Validation of the Simple Calculated Osteoporosis Risk Estimation (SCORE) and Osteoporosis Self-assessment tool (OST) among people aging with HIV in Peru

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INTRODUCTION

- Life expectancy of people living with HIV (PLWH) has improved notably.
- PLWH are increasingly impacted by comorbidities associated with aging, including osteoporosis.
- The gold standard tool for diagnosing osteoporosis is dual-energy X-ray absorptiometry (DXA), however its availability in low-resource settings is limited.
- To address this barrier, low-cost screening tools for osteoporosis, such as the **Simple Calculated Osteoporosis Risk Estimation (SCORE)** and the **Osteoporosis Self-Assessment Tool (OST)**, have been developed.
- These tools have only been validated for the general population, not for PLWH.

METHODS

- We recruited PLWH (men ≥50 years and postmenopausal women) at three HIV clinics in Lima, Peru.
- Osteoporosis was assessed via DXA.
- **SCORE** and **OST** values were calculated as described in the literature.
- Since OST does not include sex as a predictor, results were analyzed separately for men and women.
- Sensitivity (S), specificity (Sp), and predictive values (NPV/PPV) with their 95% confidence intervals were calculated for **SCORE** and **OST.**

RESULTS:

- **173 PLWH were enrolled (55% women, mean age 56.9±6.3) .**

SCORE for total population (cutpoint[1] = 7)

SCORE	Osteoporosis: Yes	Osteoporosis: No	Total
Positive	43	93	136
Negative	3	34	37
Total	46	127	173

Sensitivity (95%CI)	**93.5% (86.9-100%)**
Specificity (95%CI)	26.8% (19.2-34.4%)
PPV (95%CI)	31.6% (23.9-39.3%)
NPV (95%CI)	91.9% (83.1-100%)
AUC (95%CI)	0.60 (0.51-0.69)

OST for Women (cutpoint[2] = -4)

OST	Osteoporosis: Yes	Osteoporosis: No	Total
Positive	2	2	4
Negative	36	56	92
Total	38	58	96

Sensitivity (95%CI)	5.3% (0-12.6%)
Specificity (95%CI)	**96.6% (91.1-100%)**
PPV (95%CI)	50% (0.01-100%)
NPV (95%CI)	60.9% (51.1-70.7%)
AUC (95%CI)	0.51 (0.41-0.61)

OST for Men (cutpoint[3] = -1)

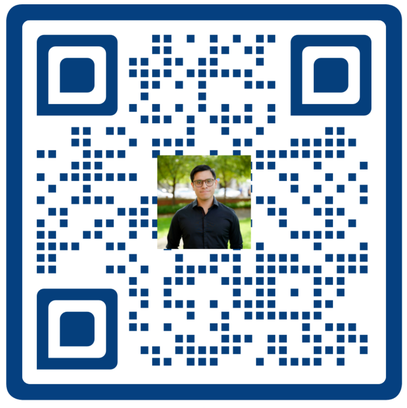
OST	Osteoporosis: Yes	Osteoporosis: No	Total
Positive	2	2	4
Negative	6	67	73
Total	8	69	77

Sensitivity (95%CI)	25% (6.8-93.2%)
Specificity (95%CI)	**97.1% (83.0-96.9%)**
PPV (95%CI)	50.0% (3.2-65.1%)
NPV (95%CI)	91.8% (89.9-99.6%)
AUC (95%CI)	0.61 (0.42-0.99)

[1,2,3] Cutpoints based upon literature

CONCLUSIONS

- This is the first study aimed at validating two screening tools for osteoporosis among People Living with HIV.
- Among our study population, SCORE showed acceptable Sensitivity and Negative Predictive Value, while OST showed greater Specificity.
- In low resource settings such as Peru, SCORE may represent a better screening tool for identifying patients with HIV at high risk for osteoporosis who would benefit from further evaluation and management strategies.



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