

Evaluation of the occurrence and factors responsible for Hypertension in HIV Patients on HAART attending Chai Clinic at Kampala International University Teaching Hospital Bushenyi, Uganda.

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ABSTRACT

The study determined the prevalence and risk factors associated with hypertension in Human Immune Deficiency Virus (HIV) patients on HAART attending Chai clinic at Kampala International University Teaching Hospital. The Specific objectives were to find out the prevalence of hypertension in HIV patients on HAART attending CHAI clinic and to assess the risk factors to hypertension in HIV patients on HAART attending CHAI clinic at Kampala International University Teaching Hospital. This was a cross sectional study based on prospectively collected data from participants enrolled in CHAI clinic KIU-TH. This recruited HIV-infected individuals receiving care. The study showed that the prevalence hypertension in HIV patients on HAART attending CHAI clinic in KIU-TH 8(14%). From the study, the most affected HIV-Hypertensive patients (75%) were aged between 40 to 60 years. The most risk factors of hypertension in HIV patients were; 4(50%) had a positive family history of having hypertension in their homes, 1 (12.5%) history of obesity, 2(25%) had a positive history of diabetes and 1(12.5%) said they were not doing physical exercises. The study found out that some were predispose due to their social life style that is; of the participants were smokers 3(43%), 2(25%) was neither taking alcohol nor smoking, 1(12.5%) had history of taking alcohol and smoking while 2(25%) said they were smokers only. Health workers should encourage HIV patients on HAART to do frequent physical exercises to reduce hypertension due to obesity, health workers should encourage HIV patients on HAART to reduce / stop smoking to reduce risks of hypertension, health workers should health educate HIV patients on HAART about diet and its risks to hypertension, health workers should encourage HIV patients to reduce/ stop alcohol to reduce risk of atherosclerosis which can reduce hypertension.

Keywords: Hypertension, HIV patients, Teaching Hospital, Health Workers, Alcohol.

INTRODUCTION

HIV infection continue to be a major health problem in developing countries. Worldwide around 33.3 million people are living with HIV, 30.8 million are adults [1-4]. In 2009, an estimated 2.6 million new HIV cases occurred. The estimated number of AIDS related deaths in 2009 was estimated to be 1.8 million with adults being 1.6 million [5]. WHO reported that as of December 2008, approximately 4 million people in low- and middle income countries were receiving antiretroviral therapy. Between 2003 and 2008, access to antiretroviral drugs in low- and middle-income countries rose 10 times [6]. Sub-Saharan Africa remains the region most heavily affected with HIV [7-9]. In 2009,

sub-Saharan Africa accounted for 67.6 % of HIV infections worldwide. The region also accounted for 72.2% of the world's AIDS-related deaths in 2009 [10, 11]. The prevalence of HIV in Uganda estimated to be 5.7%, 5% for men and 7% for women. The prevalence varies between different regions with western region having a prevalence of 9%; [12–15]. In Uganda 1.2 million people are estimated to be living with HIV, and 20% or 240,000 are eligible for ART. Only 150,000 and 200,000 people are currently receiving ART, which represents between 63% and 83% of those in need in Uganda [8, 9, 16, 17]. After the introduction of ARVs morbidity and mortality due to HIV has decreased [18-22].

However, morbidity and mortality due to heart related complications has become a concern due to metabolic complications attributed by long term use of HAART which increases the risk for hypertension. A study done by Brown et al. [23] showed that there was a change in a trend of cause of death among HIV patients from opportunistic infections to non-infectious causes including hypertension [24]. Death due to hypertension contributed to 3.8 % of all deaths post HAART era compared to 1.1 % pre HAART era [25-27]. Clinical and subclinical atherosclerosis among HIV patients has been reported with a rate of up to 50% compared to HIV negative controls [28].

Problem Statements

Studies have demonstrated the prevalence of hypertension to be higher among HIV patients than among HIV negative individuals. A study which was done in India revealed the prevalence of hypertension to be as high as 33% in HIV patients who were on HAART compared to 19% among HIV negative [5]. This higher prevalence is explained by HAART induced dyslipidemia, insulin resistance, and increased hip/waist circumference ratio which are risk factors for hypertension; [29, 30]. HIV is known to be associated with increased risk factors for hypertension among infected individuals [31, 32, 33]. Management of HIV patients with ARVS has been associated with exacerbation of cardio-metabolic complications. Therefore, there is an increased morbidity and mortality due to hypertension among patients treated with Antiretro Viral Therapy (ARV) [10, 31]. However, multiple differences have been observed between the USA and European countries and Uganda (and other African settings) in the epidemiology of HIV, its demographics and the availability of antiretroviral drugs, amongst others. HIV prevalence rates are relatively higher 4.3% in Uganda in 2011 [34, 35] the main method of transmission is heterosexual and more than half of people living with HIV/AIDS are women. Despite increasing overall access, antiretroviral therapy is still limited in the availability of drug groups such as protease inhibitors. The choice of

treatment regimens is thus limited. Therefore, the purpose of this study is to oversee this gap and its relation to hypertension.

The increased morbidity and mortality due to hypertension among HIV/AIDS patients on ART poses a new challenge in HIV/AIDS management. Despite present awareness on the rising hypertensive events among HIV patients on ART, little is known on the extent of hypertension risks among HIV patients and their contribution to the overall risk in the development of hypertension in our settings [36]. Hypertension risk factors attributed by HIV disease and its treatment are modifiable. Inadequate knowledge on the magnitude of the hypertensive risk factors among HIV patients in Uganda is among the limiting factor for intervention [34, 37, and 38]. This study on prevalence and risk factors of hypertension among HIV patients will help to bridge this information gap.

Aim of the Study

To determine the prevalence and risk factors associated with hypertension in HIV patients on HAART attending CHAI clinic at Kampala International University Teaching Hospital.

Specific objectives of the Study

1. To find out the prevalence of hypertension in HIV patients on HAART attending CHAI clinic at Kampala International University Teaching Hospital.
2. To assess the risk factors to hypertension in HIV patients on HAART attending CHAI clinic at Kampala International University Teaching Hospital.

Research Questions

1. What is the prevalence of hypertension in HIV patients on HAART attending CHAI clinic at Kampala International University Teaching Hospital?
2. What are the risk factors leading to hypertension in HIV patients ON HAART attending CHAI clinic at Kampala International University Teaching Hospital?

The study justification

The study is designed to come up with the prevalence and risk factors associated with the hypertension in HIV patients on HAART attending CHAI clinic at Kampala International University Teaching

Hospital. The data generated will serve the following purpose. It will be used by policy makers, implementing committees, office of the DHO, relevant NGOs and MOH. This will assist in instruction of bi-laws and plans to improve on utilization of HAART.

METHODOLOGY

Study Design.

This is a longitudinal study based on prospectively collected data from participants enrolled in CHAI clinic KIU-TH, an open, ongoing cohort that recruits HIV-infected individuals receiving care at CHAI clinic Kampala International University.

Area of the Study

The study will be carried out at CHAI clinic in KIU-TH located in Bushenyi Ishaka town council Bushenyi District 62km along Mbarara Kasese high way located in western Uganda. It borders with Rubirizi and Buhwezu districts in the North Mitooma and Rukungiri in the south, Buhwezu and Sheema in the east.

Study Population

The study population will be made up of HIV/AIDS patients receiving longitudinal care at the CHAI clinic KIU-TH treatment during June 2017 and September 2017. These participants will be: A group of HIV/AIDS patients on HAART selected by consecutive convenient sampling matched by age and gender to the HAART.

Sample Size Determination

Sample size will be determined by using fisher formula:

$$s = \frac{Z^2 PQ}{d^2}$$

Where S= Sample size

Z= standard Deviation at required degree of accuracy which at 90% which gives 1.96

P= prevalence of hypertensive emergency in previous study (3.8%) [27].

Q= 1-P

d = degree of error you are able to accept.

$$s = \frac{(1.96)^2 * 0.038(1 - 0.038)}{0.05^2}$$

S= 56.

Simple random sampling will be used in this study because patients shall be

coming to the facility which is a convenient place where the researcher can easily access them. Patients also shall be coming to the facility at different time intervals. This technique will also help the researcher to gather data quickly as time is so limited for the study. The researcher is aware of the shortcomings of this technique in that the sample might not represent the population as a whole and may be biased by volunteers.

Selection criteria

Patients who will consent to take part in the study; and for the HAART group, patients who had taken HAART for at least 12 months.

Inclusion criteria

Patients who will consent to take part in the study; and for the HAART group, patients who will have taken HAART for at least 12 months.

Exclusion criteria

Patients with a confirmed non-adherence to HAART for 6 months and above will be excluded.

Patients with known cardiovascular risk factors such as renal diseases and diabetes will be excluded.

All patients with pre-existing hypertension before HAART initiation, whether on anti-hypertensive medications or not will be excluded.

Definition of variables.

All participants will be subjected to a face-to-face interview and a physical examination.

Dependent variables

Prolonged use of HAART will be the depended variable to hypertension in HIV patients.

Independent variable

Other associated risk factors to hypertension in HIV patients.

Data collection tools

Questionnaires, calculators, pens, record entry sheets will be used to collect data for the study.

Data collection procedure

The participants will fill structured questionnaires. After which the data shall be collected computed in order to come up with a comprehensive data for analysis.

Data will be collected using a standardized questionnaire. Information on socio-demographics, smoking habit, alcohol consumption, physical activity, family history of HTN, CD4 cell count (within past 6 months), duration of HIV infection and HAART (all considered as predictor variables) will be obtained both from the interviews and the patients' medical records.

The physical examination entailed measurement of the height, weight, body mass index (BMI), waist and hip circumferences, waist-to-hip ratio (WHR) and determination of the WHO clinical staging of HIV of each participant (all considered as predictor variables also). The blood pressure (BP) of each participant was

measured and hypertension (the outcome variable) was diagnosed from the BP values.

Data analysis and presentation

The researcher will employ both qualitative and quantitative techniques in data analysis. The information gathered from the data will enable exploratory data analysis using descriptive statistics. The findings will be presented in frequency counts, score tables with varying percentages calculated, and charts.

Ethical consideration

Purpose of the study will be explained to all eligible respondents and consent sought before any enrolment for the study. Results will be kept confidential. Participants' names will not be used for identification but initials and or numbers only. An approval to carry out the study will be obtained from the Research Committee School of Allied Health Sciences of Kampala International University- Western Campus. Participation in the study being purely voluntary will be emphasized.

RESULTS**Table. 1: Demographic data**

Characteristic	Category	Numbers	Percentage
Age	20- 40 years	04	7%
	40- 60 years	32	57%
	Above 60	20	36%
Sex	Female	26	46%
	Male	30	54%
Marital status	Married	18	32%
	Single	28	50%
	Widowed	10	18%
Educational level	Primary	10	18%
	Secondary	30	54%
	Tertiary	16	29%

From the table above 7% (04) of the participants, were between 20 to 40 years, then 32(57%) were between 40 to 60 years while 20 respondents were above 60 years. Also to note is that 26(46%) were females and the majority 30(54%) were males. More

so 18(32%) were married, 28(50%) were single and 10(18%). Concerning educational background 10(18%) had finished primary level, 30(54%) had finished secondary level while 16(29%) had finished tertiary level of education.

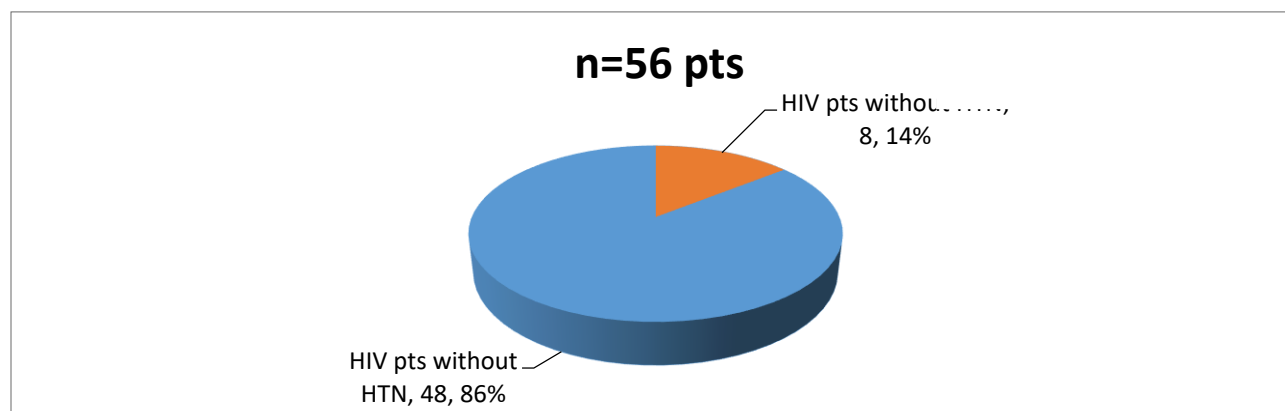


Figure1: The prevalence of hypertension in HIV patients on HAART.

From figure.1 above, majority of HIV patients on HAART had no hypertension 48(86%) and 8(14%) had developed hypertension.

Table 2: The risk factors to hypertension in HIV patients on HAART.

Social demographic characteristics of HIV-Hypertensive patients

Feature	Category	Value	Percentage
Age	Below 40 years	0	0
	40 to 60 years	6	75%
	Above 60 years	2	25%
Sex	Males	5	62.5%
	Females	3	37.5%

From the study, 6 out of 8 of HIV-Hypertensive patients (75%) were between

40 to 60 years, 2(25%) were above 60 years and none was above.

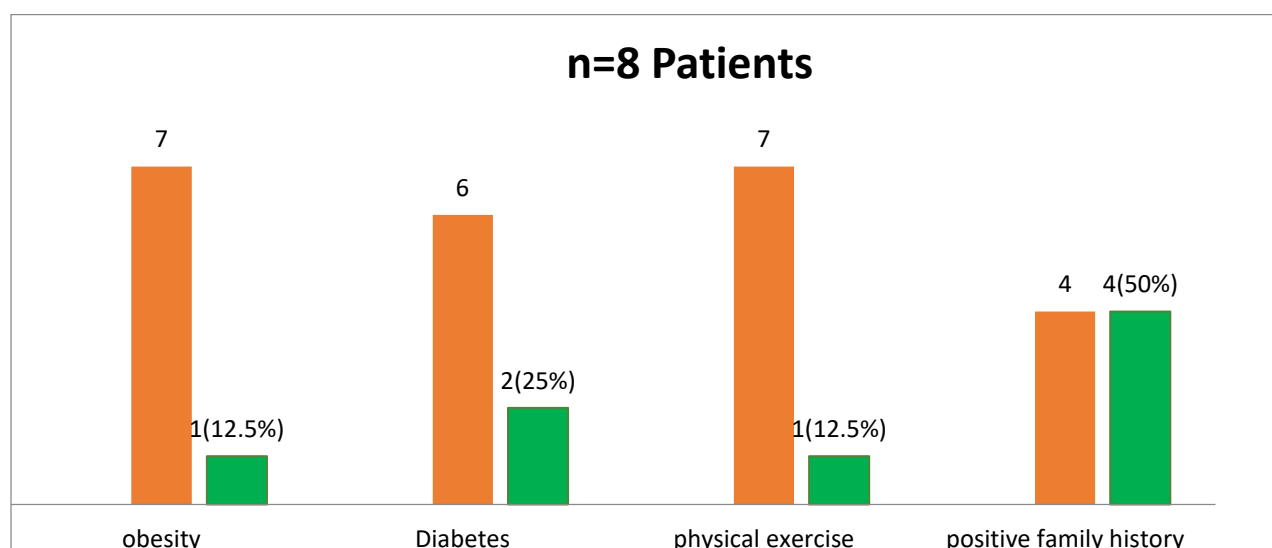


Figure 2: Medical factors.

From figure 2 above, majority of the participants 4(50%) had a positive family history of having hypertension in their

homes 1(12.5%) had obesity history, 2(25%) had a positive history of diabetes and one

person and 1(12.5%) person said she was doing physical exercise

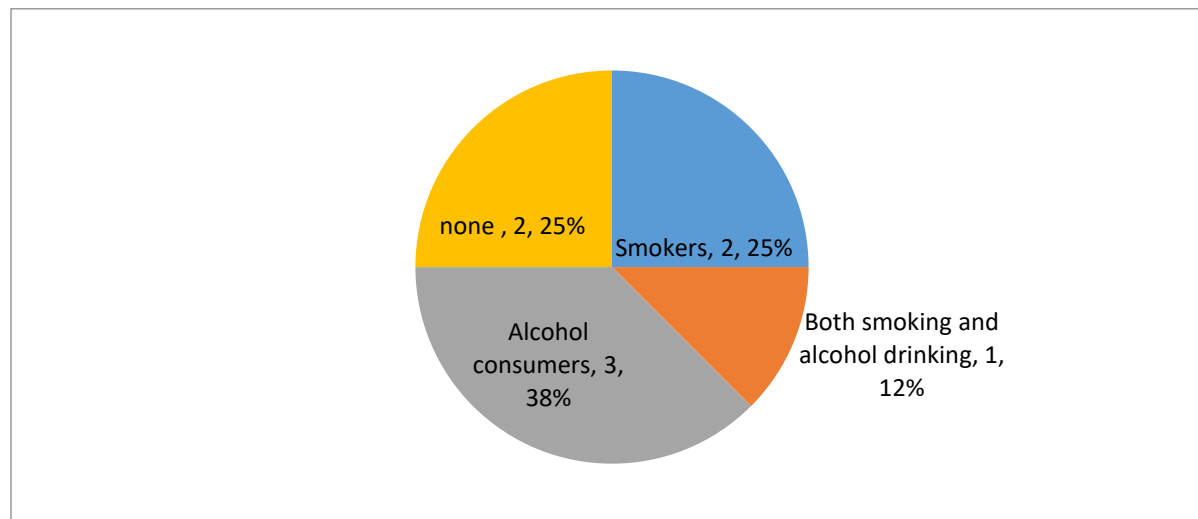


Figure 3: Social Factors

From the figure 3 above, majority of the participants were smokers 3(38%) and alcohol consumers were 3(38%), 2(25%) was neither taking alcohol nor smoking,

another person had history of taking alcohol and smoking while 2(25%) said they were smokers only.

DISCUSSION

Social-demographic characteristics

From the table above 7% (04) of the participants, were between 20 to 40 years, then 32(57%) were between 40 to 60 years while 20 respondents were above 60 years. Also to note is that 26(46%) were females and the majority 30(54%) were males. More so 18(32%) were married, 28(50%) were single and 10(18%). Concerning educational background 10(18%) had finished primary level, 30(54%) had finished secondary level while 16(29%) had finished tertiary level of education.

The Prevalence of Hypertension in HIV Patients on HAART.

Majority of HIV patients on HAART had no hypertension 48(86%) and 8(14%) had developed hypertension, although the majority of HIV patients were not hypertensive, the percentage which had hypertension 14% which is still high and needs an intervention. In comparison with other studies, a study by Thiébaut et al. [11] in Uganda reported a 36% prevalence of hypertension in HIV-infected individuals which is comparable to that of an age-, gender-and BMI-adjusted Ugandan

population. Behrens [39] however reported that the prevalence of hypertension in HIV-infected cohorts varies considerably, from 8 to 49% and is reported higher, similar and lower than in the HIV-uninfected population.

The Risk Factors to Hypertension in HIV Patients on HAART.

Of the 8 of HIV-Hypertensive patients (75%) were between 40 to 60 years, 2(25%) were above 60 years and none was below 40 years. This shows that the majority of the patients who were both HIV and hypertensive were between 40 to 60 years, where majority of them have reduced physical activity that can predispose them to hypertension a study by Palacios [40], in 2016 showed that age is the most powerful modifiable independent risk factor for atherosclerosis. As the age increases above 45 years the risk of hypertension also increases. This is because accumulated risk factors in an individual increase with age.

Medical Factors.

From the study majority of the participants 4(50%) had a positive family

history of having hypertension in their homes, this has been cited in many studies. A study by Chow [41] in 2013 indicated that positive family history is present when the first degree relative dies or suffer hypertension at the age < 50 for men and < 55years for women. Atherosclerotic vascular disease often runs in families. This may be due to a combination of shared genetic, environmental and lifestyle (e.g. smoking, exercise and diet) factors. Another finding of significance was that one person (12.5%), 2(25%) had a positive history of diabetes and one person and only (12.5%), diabetes is becoming commonly associated in hypertensive patients. This is because fats get deposited in the body because there is usually enough glucose circulating in the blood. Several authors had discovered a similar phenomenon in which Diabetes increases risk of hypertension by causing abnormal increase in blood lipids [42, 43, 44]. Hypertension occur more frequently in people with diabetes which predisposes these individuals to atherosclerosis [45]. Good glycemic control can reduce a cardiovascular disease event by 42 %. Lastly only one person out of the eight said she was doing physical exercises. This is because HIV patients are already weak and

The study showed that the prevalence of hypertension in HIV patients on HAART attending CHAI clinic in KIU-TH was 8(14%). From the study, the most affected HIV-Hypertensive patients (75%) were aged between 40 to 60 years. The most risk factors of hypertension in HIV patients were; 4(50% had a positive family history of having hypertension in their homes, one person (12.5%), 2(25%) had a positive history of diabetes and others said they were not doing physical exercises. The study found out that some were predisposed due to their social life style that is; of the participants were smokers 3(38%), 2 (25%) was neither taking alcohol nor smoking, another person had history of taking alcohol and smoking while 2(25%) said they were smokers.

Kajura fail to practice exercises. In a related study, Jericó [46] explained that regular exercise (brisk walking, cycling or swimming for 20 minutes two or three times a week will reduce risk of coronary heart disease by about 30%. This is explained by increased HDL cholesterol, lower blood pressure, reduced blood clotting, and collateral vessel development. Physical activity is known to reduce the risk of developing dyslipidemia. Dyslipidemia is also a hypertension risk factor [47, 48, 49, 50, 51, 52, 53, 54].

Social Factors.

Concerning the social factors majority of the participants were smokers 3(43%), 2 persons (25%) was neither taking alcohol nor smoking, another person had history of taking alcohol and smoking while 2(25%) said they were smokers alcohol and smoking are key predisposing factors , although it was only 25% for alcohol intake and smoking responsively, it is of health concern In their studies Gazzaruso et al. [50] in 2013 cited that, heavy alcohol drinking is associated with increased risk of atherosclerosis. This is partly explained by the fact that the moderate alcohol intake is associated with increased HDL and lipo protein.

CONCLUSION

Recommendations

- Health workers should encourage HIV patients on HAART to do frequent physical exercises to reduce hypertension due to obesity.
- Health workers should encourage HIV patients on HAART to reduce / stop smoking to reduce risks of hypertension.
- Health workers should health educate HIV patients on HAART about diet and its risks to hypertension.
- Health workers should encourage HIV patients to reduce/ stop alcohol to reduce risk of atherosclerosis which can reduce hypertension.

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