CLINICAL PRESENTATION, MANAGEMENT AND TREATMENT OUTCOMES OF PATIENTS WITH HYPERTENSIVE URGENCY AND EMERGENCY PRESENTING TO THE EMERGENCY DEPARTMENT OF MUHIMBILI NATIONAL HOSPITAL, DAR ES SALAAM, TANZANIA

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By

Patrick J. Shao

A dissertation to be submitted in (Partial) Fulfillment of the Requirement for the Degree of master of Medicine (Emergency Medicine) of Muhimbili University of Health and Allied Sciences

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CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled; ***Clinical presentation, management and treatment outcomes of patients with hypertensive urgency and emergency presenting to the Emergency Department of Muhimbili National Hospital, Dar es salaam, Tanzania***, in (partial) fulfillment of the requirements for the Degree of Master of Medicine (Emergency Medicine) of Muhimbili University of Health and Allied Sciences.

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Dr. Hendry R. Sawe

(Supervisor)

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Date

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Prof. Victor Mwafongo

(Co-Supervisor)

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Date

DECLARATION

AND

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I, **Patrick J. Shao**, declare that this **dissertation** is my own original work and that it has not been presented and will not be presented to any other university for a similar or any other degree award.

Signature: …… **Date:** ……

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I would like to thank **GOD** for his guidance during my time as a postgraduate student as well as during the preparation of this work.

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DEDICATION

I dedicate the work to my parents whom have been the reason behind my love for medicine. I also dedicate it to my lovely wife for her prayers, support and encouragement throughout my study period.

ABSTRACT

Background: Hypertensive crises are clinical syndromes grouped as hypertensive urgency and emergency, which occur as complications of untreated or inadequately treated hypertension. Emergency Departments (ED) cross the world are the first points of contact for patients with hypertensive crises. In Tanzania, there is general paucity of data on patients with hypertensive crisis presenting to ED and other acute intake areas.

Objective: To describe the profile and outcome of patients with hypertensive urgency and emergency presenting to the Emergency Medicine Department (EMD) of Muhimbili National Hospital (MNH).

Methodology: A descriptive cohort study of consecutive convenient patients presenting to the EMD-MNH over a four-month period. Structure data sheet was completed, documenting demographic information, clinical presentation, diagnostic evaluations, EMD treatment, outcome and disposition. Descriptive statistics is described as percentage, mean, median, and confidence intervals with P values of less than 0.05 are used to show the statistically significant differences.

Results: We screened 8002 patients and enrolled 203 (2.5%) patients, 53.2% were females; the overall median age was 55 years (IQR 21-96 years). 138 (68%) patients had hypertensive emergency and 65 (32%) patients had hypertensive urgency. The commonest presenting symptom in hypertensive emergency was altered mental status 74 (53.6%) while the commonest physical finding was low GCS 61 (44.2%). None of patients with hypertensive urgency had any of these symptoms or physical findings. Overall Cerebrovascular accident was the most common 63 (31%) final EMD diagnosis. 112 (81.2%) patients with hypertensive emergency were admitted and 3 died in EMD, while 24(36.9%) patients with urgency were admitted and none died at EMD. The overall in-hospital mortality rates for hypertensive emergency and urgency were 26.8% 95% CI(19.42,34.2%)vs.3.1% 95%CI (-1.12, 7.28%) respectively.

Conclusion: The prevalence of hypertensive crisis among adult patients presenting to EMD-MNH is around 1.3%, with no significant difference between patients with hypertensive emergency and urgency. Most patients were female, presented with altered mental status, headache, shortness of breath, and CVA was the most common EMD diagnosis. Most patients with hypertensive emergency were admitted, while most patients with urgency were discharged. The overall hospital mortality was nine times higher in patients with hypertensive emergency than those with hypertensive urgency.

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LIST OF ABBREVEATIONS

AMS	Altered Mental Status
BP	Blood Pressure
CT-Scan	Computerized Tomography Scans
DALYs	Disability Adjusted Life Years
EM	Emergency Medicine
EMD	Emergency Medicine Department
ICU	Intensive Care Unit
IV	Intravenous
JNC	Joint National Committee
MNH	Muhimbili National hospital
MUHAS	Muhimbili University of Health and Allied Sciences
WHO	World Health Organization

DEFINITION OF KEY TERMS

Hypertension: is an elevation of systolic blood pressure to 140mmHg and above or diastolic blood pressure of 90mmHg and above in two consecutive readings taken at least 6 hours apart(1).

Hypertensive crisis: clinical syndromes that occur as complications of untreated or inadequately treated hypertension, with the systolic blood pressure of 180mmHg and above and diastolic pressure of 110mmHg and above(2,3)

Hypertensive urgency: refers to severe hypertension with no signs of end organ damage(4)**.**

Hypertensive emergency: refers to severe hypertension with signs of end organ damage(4).

End organ damage: this refers to a spectrum of conditions whereby uncontrolled high blood pressure affects the functioning of other body organs such as brain, heart, kidneys.

Ischemic heart disease: also referred to as coronary heart disease, is present when a patient has one or more symptoms, signs, or complications from an inadequate supply of blood to the myocardium which includes chest pain, nausea, vomiting, sweating, difficulty in breathing, palpitations and cardiogenic shock.

Acute Renal failure: refers to an abrupt and usually reversible decline in the glomerular filtration rate (GFR). This results in an elevation of serum blood urea nitrogen (BUN), creatinine, and other metabolic waste products that are normally excreted by the kidney.

Pulmonary oedema: refers to the movement of excess fluid into the alveoli as a result of an alteration in one or more of Starling's forces.

Hypertensive retinopathy: is a condition in which retinal changes occur in association with arterial hypertension. The changes may include blood vessel alterations, hemorrhages, exudates, papilledema and retinal edema(5).

Cerebral vascular accident: refers to the sudden death of brain cells due to blood flow interruption to the brain(5).

CHAPTER ONE

1.1 BACKGROUND

Hypertension is one of the most common chronic non communicable medical condition affecting over 1 billion people globally(1). Traditionally defined as an elevation of systolic blood pressure (BP) to 140mmHg and above or diastolic blood pressure of 90mmHg and above, WHO estimates that 40% of adults aged above 25 years had hypertension by year 2008(1). Ischemic heart disease is a recognized complication of poorly controlled hypertension(6) and is the leading cause of death of death globally with over 7million deaths annually(1). In Africa hypertension remains to be one of the largest health concern with estimated prevalence of 46%. Early detection of hypertension have been shown to minimize the complications that arise from poorly controlled hypertension such as heart attack, heart failure, stroke, kidney failure, blindness and hypertensive crisis all of which carries significant morbidity and mortality(7).

Hypertensive crises are clinical syndromes that occur as complications of untreated or inadequately treated hypertension(2,3), and they are a frequent cause of Emergency Department and unplanned hospital visits worldwide(8). They are grouped as hypertensive urgency and emergency. Hypertensive emergency is present when severe hypertension is associated with acute end organ while hypertensive urgencies has been used for patients with severely elevated Blood Pressure without acute end-organ damage(4).The clinical differentiation between hypertensive emergencies and hypertensive urgencies depends on the presence of target organ damage, rather than the level of BP (4). Prior to the introduction of antihypertensive medications, approximately 7% of hypertensive patients had a hypertensive emergency(9). It is estimated that 1-2% of patients with hypertension will end up developing hypertensive emergency(9).

The management of hypertensive emergency involves aggressive means of lowering blood pressure using intravenous medications. Early interventions have shown to reduce the complications of high blood pressure which includes; myocardial ischemia, stroke, pulmonary edema, retinopathy and renal failure(7). The diagnosis of hypertensive crisis relies on

assessment of features of end organ damage that include assessment of kidney function by doing the serum creatinine and urea levels, doing Electrical cardiograph to look for features of ischemia, Brain CT-Scan for cerebral vascular accidents, fundoscopy to look for retinopathy and lung ultrasound to look for pulmonary edema(7,9).This is a big challenge in most of the African countries as most of the health facilities lacks the diagnostics workups hence late diagnosis and late interventions which eventually explain the high morbidity and mortality(10).

In Tanzania majority of the health facilities lack emergency units or equipped emergency rooms this poses a challenge as most of the patients with hypertensive emergencies end up being attended in clinics and outpatient departments or end up undiagnosed, this is a big setback in provision of early intervention and management(11).

The current standard of care for patients with hypertensive crisis recommends continuous blood pressure monitoring during the management(12). The Tanzania standard treatment guideline of July 2013 recommends immediate lowering of BP usually with parental therapy preferably Intravenous agents as infusion with strictly monitoring of hemodynamic in high care depended unit or intensive care unit in the hospital(12).
The need for continuous monitoring of blood pressure changes during the management of hypertensive crisis brings another concern in the resource limited settings such as Tanzania since there is a global lack of both human and facility resources(11). This results in poor monitoring of patients as most of them will be admitted in the wards and hence resulting in the increase in the morbidity and mortality(11).

In Tanzania, the proportion of patients with hypertensive crisis presenting to acute intake areas remains unknown, however relatively high prevalence of Hypertension in Tanzania is estimated to be over 25%(13–15).WHO country estimate for hypertension is 40% among male and female above 25 years(13). The growing burden of hypertension in Tanzania(13), compounded with poverty and lack of proper care, may be a strong precipitant to patient

presenting with hypertensive crisis in acute intake areas. Hypertensive crisis is becoming a common clinical problem in Tanzania, doctors and other healthcare providers of all types are likely to encounter patients with hypertensive urgencies and emergencies. There is limited data regarding the prevalence of hypertensive urgency and emergency in Tanzania.

The establishment of the Muhimbili National Hospital Emergency Medical Department in 2010 and Cardiac unit in 2013 has provided an opportunity in the standard management of critically ill patients including hypertensive crisis patients. The availability of point of care tests as well as the ability to provide continuous monitoring of these patients makes an early detection of hypertensive crises as well as initiation of early standard recommended management. The scarcity of human and facility resources creates a need for establishment of other centers that will be adequately equipped as far as management of critically ill patients. Emergency Medical Department offered a good opportunity for conduction of the study.

The study was looking at the epidemiological profile and clinical presentations of the patients presenting at the Muhimbili National Hospital Emergency Department with hypertensive urgency and emergency.

1.2 LITERATURE REVIEW

Hypertension is an increasingly important medical and public health issue worldwide. High blood pressure is estimated to have caused 7.6 million premature deaths (13.5% of the total) and contributed 92 million disability adjusted life years (DALYs) worldwide in 2001(16). In the year 2000, non-optimal blood pressure was estimated to have caused approximately 7.1 million deaths (12.8%) and contributed 64.3 million DALYs(17).

The prevalence of hypertensive crises in high income countries has been shown to be between 0.5- 3%. A study done by Martin et al in Brazil, showed that hypertensive crisis, accounted for 0.5% of all emergency cases, of which 60.4% were hypertensive urgencies and 39.6% were hypertensive emergencies(18). Another study done by Zampaglione et al showed that the prevalence of hypertensive urgency and emergency in Italy to be 3% of the total patients but approximately one fourth (27%) of the urgencies-emergencies. The study also showed that hypertensive urgencies are more frequent than hypertensive emergencies (76% and 24%, respectively). Although hypertensive emergencies represent only one fourth of hypertensive crises, they are by definition characterized by end-organ damage so that the medical staff devotes a lot of time and effort to these patients(19).

In low income countries, the prevalence is not clearly documented due to the Limited studies that have been conducted in Africa as far as hypertensive urgency and emergency is concerned, between 2003 and 2009 WHO conducted a STEPS survey in 20 African countries. A high rate of hypertension was reported in most countries, particularly among men. The prevalence ranges from 19.3% in Eritrea to 39.6% in Seychelles. The prevalence is for the adult population aged 18 years and above. In Africa, hypertension is usually more pronounced in males than in females. However, in a few countries there were higher levels of prevalence in women than men such as in Algeria 31.6% vs. 25.7 percent in 2003, Botswana 37.0% vs. 28.8% in 2006 and Mali 25.8% vs. 16.6%t in 2007, for women and men, respectively. The prevalence of hypertension varies by sex and residence. The urban population has a higher prevalence of hypertension than the rural population(20).These higher rates of hypertension

may go hand in hand with having higher prevalence of hypertension urgency and emergency which may results in higher morbidity and mortality.

A study done in Mwanza, Tanzania in 2014 by Mtui et al on the prevalence of hypertensive emergency among patients admitted at Bugando Medical Centre, Tanzania, the results showed that prevalence of hypertensive emergency was 12.7%, majority of patients had more than one emergency and the commonest type was hypertensive retinopathy (62.2%). Hypertensive emergency was significantly associated with female gender and age above 45 years. The mortality rate was 30%(21)

Patients with hypertensive urgency and emergency frequently visit the Emergency Departments. Preston RA et al did a study on Clinical presentation and management of patients with uncontrolled, severe hypertension it was found that; Of 2898 consecutive medical emergency department visits, there were 142 (4.9%) patient visits specifically for systolic blood pressure of 220 mm Hg or diastolic blood pressure of 120 mm Hg. Ninety-one of the 142 patient visits were for severe hypertension in the absence of acute target organ impact or neuroretinopathy.(8)

Regarding the clinical presentation, several studies conducted both low income countries as well as high income countries have shown the similarities in the clinical presentations. In a retrospective study done in Pakistan by Aysha et al on Hypertensive Crisis, Burden, Management, and Outcome at a Tertiary Care Center in Karachi it was shown that, headache was the most common presenting symptom, 35.7% , followed by dyspnea, 32.6%, chest pain, 21.4%, dizziness, 21.2%, vomiting, 17.3%, epistaxis, 5.2%, and neurologic deficit, 3.6%. The total length of stay for a patient with hypertensive crisis was found to be 2.46 days. Overall prevalence of complications was 47.7% in patients with hypertensive crisis. Acute renal failure was the most common complication with the prevalence of 41.3% followed by myocardial infarction 28.8% and pulmonary edema 18.26%. Stroke accounted for 6.5% of complications (22). In Brazil, Martin et al found that Ischemic stroke and acute pulmonary edema were the most common hypertensive emergencies, being in accordance with the most frequently found clinical manifestations of neurologic deficit and dyspnea. And for 1.7% of all

clinical emergencies, hypertensive urgency being more common than hypertensive emergency (18). An observational, descriptive, cross sectional study done in Hospital do prenda, Luanda in May 2011 by Garcia GM et al among patients admitted aged 45 years and below, where they were looking on the characteristics of patients admitted with hypertensive emergency, it was shown that, Hemorrhagic stroke was the most common presentation. There was a significant relationship between mode of presentation, age and in-hospital mortality (23).

In Tanzania, studies conducted have shown an increase in the burden of cerebrovascular diseases and ischemic heart diseases. *Peck RN et al* did a prospective study on Hypertension-related diseases as a common cause of hospital mortality in Tanzania, he found that non communicable diseases account for half of all deaths, admissions and hospital days at our Tanzanian hospital and hypertension-related diseases were the most common Non Communicable disease. Hypertension accounted for 34% of Non-communicable disease deaths and 15% of all deaths. Hypertension was the second most common cause of death overall and the leading cause of death in patients more than 50 years old. More than half of hypertension-related deaths occurred before retirement age. These findings have important implications for public health and medical education in sub-Saharan Africa, where in hypertension and related diseases have not traditionally been given a high priority(24). In another prospective community study Stroke incidence in rural and urban Tanzania: Walker et al found that Age-standardized stroke incidence rates in Hai were similar to those seen in high income countries. However, age-standardized incidence rates in Dar-es-Salaam were higher than seen in most studies in high income countries; this could be because of a difference in the prevalence of risk factors and emphasizes the importance of health screening at a community level (25).

The management of hypertensive urgency and emergency involves lowering of the blood pressure by the use of anti-hypertensives. For patients with hypertensive emergency, the blood pressure is lowered to the targeted BP immediately at the Emergency Department. Studies have shown differences in the approach of lowering the blood pressure between the high

income and low income countries. A study done by Preston RA et al showed that Eighty-nine (89) patients out of the ninety one (91) received acute drug therapy. Twenty-nine patients received two drugs, and 15 received three drugs. Sixty-eight patients (75%) received clonidine, and 15 (16.5%) received short-acting nifedipine despite widely published concerns about the safety of this practice. We found a wide variability of blood pressure response to treatment. The average decline in SBP was 50+/-31 mm Hg and the average decline of DBP was 34+/-20 mm Hg over 4.2+/-2.9 h. Forty-two patients (46%) had the SBP reduced to less than 160 mm Hg, and 46 patients (50%) the DBP to less than 100 mm Hg. Long-term management and follow-up were suboptimal. Of 74 patients discharged from the emergency room, 22 patients (30%) returned because of uncontrolled hypertension within an average of 33+/-28 days, 10 patients with hypertensive complications(8). It was concluded that, Severe hypertension continues to present an important and common problem. Physicians appear to place a strong emphasis on acute lowering of the blood pressure to near-normal levels. Patients are frequently lost to follow-up and have a very high rate of recurrent emergency department visits and hypertensive complications (8).

1.3 PROBLEM STATEMENT

Hypertension is a major health problem globally(17). Untreated hypertension can lead to complications such as Hypertensive urgency and emergency(9). In Tanzania, as most developing countries, hypertension is a rapidly growing medical burden(24), and this compounded with poverty and poor literacy, many people live unrecognized and presents to acute intake areas with hypertensive crisis and other complications associated with hypertension. Clinical epidemiology from hypertensive crises in Tanzania is still not well documented.

Hypertensive urgency and emergency has a significant number of Emergency Department visits as well as unplanned hospital visits globally(8). Since the opening of the Emergency Medical Department, Muhimbili National Hospital in 2010 patients with hypertensive urgency and emergency among other groups of patients are also attended however the clinical epidemiological profile of these patients is yet to be established.

Despite the increase in the number of patients presenting with complications of hypertension and hypertensive emergencies there is paucity of data on epidemiological profile and clinical presentation of hypertensive emergency and urgency. This poses a challenge in both management and resource allocation.

1.4 RATIONALE

This study focused on looking on the prevalence and characteristics of patients with hypertensive urgency and hypertensive emergency seen at Muhimbili National Hospital Emergency Department. Muhimbili National Hospital as a tertiary receives higher number of hypertensive patients who usually have urgency or emergency.

The results of this study will give a picture of the epidemiological and clinical presentation of hypertensive urgency and emergency, this helps in development of protocols for management of hypertensive urgency and emergency and primary and secondary prevention of hypertensive crises and hence setting priorities on medications and equipment necessary for the management in resource limited settings such as Tanzania. Also it provided the missing information on the common epidemiological profile as well as clinical presentations of hypertensive urgency and emergency in Sub Saharan Africa.

1.5 RESEARCH QUESTION

- What are the clinical presentations, Emergency Department management strategies and early outcome of patients with hypertensive urgency and hypertensive emergency seen at Muhimbili National Hospital Emergency Department?

1.6 OBJECTIVES

1.6.1 Aim

To describe the clinical presentation, management and treatment outcomes of patients with of hypertensive urgency and hypertensive emergency, presenting to the Emergency Department of Muhimbili National Hospital Emergency Department.

1.6.2 Specific Objectives

- To determine the prevalence of hypertensive urgency and emergency among patients seen at EMD, MNH.
- To characterize the risk factors and clinical presentations for hypertensive urgency and emergency.
- To describe the different treatment options and final disposition of patients presenting with hypertensive urgency and emergency.
- To describe the 72 hours clinical progression as measured by blood pressure in patients with hypertensive urgency and emergency.
- To describe the in-hospital mortality as an outcome of patients presenting with hypertensive urgency and emergency.
- To describe the predictors of in hospital mortality among patients with hypertensive urgency and emergency.

CHAPTER TWO

2.1 METHODOLOGY

2.2 Study design

This was a prospective descriptive cohort study of adult patients aged 18 years and above presenting to Emergency Medicine Department of Muhimbili National Hospital and meeting criteria for hypertensive emergency and Urgency, between September 2015 and December 2015.

2.3 Study area

This study was done at the Emergency Medicine Department of Muhimbili National Hospital. Muhimbili National Hospital is a tertiary hospital located in Dar es salaam, Tanzania. It has a bed capacity of 1,500. Emergency Medicine Department is part of the Muhimbili National Hospital and it is the first entry to the hospital for most of the patients (26).

The department is staffed by interns (fresh graduates from medical school), Registrars (registered medical practitioners who are 1 to 3 years post internship) and Emergency medicine residents (all had already worked as registrars before joining the 3-year residency program). All the doctors work under supervision and training from the locally trained emergency physicians with support and consultation from a group of board-certified emergency physicians from the USA, Canada, and South Africa.

The department serves a high-acuity patient population from within Dar es Salaam and receives referral patients from throughout the country. Of the 36000 patients seen each year, only 20% are discharged home from the EMD. The top five categories of complaints seen in the department are trauma, infectious, mental health, neoplasm and pregnancy related issues. (27)

2.4 Target population

The target population was all individuals with hypertensive urgency and emergency seeking health services in tertiary hospitals

2.5 Accessible population

All patients with hypertensive urgency and emergency attending Emergency Medicine department, Muhimbili National Hospital

2.6 Study population

This included all patients with hypertensive urgency and emergency who are attended at the Emergency Medicine Department, Muhimbili National Hospital who were included in the study.

2.7 Sampling design

All patients with systolic blood pressure of 180mmHg and above or diastolic pressure of 110mmHg and above were involved in the study and were interviewed. A set of questions in the questionnaire were given to the patient to fill.

2.8 The Inclusion Criteria included

Adult patient aged 18 years and above

Known/ not known to have hypertension presenting with hypertensive urgency and emergency.

Hypertensive emergencies will include all cases with systolic blood pressure of 180mmHg and above or diastolic pressure of 110mmHg and above associated with one or more of the following types of acute or ongoing end-organ damage

- Hypertensive encephalopathy
- Acute pulmonary edema
- Congestive heart failure
- Acute myocardial infarction or unstable angina pectoris
- Progressive renal insufficiency or significantly reduced urine output

2.9 The Exclusion criteria included

Lack of consent

2.10 Sample size estimation

A study done by Zampaglione et al showed that the prevalence of hypertensive urgency and emergency in Italy 3% of the total patients, another study done by Mtui et al conducted a study in Mwanza Tanzania, the prevalence of hypertensive emergency among patients admitted at Bugando Medical Centre, Tanzania was 12.7% using the formula

$$N = \frac{Z^2P(1-P)}{d^2}$$

Where:

N- The minimum number of patients required to be enrolled in the study

Z- Score for confidence interval

P- Prevalence of hypertensive urgency and emergency

d- Standard of error

Using the prevalence of 12.7% from a 2014 study by Mtui et al in Bugando, Z of 1.96 (95% confidence interval) and standard error of 5%

$$N = \frac{1.96^2 \text{ X } 0.127(1-0.127)}{0.05^2}$$

The sample size was estimated to be 170. A total of 203 individuals were enrolled and analyzed.

2.11 Patient recruitment and data collection technique

Consecutive sampling was used during recruitment of patients. All patients meeting the inclusion criteria at EMD were offered a chance to participate in the study. After obtaining a verbal consent patients' chart were reviewed. The information obtained was filled in a structured questionnaire by the investigator. Patients were followed up in the wards to collect

information on any other management that has been instituted. After discharge or death of the patient the length of stay and mortality were also recorded in the respective participant's questionnaire.

Measurements

The conditions were diagnosed clinically and by diagnostic tests such as blood chemistry for serum creatinine and Urea, ECG, computed tomography, and ultrasound imaging as appropriate. In the absence of end-organ damage all other hypertensive crises will be considered by exclusion to be hypertensive urgencies.

Blood pressure will be measured using the digital blood pressure machine while at the emergency department and there after blood pressure tracking for 72 hours will be done in the wards where these patients will be disposed. All subjects will be given informed consent to participate in the study.

2.12 Electronic and Data Analysis

Patient descriptive characteristics were reported, including means, medians, and standard deviation. The prevalence of patients with hypertensive urgency and emergency presenting to the EMD was calculated from the enrolled hypertensive urgency and emergency patients divided by the total number of patients who will visit the EMD during the study period. The length of hospital stay was calculated as a median of the total number of days of all patients were admitted. In hospital mortality was estimated from the number of patients who died divided by the total number of patients seen.

2.13 Ethical clearance

All patients were asked for consent to participate in the study. For those patients who were unable to consent because of the illness, the next of kin were asked to consent on their behalf. Only those who consented were involved on the study. It was a voluntary and the management

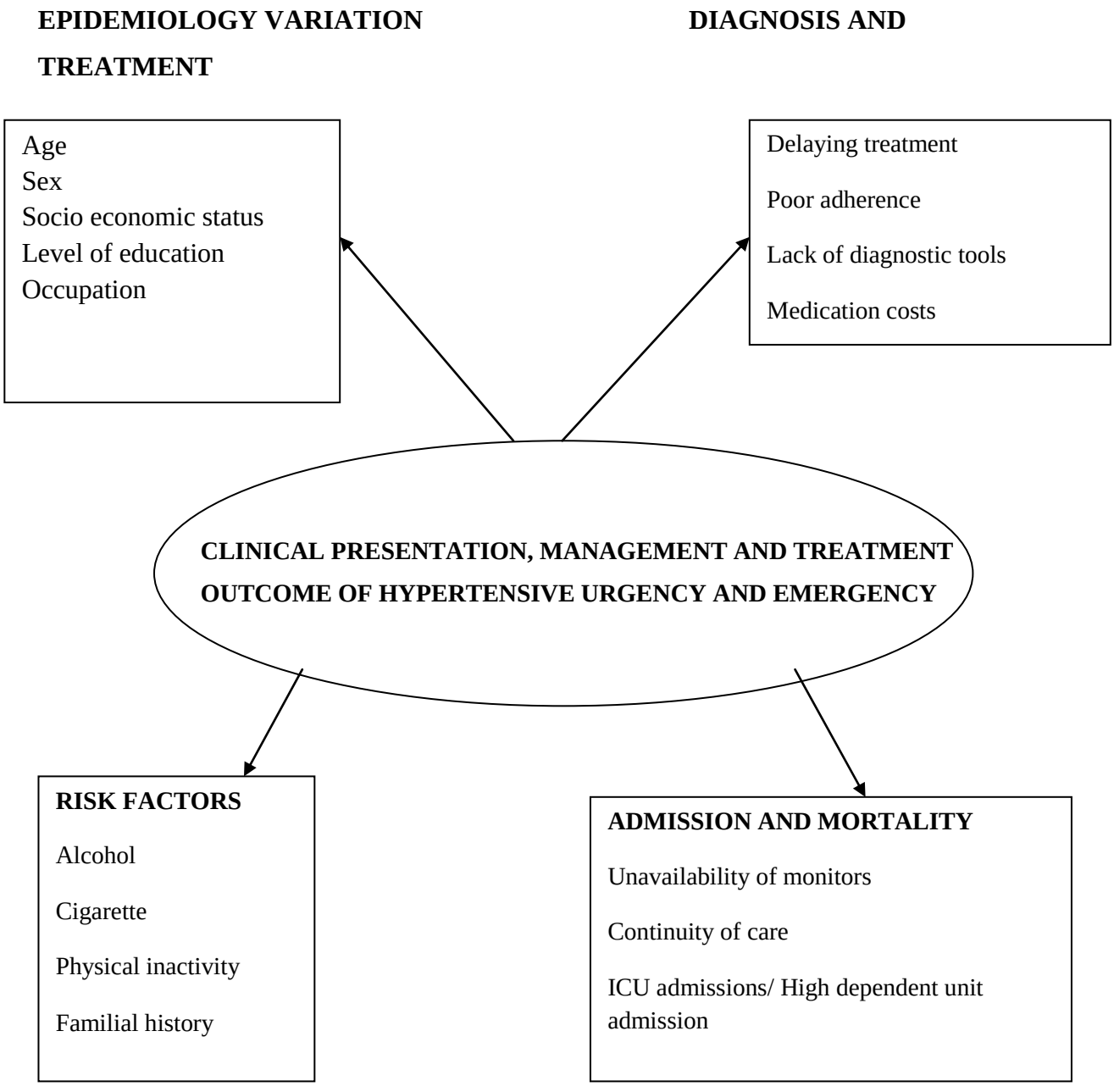
given for those who didn’t consent was not different from those who consented. No harm was done to the participants.

2.14 Study mitigations and Limitations

Some patients presented with coexisting medical conditions which made identification of hypertensive crisis cases difficult.

Some patients were unable to afford doing some investigations like CT scan and serum creatinine and urea while others couldn’t afford the investigations on time as a result, some patients had to stay longer in the wards while waiting to do the investigations. The social welfare department could only assist few patients to do the required investigations.

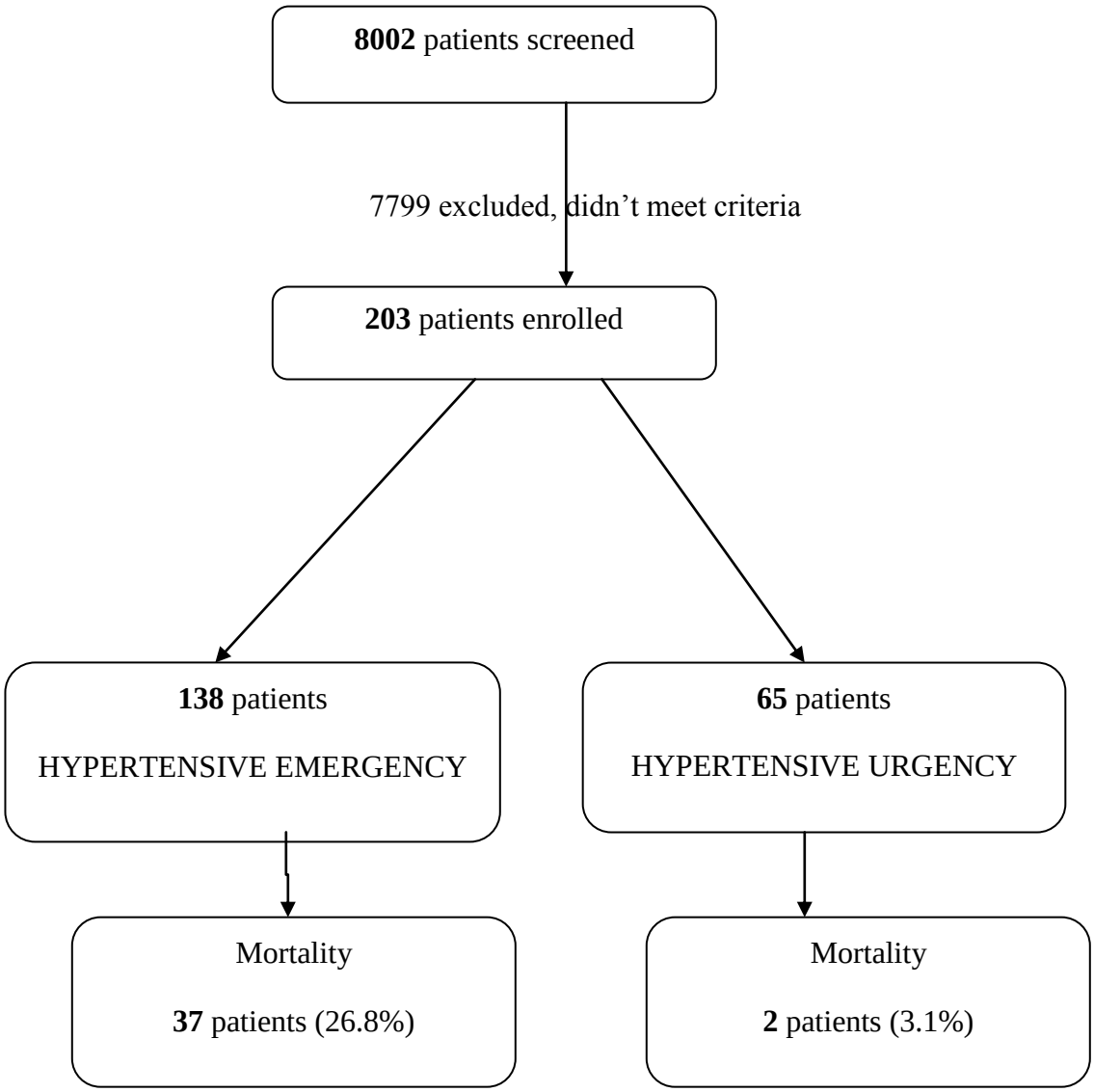
CONCEPTUAL FRAMEWORK



The clinical presentation, management and treatment outcomes of patients with hypertensive urgency and emergency varies as a result of several factors ranging from epidemiological variations and risk factors such as alcohol and cigarette use, physical inactivity and family history. Unavailability of medications as well as diagnostic tools results into higher numbers of ICU admissions as well as increased mortality.

CHAPTER THREE

3.0 RESULTS



We screened 8002 patients in 4 months; of the 203 patients enrolled 138 patients (67.98%) had hypertensive emergencies. The median age was 55(IQR 22). Majorities were females, married, had primary school education and were unemployed.

Table 1: Demographic Characteristics

	Overall	**Emergency**	**Urgency**	**p-value**
Sex n=203(100%)				
Male	95(46.8)	62(44.9)	33(50.8)	0.44
Female	108(53.2)	76(55.1)	32(49.2)	
Age (years) n=203(100%)				
Median (IQR) years	**55 (45-67)**	**54 (43-67)**	**60(49.5-67)**	
				0.25
Marital status n=203(100%)				
Single	17(8.4)	9(6.5)	8(12.3)	0.28
Married	146(71.9)	98(71.0)	48(73.8)	
Divorced	14(6.9)	10(7.3)	4(6.2)	
Widow	26(12.8)	21(15.2)	5(7.7)	
Level of Education n=203(100%)				
University	21(10.3)	14(10.2)	7(10.8)	
A level	3(1.5)	1(0.7)	2(3.1)	
O level	45(22.2)	34(24.6)	11(16.9)	
Primary	111(54.7)	74(53.6)	37(56.9)	
None	13(6.4)	10(7.3)	5(7.7)	
Others	10(4.9)	5(3.6)	3(4.6)	
Employment n=203(100%)				
Government	31(15.3)	24(17.4)	7(10.8)	
Private	17(8.4)	13(9.4)	4(6.1)	
Self	60(29.5)	39(28.3)	21(32.3)	
Unemployed	95(46.8)	62(44.9)	33(50.8)	
SBP n=203(100%)				
Mean	**188(SD 27)**	**190(SD 30)**	**184(SD 19)**	0.076

Risk Factors

Out of the 202 patients, about one fifth were current alcohol users, over a quarter reported past history of alcohol use. Less than 10% were current cigarette smokers. Over three quarter of individuals reported not to be involved in any type of physical exercise. Past history of hypertension was reported in 80.2% patients of which nearly half were not on regular medications and about two third were not on regular clinic visit.

Table 2: Risk Factors

Alcohol n=202(99.5%)			
	Overall (%)	Emergency (%)	Urgency (%)
Current alcohol use	44(21.8)	33(24.1)	11(16.9)
Past Alcohol use	54(26.7)	33(24.1)	21(32.3)
Cigarette n=202(99.5%)			
Current cigarette smoking	15(7.4)	12(8.8)	3(4.6)
Past history of cigarette use	54(26.7)	33(24.1)	21(32.3)
Type of work n=203(100%)			
Farmer	36(17.7)	21(15.2)	15(23.1)
Housewife	37(18.2)	25(18.1)	12(18.5)
Petty trader	18(8.9)	15(10.9)	03(4.6)
Business	27(13.3)	17(12.3)	10(15.4)
frequently mentioned			
Exercises n=200(98.5%)			
Performing exercises	41(20.5)	25(18.5)	16(24.6)
Type			
Jumping	14(34.1)	6(24)	08(50)
Walking	12(29.3)	7(28)	05(31.2)
Frequency			
Daily	16(39)	9(36)	07(43.8)
2 to 3/week	12(29.3)	8(32)	04(25)
Once	9(22)	6(24)	03(18.8)
Hypertension n=202(99.5%)			
Hypertension history	162(80.2)	114(83.2)	48(73.8)
Regular medication use	82(59)	60(58.8)	22(59.5)
Regular clinic visit	55(36.4)	39(36.4)	16(36.4)
Stop medication	67(56.3)	51(60)	16(47.1)

Clinical presentations

The overall mean systolic blood pressure was 188; mean heart rate 93, respiratory rate of 23 and SpO_2 of 98% RA. AMS and headache were the two commonest clinical presentations in the hypertensive emergency group while body weakness and abdominal pain were the commonest complaints in the hypertensive urgency group.

Table 3: Clinical presentations

	Overall		Emergency		Urgency
	Abnormal (n)	N	Abnormal (n)	N	Abnormal (n)
Tachypnoea≥20 **N= 196**	150 (76.5%CI, 70.56-82.44%)	132	107 (81.1%CI, 74.42-87.78%)	64	43 (67.2%CI, 55.7-78.7%)
Tachycardia≥120 **N= 201**	17 (8.5%CI, 4.64-12.36%)	136	14 (10.3%CI, 5.19-15.41%)	65	3 (4.6%CI, -0.49-9.69%)
RBG≤3 **N= 86**	3 (3.5%CI, -0.38-7.38%)	72	3 (4.2%CI, -0.43-8.83%)	14	0
SP02≤90 **N= 201**	10 (5%CI, 1.99-8.01%)	136	10 (7.4%CI, 3-11.8%)	65	0
Temperature≥38°c **N= 203**	7 (3.4%CI, 0.91-5.89%)	138	7 (5.1%CI, 1.43-8.77%)	56	0

Chief complain:

	Overall	Emergency	Urgency
	N (%)	N (%)	Freq %
AMS	74 (36.5%CI, 29.88-43.12%)	74 (53.6%CI, 45.28-61.92%)	0
Headache	71 (35%CI, 28.44-41.56%)	71 (51.4%CI, 43.06-59.74%)	0
Chest pain	26 (12.9%CI, 8.29-17.51%)	26 (19%CI, 12.45-25.55%)	0
Blurred vision*	21 (10.3%CI, 6.12-14.48%)	20 (14.5%CI, 8.63-20.37%)	01 (1.5%CI, -1.45-4.45%)
Decreased urine output	11 (5.4%CI, 2.29-8.51%)	11 (8%CI, 3.47-12.53%)	0
Shortness of Breath[†]	47 (23.2%CI, 17.39-29.01%)	46 (33.3%CI, 25.44-41.16%)	01 (1.5%CI, -1.45-4.45%)
Others			

**The patient in the urgency group had EM final diagnosis of refractive error*

[†]*patient in the urgency group had an EM final diagnosis of severe pneumonia*

Physical findings:

	Overall	**Emergency**	**Urgency**
	N(%)	N (%)	Freq (%)
Compromised airway	4	4	0
	(1.97%CI, 0.06-3.88%)	(2.9%CI, 0.1-5.7%)	
Crepitations	16	16	0
	(7.9%CI, 4.19-11.61%)	(11.6%CI, 6.26-16.94%)	
Cold extremities	3	3	0
	(1.5%CI, -0.17-3.17%)	(2.2%CI, -0.25-4.65%)	
GCS≤14	61	61	0
	(30%CI, 23.7-36.3%)	(44.2%CI, 35.91-52.49%)	
Focal deficit	46	44	2
	(22.7%CI, 16.94-28.46%)	(31.9%CI, 24.12-39.68%)	(3.1%CI, -1.11-7.31%)
Lowerlimb swelling	10	9	1
	(4.9%CI, 1.93-7.87%)	(6.5%CI, 2.39-10.61%)	(1.5%CI, -1.45-4.45%)
Pallor	5	4	1
	(2.5%CI, 0.35-4.65%)	(2.9%CI, 0.1-5.7%)	(1.5%CI, -1.45-4.45%)

Disposition

Out of the 138 patients with hypertensive emergency, 16.7% were discharged at EMD, 81.2% were admitted, half at the neurology unit and three patients died at EMD. For the hypertensive emergency group, over two third were discharged. None died at EMD.

Table 4: Disposition n=203(100%)

	Overall		Emergency		**U**rgency	
WARD	Freq	%	Freq	%	Freq	%
Cardiac	17	8.4	14	10.1	3	4.6
CCU	1	0.5	1	0.7	0	0
Discharged	64	31.5	23	16.7	41	63.1
Neurology	73	35.9	69	50	4	6.2
Medical	45	22.2	28	20.3	17	26.2
Died at EMD	3	1.5	3	2.2	0	0
Total	203	100	138	100	65	100

Medications

IV Antihypertensive was administered in 41(29.7%) of patients with hypertensive emergency. 84(60.9%) patients were not given any antihypertensive medication. 7(10.8%) Out of the 65 patients with hypertensive urgency were given IV antihypertensive. The IV antihypertensives commonly used were labetalol, nitroglycerine and hydrallazine respectively. The sublingual antihypertensive used was sublingual nitroglycerine

Table 5: Medications

	Overall	**Emergency**	**Urgency**
	N 190(%)	N 148(%)	N 42(%)
Antihypertensive			
Oral	3 (1.6%CI, -0.18-3.38%)	3 (2.0%CI, -0.26-4.26%)	0
Sublingual*	12 (6.3%CI, 2.85-9.75%)	10 (6.8%CI, 2.74-10.86%)	2 (4.8%CI, -1.66-11.26%)
IV	48 (25.3%CI, 19.12-31.48%)	41 (27.7%CI, 20.49-34.91%)	7 (16.7%CI, 5.42-27.98%)
Morphine	10 (5.3%CI, 2.11-8.49%)	7 (4.7%CI, 1.29-8.11%)	3 (7.1%CI, -0.67-14.87%)
Asprin	2 (1.0%CI, -0.41-2.41%)	2 (1.4%CI, -0.49-3.29%)	0
Antibiotics	40 (21.0%CI, 15.21-26.79%)	31 (20.9%CI, 14.35-27.45%)	9 (21.4%CI, 9-33.8%)
Fluids	37 (19.5%CI, 13.87-25.13%)	25 (16.9%CI, 10.86-22.94%)	12 (28.6%CI, 14.93-42.27%)
Others	38 (20%CI, 14.31-25.69%)	29 (19.6%CI, 13.2-26%)	9 (21.4%CI, 9-33.8%)

*Sublingual medication used was Nitroglycerine

Table 6: Final EM diagnosis:

	Overall		**Emergency**		**Urgency**	
	Freq	%	Freq	%	Freq	%
CVA	63	31.0	63	45.7	0	0
Hypertension	76	37.4	56	40.6	20	30.8
Heart failure	15	7.4	11	8.0	4	6.2
Renal failure	25	12.3	21	15.2	4	6.2
Hypertensive emergency	20	9.9	20	14.5	0	0
Hypertensive urgency	9	4.4	6	4.3	3	4.6
MI	6	3.0	6	4.3	0	0
Pulmonary oedema	11	5.4	11	8.0	0	0
Diabetic Mellitus	20	9.9	16	11.6	4	6.2

Blood Pressure Progression

Overall there was a drop in the mean arterial pressure (MAP) for the patients with hypertensive emergency (137 to 113) and urgency (131 to 120) who were admitted in the ward. The drop was more pronounced during the first 24 hours of admission.

Table 7: Blood pressure progression

	All Patients			
	EMD	**24hrs**	**48hrs**	**72hrs**
	n=203	**n=92**	**n=83**	**n=71**
Median SBP(IQR)	185 (172.5-200.5)	160(138.75-180)	150(129.5-170)	150(138.5-170)
Median DBP(IQR)	113(106-122.5)	90(80-100)	80(70-100)	80(70-92.5)
Median MAP (IQR)	134 (127-145.5)	113 (97.5-128.5)	103 (90-120)	103(93.3-117)
Patients with Hypertensive Emergency				
	EMD	**24hrs**	**48hrs**	**72hrs**
	n=138	**n=73**	**n=66**	**n=57**
Median SBP(IQR)	185(173.25-207.75)	160(140-180)	150(130-170)	150(140-170)
Median DBP(IQR)	115(108.25-126)	90(80-100)	80(70-97.5)	80(70-90)
Median MAP (IQR)	137 (127.3-149.7)	113 (98.3-126.7)	103(90-120)	103(96.5-112.8)
Patients with Hypertensive Urgency				
	EMD	**24hrs**	**48hrs**	**72hrs**
	N=65	**N=19**	**N=17**	**N=14**
Median SBP(IQR)	185(172-194)	170(143.5-186)	160(129-180)	150(124-180)
Median DBP(IQR)	110(96-116)	90(80-105)	80(70-100)	80(70-110)
Median MAP (IQR)	131 (126-137.3)	120(96.7-136.7)	103(93.3-130)	97(90-133.3)

OUTCOME

The overall in hospital mortality for patients with hypertensive emergency was 26.8% while that of hypertensive urgency was 3.1%

Table 8: Overall Mortality for the Study Population

	Emergency n=138	**Urgency n=65**	**Overall n=203**
STILL ADMITTED	02	02	04
	(1.5%CI, -0.53-3.53%)	(3.1%CI, -1.11-7.31%)	(2.0%CI, 0.07-3.93%)
DISCHARGED	98	60	158
	(71%CI, 63.43-78.57%)	(92.3%CI, 85.82-98.78%)	(77.8%CI, 72.08-83.52%)
DIED	37	02	39
	(26.8%CI, 19.41-34.19%)	(3.1%CI, -1.11-7.31%)	(19.2%CI, 13.78-24.62%)
ABSCONDED	01	01	02
	(0.7%CI, -0.69-2.09%)	(1.5%CI, -1.45-4.45%)	(1.0%CI, -0.37-2.37%)

*The overall in-hospital mortality rates for hypertensive emergency and urgency were 26.8% 95% CI(19.42,34.2%)vs.3.1% 95%CI (-1.12, 7.28%)respectively.

CHAPTER FOUR

4.1 DISCUSSION

Hypertensive crisis poses a unique challenge in diagnosis and management, especially in low-income countries like Tanzania(28).We report the findings of adults patients who were seen at our Emergency Medical Department of Muhimbili National Hospital presenting with hypertensive emergency or Urgency where a total of 138 patients with hypertensive emergency and 65 patients with hypertensive urgency were identified. In this study females were slightly predominant in our study population.

In Tanzania, there are limited in-hospital and intensive care unit (ICU) studies reporting on hypertensive crisis, all of which have reported a much higher prevalence (21), than the one reported in this study. To the best of our knowledge this is the first descriptive study reporting on the prevalence of hypertensive crisis in an emergency department (ED) population in Tanzania. This is lower than what has been reported in most Sub Saharan Africa (SSA) countries (29), in which studies have estimated the prevalence to be between 0.5% and 4%(19,29).

Most of our patients self-reported the risk factors for cardiovascular disease, including regular consumption of alcohol, cigarette smoking, and lack of physical exercises; sedentary work and poor compliance to antihypertensive medications have been associated with hypertensive emergency and urgency. These findings are similar to observations made in other Sub Saharan countries(29–31) in which, obesity, history of hypertension and low socio economic state compliant with drug treatment and health education were mentioned as the factors associated with hypertensive emergency and urgency.

The clinical presentation of hypertensive emergency and urgency patients vary widely depending on the underlying illnesses(19,22). We found that nearly half of patients with hypertensive emergency presented with altered mental status and headache as their initial complaints, suggesting the likely hood of a cerebrovascular accident (CVA), as the underlying condition. On the other hand, patients with hypertensive urgency presents mostly with

generalized body weakness and abdominal pain. These symptoms may be indicating a wide range of differentials(32,33) and highlight the need for thorough evaluation prior to disposition.

The commonest physical finding among patients with hypertensive emergency was low Glasgow Coma Score followed by focal deficit and lung crepitations, this is a similar finding that has also been reported in other studies in Europe and Sub Saharan Africa(19,23,29).For those with urgency lower limb swelling and pallor were among the physical findings identified.

We observed that, most of the patients did not receive the recommended investigations as depicted by their clinical presentations and physical findings. Example, 20 patients received CT evaluation as part of the care, we suspect this may be partly because of minimal number of physicians ordering the investigation as well as inability of the patients to afford the CT scan. Less than 100 patients received ECG an important evaluation tool in patients with chest pain, despite being recommended in our guideline, this is number is smaller than the expected and it may be due to inability of the patients to pay as well as physicians not adhering to the protocols available.

The use of intravenous antihypertensive in the acute management of hypertensive emergency is recommended standard treatment(7,34–36), while oral antihypertensive and appropriate investigation and follow-up are recommended in those patients with hypertensive urgency(35). In this study, nearly two-third of the patients with EMD diagnosis of hypertensive emergency did not receive any antihypertensive, we think that this can be due to number of reasons, amongst which include: lack of appropriate intravenous medication and providers hesitancy in rapid lowering of blood pressure, this warrants a compliance type of study to evaluate providers compliance to hypertensive crisis protocols, since the department have had hypertensive crisis protocol available for over 3 years, prior to this study. Incidentally, we found that, seven patients with urgency were given intravenous antihypertensive and two were given sublingual nitroglycerine, interesting finding that goes against available departmental protocol which clearly limits the use of sublingual and intravenous antihypertensive to

hypertensive emergency patients, highlighting the need to re-enforcing the need for a compliance study.

Cerebrovascular accident was the top EMD diagnosis, followed by diabetes Mellitus, Renal failure, heart failure, pulmonary oedema and Myocardial ischemia, Only one patient with hypertensive emergency was admitted to intensive care unit (ICU), this observation indicates a very low rate that is contrary to recommendations of international guidelines, which dictates the need for admission to ICU/HDU in patients with hypertensive emergencies(3,4,35), and studies have shown improved outcomes with such practice(35). This observation, might have been caused by a significant shortage of intensive care unit (ICU) facilities at Muhimbili, as reported in previous studies(11,37), and at the time of this study, there were only five beds accessible to all 1500 patients admitted at the hospital. Of concern, was the 23 (17%) patients with hypertensive emergency which were discharged from EMD, and upon close sub analysis, we noted that nearly all of these patient received a cardiac consult while in EMD, and a consultative discussion on benefits of admission versus discharge is usually done, with most of time patients receiving oral medications, and ask to follow-up in cardiac clinic. These results clearly indicates the need to re-evaluate the existing interdepartmental standard operating procedures and also the need to follow up study to assess the impact of the current practice, in order to ensure optimization of patient care and outcomes.

In those patients who were admitted, and had their blood pressure monitored, we observed a significant drop in the mean arterial pressure (MAP) up-to 48 hrs post admission after which the MAP remained constant in the hypertensive emergency group. This observation follows similar trend to an observation in a study done by Merlo C where there was a declined in SBP initially and eventually started to increase(38).

The high in hospital mortality among hypertensive emergency group might be attributed to a number of factors including the severity of illnesses, existing co morbidities but most importantly the in-ability to provide advanced care to the critically ill-patients as a result of lack of resources(37,39). For those patients with hypertensive urgency who died in hospital, all had severe co-morbidities namely: sepsis, hypokalemia and bladder tumor.

In the group of patients with hypertensive urgency who survived to discharge, two-thirds were counseled and informed they were told to be hypertensive on discharge, however over 60% were not prescribed any antihypertensive medications after discharge. Further follow-up on these patients, we found that, nearly two thirds didn't know how long they are supposed to be on anti-hypertensive and over forty percent were not booked for clinic or informed to attend any follow up clinic. On the other hand, those patients with hypertensive emergency, majority were informed of their diagnosis on discharge and were on antihypertensive medications, however over a quarter didn’t know for how long they should use the medications and one-third didn’t know when they should come for cardiac clinic follow-up.

CHAPTER FIVE

5.1 CONCLUSION

The prevalence of hypertensive crisis among adult patients presenting to EMD-MNH is around 1.3%, with no significant difference between patients with hypertensive emergency and urgency. Most patients were female, presented with altered mental status, headache, shortness of breath, and CVA was the most common EMD diagnosis. Most patients with hypertensive emergency were admitted, while most patients with urgency were discharged. The overall hospital mortality was nine times higher in patients with hypertensive emergency than those with hypertensive urgency.

5.2 RECOMMENDATION

There is a need to increase the focus towards having more intensive care units and high dependent units. This will help in improvement in the quality of care once the patients are disposed from the emergency department and hence reduced the morbidity and mortality.

Increase awareness about the hypertensive urgency and emergency. This can be done during the clinic visits as majority of the patients are known patients with hypertension. Patients should be informed about the risk factors, medication use and complication of untreated hypertension.

For the patients that are discharged with hypertensive urgency from the Emergency Medical Department, emphasis should be kept on follow up cardiology clinic as well as use of antihypertensive.

Adherence to the protocols in the management of hypertensive emergency and urgency is essential. This will minimize the number of patients who fits the criteria of receiving antihypertensive who end up not receiving them.

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APPENDICES

Appendix 1: Consent form (English version)

ID NO……..

PERMISSION TO TAKE PART IN RESEARCH

Study title: **CLINICAL EPIDEMIOLOGY OF HYPERTENSIVE URGENCY AND EMERGENCY, THERAPEUTIC INTERVENTIONS AND 72 HOURS BLOOD PRESSURE MEASUREMENT AMONG PATIENTS PRESENTING WITH HYPERTENSIVE URGENCY AND EMERGENCY TO THE EMERGENCY DEPARTMENT OF MUHIMBILI NATIONAL HOSPITAL, DAR ES SALAAM, TANZANIA**

Introduction:

My name is **Patrick John Shao**, I would like to ask your permission to take part in the study I am conducting on the clinical epidemiological of hypertensive urgency and emergency, therapeutic interventions and 72 hours blood pressure measurement among patients with hypertensive urgency and emergency presenting to the Emergency Department of Muhimbili National Hospital, Dar es salaam.

Your decision whether or not to take part will have no effect on the quality of your medical care. Please ask questions if there is anything about this study you do not understand.

Purpose of this study:

The purpose of this study is to determine the prevalence and clinical-epidemiology of patients with hypertensive urgency and hypertensive emergency seen at Muhimbili National hospital Emergency department

Benefit from taking part in this study:

Being a volunteer, you might not personally benefit from being in this research study. However, this study will help set protocols among other useful outcomes that will be used in the later management of patients.

What does this study involve?

This study will involve measurements of vital signs; blood pressure, being interviewed by filling of the questionnaire, taking laboratory tests and conducting radiological investigations.

Options if you do not want to take part in this study:

Your participation in this study is completely voluntary. You will continue to receive regular care at the department regardless of whether you do / do not participate in the study.

Risks involved with taking part in this study:

This study will not interfere with daily routine of management of patients with different medical conditions that's including your medical condition.

Leaving the study: You may choose to stop taking part in this study at any time for any reason. If you decide to stop taking part, it will have no effect on your medical care.

New Information: New information related to this study will be made known to you when it becomes available.

Privacy protection:

The information you provide as well as the test results will be kept strictly confidential. The study information will be stored in protected computer files and in paper records stored in locked filing cabinets. Only study staff will have access to the information.

The information will be maintained indefinitely.

Who may use or see your health information:

By signing this form, you allow the research team to use your health information and give it to only those involved in the research.

Decision not to give permission to use and share your personal healthInformation:

If you do not allow use of your health information for this study, you may not take part in this study.

If you choose to stop taking part in this study, you may cancel permission for the use of your health information. You should let the researcher know if you want to cancel your permission. The study team will assist you in putting your wishes in writing. Information collected for the study before your permission is cancelled will continue to be used in the research.

Whom should you call about this study?

If you have questions about this study or need to report a study related injury, you can call your doctor or the research director for this study: **Dr. Patrick Shao** (0716 611022). If you have questions about your rights as a participant, you may contact, **Professor Mainen Moshi, Director of Publications and Research**, M**uhimbili University of Health and Allied Sciences, Research and Publication Committee, P. O. Box 65001, Dar es Salaam, Telephone number 2150302-6**

What about the costs of this study:

There will be no costs for you if you agree to participate in the study. All study costs will be supported by the research team and MUHAS.

Will you be paid to take part in this study?

There will be no payment to you for participation in the study.

If you agree that you take part in this study and you sign this consent form, you are not giving up any of your legal rights.

CONSENT

I have read the above information about CLINICAL EPIDEMIOLOGY OF PATIENTS WITH HYPERTENSIVE URGENCY AND EMERGENCY and have been given time to ask questions. I agree to take part in this study and I have been given a copy of this signed consent form.

SIGNATURE

_____

Researcher or Designee Signature and Date Printed Name

_____

Legally Authorized Representative (Parent/legal guardian) and Date Printed Name

Appendix 2: Consent form (Swahili version)

RIDHAA YA KUSHIRIKI KWENYE UTAFITI HUU

NambayaUtambulisho……

Jina la Utafiti: Epidemiolojia na uonekano wagonjwa wenye shinikizo la damu kwa ghafla wanaokuja kutibiwa idara ya huduma za dharura, hospitali ya Taifa, Muhimbili.

Utangulizi:

Jina langu ni Patrick John Shao, Unaombwa kushiriki katika utafiti ninaofanya kuhusiana na uchunguzi wa Epidemiolojia na uonekano wagonjwa wenye shinikizo la damu kwa ghafla wanaokuja kutibiwa idara ya huduma za dharura, hospitaliyaTaifa, Muhimbili.

Uamuzi wako kushiriki au kutokushiriki hautakua na athari zozote kwenye ubora wa huduma katika matibabu yako. Tafadhali uliza swali kama kuna kitu usichokielewa kuhusu utafiti huu.

Dhumuni la utafiti:

Utafiti unahusu Uchunguzi wa Epidemiolojianauonekanowagonjwawenyeshinikizo la damu kwa ghafla wanaokuja kutibiwa idara ya huduma za dharura, hospitali ya Taifa, Muhimbili.

Je utafaidika kwa kushiriki kwenye utafiti huu?

Unaweza usifaidike moja kwa moja na utafiti huu, ila matokeo ya utafiti huu yatasaidia sanaa katika utengenezaji wa miongozo itakayokuwa ikitumika katika matibabu ya wagonjwa wenye ugonjwa kama wako.

Je Utafiti huu unahusisha nini?

Utafiti huu utahusisha upimwaji wa presha pamoja na kupewa karatasi yenye maswali ambayo utaulizwa kuhusiana na presha kali. Pia kutakuwa na uchukuaji wa damu kwa ajili ya kupima uwezo wa figo kufanya kazi, vipimo vingine vitakavyofanyika ni pamoja na ECG, CT scan na ultrasound

Je itakuwaje kama hutataka kushiriki kwenye utafiti huu?

Kushiriki kwako kwenye utafiti huu ni hiari kabisa. Utaendelea kupata huduma bila kujali kama umeshiriki kwenye utafiti ama la.

Je kuna athari gani za kushiriki katika utafiti huu?

Utafiti huu hautakuwa na athari yeyote katika matibabu yako

Kuondoka kwenye utafiti:

Unaweza kuamua kusitisha kuendelea kushiriki kwenye utafiti huu muda wowote na kwasababu yoyote. Kama utaamua kuacha kushiriki hautaathiri huduma za matibabu yako.

Maelezo mapya:

Maelezo mapya kuhusiana na utafiti huu nahasa maelezo mapya kuhusu ugonjwa wako utajulishwa mara tu yatakapokuwa yamepatikana.

Utunzaji wa siri:

Habari utakazotoa pamoja na majibu ya vipimo yatatunzwa kwa usiri mkubwa. Habari zihusuzo utafiti zitatunzwa kwenye kompyuta zenye ulinzi na rekodi, zilizopo kwenye makaratasi zitatunzwa kwenye makabati yanayofungwa. Ni wafanyakazi wanaohusika na utafiti tu ndio watakaoweza kuona taarifa, na taarifa hizi zitatunzwa siku zote.

Ni nani anaweza kutumia au kuona taarifa zako za afya:

Kwa kuweka sahihi kwenye fomu hii umeruhusu watafiti kutumia taarifa za afya yako na kuwapatia wengine wanaohusika na utafiti huu. Watafiti ni pamoja na mwendesha utafiti pamoja na wengine wanaohusika na utafiti huu. Unaweza kuomba taarifa zako wakati wowote.

Inawezekana mahakama au afisa wa serikali akaamuru kuonyeshwa kwataarifa za utafiti.

Je itatokea nini kama utaamua kutotoa ruhusa ya kutumia na kushirikisha wengine taarifa zako za afya :

Kama hautaruhusu taarifa ya afya yako zitumike, hautaweza kushiriki kwenye utafiti huu.

Kama utachagua kuacha kushiriki katika utafiti huu, unaweza kufuta ruhusa ya matumizi ya taarifa za afya yako. Watafiti watakusaidia kuweka matakwa yako kwenye maandishi. Taarifa zitakazokuwa zimekusanywa kabla ya kufuta ruhusa zitaendelea kutumika kwenye utafiti.

Je utampigia nani kuhusu utafiti huu:

Kama unamaswali kuhusu utafiti au ukiwa na haja ya kuripoti athari zitokanazo na utafiti, unaweza kumpigia daktari wako au mwendesha utafiti huu: **Dr Patrick Shao (0716 611022)** Kama una swali kuhusu haki zako kama mshiriki unaweza kuwasiliana na **Profesa Mainen Moshi, Mkurugenzi wa Kamati ya Kitengo cha Utafiti, Chuo Kikuu Cha Sayansi naTiba Muhimbili, S.L.P 65001, Dar es Salaam, Namba ya Simu 2150302-6**

Je kuna gharama juu ya tafiti huu:

Hakuna gharama kama utakubali kushiriki kwenye utafiti huu. Watafiti na Chuo kikuu cha Muhimbili watasaidia gharama zote za utafiti.

Je utalipwa kwa kushiriki kwenye utafiti:

Hapatakuwa na malipo kwako kwa kushiriki kwenye utafiti

Ridhaa

Nimesoma maelezo hapo juu kuhusu Utafiti unaohusiana na Uchunguzi wa Epidemiolojia na uonekano wagonjwa wenye shinikizo kali la damu wanaokuja kutibiwa idara ya huduma za dharura, hospitali ya Taifa, Muhimbili. Nimepewa muda wa kuuliza maswali. Nakubali kushiriki katika utafiti huu na nimepewa fomu ya ridhaa hii iliyowekwa sahihi

Sahihi

_____

sahihi ya mtafiti au kaimu na tarehe Jina kamili

_____

sahihi ya mwakilishi wa kisheria (mzazi/mlezi) na tarehe Jina kamili

Appendix 3: Data Collection Sheet

HYPERTENSIVE URGENCY AND EMERGENCY STUDY 2015

***INCLUDE ALL PATIENTS WITH TRIAGE (DBP OF > 110 AND SBP >180)**

MRN: ☐☐☐☐☐☐☐ **DATE:** ☐☐ ☐☐ ☐☐

A: DEMOGRAPHIC INFORMATION:

AGE: ☐ SEX: Male: ☐ Female: ☐

ADDRESS: ☐

MARITAL STATUS: Married ☐ Single ☐ Divorced ☐ Widow ☐

LEVEL OF EDUCATION

University level ☐ A-level secondary education ☐

O-level secondary education ☐ Primary education ☐

None ☐ Others ☐

EMPLOYMENT STATUS

Government ☐ Private ☐

Self employed ☐ Unemployed ☐

INCOME STATUS

Over 1,000,000 per month ☐ 500,000-1,000,000 per month ☐

100,000-500,000 per month ☐ 0-100,000 per month ☐

A: VITAL SIGNS

BP ☐ PR ☐ RR ☐ Temp ☐ RBG ☐ SpO_2 ☐

B: RISK FACTORS CHARACTERIZATION:

1. Cigarette smoking YES ☐ NO ☐
2. If YES, for how long have you being smoking? ☐
3. On average how many cigarettes do you smoke per day? ☐
4. Cigarette smoking in the past? YES ☐ NO ☐

---

5. Alcohol consumption YES ☐ NO ☐
6. If YES for how long have you been drinking? ☐
7. What type of alcohol do you take?
   Spirits ☐ Beer ☐
   Wine ☐ Local brews ☐
8. On average how much do you drink per session?
   1 bottle ☐ ☐ 2-4 5-7 ☐ Above 7 ☐
9. Where you drinking alcohol in the past? YES ☐ NO ☐

---

10. What type of work are you doing?

11. Do you do physical exercises? YES ☐ NO ☐

12. If YES to Qn 10 above, how many times in a week are you involved in physical exercises?
    Once ☐ 2-3 ☐ 4-6 ☐ Daily ☐

---

13. Have you ever have your blood pressure taken? YES ☐ NO ☐

14. Have you been told that you are hypertensive YES ☐ NO ☐

15. If YES to Qn 14 above, when?_____

16. If YES to Qn 14 where you kept on medications for hypertension? YES ☐ NO ☐

17. If NO to Qn 16. What was the reason? _____

18. Do you take your medication regularly? YES ☐ NO ☐

19. Have you ever stopped using your antihypertensive medications at any point?
    YES ☐ NO ☐

20. If YES to Qn 19 above, what was the reason(s)?_____

21. Are you on regular follow up clinic? YES ☐ NO ☐

C: CLINICAL PRESENTATIONS

CHIEF COMPLAINS:

1.
2.
3.
4.
5.

PHYSICAL EXAMINATION:

A	B	C	D	E
Normal				
Abnormal				
If abnormal, explain				

C: MANAGEMENT STRATEGIES:

Investigations performed:

	Normal	Abnormal	specify (if abnormal)
ECG			
CT Scan			
Chest xray			
Serum creatinine			
Serum Urea			
Ultrasound			
Fundoscopy			
Full Blood picture			

Medications given

Type	Route	Amount
1.		
2.		
3.		
4.		
5.		

Other medications:_____

Final emergency diagnosis

1.
2.
3.

Final ward diagnosis

1.
2.
3.

D:DISPOSITION

Cardiac Consultation Done ☐ Not Done ☐

Patient:
- ☐ Admitted to the ward ☐ Cardiac
- ☐ Admitted to ICU ☐ Cardiac
- ☐ Admitted to HDU ☐ Cardiac
- ☐ Discharged
- ☐ Died at EMD
- ☐ Transfer out of MNH

Progress in the ward

	Day 1			Day 2			Day 3		
	AM	Control	PM	AM	Control	PM	AM	control	PM
SBP									
DBP									

Outcome:

☐ Discharged After ☐ Days

☐ Died After ☐ Days

Final hospital diagnosis:

1. ☐
2. ☐
3. ☐