

Prevalence of Tobacco Consumption, Alcohol, Khat (*Catha Edulis*) Use and High Blood Pressure among Adults In Jimma Town, South West Ethiopia

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Abstract: Introduction Use of substances such as alcohol, khat leaves (*Catha edulis*) and tobacco has become one of the rising major public health and socio-economic problems worldwide. Recent trends indicate that the use of substances have dramatically increased particularly in developing countries. The prevalence of CVDs and other chronic diseases is growing more rapidly in developing countries. Hypertension is a growing public health problem and about 19.1% of adults had Hypertension. Methods A community based cross-sectional descriptive study design was employed. A semi structured questionnaire was used to assess association of tobacco, alcohol and Khat (*Catha edulis*) use with high blood pressure among adults in jimma town, south west Ethiopia. Prevalence of cigarette smoking, alcohol drinking, and khat (*Catha edulis*) chewing was determined. Blood pressure was measured three times for each individuals using OmronHEM-711DLX Automatic Blood pressure monitor and the average was used to categorize the subjects into hypertensive and non hypertensive. Results Prevalence of Tobacco uses, drinking alcohol, and chewing khat were, 150(35.5%), 202(50%), 289(68.5%) respectively. The Prevalence of high blood pressure was 79 (18.7%). Tobacco consumption, alcohol drinking, age group of 50-59 and sex were significantly associated with high blood pressure among adults of the town. Conclusion The magnitude of risk factors for hypertension is considerably high in the study population. Roughly one five adults in this study area had high blood pressure. Cigarette smoking, alcohol drinking, chewing khat was associated with high blood pressure. These findings are crucial for evidence based decision making. It will help policy makers for planning of preventive and control measures of these modifiable risk factors. This study will also give baseline information that will enable researchers to conduct longitudinal studies.

Keywords: Substance Use, High Blood Pressure, Tobacco Use, Khat Use, Tobacco Smoking, Alcohol

1. Introduction

Use of substances such as alcohol, khat leaves (*Catha edulis*) and tobacco has become one of the rising major public health and socio-economic problems worldwide. Recent trends indicate that the use of substances have dramatically increased particularly in developing countries [1]. The prevalence of CVDs and other chronic diseases is growing worldwide but more rapidly in developing countries [2]. Hypertension is a growing public health problem, with remarkable contribution to cardiovascular diseases (CVD) morbidity. Worldwide, an estimated 1 billion individuals have hypertension, and approximately 7.1 million deaths per

year are attributable to hypertension [3]. It is estimated that more than 20 million people are affected in the African Region, where prevalence ranges from 25 percent to 35 percent in adults aged 25 to 64 years (4). In Ethiopia, The overall prevalence of hypertension was 19.1% of which 22% were men and 14.9% were women [5].

Different risk factors are contributing to high burden of non communicable diseases. Of these risk factors tobacco is the fourth most common risk factor for the diseases and the second major cause of death worldwide and currently responsible for the death of one in ten adults worldwide [6]. Alcohol consumption is also the leading risk factors for the disease burden and mortality in low developing countries and

the third largest risk factor in developing countries [7].

Khat is found in the flowering evergreen tree or large shrub of Celastraceous family. It consists of whole fresh leaves and buds of a plant known as *Catha edulis*. It is indigenous to Ethiopia, Kenya, and Yemen [8].

More than 20 different compounds including, Cathinone/amino propiophenone/, Cathine/nor pseudoephedrine/and nor ephedrine have been isolated from Khat [9]. Regular and repeated intake of Khat has recently been reported to be associated with increased risk of high blood pressure [10]. The main objective of this study was to address the association between selected substance uses (tobacco consumption, alcohol drinking and khat chewing) and increased blood pressure or hypertension. Having data on these selected substance uses are very important for designing prevention programs which has a paramount importance in reduction of chronic diseases and other diseases occurring as a consequences of substance uses.

2. Methods and Material

The study was conducted in Jimma Town from February 30 to April 30, 2012. Jimma town is located 354 KM to South West of Addis Ababa. Based on figures from the Central Statistical Agency in 2007 Ethiopia (CSA), this town has a total population of 120, 960. The town has one specialized Hospital, 2 health centres, and 2 health posts.

A community based cross-sectional study design was employed. Eight Kebeles out of 13 Kebeles were selected by lottery method and subsequent households were selected using systematic random sampling. The total sample size of 422 was distributed among selected kebele proportionally. One adult age between 18 and 65 years old was chosen by lottery method for interview from the selected households.

For data collection, a semi-structured questionnaire, modified from the World Health Organization instrument for stepwise surveillance (WHO STEPS) of chronic disease risk factors[11] was used. The questionnaire was pretested and translated from English to Afaan Oromo (Local Language) and back to English for consistency.

Intensive training was given for data collectors on the purposes of the study, sample selection, interview methods, and measuring blood pressure and how to get informed consent from study subjects. Interview method was used to collect data on socio demographic part of the tool and substances uses.

Three consecutive measurements of BP were taken on the left arm at 3-5 minutes interval using OmronHEM-711DLX Automatic Blood pressure monitor. Average of the measurement was used to describe the mean systolic blood pressure (SBP) and mean diastolic blood pressure (DBP) of study participants.

Those adults having mean SBP ≥ 140 and/ or DBP ≥ 90 mmHg were classified as hypertensive and those having SBP < 90 mmHg and/or DBP < 140 mmHg as non hypertensive as per world health organization.

Data were analysed using SPSS version 19. Both

descriptive and summary measures were used. Multiple logistic regression (MLR), employed to find out independent predictors of High blood pressure/hypertension, with Odds ratios (OR) at 95% confidence intervals. Statistical significance was declared at P value of $< 5\%$.

Ethical approval was obtained from the Ethical Board of Jimma University. Also permission was obtained from the town Administrative offices and each selected kebeles. Informed consent was obtained from study participants to undertake the interview and blood pressure measurement. Ethical conduct was maintained throughout the research process.

3. Results

A total of 422 adults were interviewed, yielding response rate of 100%. Among the 422 study participants, 29.4% were females and 70.6% were males. Forty two (10%) of them were illiterate, majority were Oromo in ethnicity and Muslim in religion. Mean age was 41.7 (SD, 10.5) years (Table 1).

Table 1. Distribution of socio-demographic characteristics of the study participants in Jimma, South West, Ethiopia, Feb - April, 2012(n=422).

Variables	Frequency	Percentage
Sex		
Male	298	70.6
Female	124	29.4
Education status		
Illiterate	42	10.0
Primary complete	145	34.4
Secondary complete	107	25.4
Colleges and above	128	30.2
Ethnicity		
Oromo	245	58.0
Dawuro	37	8.8
Amara	42	10.0
Kefa	38	9.0
Yem	21	5.0
Gurage	39	9.2
Religion		
Christian	176	41.7
Muslim	246	58.3
Age		
20-29	227	53.8
30-39	109	25.8
40-49	40	9.5
50-59	30	7.1
60 and above	16	3.8
Occupation		
Governmental employee	87	20.6
Daily laborer	118	28.0
Merchant	73	17.3
Student	80	19.0
Nongovernmental employee	27	6.4
House wife	24	5.7
Pensioner	7	1.6
Farmer	6	1.4

Prevalence of hypertension among the adults were about 79(18.7%) based on blood pressure measurement. About Thirty five percent of the study subjects reported current tobacco smoking. Median age at start of smoking was 24

years (range, 14–52 years) (SD, 5.1).

About sixty eight percent of study subjects reported current khat chewing. Ninety Eight (33.9%) of the study subjects chewed khat every days, 63 (21.8%) chewed khat 2-3 days per week. Two hundred two (49.7%) of study subjects, reported current alcohol consumption (drinking within the preceding 12 months). About ten percent reported daily alcohol use and twenty seven percent reported drinking alcohol less than one to four Days per week (Table 2).

Table 2. Prevalence of hypertension based on blood pressure measurement among adults of jimma town, south west Ethiopia Feb - April, 2012(n=422).

Hypertension status	Frequency	Percentage
Hypertensive	79	18.7
Not hypertensive	343	81.3

Mean systolic BP was 122.79 mm Hg and the mean diastolic pressure was 77.47 mm Hg for the study subjects. The prevalence of hypertension or increased blood pressure was about 79(18.7 %) (Table 3).

Subjects who were not using tobacco were less likely to develop hypertension compared to tobacco users (AOR: 0.34, 95%CI: 0.18-0.70). Subjects who were not drinking alcohol currently were less likely to develop hypertension compared to currently drinking alcohol (AOR: 0.28, 95%CI: 0.14-0.57) (Table 4).

Table 3. Distribution of substance use among study subjects of jimma town, South West, Ethiopia, Feb - April, 2012(n=422).

Variables	Frequency	Percentage
Tobacco consumption		
Yes	150	35.5
No	272	64.5
Currently smokers		
Yes	150	35.5
No	272	64.5
Alcohol consumption		
Yes	211	50.0
No	211	50.0
Used Alcohol within past 12months		
Yes	202	47.9
No	220	52.1
Frequency of Alcohol uses		
Daily	21	10.2
5-6days/week	43	21.0
1-4days/week	56	27.3
1-3days/week	41	20.0
<1days/week	44	21.5
Chew chat ever		
Yes	289	68.5
No	133	31.5
Khat+Alcohol+Tobacco uses		
Yes	99	76.5
No	323	23.5

Table 4. Multivariable analysis for hypertension based on blood pressure measurement among study subjects of jimma town, south east Ethiopia, Feb - April, 2012(n=422), 2012(n=422).

Variables	Frequency	AOR(95%CI)
Tobacco		
No	272	0.34(0.17-0.70)
Yes	150	ref
Alcohol		
No	211	0.28(0.14-0.57)
Yes	211	ref
Chew chat ever		
No	133	0.57(0.27-0.52)
Yes	289	ref
Religion		
Christian	176	0.73(0.37-1.45)
Muslim	246	ref
Educational status		
Illiterate	42	2.38(0.86-6.64)
Primary	145	0.83(0.38-1.82)
Secondary	107	0.09(0.44-0.18)
College ⁺	42	ref
Sex		
Male	124	0.36(0.16-0.79)
Female	298	ref
Age		
20-29	227	0.28(0.07-1.02)
30-39	109	0.38(0.10-1.45)
40-49	40	1.47(0.36-6.05)
50-59	30	4.87(1.12-21.24)
60 ⁺	16	ref

AOR= Adjusted Odd Ratio, CI=Confidence Interval

4. Discussion

Epidemiological transition has resulted in double burden of communicable and non communicable disease in most developing countries. Most of these diseases share risk factors like tobacco use, alcohol consumption and khat chewing. This study also examined association of substance use with increased blood pressure in the adult population of jimma town. Tobacco consumption is the second major cause of death in the world. This study revealed that Prevalence of tobacco consumption among study subjects was about 35.5% which is higher than the prevalence of smoking among adults in Butajira, Southern Ethiopia which was 5.8% [12] and Finding from Gilgel Gibe Field Research Center, Jimma [13]. This indicates that considerable proportion of the community was smoking that puts them at higher risk for chronic Non communicable Diseases.

The study conducted in rural part of Iraq reported that all most all current smokers were daily smokers [14] which are consistent with this study finding. In this study, Adults who were not experienced tobacco consumption were less likely to develop hypertension compared to those experienced tobacco consumption which is consistent with finding from the study conducted among adults in Addis Ababa [15]. The possible reason for this is due to the fact that smoking causes an acute increase in arterial stiffness and associated with greater endothelial dysfunction which results in High blood pressure [16].

High risk alcohol use was related to different chronic

diseases like cardio vascular diseases [17]. This study revealed that Alcohol drinking was significantly associated with increased blood pressure or hypertension. The prevalence of alcohol consumption was 50% which is higher than the finding from Haramaya University (41.7%) [18], Gilgel Gibe Field Research Center (7.3%)[13], and lower than finding from Iringa of Tanzania (71%) [19]. Possible explanation for these differences would be due to sample size, socio cultural and study setting differences.

The current prevalence of khat chewing (68.5%) is higher than the finding in Butajira, Ethiopia [20], Gilgel Gibe Field Research Center, Bahir Dar town (19.6%)[13] and findings of other studies in Ethiopia [21, 22, 23]. The difference could be due to difference in study setting, cultural and the study populations. This Study also found that chat chewing has significant association with increased blood pressure. The possible reason might be due to the effects of amphetamine on blood vessels.

In this study, the prevalence of high blood pressure was found 18.7% which is similar with finding from Sidama Zone, Ethiopia (18.8%)[24], and higher than the finding from, Gilgel Gibe Field Research Center, Jimma (9.3%)[13], Eritrea (10.3%)[25] and Nigeria (16%)[26] And lower than finding from Durame Town, Southern Ethiopia (22.4%)[27]. This discrepancy could be due to difference in study setting, socio cultural differences and time of the study.

5. Conclusion

The magnitude of risk factors for hypertension is considerably high in the study population. Roughly one five adults in this study area had high blood pressure. Cigarette smoking, alcohol drinking, chewing khat was associated with high blood pressure. These findings are crucial for evidence based decision making. It will help policy makers for planning of preventive and control measures of these modifiable risk factors. This study will also give baseline information that will enable researchers to conduct longitudinal studies.

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Author Contributions

Sisay Bissa: conceives the study, contributed to the design of the questionnaire and data analysis.

Tomas Benti: Contributed to data analysis and manuscript preparation and final approval of the Manuscript.

Muktar Beshir: Involved in data analysis and critically reviewed the manuscript

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