

## Evaluation of Present Scenario of Hypertension in Port City Chattogram, Bangladesh.

### ABSTRACT

Hypertension or elevated blood pressure is a serious medical condition that significantly increases the risks of heart, brain, kidney and other diseases. An estimated 1.28 billion adults aged 30-79 years worldwide have hypertension. While data collection on hypertension in resource poor environments has been improving through the use of standardized surveys, little is known about how well treatments are being applied. Knowledge of gaps in diagnosis, treatment pattern and changing lifestyle is necessary if appropriate illness management are to developed. Using a community based sample has been taken from Chittagong Medical College Hospital, Chittagong and from the Chittagong city, studied through some questions ask to the suspicious patients. Randomized sampling methods were used to identify adults from 18 to above from different wards and areas of CMCH and Chittagong city. Using World Health Organizations guidelines, data were collected on subject's demographics, medical history, blood pressure and health behaviors. The study was conducted on 500 hypertensive patients at the Chittagong Medical College Hospital and Chittagong city between 23 October 2021 to 8 December 2021, total 7 weeks. This survey was done by a structured questionnaire written in Bangla and English. This questionnaire was used to collect data from the patients. Questions were asked to the patient and finally answers of the patient were inserted into the data collection.

Keywords: Hypertension, Survey, Chattogram, diagnosis, treatment pattern and changing lifestyle

### Introduction

Hypertension is by far the most common disease that affects human beings, its high prevalence involving both sexes and extending to either industrialize and developing countries. Compared with normotensives, individuals with a high blood pressure stand a much greater chance of having during their life a stroke, coronary heart disease, heart or renal failure, and peripheral artery disease with a substantially higher risk also of developing atria fibrillation deterioration of cognitive function, and dementia (1). The high prevalence and the multifold important contribution of hypertension to cardiovascular and renal risk account for its position as the top contributor to the burden of disease worldwide (2). Despite extensive research the cause or causes of hypertension in a given patient remain in most instances as unclear today as they were decades ago (3). Yet, the data that have been obtained by basic and clinical studies have provided considerable knowledge of the factors that may be potentially involved as well as of the molecular, humeral, neural, and structural mechanisms through which a blood pressure increase may occur (4). The aim of this compendium, the first devoted to hypertension by *Circulation Research*, is to offer clinicians and investigators a critical review of this knowledge, covering a large spectrum of data, that is, from genetic and molecular to integrated path physiology, epidemiology, diagnosis, and treatment (5) Sex differences exist in both the prevalence and survival of patients with idiopathic pulmonary arterial hypertension (IPAH). Men are less frequently affected by the condition but have worse outcome as compared to females (6). We sought to characterize the sex related differences in right ventricular remodeling in age matched

male and female patients with IPAH using cardiac magnetic resonance imaging (7). The endothelium plays a crucial role in acute regulation of vascular tone and in long-term vascular remodeling. In healthy conditions, nitric oxide (NO) is the most important endothelium-derived vasodilator molecule able to inhibit the major key mechanisms promoting the development of atherosclerosis, thus, promoting vascular health.1 NO breakdown by reactive oxygen species (ROS) is the main cause of reduced NO availability and endothelial dysfunction, both in physiological aging and in many pathological conditions (8). However, vascular features of physiological aging and hypertension are not necessarily similar. With respect to endothelial function, essential hypertensive patients (HT) show a reduced response to acetylcholine (Ach) as compared with normotensive individuals (NT) in each age range (9). However, with increasing age, vascular response to Ach is similarly reduced among HT and NT. Vascular structure changes in the microcirculation represent another hallmark of essential hypertension. Increased media to lumen ratio (M/L), which characterizes vascular remodeling, can result from a reduced outer diameter that narrows the lumen without net growth (eutrophic remodeling) or from a thicker media encroaching on the lumen (hypertrophic remodeling) (10). Eutrophic remodeling is most often found in essential hypertension.7–9 M/L is considered the most reproducible index of small resistance artery structure, with a relevant prognostic value, being associated with increased prevalence of cardiovascular events in a high-risk population (11). Vascular fibrosis is critically important in determining vascular remodeling in hypertension, and it involves, among others, changes in collagen deposition (12). Strong epidemiological and experimental evidence indicate that both age and hypertension lead to significant functional and structural impairment of the cerebral microcirculation, predisposing to the development of vascular cognitive impairment (VCI) and Alzheimer’s disease (13). Preclinical studies establish a causal link between cognitive decline and micro vascular rarefaction in the hippocampus, an area of brain important for learning and memory. Age-related decline in circulating IGF-1 levels results in functional impairment of the cerebral micro vessels; however, the mechanistic role of IGF-1 deficiency in impaired hippocampus microvascularization remains elusive (14). There is growing evidence that alterations of the cerebral microcirculation play a key role in age-related decline in higher brain. Normal brain function is critically dependent on a continuous, tightly controlled supply of oxygen and nutrients through adequate cerebral blood flow. The human brain receives almost 15 % of the cardiac output through a network of over 600 km of capillaries. In the brain, the number of endothelial cells is very similar to that of neurons and nearly every neuron is supplied by its own capillary, with an average distance of 8–20  $\mu\text{m}$  between the neuron and the microvessels (15). Importantly, there is strong evidence that aging is associated with a decline in cerebral capillary density (“microvascular rarefaction”) and that decreases in microvascular density contribute to the age-related decline in regional cerebral blood flow (16)

## **Aim of the work**

The aim of the work is to present the current scenario of the patients of Chittagong Medical College Hospital.

- The aim of the work is to present the current scenario of the patients of Chittagong Medical College Hospital.
- To find out patients age when they suffer from hypertension most.

- To find out the habits that are associated with the hypertension like smoking.

## Materials and Methods

### Study Design & Participants:

This study was based on a sample of 500 patients who were diagnosed with hypertension seeking care in Chittagong Medical College Hospital, Bangladesh between 23 October 2021 to 8 December 2021.

### Data Collection Procedures:

This survey was done by a structured questionnaire written in Bangla and English. This questionnaire was used to collect data from the patients. Questions were asked to the patient and finally answers of the patient were inserted into the data collection form.

## Results and Discussion

### Gender of patients

**Table 1: percentage of Patients gender**

Patient Gender	Percentage
Male	250(50%)
Female	250(50%)

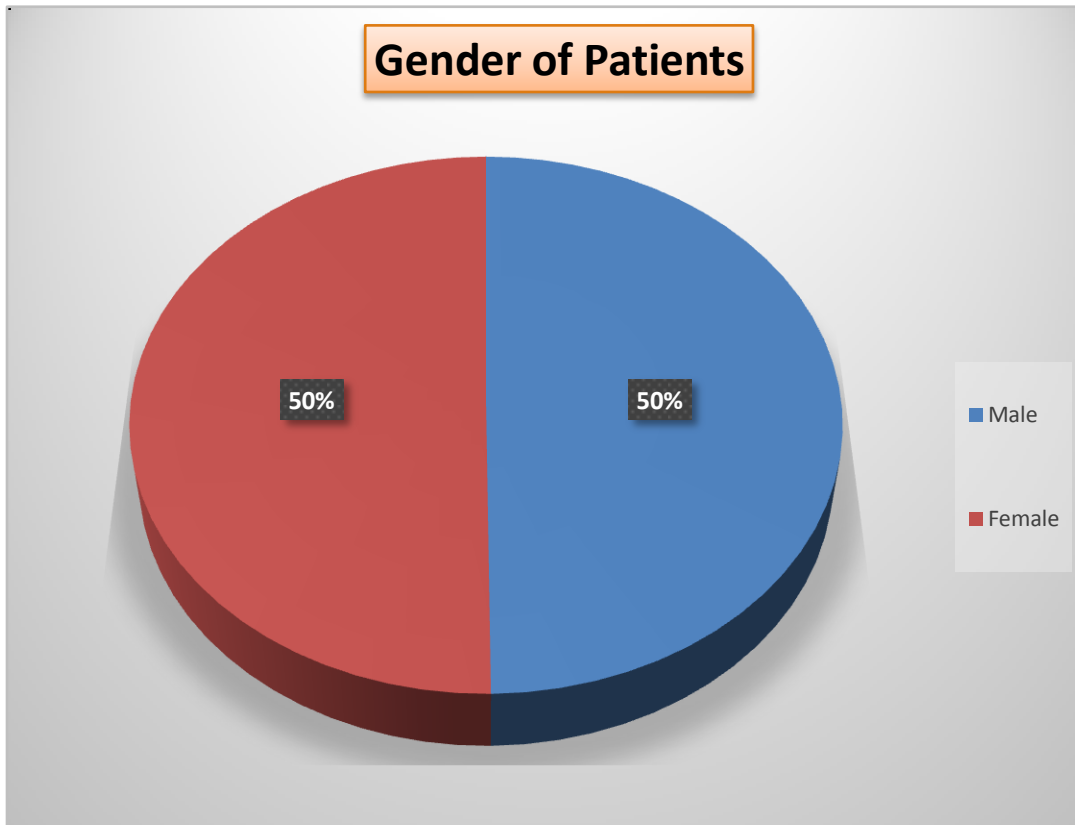


Figure 1: Percentage of Patients gender

Discussion: From above figure we can observe that about 50% of patients are male and 50% of patients are female.

### Age of Patients

Table 2: Different age group of patients

Age of Patients	Percentage
0-20 years	1(0%)
21-40 years	95(21%)
41-60 years	290(65%)
Above 60 years	61(14%)

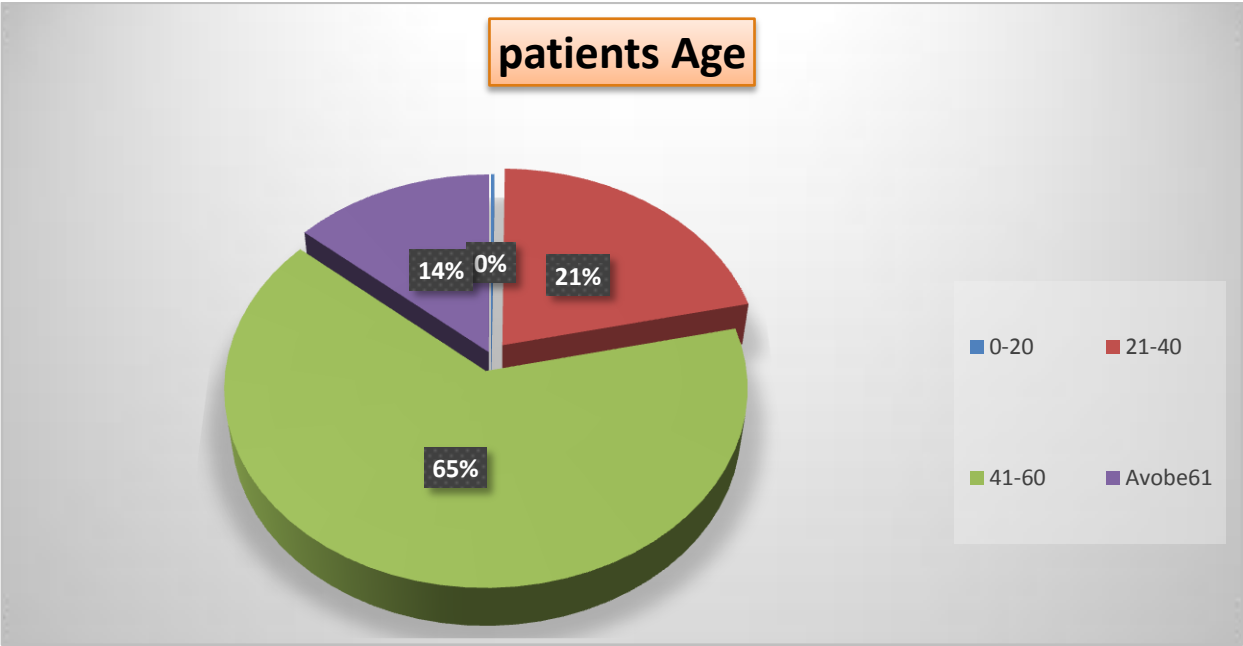


Figure 2: Different age group of patients

Discussion: Age are categorized into four different group and the patient below 20 years, 21-40years, 41-60years, above 60years and the percentage of this age group are 0%,21%65%,14% respectively.

**Patients area**

Table 3: Number of Patients Area

Patients Area	Percentage
Urban Area	238(48%)
Rural Area	262(52%)

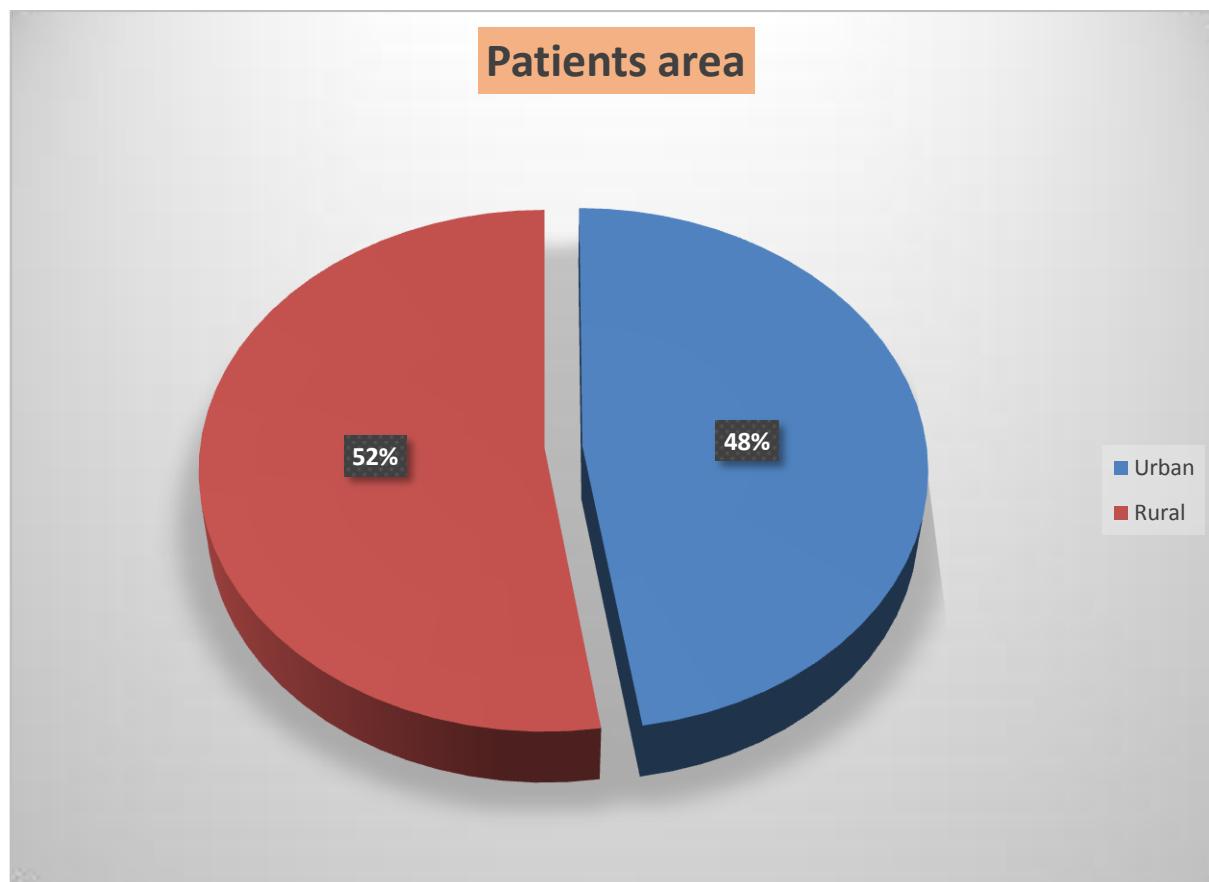


Figure 3: Percentage of Patients Area

**Discussion:** In this study 48% patients live in urban area and 52% patients live in rural area.

[See Doctor for Blood Pressure Checkup](#)

Table 3. See doctor for pressure checkup

See doctor for pressure checkup	Percentage
Monthly	48(10%)
Every 3-4 Months	77(15%)
Every 6 Months	239(48%)
Once a year	136(27%)

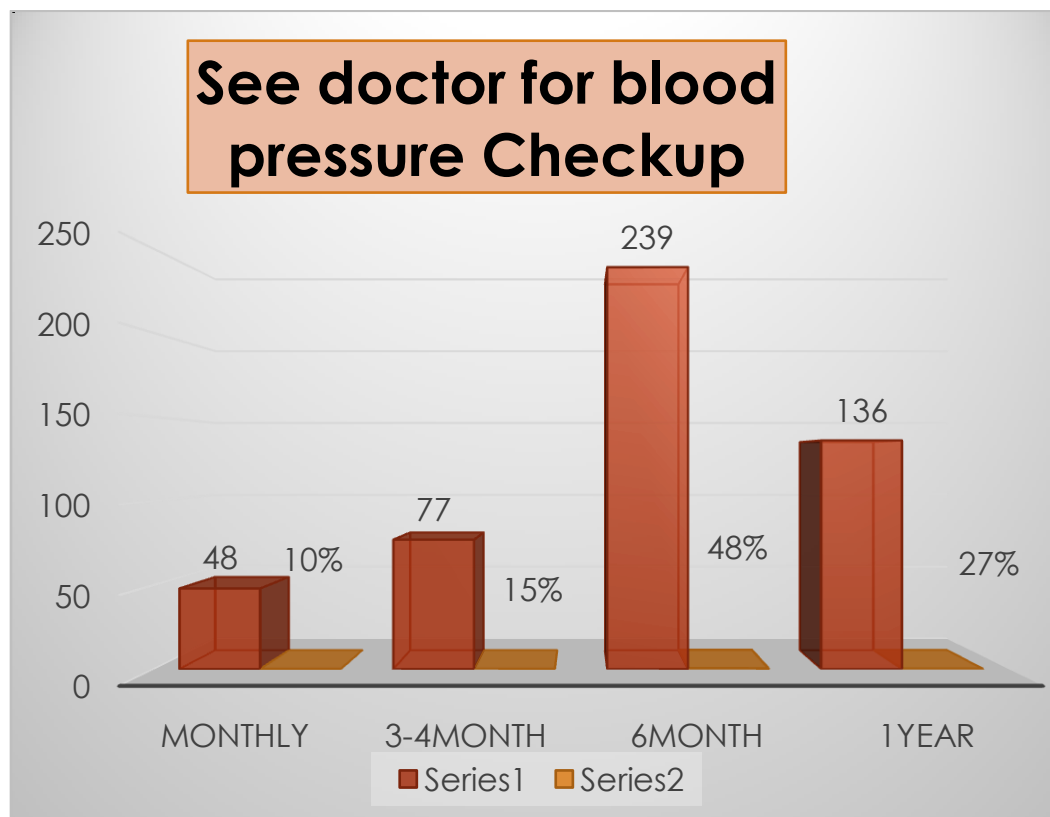


Figure 4: See Doctor for Blood Pressure Checkup

Discussion: In this study 10% patients were gone to Doctor on monthly for checking up their blood pressure, 15% patients were 3-4 months, 48% patients were 6months and 27% patients were once a year.

### Family History

#### Family history of having hypertension

Tablet4: Mother die from or suffer a heart attack or stroke

Mother die from or suffer a heart attack or stroke	Percentage
Yes	34(7%)
No	383(76%)
Don't know	83(17%)

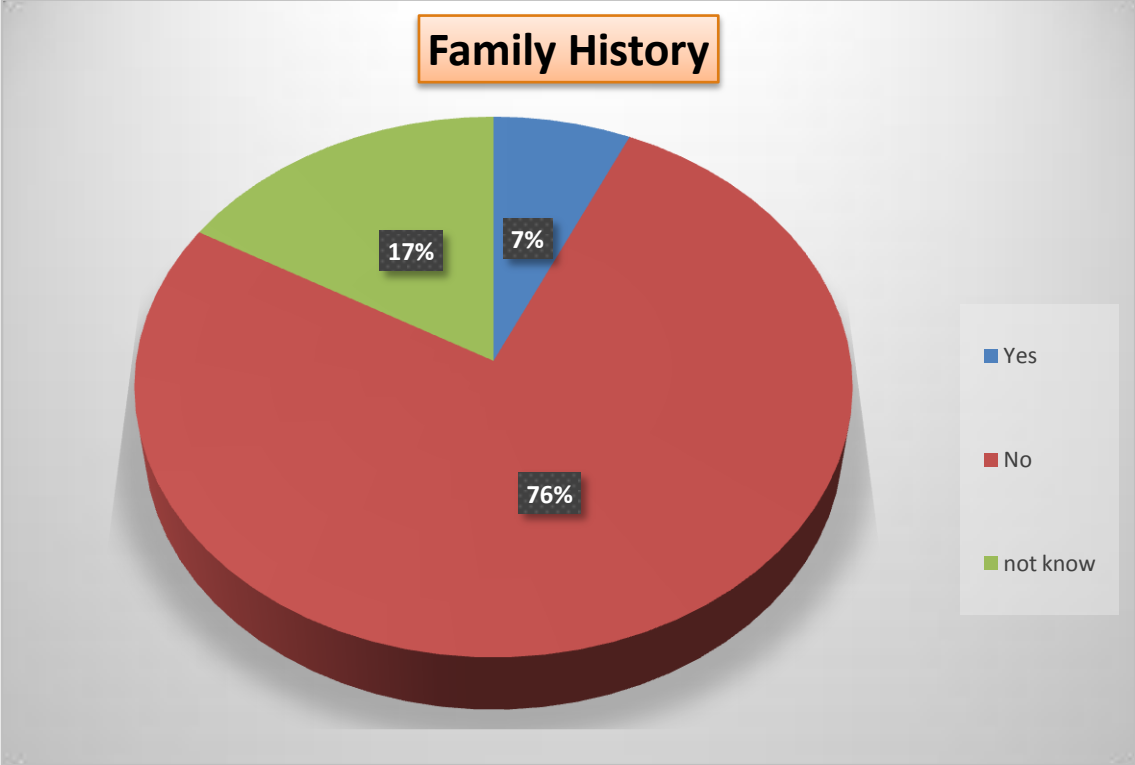


Figure 5: Mother die from or suffer a heart attack or stroke

Discussion: About 7% patients have family history (due to Mother) having hypertension, about 76% patients replied negative and 17% patients replied that they do not know.

**Father die from or suffer a heart attack or stroke**



Tablet 5: Father die from or suffer a heart attack or stroke

Father die from or suffer a heart attack or stroke	Percentage
Yes	68(14%)
No	346(69%)
Don't know	86(17%)

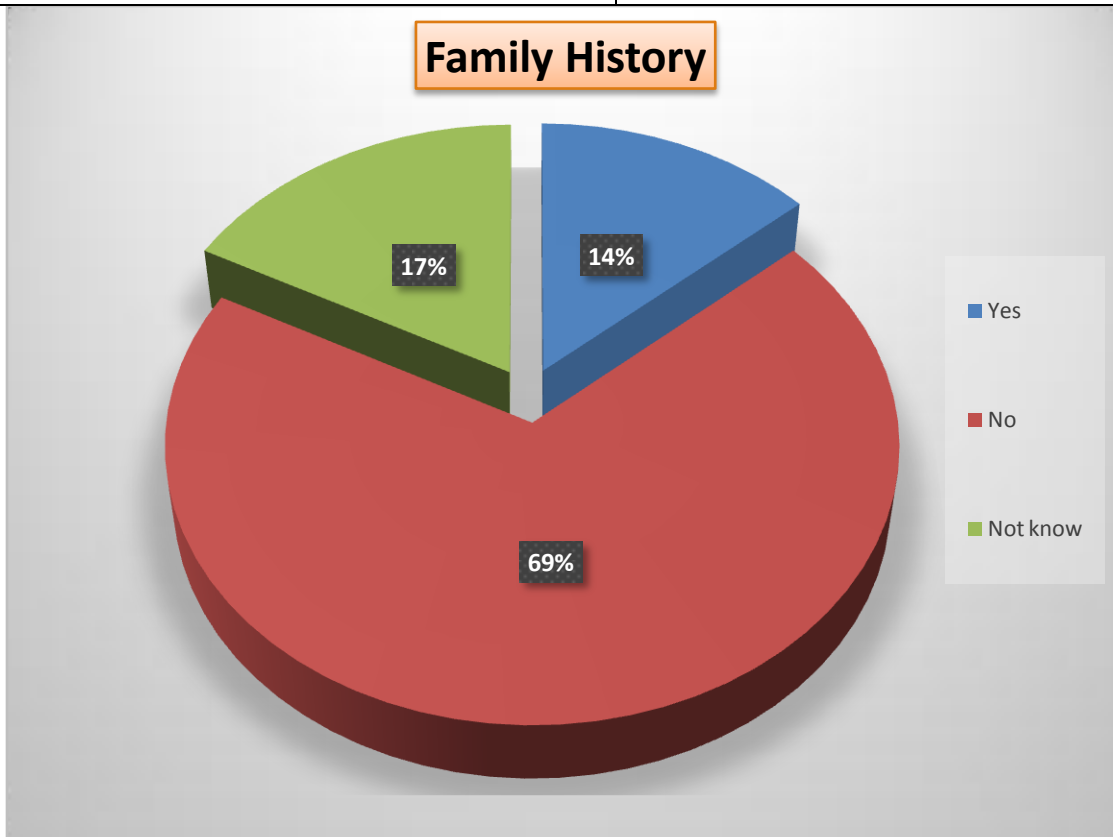


Figure 6: Father die from or suffer a heart attack or stroke

Discussion: About 14% patients have family history (due to Father) having hypertension, about 69% patients replied negative and 17% patients replied that they do not know.

### Blood Pressure Checkup at Home

Tablet 6: Blood Pressure Checkup at Home

Blood pressure checkup at home	Percentage
Yes	389(78%)
No	111(22%)

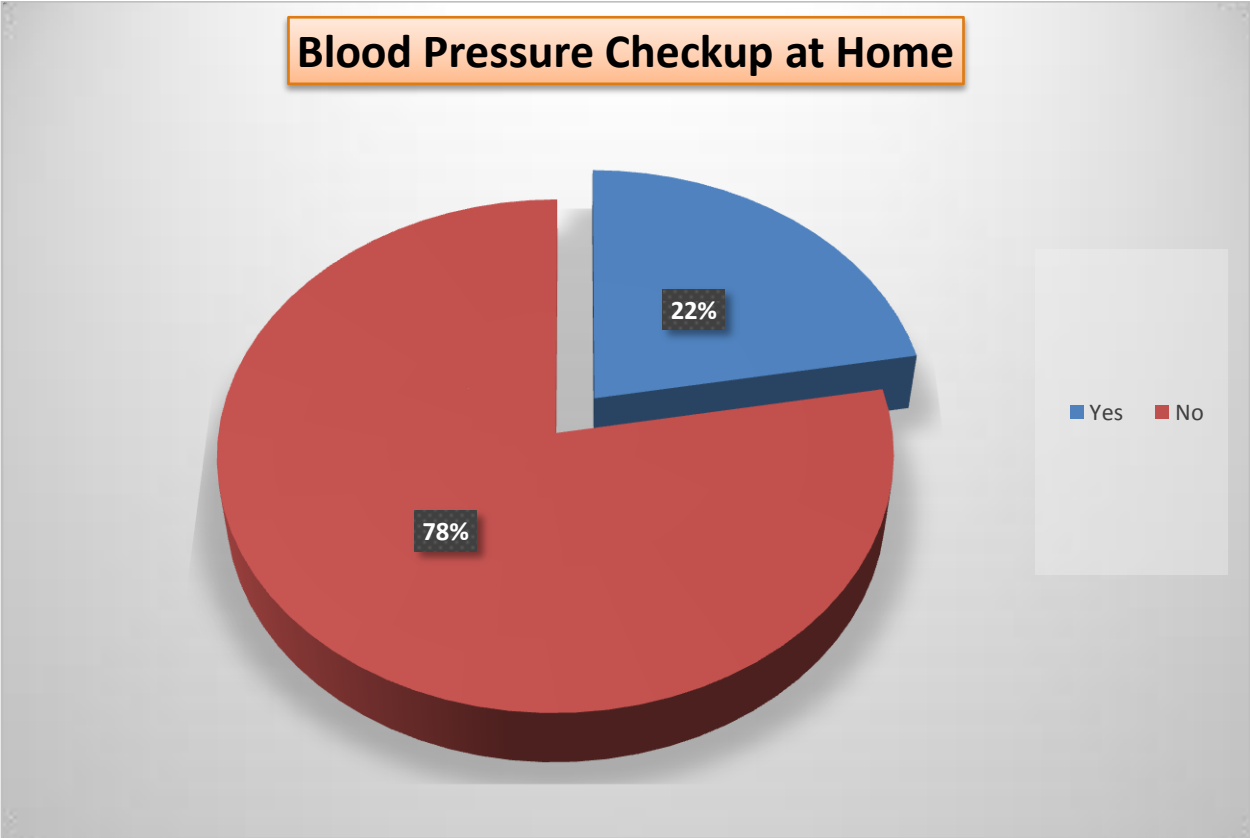


Figure 7: Blood Pressure Checkup at Home

Discussion: Most of the patients don't checkup their blood pressure at home which was 78% and 22% patients do checkup their blood pressure at home.

**Patients Habit**

Table 7: Patients habit like smoking

Smoking	Percentage
Yes	180(36%)

No	320(64%)
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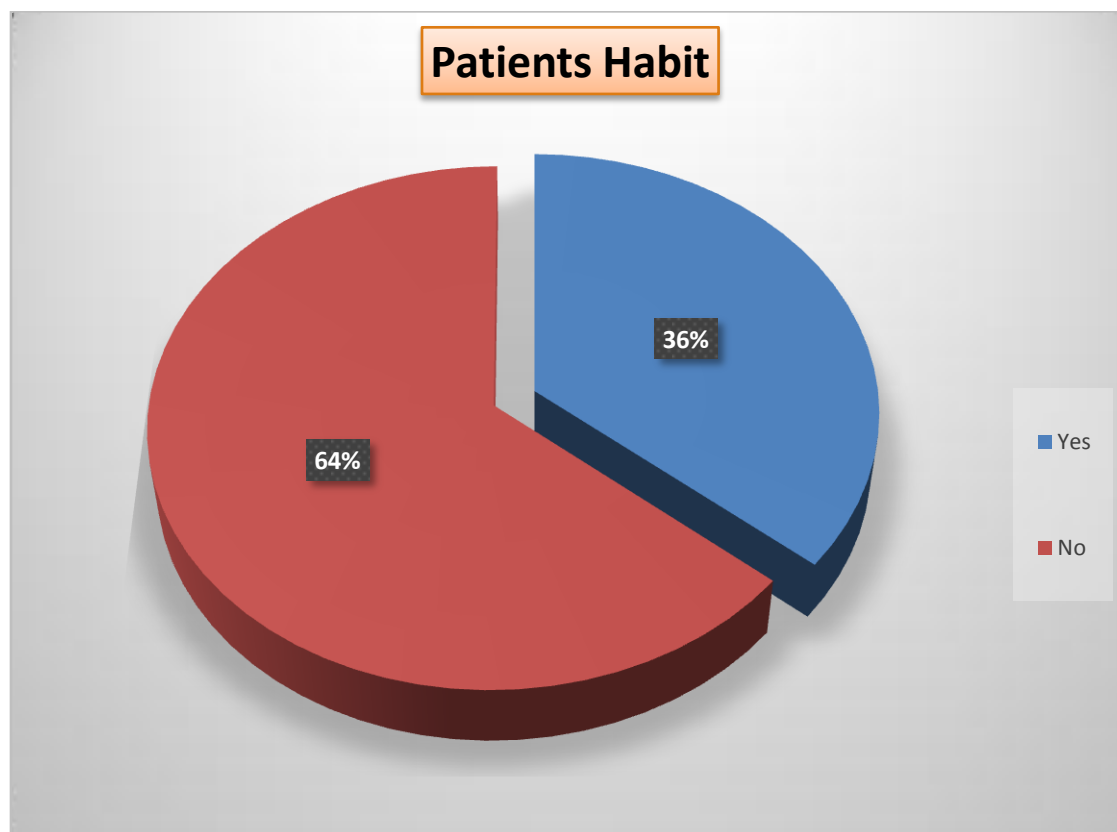


Figure 8: Percentage of Patients habit like smoking

Discussion: Smoking is one of the reason of hypertension. In this study 36% patients were smoker and 64% patients were non-smoker.

### Treatment Duration

Table 8: Patient Treatment Duration

Treatment Duration	Percentage
Less than one year	113(23%)
1-2 years	117(23%)
More than 2 years	254(51%)
Don't remember	16(3%)

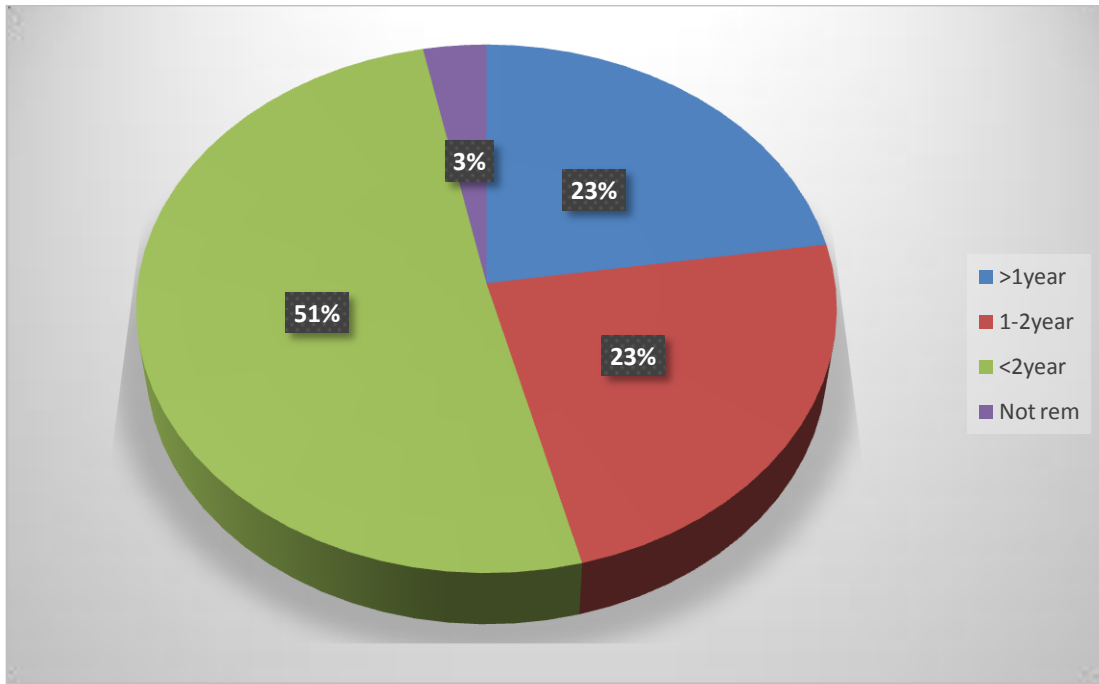


Figure 9: Percentage of Patient Treatment Duration

Discussion: Here 23% patients took treatment less than one year, 23% patients took treatment about 1-2 years, 51% patients took treatment more than 2 years and 3% patients did not remember their treatment duration.

## Conclusion

It could be concluded from this study that half of the respondents are female and half of the respondents are male. Based on the findings of the research, we realize that patients with 41-60years patient, suffer hypertension or its related diseases. Based on the findings of the study, the following recommendations are made: Religious organizations should be used as a platform for disseminating health-related information particularly hypertension management techniques in the rural areas. Government/NGOs should assist the rural dwellers by providing and organizing ICT training centers for them to empower and source for information on the internet. The government should subsidize the cost of special hypertension medication to be affordable by the rural dwellers.

We assume that the outcomes of this study will work as a baseline for future studies in the same context.

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