Treated HIV, Bone Mineral Density and Compression Fractures in Uganda

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BACKGROUND

- Reduced bone mineral density (BMD) and fracture are recognized complications among people with HIV (PWH) and antiretroviral therapy (ART) in the global north.
- There are few data on similar relationships in sub-Saharan Africa were diet, sun exposure, and access to tenofovir-sparing regimens differ greatly

METHODS

- Cross-sectional cohort study in rural Uganda
- Study participants:
  - PWH ≥40 years, on ART for ≥ 3 years
  - HIV-uninfected persons, matched by age-and-sex, residing in the same communities
- Procedures
  - Survey collection of sociodemographic, clinical, and anthropomorphic measures
  - Non-contrast chest computed tomography (CT)
  - Hounsfield unit (HU) estimation of three consecutive thoracic vertebral bodies starting at the origin of the left main coronary artery
- **Outcomes of interest**

  1) Reduced BMD: a mean attenuation of < 160 HU;

  2) Vertebral compression fractures: based on the Genant semiquantitative method, scored from normal [grade 0] to severe deformity [grade 3])
- **Data analysis**

Multivariable logistic regression to determine correlates of reduced BMD.

RESULTS

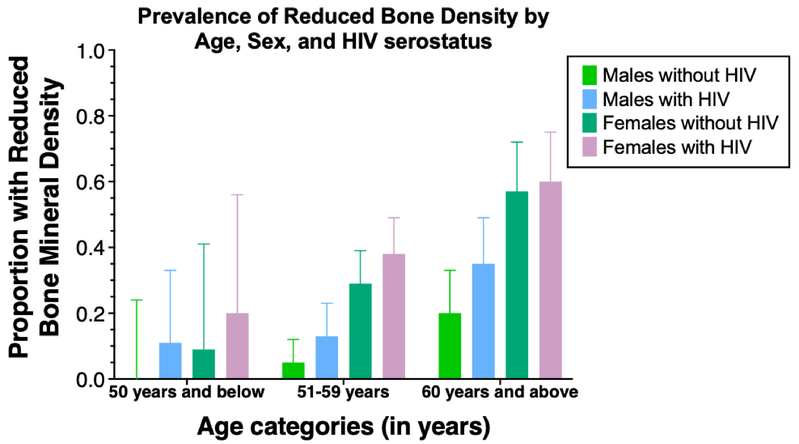
Table 1. Characteristics of study participants

Characteristic	PWH (n=280)	PWoH (n=299)
Age (years)		
≤50	29 (10.4%)	24 (8.0%)
50-59	156 (55.7%)	176 (58.9%)
60+	95 (33.9%)	99 (33.1%)
Female	135 (48.2%)	146 (48.8%)

Table 2. Proportion with vertebral fractures

Grade	PWH (n=280)	PWoH (n=299)
Grade 0 (Normal)	228 (81.4%)	254 (85.0)
Grade 1 (Mild)	45 (16.1%)	42 (14.1%)
Grade 2 (Moderate)	9 (2.1%)	3 (1.0%)
Grade 3 (Severe)	1 (0.4%)	0 (0.0%)

Both reduced BMD and vertebral compression fractures are more common among PWH, women, and older age people in rural Uganda.



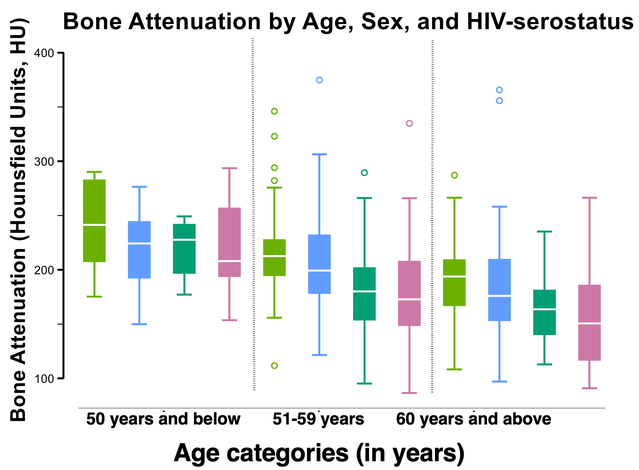


Table 3. Regression Model of Reduced BMD*

Characteristic	Adjusted Odds Ratio (95%CI)	P-value
HIV Serostatus		
HIV uninfected	REF	REF
PWH	**1.95 (1.29, 2.95)**	**0.002**
Sex		
Male	REF	REF
Female	**5.10 (3.23, 7.92)**	**<0.0001**
Age (each 10 years)	**3.38 (2.44, 4.66)**	**<0.0001**

*Models adjusted for HIV serostatus, sex, and age per ten years

CONCLUSIONS

- In rural Uganda, reduced BMD and vertebral compression fractures were more prevalent among PWH, women, and older age people.

RECOMMENDATIONS:

- Future work should explore the causal pathways that explain increased prevalene of osteopenia among PWH
- Longitudinal observation for fracture risk and its downstream consequences may be warranted
- Should HIV or ART be associated with increased morbidity, interventions may be needed to enhance bone health in this population

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