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Prevalence and assessment of knowledge and practice towards hypertension among Bahir Dar City communities, 2016: A community based cross-sectional study

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Hypertension is a silent killer cardiovascular disease and is becoming a concerned public health challenges particularly in developing countries up to date. The problem is significant particularly where there is weak health system like sub-Saharan Africa. The global prevalence of raised blood pressure in adults aged 18years and over was around 22% in 2014, and the number of people living with hypertension is predicted to be 1.56 billion at 2025, increasing by 60%. Reducing the incidence of hypertension through implementation of behavioral risk factor reduction is essential through creation of awareness about the knowledge and practice associated with hypertension. This study aims to determine the proportion of people with hypertension, and to assess knowledge and practice towards hypertension among Bahir Dar city Administration communities. A community based cross sectional study was conducted on April, 2016 among Bahir Dar city administration communities with age greater than or equal to 20 years old. A multi-stage sampling technique was used to select 388 study participants. Data was collected after oral informed consent secured for all study participants. Chi square test was done to see whether there is an association between the predictor and outcome variable. The mean age of study participant was 38.24(±17.2 SD), 46.5% of them were female. The prevalence rate of hypertension was 16.45%. The percentage of knowledge and practice score of the respondent with poor score level was 71.8 and 84.3%, respectively. Furthermore, socio-demographic characteristics like education, occupation and health information concerning hypertension were associated with level of knowledge and practice toward hypertension. Two hundred seventy five (71.8%) and three hundred twenty three (84.3%) of the respondents had poor knowledge and poor practice in the prevention of hypertension respectively. As part of prevention programme, regarding hypertension health education should be planned and incorporated by Federal Ministry of Health along with other health topics provided by health extension workers. Furthermore, mass media like radio should have focus towards cardiovascular non-communicable diseases like hypertension.

Key words: Hypertension, cardiovascular disease, knowledge, Bahir Dar city.

INTRODUCTION

Raised blood pressure (RBP) is a major cardiovascular (CVD) risk factor. The proportion of the world's population with high blood pressure or uncontrolled hypertension

(HTN) fell modestly between 1980 and 2010.However, because of population growth and ageing, the number of people with uncontrolled HTN has risen over the years

(World Health Organization, 2014). According to the seventh report of joint national committee prevention, detection, evaluation, and treatment of high blood pressure (JNC7) HTN is defined as a systolic blood pressure ≥140 and a diastolic blood pressure ≥90 based on the average of two or more accurate measurement taken during two or more contact with health care provider. But, it is classified as pre-hypertension which is 120 to 139 systolic and diastolic 80 to 89, stage I systolic of 140 to 159 and diastolic 90 to 99, stage II systolic of ≥160 and diastolic ≥100 (Suzanne et al., 2010).

The global prevalence of RBP in adults aged 18 years and over was around 22% in 2014 (World Health Organization, 2014). The prevalence of hypertension in SSA, particularly in urban areas, was high (ESH E, ESH/ESC Guidelines, 2013; Addo et al., 2007(. The estimated prevalence rate of HTN in overall Africa in adults aged 18 years and over 30 and 24.4% in Ethiopia (World Health Organization, 2014). The common risk factors for HTN are obesity and weight gain, high sodium intake, low calcium and potassium intake, alcohol consumption, ageing, socioeconomic determinants psychological stress and low physical activity also heritability blood pressure is in the range of 15 to 35% (Suzanne et al., 2010; ESH E, ESH/ESC Guidelines, 2013; Don Longo et al., 2012).

Globally CVD accounts for approximately 17 million deaths a year, nearly one third of the total, of these, complications of HTN account for 9.4 million deaths worldwide. Every year HTN is responsible for at least 45% of deaths due to heart disease, and 51% of deaths due to stroke (WHO, 2013). By 2025 the projected number of people with hypertension is expected to rise by 60% and reach 1.56 billion people (WHO, 2011). If left uncontrolled, HTN causes stroke, myocardial infarction, cardiac failure, dementia, renal failure and blindness, causing human suffering and imposing severe financial and service burdens on health systems (World Health Organization, 2014).

From different studies, the prevalence of HTN in urban is high due to low physical inactivity, better sedentary life, stress full environment. A study done in Addis Ababa showed that, the highest prevalence of 30.2% (Tesfaye et al., 2009) whereas a study done in South West Ethiopia showed the lowest prevalence of 2.6% (Muluneh et al., 2012).

Now a day, the prevalence of NCD including HTN is increasing dramatically posing a double burden to countries of low socioeconomic status such as Ethiopia. Moreover, because of weak health systems, the numbers of people with HTN who are undiagnosed, untreated and uncontrolled are also higher (WHO, 2013).

Measuring of knowledge and practices (KP) is a crucial element of hypertension control, but little is known about KP on HTN from developing countries including ours, where hypertension has lately been recognized as a major health problem. Therefore, this study is aimed to examine KP and prevalence on hypertension among general population of Bahir Dar city residents.

MATERIALS AND METHODS

Study area and period

A community based cross sectional study was conducted among Bahir Dar city administration communities from April 30 to May 30 2016. Bahir Dar is the capital of Amhara National Regional State and is one of the leading tourist destinations in North West Ethiopia. The city is located approximately 565 km northwest of Addis Ababa, and an elevation of about 1,800 m (5,906 feet) (United Nation Education Science and cultural organization (UNESCO), 2002).

Sampling technique and procedures

Randomly one kebele (the smallest administrative system in Ethiopia) was selected from each (9 urban, 9 rural and 3 satellite kebele). After that the sample size was distributed proportionally to randomly selected kebeles (3 kebele), then the household was selected by systematic random sampling; the first household was taken by tossing a coin and if more than one eligible individuals present in the same household, one was recruited randomly, but if the eligible individuals not present in the selected household the next house was taken, in this way the household was taken until the sample size was fulfilled for that kebele (Figure 1).

Operational definition

The overall **knowledge** of the study participant's was assessed using the sum score of each outcome based on Bloom's cut-off point. The scores were classified into 3 levels as follow:
1. Good level knowledge: Knowledge score that fell above 80%.
2. Moderate level knowledge: Knowledge score that fell between 60 and 79%.
3. Poor level knowledge: Knowledge score below 60%

Practice

Practice Is the overt behavior, habit or custom that a person does, follow up or carry out in his/her daily life in prevention of hypertension. Each question contains 1 point for positive life style practice and 0 point for negative life style practices.

The total response classified in to 3 according to Bloom's cut off point:

1. Good practice: Practice score 6 to 7 scores (above 80%).
2. Fair practice: Practice score 4 to 5 (60% - 79%).
3. Poor practice: Practice score that fell below 4(0-59%).

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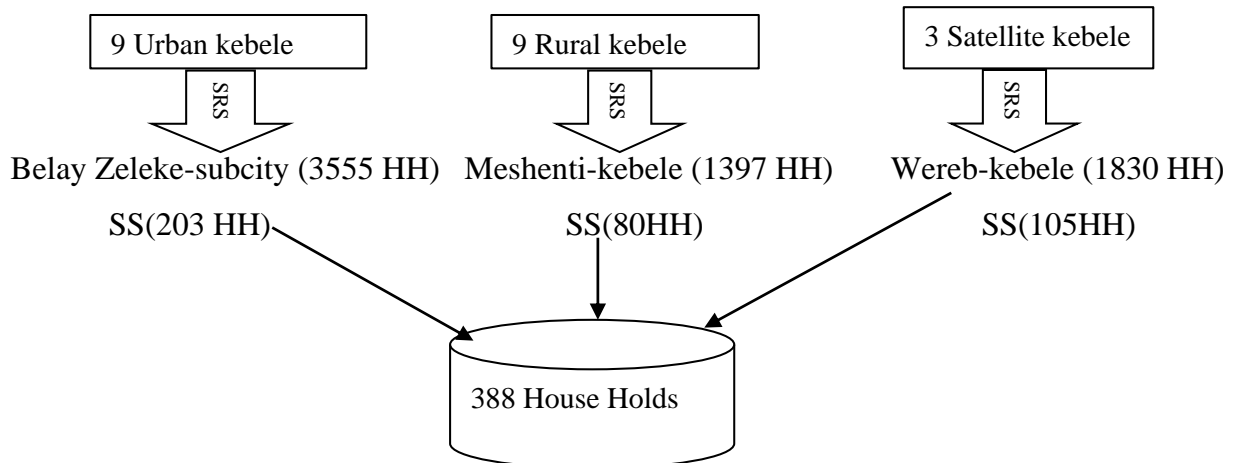
Figure 1. Schematic representation of sampling procedure, 2016. SS, Systematic sampling; SRS, simple random sampling; HH, household.

Hypertension

Blood pressure of 140/90 mm Hg and above taken at least on two occasions at 30- minute interval (Tadesse, 2016).

Data collection procedure

Blood pressure was taken using BP cuff (adult size) and stethoscope. Patients' BP was taken while the patient is in a sitting position, from the right arm after the patient rested for at least 10 min before measurement. Two measurements of BP on a single visit was taken at least 30 min apart, and the averages of the two records was used for the computation of the results (if the selected individuals not taken caffeine within 30 min). But if the study participant was taken caffeine within 30 min, 9 mm Hg systolic and 9 mm Hg diastolic will be subtracted from the average blood pressure of non-hypertensive individuals whose blood pressure was ≥140/90 (Mort and Kruse, 2008).

Data processing and analysis procedures

The data was edited, coded and entered into Epi-Data version 3.1 and exported to IBM SPSS Statistics Version 20 for analysis. Descriptive statistics like frequencies, mean, proportions and measures of dispersions was employed to describe socio-demographic, knowledge and practice variables. The degree of association between socio demographic and level of knowledge and practice variables was measured using chi-square test, P-value of less than 0.05 was considered as statistical significance, then results was summarized and presented by using tables, charts and graphs.

Ethical consideration

Ethical clearance and approval letter to conduct the research was obtained from Bahir Dar University College of Medicine Health Sciences ethical review committee. A formal letter was written to Bahir Dar city municipality office and written informed consent was obtained from each respondent after the purpose and procedure of participant remain anonymous for indefinite time period, and privacy

the study was explained in local language. Data collected from the of each respondent was maintained throughout the data collection process. The sampled participant who gave consent to participate in the study was interviewed face to face, and those with newly detected hypertension, those who discontinue anti-hypertensive medication as well as those with pre-hypertension stage was advised to start follow-up in their nearby health facility.

RESULTS

Socio-demographic characteristics

The number of study participant enrolled in this study was 383 making the response rate 98.7%, of these 178 (46.5%) were females, 254 (66.3%) married, 351 (91.6%) Anhara ethnic group, 272 (71%) orthodox religion follower, 134 (35%) illiterate and 29(7.6%), had Diploma, and 34(8.9%) had degree, 106 (27.7%) merchant. The mean age of study participants were 38.24(±17.2 SD) (Table 1).

Information and knowledge regarding hypertension

A total of 157(41%) had information regarding hypertension. The majority (56.1%) of them did not know the normal level of BP. Around Fifty three percent of the sample size respond hypertension as high BP while about eight of them respond as high sugar. Thirty three percent of the participants mentioned stress as a risk factor and 53% answered that obesity is a risk factor for hypertension. Around twenty percent of the participant did not know the complication of hypertension.

Regarding the diagnosis of hypertension, 70% of the participant answered that hypertension diagnosed through BP measurement while 1.6% of them thought as it is diagnosed by X-ray (Table 2).

Table 1. Respondent's socio-demographic characteristics, Bahir Dar City administration, 2016.

Variable	Response category	N	%
Sex	Male	205	53.5
	Female	178	46.5
Marital status	Married	254	66.3
	Unmarried	101	26.4
	Divorced	11	2.9
	Widowed	17	4.4
Ethinicity	Amhara	351	91.6
	Oromo	15	3.9
	Tigray	7	1.8
	Other*	10	2.6
Religion	Orthodox	272	71
	Muslim	102	26.6
	Protestant	6	1.6
	Catholic	3	0.8
Educational status	Illitrate	134	35
	Primary	83	21.7
	Secondary	85	22.2
	University student	18	4.7
	Diploma	29	7.6
	Degree and Above	34	8.9
Occupation	Merchant	106	27.7
	Daily laborer	52	13.6
	Governmental employee	51	13.3
	House wife	88	23
	Other[€]	85	22.2

Practice regarding in prevention of hypertension

From the total respondents 145 (37.8%) of the respondents had previously measured their blood pressure. Regarding to physical exercise 115 (30%) of the respondents reported that they perform physical exercise regularly. From these 115 individuals 48.6% perform physical exercise for less than 30 minutes per day whereas 8.8% perform for one hour per day.

Study respondents also were asked about whether they are addicted or not for different substances and 63 (16.4%) were addicted of these 30 (7.8%) had alcohol addiction (Table 3).

Prevalence of hypertension

The mean systolic and diastolic BP was 118.6 and 76.6 mmHg respectively. The overall prevalence of hypertension was 16.45%. Prevalence of hypertension among female respondents was 8.6%, for age groups between 20 and 40 years was 6.5 and 3.9% for age 41 to 60 years.

Prevalence of hypertension among illiterate respondents was 9.4% whereas the prevalence of those who have degree and above educational status was 0.78%. Among hypertensive individuals, 39(61.9%) were newly diagnosed and the percentage of those reporting previous history of anti-hypertensive medication/ hypertension were 19(30.1%), and individuals who discontinued antihypertensive medication and whose BP was above normal (140/90 mmHg) were 5(7.94%).

Among the total study participants 275 (71.8%) and 59 (15.4%) had poor and good knowledge regarding hypertension prevention respectively whereas 323 (84.3%) and 16 (4.2%) had poor practice and good practice towards in the prevention of hypertension (Table 4).

A chi-square test was performed and educational status, occupation and health information regarding hypertension have an association with the outcome variable (knowledge level of the respondents), X^2 (2, N = 383) = 18.4, P = 0.0001, X^2 (8, N = 383) = 34.8, P = 0.0001 and X^2 (2, N = 383) = 59.6, P = 0.0001 respectively. The rest do not show any association with the outcome variable (knowledge level of the

Table 2. Respondent's Information Regarding hypertension, Bahir Dar City residents, 2016.

Information for hypertension	N	%
Yes	157	41.0
No	225	58.7
Level of cut point for hypertension mentioned by the respondents		
90/60	29	7.6
120/80	126	32.9
140/90	13	3.4
i do not know	215	56.1
Respondent's perception and definition about hypertension		
High blood pressure	204	53.3
High level stress	58	15.1
High sugar	30	7.8
I do not know	91	23.8
Risk factors for hypertension as mentioned by the respondents		
Stress	127	33.2
Age	07	1.8
Heredity	06	1.6
Diabetes Mellitus (DM)	20	5.2
Obesity	203	53.0
I don't know	20	5.2
Complication of hypertension as perceived by respondents		
Blindness	29	7.6
Paralysis	127	33.2
Renal failure	22	5.7
Blindness, paralysis, renal failure	130	33.9
I do not know	75	19.6
Controlling method for hypertension as perceived by the respondents		
Diet	72	18.8
Medication	26	6.8
Physical exercise	75	19.6
Diet, medication and exercise	177	46.2
I do not know	33	8.6
Diagnostic method of hypertension as mentioned by the respondents		
Blood test	53	13.8
Urine analysis	12	3.1
Blood Pressure measurement	268	70
X ray	6	1.6
I do not know	44	11.5

respondents) (Table 5). Surprisingly educational status does not show significant association with practice towards hypertension prevention whereas age and marital status has significant association with outcome variable (practice level of the respondent) at X^2 (4, N=383) =29.6, P=0.0001 and X^2(4, N=383) =32.56, p-value= (0.0001) respectively, but the rest has no association (Table 6).

DISCUSSION

This community based cross-sectional study showed different variation as well as similarities with various studies, which was done in Ethiopia and other countries. When compared to the prevalence of hypertension in other parts of the world, the prevalence hypertension in Bahir Dar city communities were lower than communities in USA, which was 18% and overall Africa, was 30% (World Health Organization, 2014). The overall prevalence of hypertension in our study was 16.45%, which is higher than the study done in Gilgelgibe, Ethiopia was 2.6% (Muluneh et al., 2012) and 13% in Jimma (Gudina et al., 2013). This could be explained by participants age variation in both studies they

Table 3. Respondents' practice towards in preventing hypertension Bahir Dar City residents, 2016.

Respondents' practice	N	%
History of previous blood pressure measurement		
Yes	145	37.9
No	238	62.1
Exercise habit of respondents		
Yes	115	30
No	268	70
Duration of exercise		
< 30 minutes	56	48.6
30– 60 minutes	49	42.6
>60 minutes	10	8.8
Respondents' habit of substance use		
Yes	62	16.1
No	321	83.8
Type of substance used by the respondents		
Alcohol	30	7.8
Cigarette	6	1.6
Alcohol and cigarette	6	1.6
Other	20	5.2

Table 4. Knowledge and practice level of study subjects regarding to hypertension, Bahir Dar city administration, 2016.

Score	Knowledge		Practice	
	n	%	n	%
Good	59	15.4	16	4.2
Fair	49	12.8	44	11.5
Poor	275	71.8	323	84.3
Total	383	100	383	100

incorporated 15 years to 64 and 81 years old respectively and they used larger sample size 4469 and 734, respectively. However, the current study is lower than those found in Systemic meta-analysis study in overall Ethiopia, which is 19.6% (Kibret and Mesfin, 2015), and community based study of Addis Ababa, 30% (Tesfaye et al., 2009). The possible reason for this discrepancy is the sample size and setting in which the study was done. In our study 26.9% were from rural, 20.6% were from satellite kebeles and the remaining one was urban dwellers.

The finding of our study showed that poor knowledge and practice towards hypertension. However, study done in India (Pragnesh, 2014) and Seychelles (Aubert et al., 1998) found that the majority had good knowledge and greater than 96% in Seychelles and 80.4%, India, of the participant knew that obesity was associated with hypertension, but in our study only 62.9% of the participant mentioned it as a risk factor. This discrepancy could be explained by the type of participant included in

the study. The former one included adults aged 25 to 64 years, which might have been exposed to different media talking about hypertension.

In our finding, 1.6% of our study participants were smoking but the study done in Egypt (Abdelraziq et al., 2015) shows, 11% of their study participants were smokers, the reason behind this inconsistency result could be explained by cultural influence.

Another finding that we got from our study shows 71.8% of our study participants did not engaged in any type of practice, meanwhile, the study done in Egypt (Abdelraziq et al., 2015) on general population attending primary health care showed, 30.77% of their study participants do not practice any type of exercise. This may be due to lack of knowledge about the advantage of exercise.

Our study reviled that health information regarding hypertension has an association with knowledge of the respondents for hypertension and this finding is supported by the previous study done in Ethiopia. But the

Table 5. Chi square test of the association between level of Knowledge and socio-demographic characteristics of the respondents, Bahir Dar city, 2016.

Variable		Good	Fair	Poor	X^2	P-value
Sex	Male	38(64.4%)	28(57.1%)	139(50.5%)	4.048	0.132
	Female	21(35.6%)	21(35.6%)	136(49.5%)	df=2	
Age	20-40	47(79.6%)	38(77.5%)	184(66.9%)	8.02	0.0908
	41-60	6(10.1%)	9(18.4%)	54(19.6%)	df=4	
	≥61	6(10.3%)	2(4.1%)	37(13.5%)		
Educational status	Illiterate	11(18.6%)	9(18.4%)	114(41.5%)	18.4	0.0001*
	Litrate	48(81.4%)	40(81.6%)	161(58.5%)	df=2	
Occupation	Merchant	23(38.9%)	12(24.48%)	71(25.8%)		
	Daily laborer	3(5.1%)	6(12.24%)	43(15.6%)		
	Governmental worker	17(28.8%)	11(22.4%)	23(8.3%)	34.813	0.0001*
	Housewife	7(11.9%)	8(16.3%)	73(26.5%)	df=8	
	other$^€$	9(15.2%)	12(24.5%)	65(23.6%)		
Health information	Yes	45(76.2%)	30(61.2%)	82(29.8%)	59.6	0.0001*
	No	14(23.7%)	19(38.8%)	192(69.8%)	df=2	

42 student, 18 farmer, 10 alcohol brewer, 15 weaver; *significant.

Table 6. Chi square test of the association between level of practice and socio-demographic characteristics of the respondents, Bahir Dar city, 2016.

Variable		Good	Fair	Poor	X^2	P-value
Age	20-40	9(56.25%)	26(59.1%)	80(24.8%)	29.6	0.0001
	41-60	4(25%)	11(25%)	97(30%)	Df=4	
	≥61	3(18.75%)	7(15.9%)	146(45.2%)		
Educational status	Illiterate	6(37.5%)	14(31.8%)	122(37.8%)	0.44	0.8025
	Literate	10(62.5%)	30(68.2%)	201(62.2%)	Df=2	
Marital status	Married	5(31.25%)	20(45.4%)	204(63.1%)	32.56	0.0001
	Unmarried	10(62.5%)	18(41%)	87(27%)		
	Divorced and widowed	1(6.25%)	6(13.6%)	32(9.9%)		

relationship between marital status and level of practice was inconsistent with our study (Tadesse, 2016).

Conclusion

HTN was found to be prevalent (16.45%), among hypertensive individuals, 39(61.9%) were newly diagnosed and the number of people discontinuing medication was relatively increasing (7.94%). The percentage of people with poor level of knowledge and practice was 71.8 and 84.3% respectively. Moreover, socio-demographic characteristics (Educational status, occupation) and (marital status and age) has significant association with the level of knowledge and practice of Bahir Dar city communities respectively. As part of prevention, health education programme to the level of specific knowledge regarding hypertension should be planned and incorporated by policymaker along with other health topics which is provided by health extension workers and other health care providers to tackle the incidence of hypertension. Furthermore, mass media like radio and television programs should have a regular health education programme regarding hypertension.

Conflicts of Interests

The authors have not declared any conflict of interests.

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