

Prevalence and Associated Factors of Hypertension among Adult Outpatients Attending Seka Chokorsa Health Center, Jimma Zone, Southwest Ethiopia

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Abstract

Background: Hypertension (HTN) is a major public health issue that causes life-threatening complications and primary prevention is a key by identifying its risk factors. The aim of the present study was to assess the prevalence associated factors of HTN at seka chokorsa health center, Southwest Ethiopia.

Methods: A cross-sectional study was carried out at seka chokorsa health center, Jimma Zone from February 1 to March 30, 2020. Data were collected using structured tool, then entered into Epi Data version 3.2 and exported to SPSS version 20. Multivariate logistic regression models were used to identify HTN risk factors and all statistical tests were found to be significant at P-value < 0.05.

Result: A total of two hundred and fifty three participants were involved in this study with mean age of 42.07 ± 13.84 years. The overall prevalence of HTN in our study was found to be 35.2%. According to multivariate analysis age above 50 years (AOR = 2.7; 95% CI 1.06, 6.93), family history of HTN (AOR = 6.4; 95% CI 3.1, 13.03), physical inactivity (AOR = 4.54; 95% CI 2.22, 9.29) and khat chewing; [current chewing (AOR = 3.87; 95% CI 1.55, 9.68), former chewing (AOR = 4.33; 95% CI 1.43,13)] were independent predictors of HTN among study participants.

Conclusion: About a third of the respondents had high blood pressure. It was associated with advanced age, physical inactivity, family history of HTN and khat chewing. These findings trigger the policy makers and health care professionals to take appropriate measures to decrease HTN and subsequent sequelae.

Keywords: Prevalence; Factors; Hypertension; Seka Chokorsa Health Center

Abbreviations

BMI: Body Mass Index; HTN: Hypertension; DBP: Diastolic Blood Pressure; SBP: Systolic Blood Pressure; SCHC: Seka Chokorsa Health Center; WHO: World Health Organization

Introduction

Hypertension (HTN) is defined as persistently elevated arterial blood pressure, systolic blood pressure (SBP) ≥ 140 mm Hg and/or diastolic BP (DBP) ≥ 90 mm Hg [1]. It is an asymptomatic silent killer and is usually detected after significant organ damage. Most patients are detected to have it incidentally when they came to health facility for unrelated disease and its real burden in most societies, particularly in the developing world, is underreported [2,3].

HTN is a major public health problem, responsible for around 6% deaths globally [3,4] and an estimated 7.5 million deaths per year [5,6]. Globally, about 62% of cerebrovascular diseases and 49% of ischemic heart disease are attributable to HTN [7]. According to the latest estimates from the World Health Organization (WHO), two-thirds of people with HTN live in developing countries [8]. Previous studies have revealed that the prevalence of HTN in sub-Saharan Africa (SSA) ranges between 5% to 50% [9-11]. It is the fourth contributor to premature death in developed countries and the seventh in developing countries [12]. Furthermore, it has a significant economic impact [13].

Globally, nearly one billion people have HTN and its prevalence in adults aged 25 and over was estimated at 40%, being highest in the African region [14]. The prevalence in Sub-Saharan Africa is in the range of 25.4% - 41.1% in men and 27.2% - 38.7% in women [15] which have serious consequences, as very few people receive management and control is likely to be poor [2]. Worldwide the detection, treatment and control of HTN are inadequate. The detection rates in most high-income countries vary from 32% - 64%, while in many low-income countries, the reported detection rates are lower [16,17].

According to several studies advanced age, alcohol and tobacco use, existing health condition, sedentary lifestyle, high salt diet, high fat, being obese, overweight and physical inactivity are the common risk factors for HTN [14,18].

In many countries in SSA, the prevention and control of HTN has not received due attention compared to other computing illnesses [19]. Few studies report the proportion of people with HTN who know their status. So far, there is no information concerning the prevalence and determinants of HTN among patients attending Seka chokorsa health center. Thus, this study was aimed to solve this gap. The results of this study will be useful in raising awareness about the magnitude of HTN and related risk factors, thus helps to design appropriate interventions before complications arise.

Methods

Study design, period and setting

This cross-sectional study was conducted in the Seka Chokorsa Health Center (SCHC) which is found in Seka town, Jimma Zone, Southwest Ethiopia at a distance of 370 Km from Addis Ababa, capital city of country and averagely about eighteen Km from Jimma town. It provides a many services to the surrounding community and it has estimated that the average number of cases seen was 3036 per year. The average number of cases per month will be 253. Consecutive sampling technique was applied to recruit 253 study participants who came to adult outpatient department from February 1 to March 30, 2020.

Selection of study subjects

Individuals aged > 18 years in the selected study area who gave consent for participation who attend the outpatient department were included, whereas Individuals who are unable to give response, severe illnesses, psychiatric disorder and pregnant patients were excluded.

Data-collection tool and procedure

Data were collected by face-to-face interview, anthropometric measurements, and clinical examinations through a validated, pre-tested, and structured questionnaire which was developed after reviewing different literatures. It was first developed in English, then translated into local languages, and re-translated into English to ensure that the translated version has the correct meaning. The tool had three sections: behavioral characteristics, socio-demographic and clinical characteristics. Data were collected by three trained nurses and 1 supervisor.

Blood pressure was measured twice in a sitting position using standard mercury sphygmomanometer blood pressure cuff with the appropriate cuff size that covers two-thirds of the upper arm after the participant rested for at least ten minutes and no smoking or caf-

feine 30 minutes before measurement. Blood pressure (BP) was measured twice in a sitting position with an appropriately sized standard mercury BP cuff covering two-thirds of the upper arm after the participant had rested for at least ten minutes. The second measurement was taken five to ten minutes after the first measurement. Finally, the mean of the two blood pressure values was used for the analysis. Behavioral characteristics were collected using the WHO STEPS instrument [20].

Operational definition

- **Hypertension:** In this study context HTN is if the average SBP/DBP was $\geq 140/90$ mmHg and/or on anti-hypertensive medications.
- **Khat chewers:** Participants who chewed Khat for four or more days in a week.
- **Non-chewers:** those who never chewed Khat.
- **Excessive salt users:** Subjects who consumed more than 10 grams salt per day for over 6 months determined by standard measuring cups.
- **Harmful alcohol consumption:** Defined as drinking \geq four standard alcoholic beverages on a single occasion in the past thirty days for women and \geq five standard drinks on a single occasion in the past thirty days for men.
- **One standard drink:** In this study context defined taking of half a standard bottle of normal beer (500 ml), a single serving spirits (30 ml) or a medium glass of wine (120 ml).

Data quality assurance

Two days’ training was given on interview methods, on the purposes of the study and measuring techniques to the data collectors and supervisors. The collected data was carefully reviewed for accuracy and completeness by a supervisor daily, and general data collection activities were monitored by the principal investigator. The tool was pretested on 5% of the study participants who were found outside of the study area to verify for the validity of the instruments and then necessary adjustments were made.

Statistical analysis

Data were entered into Epi Data version 3.2 and exported to SPSS version 20 for analysis. Descriptive statistics such as means, percentages and standard deviations were calculated. Chi-square tests were performed to check the suitability of the cells before performing a logistic regression. Variables with *p*-value of ≤ 0.25 on bivariate regression were taken as candidates for multivariate regression and multicollinearity was checked via the variance-inflation factor and none was found. Multivariate logistic regression was performed using a backward method to assess association between independent variables and outcome variable. Model fitness was checked with the Hosmer and Lemeshow test.

Result

Socio demographic characteristics of participants

A total of two hundred and fifty three participants were recruited with response rate of 100%. More than half 54.5% (138) of the respondents were males and the rest 45.4% were females. The mean age of participants was 42.07 ± 13.84 years (Table 1).

Variables	Category	Number	Percentage
Gender	Male	138	54.5
	Female	115	45.4
Age	< 30 years	54	21.3
	30 to 50 years	124	49.1
	≥ 50 years	75	29.6
Marital status	Single	84	33.2
	Married	139	54.9
	Others*	30	11.9
Religion	Muslim	112	44.2
	Orthodox	94	37.1
	Protestants	39	15.4
	Others†	8	3.12

Education- al status	Illiterate	40	15.8
	Primary	106	41.9
	Secondary	61	24.1
	College and Above	46	18.2
Occupa- tional status	House Wife	50	19.8
	Farmer	108	42.7
	Employer	37	14.6
	Private worker	42	16.6
	Others ‡	16	6.3
Residence	Urban	91	35.9
	Rural	162	64
Family history of hyperten- sion	Yes	85	33.6
	No	168	66.4
Average monthly income (ETB)	< 1970	100	39.5
	1970 to 2999	89	35.2
	≥ 3000	64	25.3

Table 1: Socio demographic characteristics of outpatients at SCHC 2020, Jimma, Ethiopia.

*: Widowed, Separated; †: Catholic, Wakefata; ‡: Retired, Unemployed.

Behavioral, clinical and anthropometric characteristics of participants

Most of participants (70.7%) are in normal BMI category and almost half (55.3%) of the participants were current khat chewers. More than three fourth (80.2%) of the participants didn't consume excessive salt in their diet (Table 2).

Variables	Category	Number	Percentage
BMI (kg/m ²)	18.5 to 24.9	179	70.7
	< 18.5	15	5.9
	≥ 25	59	23.3
Alcohol intake	Current	31	12.3
	Former	24	9.5
	Never	198	78.3
Smoking	Current	35	13.8
	Former	67	26.5
	Never	151	59.6
Physical exercise	Active	114	45.1
	Inactive	139	54.9
Comorbidities	Peptic ulcer disease	25	9.8
	Acute febrile illness	30	11.8
	Diabetes mellitus	15	5.9
	Pneumonia	20	7.9
	Others*	17	6.7
Khat chewing	Current	140	55.3
	Former	55	21.7
	Never	58	22.9
Excessive salt	Yes	50	19.7
	No	203	80.2
Vegetable and/or fruit use/week	None	30	11.8
	1 - 3 days	140	55.3
	3 - 4 days	83	32.8

Table 2: Clinical and behavioral characteristics of outpatients at SCHC 2020, Jimma, Ethiopia.

*: 4 Asthma, 6 heart failure, 3 chronic liver disease, 4 ckd.

Prevalence of hypertension among study participants

The overall prevalence of hypertension defined by SBP/DBP \geq 140/90 mm Hg and/or reporting history of hypertension diagnosed by health professional was found to be (89) 35.2% (95% CI: 29.6, 41.1). Among all hypertensive people identified, 60 (67.4%) were identified during current study (Figure 1).

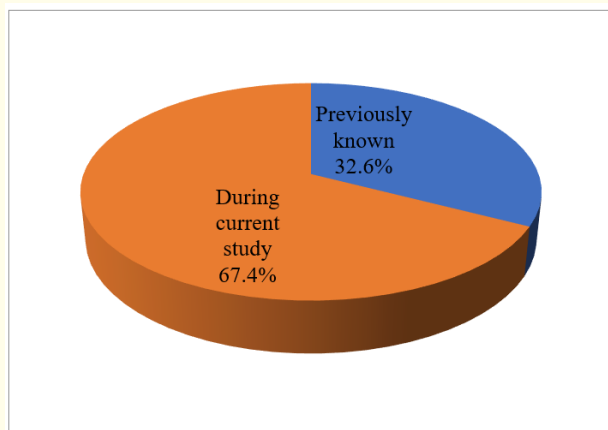


Figure 1: Shows prevalence of hypertension based on the time it diagnosed.

Adjusted associated factors of hypertension

Multivariable logistic regression model was fitted to identify associated factors of HTN. According to multivariate analysis participants in their age above 50 years were 2.7 times more likely to develop HTN compared to patients younger than 30 [AOR = 2.7; 95% CI 1.06, 6.93]. Participants who had family history of HTN were 6.4 times more likely to develop HTN compared with their counterparts [AOR = 6.4 95% CI 3.1,13.03]. Furthermore, the study finding showed that participants who were physically inactive were 4.54 times more likely to develop hypertension compared to physically active participants [AOR = 4.54 95% CI 2.22, 9.29]. Finally, participants who were khat chewers; current 3.87 times [AOR = 3.87 95% CI 1.55, 9.68] and former 4.33 times [AOR = 4.33 95% CI 1.43, 13] more likely to develop hypertension compared with counterparts (Table 3).

Variables	Cat-egory	HTN		Bivariate Analysis		Multivariate analysis	
		Yes	No	p-value	COR (95%CI)	p-value	AOR (95%CI)
Age(years)	< 30	10	44	1	1	1	1
	30 to 50	41	83	.052	2.2 [.99, 4.75]	.399	1.5 [.58, 3.78]
	\geq 50	38	37	\leq .001	4.5 [1.9, 10.28]	.037*	2.7 [1.06, 6.93]
Gender	Male	43	95	.143	.6 [.404, 1.14]	.648	**
	Female	46	69	1	1	1	1
Smoking	Current	18	17	.013	2.57 [1.21, 5.45]	.071	2.49 [.92, 6.72]
	Former	27	40	.106	1.64 [.9, 2.99]	.838	1.08 [.482, 2.45]
	Never	44	107	1	1	1	1
Family history of HTN	Yes	50	35	\leq 0.001	4.72 [2.69, 8.28]	\leq 0.001*	6.4 [3.1, 13.03]
	No	39	129	1	1	1	1

Physical Exercise	Active	22	92	1	1	1	1
	Inactive	67	72	≤0.001	3.89 [2.19, 6.89]	≤0.001*	4.54 [2.22, 9.29]
Khat chewing	Current	57	83	.001	3.73 [1.7, 8.21]	0.004*	3.87 [1.55, 9.68]
	Former	23	32	.003	3.9 [1.6, 9.53]	<.009*	4.33 [1.43, 13]
	Never	9	49	1	1	1	1
Harmful alcohol in take	Current	7	24	.115	.48 [.2, 1.19]	.406	**
	Former	8	16	.699	.83 [.34, 2.05]	.507	**
	Never	74	124	1	1	1	1
BMI(Kg/m ²)	18.5-24.9	57	122	1	1	1	1
	< 18.5	6	9	.519	1.42 [.48, 4.20]	.726	**
	≥ 25	26	33	.089	1.68 [.92, 30]	.636	**
Residence	Rural	62	100	.17	1.4 [.84, 2.54]	.157	**
	Urban	27	64	1	1	1	1

Table 3: Multivariate logistic regression analysis of factors associated with hypertension among outpatients at SCHC 2020, Jimma, Ethiopia. *Value statistically significant; **Not statistically significant; AOR-Adjusted Odds Ratio; COR-Crude Odds Ratio; CI-Confidence Interval; 1-reference.

Discussion

The overall prevalence of hypertension among patients seen at SCHC was found to be 35.2% [95% CI: 29.6, 41.1]. Almost two third of participants (67.4%) were unaware of their high blood pressure at the time of data collection, signifying a high hidden disease burden, increasing the risk of complications. The overall prevalence of HTN reported in this study was consistent with several previous studies conducted to date. Accordingly, study done in Addis Abeba, Ethiopia 30.3% [21], Hossana-Hadiya zone 30% [22], Kathmandu, Nepal 32.5% [23], Varanasi, India 32.9% [24], Uganda 30.5% [25], Zambia 34.8% [26] and Korea 33.7% [27].

However, the current finding is lower than prevalence studies conducted in south Africa 41% [28], Iranian 42.7% [29], Nigeria 44.5% [30] and in Senegal 46% [31]. This disparity in findings may be due to differences in the study setting, design, study population, different behavioral and dietary lifestyles, the methodology used, difference in the age composition of study population, study period and socio-cultural factors.

On the other hand, current finding is higher than studies conducted in China 20.5% [32], in Gondar, Ethiopia 28.3% [15], in Dire Dawa, Ethiopia 24.43% [33], in Northwest Ethiopia 27.9% [34], in the USA 28.6% [35] and Angola 23% [36]. The possible explanation for that discrepancy might be due to difference in study population, behavioral characteristics, habit of visit of health care, study setting, genetic predisposition, dietary habits and socio-demographic status of the study participants. For example, more than half (55.3%) of our study population are current khat chewer.

The current study revealed that family history of HTN was significantly associated with being hypertensive. This result is in line with previous studies [15,37,38]. This might be due to the fact that family members may share similar lifestyle and genetic factors.

As many studies agreed, this study revealed that there is a positive association between advanced age and HTN [15,30,39-41]. This is explained by as age is increased the walls of the arteries become stiffened and raised peripheral vascular resistance of smaller arteries, in addition older people are susceptible to non-communicable diseases including HTN [42].

Consistent with previous researches report [43-45] khat chewing is associated with increased risk of HTN. The possible reason might be cathinone, might have a sustained effect as peripheral vasoconstrictor which raises the risk of developing HTN [46].

Finally, our study also found associations between HTN and physical inactivity. This result was supported with prior findings studies [15,47]. This relationship can be due to physical exercise increase micro-vascular circulation, attenuates of oxidative stress, improves cardiac autonomic modulation and for physiological well-being of the body [48,49].

Conclusion

About a third of the respondents had high blood pressure. It was associated with advanced age, physical inactivity, family history of HTN and khat chewing. These findings trigger the policy makers and health care professionals to take appropriate measures to decrease hypertension and subsequent sequelae.

Limitation of the Study

The major limitation is the cross-sectional nature of the study which does not confirm the definitive cause and effect relation. The other is we measured blood pressure at only one session rather than the two visits, which may led to overestimation of the prevalence.

Ethical Consideration

Ethical clearance was obtained from the Jimma University Institutional Review Board. A supportive formal letter was written to SCHC. Data collection was done after permissions were obtained and oral informed consent was obtained from the study participants to start data collection.

Data Availability

The datasets of this study could be available up on reasonable corresponding author request.

Conflict of Interest

The author of this study declares that has no competing interest.

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