Physical, Behavioral and Sociodemographic determinants of hypertension among adult population in Nekemte town, western Ethiopia: Community based study.

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Abstract

Objectives

Although hypertension is a growing public health problem in many developing countries there is inadequacy of scientific evidences on community based level of hypertension among the population. The study aimed at exploring prevalence and associated factors of hypertension among adults in Nekemte town, Ethiopia. Community based cross sectional study was conducted on 711 adults selected by multistage sampling procedure and data obtained by interview. Height, Weight, Blood Pressure and waist circumference were measured with standard procedures. Data was analyzed by SPSS 20 version and multiple logistic regression models were used to determine the independent risk factors for hypertension.

Result

The overall prevalence of hypertension was 34.9% of which only about half (52.7%) of them knew that they were hypertensive and only 22.4% of them were on medication. Older age; age group >65 year (AOR =5.85, 95% CI; 1.74-20), 41-64 year (AOR = 2.6, 95% CI; 1.49-4.57), Obesity and overweight (AOR =1.71, 95% CI; 1.09-2.67), chat chewers in the past year (AOR =2.44, 95% CI; 1.05-5.68) and lower educational status (AOR =2.75, 95% CI; 1.26-6.03) had higher risk of hypertension.

Introduction

Hypertension is defined as systolic Blood Pressure (BP) ≥140 mmHg or diastolic BP ≥90 mmHg, and any prior diagnosis of hypertension made by a health professional and taking antihypertensive drugs. Primary hypertension account 80–90% of cases of hypertension and has no clearly known cause. Secondary hypertension which accounts 5–20%, is less common type and has different causative factors which could be curable. Hypertension is the leading risk factor for mortality followed by tobacco use and Diabetes mellitus (DM) and it is the fifth cause of Disability adjusted life years lost (DALYs). Hypertension doubles the risk of CVD, including Coronary heart disease (CHD), Congestive heart failure (CHF), ischemic stroke and hemorrhagic stroke, renal failure and Peripheral arterial disease (PAD). Systolic blood pressure is attributing factor of 51% and 45% of deaths due to stroke and ischemic heart disease respectively. (1–3).

Hypertension has been thought as a disease of affluence but now it is becoming rampant in developing nations and its distribution is increasing in Africa than Europe and America. The Global average of prevalence of hypertension is about 40% and the distribution is different in different regions, being highest in Africa, 46%. The numbers of undiagnosed, untreated and uncontrolled hypertension cases and the Risk of dying from hypertension and related morbidities are higher in developing countries than the high income countries. (2, 4, 5).

Burden of morbidity and mortality due to chronic illnesses is increasing in developing countries shifting from communicable diseases to non-communicable diseases. According to world health (WHO) report in

2008, 67% of mortality in low and middle income countries was contributed by non communicable diseases of which CVD shares 48%. Hypertension is the commonest cause of CVD in Africa and will be among leading cause of mortality in coming few years. WHO survey between 2003 and 2009 in 20 African countries showed that prevalence from 19.3 to 39.6% in different countries. There are evidences that non communicable diseases particularly hypertension and its complications are increasing in Ethiopia (5, 6, 7, 10).

The prevalence of hypertension can be affected by different factors which can be modifiable or non modifiable. Family history of hypertension, age, life style and environmental factors are among the factors affecting prevalence of hypertension (11–15).

Another behavioral factor which becoming rampant in Ethiopia and could be related with hypertension is frequent chewing of khat. According to a research done in Addis Ababa Current daily smoking and regular khat chewing were significantly associated with elevated mean diastolic blood pressure (15). Psychological distress such as anxiety, depression, and anger/hostility has been found to contribute to the development of hypertension (16–19).

This study aimed at studying prevalence of hypertension and the physical, behavioral and Sociodemographic determinants among adult populations in Nekemte town, Ethiopia.

Methods

Study setting and design:

Community based crossectional study was conducted Nov. 2015 to Dec. 2015 on adult population with age 18 and residing in Nekemte town. The required sample size of the study (711) was determined using single finite population proportion formula by considering: prevalence of hypertension 30% from the study done in Addis Ababa and 10% possible non response rate and design effect 2.

$$n = \frac{(Z_{\alpha/2})^2 p (1-p)}{d^2}$$

Sampling procedure:

The study participants were identified by multistage sampling technique.

Variables:

Dependent variable: Prevalence of hypertension

Independent variable: Age, Sex, Ethnicity, marital status, educational status, family Income, accessibility of Screening program, alcohol consumption, smoking, chewing khat, diet, physical exercise and psychological stress.

Data collection procedure:

Data were obtained on socio-demographic characteristics and lifestyle behaviors including, physical activity, and physical measurements of weight, height, waist circumference, as well as blood pressure. Data was collected by 5 health extension workers supervised by experienced BSc nurses. One day training was given on how to measure BP, weight, height and waist circumference by the investigator and two supervisors. Weight and height was measured with participants standing without shoes position and height was recorded to the nearest 0.5 cm, and weight was measured by Digital weight scale and recorded to the nearest 100 g. BMI was calculated as weight in kilograms over height in meters squared [weight (kg)/ (height (m)) ^{2}]. Waist circumference was measured at the level the mid-way between the level of iliac crest and lowest margin rib margin using a non-elastic tape measure. Blood pressure was measured in a sitting position with supported back using a mercury sphygmomanometer and stethoscope after the participants rested for at least 5 minutes and the participants had no coffee drinking, cigarette smoking and strenuous exercise with an hour of BP measurement with standard procedure with 2-3 cm above antecubital fossa for placement of stereoscope and the bladder encircled at least 2/3 $^{rd.}$ the arm. The accuracy of the mercury sphygmomanometers was seen by checking that the upper curve of the meniscus of the mercury column is at 0 mm Hg, that the column was free of dirt, and that it rose and fell freely during cuff inflation and deflation. The measurement was done in both arms at sitting position with back supported and the larger one was taken. Two consecutive measurements of blood pressure were taken 2 minutes apart from all study participants. The average of the two measurements was used for analysis (20, 21).

Data processing and analysis:

Data was cleaned and entered into computer and analyzed using SPSS Windows Version 20. Descriptive analysis was done using numbers and percentages. Presence of statistical association between dependent and independent variables was assessed. Multiple Logistic regression analysis was done to assess independent risk factors for hypertension.

Result

Socio-demographic and socio economic characteristics of respondents:

Seven hundred five (with a response rate of 99.2%) participants were included in this study with the mean(±SD) age of 33.24 ±0.942 years with maximum of 80 years and minimum of 18 years. Majority (78.3%) of them are with 1st age group (18–40 years), the 2nd age groups (41–64 years) contains 18% of them and the remaining proportion (3.7%) are within 3rd age group(≥65 years). More than half of the respondents (61.6%) were females. Majority of the respondents (64%) were protestant Christians. In Ethnicity Oromo constitute the majority of the respondents with 89.8%. Refer table 1 below for detail Sociodemographic variables of the respondents

[Insert Table 1 here]

Prevalence of hypertension:

The mean systolic and diastolic BP readings were 119.8 (±1.2) and 81.9(±.9) mmHg, respectively. The overall prevalence of hypertension was 34.9% (±3.6% CI: 31.3–38.5): it is 36.9% among male respondents and 33.6 among female respondents. Only 53.3% of respondents ever measured their BP and out of hypertensive respondents only 52.7% of them knew or told that they have a raised BP and only 22.4% of them were on anti-hypertensive medications.

Descriptions of behavioral, physical and nutritional factors:

Only 1.4% of the respondents have ever smoked cigarettes. Regarding alcohol consumption 13.9% of the respondents had regular alcohol drinking habit and 6.2% had cat chewing habit. When we see dietary behavior of respondents; most of the respondents (83.6%) have habit of high consumption of Salt and only 3.2% & 5.3% of the respondents have adequate intake of vegetables and fruit on regular bases. As to physical exercise; 18% of them were engaged in vigorous physical activity either work related, recreational and sport related, 52.2% of them were engaged in moderate activities and 29.8% were not involved in either of this activities. As to the Nutrition status of respondents, 62.6% of respondents have normal BMI, 16.7% were underweight, 11.2% were overweight and 9.5% were obese of which 21.6% had central obesity.

Risk factors associated with hypertension:

Bivariate logistic regression analyses showed that older age, nutritional status (BMI and Central obesity), sedentary life style, lower education status, family history of hypertension, self-history of Diabetes mellitus (DM), alcohol drinking status and chat chewing were significantly associated with hypertension. However, controlling for other variables on multivariate logistic regression, only age, nutritional status and chat chewing were remained independent predictors of hypertension (Table 2).

[Insert Table 2 here]

Discussion

This study revealed that about a third of adults population in the town (18 years and above) had hypertension. This is comparable with WHO estimate of prevalence of hypertension in Ethiopia which is 31%. The result is higher than similar study done in northern part of the country (28%), and is comparable with the study done elsewhere (8–10, 22). The finding is higher as compared with surveys in Eritrea (16%) and Ghana (29.4%) (23,24). However this study showed a lower prevalence as compared with WHO estimate of prevalence of hypertension in Africa which is 46 % (5). This variation may be explained by variability in different age group, prevalence in different proven risk factors, and difference in definition of hypertension (taking those respondents which told to have hypertensive /those only on medications as hypertensive may explain this difference.) and genetic/racial difference.

In this study, age, BMI, and chat chewing had positive association with prevalence of hypertension. With regards to sex similar to studies done in Gondar, Addis Ababa, Durame and Bedele towns of Ethiopia it didn't show association (8–10). Prevalence of hypertension was higher in overweight and obese (44.3%) than those of normal (33.6%) and underweight (20.3%). This is consistent with other studies (8–10). This study found association between chewing chat in the past one year (54.5%) and hypertension. This is similar to the study done Addis Ababa but not the case for study done in Bedele (10, 15).

Conclusion

The prevalence of hypertension was found to be high among adults older than 18 years in Nekemte town. Older age, lower educational status, overweight/obesity and Khat chewing were associated with high risk of Hypertension. Community based health promotion and screening programs should be available and further researches with biochemical data should be done.

Limitation:

As there could be recall bias as some of the participants may not remember how regularly they behave. There may be hiding of different socially unacceptable behaviors like alcohol intake; cigarette smoking and Khat chewing this may lead to underestimation these factors. This study did not include the biochemical factors of hypertension.

Declarations

Abbreviations:

BP: Blood Pressure; DALYs: Disability adjusted life years; CVD: Cardio vascular Disease; CHF: Congested heart Disease; WHO: World health organization; BMI: Body Mass Index; DM: Diabetes Mellitus.

Ethics approval and consent to participate:

Ethical clearance was obtained from Wollega university ethical clearance committee before data collection. Written informed consent was obtained from all participants for participation in this research.

Consent for publication:

Written Consent has been obtained from the participants.

Availability of data and material:

The data sets during and/or analyzed during the current study available from the corresponding author on reasonable request.

Competing interests:

The authors declare that they have no competing interests.

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Authors' contributions:

All of the authors participated in preparation of this manuscript. The final version of the manuscript was read by all authors and approved for publication process.

GT generated the research question, developed proposal, supervised data collection process, analyzed data and prepared research report.

MC was senior advisor of the research proposal development and data analysis process.

EM was co-advisor of the research proposal development and data analysis process.

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Tables

Due to technical limitations, Tables 1 & 2 are only available for download from the Supplementary Files section.

Supplementary Files

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- supplement1.pdf
- supplement2.pdf