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Prevalence of Undiagnosed Hypertension and Associated Factors among Residents in Gulele Sub-City, Addis Ababa, Ethiopia

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Abstract

Background: Non-communicable diseases are the major contributors of morbidity and mortality in the elderly estimating the prevalence of hypertension and studying the health seeking behavior is important.

Objective: To assess undiagnosed hypertension and associated factor in Gulele Sub City, Addis Ababa, Ethiopia

Methods: A cross-sectional study was conducted on 422 adults from April to May 2017. Data was collected by using pre-tested, structured questionnaire. The data collected was analyzed using SPSS version 20.00 statistical software. Multivariable logistic regression was used to identify independent variables.

Result: The prevalence of undiagnosed Hypertension in our finding was 13.25%. Most of the respondents 249 (69.75%) know about what hypertension mean. In this study age, occupation, marital status, dietary practices were significantly associated undiagnosed hypertension.

Conclusion: Undiagnosed hypertension was found to be prevalent in the community. The study concluded that the there is a need for increasing awareness towards health seeking behavior to prevent undiagnosed hypertension.

Keywords: Hypertension; Community; Myocardial infarction

Introduction

Non-communicable diseases (NCDs) are the leading global causes of death, causing for 38 million (68%) of the world's 56 million deaths in 2012. More than 40% (16 million) of them were premature deaths under age 70 years. Almost three quarters of all NCD deaths (28 million) occur in low- and middle-income countries [1]. Almost half, (17.5 million) of NCD deaths are due to cardiovascular diseases. Over 80% of cardiovascular deaths occur in low- and middle-income countries [2]. Raised blood pressure is a major cardiovascular risk factor. If left uncontrolled, hypertension causes stroke, myocardial infarction, cardiac failure, dementia, renal failure and blindness, causing human suffering and imposing severe financial and service burdens on health systems [3,4]. The global prevalence of raised blood pressure (defined as systolic and/or diastolic blood pressure equal to or above 140/90 mmHg) in adults aged 18 years and over was around 22% in 2014 [2].

Hypertension is commonly referred to as high blood pressure [5]. According to European Society of Hypertension, Normal blood pressure is systolic blood pressure (SBP) less than 120 mmHg and diastolic blood pressure (DBP) less than 80 mmHg. Pre hypertension is for patents on the cusp of developing hypertension and defined as an SBP of 120-139 mmHg or a DBP of 80-89 mmHg. Hypertension is defined as a systolic blood pressure equal to or above 140 mmHg and/or diastolic blood pressure equal to or above 90 mmHg. However, it is divided as stage I with the SBP 140-159 mmHg or DBP 80-89 mm Hg and stage II with SBP ≥ 160 mmHg or DBP of ≥ 100 mmHg [6].

Many modifiable factors contribute to the high prevalence rates of hypertension. They include eating food containing too much salt and fat, inadequate intake of fruits and vegetables, overweight and obesity, harmful use of alcohol, physical inactivity, psychological stress, socioeconomic determinants, and inadequate access to health care. Worldwide, detection, treatment and control of hypertension are inadequate, owing to weaknesses in health systems, particularly at the primary care level [2]. Research work related to NCDs in low and middle-income counties like Ethiopia is poor. Analysis of available data between 2000 and 2012 suggests that deaths by communicable disease have been decreasing while deaths due to NCDs especially cardiovascular disease (CVD) like hypertension have been rising in Ethiopia [7].

A quantitative epidemiological systematic literature review conducted shows that rate of hypertension varied widely, with the highest rate of 31.5% in males and the lowest rate of 0.8% in females but most literatures shows the prevalence in Ethiopia between 20% to 30%. The systematic review study found a high prevalence of hypertension in urban residents with the highest of 31.5 in males and 28.9 in females in Addis Ababa city [8]. A systematic meta-analysis study to determine the prevalence of hypertension showed that the prevalence of hypertension among Ethiopian population was estimated to be 19.6%. Subgroup analyses indicated that the prevalence of

hypertension is higher in the urban population (23.7%) than rural and urban combined (14.7%). The prevalence of hypertension among males (20.6%) and females (19.2%) was similar [9].

Different study results in different parts of Ethiopia also show high prevalence of hypertension. For example, a cross-sectional survey conducted in Addis Ababa, Ethiopia reported a 25% of respondents were found to have hypertension and men had significantly higher prevalence than women [10]. A research study on socio-economic status and hypertension among teachers and bankers in Addis Ababa town indicates that 21% of the participants are found to be hypertensive; the prevalence is 19.13% and 21.8% for bankers and teachers, respectively [11].

Another study conducted in Jijiga town identified the overall prevalence of hypertension as 28.3%. Having family history of hypertension, having high level of income, being male, being below grade 12, and having BMI ≥ 25 were significantly associated with hypertension for the overall study participants [12]. A study conducted in North West Ethiopia found the overall prevalence of hypertension to be 27.9%. The associated factors included obesity, old age, alcohol consumption, and increasing waist circumference [13].

A study conducted Gilgel Gibe Field Research Center reported that 7.5% of adults were hypertensive. Gender, educational level, alcohol use, and participated in vigorous recreational activity were found to be predictors of hypertension [14]. A hospital-based cross-sectional study found the percentage of those reporting a previous history of hypertension as 13.2%. Family history of hypertension, having diabetes mellitus, being overweight, and oral contraceptive use were associated with high blood pressure [15]. A study conducted in Bedele town indicated a prevalence of hypertension of 16.9% and age and waist circumference were found to be independent predictors of hypertension in the community [16].

The burden of hypertension is currently increasing in Ethiopia, and one of the reasons for increment of hypertension is unknown status of population about their health status. An up-to-date and comprehensive assessment of the evidence concerning hypertension in Ethiopia is lacking. Therefore, this study is aimed to assess undiagnosed hypertension status and associated factors among adults. The results of the study can be used as a base line data to design interventions to increase health seeking behavior of individuals and early treatment before complication occurs.

Methods

A community based cross-sectional study design was conducted in Gulele Sub-city, Addis Ababa city, Ethiopia, from April to May 2017. The sample size was determined taking 50% estimated magnitude of undiagnosed hypertension. Assuming 5% margin of error, 95% confidence level and 10% non-response rate, the total sample size calculated was 422. For sampling, simple random sampling method was used. Out of 10 woredas in the sub-city, 3 kebeles were randomly selected for this study (that is 30% of the woredas, woredas were assumed homogenous to the study variables). For selection of respondents in each woreda Population proportionate to size (PPS) technique was employed. Individuals who are greater than 18 years old, who are not previously diagnosed and not using anti-hypertensive drug were included in the sampling frame. The respondents from the sampling frame of the eligible households were selected by lottery method. Finally, the selected participants were interviewed by going

every household according to their respective household number until the required sample size was achieved in each of the woreda.

Data was collected by using pre-tested, structured questionnaire. All instruments for this study were tailored from diverse literatures. Data were collected by trained data collectors who are fluent in Amharic language. Mock interviews and practical field exercise was given to data collectors to ensure the quality of the field operation. During data collection, the supervisors followed data collectors and performed quality checks with the principal investigator. The questionnaire was prepared in English and translated to Amharic, then back translated to English to keep the consistency of the questions.

Blood pressure (BP) was measured twice in a sitting position using standard mercury sphygmomanometer BP cuff with the appropriate cuff size that covers two-thirds of the upper arm after the participant rest for at least five minutes and no smoking or caffeine 30 minutes before measurement. The second measurement was taken five-to-ten minutes after the first measurement if the first measurement inclination to hypertension. The mean systolic and diastolic BP from the first and second measurement was analyzed. Hypertension was defined as mean systolic blood pressure greater than or equal to 140 mmHg, or diastolic pressure greater than or equal to 90 mmHg.

Data were coded, cleaned, entered, and analyzed using SPSS window version 20 statistical packages for descriptive and inferential analysis. Binary logistic regression was used to predict a dependent variable on the basis of independents variables and predictors having P ≤ 0.25 on the bivariate analysis were candidates for the multivariate analysis. And factors with p<0.05 were statistically significant. The degree of association between dependent and independent variables was assessed using AOR at 95% CI.

Prior to data collection, ethical clearance was obtained from Research and Ethics committee of Addis Ababa Medical and Business College. Permission was also obtained from Gulele sub-city administration and health offices. All study participants were briefed about the purpose of the study and then verbal consent was obtained. Confidentiality was ensured during the process of the data collection.

Result

Background characteristics of the respondents

A total of 400 respondents participated in this study with a 95% response rate. The majority of respondents 60% (n=240) were female. Twenty-seven percent of the respondents were in the age group of 18-34 years. The study revealed that 48.3% of them were married. Around 29% of the respondents were housewives. Among the respondents, 30% were educated at diploma or higher level. Thirty-four percent of the respondents perceive a poor economic status compared to their neighborhood. Ninety-one percent of the respondents were housewives (Table 1).

Socio-demographic Variables	N (%)
Sex	
Male	160 (40)
Female	240 (60)
Age	
18-34	109 (27.3)

35-54	191 (47.7)
≥ 55	100 (25)
Marital status	
Single	140 (40)
Married	193 (48.3)
Divorced	37 (9.2)
Widowed	30 (7.5)
Educational status	
No formal education	82 (20.5)
6-Jan	63 (15.8)
12-Jul	136 (34)
Diploma and above	119 (29.7)
Occupation	
Daily labor	41 (10.3)
Housewives	116 (29)
Government employee	106 (26.5)
Merchants	94 (23.5)
Others	43 (10.7)
Average monthly income (ETB)	
≥ 1000	223 (55.8)
<1000	177 (44.2)

Table 1: Socio-demographic characteristics of respondents, Gulele sub-city, Addis Ababa city, Ethiopia, April 2017 (N=400).

Hypertension related knowledge, attitude and health seeking behavior

About 69.75% of the respondents have heard about hypertension, the major source of information was form medical professionals. Respondents identified cigarette smoking, family history, and alcoholism as a risk factor for getting hypertension.

About 16.5%, 9.5%, and 36.75% of the respondents did not know the symptoms, treatment options, and complication of hypertension, respectively. The respondents also mentioned exercise (37%) and dietary adjustment (34%) as a life style modification for prevention of hypertension.

Eighty percent of the respondents believe that regular blood pressure measurement is important to reduce the complication of hypertension. And 33% reported that they conduct regular checkup for hypertension.

Among the respondents 23% had a family with a history of hypertension. Majority (76.5%) of the respondents did not have smoked cigarette. Twenty-eight percent and nineteen percent of respondents have history of drinking alcohol and chewing Khat, respectively. Among the respondents 32% reported that they did not consume fruits and vegetables in a typical week. And 31% reported that they did not engage in a work that requires a moderate physical activity.

Prevalence and factor associated with undiagnosed hypertension

The study showed that the prevalence of undiagnosed hypertension among the respondents to be 13.25% (n=53). The bivariate analyses revealed that age, occupation, marital status, source of information, and history of eating vegetable were identified as factors associated with undiagnosed hypertension. In the multiple logistic regressions, age, occupation, marital status, and history of eating vegetable were found to be significantly associated with undiagnosed hypertension (Table 2).

Variables	Undiagnosed Hypertension		COR 95%CI	AOR 95%CI
	Yes	No		
Age group				
18-34	5	104	1	1
35-54	17	174	2.43 (1.21,4.85)	3.79 (1.54,9.32)
≥ 55	36	64	5.21 (2.84,9.56)	2.44 (1.35,5.19)
Marital status				
Single	3	137	1	1
Married	7	186	0.26 (0.12,0.57)	2.29 (0.97,5.48)
Divorced	25	12	2.55 (1.69,5.25)	6.36 (1.62,24.94)
Widowed	18	12	1.54 (0.27,4.83)	2.09 (0.76,5.73)
Occupation				
Daily labor	5	36	1	1

Housewives	20	96	2.52 (1.14,5.54)	4.22 (1.74,10.22)
Government employee	17	89	1.52 (0.66,3.74)	0.53 (0.22,1.30)
Merchants	7	87	1.03 (0.41,2.60)	0.69 (0.26,1.86)
Others	4	39	1.05 (0.36,3.03)	1.10 (0.35,2.46)
Frequency of eating vegetables and fruits				
≥ 5 times	10	48	1	1
1-4 times	12	201	1.71 (0.93,3.14)	1.05 (0.55,1.99)
Not eating	31	97	3.95 (1.74,8.94)	2.53 (1.11,5.74)

Table 2: Factors associated with undiagnosed hypertension among respondents, Gulele sub-city, Addis Ababa city, Ethiopia, April 2017 (N=400).

The prevalence of undiagnosed hypertension was strongly related to the respondent's age. Respondents with age 40 or above were 2 times (AOR=2.44, 95% CI: 1.15, 5.12) more likely to have undiagnosed hypertension. Respondents who are housewives were 4 times (AOR=4.22, 95% CI: 1.74, 10.22) more likely to have undiagnosed hypertension than those who are daily laborers. The current study found that respondents who are divorced were 6 times (AOR=6.35, 95% CI: 1.61, 24.94) more likely to have undiagnosed hypertension than single respondents. Moreover, prevalence of undiagnosed hypertension by respondents who did not consume fruits and vegetables in a typical week were 3 times (AOR=2.52, 95% CI: 1.11, 5.74) more likely than those respondents who consume fruits and vegetables 4-7 times in a typical week.

Discussion

This community based study has attempted to identify the prevalence and factor associated with undiagnosed hypertension. Accordingly, the study revealed that the prevalence of undiagnosed hypertension in the sub-city to be 13.3%. This finding is consistent with the most recent studies conducted in Jimma University Specialized Hospital (13.2%) and Bedele town (16.9%) [15,16]. However it is significantly higher than the findings of the study done in Gilgel Gibe Field Research Center that found 7.5% were hypertensive [14]. This discrepancy could be because this study was conducted only in a community living in urban setting; whereas the study conducted in Gilgel Gibe Field Research Center south west Ethiopia was conducted in rural settings. Compared with other studies in Ethiopia, the finding of this study is much lower [10-13].

In this study age, occupation, marital status, and history of eating vegetable were found to be significantly associated with undiagnosed hypertension. A significant increase in the prevalence of hypertension with age of respondents was observed in this study. Age group ≥ 55 years were found to have a significant positive association with hypertension, which has been confirmed in previous studies [13,14,16]. This can be explained by the increasing arterial stiffness with increasing age, which will contribute to high prevalence of hypertension in the older group [10].

The current study also revealed that prevalence of undiagnosed hypertension by respondents who did not consume fruits and/or vegetables in a typical week were three times more likely than those respondents who consume fruits and/or vegetables for greater than five days in a typical week. Another study found that eating vegetable three or fewer days per week was associated with hypertension [8]. It is widely accepted that fruit and/ or vegetable are important component of healthy diet and that their consumption could help prevent a wide range of CVDs including hypertensive CDs and WHO aim to promote an increases in consumption of it [14].

In the current study respondent's occupation was significantly associated with undiagnosed hypertension. Those respondents who are housewives were four times more likely to have undiagnosed hypertension than those who are daily laborers. This may be due to stress and in some instances it is a cause of sedentary lifestyles. The current study also revealed that respondents who are divorced were six times more likely to have undiagnosed hypertension than respondents who are single. About 23.5% of the participants reported history of smoking whereas 19% and 28% of the participants gave history of khat use and drinking alcohol respectively. However, the influence of most of these risk factors on prevalence of undiagnosed hypertension was not seen in this study.

Even though this study has presented the main findings with respect to the magnitude and factors associated with undiagnosed hypertension, the temporal relationship among variables could not be determined due to the cross-sectional nature of the study. All of the possible factors associated with undiagnosed hypertension could not be addressed. Further study that incorporates a qualitative approach to conduct an in-depth investigation of factors associated with undiagnosed hypertension is needed.

Conclusion

This study has shown that the prevalence of undiagnosed hypertension is high compared to other studies. Awareness on hypertension was low among respondents. The finding revealed that there are complex factors that are associated with undiagnosed hypertension. Therefore, there is a need for increasing awareness towards health seeking behavior to prevent undiagnosed hypertension.

Acknowledgement

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