

Determinants Of Uncontrolled Hypertension In Gweru City, Zimbabwe, 2015.

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ABSTRACT: Hypertension in Zimbabwe was ranked highest among non-communicable diseases recorded in the out-patients registers in 2006. This study was aimed at investigating the determinants of uncontrolled hypertension in Gweru urban among patients aged 45-80years. An unmatched 1:1 case-control study design was used. Data was collected through interview-guided questionnaires from outpatients registered on the chronic disease registers at the 7 City Council Clinics of Gweru in 2015. The majority of the study participants were female (77%), males (23%) and 72% of the participants were 60years and above. Knowledge on hypertension was poor with 86% of participants stating that hypertension is curable. Independent risk factors in the study included being unhappy with clinic services (OR 4.6 95% CI 1.7039-12.5185) eating fried food (OR 2.77 95% CI 1.0185-7.5363), experiencing side effects (OR 3.2 95% CI 1.168-9.1866) and factors less likely to lead to uncontrolled hypertension included being less than 60years (OR 0.49 95% CI 0.2298-0.5162), having only primary education (OR 0.36 95% CI 0.1378-0.9509), receiving health education (OR 0.42 95% CI 0.1841-0.9638), traveling short distances to the clinic (OR 0.22 95% CI 0.0905-0.5188), exercising often (OR 0.36 95% CI 0.1474-0.9036) being married (OR 0.65 95% CI 0.2888-0.7855) and having a treatment partner (OR 0.06 95% CI 0.0234-0.1754). It is therefore recommended that health staff should sensitize hypertensive patients on the risks of having uncontrolled hypertension. Also the patients should be educated that the anti-hypertensive medication works in combination with life style modifications.

Keywords: hypertension, knowledge, risk factors, urban, service factors

1.0 INTRODUCTION

Uncontrolled hypertension refers to systolic pressure above 160mmHg or diastolic blood pressure above 90mmHg in patients on anti-hypertensive medication [1]. In low and middle income countries, it is estimated that half of the population is aware that they have hypertension but majority do not have their blood pressure under control (2). In Sub-Saharan Africa, levels of detection, treatment, and control of hypertension are low especially in urban areas [1]. This increases the future risk of stroke, heart and renal failure [3]. In Zimbabwe, a 2006 survey revealed that hypertension cases increased between 1990-1997 from 1000 to 4000 cases calculated per 100 000 [4]. The age-standardized rate of hypertension in Zimbabwe recorded at 33.1% is higher than that seen in developed countries [5]. Hypertension accounted for the highest number of deaths in Zimbabwe public hospitals in 2008 [6]. A WHO summary of the prevalence of hypertension in Zimbabwe from 1997-2010 revealed prevalence to be higher at 39.9% in women and 38.2 % in men [4]. The condition was recorded highest in the urban Zimbabwean population [7]. In 2014 the incidence of hypertension from January to June was 5764 cases in Gweru City [8]. Hypertension has no cure but it can be controlled through adhering to correct medication. Patients who believe that hypertension has a cure are likely to stop taking medication when they feel better [9]. Lifestyle habits such as eating fried foods are known to increase risk of uncontrolled hypertension [10]. Experiencing side effects influences patients to stop taking anti-hypertensive medication [11]. A study in Brazil showed that poor knowledge on hypertension and dissatisfaction with health services are associated with non-drug adherence [12]. There is a strong association between uncontrolled hypertension and age [10,13]. Hypertensive patients who receive health education are less likely to have uncontrolled hypertension because they will be aware of the importance of taking the medication consistently [14]. Patients who are married or have treatment partners are more likely to adhere to medication and have their hypertension under control [16]. A cross-sectional study

done in Dar es Salam revealed that low levels of education influence patients to adhere to medication and keep their blood pressure under control [17]. Adopting a healthy lifestyle of regular exercise is an effective mechanism to control hypertension [18]. This study therefore aims to contribute to the available pool of knowledge on factors associated with uncontrolled hypertension among urban patients of Gweru.

2.0 RESEARCH QUESTIONS

What are the socio-demographic characteristics hypertensive patients?

1. What are the socio-demographic characteristics of hypertensive patients?
2. What are the levels of the patients' knowledge on hypertension?
3. Which service factors influence decisions of hypertensive patients?
4. What are the risk factors for hypertension?

3.0 OBJECTIVES

1. To assess the socio-demographic characteristics of hypertensive patients.
2. To assess the level of the patients' knowledge on hypertension.
3. To determine the service factors influencing decisions of hypertensive patients.
4. To assess the risk factors for hypertension.

4.0 HYPOTHESIS

H₀: Non-compliance to anti-hypertension medication is the major predictor for uncontrolled hypertension amongst hypertensive patients on treatment.

H₁: Other factors combined will predict the occurrence of uncontrolled hypertension among hypertensive patients on anti-hypertensive treatment.

5.0 SIGNIFICANCE OF THE STUDY

The findings of this study will help to sensitize clinicians and community health officers on knowledge needs of hypertensive patients.

6.0 METHOD OF STUDY

The study adopted an analytical unmatched 1:1 case control to compare the group of patients aged 45 years and above with uncontrolled hypertension against a group with controlled hypertension. The study participants were outpatients recorded at the outpatient Chronic Disease Registers of the 7 Gweru City Council Clinics. A case was defined as anyone who attended a Gweru City Clinic with systolic blood pressure of ≥ 140 mmHg and diastolic blood pressure of ≥ 90 mmHg after commencing on hypertension treatment. A control was defined as anyone who attended a Gweru City Clinic with systolic blood pressure of ≤ 140 mmHg and diastolic pressure of ≤ 90 mmHg after commencing on hypertension treatment. Using Epi-info STATCAL at 95% confidence interval and power of 80% and assuming that defaulting among controls due to side effects was 38.6% and 67.5% in the cases at Odds Ratio of 3.3 at a 10% refusal rate. The minimal sample size required was 94 with 47 cases and 47 controls.

6.1 SAMPLING

Simple random sampling was used to select hypertensive patients from the Chronic Disease Registers. Each participant was assigned a number which was matched on the random number table. Every nth number was picked from the random number table. An interviewer-

administered questionnaire was developed using standard guidelines of World Health Organization.

7.0 ETHICAL CONSIDERATION

The informed consent of the participants was obtained in writing and permission to carry out the research was sought from the Africa University Research Ethics Committee and the Gweru City Health Director. Confidentiality was maintained by not recording names of respondents on the questionnaire.

8.0 DATA PROCESSING AND ANALYSIS

Completed questionnaires were sorted as cases and controls, collated and cleaned. Cross validation was done and quantitative data captured, processed and analysed using Epi Info software. Statistical significance was accepted at the 95% confidence interval.

9.0 RESULTS

Characteristics of the study sample

The study participants were predominantly female 77% and 23% male. The median age for the study participants was 67 years ($Q_1=60$, $Q_3=79$). Most participants were aged >60 years (69%).

Table 1: DEMOGRAPHIC FACTORS ASSOCIATED WITH UNCONTROLLED HYPERTENSION

VARIABLE	CASES (n=47)		CONTROLS (n=47)		OR	95% CI
	No.	%	No.	%		
SEX						
Male	10	21	12	26	1.26 (0.4867-3.3.067)	
Female	37	79	35	74		
AGE					0.49 (0.2298-0.5162)*	
45-60years	14	30	12	26		
61+ years	33	70	35	74		
LEVEL OF EDUCATION					0.36 (0.1378-0.9509)*	
Primary	30	64	39	83		
Secondary	17	36	8	17		
MARITAL STATUS					0.65 (0.2888-0.7855)*	
Married	20	43	25	53		
Single/Divorced/Widowed	27	57	22	47		
Occupation					0.78 (0.1962-3.1117)	
Employed	4	9	5	11		
Unemployed	43	91	42	89		

*Statistically significant**

Table 2: KNOWLEDGE ASSOCIATED WITH UNCONTROLLED HYPERTENSION

VARIABLE	Cases (n=47)	Controls (n=47)	OR	95% CI
Hypertension is curable	YES 45(96%) NO 2 (4%)	36(77%) 11(23%)	6.88	(1.4318-33.0563)*
Hypertension can be controlled	YES 45 (96%) NO 2(4%)	41(87%) 6(13%)	0.36	(0.1055-0.5937)*
Hypertension is hereditary	YES 10(21%) NO 37(79%)	7(15%) 40(85%)	1.23	(0.5628-1.8522)

Study participants who believe that hypertension is curable were shown to be 6.88 times more likely to have uncontrolled hypertension (OR 6.88 95% CI 1.4318-33.0563). This association was statistically significant. Believing that hypertension can be controlled was shown to be protective and statistically significant (OR 0.36 95%CI 0.1055-0.5937).

Table 3: SERVICE FACTORS INFLUENCING DECISIONS OF HYPERTENSIVE PATIENTS

VARIABLE	Cases (n=47)	Control (n=47)	OR	95% CI
Receiving health education	Yes	18	0.42	(0.1841-0.9638)*
	No	29		
Seeking treatment from private hospitals	Yes	34	0.74	(0.3076-1.7841)
	No	13		
Spending more than an hour at the clinic	Yes	42	1.47	(0.4311-5.0133)
	No	5		
Travelling less than 2km to the clinic	Yes	13	0.22	(0.0905-0.5188)*
	No	34		
Unhappy with clinic services	Resource shortage	18	4.6	(1.7039-12.5185)*
	Unfriendly staff	6		

*Statistically significant**

Patients who are unhappy with clinic services are 4.6 times more likely to have uncontrolled hypertension (OR 4.6 95% CI 1.7039-12.5185). Service factors which are protective from uncontrolled hypertension are health education (OR 0.42 95% CI 0.1841-0.9638) and travelling less than 2km to the clinic (OR 0.22 95% CI 0.0905-0.5188).

9.1 AVAILABILITY OF RESOURCES

A physical check of resources at the 7 clinics involved in the study revealed that only 1 clinic had a functional

sphygmometer, 5 of the clinics had sphygmometers without batteries, 1 clinic had no sphygmometer at all to check blood pressure of the patients. The study also discovered that all the 7 clinics had 1 type of anti-hypertensive drug hydrochlorothiazide (HCT). Other popularly used drugs such as Atenolol, Nifedipine, Captopril and Methyldopa were not in stock at the time of the interviews. This means patients had to buy drugs at a cost of \$1 and check their blood pressure at \$2 in private pharmacies.

Table 4: RISK FACTORS ASSOCIATED WITH UNCONTROLLED HYPERTENSION

VARIABLE	CASES (n=47)	CONTROLS (n=47)	OR	95% CI
Exercise often	Yes	10	0.36	(0.1474-0.9036)*
	No	37		
Smoking	Yes	3	1	(0.1913-5.2278)
	No	44		
Eating fried food	Yes	10	2.77	(1.0185-7.5363)*
	No	37		
Forgetting to take tablets	Yes	12	1.12	(0.4378-9.8759)
	No	35		
Adding salt on the table	Yes	8	1.67	(0.2482-1.8565)
	No	39		
Experiencing side effects	Yes	15	3.2	(1.1168-9.1866)*
	No	32		
Having a treatment partner	Yes	9	0.06	(0.0234-0.1754)*
	No	38		
Co-morbidity	Yes	20	1	(0.4804-2.4806)
	No	27		

*Statistically significant**

Variables shown to be risk factors with a statistically significant association with uncontrolled hypertension were eating fried food (OR 2.77 95% CI 1.0185-7.5363), forgetting to take tablets (OR 1.12 95% CI 0.4378-9.8759) and experiencing side effects (OR 3.2 95% CI 1.1168-4.1866). Exercising often (OR 0.36 95% CI 0.1474-0.9036) and having a treatment partner (OR 0.06 95% CI 0.0234-0.1754) were shown to be protective of uncontrolled hypertension.

9.2 STRATIFIED ANALYSIS

To assess for possible confounding and effect modification, factors associated with uncontrolled hypertension were analysed. In a stratified analysis, factors independently associated with hypertension were sex, age and experiencing side effects.

Table 5: ASSOCIATION BETWEEN EATING TAKE AWAY FOOD AND HAVING UNCONTROLLED HYPERTENSION STRATIFIED BY SEX

VARIABLE	CASES	CONTROLS	STRATUM SPECIFIC (AOR 95% CI)	P-VALUE
Males	YES	6	3.5 (1.0395-7.1181)	0.045*
	NO	14		
Females	YES	5	1.45 (0.2284-9.2798)	0.691
	NO	22		

*Statistically significant**

The relationship between eating take away food and having uncontrolled hypertension was modified by sex. Males that eat takeaway food are 3.5 times more likely to have uncontrolled hypertension. This was statistically significant (AOR 3.5 95% CI 1.0395-7.1181), p-value 0.045.

Table 6: ASSOCIATION BETWEEN EXPERIENCING SIDE EFFECTS AND HAVING UNCONTROLLED HYPERTENSION STRATIFIED BY AGE

VARIABLE	CASES	CONTROLS	STRATUM SPECIFIC (AOR 95% CI)	P-VALUE
45-60YRS YES	2	1	0.38(0.0304-4.8677)	0.544
NO	16	14		
61+YRS YES	11	5	3.9 (1.2027-3.7865)	0.023*
NO	18	27		

The relationship between side effects and uncontrolled hypertension was modified by age. Patients who are 61yrs and above are more likely to have uncontrolled hypertension (AOR 3.9 95%CI 1.2027-3.7865). This was statistically significant with a p-value of 0.023.

Table 7: ASSOCIATION BETWEEN A TREATMENT PARTNER AND DEVELOPING UNCONTROLLED HYPERTENSION

VARIABLE	CASES	CONTROLS	STRATUM SPECIFIC (AOR 95% CI)	P-VALUE
45-60YRS YES	3	8	0.14 (0.0236-0.7865)	0.025*
NO	15	7		
61+YRS YES	8	15	0.46 (1.5629-2.5112)	0.127
NO	21	17		

*Statistically significant**

The relationship between adherence to medication and having uncontrolled hypertension was modified by age. Patients who are 60yrs and below with treatment partners are 0.14 times less likely to have uncontrolled hypertension. This was statistically significant with a p-value of 0.025.

10.0 DISCUSSION

Majority of respondents in this study were female 77% and males 23%. This concurs with results of a similar study done on correlates of hypertension on urban population in Zimbabwe in comparison to other African populations [15]. Findings of the study show that people who are married are 0.65 times less likely to have uncontrolled hypertension and those with treatment partners are 0.06 times less likely to have uncontrolled hypertension. This is supported by separate studies which revealed that people who are married or have a life partner are less likely to have uncontrolled hypertension [16]. Patients who have only attained primary education are 0.36 times less likely to have uncontrolled hypertension. This is similar to a study in Dar es Salaam which revealed that patients without formal education are more compliant to treatment [17]. The findings of the study established that those who receive health education are 0.42 times less likely to have uncontrolled hypertension. This was in line with a study done in Lupane District in Zimbabwe [14]. The results of the study showed that patients who are below 60years are 0.49 times less likely to have uncontrolled hypertension compared to patients who are older than 60years. Hypertension is significantly associated with increase in age [10, 13]. Patients who exercise regularly are 0.36 times less likely to have uncontrolled hypertension. The risks associated with uncontrolled hypertension can be reduced by engaging in regular exercise [18]. The study established that those who travel less than 2km to the clinic are 0.22 times less likely to have uncontrolled hypertension. Living far from the health facility leads to demotivation and defaulting amongst patients when they consider distance as a factor

[11]. The study indicated that those with poor knowledge and believe that hypertension is curable are 6.88 times more likely to have uncontrolled hypertension due to defaulting treatment. The association between uncontrolled hypertension and the belief that hypertension is curable was also found in a study done in Bangladesh [9]. When patients are not happy with services encountered at the clinic they may not comply with medication and become 4.6 times more likely to have uncontrolled hypertension as reflected in a study done in Brazil [13]. The study revealed that eating fried food makes people 2.77 times more likely to have uncontrolled hypertension. A case-control study in Gaza strip showed a strong association between eating fried food and having uncontrolled hypertension [10]. Respondents who had experienced side effects were shown to be 3.2 times more likely to have uncontrolled hypertension. This is similar to results of a study done in Chirumanzi District of Zimbabwe [11].

10.1 CONCLUSION

It was concluded that poor knowledge levels on hypertension, being unhappy with clinic services, eating take away food and experiencing side effects are predictors of uncontrolled hypertension in Gweru City. Factors which are protective are regular exercise, being married, having a treatment partner, being less than 60years of age, receiving health education, having only primary education and travelling less than 2km to the clinic.

10.2 RECOMMENDATIONS

It is recommended that the clinical staff educate the patients on the complications of hypertension if left uncontrolled. They should talk about the risk factors associated with hypertension so that they may understand what raises the blood pressure. The patients should be sensitized that the tablets work in combination with lifestyle modification methods such as diet and exercise. Hypertension medication should be subsidized so that they can be affordable to all patients. Ministry of Health should ensure that health facilities are supplied with blood pressure machines which are functional. Mass campaigns on hypertension should be rolled out to communities.

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