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Research Article

**MAGNITUDE and ASSOCIATED FACTORS OF HYPERTENSION
AMONG ADULTS IN ILLUBABORE ZONE OF OROMIA NATIONAL
REGIONAL STATE, SOUTH WEST ETHIOPIA, 2016/17****Ebissa Negera, Tesfaye Sileshi, Ramiya B.Hathic**

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Background: Hypertension is a growing public health problem in many developing countries.

Ethiopia is one of the lower income countries that has been affected by double burden diseases. Different literature showed the burden of hypertension becomes increased from time to time. However, its prevention and control has not yet received due attention. In Ethiopia little research conducted only in the big city like Addis Ababa and around the central part of the country.

Objective: This study aims to determine the prevalence and associated factors of hypertension among adults in selected towns in Illubabor Zone of Oromia National regional State, South-West Ethiopia.**Methods:** A community based cross-sectional study was conducted. Participants aged 25 years and older was recruited using multi-stage random sampling technique. A stratified multistage sampling procedure was carried out to select the study subjects and face to face interview with Afan Oromo and Amharic version interviewer administered questionnaire, followed with amphothropic measurements was employed on 668 adults.**Result:** The mean SBP and the mean DBP were 112.23 ± 14.15 mmHg and 77.22 ± 8.34 mmHg respectively. Among 648 participants, the 92(14.2%) study subject were shown having hypertension of which 42.4% had reported their blood pressure measured at least once before. Only 27.7% were aware of their hypertension. In this study Age AOR (1.63(1.77,1.84)*) and binge alcohol consumption AOR(1.24(1.14,1.64)*) were significantly associated with hypertension.**Conclusion and Recommendation:** In this study the magnitude of hypertension was significantly increased. Since the study people include all the adult people living in urban and rural, the previous trend of the case commonly seen in urban indicated changed so that hypertension expanded in rural area. Majority of independent variables showed no association with hypertension. Age and binge alcohol consumption were the only variable found to be significantly associated with hypertension. Health extension workers and Health Professional in Iluababor Zone must give awareness for the community about hypertension at House hold level by giving attention for the adult people living in both urban and rural. The government multimedia must arrange the stage for those concerned body in the health office together with health professional to educate the community on the risks of hypertension and ways of prevention.**Key Words:** Hypertension, alcohol consumption, physical inactivity, cigarette smoking**Corresponding author:****Tesfaye Sileshi,**

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INTRODUCTION:

Hypertension is one of non-communicable disease which is rapidly increasing both in developed country as well as developing country. It can be considered as chronic disease by itself and also risk factor for other non-communicable diseases. Cardiovascular disease is the most common consequence of hypertension.

Globally cardiovascular disease accounts for approximately 17 million deaths a year, nearly one third of the total (7). Of these, complications of hypertension account for 9.4 million deaths worldwide every year (8). Hypertension is responsible for at least 45% of deaths due to heart disease, and 51% of deaths due to stroke (7).

The evidence is also unraveled as the burden of hypertension increased in Ethiopia. The WHO 2011 report showed that 34 % of all deaths in Ethiopia were due to NCDs, from which CVD contributes 15 % [2]. A burial surveillance in Addis Ababa also revealed that 51 % of all deaths were due to NCDs, of which CVD was a main cause of death (24 %), and hypertension was responsible for 12 % of the CVD deaths (18).

METHODOLOGY:

The study was conducted in Mettu town. It is one of zonal town in the South West of Oromia region. Mettu town is located at 600 KMS South West of Addis Ababa. The main road running from Addis Ababa at south west direction to Gambella is crossing the town. The Zone is bounded in north- west Wollega, south-SNNP, west-Gambella region, and east-Jimma Zone. There are 22 rural woreda and two town administrations. In this zone there are 488 rural kebeles and 31 kebeles of towns. The zone has 1,432,607 populations (1,281,438 rural population and 151,169-town population). The health coverage of the Zone is more than 90%. There are 718 schools in this zone. The climatic condition of the zone is rainfall 1150 mm-2200 mm, temperature 10.6-26^o high land 16% lowland 23%woinedega 61%. There are 46 governmental health centers (all types), 488 health posts, one referral hospital, two district hospitals in the zone. Except seven up graded health centers, all are currently functional.

Two hundred eleven private health sectors are found in this zone (two higher clinics and others). For the purpose of this study, Six Woredas were randomly selected and attempt was made to adopt three stage sampling technique to select the adult individual. The first stage involves the selection of woredas. The

second stage was selection of kebeles from the selected woredas. The total numbers of kebele to be selected were 45. The adult people living in selected kebele were stratified based on the status of area as urban, semi-urban and rural. The third stage was selection of House Holds and adult individual. Finally individual was selected from the HH. But if more than 1 individual fulfilled the criteria, random sampling was employed. The sample size was proportionally allocated to each status of the area. The target populations for the study was adult population living permanently in Ilu-Ababor Zone.

Sample size was determined using the formula for single population proportion by considering, 28.3 % proportion, of hypertension in Gonder, North West Ethiopia (Awoke et al. 2012) 95% level of confidence, 5 % margin of error and 10 % none response rate.

$$n = (Z \alpha / 2)^2 p (1-P) / d^2$$

$$n = (1.96)^2 0.283 (1-0.283) / (0.05)^2$$

$$n = 312$$

$$n = \text{Non response rate } 10\% = 32$$

$$302 + 32 = \underline{334} \text{ required sample size}$$

$$\text{Multiply by design effect} = 2 * 334 = \underline{668}$$

$$n = \text{the required sample size}$$

Z=Standard score corresponding to 95% confidence interval

p= Assumed proportion of fertility desire

d = the margin of error (precision) 5 %

Non response rate =10%

Therefore, the final calculated sample size was 668 adult populations.

The data was collected using A structured questionnaire that includes variables on socio--demographic characteristics, risk factors for hypertension, and then toke physical examination to measure variables such as body weight, height, hip and waist circumferences, and three BP record to use the average for BP. Thirteen Diploma nurses were involved as data collectors. Four BSc Health Officers were also participated to supervise the data collector as well as overall data collection process. Data from the questionnaire were checked and cleaned to minimize entry errors, outliers and missing values. Responses from questionnaire were coded and the codes were saved in the code book and used during the interpretation. The data was entered onto EPI data version 3.1 and exported to SPSS (SPSS Inc. version 20.0) computer software for further analysis. Errors related to inconsistency of data such as missing values and outliers were checked and considered during data cleaning. Descriptive statistics was used to give a clear picture of dependant and independent

variables. The frequency distributions of the variables were worked out using tables and figures.

A two step logistic regression (Bivariate and multivariate) analysis was done to see the effect of the independent variables for hypertension. Explanatory variables with (P-value<0.2) was entered into the final logistic regression (multivariate) model based on the likelihood ratio. The significant level was considered at $P < 0.05$. Then, the strength of association between the independent variables and the dependent variable was assessed using OR and 95% CI; adjusted OR for explanatory variables was also determined. Finally, the finding was presented by using tables and graphs as appropriate.

Consideration and procedures

BP was measured using a mercury sphygmomanometer (adult size) and stethoscope. A patients' BP was taken while the patient is in a sitting position, from the right arm after the patient rested for at least 5 minutes before measurement. Three measurements of BP on a single visit were taken at least 3 minutes apart, and the average of the three records was used for the computation of results. The point at which the first Korotkoff sound is heard was taken as SBP, and the DBP was taken to be the point at which the sound disappeared.

Weight and height were measured with participants standing without shoes and wearing light clothing. Weight will be measured using a digital weighing scale. The scale was calibrated to zero level before each measurement, and was tested for repeatability of the measures. Height will be measured by using a stadiometer while the patient was in an upright position.

Waist and hip circumferences was measured by using a flexible tape meter at both the level just above the iliac crest and at the maximum circumference of the hip, respectively.

To keep the quality of data, The English version questionnaire was translated in to Amharic, Afan Oromo and then back to English to maintain its consistency for actual data collection purpose with great emphasis given to local vocabularies. The questionnaire was also pre-tested on 5% Of study population outside the study area to the specific Buno Bedele Zone 1 town kebele and 1 rural kebele adult people. Modification was made to ensure their accuracy and consistency before actual data collection. Detail training for data collectors and supervisor was given by the principal investigator and a guiding document was given to them. Furthermore, the principal investigator and supervisor give feedback and correction on daily basis for the data collectors before they are deployed to the field and completeness, accuracy, and clarity of the collected data was be checked carefully. Any error, ambiguity, incompleteness encountered was addressed on the following day before starting next day activities.

Ethical clearance was obtained from ethical committee of Mettu University to conduct the study. Permission paper was secured from Mettu University research Directorate and Zonal Health administration. And also after informing in detail the purpose of the study orally, informed consent was obtained from study subjects while the study subjects had the right to leave.

Confidentiality was guaranteed to assure the study subject privacy by avoiding writing their names or any identification in the questionnaire.

RESULT AND DISCUSSION:

RESULTS

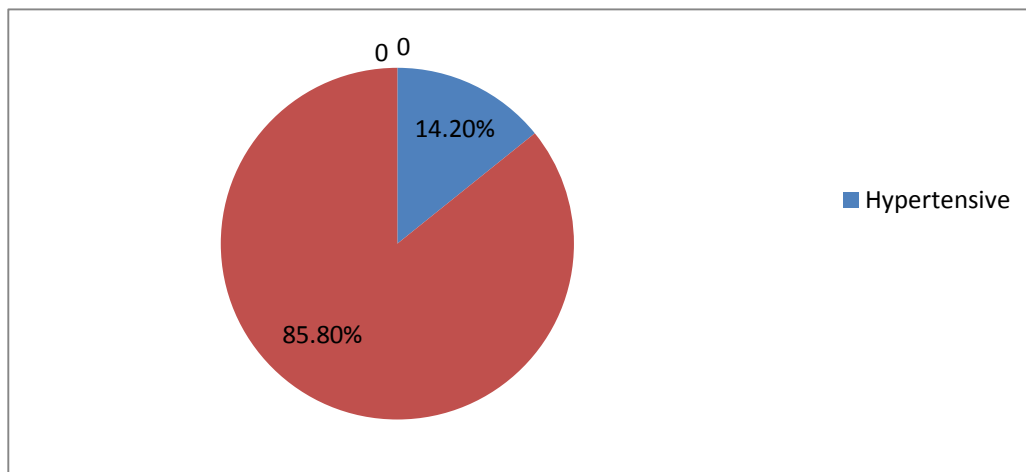
Socio-demographic characteristics: A total of 668 participants took part in this study with a response rate of 97 %. The mean age was 27.2 years with range between 25 and 80 years.

More than half, 54.6%, of them were men. The majority of the study subjects, 168(25.9%), were in the age category of 55-64 years. Most of them had completed at least secondary education (Table 1).

Table 1: Socio-demographic characteristics of the study participants, Iluababor Zone, Southwest Ethiopia, 2016/17.

Variables	No.	%
Sex		
Male	354	54.6
Female	294	45.4
Age		
25-34	80	12.3
35-44	144	22.2
45-54	102	15.7
55-64	168	25.9
65-74	76	11.7
≥75	78	12.0
Marital status		
Single	252	38.9
Married	353	54.5
Others	43	6.6
Occupation		
Student	111	17.1
Merchant	129	19.9
Government	142	21.9
Daily laborer	119	18.4
Housewife	86	13.2
Private	22	3.4
Farmer	28	4.3
others	11	1.7
Education		
Illiterate	53	8.2
Elementary	134	20.7
Secondary	266	41.0
Tertiary	195	30.1

Magnitude of hypertension: The mean SBP and the mean DBP were 112.23 ± 14.15 mmHg and 77.22 ± 8.34 mmHg respectively. Among the 92(14.2%) participants identified as having hypertension, 42.4% reported to have had their blood pressure measured at least once before. Only 27.7% were aware of their hypertension, and the overall control rate of hypertension was only 19.5%.

**Fig.1. Hypertensive status of individuals in Iluababor Zone, 2016/2017**

Among the total 668 participant, almost relatively equal proportions of sex were found to be hypertension case. In this study those participant in the age range between 55-64 years were the majority of hypertension case. Even though majority of study showed the significance association between cigarette smoking, khat chewing, physical inactivity, the study indicated no association among these mentioned explanatory variable with hypertension. The only independent variable that showed significant association were age (Adjusted OR: 1.63(1.57-1.84)) and binge alcohol consumption (Adjusted OR: 1.24(1.14,1.64). According to the finding, Those adult people aged above 45 years were 1.63 times more likely to develop hypertension than the younger age <45 years. The other significantly associated variable indicated Binge alcohol consumers were 1.24 times more likely to develop hypertension as compared to no binge alcoholic.

Table 2: Bivariate and Multivariate Logistic regression analysis for factors associated with hypertension among adult population in Ilu ababor Zone, Southwest Ethiopia, 2016/2017* = p-value <0.005

		Crude OR(95%CI)	Adjusted OR(95% CI)
Sex	Male	1.00	1.00
	Female	2.13(1.1,3.47)*	.98(0.5,2.14)
Age	<45	1.00	1.00
	≥45	1.28(1.22,1.68)*	1.63(1.57,1.84)*
Smoking	No	1.00	1.00
	Yes	1.34(0.7,1.82)	1.31(0.92,37.8)
Khat use	No	1.00	1.00
	Yes	6.66(0.3,29.42)	4.54(0.28,15.67)
Binge alcohol consumption	No	1.00	1.00
	Yes	1.68(1.52,1.86)*	1.24(1.14,1.64)*
Additional salt	No	1.00	1.00
	Yes	1.24(1.4-1.64)*	1.23(0.35,1.65)
Physical exercise	No	1.00	1.00
	Yes	0.31(0.24,13.15)	0.62(0.44,1.08)
Waist circumference	Normal	1.00	1.00
	High	1.00	1.00
Age** and	Binge alcohol consumption**	alcohol 1.66(0.51,1.84)	1.77(0.62,1.81)

There is no sharp demarcation between normal blood pressure (BP) and hypertension. However, for clinical purposes, hypertension is defined as systolic BP (SBP) ≥ 140 mmHg or diastolic BP (DBP) ≥ 90 mmHg, any prior diagnosis of hypertension made by a health professional, and taking antihypertensive drugs (Kotchen TA.2007)

The increasing prevalence of hypertension is attributed to population growth, ageing and behavioural risk factors, such as unhealthy diet, harmful use of alcohol, lack of physical activity, excess weight and exposure to persistent stress. The adverse health consequences of hypertension are

compounded because many people affected also have other health risk factors that increase the odds of heart attack, stroke and kidney failure. (World Health Organization, 2013)

This study revealed that, 14.2% of study participants were hypertensive. But; it is much lower than study conducted in Uganda, Ethiopian and Gonder (Wamala JF et al (2009), Kibret et al (2015) and Awoke A et al (2012)). The discrepancy may be due to differences in geographical areas and study period. But it is comparable with study conducted in Mekele city which was 11 % and Jimma University Teaching Hospital(Assefa B.Zikur et al (2014)).In this study

Age AOR(1.63(1.77,1.84)*) and binge alcohol consumption AOR(1.24(1.14,1.64)*) significantly associated with hypertension.

In this study the magnitude of hypertension was significantly increased. Since the study people include all the adult people living in urban, semi-urban and rural, the previous trend of the study case specifically limited in urban indicated changed so that hypertension expand in rural area. Majority of independent variables showed no association with hypertension. Age and binge alcohol consumption were the only variable found to be significantly associated with hypertension.

- ❖ Based on our findings the researchers forwarded the following recommendations:
- ✓ Health extension workers and Health Professional in Iluababor Zone must give awareness for the community about hypertension at House hold level by giving attention for the adult people living in both urban and rural.
- ✓ The government multimedia's must arrange the stage for those concerned body in the health office together with health professional to educate the community on the risks of hypertension and ways of prevention
- ✓ Further research must be conducted in this zone to differentiate factors associated with hypertension using advanced analytical study design.

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