Screening for Hypertension in People Aged 50 Years and Older in Byumba Sector: A Community-Based Approach

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Abstract

Background: Hypertension is taken as a global public health crisis and it is named as a "silent killer" since it is mostly asymptomatic with many life threatening complications such as stroke, coronary artery disease, heart attack… Hypertension as the cause of morbidity and mortality in older adults, it is one of the conditions that could be mostly prevented and treated. In developing countries, most people with raised blood pressure are unaware of their condition. **Purpose:** The purpose of this study was to detect high blood pressure in people aged 50 years and older who are not diagnosed for hypertension before, and approximate the prevalence of hypertension in older adults who are apparently healthy and determine if there is age and gender differences for people who have high blood pressure after screening. **Methods:** The study design was quantitative analytical cross-sectional study, and the sample of 149 people aged 50 years and older was obtained using convenient sampling method including 116 women and 33 men. A sphygmomanometer and a stethoscope for auscultatory method was used to measure blood pressure in the community. **Results:** The results showed that among 149 screened people, 38.3% (= 57) had hypertension. 40.5% of women were newly diagnosed with high blood pressure during screening, and 30.3% of men were newly diagnosed with high blood pressure. However, the difference between women and men in terms of the prevalence of newly diagnosed hypertension is not statistically significant [CI: 95% X^2 (1, N = 149) = 1.13, p = 0.28]. The Pearson Chi square test shows no statistical significance in difference of high blood pressure among different age groups X^2 (2, N = 149) = 1.12, p = 0.57. **Conclusion:** More than one third of the screened people aged fifty years and older were found hypertensive and they were not aware of the disease before screening. The early detection of hypertension through community screening is very important because it raises people's awareness of their blood pressure and be able to seek care as soon as possible before the complications occur.

1. Introduction

1.1. Background

Hypertension is taken as a global public health crisis and it is named as a "silent killer" since it is mostly asymptomatic with many life threatening complications such as stroke, coronary artery disease, heart attack [1]. Hypertension as the cause of morbidity and mortality in older adults, it is one of the conditions that could be mostly prevented and treated [2]. Rwanda ministry of health reported 9498 cases of Hypertension in hospitals in 2014 representing 2% of all Out patient department (OPD) cases [3].

High blood pressure is the leading cause and the most controllable risk factor for stroke, causing to about 70% of all strokes [4] and old people are mostly risky for stroke, mainly those with high blood pressure [5].

So stroke can be prevented by control of hypertension by its detection among those who are apparently healthy and do not recognize if they have high blood pressure or not. In developing countries, most people with raised blood pressure are unaware of their condition [6]. A holistic strategy to reduce complications and mortality due to hypertension must include preventive measures and early detection among others [7]. This is the role of screening and it had been recommended by the World health Organization that "'early detection is the Key' for prevention and treatment of high blood pressure and that all adults should know their blood pressure" [1].

A little attention had been focused on hypertension and associated factors among older adults in Africa [8]. In one study of hypertension and associated factors in older adults in South Africa, it was found that hypertension was more prevalent (77.3%) among older adults aged 50 years and more in South Africa and it is prevalent in Rwanda at a rate of 41% and 36.6% for men and women respectively [8]. Since the blood pressure tends to rise as individual becomes older, high blood pressure is frequently found in old people compared to other age group [7] [9] [10].

1.2. Problem Statement

Hypertension is a condition which is usually asymptomatic but is associated with cardiovascular complications when it is not detected early in order to be controlled. Old age is also associated with this so-called "Silent killer" condition. Hypertension is associated with life-threatening and fatal complications: 77% among those who suffer from first stroke, 69% of those who have the first heart attack, and 74% who suffer from heart failure have high blood pressure [4]. In Rwanda, mortalityrate due to stroke was 96 -

130/100,000 and mortality rate from myocardial infarction was 95 - 135/100,000 in 2011 [12]; and both conditions are the fatal complications of hypertension. This is a serious condition that should be detected early using screening.

As the most older people in Rwanda are not seeking health care unless they are seriously ill, the screening of hypertension using community-based approach is the one which is be helpful in detecting hypertension in older adults aged 50 years and older. After the screening, people recognized their blood pressure and those with hypertension are advised to come on the next day for second check, diagnosis and treatment when necessary and those with prehypertension are advised for the Dietary approach to stop hypertension and other lifestyle modification.

1.3. Objectives

1.3.1. General Objective
This study is aiming at detecting high blood pressure in people aged 50 years and older.

1.3.2. Specific Objectives
The specific objectives of this study are:

1) To detect high blood pressure in people aged 50 years and older who are not diagnosed for hypertension before, and approximate the prevalence of hypertension in older adults who are apparently healthy.

2) To determine if there is age and gender differences for people who have high blood pressure after screening.

1.4. Research Questions

1) What is the prevalence of hypertension in old people aged 50 years and more who attended the screening?

2) What is the difference between women's and men's prevalence in matter of hypertension?

3) What is the difference of blood pressure between different age groups?

1.5. Hypothesis

H_0: The high blood pressure is frequent for old females as for old males.
H_1: High blood pressure is more frequent in old females than old males.

1.6. Significance of the Study

This screening enabled the old people aged 50 years and more to recognize their blood pressure and to detect the high blood pressure before it gets worse with complications by using a community-based approach, so that people should seek care as soon as possible and their hypertension should be controlled.

2. Literature Review

The Prevalence of Hypertension in Older Adults

One study titled "Screening for Hypertension Among Older Adults: A Primary Care

"High Risk' Approach", showed that 33% of the screened people had prehypertension, and 28% had hypertension [2]. The study also showed that hypertension is increasing with age, 25% of those below 60 with hypertension versus 37% for those above 70 years and further revealed that 75% of those screened for hypertension were unaware of its presence [2].

The systematic review done bythe US Preventive Services Task Force (USPSTF) found good evidence that measuring blood pressure in adults can help in identifying those with increased cardiovascular risk due to high blood pressure [13].

The screening campaign in Eastern province of Saudi Arabia revealed that the mean systolic blood pressure and diastolic blood pressure increased with age reaching their peak in the age-group 50 - 59. High blood pressure was more prevalent in women than in men: 18.1% and 13.1% respectively [14]. The researchers concluded by emphasizing on the important role of high blood pressure screening, based on the high percentage (9% = 17,791) of the people aged 30 years and older who were newly diagnosed for hypertension [14].

3. Methods

3.1. Study Design

A quantitative analytical cross-sectional study design was used.

3.2. Study Area

The study was conducted in Byumba sector of Gicumbi District located in Northern Province of Rwanda.

3.3. Study Population

The target population was people aged 50 years and more without known hypertension who reside in Byumba sector of Gicumbi district, Rwanda.

3.4. Inclusion and Exclusion Criteria

The people who got screened were those aged 50 years and more without known hypertension. Excluded are those younger than 50 years, and those who already have high blood pressure.

3.5. Sample Size and Sampling Strategy

The sample of 149 people aged 50 years and older was obtained using convenient sampling method. 116 women and 33 men were included in the sample.

3.6. Data Collection Tool and Procedure

3.6.1. Instrument

A sphygmomanometer and a stethoscope for auscultatory method was used to measure blood pressure. Eight data collectors were trained to use the instrument by emphasizing on when to define systole by listening the 1st sound and the diastole by listening the last

sound, the inter-rater reliability was done where all data collectors took blood pressure for one client and compare the findings. All instruments were assessed for their functioning whereby they are used to measure blood pressure for the same person and obtain the same results. The blood pressure was measured in millimeters of mercury (mmHg).

3.6.2. Procedure

The screening activity was conducted on different sites in the community specifically where people can meet.

Eight trained data collectors (2 registered nurses and 6 student nurses) with prior training and experience in measuring blood pressure using manual auscultatory method were placed on 2 chosen sites (four for one site and other four for the other site). The sites were chosen based on convenient area where old people can be reached easily, *i.e.* near the church where the old people came from the 1st mass.

People were sensitized using communication in churches in order to participate in the screening with respect to above inclusion and exclusion criteria. The blood pressure measures were recorded in systolic and diastolic,and categorized in normal (systolic < 120 mmHg and diastolic < 80 mmHg), pre-hypertension (systolic 120 - 139 mmHg or diastolic 80 - 89 mmHg), and hypertension (either systolic ≥140 mmHg or diastolic ≥ 90 mmHg where by stage 1 hypertension is considered as systole of 140 - 159 mmHg or diastole of 90 - 99 and stage 2 hypertension is considered as systole of 160 mmHg and more or diastole of 100 mmHg and more) according to the 7th Joint National Committee on prevention, detection, evaluation and treatment of high blood pressure (JNC 7). The variables considered were age, gender, systolic and diastolic blood pressure. The measurement of blood pressure was done on the same day, from 8 o'clock in the morning to 2 o'clock in the Afternoon.

Those who were detected as having high blood pressure on the first screening, came back on the next session for confirmation of hypertension or not.

3.7. Data Analysis

Data were recorded on sheet of paper, and entered in SPSS version 16.0 to be presented in graphs (Figure 1) and tables (Tables 1-4), then analyzed using Chi-square test, and One-way Anova test. The significance threshold was set at 0.05.

3.8. Scope and Limitations

The screening was community-based in Byumba sector. The study did not involve Young adults aged less than 50 years, and only people in one sector and the surrounding benefited from the screening activity due to limitation of resources.

4. Results

This pie chart illustrates that among 149 screened people, 38.3% (= 57) had hypertension.
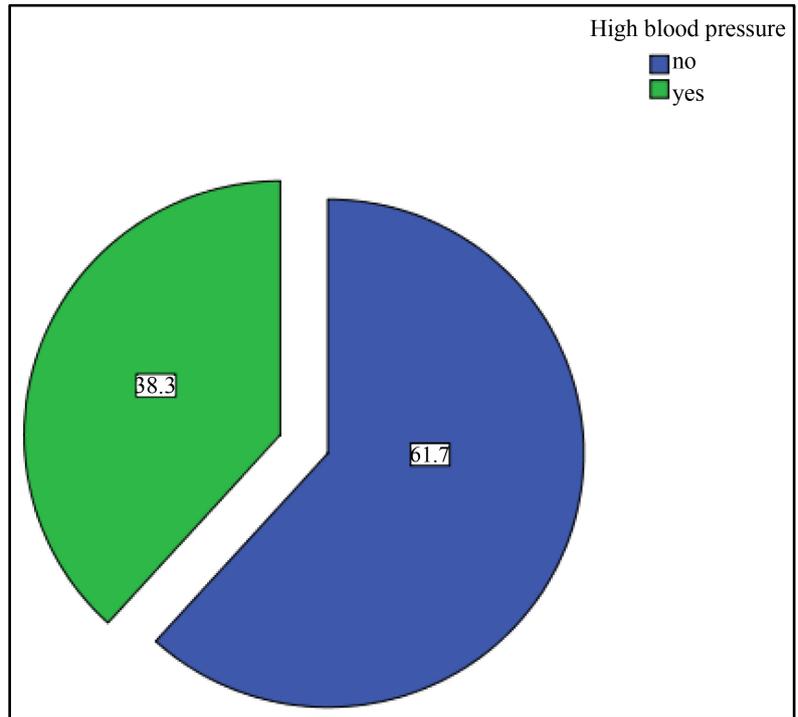
Figure 1. Prevalence of newly diagnosed hypertension.

Table 1. Blood pressure by categories.

		categories of blood pressure			
		Frequency	Percent	Valid Percent	Cumulative Percent
	prehypertension	58	38.9	38.9	38.9
	stage 1 hypertension	37	24.8	24.8	63.8
Valid	stage 2 hypertension	20	13.4	13.4	77.2
	normal	34	22.8	22.8	100.0
	Total	149	100.0	100.0	

Among 149 screened people, 38.9% had prehypertension, 24.8% had stage 1 hypertension, 13.4% had stage 2 hypertension and only 22.8% had normal blood pressure.

40.5% of women were newly diagnosed for high blood pressure during screening, and 30.3% of men were newly diagnosed for high blood pressure. However, the difference between women and men in terms of the prevalence of newly diagnosed hypertension is not statistically significant [CI: 95% X^2 (1, N = 149) = 1.13, p = 0.28].

21 out of 63 people (33.3%) aged 50 - 59 years had hypertension, 24 out of 57 (42.1%) aged 60 - 69 years had hypertension, and 12 out of 29 (41.3%) of those aged 70 years and more had hypertension. The Pearson Chi square test shows no statistical significance in difference of high blood pressure among those 3 age groups X^2 (2, N = 149) = 1.12, p = 0.57.

Table 2. High blood pressure difference between women and men.

(a)

gender * High blood pressure Crosstabulation

Count

		High blood pressure		Total
		no	yes	
gender	female	69	47	116
	male	23	10	33
Total		92	57	149

(b)

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.135[a]	1	0.287		
Continuity Correction[b]	0.744	1	0.389		
Likelihood Ratio	1.162	1	0.281		
Fisher's Exact Test				0.317	0.195
N of Valid Cases[b]	149				

Table 3. High Blood pressure in different age groups.

(a)

age groups in years * High blood pressure Crosstabulation

Count

		High blood pressure		Total
		no	yes	
age groups in years	50 - 59	42	21	63
	60 - 69	33	24	57
	70 years and more	17	12	29
Total		92	57	149

(b)

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.124[a]	2	0.570
Likelihood Ratio	1.130	2	0.568
N of Valid Cases	149		

The mean systole among people aged 50 - 59 years is 125 mmHg (±17), 131 mmHg (±18) for those aged 60 - 69 years and 131 mmHg (±19) for those aged 70 years and

Table 4. Difference between systolic blood pressure among age groups.

(a)

age groups in years	Mean	N	Std. Deviation
50 - 59	125.30	63	17.823
60 - 69	131.49	57	18.232
70 years and more	131.45	29	19.037
Total	128.87	149	18.352

(b)

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1386.628	2	693.314	2.089	0.128
Within Groups	48,456.688	146	331.895		
Total	49,843.315	148			

more. The mean systolic blood pressure among 3 age groups is not statistically different, $F (2, N = 149) = 2.08$, $p = 0.12$.

5. Discussion

The prevalence of hypertension was 38.3% in people aged 50 years and more with increased percentage as people get older; 33.3% of people aged 50 - 59 versus almost 42% of people age 60 years and older had hypertension,. These findings are similar to those found in India [2] [15] which stated that the prevalence of hypertension increases with age with highest proportion among those aged 70 years and older.

The proportion of hypertension tends to be higher in women than men with 40% and 30% respectively, however this difference was not statistically significant as tested by Chi square test ($p = 0.28$), contrarily to other studies which show the high percentage among men than women [8]. Similar results were found in those aged 30 years and older with high percentage in women compared to men; 18.1% and 13.1% respectively [14].

The mean systolic blood pressure increased with age with 125 mmHg (±17) in age group 50 - 59 years old, 131 mmHg (±18) and 131 mmHg (±19), however the difference of means between those age groups is not statistically significant as tested by one way Anova: $F (2, N = 149) = 2.08$, $p = 0.12$. This is quite similar to the findings of the study done in Saudi Arabia stipulating that the mean systolic and diastolic blood pressure increased with age [14].

6. Conclusions & Recommendations

The early detection of hypertension through community screening is very important because it raises people's awareness of their blood pressure and be able to seek care as soon as possible before the complications occur. More than one third of the screened

people aged fifty years and older were found hypertensive and they were not aware of the disease before screening. There were no statistical significant difference between women and men and the difference between the mean systolic blood pressure measurements among different age groups was not statistically significant, therefore as the study results suggest, the null hypothesis was accepted.

The health policy makers should establish a screening program of old people so that every adult aged 50 years and older should be screened for hypertension at least once a year and be treated as early as possible.

Further researches are needed to estimate the prevalence of hypertension in very old people using home-based screening approach as those people aged 90 years and above are not able to quit their home easily to seek health care.

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