

St. PAUL'S HOSPITAL MILLENNIUM MEDICAL COLLEGE



ASSESSMENT OF MAGNITUDE AND ASSOCIATED RISK FACTORS OF HYPERTENSION AMONG PATIENTS VISITING MEDICAL OPD OF ST. PAUL'S HOSPITAL.

RESEARCH REPORT

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Assistant Professor of Medicine)

A RESEARCH REPORT TO BE SUBMITTED TO THE
DEPARTMENT OF PUBLIC HEALTH, SPHMMC, IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE
OF DOCTOR OF MEDICINE

September 2017

SPHMMC, Ethiopia

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Abstract

Back ground- Hypertension is an elevation of blood pressure $>140/90$ mm Hg. Hypertension has two major classifications, which are primary hypertension and secondary hypertension. The magnitude of hypertension is increasing in Africa in general and Ethiopia specifically. Despite this increase in hypertension magnitude trend there are only few studies done in Ethiopia.

Objective- To assess magnitude and associated risk factors of hypertension among patients who visited medical OPD of SPHMMC during April 3 to May 12, 2017.

Methods- The study was conducted at SPHMMC medical OPD. An institutional based cross-sectional study design was used to conduct the study among patients attending SPHMMC medical OPD from April 3- May 12, 2017. One hundred ninety-one (191) patients visiting medical OPD was selected using systemic random sampling. Data was collected by using structured, pretested questionnaire which was adapted from previous studies and modified. The collected data was entered to SPSS 22.0 version. Different sociodemographic variables were analyzed. Possible associated factors were analyzed for possible association using cross-tabulation. A p-value less than 0.05 was considered statistically significant. Results was presented in tables and graphs.

Result:

The prevalence of hypertension is 27.7% of whom 35(66%) were male and 18 were females. Above two-third were known hypertensives (36) and 23 of them were taking anti-hypertensive medications. Age, family history, DM and BMI of the respondents were found to have statistically significant association.

Conclusion and recommendations:

The prevalence of hypertension is increasing probably due to the change in the life style of the population and lack of due attention from authorities. Therefore, there should be regular health education to the societies regarding the modifiable risk factors and nation-wide interventions for early detection and treatment hypertension.

Key words: Hypertension, SPHMMC, Magnitude, Risk factors

Acronyms and abbreviations

BMI-Body Mass Index

CHF-Congestive Heart Failure

CHD -Coronary Heart Disease

DM-Diabetes Mellitus

OPD- Out-Patient Department

SPHMMC- St. Paul's Hospital Millennium Medical College

SPSS- Software Program for Social Studies

SSA- Sub-Saharan Africa

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1. INTRODUCTION

1.1. Background

Hypertension is an elevation of blood pressure $\geq 140/90$ mm Hg. Hypertension has two major classifications, which are primary hypertension and secondary hypertension. Secondary hypertension accounts for the majority of childhood hypertension (90%) but only small percentage of adulthood hypertension. Secondary hypertension is due to some other process that the patient develops hypertension. Proper management of the primary cause may prevent hypertension and its complications. The primary hypertension accounts for the majority (90%) of adulthood hypertension with no particular cause, although there are usually recognizable risk factors (1,2).

Some of the known risk factors for primary hypertension like age, heredity, and gender are non-modifiable. However, the majority of the other risk factors like smoking, alcohol drink, unhealthy diet, physical inactivity, overweight and obesity can be successfully preventable (1,2).

Hypertension is one of the leading causes of the global burden of disease. Approximately 7.6 million deaths (13–15% of the total) and 92 million disability-adjusted life years worldwide were attributable to high blood pressure in 2001. Hypertension doubles the risk of cardiovascular diseases, including coronary heart disease (CHD), congestive heart failure (CHF), ischemic and hemorrhagic stroke, renal failure, and peripheral arterial disease. It often is associated with additional cardiovascular disease risk factors, and the risk of cardiovascular disease increases with the total burden of risk factors (2).

The incidence & magnitude of hypertension continue to increase around the world, according to Global burden of hypertension report the estimated total number of adults with hypertension in 2000 was 972 million; 333 million in economically developed countries and 639 million in economically developing countries. The number of adults with hypertension in 2025 was predicted to increase by about 60% to a total of 1.56 billion (3).

Hypertension was thought to be rare in Africa, but it is now recognized as one of the most important cerebrovascular diseases contributing for about 40% of these diseases on the continent. Its magnitude in urban areas is almost as high as that in the developed world, ranging from 5% to 20% overall. Despite their growing importance in sub-Saharan Africa (SSA), hypertension and other cardiovascular diseases were not given attention. An increasing burden of hypertension in this region will thus result in serious consequences, because only very few people get treatment, and control is likely to be low (4).

Hypertension is a “silent killer”. Despite the fact that it is in the range of damaging different organs, it may not be manifested unless the BP is measured. Although antihypertensive therapy clearly reduces the risks of cardiovascular and renal disease, large segments of the hypertensive population are either untreated or inadequately treated (2,4).

1.2.Statement of the problem

The prevalence of hypertension is increasing in the world, as well as in Africa. There is increasing risk factors for hypertension related to westernization and urbanization like obesity, decreased activity and stress. However, there are only few studies done to assess the magnitude of hypertension among Ethiopian population and specifically there are no studies done in SPHMMC to determine the magnitude and risk factors of hypertension. This study will fill the gap in our knowledge about the magnitude and association of risk factors for hypertension in SPHMMC specifically and Ethiopia generally.

1.3.Significance of the study

Despite the high global burden of hypertension and the natural history of the illness there are only limited researches done on the topic in our country. This research will add some additional point on the magnitude of hypertension and possible risk factors. It will create a way for the new researchers on the topic by showing some additional risk factors of hypertension. It will provide the hospital and government administrators with essential information to guide their policy regarding prevention and treatment of hypertension.

2. LITERATURE REVIEW

A Cross-sectional study done in Haldwani to find out the magnitude and identify possible risk factors associated with Hypertension, among 369 individuals of 30 years and above attending Out Patient Department (OPD) in Rural Health Training Centre under the Department of Community Medicine, Government Medical College, Haldwani during June 2013-August 2013. Accordingly, among 369 patients, the magnitude of hypertension was 41.7%; out of this, 28.7% were aware of their hypertensive status while 13% were newly diagnosed cases. The association between hypertension with increase in age, family history of hypertension, increase salt intake, consuming mixed diet, increase waist circumference, waist hip ratio and body mass index was found significant. Physical inactivity, gender, tobacco and alcohol consumption were not significantly associated with hypertension (5).

Another study was conducted to determine the magnitude and identify factors associated with hypertension among residents of the rural district of Rukungiri, Uganda between January and February 2006. District residents, aged 20 years or older were enrolled to participate in this study. Of the 842 study participants, 252 were hypertensive covering 30.4% of the study subjects. The age-standardized magnitude of hypertension was 30.5%. Factors found to be associated with hypertension included: past or present alcohol use being overweight or obesity, female sex, having attained tertiary education and older age (8).

On a literature review done to summarize new researches on hypertension in SSA that has been published since the last major review in 2008 were included. According to this review the overall magnitude of hypertension in SSA was estimated at 16.2% with an estimated number of hypertensive individuals to be 74.7 million. The magnitude of hypertension varies widely from country to

country. It is projected that the number of affected individuals will increase by 68% (125.5 million) by 2025. Mass migration of rural Africans to urban areas and rapid changes in lifestyle and risk factors account for the rising magnitude of hypertension (10).

Another study involving multiple districts of different countries was also done between 2009–2011 to assess the magnitude of hypertension and determinants of blood pressure. Rural Nigeria and Kenya, and urban Namibia and Tanzania were involved in the study. A total sample size 7,568 respondents above 18 years were included. The primary outcome measure was the magnitude of hypertension in each of the populations under study. The age-standardized magnitude of hypertension was 19.3% (95%CI:17.3–21.3) in rural Nigeria, 21.4% (19.8–23.0) in rural Kenya, 23.7% (21.3–26.2) in urban Tanzania, and 38.0% (35.9–40.1) in urban Namibia. In individuals with hypertension, the proportion of grade 2 ($\geq 160/100$ mmHg) or grade 3 hypertensions ($\geq 180/110$ mmHg) ranged from 29.2% (Namibia) to 43.3% (Nigeria). Control of hypertension ranged from 2.6% in Kenya to 17.8% in Namibia. Obesity magnitude (BMI ≥ 30) ranged from 6.1% (Nigeria) to 17.4% (Tanzania) and together with age and gender, BMI independently predicted blood pressure level in all study populations. Diabetes magnitude ranged from 2.1% (Namibia) to 3.7% (Tanzania) (16).

Another research was also done to determine the magnitude and risk factors among known hypertensive patients in Bayelsa, Nigeria in 2014. A total of 172 hypertensive patients visiting a cardiology clinic in Federal Medical Center, Bayelsa Nigeria were recruited for the study, 93 males and 79 females. Greater than 55 percent of these clients visiting the clinics were 50 years and above, and more than 50 percent of had no educational status or of low educational status (primary level). At least a third proportion of the studied population either

consume tobacco product, or add salt to already cooked food or practice exercise as lifestyle or had positive family history of hypertension. The determinants for these observations had arisen from socio-cultural background, educational status, and religious background (7).

On another study aimed to assess the magnitude, awareness, treatment, and control of hypertension in patients attending an outpatient clinic at a general hospital in Huambo, South Angola, in 2015, 265 subjects aged 18 years and older were included. It is found that the magnitude rates of hypertension and prehypertension were 38.5% and 30.20%, respectively. Hypertension was associated with age and female gender. Among total hypertensive patients, 54.9% were aware of their diagnosis, 28.43% were in treatment, and 7.84% had controlled blood pressure. Lack of awareness was significantly higher in younger. The most commonly used treatment regimens included renin–angiotensin–aldosterone system inhibitors, alone, or in combination with diuretics and/or calcium channel antagonists. Lack of awareness about diagnosis was significantly higher in younger than in older, and in men than in women. In the sample, 3.39% and 4.15% self-reported diabetes and active smoking, respectively, without significant association with hypertension magnitude (6).

In Ethiopia meta-analysis of the results from 9 studies published between January, 2000 and April, 2015, was conducted to provide an estimate of the magnitude of hypertension in the Ethiopian population. The analysis showed that the magnitude of hypertension among Ethiopian population was estimated to be 19.6 % (95 % CI: 13.7 %, 25.5 %). Subgroup analyses indicated that the magnitude of hypertension is higher in the urban population (23.7 %) than rural and urban combined (14.7 %). The magnitude of hypertension among males (20.6 %) and females (19.2 %) was similar (11).

On another study done in Ethiopia in December 2009 and January 2010, to determine the magnitude of hypertension and diabetes among members of an Ethiopian occupational cohort; and to examine the proportion of adults who were aware of their conditions, a total of 2,153 of subjects were included in this cross-sectional study. In this research it is found that the overall magnitude of hypertension was 19.1% and 22% and 14.9% among men and women respectively. Fifteen percent of hypertensives reported never having had their blood pressure checked prior to the present study examination. Approximately 45% of participants who had their blood pressure checked were never diagnosed with hypertension, but were found to be hypertensive in the study (12).

There was also a hospital-based cross-sectional study done at Jimma hospital, southwest Ethiopia between May 2012 to June 2012, to determine the prevalence and risk factors of hypertension. A total of 734 participants aged 15 years or older involved. The prevalence was 13.2% and Only 35.1% of them were aware of their hypertension and only 23.7% were on treatment. The overall control rate was 15.5%. The mean age of the participants was 42.3 ± 13.2 years and 71.7% of them were 35 years and older; 58% of them were females. Family history of hypertension, having diabetes mellitus, being overweight, and oral contraceptive use were statistically associated with hypertension (14).

Another research was also done in Tikur Anbessa Hospital to assess the main risk factors of hypertension among patients visiting in Adult emergency department using risk assessment form that contains 39 structured close-ended questionnaires. In this study from non-modifiable risk factors age, gender, ethnicity, family history, and from modifiable risk factors smoking, alcohol drinking, excessive salt intake, Khat chewing, DM, BMI, Physical inactivity, and Psychosocial stressors were observed. Among 254 study subjects smoking

13.8% and alcohol 42.5% might be considerable risk factors only seen in men. Moreover, psychological stressful condition, excessive salt food intake, physical inactivity and BMI were the mainly seen modifiable risk factors in both gender (13).

3. OBJECTIVE

3.1.General objectives

-To assess magnitude and associated risk factors of hypertension among patients visiting medical OPD of SPHMMC during April 3 to May 12 ,2017

3.2. Specific objectives

-To find out magnitude of hypertension among patients who visited medical OPD of SPHMMC during April 3 to May 12 ,2017

-To determine risk factors of hypertension among patients who visited medical OPD of SPHMMC during April 3 to May 12 ,2017

4. METHODOLOGY

4.1.Study Area

St. Paul's hospital millennium medical college is located in Gulele sub city Addis Ababa. The hospital was giving medical service for more than fifty years. It becomes teaching hospital in 2000 E.C (millennium). In 2000 E.C it begins only with few students less 50 and fewer medical staffs. Currently there are more than 700 students and much more medical staffs including specialists and sub specialists. It has nine departments which are: Pediatrics, Internal Medicine, Gynecology & Obstetrics, Surgery, Ophthalmology, Dermatology, ENT, Psychiatry and Dentistry.

4.2.Study design

Institution based cross-sectional study was conducted.

4.3.Study period

The study was conducted April 3 to May 12 ,2017.

4.4.Source population

All patients attending medical OPD of SPHMMC was considered the source population.

4.5.Study population

All patients attending medical OPD of SPHMMC from April 3 to May 12 ,2017.

4.6.Inclusion criteria and Exclusion Criteria

4.6.1. Inclusion criteria:

- All patients visiting the medical OPD with Age greater than 18 years old.

4.6.2. Exclusion Criteria:

- All pregnant and laboring mothers.

4.7. Sample size determination

To determine the sample size of this research we used a hospital based research done in southwest Ethiopia indicating the magnitude of hypertension to be 13.2%. Taking 95% confidence interval and 5% margin of error total sample size was calculated as follows (14).

$$n = \frac{z^2 p(1-p)}{d^2}$$

where $z=1.96$ (confidence interval 95%)

$p=13.2\%$ (from similar research previously)

d =margin of error

based on the above calculation sample size was 174.

And adding the 10 % of the above number for non-responders and absentees the total sample size was 191.

4.8. Sampling method

systemic random sampling method was used to collect data among patients attending medical OPD from April 3 to May 12, 2017GC. Study subjects was selected by using systemic random sampling taking every 10th patient and the 1st patient was selected by lottery method from the 1st ten patients. Daily average medical OPD visitors are 65 which sums up to 1950 patients per 30 days (April 3 to May 12).

$$K = N/n = 1950/191 = 10$$

N = study population

n = sample size

4.9. Study Variables

4.9.1. Dependent variable

- Magnitude of Hypertension

4.9.2. Independent variables

- Sociodemographic variables of study subjects
- Behavioral characteristics (smoking, alcohol, khat, ...)
- Family history of study subjects
- DM
- BMI

4.10. Data Collection method

Data was collected by using structured, pretested questionnaire which was adapted from previous studies and modified. Data was collected by the researcher and collaborators fourth year medical students and nurses. Using aneroid BP cuff, patients' BP was taken while the patient was in a sitting position, from the right arm after the patient rested for at least 15 minutes before measurement. Two measurements of BP on a single visit were taken at least 5 minutes apart, and the averages of the two records were used for the computation of results. Weight and height was measured by the standard instruments in the OPD.

4.11. Data processing and analysis

After data collection is completed, data was checked for completeness and entered in to EPI INFO version 6.0 and later exported to SPSS version 22.0. Data was analyzed for frequency of different sociodemographic variables. Different risk factors were analyzed for possible association with magnitude of hypertension Chi- square test. A p-value less than 0.05 was considered statistically significant association.

4.12. Operational definitions

Hypertension: A blood pressure of $\geq 140/90$ for more than one occasion or a patient taking any of antihypertensive agents (2).

Prehypertension-is a blood pressure of Systolic from 120 up to 139 mm Hg and diastolic 80 up to 89 mmHg (2).

Normal blood pressure(normotensive)-is a blood pressure between 90/60 and 120/80 mm Hg (2).

Risk factors- are conditions that increase the risk of developing hypertension (13).

Modifiable risk factors-are factors that can be avoidable (13).

Non modifiable risk factors- are factors that cannot be avoidable but we can control by early diagnosing and treating (13).

Family history of HTN- a reported history of hypertension with in the 1st degree relatives (14).

Body mass index (BMI) of $=$ or > 25 but < 30 kg/m² was considered as overweight, and those above that range were considered obese (14).

4.13. Ethical consideration

After the research proposal is approved by public health department, ethical clearance was obtained from SPHMMC research directorate. And verbal consent was obtained from the patients for their willingness before proceeding to data collection. The information on the research was used only for this research purpose and the identity of study subjects wasn't mentioned. The privacy of the information was kept confidential throughout the research process.

4.14. Dissemination of the study

The results of this study will be disseminated or communicated to SPHMMC public health department, department of internal medicine, Federal Ministry of Health, Regional health bureau, local institutions and other concerned bodies through reports and publication on an appropriate journal.

5. Result

5.1. Socio-Demographic Characteristics

A total of 191 patients who visited SPHMMC medical OPD from April 3 to June 12 of 2017, were included in this study. About half (44%) of the participants were women and 56 % were men. The mean age was 47.33 years and the minimum age is 15 and maximum being 86yrs.

Most of them were married (150). About half were Oromo (46.1%), Amara (27.7) and the rest have other types of ethnicity. More than two third are from Addis Ababa. 62.3% are Orthodox, 24.3% Muslim and 11.5 % are protestant in religion. Three forth of the respondents completed primary school and 35 % learned up to tertiary level. About quarter 26.2(50) were private employed, 30(15.7%) government employed, 9.4% are house wife (Table -1).

Table 1 socio-demographic characteristics of the study participants visited medical OPD, St' Paul's hospital, Addis Abeba,2017 Gc

Property		Frequency	Percent
Sex of participants	Male	107	56
	Female	84	44
Marital status	Married	150	78.6
	Unmarried	27	14.1
	Divorced	10	5.2
	Widowed	4	2.1
Ethnicity	Tigray	16	8.4
	Oromo	88	46.1
	Amhara	53	27.7
	Guragea	30	15.7
	Others	4	2.1
Address	Urban	119	62.3
	Rural	72	37.7

Religion	Orthodox	119	62.3
	Muslim	46	24.1
	Catholic	4	2.1
	Protestant	22	11.5
Education	Reading and writing	53	27.7
	Primary school	74	38.7
	secondary school	35	18.3
	Collage/university	7	3.7
	No formal education	22	11.5
Occupation	Governmental Employee	30	15.7
	Private Employee	50	26.2
	Merchant	10	5.2
	Daily laborer	17	8.9
	Retired	7	3.7
	Housewife	18	9.4
	Farmer	19	9.9
	Student	4	2.4
	Others	40	20.9

The mean height was 1.633(SD+/-0.07) ms, weight was 62.3(SD+/-10.8) kgs, systolic blood pressure was (120 SD+/-19.18) mmHg, and diastolic blood pressure was (79.05SD+/-11) mmHg. The minimum and maximum height was 140cms and 176cms, weight was 40 & 90 and, systolic blood pressure was 90 & 200mmHg and mmHg, and diastolic blood pressure was 50 &120 mmHg. The mean BMI was 23.4(-/+22.6), the minimum and the maximum being 15.24 and 32.8 respectively.

Table 2 Descriptive characteristics of the study participants visited medical OPD of St' Paul's hospital, Addis Ababa, Ethiopia 2017

<i>Descriptive Statistics</i>	<i>Height</i>	<i>Weight</i>	<i>BMI</i>	<i>Age of participants</i>	<i>Blood pressure</i>	
					SBP	DBP
<i>Mean</i>	1.63.30	62.3	23.4	47.33	120.9	79.05
<i>Std. Deviation</i>	0.07	10.8	22.6	17.6	19.18	11
<i>Minimum</i>	1.40	40	15.24	15	90.00	50.00
<i>Maximum</i>	1.76	90	32.8	86	200.00	120.00

5.2. Hypertension

The prevalence of hypertension in our study was 27.7%(53). More than two third of the hypertensive respondents, 36(67.9%) were known hypertensive patients and 17 were newly diagnosed patients. Out of the known hypertensive patients more than half, 23(63.9%) are taking anti-hypertensive medications, but the rest, 13(36.1%) do not. More than 80%(43) of them were with BP of hypertension range during the study. 35(66%) of the total hypertensives were men the rest being women.

Figure 1 BP range of the participants visited medical OPD of st' Paul's hospital, Addis Ababa, Ethiopia 2017

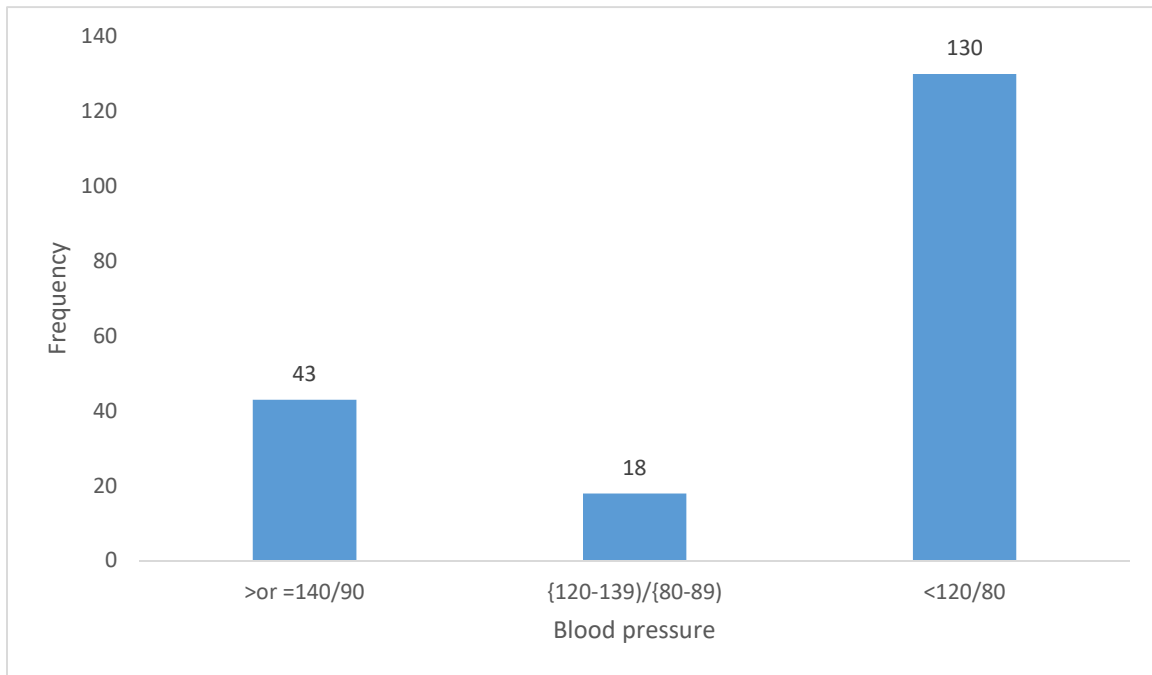


Figure 2 awareness of their status(BP) among the total hypertensive patients in this study done at medical OPD of st Paul's hospital, Addis Ababa, ethiopia,2017

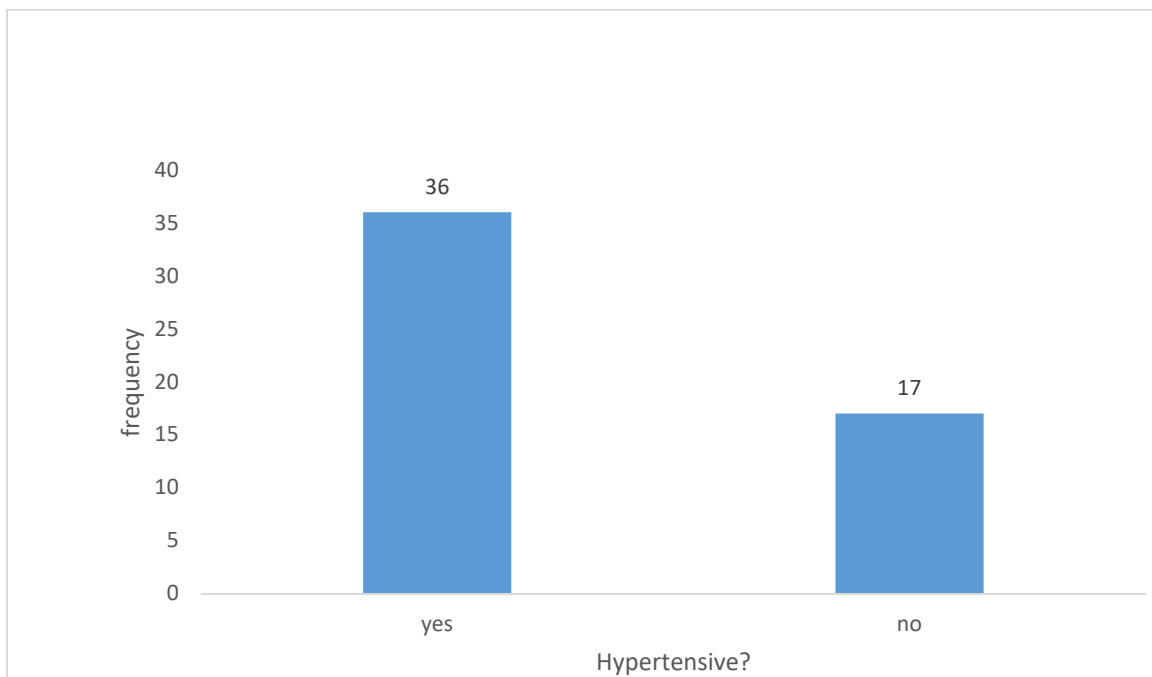


Figure 3 distribution of hypertensives by age groups, medical OPD st Paul's hospital, Addis Ababa, Ethiopia, 2017

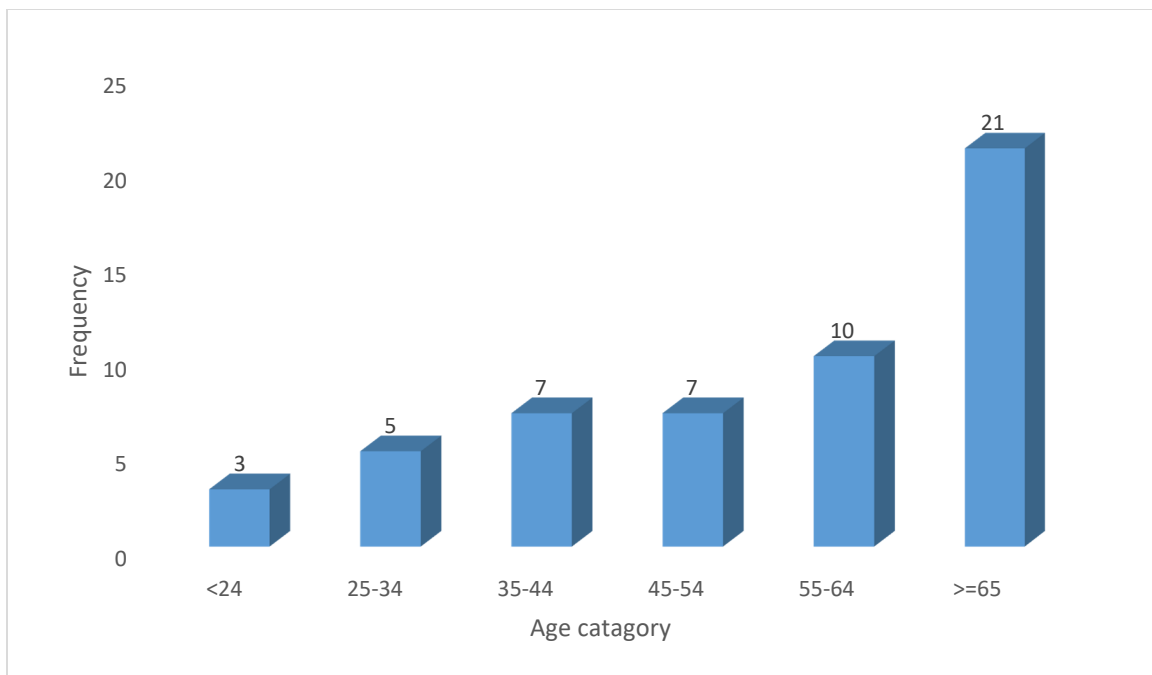
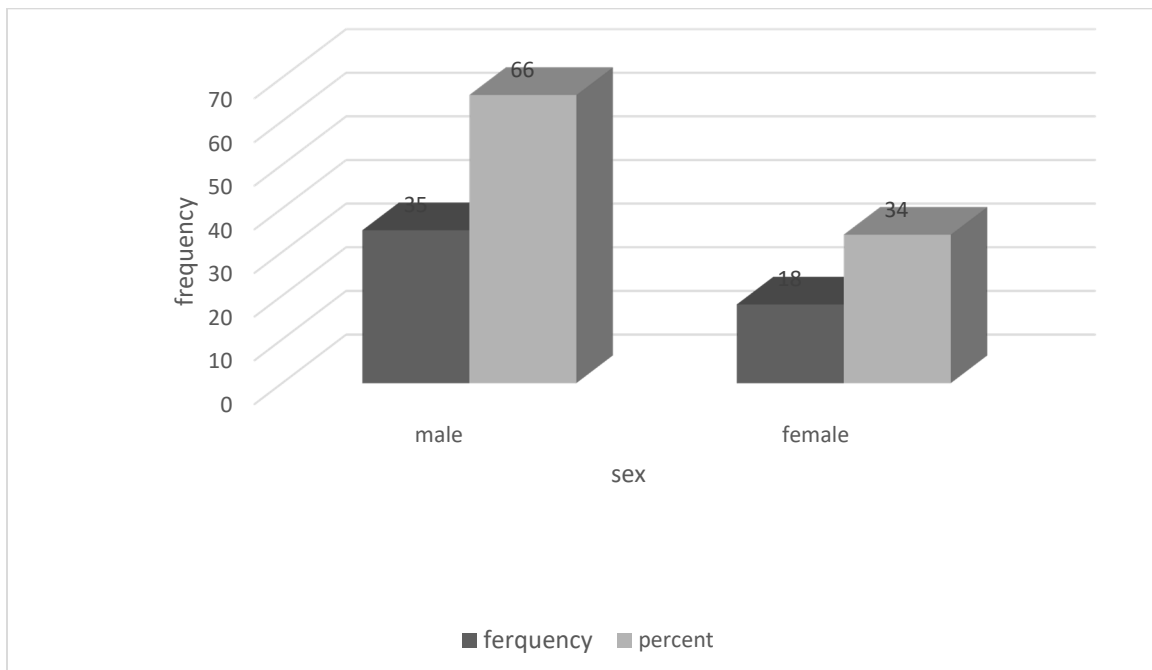


Figure 4 Distribution of the hypertensive patients by sex among the study participants visited medical OPD of st Paul's hospital, Addis Ababa, Ethiopia, 2017



5.3. Risk factors

There were only 9 smokers seen in this study and 4 of were hypertensives but there was no significant association (P value =0.252). 33(17.3%) participants drink alcohol currently and the rest, 158(82.7%) do not.13 of those who drink alcohol were hypertensives and found no significant association (P value= 0.1).

In this study there were only 21(10.9%) participants who chew khat currently, of whom 15 are males and 6 are females. and the rest, 160(89%) do not. Among the hypertensive participants 6 are engaged in chewing khat. (P value=0.92)

Most of the hypertensive patients 47(88.6%) sleep for 6 hours or even more and only 6 sleep less than 06 hours. The mean sleep hours are 6.2 hrs.

Table 3 Descriptive characteristics of risk factors of hypertension among the study participant visited medical OPD of st Paul's hospital, Addis Ababa, Ethiopia 2017

Variables	Category	Frequency	Percent
Anti-hypertensives	Yes	23	12
	No	13	6.8
Smoking	Yes	9	4.7
	No	182	95.3
How frequent per week do you smoke	Daily	4	2.1
	4-5/wk	3	1
	2-3/wk	2	3
Packet/day	< =1 pack	4	2.1
	1-2 pack	5	2.6

Duration	< 5 yrs	3	1.6
	5-10 yrs	5	2.6
	10-20 yrs	1	0.5
Alcoholic drinks	Yes	33	17.3
	No	159	82.7
How frequent/week	Daily	4	2.1
	4-5/wk	13	6.8
	2-3/wk	2	1
	Weekly	5	2.6
	Occasionally	9	4.7
Bottles/day	1-2	14	7.3
	2-5	15	7.9
	> 5	4	2.1
Duration	< 5 yrs	15	7.9
	5-10 yrs	10	5.2
	10-20 yrs	3	1.5
	>20 yrs	5	2.6
Khat	Yes	21	11
	No	170	89
How frequent/week	Daily	5	2.6
	4-5/wk	11	5.8
	2-3/wk	5	2.6

	Weekly	2	1
Sleeping duration/day	< 6 hrs	8	4.2
	6-8 hrs	136	71.2
	>8 hrs	45	23.6

According to the chi square and binary logistic regression statistical tests, the client's age, family history of hypertension, being overweight or obese and having DM showed statistically significant association with having hypertension the rest didn't show association in this study.

The mean age of those with hypertension was 55.7(SD+/-17.26), as compared to 44.12(SD+/-16.8) for those with non-hypertensives (P =0.006).

Among the respondents 29(15.1%) had family history of hypertension, more than three fourth, 147(76.9%) have no family history of hypertension and in 15(7.8%) history is unknown. More than half (15) those who had family history found to be hypertensives with P value of 0.005.

On the other hand, 29 (15.1%) of participants are known diabetic and 51.7% of them are hypertensive patients (p value of 0.002).

In this study 38 were overweight and 12 were obese. Among these 14 overweight and 7 obese are hypertensive patients. The mean BMI in hypertensives were 24.27(SD-/ + 4.32) while it is 23.12(SD-/ + 3.41). The P value is 0.03.

Table 4 Binary logistic regression analysis of those risk factors of hypertension with P value < 0.05 in this study, medical OPD of ST Paul's hospital, Addis Ababa, ethiopia,2017

VARIABLE	CATEGORIES	FREQUENCY	COR	P VALUE	95% CI
AGE	<=24	17	1	0.011	
	25-34	37	0.729	0.692	0.153- 3.481

	35-44	33	1.256	0.766	0.280-5.633
	45-54	30	1.420	0.648	0.315-6.409
	55-64	32	2.121	0.311	0.496-9.078
	>= 65	42	4.667	0.029	1.167-18.659
FAMILY HISTORY OF HTN	Yes	29	1	0.007	
	No	147	0.270	0.002	0.118-0.616
	Don't know	15	0.467	0.250	0.128-1.708
DM	Yes	29	1	0.853	
	No	162	0.286	0.003	0.127-0.646
BMI	<18.5	9	0.204	0.109	0.029-1.429
	[18.5-25)	132	0.210	0.012	0.62-0.710
	[25-30)	38	0.417	0.192	0.111-1.565
	=>30	12	1	0.042	

Abbreviations: COR, crude odds ratio; CI, confidence interval; BMI, body mass index; DM, diabetic mellitus;
: Bold column indicates statistically significant.

6. Discussion

This is a hospital-based cross-sectional study conducted in SPHMMC adult medical OPD. The prevalence of hypertension found in this study (27.7%) is higher than the result that hospital-based cross-sectional survey done in southwest Ethiopia found (13.2%) probably due to the difference in location and number of urban dwellers (Jimma and Addis abeba) and time gap (about 6 years). It is a bit lower than the research done among Outpatients at a General Hospital in South Angola (38.5%) (7) and Nigeria 38.2%(9). But it is in line with the findings (28.3%) in Gondar city (15).

Because of the asymptomatic nature of hypertension, its detection is usually incidental. As a result, the real burden of hypertension in most societies, particularly in the developing world, is underreported. A large proportion of respondent with high BP did know their hypertensive status and most of them (23(63.9%)) were taking their medications which is a bit better than the study done in Jimma hospital which found that only 35.1% of them were aware of their hypertension and only 23.7% were on treatment but in line with the study done in south angola (54.9%) of hypertensives were aware of their status and the treatment rate was (28.43%). But it is more worrying when considering that this is a sample of patients with some contact with health professionals and most live in the capital, and the problem may be greater in the general population in a country where most of the population is in rural areas (14).

Consistent increase in hypertension prevalence with age was seen in our study, especially in older age of ≥ 65 (39.6%) years which is consistent with the global trend. This study is in line with study conducted in Tikur Anbessa Hospital in which 30% of the hypertensives are above the age of 65yrs (13). but a study conducted in Northwest Ethiopia Gondar found that only one in-five participants (21.0%) aged 65 years or older were hypertensive (15).

With regard to gender differences, this study shows more than half of the study participants were male which is similar with the study done in Tikur Anbessa Specialized Hospital. 35(66%) of the hypertensives are males and 18(34%) females. The study done in Tikur Anbessa also has found the predominance of males among the hypertensive participants (13).

Majority of the respondents never drink alcohol at all. On the other hand, 33(17.30%) of the participants were alcohol drinkers seen but no women were seen drinking alcohol. From all respondents only 13(6.8%) of them were consuming alcohol 4-5 times weekly while the rest of them were consuming alcohol 2-3 time weekly and lesser. This is lower than the study done

previously in Addis Ababa, approximately 10% of men consuming 5 or more standard units of alcohol on one or more days during a week, and in a study done in Nigeria majority of the respondents (72.5%) were consuming alcohol drink and about 30.0% of them consume it daily (9).

Seven point five percent of the hypertensives are smokers (4) which is different from the studies in Addis Ababa which found that 13.8% of men and 2.8% of women who are hypertensives are smokers (13).

In this study there were only 21(10.9%) participants who chew khat currently, of whom 15 are males and 6 are females and the rest 160(89%) do not. Among the hypertensive participants 6 are engaged in chewing khat which is 11.3%. This is similar to the study done in Tikur Ambessa which found that less than quarter of the participants (17.7%) only have self-reported Khat chewing adaptation, among those mostly all 95.6% were regular chewer of Khat (13).

On this study Among the respondents 29(15.1%) had family history of hypertension, more than three fourth, 147(76.9%) have no family history of hypertension and in 15(7.8%) history is unknown. More than half (15) those who had family history found to be hypertensives which is about 28.3% of the hypertensives. This is a little higher proportion than those of a study done in Tikur Anbesa and Jimma in which 21.7% and 19.6% of the participants(hypertensives) had family history (13,14), Which might be due to increased awareness or increased prevalence of the disease.

Most studies done in Africa used Body Mass Index (BMI) not waist circumference to assess obesity. In this study about three fourth 141(73.8%) of the participants are in normal range of BMI, 38 were overweight and 12 were obese. Among these 14 overweight and 7 obese are hypertensive patients. This result is similar with Gonder study of all hypertensive participants 25% were overweight. In obesity the current study is higher than the previous study of Addis Ababa 10 % and Gonder 5.6%, but it is lower than those in other developed countries due to the difference in lifestyle and economical background of the countries (15).

On the other hand, 29 (15.1%) of participants are known diabetic and 15(51.7%) of them are hypertensive patients. This is different from that study done in Jimma hospital in which 2.2 % of the participants were self-reported diabetic and about 37.5 % of them were hypertensives (14).

Generally, in this study, the client's age ($P = 0.006$, $CI=95\%$), family history of hypertension ($p=0.005$, $CI=95\%$) and having DM ($p=0.002$, $CI=95\%$) and being overweight or obese ($p=0.03$, $CI=95\%$) showed statistically significant association with having hypertension the rest didn't show association in this study.

This is consistent with studies done in Jimma and Haldewani hospitals in which family history, age and overweight or obese have significant association with hypertension in both of them (5,14).

7. Strengths and limitations

7.1.Strength

- The data was primary.
- During the study time, health education was given by investigator for each of the study participant of hypertension.

7.2.Limitation

- For those newly diagnosed hypertensive patients we couldn't use the standard criteria of diagnosing hypertension.
- Because of exposure and outcome were measured simultaneously it was not possible to determine whether the measured exposure preceded the outcome or resulted from it.
- Waist circumference not done to assess obesity.

8. Conclusion

Hypertension was found to be prevalent in this population, but awareness, treatment, and control rates in those with the disease were low. A significant proportion (32%) of participants were unaware of having the condition (screened newly for the first time) before they were identified by the current study.

Certain factors like family history of hypertension, increasing age, diabetes, and being overweight were found to be associated with high BP. The findings in this study and other recent studies conducted in the country have clearly shown that hypertension is becoming a serious public health concern.

9. Recommendations

Policymakers should make this chronic illness a part of the public health agenda, and they should plan timely interventions.

Intervention measures at the community level should be undertaken using health education and other measures by providing an emphasis on the prevention, early detection, and treatment of hypertension. Furthermore, researchers and health care providers should work to uncover the burden of hypertension overall.

To reduce the prevalence of hypertension among the population necessitates early diagnosis & treatment, a reduction of certain modifiable risk factors, notably overweight & obesity, smoking, alcohol drink, and also the promotion of a healthy lifestyle with regular walking as well as avoiding stressful condition and greater efforts are needed to improve the situation in order to reduce the complications associated with hypertension.

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Annex I: Questioners in English

Questionnaire for data collection to magnitude and risk factors for hypertension in SPHMMC MOPD

Dear participant,

My name is Dr. BERIHU KAHSAY, a final year medical student in general practitioner Program at SPHMMC. I would like to interview you a few questions about magnitude and associated risk factors of hypertension. Your participation and willingness for the interview is helpful in identifying the risks and prevention related to the subject matter. As well as enhance contribution to reducing mortality and morbidity as a result of high blood pressure which is currently one of the burdens of the developing country health service. Your name will not be written be in this form. All information that you give was kept strictly confidential and your participation is voluntary and you are not obliged to answer any question you do not wish to answer. It will take about 15 minutes to complete. If you are not feeling comfortable with the interview, please feel free to stop at any time you want. Do I have your permission to continue?

1. If yes, we can continue to the next page.

Please sign here _____

I. Socio-demographic characteristics:

1. Gender
 1. Male
 2. Female
2. Age-----year
3. Marital status?
 1. Married
 2. Single
 3. Divorce
 4. Widow
4. where do you live now?
 1. Urban
 2. Rural area-----
5. Ethnicity?
 1. Tigray
 2. Oromo
 3. Amhara
 4. Gurage
 5. Other, please specify-----
6. Religion
 1. Orthodox Christian
 2. Muslim
 3. Catholic
 4. Protestant
 5. Other, please specify-----
7. Education background?
 1. None
 2. read and write only
 3. Primary education (1-8)
 4. Secondary education (9-12)
 5. college or university
8. occupation
 1. Government employed
 2. Private employed
 3. Merchant
 4. Daily laborer.
 5. Retired

6. Others _____

II. History of illness, lifestyle and dietary characteristics

9. Are you hypertensive?

1. Yes
2. No
3. Do not know

10. Did you start using medication?

1. Yes,
2. No

11. Is there a family member with hypertension?

1. Yes
2. No

12. Which of your family member have hypertension?

1. My father
2. My mother
3. My sister
4. My brother
5. Other, specify

13. Are you Diabetic? 1.yes 2. No

14. Do you smoke cigarette? 1. Yes 2. No

15. If you smoke how frequently?

1)Daily 2) 2 -3 days/wk 3) 4-5 days/wks 4) once /wk 5)

Other, please specify-----

16. If your answer is yes for question number 14, how much cigarettes do you smoke per day? -----

17. For how long have you been smoking? -----

18. Do you drink alcohol? 1.yes 2. No

19. If yes. How often do you take alcoholic drinks? (-----)

1) Daily 2) once /wk 3) 2 -3 days/wk 4) 4-5 days/wks 5.

Other, please specify-----

20. If yes, for question number 18, how much per day do you drink? in bottles or glass? -----
21. For how long have you been drinking alcohol? -----years
22. Do you have a habit of Khat chewing? 1. Yes 2. No
23. If Yes, how often? 1) Daily 2) once /wk. 3) 2 -3 days/wk. 4) 4-5 days/wk. 5. Other, please specify-----
24. For how many years have you been chewing?.....
25. How many hours do you sleep within 24 hours (both at night and day)? -----hours.
26. Anthropometric and blood pressure measurement
1. Height-----meters
 2. Weight-----kilogram
 3. BP-----mmHg

WE THANK YOU FOR THE FULL COOPRERATION

Annex II: Questioners in Amharic

በቅዱስ ጳውሎስ ሆስፒታል ሚኒንዮም ሜዲካል ኮሌጅ የውስጥ-ደዌ
□□□□ □□ል
ተመላላሽ ታካሚዎች □□□ □□□ □□□ □□ለ□ □□□□ ላይ
የሚደረግ ጥናት □□□□ ቃለ-□□□□ 2009 □.□

ስሜ ዶ/ር በሪሁ ካህሳይ እገለግላለሁ።በዚህ ሰዓት ለመመረቂያ ፅሁፍ
በደም-ግፊት በሽታ አጋላጭ ምክንያቶች ላይ ጥናት እያደረግኩኝ ነው።
፡ እርስዎ በዚህ ጥናት ላይ እንዲሳተፉ ተመርጠዋል። የርስዎ በጥናቱ
ላይ መሳተፍ ስለበሽታው ያለውን እውቀት በመጨመር በበሽታው
የሚመጣ ህመምንና ሞትን ይቀንሳል።በጥናቱ ላይ ለመሳተፍ ከ15
ደቂቃ የበለጠ አይወስድም።በጥናቱ ላይ የሚሰጡት ማንኛውም
መረጃ ሚስጥራዊነቱ የተጠበቀ ነው።ቃለመጠይቁን መተው ከፈለጉ
በማንኛው ሰዓት መተው ይችላሉ።ፈቃደኛ ከሆኑ ልቀጥል።

ፊርማ -----

I. □

1. ፆታ

1. ወንድ
2. ሴት

2. እድሜ ----- አመት

3. የ ሥራ ብቻ ሁኔታ

1. ያገባ/ያገባች
2. ያላገባ/ያላገባች
3. የፈታ/የፈታች
4. የትዳር አጋር በሞት የተለየበት /የተለየባት

4. አሁን የትነው የሚኖሩት?

1. አዲስ አበባ
2. ከአዲስ አበባ ውጭ

5. ብሔርዎ ምንድን ነው?

1. ትግራይ
2. አሮሞ
3. አማራ
4. ጉራጌ
5. ሌላ ከሆነ ይጥቀሱ----

6. ሐይማኖት

1. ኦርቶዶክስ ክርስቲያን
2. ሙስሊም
3. ካቶሊክ
4. ፕሮቴስታንት
5. ሌላ ከሆነ ይጥቀሱ----

7. የ ትምህርት ደረጃ

1. ማንበብና መጻፍ ብቻ
2. የመጅመሪያ ደረጃ ትምህርት
3. ሁለተኛ ደረጃ ትምህርት
4. ኮሌጅ/ዩኒቨርሲቲ

8. ስራ

1. የመንግስት ተቀጣሪ
2. የግል ተቀጣሪ

3. ነጋዴ
4. የቀን ሰራተኛ
5. ጡረተኛ
6. ሌላ

II. ካሁን በፊት የታወቁ በ ሽታዎች ፣ የአመጋገብና የአኗኗር ባህሪያት

9. የደም ግፊት በሽታ አለብዎት

1. አዎ
2. የለብኝም
3. አላውቅም

10. የደም ግፊት መድሃኒት መውሰድ ጀምረዋል

1. አዎ
2. አልጀመርኩም

11. ከቤተሰብዎ ውስጥ የደም ግፊት ያለበት ሰው አለ

1. አዎ
2. የለም

12. ከቤተሰብዎ ውስጥ የደም ግፊት ያለበት ሰው ካለ ለርስዎ ምንዎ ነው

1. አባቴ
2. እናቴ
3. ወንድሜ
4. እህቴ
5. ሌላ ካለ ይጥቀሱ-----

13. □□□□ □□□ □□□□□

1. □□
2. □□□□□

14. □□□ □□□□

1. □□
2. □□□□□

15. □□□ □□□ □□ □□□□ □□□□

1. □□□□
2. 2-3 □□ □□□□□
3. 4-5 □□ □□□□□
4. □□□□□□
5. □□ □□ □□□□

16. ከነበረ በቀን ምን ያክል ሲጋራ ያጨሱ ነበረ ? -----

17. □□□□ □□□ □□□? -----

18. □□□□□ □□□ □□□□?

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2. □□□□□

19. □□□□□ □□□ □□□□ □□□ □□ □□□ □□□□?

1. □□□□

2. 2-3 □□ □□□□□

3. 4-5 □□ □□□□□

4. □□□□□□

5. □□ □□ □□□□

20. በቀን ምን ያክል ይጠጥሉ?-----

21. □□□ □□□ □□□□ □□□□ □□□□□.....

22. □□ □□□□

1. □□

2. □□□□□

23. □□ □□□□ □□□ □□ □□□ □□□□

1. □□□□

2. 2-3 □□ □□□□□

3. 4-5 □□ □□□□□

4. □□□□□□

5. □□ □□ □□□□

24. □□□ □□□ □□□ □□ □□□□.....

25. □□□ □□□ □□ □□□ □□□□ (□□□ □□□□ □□□) □□□

26. □□□ □□□□□□□□□□ □□□ □□□□

1. □□□.....□□□

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