 times daily	One Mid-sized fruit.
Milk-derived products	2 to 3 times daily	One Portion of yogurt or milk.
Oils & Fats	2 to 3 times daily	One tbsp of vegetable fat or One tbsp of mayo or two tbsp of Vinaigrette
Chicken, Seafood, Trimmed meat	2 to 3 per day	Two servings of cooked fish, meat or chicken.
Shelled nuts, Edible seeds and Lentils	4 to 5 times per seven days	One third cup of Shelled-nuts or two tbsp of Groundnut spread or two tbsp of seeds or half cup of cooked Lentils.
Sweets and Processed sugars	5 or less times per seven days	One tbsp of sugar or jam or one cup of lemon water.

Advised intake frequency for a 2,000 calorie per day nutrition plan (Oparil et al., 2018).

### 1.6 Pharmacological treatment (Finkel et al., 2009)

**Table 4.** Pharmacological treatment

Drug class	Mechanism of Action	Drug example
<b>Thiazide-like or thiazide-type diuretics</b>	Diuretics task by intensifying renal sodium and water excretion and that erode the blood volume that conclusively treat HTN (Burnier et al., 2019)	Hydrochlorothiazide, chlorthalidone, furosemide, torsemide, bumetanide, ethacrynic acid, amiloride and triamterene.
<b>Long-acting calcium channel blockers</b> (Ogihara et al., 2008)	CCBs function by clasping to the L-type calcium channels in smooth muscle cells of blood vessels and heart muscle cells, blocking calcium entry and preventing muscle contraction (Burnier et al., 2019)	Dihydropyridine such as amlodipine, nifedipine, felodipine and non-dihydropyridine such as verapamil, diltiazem.
<b>β -adrenoceptor–blocking agents</b>	Beta-blockers yield by competing with catecholamines, which normally activate adrenergic receptors. Blocking these receptors reduces cardiac output (Larochelle et al., 2014)	Acebutolol, atenolol, betaxolol, bisoprolol, etc.
<b>α-adrenoceptor–blocking agents</b>	They block a type of receptor called α-1-adrenoceptors, which helps reduce the resistance in blood vessels and lowers blood pressure by relaxing the muscles in both arteries and veins (Finkel et al., 2009).	Prazosin, doxazosin and terazosin.
<b>Angiotensin-converting enzyme (ACE) inhibitors</b>	ACE inhibitors deter the conversion of angiotensin I to angiotensin II (Li et al., 2014).	Benazepril, captopril, enalapril, fosinopril, etc.

<b>Angiotensin II receptor blockers (ARBs)</b> (Ogihara et al., 2008)	ARBs antagonize receptor binding of angiotensin II to AT1 receptors (Li et al., 2014).	Azilsartan, candesartan, eprosartan, etc.
<b>Renin inhibitor</b>	Renin inhibitors lower blood pressure by blocking the production of both angiotensin I and angiotensin II (Musini et al., 2017).	Aliskrin.

## 2 Literature Review

Hypertension ranks third amidst cardiovascular risk factors, substantially expanding heart disease, stroke, and renal failure risks. An analysis sourced from PubMed and Google Scholar found 10 relevant papers published between 2017 and 2021, mainly by foreign research groups. Identified risk factors in young adults include smoking, alcohol consumption, obesity, sedentary behavior, high salt intake, alongside socio-cultural factors like illiteracy and gender disparities. Modifying to Western lifestyles exacerbates these risks, emphasizing the need for enhanced awareness and prevention strategies (Meher et al., 2023).

The study investigates prehypertension (PHT) and hypertension (HTN) risk factors and prevalence in university students in Hanoi, Vietnam. Results show a high prevalence of PHT/HTN, with males at higher risk. Factors like drinking alcohol and being obese greatly contribute to PHT/HTN. The results emphasize the importance of early screening and promoting healthy lifestyles among young adults in Vietnam to reduce CVD risks (Vo et al., 2023).

The study synthesizes findings on rural-urban disparities in hypertension prevalence in West Africa. Despite urbanization's perceived role in hypertension prevalence, evidence on rural-urban differences remains inconclusive. A systematic review spanning 2000 to 2021, encompassing 22 studies with over 62,000 participants, revealed high hypertension rates in both rural and urban settings. However, the likelihood of hypertension was reduced in rural areas. Sex-disaggregated data showed comparable hypertension prevalence between females and males. The findings underscore the necessity for comprehensive hypertension control policies targeting both populations living in rural and urban areas, irrespective of gender, in West Africa (Sani et al., 2024).

The study summarizes a systematic review exploring rural-urban disparities in hypertension prevalence across West Africa. Conducted through comprehensive database searches from 2000 to 2021, the review included 22 studies with over 62,000 participants. Findings suggest high hypertension rates in both countryside and city areas, though odds were lower in rural settings. Sex-disaggregated data indicated similar prevalence between females and males. The study underscores the need for holistic hypertension control strategies spanning rural and urban populations in West Africa, independent of gender (Burnier & Damianaki, 2023).

Pulmonary hypertension (PH) is marked by changes in the pulmonary blood vessels and has a poor outlook. Recent studies using rat models of PH induced by Sugen/Hypoxia or monocrotaline reveal that Neurotensin receptor 1 (Ntsr1) contributes to PH development by inducing endoplasmic reticulum stress through ATF6 activation. Key pathways involving Ntsr1-JAK2-STAT3-thrombospondin 1 (Thbs1)-ATF6 were identified, with interventions targeting Ntsr1 or associated signaling molecules shown to reverse PH phenotypes. Thus, targeting Ntsr1 presents a potential therapeutic strategy for PH (Cook et al., 2009; Wei et al., 2024).

Epidemiological studies link insulin resistance and diabetes to increased risks of HTN, decreased vascular elasticity, and CVD, while excessive arterial stiffness exacerbates insulin resistance. Recent research has uncovered new mechanisms for diabetes-associated hypertension, including epithelial sodium channel activation, changes in extracellular vesicles and microRNAs, abnormal gut microbiota, and increased renal Na<sup>+</sup>-glucose cotransporter activity. Socioeconomic determinants and current blood pressure targets and treatments for diabetic patients with hypertension are also discussed (Abdel-Megeid et al., 2011; Jia & Sowers, 2021; Ranasinghe et al., 2015).

### 3 Materials and Methodology

#### 3.1 Study Design

This research utilized a cross-sectional survey approach to evaluate the prevalence of hypertension in adults. A structured questionnaire administered via Google Forms was used as the primary tool for data collection.

#### 3.2 Participants

The study targeted adults aged 18 and above up to 65. A sample size of 300 participants was determined to provide a representative overview.

#### 3.3 Questionnaire Design

The questionnaire was designed to capture demographic information, lifestyle factors, and specific indicators related to the condition being studied. The questionnaire comprised various sections:

#### 3.4 Demographic Information

Age, gender, occupation, education level, etc.

#### 3.5 Lifestyle Factors

Questions about diet, physical activity, smoking status, and alcohol consumption.

#### 3.6 Condition-Specific Indicators

Questions tailored to identify symptoms, duration, and severity related to the condition. etc.

#### 3.7 Data Collection

Data collection was conducted over a one-month period using Google Forms. The survey link was distributed through email, social media platforms, and community networks to reach a broad audience. Participation was voluntary, and informed consent was obtained digitally before respondents could proceed with the survey. Measures were taken to ensure anonymity and confidentiality.

#### 3.8 Data Analysis

Quantitative data from the questionnaire were analyzed using Excel. Percentages were used to summarize the data and to evaluate the prevalence of HTN.

**Table 5. Questionnaire**

<b>(Questionnaire)</b>	
We are doing <u>PHARM-D</u> at the University of Chenab. We are conducting research on the topic <u>HTN in adults</u> . Please express your views freely. All the information you provide will be confidential and will use only for research purpose. Thanks in advance for your participation	
	Date_____
<b>Section – A</b>	
<b>Prevalence of Hypertension in Adults</b>	

Hypertension is a disease without noticeable symptoms, which is why it's called a '**silent killer**'. According to a 2002 WHO report, it caused 7.1 million deaths globally, accounting for 13% of all deaths that year. HTN is closely connected to various diseases and can harm important organs like the heart, kidneys, brain, and lungs, often resulting in organ failure.

Our aim is to check the different aspects in Hypertension:

1. Hypertension related different concomitant diseases
  - Effect of noncompliance in Hypertension
  - Presence of drug interactions in already prescribing patients

#### Consent Form:

We are conducting this research in hypertensive patients All information gathered during this study will remain confidential. Your responses will be used exclusively for research purposes. Your participation will enhance our understanding and is greatly appreciated.

**Section – B**  
**Demographic Information**

This data pertains to statistical information about the population, including attributes such as age, gender, education level, marital status, occupation, and geographic location.

Sr	Question	Option-A	Option-B	Option-C	Option-D	Option-E
1.	<b>Age</b>	18 to 24	25 to 34	35 to 44	45 to 54	55 and above
2.	<b>Gender</b>	Male	Female	Other		
3.	<b>Weight</b>	Below 40	40-50	50-60	60-70	Above 70
4.	<b>Education Level</b>	Primary	Secondary	Bachelor's degree	Master's degree	Un educated
5.	<b>Marital Status</b>	Married	Un married	Divorced	Widow	
6.	<b>Area of residence</b>	Rural	Urban	Town		
7.	<b>Family System</b>	Joint Separate	Joint Separate			
8.	<b>Job</b>	Government	Private	Own Business	Housewife	Student
9.	<b>Standard</b>	Lower class	Middle class	Upper class	Business class	

**Section – D**  
**Risk Factors and Lifestyle**

Sr	Question	Option-A	Option-B	Option-C	Option-D
1	Do you have a family history of hypertension?	Yes	No	Not Sure	
2	How would you rate your level of physical activity?	Sedentary	Low	Moderate	High
3	How would you describe your typical dietary habits?	Healthy	Unhealthy		
4	Do you smoke tobacco products?	Yes	No	Sometime	
5	Do you consume alcohol?	Yes	No	Sometime	
6	Do you think that high salt intake can elevate B.P?	Strongly agree	Agree	Strongly disagree	Disagree
7	Please indicate how often you have experienced stress.	Rarely	Occasionally	Sometimes	Frequently
8	Are you a hypertensive patient?	Yes	No		

**Section – E**  
**Diagnosis**

Description (optional)

1.How long have you been diagnosed with hypertension?

1-5 yrs.	5-10 yrs.	10-15 yrs.	Above 15 yrs.
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2. What symptom do you experience in hypertension?

Shortness of breath	Headache	Dizziness	Visual Blindness	All	Other
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**Section – F**  
**Treatment and lifestyle modification**

1. Did your doctor prescribe you any lifestyle modification?

Yes	No	May be
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2. Which lifestyle modification are you following?

Reduce Na+ intake	Increased K+ intake	Exercise and walk	Losing weight
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**Section – G**  
**Concomitant Disease**

1. Do you have a concomitant disease?

yes	No	Maybe
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2. Which disease you have been diagnosed with hypertension?

Heart failure	CA disease	Stork	Diabetes	CK D	Sleep Apnea	Vision problem	Other
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3. How do you perceive the impact of your concomitant diseases on your hypertension management?

A	Significantly worsens hypertension control
B	Moderately affects hypertension control
C	Minimally affects hypertension control
D	Does not affected by hypertension
E	Not sure

**Section – H**  
**Volunteer Question**

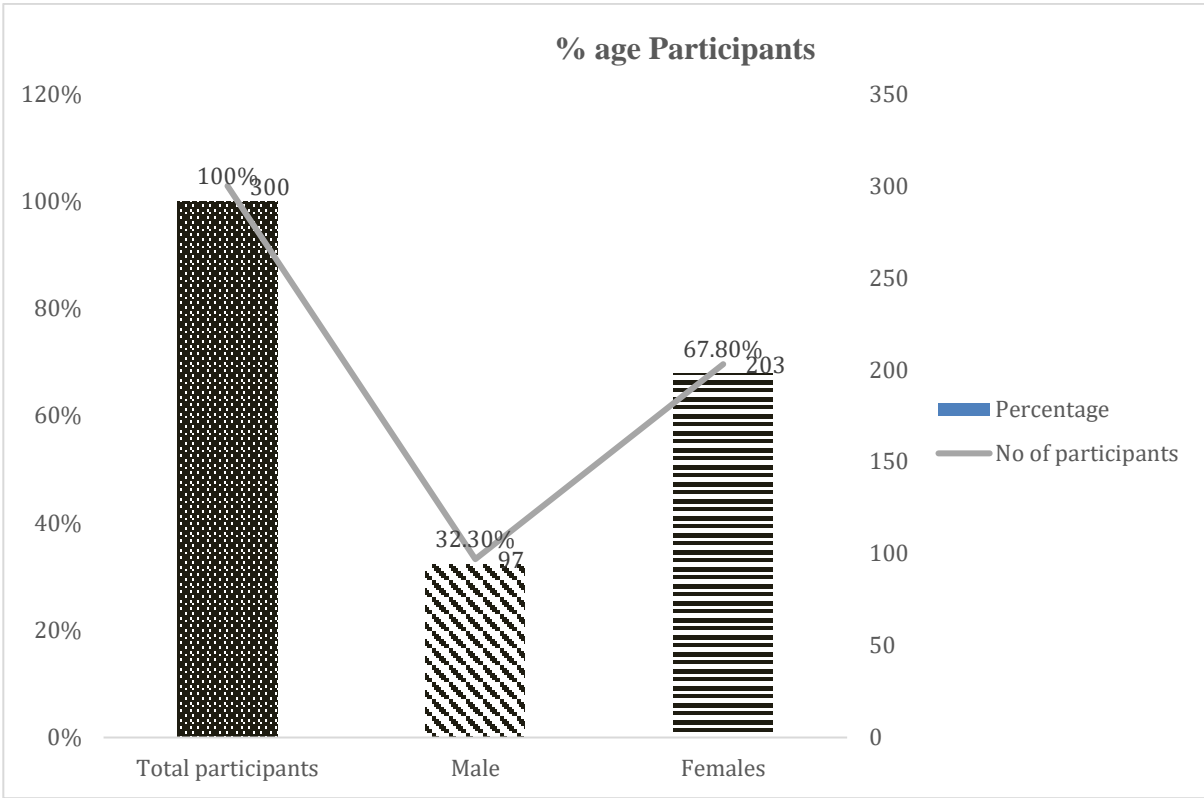
If you have any queries related to this disease or need any kind of healthcare assistance, feel free to ask. (Share your email or contact number to stay tune)

## 4. Results

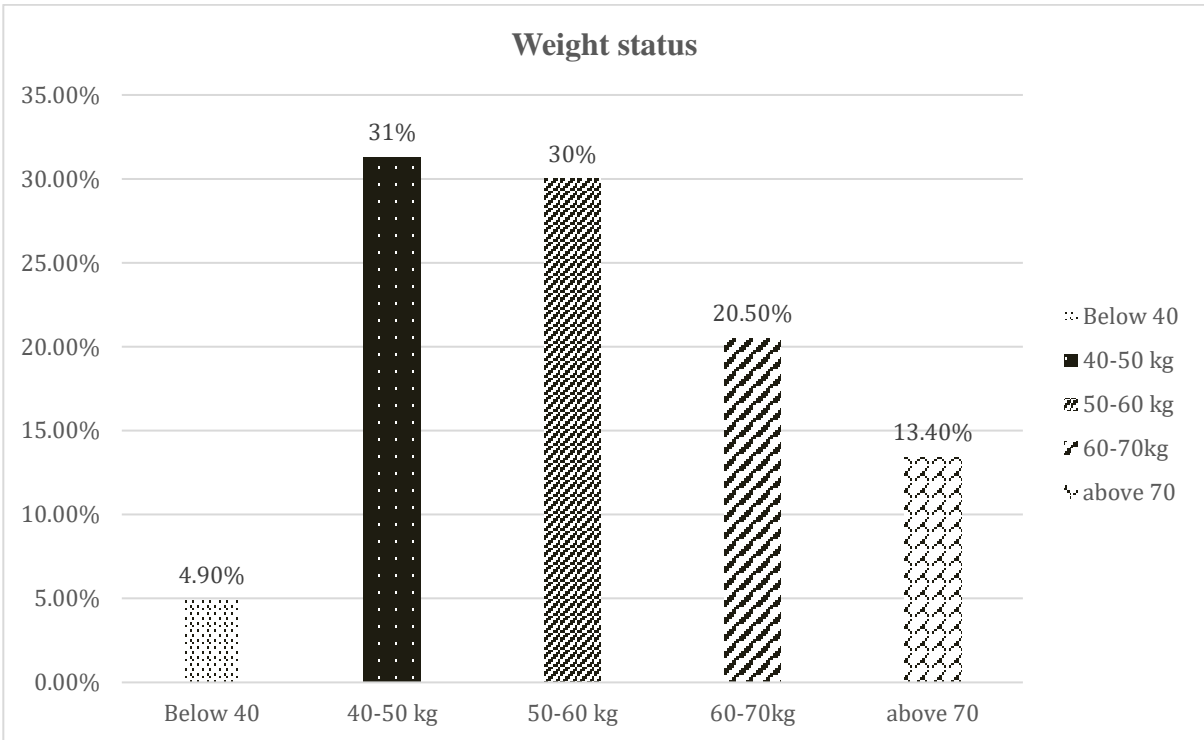
### 4.1 Demographic Data

The survey included 300 participants, with 32.3% male and 67.8% female. Age distribution was as follows: 71.3% were 18-24 years old, 21% were 25-34, 3.9% were 35-44, 2.9% were 45-54, and 0.9% were 55 or older. Regarding weight, 31.3% weighed 40-50 kg, 30% weighed 50-60 kg, 20.5% weighed 60-70 kg, 13.4% weighed over 70 kg, and 4.9% weighed under 40 kg. Most participants were unmarried (81.4%), followed by married (17.3%) and widowed (1%). Residency was distributed as 33.2% rural, 38.1% urban, and 28.7% town. In terms of family system, 55.7% belonged to a joint family, while 44.3% lived separately. Employment status included 18.2% in private jobs, 3.6% in government jobs, 3.6% housewives, 4.6% business owners, and 65.8% students.

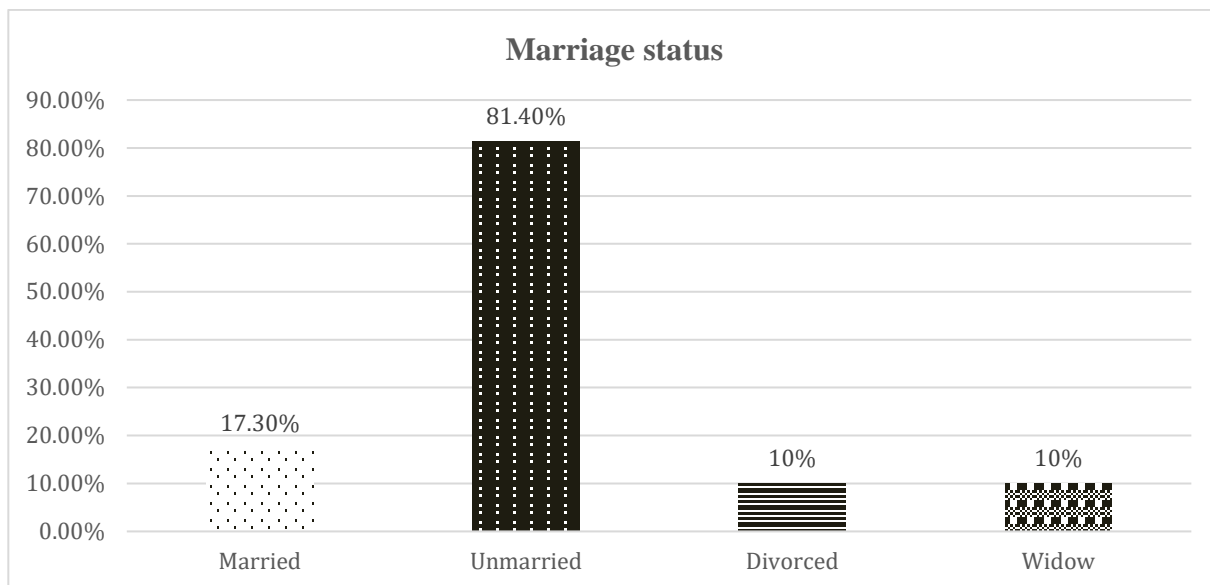




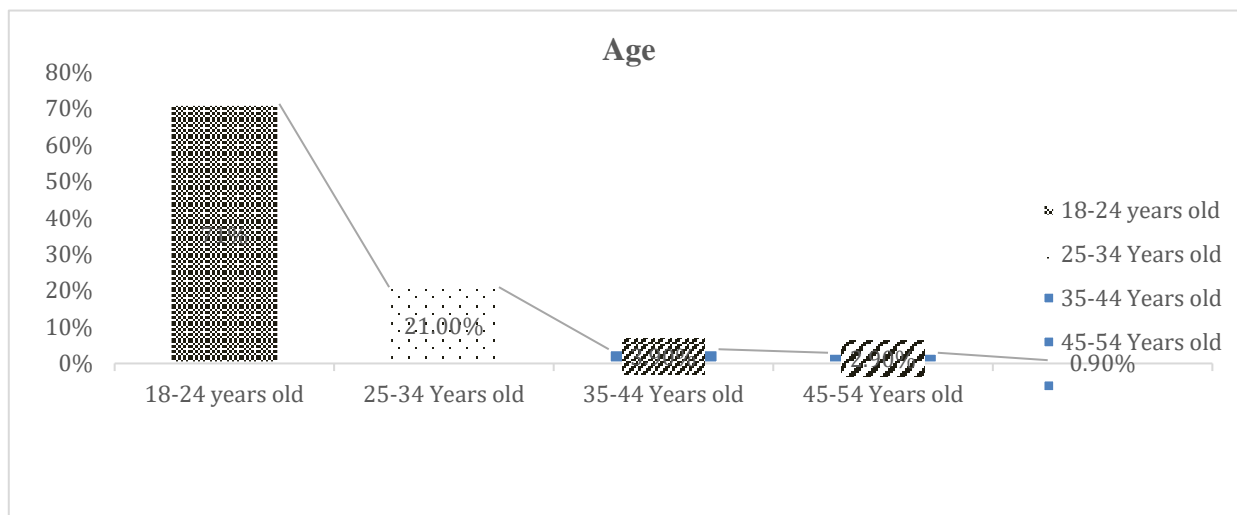
**Figure 1.** % of Participants



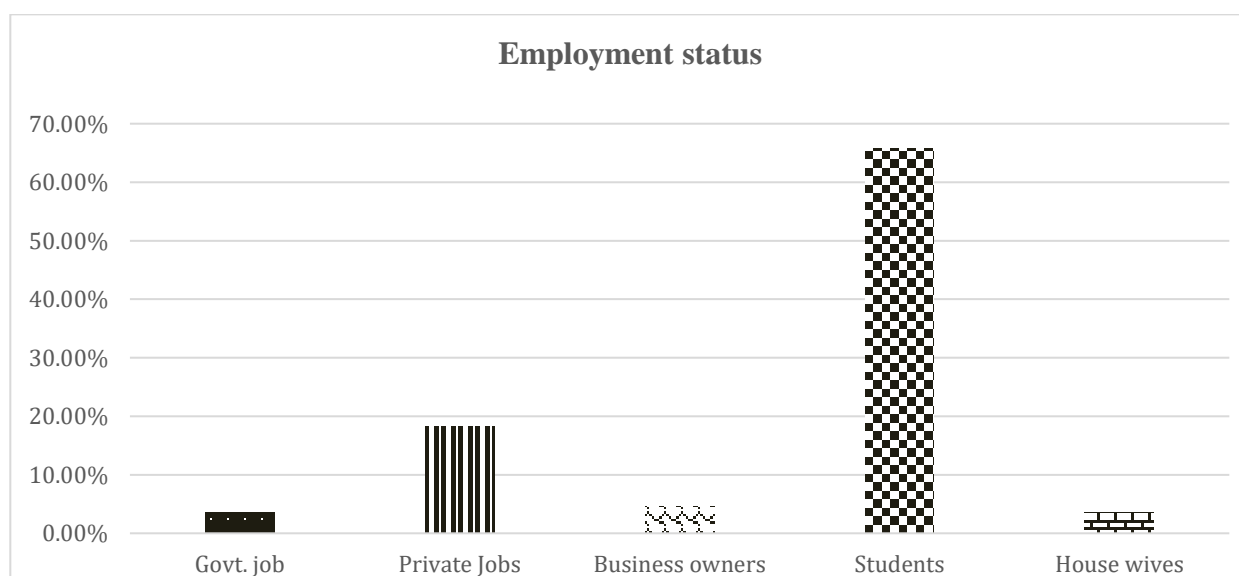
**Figure 2.** Weight Statistics



**Figure 3. Weight Status**



**Figure 4. Age Statistics**



**Figure 5. Employment status**

#### 4.2 Risk Factors and Lifestyle Modifications

In terms of family history, 46.3% had no family history of hypertension, 41% had a positive history, and 14.3% were unsure. Dietary habits showed that 46.3% had a moderate diet, 32.2% had an unhealthy diet, and 32.2% had a healthy diet. Regarding meal patterns, 50.5% had two regular meals, 30% had irregular meals, 5.5% had one meal, and 14% skipped breakfast. Physical activity levels were 10.1% high, 6.8% sedentary, 53.7% moderate, and 30% low. Smoking habits revealed 90.2% non-smokers, 7.8% smokers, and 2% unsure. High salt intake was agreed upon by 94.8% as a contributor to hypertension. Alcohol consumption was reported as 95.4% non-drinkers, 2.9% drinkers, and 1.6% unsure. Stress levels showed 12.8% rarely experienced stress, 15.4% occasionally, 44.6% sometimes, 18.7% frequently, and 8.5% often or always stressed.

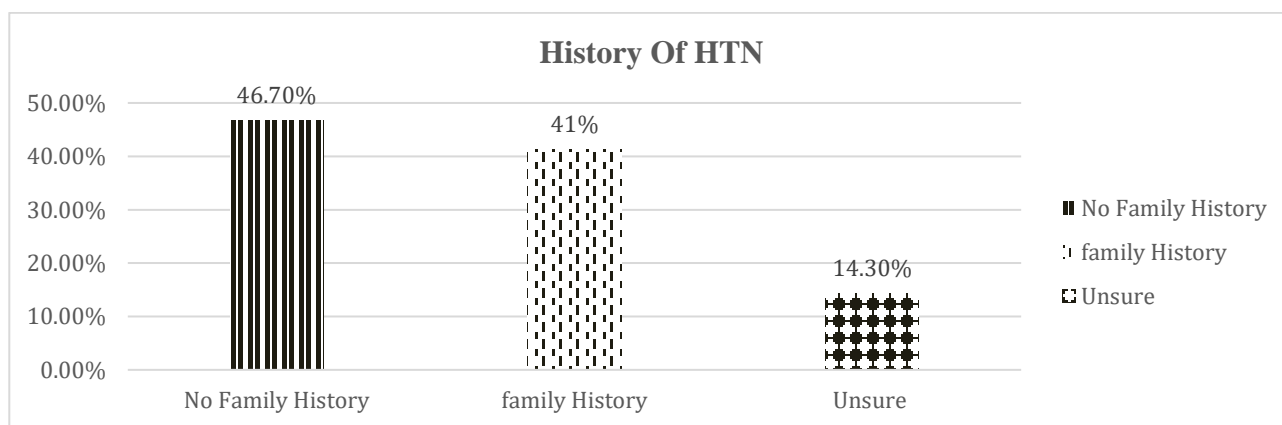


Figure 6. History of Hypertension

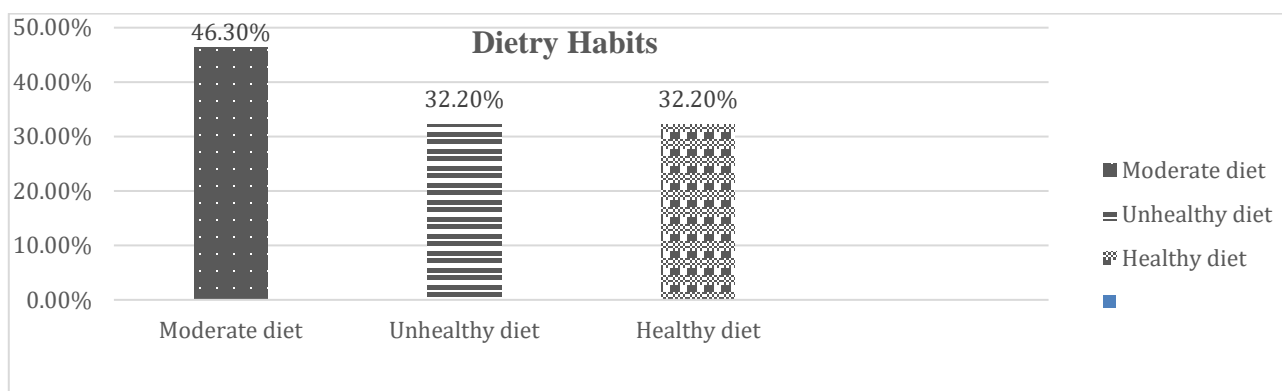


Figure 7. Dietary Habits

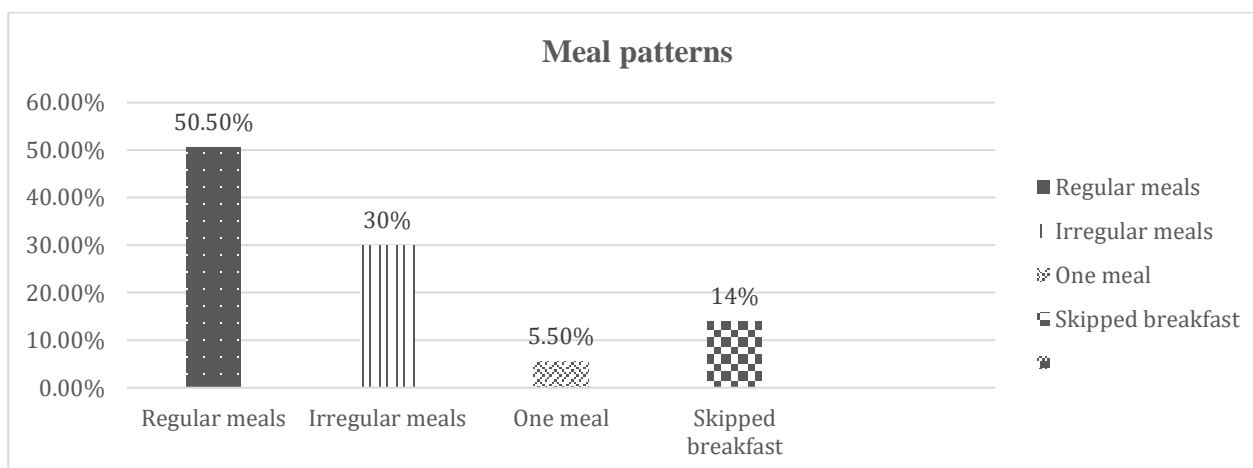
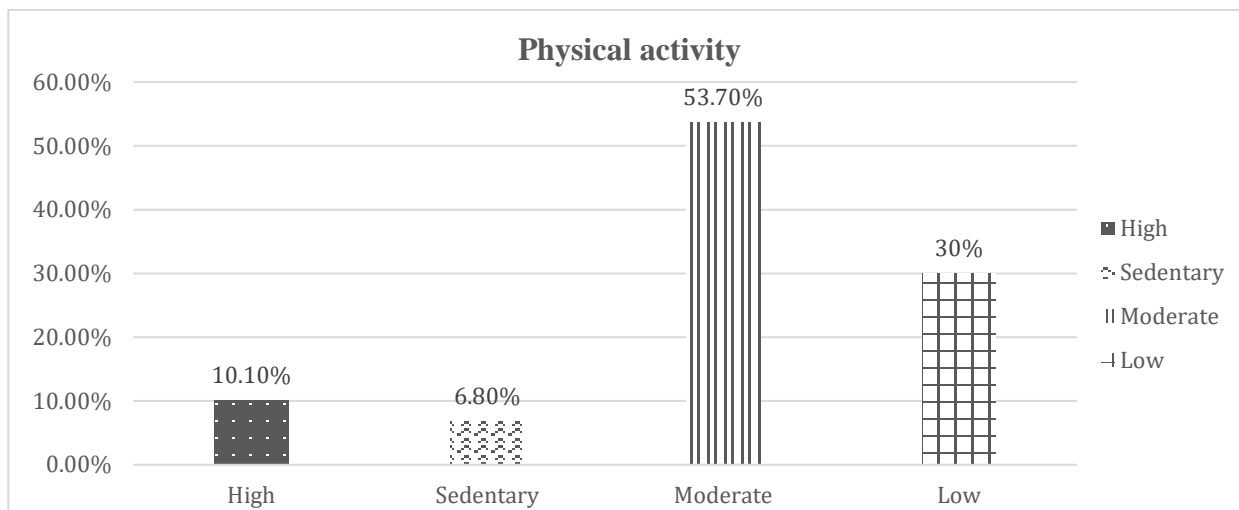
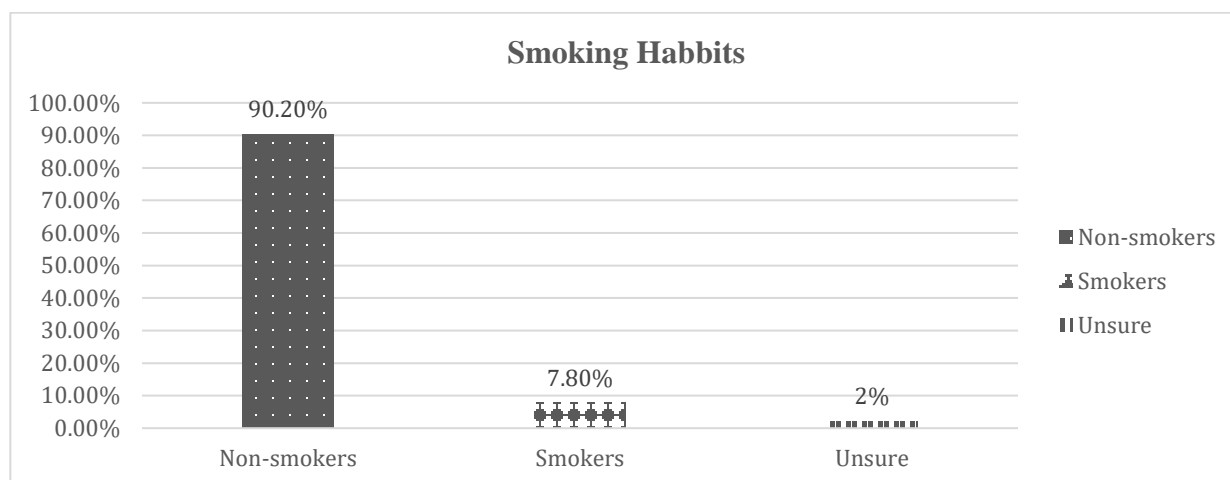


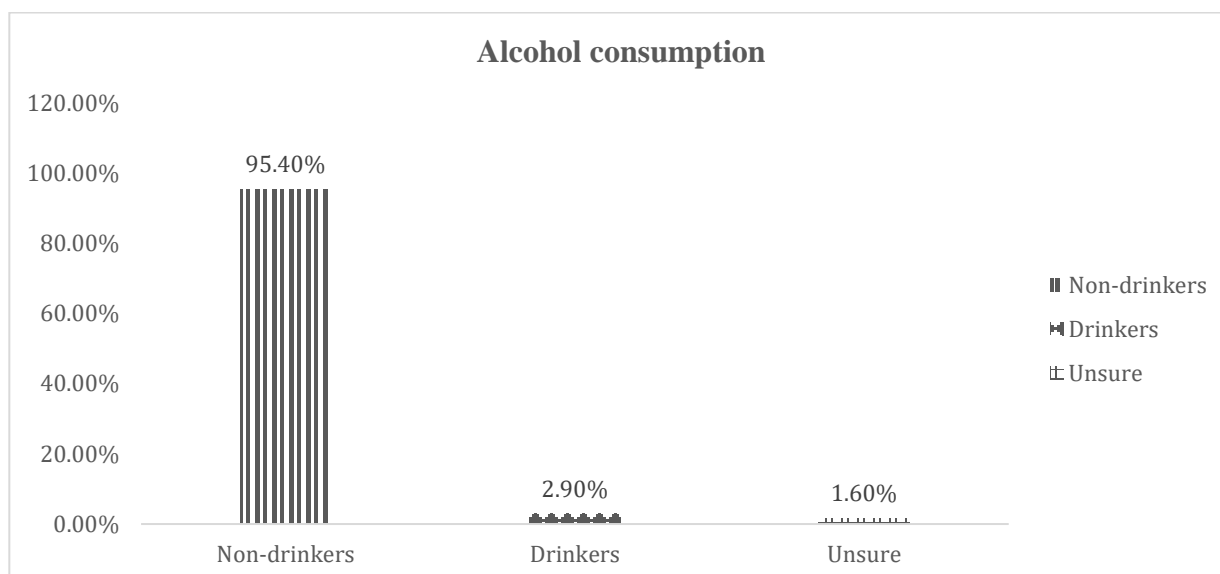
Figure 8. Meal patterns



**Figure 9. Physical activity**



**Figure 10. Smoking Habbits**



**Figure 11. Alcohol consumption**

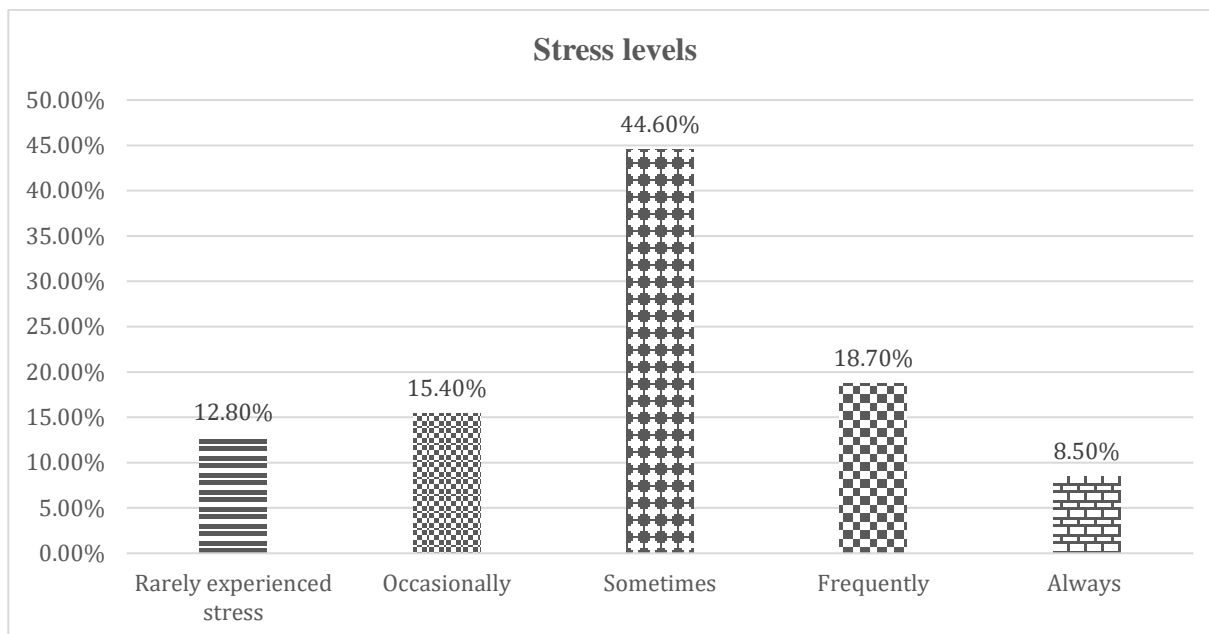


Figure 12. Stress levels

### 4.3 Diagnosis and Symptoms

Among participants, 26.3% had been diagnosed with hypertension for 5-10 years, 23.7% for 1-5 years, 44.7% for less than 1 year, and 5.3% for 10-15 years. Symptom prevalence included 26.3% with dizziness, 34.2% with headaches, 5.3% with shortness of breath, 31.6% with all these symptoms, and 2.6% with other symptoms.

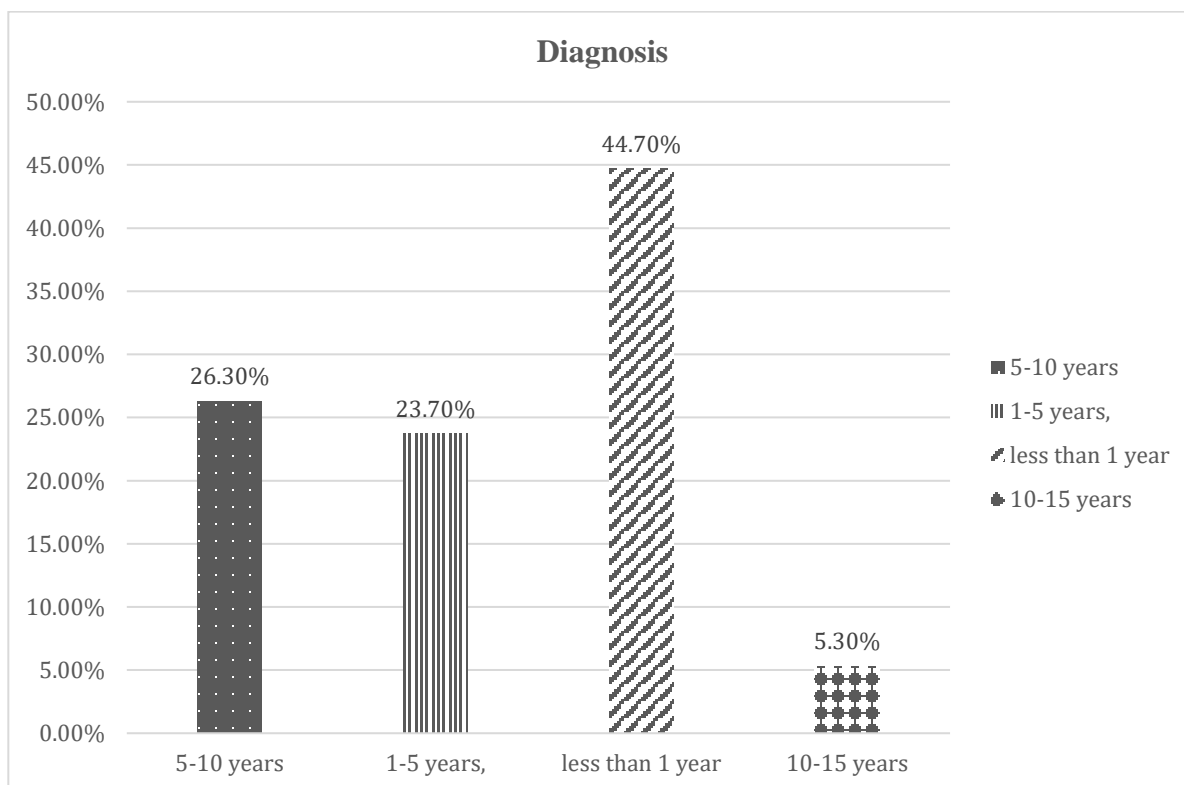
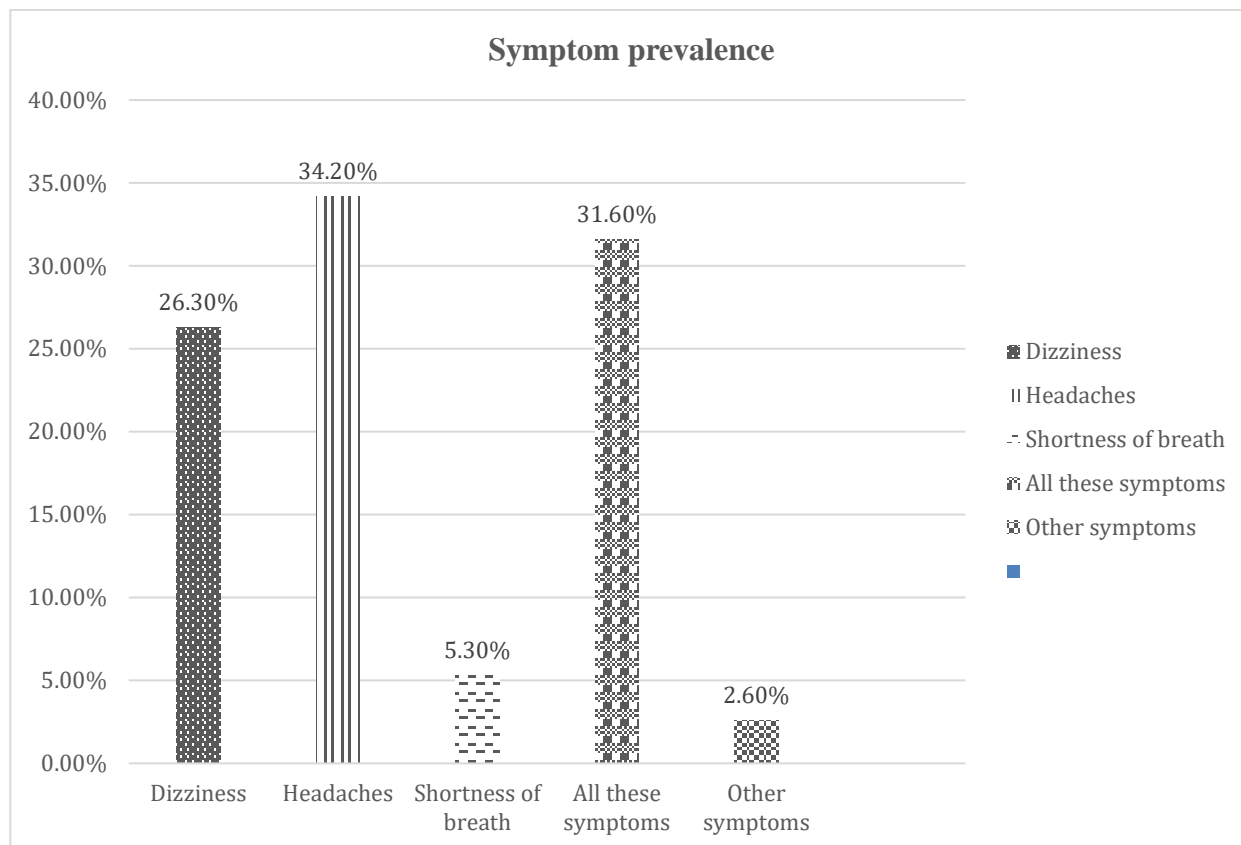


Figure 13. Diagnosis



**Figure 14.** Symptom prevalence

#### 4.4 Treatments and Lifestyle Modifications

Lifestyle modifications were prescribed to 63.2% by physicians, while 26.3% were not prescribed, and 10.5% were unsure. Modifications followed included exercise/walking (34.2%), increased potassium intake (21.1%), reduced sodium intake (34.2%), and weight reduction (10.5%).



**Figure 15.** Lifestyle modifications

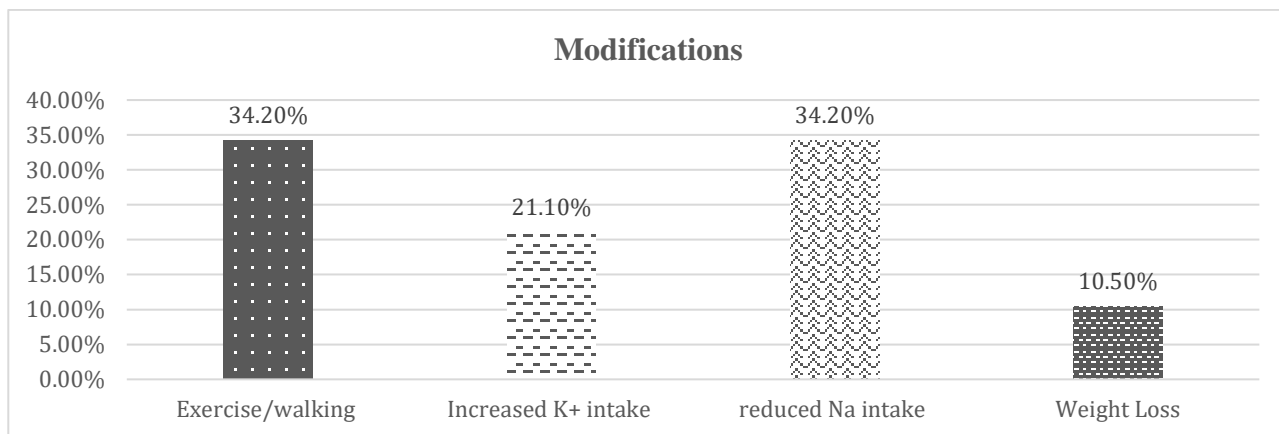


Figure 16. Modifications

#### 4.5 Concomitant Diseases and Hypertension Exacerbation

Concomitant diseases included vision problems and sleep apnea (13.9%), kidney disease and diabetes (11.1%), strokes (8.3%), coronary artery disease (2.8%), heart failure (16.7%), and joint pain, arthritis, and hepatitis C (2.8%). These conditions exacerbated hypertension in 18.4% of subjects, moderately affected 34.2%, minimally affected 7.9%, had no effect on 5.3%, and 34.2% were unsure.

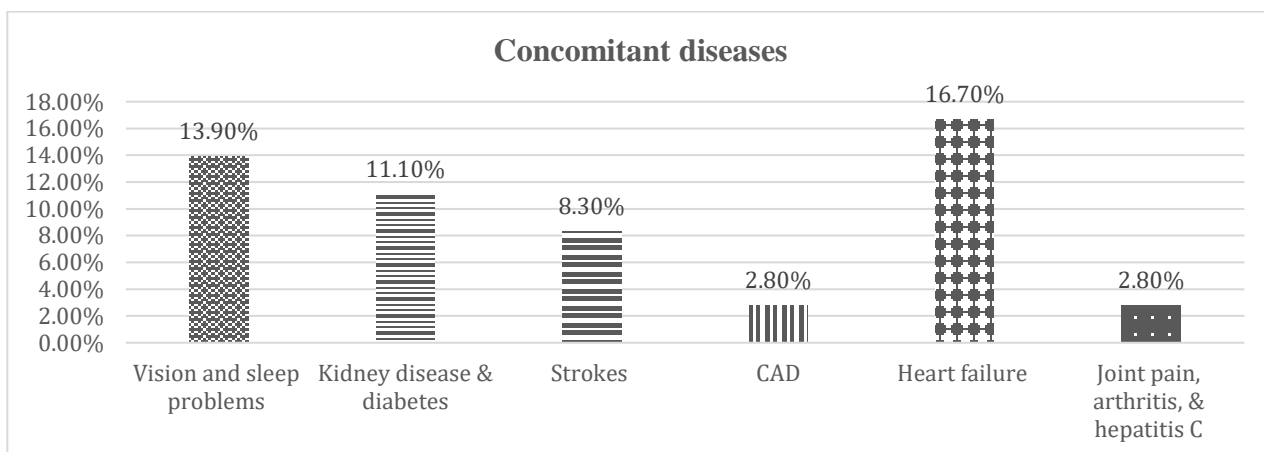


Figure 17. Concomitant diseases

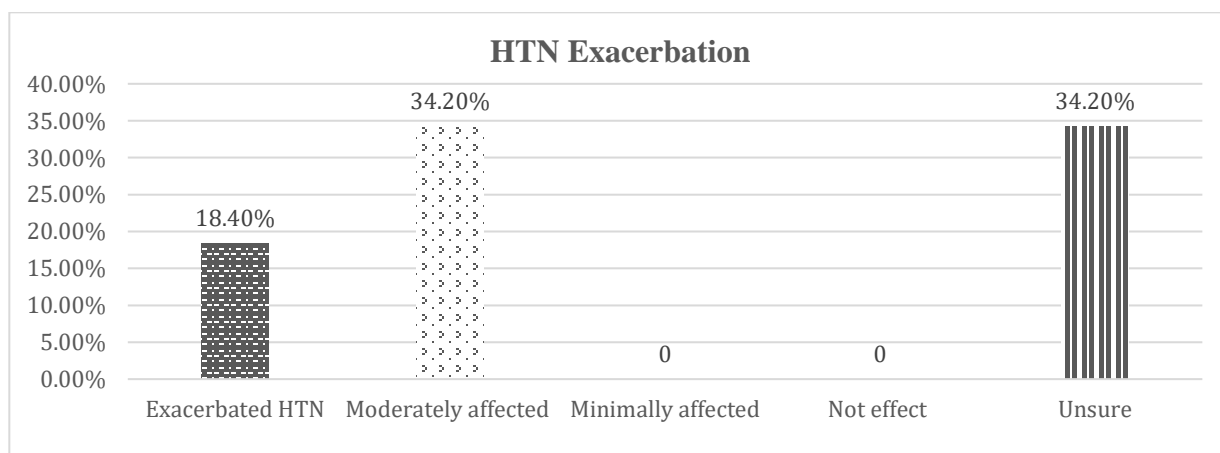


Figure 17. HTN Exacerbation

#### 5 Conclusion

The survey reveals significant findings about the occurrence and factors contributing to hypertension among the participants. The data signal a higher prevalence of HTN among certain demographics and



lifestyles, recommending the essential for targeted public health interventions. The data recommend that hypertension is prevalent spanning diverse age groups and weights, emphasizing the need for universal screening and prevention strategies.

Most participants were unmarried and resided in urban areas, indicating that lifestyle and stress factors affiliated with urban living and single status may promote hypertension. The difference in family systems, with a higher percentage living in joint families, may also mold stress levels and dietary habits, altering hypertension prevalence.

The survey found key lifestyle elements contributing to hypertension. A significant proportion of participants had a family history of hypertension, unhealthy dietary habits, and irregular meal patterns. The majority occupied moderate physical activity, but a notable percentage were either sedentary or had low activity levels. Smoking and alcohol consumption were low, but stress levels were notably high among the participants. High salt intake was primarily recognized as a factor to hypertension, indicating awareness yet possibly inadequate action to lessen this risk.

Hypertension existed in participants for varying durations, with many experiencing common symptoms like wooziness, headaches, and shortness of breath. This symptomatology accentuates the importance of early detection and steady monitoring to cope with hypertension effectively.

While a majority had lifestyle modifications prescribed by physicians, obedience varied. Many participants obeyed exercise, potassium intake, and sodium diminution guidelines, but acquiescence with medication schedules and overall lifestyle changes remained contradictory. This contradiction points to the need for enhanced patient education and endorsed systems to improve adherence to treatment standards.

The existence of concomitant diseases like vision problems, sleep apnea, kidney disease, diabetes, and heart conditions supplementary worsen hypertension. These results stress the importance of complete health control techniques that address multiple health issues simultaneously to better control hypertension.

## 6. Recommendations

Based on the results, the following guidance are suggested to tackle hypertension prevalence:

### 6.1 Public Health Campaigns

Boost awareness about hypertension and its risk factors, underscoring the importance of regular health check-ups, notably for young adults.

### 6.2 Lifestyle Interventions

Encourage healthy dietary habits, regular physical activity, and stress direction techniques through community programs and workplace healthiness initiatives.

### 6.3 Improved Screening

Put into practice routine hypertension screening in urban areas and among high-risk groups to ensure early detection and management.

### 6.4 Patient Education

Develop specific educational materials to refine understanding and adherence to prescribed lifestyle adjustments and medication regimens.

### 6.5 Incorporated Health Care

Promote a comprehensive approach in healthcare settings that addresses both hypertension and its associated secondary conditions to enhance patient outcomes.

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