

PREVALENCE AND FACTORS ASSOCIATED WITH HYPERTENSION AMONG ADULTS AGED 18-50 YEARS ATTENDING HIV CLINIC AT ENTEBBE REGIONAL HOSPITAL IN WAKISO DISTRICT. A CROSS-SECTIONAL STUDY.

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ABSTRACT.

Background:

In Uganda, about 18% of HIV-infected adults are suffering from hypertension. The comorbidity of hypertension doubles the morbidity and mortality among hypertensive patients thereby hindering the attainment of the third sustainable development goal. The purpose of this study was to determine the prevalence and factors associated with hypertension among adults aged 18-50 years attending the HIV clinic at Entebbe Regional Referral Hospital in Wakiso district.

Methodology:

A descriptive cross-sectional study design that enrolled 75 respondents who were selected using a systematic sampling method was conducted. Data was collected using self-administered questionnaires and results were analyzed using STATA version 15 and results were presented in tables and pie charts.

Results:

The study revealed that social-demographic factors like male gender (58.8%), age category 41 – 50 years (64.7%), having attained tertiary education (35.3%), being married (70.6%), body weight of above 75 kilograms (47.1%) and formal employment (47.1%) were associated with hypertension. Clinical characteristics associated with hypertension were CD4 counts of 200 – 500 cells/mm³, viral load of over 200 copies/ml, and other chronic illnesses (64.7%). Alcoholic consumption (52.9%) and not engaging in physical exercises (64.7%) were some of the behavioral and lifestyle characteristics that influenced hypertension.

Conclusion:

The prevalence of hypertension among adult HIV patients aged 18 – 50 years was high (22.7%) mainly associated with older age, male gender, high body weight, sedentary lifestyle, and presence of comorbidities.

Recommendation:

The Ministry of Health should incorporate comprehensive hypertension care into HIV care to increase accessibility since there is a higher prevalence among this population.

Keywords: Hypertension, HIV clinic, Entebbe Regional Hospital
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BACKGROUND.

HIV is a major public health problem in the world today (Pangmekeh et al., 2019). Globally, about 38.4 million people are living with HIV (Pangmekeh PJ et al 2019). The burden of HIV/AIDS condition continues to vary considerably between countries and regions but Sub-Saharan Africa remains the most severely affected with 4.4% of her population living with HIV.

Globally, cardiovascular disease (CVD) is still the leading cause of premature death and morbidity including hypertension. In 2019, CVD killed approximately 17.9 million people, i.e., 32% of global deaths, 75% of these in developing countries. In addition to “classic” risk factors,

such as smoking, alcohol consumption, and inactivity (Jonathan E. Kaplan, 2019). HIV-infected patients may have additional risk factors related to endothelial dysfunction and the metabolic effects of antiretroviral drugs such as dyslipidemias or insulin resistance. The chronic inflammation induced by Human Immunodeficiency Virus (HIV) can increase the chances of HIV-infected patients developing CVDs.

Prolonged use of ART has been linked to the development of hypertension. For instance, In Africa, 12 % living with HIV have cardiovascular disease (CVD)(Pangmekeh et al., 2019). Previous studies have reported the prevalence of cardiovascular disease markedly higher in HIV-infected patients among the general population.

In Uganda, about 18% of HIV-infected adults have sub-clinical atherosclerosis which can be predictive of CVD. HAART and especially proteininhibitors are likely to be associated with metabolic dysfunction and could escalate the risk of inducing hypertension (Bloomfield et al., 2014, Lubega et al., 2021). Hypertension or elevated blood pressure is a serious medical condition that can significantly increase the risks of heart, brain, kidney, and other diseases. Its burden among adult HIV patients is estimated to be 30% (Lubega et al., 2021). Entebbe Regional Referral Hospital serves over 300 HIV patients daily and it is a mixture of both urban and rural populations.

It has been noted that there is a marked increase in the number of clients developing CVD diseases including hypertension. The actual burden of hypertension among this population has not been well established following the introduction of new regimens like Dolutegravir and other ART that have metabolic effects.

This study therefore was conducted to determine the prevalence and factors associated with hypertension among adults aged 18-50 years attending the HIV clinic at Entebbe Regional Referral Hospital in Wakiso district.

Purpose of the Study.

The purpose of this study was to determine the prevalence and factors associated with hypertension among adults aged 18-50 years attending the HIV clinic at Entebbe Regional Referral Hospital in Wakiso district.

METHODOLOGY.

Study Design and rationale.

The researcher used a descriptive cross-sectional study design because both the outcome and predictor variables were measured at one point in time. Furthermore, it was cost effective and it didn't consume a lot of time.

Study setting and rationale.

The study was carried out at a health facility at Entebbe Regional Referral Hospital in the ART clinic.

The hospital is located approximately 35 kilometers from Kampala city. It's a government-aided hospital offering medical, surgical gynecology, and obstetrics services. The hospital has an HIV clinic that cares for almost 300 patients daily.

The rationale for such a population is that there is a high burden of hypertension among HIV-infected people in Uganda. However, the capacity to prevent, diagnose, and treat Hypertension is suboptimal. This study seeks to leverage the existing HIV-related infrastructure in primary care health facilities (HFs) using the integrated HIV/hypertension care model to improve the health outcomes of patients with HIV and hypertension. Daily, about 300 patients are attended. The researcher collected

data for 1 month in April 2023.

Study Population.

The study focused on HIV-positive clients attending HIV care at Entebbe Regional Referral Hospital, aged 18 – 50 years who met inclusion criteria during the study period.

Sample size determination.

A sample size with a margin of error which is equivalent to 0.1 of 75 respondents was used. This was obtained using the formulae originally used by the Slovan formula of 2020.

$$N = \frac{N}{1 + Ne^2}$$

N is the total number of HIV patients received per week which is an average of 300, and e is the margin of error which is equivalent to 0.1.

$$N = \frac{300}{1 + 300 \times 0.1^2}$$

$$N = 75$$

Sampling procedure.

Study participants were recruited with the help of a daily register. We used systematic sampling to enroll study respondents. Since per day the clinic attends about 300 patients, every 10th patient was screened to determine their eligibility, and assessed for willingness to participate in the study therefore a total of 15 patients were interviewed per day for five days.

Inclusion and exclusion criteria.

Inclusion.

Men and women, HIV-positive clients aged 18 to 50 years attend HIV care at Entebbe regional referral and who consented to participate in the study during the study period.

Exclusion.

Participants who were less than 18 years and above 50 years old, those who were dumb, in critical condition, and those who did not consent to the study were excluded.

Definition of variables.

Dependent variables.

Hypertension.

Independent variables.

Age, sex, marital status, religion, education level, employment status, lifestyle, physical activity, diet, alcohol consumption, smoking, regimen type, and having diabetes.

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Research instruments.

Self-administered questionnaires were used to collect information from the participants. Digital Blood Machines were used to measure participants' blood pressure. Consent forms were given to all participants before participating in the study.

Data Collection Procedure.

A researcher obtained a letter of introduction from Mildmay School of Nursing and Midwifery introducing her to Entebbe Hospital Administration seeking permission to carry out the study. The study started after the objectives of the study had been clearly explained to the study participants, who understood, and voluntarily consented to participate in the study. The participants were assured of maximum confidentiality for the information that was collected from them.

The researcher administered questionnaires to participants and thereafter, blood pressure for each participant was taken and recorded. Data was collected in 5 days and a minimum of 10 respondents were interviewed per day. Questions were interpreted into local language for the respondents to understand better.

Data Management.

All recordings, consent forms, and any other information

related to the study were stored in a lockable suitcase only accessible to the researcher. The participants' names were omitted so as not to compromise on confidentiality. Each participant was assigned a unique identification number.

Data Analysis.

The data in Excel was exported to STATA version 15 for analysis. Frequencies and percentages were used to describe categorical data. Non-normally distributed continuous variables were described using the median and interquartile range.

Ethical Consideration.

The approval was obtained from the supervisor and the researcher obtained a letter from Mildmay School of Nursing introducing her to the Director of Entebbe Regional Referral Hospital for administrative clearance before commencement of the study. Thereafter, participants were screened to ascertain eligibility, and informed consent was sought. Confidentiality of research data was ensured by using unique codes instead of names for the identification of research participants.

RESULTS.

Socio-demographic and clinical characteristics of adults aged 18-50 years living with HIV
Majority of the respondents 42(66%) were females. Most of the respondents 36(48%) were aged 41 – 50 years while the least 7(9.3%) were aged 18 – 30 years. While 51(68%) study participants were married, 30(40%) were self – employed. About 49(65.3%) had a CD4 count of 200 – 500 cells/mm³. Most of the respondents 44(58.7%) had a viral load of less than 200 copies/ml. Detailed characteristics of the respondents are presented in table 1.

Table 1: Socio-demographic, clinical, and behavioral characteristics of study participants.

Variable	Category	Frequency (n); N=75	Percentage(%)
Socio-demographics			
Gender	Male	33	44
	Female	42	66
Age (years)	18 – 30	7	9.3
	31 – 40	32	42.7
	41 – 50	36	48
Level of Education	None	9	12
	Primary	14	18.7
	Secondary	40	53.3
	Tertiary	12	16
Marital status	Married	51	68
	Single	24	32
Weight (kilograms)	<50	23	30.7
	50 – 75	41	54.7
	>75	11	14.6
Tribe	Muganda	39	52
	Musoga	15	20
	Munyankole	13	17.3
	Acholi	8	10.7
Type of employment	Formal employment	17	22.7
	Self – employed	30	40
	Unemployed	28	37.3
Clinical Characteristics			
Current CD4 count	<200 cells/mm ³	6	8
	200 – 500 cells/mm ³	49	65.3
	>500 cells/mm ³	20	26.7
Viral load	Over 200 copies/ml	27	36
	Less than 200 copies/ml	44	58.7
	Less than 20 – 75 copies/ml	4	5.3
Chronic illness	Yes	41	54.7
	No	34	45.3
Behavioral Characteristics			
Alcohol Drinking	Yes	39	52
	No	32	48
Smoking	Yes	7	9.3
	No	68	90.7

Prevalence of hypertension among adults aged 18-50 years living with HIV attending ART clinic at Entebbe Regional Referral Hospital

Of the 75 participants, 17(22.7%) were hypertensive. Results are presented in Figure 2.

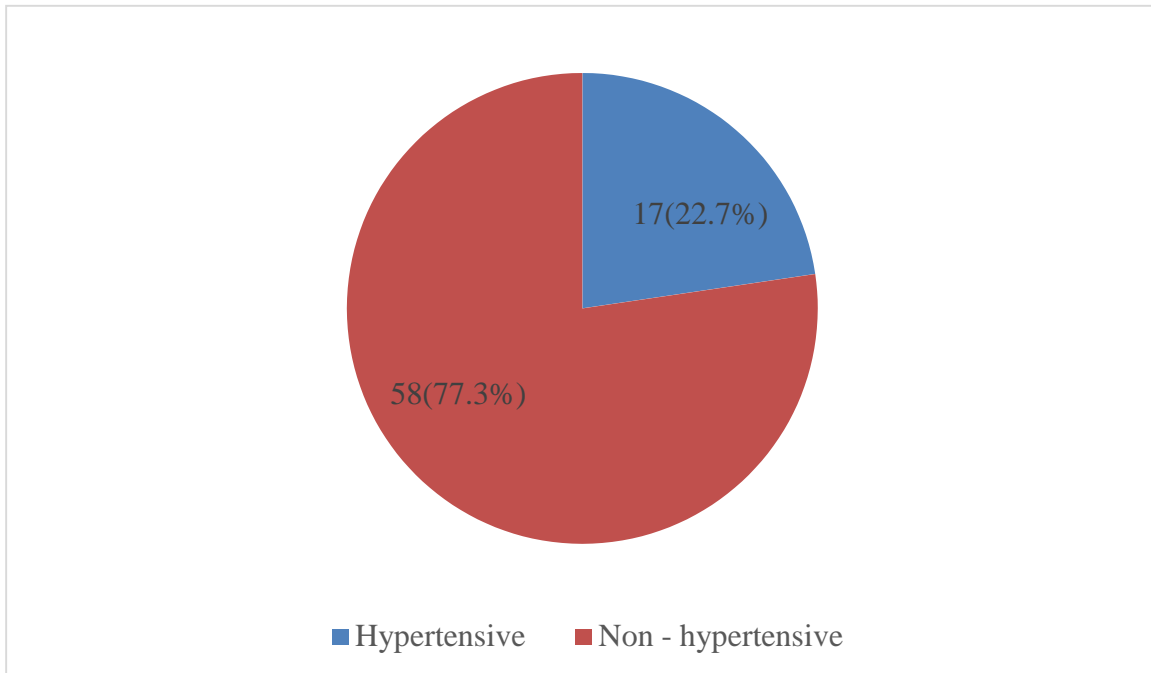


Figure 2: Prevalence of hypertension among adults aged 18-50 years living with HIV attending ART clinic at Entebbe Regional Referral Hospital.

Factors associated with hypertension among the study participants.

Socio-demographic factors among the hypertensive respondents (n=17), being male (58.8%), aged 41 – 50 years (64.7%), having attained tertiary education (35.3%), being (70.6%), having a body weight of above 75 kilograms (47.1%) and being formally employed (47.1%) were associated with hypertension among HIV adult patients at Entebbe Regional Referral Hospital. Clinical characteristics associated with hypertension were CD4 counts of 200 – 500 cells/mm³, viral load of over 200 copies/ml, and other having a chronic illness (64.7%). Behavioral and lifestyle characteristics were; alcoholic consumption (52.9%) and 64.7% were never engaged in exercises. Details are presented in Table 2.

Table 2: Factors associated with hypertension among the study participants.

Variable	Category	Hypertensive N= 17 n (%)	Non-Hypertensive N= 58 n (%)
Socio-demographics			
Gender	Male	10(58.8%)	23(39.7%)
	Female	7(41.2%)	35(60.3%)
Age (years)	18 – 30	1(5.9%)	6(10.3%)
	31 – 40	5(29.4%)	27(46.6%)
	41 – 50	11(64.7%)	25(43.1%)
Level of Education	None	2(11.8%)	7(12.1%)
	Primary	4(23.5%)	10(17.2%)
	Secondary	5(29.4%)	35(60.3%)
	Tertiary	6(35.3%)	6(10.3%)
Marital status	Married	12(70.6%)	39(67.2%)
	Single	5(29.4%)	19(32.8%)
Weight (kilograms)	<50	4(23.5%)	19(32.8%)
	50 – 75	5(29.4%)	36(62.1%)
	>75	8(47.1%)	3(5.2%)
Tribe	Muganda	6(35.3%)	33(56.9%)
	Musoga	5(29.4%)	10(17.2%)
	Munyankole	5(29.4%)	8(13.8%)
	Acholi	1(5.9%)	7(12.1%)
Type of employment	Formal employment	8(47.1%)	9(15.5%)
	Self – employed	4(23.5%)	26(44.8%)
	Unemployed	5(29.4%)	23(39.7%)
Clinical Characteristics			
Current CD4 count	<200 cells/mm ³	3(17.6%)	3(5.2%)
	200 – 500 cells/mm ³	8(47.1%)	41(70.7%)
	>500 cells/mm ³	6(35.3%)	14(24.1%)
Viral load	Over 200 copies/ml	9(52.9%)	18(31%)
	Less than 200 copies/ml	5(29.4%)	39(67.2%)
	Less than 20 – 75 copies/ml	3(17.6%)	1(1.7%)
Other Chronic illness	Yes	11(64.7%)	30(51.7%)
	No	6(35.3%)	28(48.3%)
Behavioral and lifestyle Characteristics			
Alcohol Drinking	Yes	9(52.9%)	30(51.7%)
	No	8(47.1%)	24(41.4%)
Smoking	Yes	3(17.6%)	4(6.9%)
	No	14(82.4%)	54(93.1%)
Exercise Frequency	Every day	1(5.9%)	2(3.4%)
	Every after 2 days	2(11.8%)	9(15.5%)
	Once in a week	3(17.6%)	10(17.2%)
	Never	11(64.7%)	37(63.8%)

DISCUSSION.

Prevalence of hypertension among adults aged 18-50 years attending the HIV clinic.

The study revealed that 22.7% of HIV patients were hypertensive. This was a high prevalence and the study is consistent with other studies. For instance, a study by Lubega et al (2021) found the prevalence of hypertension at 29% in Uganda among people living with HIV infection.

Similarly, a study by Nyabiage (2022) established that the overall prevalence of hypertension was 22% among participants in western Kenya. However, the prevalence was slightly higher compared to other studies for instance in a study conducted by Musekwa et al (2021) and Harimenshi et al (2022), the prevalence of hypertension among HIV people was 18.4 % and 17.4% respectively due to previous undiagnosed hypertension.

Factors associated with hypertension among adults aged 18-50 years living with HIV.

Study findings revealed that the majority of the hypertensive study participants were males. This might be due to extensive financial stress men are exposed to care for their families which puts them at risk of hypertension. The findings are in agreement with a study by Mulageta et al, (2021) which revealed that male participants were more likely to be hypertensive as compared to females.

The study revealed that the older age of 41 – 50 years (64.7%) was associated with hypertension among HIV patients. This is in agreement with other studies by Gloria Lubega et al (2021) and Jerusha Nyabiage et al (2022) that have shown a similar relationship. This could be because when people grow old, hardening of the blood vessel walls occurs hence reducing the ability to stretch which is resistance hence increasing the blood pressure.

According to the study, body weight of above 75 kilograms (47.1%) was associated with hypertension. This could be due to extensive fat deposition in the blood vessel walls thereby narrowing the lumen which raises the blood pressure of individuals. The findings are consistent with studies by Mulegeta et al, (2021) and Musekwa et al, (2022) which revealed that high body weight characterized by high BMI was associated with hypertension among hypertensive patients.

The majority (64.7%) of the hypertensive patients were not performing physical exercises. This leads to the accumulation of toxins in the blood since exercises are important in the excretion of toxins that cause blood vessel constriction.

The presence of comorbidities (64.7%) was associated with a high prevalence of hypertension among HIV patients. This could be the extensive impairment of the body's regulatory system due to multiple illnesses hence hypertension. This is in line with a study by Henok Mulugeta et al (2021) which revealed that the incidence of hypertension increased with BMI. Patients who had both HIV and Diabetes were about 3 times more likely to have hypertension as compared to those with HIV only.

CONCLUSION.

The prevalence of hypertension among adult HIV patients aged 18 – 50 years was 22.7% mainly associated with older age, being male, high body weight, sedentary lifestyle, and presence of comorbidities.

RECOMMENDATIONS.

The Ministry of Health should incorporate comprehensive hypertension care into HIV care to increase accessibility since there is higher prevalence among this population.

Entebbe Regional Referral Hospital management should consider conducting community outreach programs to sensitize communities on preventive measures and risk factors of hypertension hence implementing appropriate measures.

Health workers should offer health education programs about lifestyle modalities that can be used to minimize the occurrence of hypertension like exercises and nutrition.

Patients should revise their feeding and exercise habits to reduce the predisposition to hypertension.

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ABBREVIATIONS AND ACRONYMS.

BMI: Basal Mass Index

BP: Blood Pressure

CDC: Center for Disease Control and Prevention.

CHD: Coronary Heart Disease

DBP: Diastolic blood pressure

DM: Diabetes Mellitus

HIV: Human Immunodeficiency Virus

NCD: Non-communicable diseases

PR: Prevalence Rate

SBP: Systolic Blood Pressure

SRS: Simple Random Sampling
UNMEB: Uganda Nurses and Midwives Council
WHO: World Health Organization
WHR: Waist-to-Hip Ratio
ARVS: Anti Retro Viral

REFERENCES.

1. Musekwa, R., Hamooya, B. M., Koethe, J. R., Nzala, S., & Masenga, S. K. (2021). Prevalence and correlates of hypertension in HIV-positive adults from the Livingstone Central Hospital, Zambia. *Pan African Medical Journal*, 39(1).
2. Lubega, G., Mayanja, B., Lutaakome, J., Abaasa, A., Thomson, R., & Lindan, C. (2021). Prevalence and factors associated with hypertension among people living with HIV/AIDS on antiretroviral therapy in Uganda. *The Pan African Medical Journal*, 38.
3. Mulugeta, H., Afenigus, A. D., Haile, D., Amha, H., Kassa, G. M., Wubetu, M., & Jara, D. (2021). Incidence and predictors of hypertension among HIV patients receiving ART at public health facilities, northwest Ethiopia: A one-year multicenter prospective follow-up study. *HIV/AIDS-Research and Palliative Care*, 889-901.
4. Bloomfield, G. S., Khazanie, P., Morris, A., Rabadán-Diehl, C., Benjamin, L. A., Murdoch, D., Radcliff, V. S., Velazquez, E. J. & Hicks, C. 2014. HIV and non-communicable cardiovascular and pulmonary diseases in low- and middle-income countries in the ART era: what we know and best directions for future research. *Journal of Acquired Immune Deficiency Syndromes (1999)*, 67, S40.
5. Lubega, G., Mayanja, B., Lutaakome, J., Abaasa, A., Thomson, R. & Lindan, C. 2021. Prevalence and factors associated with hypertension among people living with HIV/AIDS on antiretroviral therapy in Uganda. *The Pan African Medical Journal*, 38.
6. Pangmekeh, P. J., Awolu, M. M., Gustave, S., Gladys, T. & Cumber, S. N. 2019. Association between highly active antiretroviral therapy (HAART) and hypertension in persons living with HIV/AIDS at the Bamenda regional hospital, Cameroon. *The Pan African Medical Journal*, 33.
7. Mulugeta, H., Afenigus, A. D., Haile, D., Amha, H., Kassa, G. M., Wubetu, M. & Jara, D. (2021). Incidence and predictors of hypertension among HIV patients receiving ART at public health facilities, northwest Ethiopia: A one-year multicenter prospective follow-up study. *HIV/AIDS-Research and Palliative Care*, 889-901.
8. Jonathan E. Kaplan, MD. The Fight Against AIDS, Then and Now November 19, 2022. <https://www.webmd.com/hiv-aids/the-fight-against-aids-then-and-now>
9. Mogaka JN, Sharma M, Temu T, Masyuko S, Kinuthia J, Osoti A, Zifodya J, Nakanjako D, Njoroge A, Otedo A, Page S, Farquhar C. Prevalence and factors associated with hypertension among adults with and without HIV in Western Kenya. *PLoS One*. 2022 Jan 10;17(1):e0262400. doi: 10.1371/journal.pone.0262400. PMID: 35007291; PMCID: PMC8746744.
10. Harimenshi D, Niyongabo T, Preux PM, Aboyans V, Desormais I. Hypertension and associated factors in HIV-infected patients receiving antiretroviral treatment in Burundi: a cross-sectional study. *Sci Rep*. 2022 Nov 28;12(1):20509. doi: 10.1038/s41598-022-24997-7. PMID: 36443478; PMCID: PMC9705296.
11. Mulugeta H, Afenigus AD, Haile D, Amha H, Kassa GM, Wubetu M, Abebaw E, Jara D. Incidence and Predictors of Hypertension Among HIV Patients Receiving ART at Public Health Facilities, Northwest Ethiopia: A One-Year Multicenter Prospective Follow-Up Study. *HIV AIDS (Auckl)*. 2021 Sep 7; 13:889-901. doi: 10.2147/HIV.S329838. PMID: 34526825; PMCID: PMC8435532.

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