Hypertension Awareness, Its Prevalence and Associated Risk Factors Among Adults Attending A Rural Primary Health Facility in Buhweju District

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Abstract

This study aimed to assess the prevalence, level of awareness of hypertension and associated factors among adults attending in Buhweju District. This was a facility based cross-sectional study that employed quantitative approach of data collection among 350 adults that were consecutively enrolled. Bivariate and multivariate logistic regression were used to assess the associated risk factors of HTN. The factors associated with hypertension were abnormal BMI (aOR = 0.5, 95% CI: 0.2-0.7, p < 0.001), advanced age (aOR = 0.3, 95% CI: 0.1-0.8, p< 0.001), family history of hypertension (aOR = 0.4, 95% CI: 0.2-0.6, p = 0.001) and lack of prior hypertension checkup (aOR= 3.7, 95% CI: 2.5-7.3, p < 0.001). The prevalence of HTN was generally higher than the national average although the level of awareness of HTN was high. The findings points out to the need for health care professionals to improve HTN screening and management.

Introduction

Globally hypertension is the most common cardiovascular disorder affecting approximately 1 billion people which is about 4.5% and it accounts for approximately 7.1 million deaths annually (McAloon et al., 2016). The World Health Organization (WHO), estimated that high blood pressure causes one in every eight deaths, making hypertension the third leading killer in the world (WHO, 2018). Hypertension, also known as high blood pressure is the most common life-threatening risk factor for cardiovascular disease (CVD) with major cost implications for low and middle-income countries (Ntuli et al., (2015). In sub Saharan Africa, approximately 80 million adults have hypertension and it is projected to raise to 150 million by 2025 (Kyobutungi, 2014). In Uganda, hypertension prevalence is averagely reported at 26.4% with the highest prevalence in central Uganda (28.5%), and its clinical management remains suboptimal across the country (Green, 2020).

According to reports, 68.7% of people with stage I hypertension (Systolic 130 to 139 and diastolic 80 to 89mmHg) will only be eligible for nonpharmacological treatment. Recognized nonpharmacological treatments include following a healthy eating plan, cutting back on sodium and increasing potassium in the diet, increasing physical activity (90–150 minutes per week), limiting alcohol consumption (≤2 drinks per day for men, ≤1 drink per day for women), and losing weight (achieving ideal body weight or at least 1 kg reduction if overweight), breathing control and meditation (Muntner, Carey et al. 2017). Clients with

stage II hypertension who are >20/10 mm Hg above their BP target, (150 systolic and/or 90 mm Hg diastolic) are advised to initiate antihypertensive drug therapy with 2 distinct antihypertensive drug classes with complementary mechanisms of action (Vamvakis et al., 2017). Additionally nonpharmacological therapy should be continued after initiation of HTN medication (Flack et al. 2018). In 2021, the World Health Organization (WHO) released new guidelines for the pharmacological treatment of adult hypertension, which include information on who within the healthcare system can initiate treatment and target blood pressure to be achieved for control. The WHO is supporting countries in their efforts to reduce the prevalence of hypertension as a public health issue in order to lower the risk of cardiovascular complications(Campbell et al. 2022).

The rampant HTN cases could be due to some mechanisms described for the development of hypertension, which include increased salt absorption resulting in volume expansion, an impaired response of the renin-angiotensin-aldosterone system (RAAS), and increased activation of the sympathetic nervous system or others like alcohol intake that may stimulate adrenals to release adrenaline, resulting in increased heart rate cardiac output and systolic blood pressure. Prior research shows some of the known risk factors for HTN as physical inactivity, regular alcohol consumption and being older than 40 years of age (Princewel et al., 2019), age, sex, ethnicity, job position, overweight or obesity, frequent drinking, family history of hypertension and diabetes (Shen et al., 2017). Some of risk factors for primary hypertension like age, heredity, and gender are non-modifiable (Joshi & Bhagwat, 2018). However, the majority of the other risk factors like tobacco use, alcohol use, unhealthy diet, physical inactivity, overweight and obesity can be effectively prevented (Peer et al., 2013).

Complications of hypertension, and in particular stroke and heart failure are increasing, (Buhweju District Health Records, 2018). It is the most common condition seen in primary care and leads to heart attack, stroke, kidney failure, and death if not detected early and treated appropriately (James, 2014). In a cross sectional study that comprised T2DM patients who were treated at a hospital for more than 12 months, about prevalence of dyslipidemia associated with complications in diabetic patients: a nationwide study in Thailand, confirmed that low education and socioeconomic levels were associated with hypertension among the urban population. The other associated factors were high BMI and increased waist circumference, dyslipidaemia, and smoking (Narindrarangkura et al., 2019).

A cross-sectional study conducted among 166 male and 201 female adults of 18 years and above using cluster sampling technique and using SPSS data analysis about socio-demographic correlates of modifiable risk factors for hypertension in a Rural Local Government Area of Oyo State South West Nigeria, revealed overweight, sex, inadequate sleep, and stress were established as positive predictors of hypertension (Abdulsalam et al., 2014).

In a qualitative study employing a total sample size of 200 respondents using qualitative data analysis methods, entitled socioeconomic status and cardiovascular outcomes; challenges and interventions in Indonesia, concluded that low socioeconomic level was associated with hypertension among the urban population. People with low socioeconomic status might be unemployed, and unemployment has an impact on stress levels, leading to high blood pressure. Moreover, people with low socioeconomic status might have jobs with fewer health benefit packages, which results in overall poorer health status (Schultz, 2018).

The prevalence of hypertension in Uganda is high, (Lunyera et al., 2018) and several studies have been done in different Ugandan regions majorly in urban populations (Green, 2020: Lunyera et al., 2018: Kato

et al. 2023). However, the interplay of these factors can vary significantly between urban and rural populations due to differences in socioeconomic conditions, healthcare access, and cultural practices.

There is limited documented information regarding prevalence, awareness and associated risk factors of hypertension specifically in Engaju, Buhweju District. Therefore this study assessed hypertension awareness, its prevalence, and associated risk factors among adult outpatient clients in a rural primary health facility. By identifying the specific factors contributing to hypertension in this community, we hope to inform public health strategies that can effectively address HTN and improve health outcomes in rural Uganda.

Methodology

Study Design, Setting, and Study Population

The study used a cross-sectional study design that employed quantitative approach of data collection. This study employed quantitative approach to collect data from the field, quantitative approach involved use of pretested questionnaires. This study was conducted at Engaju HC IV in Buhweju District, it is a public health facility that offers general patients care with HIV/AIDS services inclusive. Services offered include; general outpatient services, maternal and child health services, laboratory services, and pharmacy services. The study population included all adults attending the outpatient department at Engaju HC IV, Buhweju District. A sample size of 350 respondents participated in the study, this was determined by the Slovin's formula (1960).

Sampling Procedure

The researcher employed consecutive sampling a non-probability sampling technique, where by all the participants meeting the eligibility criteria were enrolled into the study. Consecutive sampling a non-probability is faster and more cost-effective in selecting respondents. The researcher later used stratified sampling by dividing the respondents according to gender after which a fish bowl method was used to get equal number of respondents from each gender strata. That is; the study included 175 males and 175 females.

Data Collection Tool and Procedures

Data Collection Tool

A researcher -administered pretested questionnaire was used for data collection. The questionnaire contained both closed ended and open ended items about awareness, prevalence, and associated risk factors regarding hypertension among adults. It was approximately 20-30 minutes. The questionnaire had two versions namely English and Runyankole translated versions. The questionnaire was simple enabling the respondents to easily answer the questions (Vehovar & Lozar, 2018). The questionnaire answered all the objectives of the study. That is it had four sections namely; Section A: Background Information, Section B: The level of awareness of hypertension among adults; Section C: The prevalence of hypertension among adults, and Section D: Risk factors of hypertension among adults. The reception and introduction was conducted at waiting rooms of OPD. The research tool also contained anthropometric measurements such as blood pressure, BMI, Body circumferences to assess for adiposity (waist, hip, and limbs), Skinfold thickness, and MUAC.

Data collection procedure

The researcher approached heads of outpatient departments of the selected health facility to make appo-

intments concerning dates to collect data. After confirmation of when to collect the necessary data, the administrators of OPD introduced the researcher to the all patients. Therefore after, the respondents provided both oral and written consent to voluntary participate in the study. For effective results, the researcher diagnosed hypertension after finding high blood pressure. Patients diagnosed with high blood pressure on the first measurement was repeated after 30 minutes.

Data Management and Analysis Procedures
Data was entered into an excel sheet then was exported to SPSS version 26 for analysis, objective one and objective two were analysed by descriptive analysis, objective three was analyzed by logistic regression using bi- variate analysis and those that were significant with p-value less than 0.05 were further analysed using multivariate regression to identify risk factors that significantly associated with HTN.

Objective 1: The prevalence of HTN among heart failure patients were analyzed as a proportion of all participants with HTN out of all participants recruited in the study. The findings were presented as a percentage and presented in a pie chart.

Objective 2: To analyze the level of awareness of hypertension among adults in Buhweju District, descriptive statistics, .including frequency and percentage of each source of awareness (heard or tested or both) were presented in a bar graph.

Objective 3: The risk factors of hypertension among adults in Buhweju District were identified using both bivariate and multivariate logistic regression analysis. The degree to which independent variables and independent variables are associated were presented as odds ratios (ORs) with associated 95% CI and p-value during bivariate logistic regression. The variables with a p-value of 0.05 at bivariate analysis were included in the multivariate logistic regression to identify the factors independently related with HTN in the study subjects. Through a manual backward stepwise selection process, the final multivariate analytic model with components that have an independent significant association with HTN were identified. Afterwards, the variables in the final multivariate model were listed along with their adjusted odds ratios (aORs), 95% confidence intervals, and p value. Results were presented in a Table.

Ethical Considerations
Ethical approval was obtained from the university Ethical Committee of the BSU. Prior written consent was taken from the subjects who volunteered to participate in the study. Material obtained from other sources such as journal articles, books and book chapters among were acknowledged. The researcher obtained the consent from all respondents that participated in the study. The respondents were also informed as to why and how they had been chosen. Anonymity was ensured and the researcher observed confidentiality while handling the responses. Information was availed to respondents that the research would not endanger them directly or indirectly and that participation was voluntary.

Findings
Participant Characteristics
Of the 350 participants, the majority were females (52.9%), married (74.9%) and almost all were peasants/self-employed (90.1%). Of the 350 participants, the majority had a history of HTN checkup (51.4%) but no family history of HTN (75.1%). Of the 350 participants, the majority had a normal MUAC (51.1%). Of the 350 participants, the majority were involved in physical activity (70.9%), alcohol use (52.9%) took energy drinks (56.0%).

Table 1: Characteristics   (n=350)

Characteristics	Frequency (n)	Percentage (%)
Gender		
Male	165	47.1
Female	185	**52.9**
Age in years		
<40	175	50.0
≥40	175	50.0
Education Level		
≤Primary	166	47.4
≥Secondary	189	52.6
Occupation		
Self-employed/peasants	318	**90.9**
Civil servant	32	9.1
Marital status		
Married	262	**74.9**
Single/ Widow/separated	88	25.1
History of HTN checkup		
No	170	48.6
Yes	180	**51.4**
Family history of HTN		
No/Don't know	263	**75.1**
Yes	87	24.9
BMI		
Normal (18.5 - 24.9 kg/m^2)	140	40.0
Underweight (<18.5 kg/m^2)	70	20.0
Overweight (25.0 - 29.9 kg/m^2)	56	16.0
Obese (≥30.0 kg/m^2)	84	24.0
MUAC		
Normal (25.4 -<29.9cm)	179	51.1
Underweight (< 25.4cm)	46	13.1
Overweight (29.9- ≤ 31.1cm)	49	14.0
Obese (>31.1cm)	76	21.7
Perform physical activity in a week for ≥30 minutes		
No	102	29.1
Yes	248	70.9
Alcohol use (AUDIT)		
No (AUDIT <1)	165	47.1
Yes (AUDIT≥1)	185	52.9
Ever take energy drinks		

Yes	196	56.0
No	154	44.0

Results in Table 1 show that of the 350 participants, the majority were females (52.9%), married (74.9%) and almost all were peasants/self-employed (90.1%). Of the 350 participants, the majority had a history of HTN checkup (51.4%) but no family history of HTN (75.1%). Of the 350 participants, the majority had a normal MUAC (51.1%). Of the 350 participants, the majority were involved in physical activity (70.9%), alcohol use (52.9%) took energy drinks (56.0%).
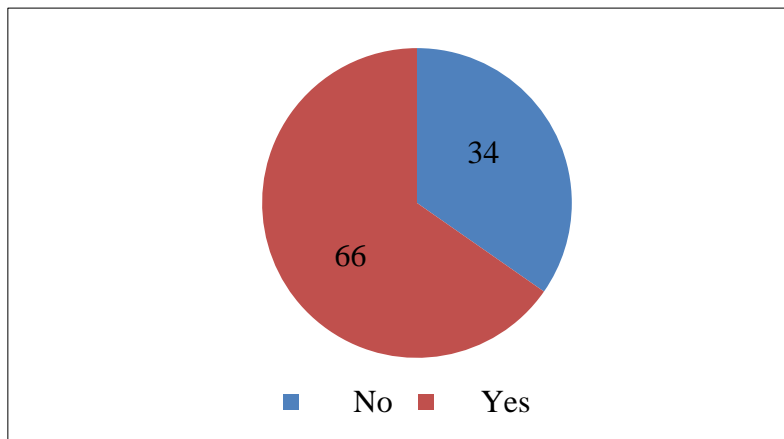

Table 2: Bivariate analysis of the risk factors of hypertension among adults attending Engaju HC IV

Explanatory Variables	Hypertension Status		UOR (95% CI)	p-value
	No n(%)	Yes n(%)		
	231(66.0)	119(34.0)		
Gender				
Male	120(72.7)	45 (27.3)	0.6(0.4-0.9)	0.013*
Female	111 (60.0)	74 (40.0)	1	
Age in Years				
<40	145 (82.9)	30 (17.1)	0.2(0.1-0.3)	<0.001**
≥40	86 (49.1)	89 (50.9)	1	
Education Level				
≤Primary	92 (57.1)	69 (42.9)	0.7 (0.5-1.1)	0.105
≥Secondary	124(65.6)	65 (34.4)	1	
Occupation				
Peasant/sel-employed	218(68.6)	100(31.4)	3.2 (1.5-6.7)	0.002*
Salaried	13 (38.2)	19 (61.8)	1	
Marital Status				
Married	177(67.6)	85 (32.4)	0.8 (0.5-1.3)	0.289
Single	54 (61.4)	34 (38.6)	1	

Physical activity				
No	63 (62.5)	39 (38.2)	1.3 (0.8-2.1)	0.284
Yes	168 (70.4)	80 (32.3)	1	
Alcohol use (AUDIT)				
No	122(48.0)	43 (26.1)	0.5 (0.3-0.8)	0.003*
Yes	109 (93.0)	76 (41.1)	1	
Take energy drinks				
Yes	135(68.9)	61(31.1)	0.7(0.5-1.2)	0.200
No	96(62.3)	58(37.7)	1	
BMI				
Normal	121(86.4)	19(13.6)	0.2(0.1-0.3)	<0.001***
Abnormal	110(52.4)	100(47.6)	1	
MUAC				
Normal	159(88.8)	20(11.2)	0.1(0.1-0.2)	<0.001***
Abnormal	72(42.1)	99(57.9)	1	
History of previous HTN diagnosis				
No	90(52.2)	80(47.1)	3.2(2.0-5.1)	<0.001***
Yes	141(78.3)	39(21.7)	1	
Family history of HTN				
No	119(67.2)	58(32.8)	0.2(0.2-0.4)	<0.001****
Yes	32(34.4)	61(65.6)		1

*Statistically significant at p<0.05.; UOR=Unadjusted Odds Ratio

From results in Table 2, independent variables with p <0.05 were entered into multivariate model to identify independent risk factors for HTN. Results were indicated in Table 2.

Table 1: Multivariate analysis of the risk factors of hypertension among adults attending Engaju HC IV

Explanatory Variables	aOR (95% CI)	p-value
Gender		
Male	0.8(0.4-1.9)	0.115
Female	1	
Age in Years		
<40	0.3(0.1-0.8)	<0.001**
≥40	1	
Occupation		
Peasant/sel-employed	2.9(0.2-4.7)	0.069
Salaried	1	
Alcohol use (AUDIT)		

No	0.5(0.4-5.9)	0.080
Yes	1	
BMI		
Normal	0.5(0.2-0.7)	<0.001***
Abnormal	1	
MUAC		
Normal	0.4(0.1-2.3)	0.062
Abnormal	1	
History of previous HTN diagnosis		
No	3.7(2.5-7.3)	<0.001***
Yes	1	
Family history of HTN		
No	0.3(0.2-0.6)	<0.001***
Yes	1	1

From Table 3, four factors were significantly associated risk factors for hypertension, including advanced age (≥40 years) (aOR = 0.3, 95% CI: 0.1-0.8, p< 0.001), abnormal BMI (aOR = 0.5, 95% CI: 0.2-0.7, p < 0.001),, history of HTN checkup and family history of HTN(aOR = 0.4, 95% CI: 0.2-0.6, p = 0.001) and patients with no history of previous HTN diagnosis were 3.7 times more likely to be diagnosed with HTN (aOR = 3.7, 95% CI: 2.5-7.3, p < 0.001).

Discussion

The findings of this study provide key insights into the landscape of hypertension (HTN) awareness, prevalence, and associated factors among adults attending a rural primary health facility in Engaju, Buhweju District. Given that 80% of participants said they were aware of HTN, it is clear that the region's efforts to promote health education had achieved substantial progress. Still, there is a significant disconnect between knowledge and preventive health care, as evidenced by the 28.6% of respondents who had heard of HTN but had never tested for it. This calls for improved health communication approaches that encourage people to get regular screenings in addition to providing information.

This study established a prevalence of HTN at 34% among patients. These findings present a relatively high prevalence of hypertension among adults in Buhweju District. These findings are consistent with findings from other previous studies conducted in rural sub-Saharan Africa, which reported a prevalence of 30.5% among adults (Kayima et al., 2015). There could be several reasons for this high incidence. First of all, people living in rural areas frequently have restricted access to medical facilities and resources, which can cause delays in HTN diagnosis and treatment. Second, the high prevalence of HTN may also be attributed to lifestyle characteristics that are common in rural areas, such as dietary practices that are heavy in fat and salt, little physical activity, and high levels of stress (Puoane et al.,2002).

However these findings are higher than in various studies, for example, a systematic study conducted in Ethiopia by Tiruneh (2020) found that hypertension was becoming a major public health problem in Ethiopia, affecting 20% older than 18 years. Similarly, the study conducted in India by Anchala et al. (2014) found that around 33% of urban and 25% of rural Indians are hypertensive.

The study indicated that the level of awareness of hypertension is notably high at 80%. Worryingly, 28.6% ever heard of HTN but refused to test for HTN. This might be attributed to a relative high level of formal education at 86% in the study area. This finding shows a relatively high level of awareness and inconsistent

with several other studies cited in the literature review. For instance, the study in Nepal conducted by Pokhrel (2019) found that 50% of participants were aware of hypertension, while a study in Colombia conducted by Legido Quigley (2015) showed that 60% of participants were aware of hypertension medication.

The study identified significant risk factors associated with hypertension among adults in Buhweju District were abnormal BMI, advanced age, family history of HTN and lack of prior HTN checkup. Similarly, the association between overweight, obesity, and hypertension is well-documented in the literature. Excess body weight is a significant modifiable risk factor for hypertension, as it contributes to increased blood pressure and strains the cardiovascular system (Mahadir et al., 2019). It is also well recognized that obesity raises the risk of HTN by processes such elevated sympathetic nervous system activity, inflammatory response, and insulin resistance (Hall et al., 2015). Considering the rising rates of obesity worldwide, including in rural areas, addressing obesity through community health initiatives is fundamental.

The role of family history in hypertension development has been extensively researched and is considered a non-modifiable risk factor. Individuals with a family history of hypertension may inherit genetic predispositions that affect blood pressure regulation (Abdulsalam et al., 2014); Gao, 2017. Therefore, family history should be taken into account as a key component in determining the risk of HTN, and screening should be strengthened for those who have a familial predisposition.

The lack of prior hypertension checkups was found to be a major factor associated with HTN. This research emphasizes how important routine health checks are for the early diagnosis and treatment of HTN. Frequent screenings can assist in detecting hypertension (HTN) early on, when lifestyle modifications and treatments are most successful (Lackland, 2014). Therefore, it is imperative to make efforts to increase rural residents' access to and participation in health screenings.

Conclusions and Recommendations

This study has established that the prevalence of HTN at 34% among adults attending Engaju HC IV Buhweju District was generally higher than the national average. Besides, the level of awareness of HTN among adults attending Engaju HC IV Buhweju District is abnormally high with at 80%. Younger patients (<40 years old), with a normal BMI, and those without a family history of hypertension are less likely to be diagnosed with hypertension than patients without a history of checkup. This highlights the importance of age as a risk factor for hypertension. These results emphasize the importance of maintaining a healthy weight to prevent hypertension. Therefore the government should prioritize public health initiatives that focus on preventing and managing hypertension, particularly among high-risk groups such as individuals above 40 years of age. The Ministry of Health should develop comprehensive strategies and guidelines for healthcare providers to screen, diagnose, and manage hypertension effectively. Policy makers should consider the findings when formulating public health policies and initiatives.

Implications

The results of the study have significant implications for rural public health policies and initiatives. Increasing access to routine health examinations should be the main goal of interventions, especially for high-risk populations such older adults, people with abnormal BMIs, and people with a family history of hypertension. Health education programs that are rooted in the community ought to persist in their efforts to raise awareness regarding the significance of routine HTN screenings. In addition, addressing lifestyle

factors with programs centered around nutrition and physical activity can help reduce the incidence of HTN in these populations.

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