Population-based Assessment of Hypertension among HIV Patients in Rural Uganda

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Background

- There are limited population-based data on non-communicable diseases (NCDs) and their risk factors in the HIV+ populations in sub-Saharan Africa.
- Following ART scale-up, there is an aging HIV+ population at risk for NCDs such as hypertension (HTN).
- We estimated HTN prevalence among adults ≥18 years attending health campaigns in 20 rural Ugandan communities in the SEARCH Study (NCT01864603).
- We investigated (a) HIV as an independent risk factor for HTN, given conflicting prior literature on this topic; and (b) awareness and control of hypertension in HIV+ adults.

Methods

- Multidisease community health campaigns (CHCs) were offered in 20 rural Uganda communities in the SEARCH study.
- 65,281 adults attended a CHC and were included in this study.
- Blood pressure (BP) was measured by sphygmomanometry, and HTN was defined as SBP≥140 or DBP≥90 on 3 repeat measurements or self-reported current use of anti-hypertensives.
- We also tested for HIV and collected demographics, body mass index (BMI), socio-economic status (SES), education attainment, and alcohol use.
- We estimated the prevalence of HTN within the population sample as well as normalized to WHO standard population distribution.
- Logistic regression (adjusting for demographics, BMI, SES, education, alcohol use, region, and HIV status) was used to identify independent predictors of HTN among all adults.
- Logistic regression (adjusting for demographics, BMI, SES, education, alcohol use, region, viral load, and CD4 count) was used to identify independent predictors of HTN among all HIV+ persons.

Results

Study Characteristics

- The majority (58%) of participants were women.
- Over a third (39%) of study participants were aged 18-29 years, 31% aged 30-44, 18% aged 45-59, and 12% aged 60+ years.
- Most participants (83%) were under or normal weight, 14% were overweight, and 3% were obese.
- More than half (58%) of participants attained primary education, 22% attained at least secondary education, while 20% had no education.

HTN Prevalence and Predictors among All Adults

- Overall, adult prevalence of HTN was 12.9% (95%CI: 12.6%-13.1%), and was 15.6% normalized to WHO standard population.
- Among hypertensive adults, 78% had no prior HTN diagnosis and 16% reported being on HTN medication.
- Among hypertensive adults on treatment, 45% achieved BP control.
- After multivariate adjustment, significant predictors of HTN included older age, male sex, higher BMI, no education, more alcohol use, region, and HIV infection.
- The adjusted relative odds of HTN were 1.2 times higher among HIV negatives than positives (95%CI: 1.05-1.35).

Significant predictors of HTN among all adults

	Adj OR	95% CI	P-value
Age 30-44	2.38	(2.2, 2.6)	<0.01
Age 45-59	6.20	(5.7, 6.8)	<0.01
Age 60+	14.71	(13.5, 16)	<0.01
Male	1.25	(1.2, 1.3)	<0.01
Overweight	1.93	(1.8, 2.1)	<0.01
Obese	2.88	(2.6, 3.2)	<0.01
No education	1.18	(1.1, 1.3)	<0.01
More alcohol	1.31	(1.2, 1.4)	<0.01
East Uganda	1.22	(1.2, 1.3)	<0.01
HIV-negative	1.19	(1.1, 1.4)	<0.01

HTN Prevalence and Predictors among HIV+

- Among HIV+ adults, prevalence of HTN was 10.2% (95%CI: 9.2%-11.2%).
- Among HIV+ hypertensive adults, 79% had no prior HTN diagnosis and 14% reported being on HTN medication.
- Among HIV+ hypertensive adults on treatment, 54% achieved BP control.
- In multivariable analyses, significant predictors of HTN among HIV+ adults were older age, higher SES, and region.
- Viral suppression of HIV did not significantly predict HTN.

Significant predictors of HTN among all HIV+ adults

	Adj OR	95% CI	P-value
Age 30-44	3.46	(1.9, 6.5)	<0.01
Age 45-59	7.17	(3.8, 13.6)	<0.01
Age 60+	17.4	(8.2, 36.9)	<0.01
Higher SES*	1.14	(1.0, 1.3)	<0.01
East Uganda	1.56	(1.1, 2.2)	<0.01

Conclusions

- In this large Ugandan study, we found a substantial prevalence of HTN in the general population and among HIV positives.
- The majority was previously undiagnosed.
- HIV positivity predicted lower odds of HTN after adjustment for common risk factors, consistent with smaller previous African studies.
- Prospective data with more extensive adjustment for confounding by SES and other factors are needed to understand the reason for this association.

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