Frailty in Virally Suppressed Women With HIV in Nairobi, Kenya: A Cross-Sectional Study

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Wendy W. Dlamini[1], Shradha Doshi[2], Faith Soi,[3] Caroline Mwangi[1,4], Simon Wahome[5], Nauzley Abedini[1], Stephanie Page[1], Carey Farquhar[1], Sarah Masyuko[1]

[1]University of Washington, Seattle, WA, USA, [2]Kenya Medical Research Institute, Nairobi, Kenya, [3]Global Assistance Programme, Nairobi, Kenya, [4]Ministry of Health, Nairobi, Kenya, [5]Kenyatta National Hospital, Nairobi, Kenya

BACKGROUND

- There is limited data on frailty among women living with HIV (WLWH) in sub-Saharan Africa
- Many frailty assessments exist, but few studies rigorously examine their performance in this population
- As WLWH age, they may experience earlier or greater risk of frailty due to persistent chronic inflammation, long-term ART exposure, and higher burden of comorbidities
- Frailty is a marker of physiological vulnerability, predicts adverse health outcomes, and is potentially preventable if identified early, making it a promising target for intervention

Objective: To examine the prevalence and correlates of frailty and agreement between the Fried Frailty Phenotype (FFP) criteria and Clinical Frailty Scale (CFS) among WLWH.

METHODS

Study design: Cross-sectional (September 2024-June 2025)
Study population: 200 WLWH aged ≥50 years receiving care at Kenyatta National Hospital
Frailty assessment:

- **FFP:** 5-item clinical phenotype criteria (unintentional weight loss, self-reported exhaustion, grip strength weakness, slow walking, limited vigorous physical activity) [robust (0), pre-frail (1-2), and frail (3-5)]
- **CFS:** 9-point clinical-judgement scale [robust (1-2), pre-frail (3-4), and frail (5-9)]

Outcome: Frailty (robust, pre-frail, frail)
Potential correlates: Baseline sociodemographic, clinical, physical, and functional characteristics
Statistical analysis:

- Frailty via FFP, defined as a binary outcome (**robust versus pre-frail/frail),** analyzed using **Poisson regression with robust standard errors** adjusting ***a priori*** for age (continuous) and results reported as **prevalence ratios (PRs)** with 95% confidence intervals (CIs)
- Agreement between FFP and CFS assessed using weighted kappa and Spearman's rho

- **Pre-frailty is common among aging WLWH despite viral suppression**
- **Two most common assessment tools do not agree; Clinical Frailty Score underestimates frailty compared with Fried Frailty Phenotype; caution needed in clinical use**

RESULTS

Characteristic	All participants (N=200)
	Median (IQR) or n (%)
Living alone	52 (26.0)
ART duration (years)	12.3 (9.7, 12.4)
PHQ-9 score (0-27)[a]	0 (0, 3.0)
Mild/moderate/severe depression	32 (16.3)
BMI (kg/m²)	28.0 (25.4, 31.4)
Overweight/obese	154 (77.0)
Waist-hip ratio ≥0.85	113 (56.5)
Timed-Up-and-Go test ≥12 seconds	59 (29.5)
Falls in the past 12 months	28 (14.0)
Previous fracture	43 (21.5)

[a] Excludes participants with missing data for the most recent viral load (n=2) and PHQ-9 (n=4).

Participants characteristics

- Median age 58 years (IQR: 53, 62)
- 50.5% had secondary school or higher
- 27% were married
- 92.4% had an undetectable viral load (≤50 copies/mL)[a]
- 64.5% were taking TDF/3TC/DTG

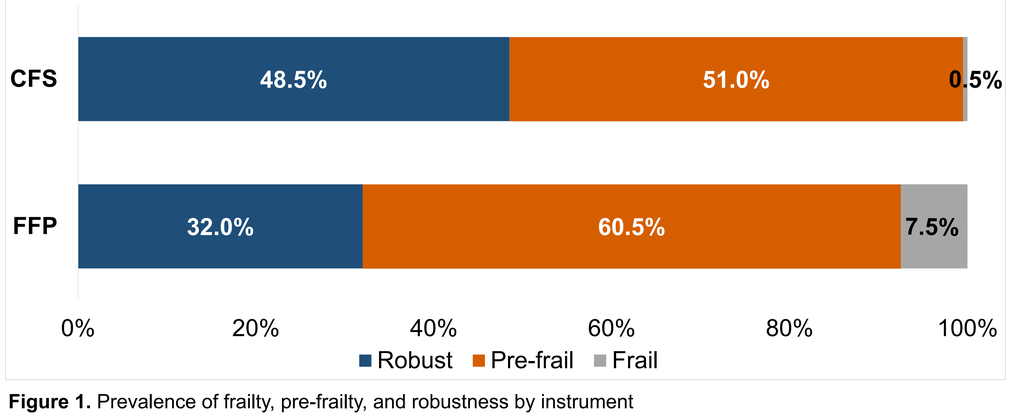


Figure 1. Prevalence of frailty, pre-frailty, and robustness by instrument

RESULTS (continued)

FFP and CFS performance

- Slow walking (58.5%) and exhaustion (12.5%) were the most common Fried frailty phenotypes
- Across the CFS, most of the women were classified as "Well" (45.0%) or "Managing Well" (47.0%)
- Observed concordance was 49.0%
- Weighted kappa agreement was 0.10 (95% CI: -0.01, 0.22)
- Spearman's rho was 0.28

Correlates of pre-frailty/frailty according to the FFP

Characteristic	Age-adjusted PR (95% CI)
Living alone	
No	*Reference*
Yes	0.79 (0.61, 1.01)
PHQ-9 score (0-27)††	1.17 (1.06, 1.30)**
Falls in the past 12 months	
No	*Reference*
Yes	1.25 (1.02, 1.53)**

†† Per 5-point difference; ** p-value <0.05

Higher PHQ-9 scores and **a history of falls** were significantly associated with a **greater prevalence** of pre-frailty/frailty

CONCLUSIONS

- Frailty prevalence is low, but 60% in this relatively young cohort (median age of 58) were pre-frail, presenting an opportunity for early intervention
- The instruments demonstrated overall poor agreement
- CFS underestimated frailty compared with FFP, missing a significant proportion of at-risk women, so caution should be used in clinical use
- Higher PHQ-9 scores and history of falls may be important indicators of increased risk for prefrailty or frailty

ACKNOWLEDGMENTS

Study participants, the women aging with HIV (WAH) study team, and the Kenyatta National Hospital Comprehensive Care Center leadership and staff.
NIH Fogarty International Center grant 3D43TW009783-08S1

First author contact information: dlaminiw@uw.edu