Research Article

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Prevalence of Hypertension and its Determinants Among Residents of Serbo Town, Jimma Zone, Oromia Regional State, Southwest Ethiopia 2021gc

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Abstract

Background: *Hypertension is an easily identifiable, largely asymptomatic, common, modifiable risk factor for cardiovascular diseases at the population level. Many hospital-based data reflect high prevalence in the study areas of Ethiopia, so large-scale studies have to be conducted to know the general picture of the problem in the community. This study emphasizes that hypertension is increasing, so the government, policymakers, and health professionals should conduct nationwide studies on its importance in public health. It also serves as a baseline for public health workers who want to conduct further studies.*

Objective: *This study is designed to assess the prevalence of hypertension and its determinants among residents of Serbo town, Jimma zone, southwest Ethiopia.*

Methods and patients: *A Cross-sectional community-based survey was conducted from June 20 to June 27, 2021, among 342 sampled adults aged 18 years or more. Four data collectors used a pretested structured questionnaire during data collection. The data was edited, cleared, entered into the software version with SPSSv21, and analyzed for valuable information based on a set of variables.*

Results: *Most participants (42.4%) were between the ages of 25 and 44. The study participants had an overall prevalence of hypertension of 14.32%, with 9.06% of them being male and the remaining patients being female. According to their B.P. statistics, they were 6.72% isolated systolic hypertension, 6.4% stage I hypertensive, 1.2% stage II hypertensive, and 22.2% pre-hypertensive. The study participants included in the research included 164 (48%) males and 178 (52%) females, with a male-to-female ratio of around 1:1. Of those registered as hypertensive during data collection, 63.48% were unaware of their condition.*

Conclusion: *This study revealed a high prevalence of hypertension. Males were shown to be significantly more affected than females. The study has showed that among the variables, sex, age, smoking, family history, diabetes mellitus, and coffee and alcohol drinking were found to be widespread in the hypertensive population, therefore additional studies are needed to look at its public health implications.*

Keywords: Prevalence, Hypertension, Determinants, Non-Communicable Diseases, Cardiovascular Diseases.

Abbreviations

- **AHA-** American Heart Association
- **B.P. –** blood pressure
- **BMI –** body mass index
- **CVA –** Cerebro vascular accident
- **DBP –** Diastolic blood presume
- **HTN –** Hypertension
- **ISH -** International society of hypertension
- **JAMA –** Journal of American Heart Association
- **NCHS –** National Community Health Statistics
- **SBP –** Systolic blood pressure
- **WHO-**World health organization

Introduction

Background Information

Before the effective development of treatment, hypertension was known to decrease life expectancy by about 10-20 years by causing target organ damage and atherosclerotic complications. Untreated hypertensive patients will develop organ damage in about 50% of cases in seven years and atherosclerotic complications in 30% of cases.

High blood pressure is an essential cause of both broad categories of stroke – hemorrhagic and ischemic. Although cigarette smoking, diabetes, dyslipidemia, obesity, and underlying cardiac diseases such as atrial fibrillation, rheumatic heart diseases and cardiomyopathy all increase the risk of stroke, the most powerful, highly prevalent, independent risk factor is high blood pressure. Epidemiological data shows that in middle-aged people, a 10mmHg increase in SBP is associated with about 40% more stroke, and the risk of stroke approximately doubles for every 7.5mmHg increase in DBP. Furthermore, Patients with DBP of 105 mmHg have a 10fold increased risk of stroke and sometimes increased risk of other Coronary events compared to subjects with DBP of 76 mmHg. However, within 3-5 years of effective lowering of SBP by 10mmHg, most, if not all, of the increased risk of stroke is eliminated, as for other coronary events. This benefit has also been noted for DBP.

Hypertension is broadly classified into two categories: primary or essential and secondary. Primary hypertension is the most common and accounts for about 95% of cases occurring in age groups 35-55. The etiology is still obscure. Until now, there is no definitive preventive or curative measure available. Despite this, some associated risk factors have been isolated epidemiologically. These are family history, overweight, excess salt/ alcohol intake, sedentary lifestyles, advancing age, etc.

Hypertension is the most critical public health problem in developing countries like Western countries, causing an estimated 7.1 million deaths a year worldwide or 13% of total deaths/mortality. Also, it is the most common CVD, leading to a significant public health challenge for societies that are in socioeconomic transition and affecting the development of countries as a whole.

Statement of the Problem

Hypertension is a highly prevalent risk factor for CVD throughout the industrialized world. It is becoming an increasingly common health problem worldwide because of increasing longevity and the prevalence of contributing factors such as obesity, physical activity and an unhealthy diet. The prevalence in many developing countries, particularly urban societies, is already as high as in developed countries. Worldwide, HTN is estimated to cause 7.1 million premature deaths and 4.5% of the disease burden [64million disability-adjusted life years (DALYs)]. The proportion of global disease burden attributable to hypertension is substantial.

Treating hypertension has been associated with about a 40% reduction in the risk of stroke and a 15% reduction in the risk of myocardial infarction. Although the treatment of HTN has been shown to prevent CVD and to extend and enhance life, hypertension remains inadequately managed everywhere. In addition, hypertension often coexists with other cardiovascular risk factors such as tobacco use, diabetes, hyperlipidemia and obesity, which compound the cardiovascular risk attributable to hypertension. Worldwide, these coexistent risk factors are inadequately addressed in patients with hypertension, resulting in high morbidity and mortality. According to one finding in the United States, the total cost of HTN was estimated at $ 37 billion in 1999, i.e., $ 26 billion in direct medical costs and $ 11 billion in lost earnings.

In Ethiopia, national surveillance for hypertension has yet to be conducted. Still, the problem is growing as few small-scale hospital-based and community surveys indicate it as a disease of public health importance. As the prevalence of hypertension increases, more working people become sick, depending on others. Hence, the overall mortality and morbidity resulting from uncontrolled or poorly controlled hypertension will impact the country's economy. A prospective study of patients in the 60+ age category found CVD, especially hypertension and its complications, in 20% of patients.

Hospital-based data on small-scale communities must reflect the problem's general picture. Thus, in Ethiopia, extensive population-based studies must be conducted to understand the magnitude of the situation and its impact on the individual and highlight a new management approach for policymakers, other concerned organizations and individuals.

Literature Review

From an epidemiologic perspective, there is no obvious level or cut-off point for blood pressure that defines hypertension. In adults, there is a continuous, incremental risk of CVD, stroke and renal disease across levels of both systolic and diastolic blood pressure. Hence, there is no sharp division between hypertension and normotension. As a result, arbitrary levels have been taken to define those who have an increased risk of developing a morbid CVS event and those who will benefit from the treatment [1].

It is essential to take into account not only the pathologic consequences of hypertension but also the psychological and social effects of labeling patients as hypertensive.

The 2004 Working Party of the British Hypertension Society recommends treatment in patients with sustained Grade 2 hypertension (>160/100mmHG) for uncomplicated hypertension and for patients with grade 1 HTN (SBP 140-159 mmHg or DBP 90-99mmHg, or both) if there is any complication of hypertension or target organ damage, or diabetes, if there is an estimated

10year risk of CVD of > 20% despite lifestyle advice after several measurements [2]. In contrast, the most recent guidelines from the AJNC on prevention, evaluation and treatment of hypertension define and recommend treatment when the average of two or more seated blood pressure during each of two or more outpatient visits is >140/90 mmHg [3]. Cut–off points vary from study to study, and some studies use estimates of hypertension prevalence based on casual blood pressure measurement, which overestimates.

Hypertension is a significant public health problem worldwide. Analysis of the global burden of hypertension revealed that over 25% of the world's adult population had hypertension in 2000, and the proportion is expected to increase to 29% by 2025 [1, 3]. According to the World Health Report 2002, CVD accounted for 9.2% of total deaths in the African region in 2001, and hypertension remains the most critical risk factor, with national Prevalence levels ranging from 25% to 35% in adults aged 25-64 years. Growing evidence suggests that hypertension constitutes the basis for the CVD epidemic in sub-Saharan Africa and is a widespread problem of economic importance because of its high prevalence in urban areas, its frequent underdiagnosis, and the severity of its complications [4, 5].

Limited data on the trends of the prevalence of hypertension suggest that it has increased in economically developing countries in recent years while it remained stable or decreased in developed countries. Thus, the world's most hypertensive people live in developing countries where CVD has an early onset and higher mortality than in developed countries. Given that more than 80% of the world's population lives in economically developing nations, it is very likely that the world's broad burden of illness due to hypertension will continue to escalate unless measures are taken to blunt the expected increase in the prevalence of hypertension [6, 7].

The prevalence of hypertension varies between 15-35% in the urban adult population of Asia, while it is two to three times lower in rural populations than in urban subjects. There has been a rapid increase in the prevalence of hypertension in India, China, the Philippines, Thailand, Sri Lanka, Iran, Pakistan and Nepal, and it occurs at a relatively younger age. The prevalence varies from one country to another country and from one community to another community in the same region, depending upon economic development and affluence [7].

A recent cross-sectional study of China estimated that 129 million people aged 35-74 have hypertension. Previous estimates found 30 million persons with hypertension in China in 1960, 59 million in 1980, and 94 million in 1990. This represents the continuation of a trend in which the prevalence and absolute number of persons with hypertension have increased at a steep rate [8]. The WHO/ISH 2003 reported HTN as an essential public health problem in developing countries. In adults aged 40-55, B.P. was the highest among Indian men compared to 20 other developing countries.

The overall prevalence of hypertension in India ranges from 4.5%-69%, which is higher for the elderly and in urban areas significantly. Few studies were conducted to compare different socioeconomic groups, and prevalence was reported higher in low and middle socioeconomic groups (based on household income, occupation and dietary pattern). Still, it didn't differ significantly between the sexes. Essential correlates of hypertension prevalence were higher BMI, higher educational status, prevalent D.M. and urban residence. In contrast, physical activity and current smoking have not been related to the prevalence of hypertension [9].

Research in Japan estimated more than 33 million adults have hypertension, which reaches 45% of the adult population. The prevalence of hypertension increases as the population ages in both men and women. More than half of middle-aged men and women and almost three-fourths of older men had hypertension [10].
According to research done in the 1990s on hypertension prevalence and blood pressure levels in 6 European countries, Canada, and limited states, 'prevalence was highest in Germany (55%), followed by Finland (44%), Spain (47%), England (42%), Sweden (38%) and Italy (38%). Prevalence in the United States and Canada was half the rate in Germany (28% and 27%, respectively). The prevalence of hypertension on the European average was 44.2% compared with 27.6% in North America [11].

In 2005-2006, 29% of all United States adults 18 years and older were hypertensive. It was nearly equal between men and women. The prevalence increased with age from 7% among those aged 18-39 years to 67% among those aged 60% years and older. The non-Hispanic black population had a significantly higher prevalence of hypertension than the non-Hispanic white and Mexican American (41%) vs. 28% and 22%, respectively). Among them, 78% were aware of their condition, 68% were using an antihypertensive medication, and 64% achieved Bp<140/90 mmHg while on antihypertensive medicines [12].

Until recently, hypertension was thought to be rare in Africa. However, more recent data, such as those from Tanzania, Ghana, Egypt and South Africa, suggest that HTN prevalence is on the rise in Africa and commonly exceeds 20%-25% in rural areas and is over 30% in urban and semi-urban areas. In a study of two linked cross-sectional surveys of a middle-income urban district and a relatively prosperous rural area in Tanzania, Edwards et al. reported an age-standardized hypertension prevalence of 37.3% among men and 39.1% among women in an urban district and 26.3% among men and 27.4% among women in the rural area [13].

The overall prevalence of hypertension in Ghana was 28.7%, being comparable in men and women 29.9% vs. 28%. It was more prevalent in semi-urban than rural villages, 32.9% vs. 24.1%. The prevalence rate increased with age in both men and women and both rural and semi-urban participants. According to this study, 22.0% were aware of being hypertensive, 11.3% were on Antihypertensive treatment, but only 2.8% of the total had their blood pressure adequately controlled (i.e., <140/90mmHg) [13, 14].

According to two cross-sectional surveys conducted between 1994 and 2003 at the same sites in Cameroon, mean B.P. levels were higher in men than women. Irrespective of sex and place of residence, the prevalence of hypertension significantly increased with age and BMI. The highest odds of having hypertension after adjusting for all other risk factors were seen in the oldest subjects, aged 55-74 years. Classes of BMI were more tightly associated with hypertension in men than women. Being over-

weight was associated with hypertension significantly in urban participants but not in rural ones. There was a different association of hypertension with alcohol consumption across sites, with a positive association in the rural area (significant only in men) and negative association in the urban area (significant only in women). Educational level was inversely associated with hypertension in women, although substantial only in the metropolitan area [15].

According to epidemiologic studies from 1991-1994, the national estimate of the prevalence of hypertension in Egyptians was 26.3%, slightly more prevalent in women, 28.9%, than in men, 25.7%. The prevalence of hypertension increases progressively with aging, reaching a peak in the age group of 65-75, where more than 50% of individuals have high blood pressure. Before the age of 45 years, hypertension was more prevalent in men, while the reverse was confirmed after 45 years. According to the study, 37.5% of Egyptians were aware of being hypertensive, 23.9% were receiving treatment, and it was controlled by only 8% [16].

The most comprehensive estimates of the prevalence of hypertension in South Africa show an overall prevalence rate of 55%, with 59% of black African people, 55% of Indian and colored people and 50% of white people. Differences in urban /rural prevalence were no longer apparent. Factors correlated positively with hypertension were age, smoking, waist-hip ratio, obesity, increased salt intake, decrease in fruit and vegetables and higher intake of Alcohol [17].

Ethiopia has no national strategy for preventing and controlling chronic diseases. Still, studies done on the Ethiopian general population to determine CV risk factors found that hypertension is common, particularly in urban areas like Addis Ababa, the prevalence being as high as 32.5% in males and 27.9% among females. Both the SBP and DBP were significantly higher in males than females in Addis Ababa. The associated risk factors for CVD were drinking Alcohol, smoking cigarettes, chewing chat and adoption of western lifestyle [18-21].

According to a recent study done in Addis Ababa, the prevalence of isolated systolic hypertension was 9.9% in males and 8.3% in females. Isolated diastolic hypertension was 5.8% in males and 6.0% in females. The combined systolic and diastolic hypertension was 16% in males and 13.6% in females.

Hypertension prevalence and age-related changes of B.P. in semi-nomadic and urban Oromos of Ethiopia were very low in semi-nomadic groups. There was an 8-fold increase in the urban population. SBP and DBP were significantly higher in both men and women and progressively increased with age in women but not men [22, 23].

According to a small-scale study done in 2003 by Admassu Fekadu in Jimma town, hypertension was 21.2%, of which only a quarter of the study subjects were aware of their illness, and only 58.6% underwent regular medical follow-up.

There was no statistically significant association between hypertension and socioeconomic variables like age, sex, educational status and marital status. However, there have been statistically significant associations between HTN and risk factors like smoking, family history of HTN, and Khat chewing and drinking coffee.

Significance of the Study

Hypertension prevalence is on the rise in Africa. It commonly exceeds 25% in rural areas and is over 30% in urban and semi-urban areas. The same is true in Ethiopia [13, 18]. This study will show the magnitude of hypertension and identify risk factors for future interventions like health education, regular screening and medical management. It will also help the community understand the importance of blood pressure status and treatment compliance. Last but not least, it will serve as a baseline for the government, policymakers and public health workers to conduct further nationwide studies on the increasing public health importance of HTN in the community.

Objectives

General Objective

This study aims to determine the prevalence of hypertension and its determinants among residents of Serbo town, Jimma zone, southwest Ethiopia.

Specific Objectives

1. To describe the socio-demographic characteristics among residents of servo town.
2. To assess the overall prevalence of hypertension in the specified area.
3. To assess the determinants of hypertension in the above area.

Methods and Materials

Study Area and Period

The study was conducted in Serbo town from June 20 to June 27, 2021. The city is located in the southwestern part of Ethiopia, Jimma zone, 23 km northeast of Jimma town. It has an altitude of 1700_1800 meters above sea level. According to community-based training program data for 2021, the total population was 3,820, 1900 males and 1920 females, and the adult population was 1720. The town is divided into two kebeles, and the climate works dega.

Study Design

A cross-sectional community-based survey was conducted.

Source Population

The total population of Serbo town.

Study Population

All adults 18 years and above live in Serbo town during data collection.

Sample Size

The sample size is calculated using the following formula with 95% CI

$n = 2Z\ pq$, where n = desires ample size

d^2 d = degree of error tolerated

P = estimated proportion

$q = 1 - p$

z = the standard normal variables at $(1-\partial)$ % confidence level and ∂% i.e. with a 05% CI = 1.95, p= 0.5

$$ni = \frac{2Z\,pq}{d^2} = \frac{(1.95)2x(0.5)2}{(0.05)2} = 380$$

$$nf = \frac{ni}{1+ni/n} = \frac{1+380}{1720}$$

nf = 311, nf is n corrected

The sample size was calculated considering this research as a baseline for the study area. Adding 10% for contingency, the sample size will be 342.

Sampling Technique
The individuals from each of the selected kebeles were selected by systematic random sampling, and the first individual in the study population was chosen by lottery.

Variables

Dependent Variables
Blood pressure, level of awareness of the disease.

Independent Variables
Age, sex, weight, height, family history of hypertension, waist circumference

Data collection and measurements
Structured questionnaire that includes the dependent variables like blood pressure, level of awareness of the disease and independent variables like age, sex, weight etc.

Procedures
Blood pressure was measured using a digital Bp apparatus. The subject was calmed, rested for 5 minutes, and told not to take caffeine 30 minutes before the blood pressure measurement, measured in a sitting position in both arms in two measures 2 - 4 hours apart. Weight and height were measured using a weighing scale and measuring tape, respectively, after which the BMI was calculated.

Data Collection
Data was collected by four data collectors (5th-year medical students) after the principal investigator trained them for one hour before the survey to ensure consistency and overcome the limitations. The data collection procedure was thoroughly explained to the other collectors with a practical demonstration.

Data Quality Control
Data quality control was ensured after the data was edited, cleared, entered into SPSS for Windows version 21, and analyzed accordingly.

Data Analysis
Data was edited, cleared and entered into the software. Analysis was carried out using SPSS for Windows version 21. Results are displayed using tables. A chi-square table was used after cross-tabulation to test for association wherever possible.

Ethical Considerations
Permission was secured from the municipality and kebeles. In addition, verbal consent was obtained from the respondents. During data collection, proper counseling was given to all individuals under study. Finally, information was given to people involved in the study to make them aware of their problem and to seek early intervention before life-threatening problems supervenes.

Limitations
Failure to confirm the diagnosis of diabetes mellitus on those subjects with a history of diabetes mellitus.

Operational Definitions
Per capita income: calculated from the total family income according to family size within one year

- **Smoking:** Using fabricated or locally made tobacco
- **Smokers:** those who smoke a cigarette at least five cigarettes per day for at least 3-4 years
- **Chat chewers:** Those who chew chat at least three days per week for at least five years.
- **Coffee consumer:** Those who consume coffee at least 3 cups daily.
- **Alcohol:** Local or fabricated alcoholic beverage
- **Alcohol consumer:** those who consume at least two units or bottles/ day
- **First-degree relative:** Refers to parents, siblings, and offspring.
- **Second-degree relative:** Refers to a first-degree relative of the siblings, the parents or the offspring of an individual.
- **Hypertension:** Those people with blood pressure > 140/90mmHg measured in two or more outpatient visits.

American Joint National Committee classification for B .P.;

B.P. classification	SBP (mmHg)	DBP (mmHg)
Normal	<120	and<80
Pre-hypertension	120-139	or 80-89
Stage I	140-159	90 – 99
Stage II	>160	
or >100		
Isolated Systolic HTN	>140	and <90

- Body mass index (BMI) = Weight/ (kg)/ (Height) 2(m2)
  <18.5kg/m2 .....underweight
  18.5-24.9kg/m2 .....normal
  25-29.9kg/m2 .....overweight
  > 30kg/m2 .....obese

Physical activity

- Vigorous = heavy lifting, digging, aerobics or fast bicycling
- Moderate = carrying high loads, bicycling at a regular pace
- Minimal=walking

Results

The study was conducted in western Ethiopia, 23 km northeast of Jimma, Serbo town. Three hundred forty-two subjects aged 18 years and above were enrolled in the study, and their data were analyzed.

Prevalence of Hypertension
The overall prevalence of hypertension in the study subjects was found to be 14.32%, from whom 9.06% were found to be males and the rest were found to be females. Their B.P. records were 63.48% normotensive, 22.2% pre-hypertensive, 6.4% stage I hy-

pertensive, 1.2% stage II hypertensive & 6.72% isolated systolic hypertensive. Still, of those registered to be hypertensive during data collection, 63.48% were not aware of their problem. Hence, they had no regular medical follow-up & appropriate management of their clinical condition. See table 1 below:

Table 1: Distribution of prevalence of hypertension in different sexes and age groups among residents of Serbo town in 2011.

Sex and age groups		Number and Percentage of prevalence of hypertension	
		No.	%
Sex	Male	31	9.06
	Female	18	5.26
Age groups	18-24	2	4.20
	25-44	9	4.80
	45-64	31	19.20
	>65	7	67.80

The mean systolic and diastolic blood pressure was 126.4mmHg and 74.6mmHg, respectively.

Among 49(14.32%) subjects who had a personal history of hypertension, it was diagnosed by symptoms in 29(59.2%) & during checkups for other reasons in 20(40.8%) patients, for which more than half of them lived with the illness for <5 years. Among them, 81.6% had symptoms either during the data collection or before that historically. All of them had regular medical follow-ups, around three-fourths in the health center, and the same Percentage were taking medications accordingly. Still, the remaining 38.5% were not taking medications due to fear of side effects, and the rest were taking them for other reasons.

Other Determinants of Hypertension

Out of 76(22.2%) of the study subjects who have a family history of hypertension, 68(89.5%) are first-degree relatives, while 8(10.5%) are second-degree relatives.

The prevalence of alcohol drinking was found to be 3.5%, of whom 50% consumed>2 units or bottles/day. The prevalence of cigarette smoking was found to be 3.9%, with 83.3% smokers and 60.1% chat chewers. Also, 50.9% of them were coffee consumers. Among the female study subjects, 12.8% were OCP users. Regarding their physical activities, more than half of the subjects were involved in minimal physical activities.

The study subjects' BMI ranged from 18.5-24.9 for 71.1%, <18.5 for 16.7% and 25-29.9 for 12.2% of them, from whom no one was obese.

Table 2: Distribution of the determinants of hypertension among residents of Serbo town in 2011.

Determinants of hypertension	No.	Percentage (%)
family history of hypertension	76	22.20
alcohol drinking	12	3.50
cigarette smoking	12	3.50
coffee drinking	174	50.90
chat chewing	193	60.10
history of diabetes mellitus	22	6.43
minimal physical activities	178	52.00
high BMI	42	12.20
OCP users	21	12.80

Socio-Demographic Characteristics

Of the study subjects enrolled in the study, 164 (48%) were males while the remaining 178 (52%) were females, and the male-to-female ratio was ~1:1. The majority (42.4%) were in the age range of 25-44. About their educational status, the majority (32.5%) were in grades 7-12, and the least had tertiary education. About half of the study subjects were married, while 10(2.9%) were widowed. Nearly a third of the study population were merchants; 2.3% were unemployed, while the least (2.0%) were private employees. See Table 3. The total family income summed up according to the 2009 World Bank GNP calculated using the World Bank Atlas method was <830 birr in 226(66.1%), and only3.5%of the study subjects had income of 3288-10162.50.

Table 3: Distribution of the demographic and socioeconomic features of adults >18 years living in Serbo town 2011.

Demographic characteristics		No (%)
Age groups	18-24 years	91(26.6)
	25-44 years	145(42.4)
	45-64 years	78(22.8)
	65+ years	28(8.2)
Educational status	Illiterate	56(16.4)
	Read and write	57(16.7)
	grade 1- 6	66(19.3)
	Grade 7-12	111(32.5)
	Tertiary education	52(15.2)
Occupation	Government employee	75(21.9)
	Merchant	113(33.0)
	Housemaid	6(1.8)
	Private employee	7(2.0)
	Housewife	28(8.2)
	Daily laborer	19(5.6)
	Unemployed	8(2.3)
	Other	86(25.1)
Per capita income	<830 birr/month	226(66.1)
	831-3287 birr/month	104(30.4)
	3288-10162.50 birr/month	12(3.5)
Marital status	Married	209(61.1)
	Single	104(30.4)
	Divorced	19(5.6)
	Widowed	10(2.9)

There was a statistically significant association between hypertension and socioeconomic variables like age, sex (p=0.010), and marital status. There was also a statistically significant association between hypertension and risk factors like smoking (p=0.032), family history of hypertension & drinking coffee. See table 4

S.NO	Status of factor	Hypertensive No (%)	Non-hypertensive No (%)	OR (95% CI)	Adjusted OR
1	Sex				
	male	31(18.9)	133(81.1)	3.06(0.80-11.73	0.74(0.29-1.92
	female	18(10.98)	146(89.02)	1.00	1.00
2	Age				
	18-24	2(2.2)	89(97.8)	1.02(0.47-2.21)	0.81(0.32-2.07
	25-44	9(6.2)	136(93.8)	1.95(1.24-3.06)	1.85(1.01-3.42
	45-64	31(39.7)	47(60.3)	2.47(1.55-3.93)	0.93(0.5-1.71
	>65	7(25)	21(75)	1.00	1.00
3	Family history of HTN				
	yes	29(38.16)	47(61.84)	2.96(1.99-4.39)	1.24(0.73-2.1)
	No	20(7.52)	246(92.48)	1.00	1.00
4	History of D.M.,				
	yes	17(77.27)	5(22.73)	0.79(0.53-1.18)	0.75(0.46-1.22
	No	32(10)	288(90)	1.00	1.00
5	Smoker	8(66.7)	4(33.3)	5.58(3.55-8.76)	2.50(1.43-4.37
	Non-smoker	41(12.42)	289(87.58)	1.00	1.00
6	Alcohol user	5(41.7)	7(58.3)	8.83(4.58-17.30)	5.34(2.51-11.10)
	Alcohol non-user	44(13.3)	286(86.7)	1.00	1.00

7	Chat chewer	10(5.18)	183(94.82)	1.83(1.24-2.69)	1.49(0.93-2.38
	No chat chewer	39(26.17)	110(74.83)	1.00	1.00
8	OCP use				
	yes	3(14.3)	18(84.6)	2.56(1.40-5.01)	0.86(0.40-1.87
	No	15(9.6)	142(90.4)	1.00	1.00
9	Physical activity:				
	minimal	27(15.2)	151(84.8)	2.47(1.55-3.93)	0.93(0.5-1.71)
	Moderate	20(17.86)	92(82.14)	1.19(0.67-2.10)	0.61(0.29-1.26
	Vigorous	2(3.84)	50(96.16)	1.00	1.00
10	BMI				
	<18.5	2(3.5)	55(96.5)	55(96.5)	14.49(3.86-54.89)
	18.5-24.9	9(3.7)	234(96.3)	234(96.3)	10.73(3.01-38.28)
	25-29.9	38(90.48)	4(9.52)	4(9.52)	1.00
11	Educational status:				
	illiterate	16(28.57)	40(71.43)	5.33(2.77-10.26)	0.83(0.31-2.19
	Read & write	17(29.82)	40(70.18)	2.61(1.42-4.78)	0.79(0.35-1.81
	Grade 1-6	2(3.03)	64(96.97)	1.45(0.74-2.85)	0.79(0.33-1.89
	Grade7-12	1(0.90)	110(99.01)	1.00	1.00
	Tertiary education	9(17.30)	43(82.70)		
12	Income				
	<830		196(86.80)	3.89(1.87-3.97)	1.98(0.98-1.87
	831-3287	30(13.20)	89(85.58)	2.89(1.89-3.67)	1.78(0.67-1.56
	3288-10,162.50	15(14.42)	12(100)	1.00	1.00

Discussions

The prevalence of hypertension is at an increasing rate, resulting in higher CVDs and morbidity and mortality from their complications [1-5].

The overall prevalence of hypertension in the study population (14.32%) is comparable with the overall prevalence in urban Asian populations & India, which are 15-35% and 4.5%-69%, respectively, but was found to be much lower than that found in most African countries and Addis Ababa which were 20-25% &30.2% respectively [6, 7]. This might be due to the lower prevalence of the risk factors in the study area, like a lower Western lifestyle, low smoking history, etc., compared to other places.

The prevalence of systolic hypertension (5.56%) was higher than that of diastolic hypertension (3.2%), which is a consistent figure with that of the Indian population [9]. The prevalence of hypertension in males (9.06%) was higher than that of females (5.26%). This sex difference is similar to Addis Ababa, in which the prevalence in males and females was 32.5% and 27.9%, respectively. Also, the same differences were observed in small-scale studies in Jimma town in 2000 and 2003, in the Ethiopia T.B. health center, and in urban bank employees.

The knowledge of the study subjects (35.4%) about being hypertensive was comparable with that of Egyptians (37.5%) but much lower than that of the United States (78%) [11, 12]. This low Percentage of awareness of hypertension may be due to lack of knowledge, negligence, cost, and fear of side effects, as these were the reasons for failure of regular medical follow-up.

Nearly two–fifths of those who know their illness are under regular medical follow-up and, hence, Antihypertensive drug treatment. This figure is higher than studies done in Ghana and Egypt, 11.3% and 23.9%, respectively [14, 16]. This may be due to the presence of health centers and private clinics and the health education provided to patients by health professionals.

There is a statistically significant association between hypertension and a family history of hypertension, smoking, alcohol drinking, coffee drinking and a history of D.M. (see Table 4).

Conclusion and Recommendations

Conclusions

This cross-sectional survey illustrated that the prevalence of hypertension was found to be high among males, who were more affected than females. A significant proportion of individuals were unaware of their illness. The study has demonstrated that among the determinants of hypertension, smoking, family history, coffee drinking & chat chewing, as well as the history of D.M., were highly prevalent.

Recommendations

This study recommends providing health information to the general population, hypertensive, and their families about risk factors, lifestyle modifications, and complications of hypertension. Patients should also be informed about the importance of regular follow-up and antihypertensive treatment, as well as establishing a habit of measuring blood pressure regularly by trained individuals in widely distributed facilities.

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