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Predictive Validity of a Measure of Barriers to ART Adherence for HIV Care (I-Score)

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BACKGROUND

- It is recommended to identify and address adherence barriers to antiretroviral therapy (ART) in routine HIV care
- From our team's conceptual framework [1], we created a 7-item patient-reported outcome measure (PROM), the Interference-Score, to evaluate seven barrier domains:
  - Thoughts/Feelings
  - Habits/Activities
  - Social situation
  - Economic status
  - Medication
  - Care
  - Health
- Both English and French versions for use in Canada and France were produced with professional translation services, stakeholder engagement [2] and cognitive testing

- **Objective**: to assess the measure's construct validity

METHODS

- **Design**: prospective longitudinal survey-based study
- **Participants**: people with HIV on antiretroviral therapy in Canada and France
- **Data collection**: From Jan-Aug 2022, with online surveys, participants completed the 7-item I-Score and 4 dependent variables (DVs) at baseline (Time 1) and 4 weeks later (Time 2)
- **DVs** (all self-reported): adherence (past: 7 days, 30 days), intention to adhere, and viral load
- **Analyses**:
  - Interitem correlations (Spearman's coefficients) to assess item redundancy (correlation ≥ 0.8)
  - Logistic regressions with all 7 items (covariates) and one model per DV, to assess each item's significance
  - ROC curve analyses, with reference values [3] and 95% bootstrap confidence intervals, to evaluate the 7-item models' predictive capacity

The 7-item I-Score is a promising simple, valid, and comprehensive PROM to evaluate ART adherence barriers in HIV care

RESULTS

- **Sample**: Time 1 = 265, Time 2 = 154 people with HIV
- **Correlation coefficients**: range 0.33 to 0.68
- **Logistic regressions and ROC cure analyses** –see Table below
- **Highlights:**
  - ❑ The items (covariates) of "Thoughts", "Habits", "Health" and "Economic status" were significantly and independently associated with from 1 to 3 DVs
  - ❑ The ROC analyses show the 7-item models' predictive capacity to be:
    1. "excellent" to "outstanding" for viral load
    2. "acceptable" for adherence (past: 7 days, 30 days)

Dependent variable (DV)	Timing	Significant covariate	Area under ROC curve	Predictive capacity [3]
Adherence past 30 days (≥95%, 0-94%)	Time 1	Habits (p=0.005)	0.72 (0.64-0.80)	Acceptable
	Time 2	Habits (p=0.01)	0.73 (0.63-0.83)	Acceptable
Adherence past 7 days (All pills taken, ≥1 missed pill)	Time 1	Habits (p<0.001)	0.76 (0.69-0.86)	Acceptable
	Time 2	Habits (p=0.03) Thoughts (p=0.03) Health (p=0.01)	0.78 (0.64-0.85)	Acceptable
Intention to adhere (M=5 Strongly agree, M<5)	Time 1	Economic (p=0.04)	0.67 (0.60-0.74)	Poor
	Time 2	Thoughts (p=0.007) Economic (p=0.02)	0.75 (0.68-0.84)	Acceptable
Viral load (Detectable, Undetectable)	Time 1	Habits (p<0.001) Health (p=0.002)	0.82 (0.71-0.89)	**Excellent**
	Time 2	Health (p=0.004)	0.96 (0.88-1.00)	**Outstanding**

CONCLUSIONS

- The ROC analyses showed the instrument's capacity to predict self-reported adherence as 'acceptable' and 'excellent' to 'outstanding' for self-reported viral load
- Sample attrition from Time 1 to Time 2 had no negative impact on the models' predictive capacity
- Most items were independently associated with at least one adherence-related measure and overall, items showed little redundancy
- These results provide evidence of the I-Score's concurrent and predictive validity

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FUNDING

- Merck Canada Inc/MSD, Investigator-Initiated Studies Program (IISP-53538)
- CIHR HIV Clinical Trials Network (CTN 283)
- Quebec SPOR Support Unit, Methodological Developments Platform (M006)

- Funding bodies had no hand in the conduct, analysis or reporting of this work and the results presented reflect the opinion of the co-authors, and not necessarily that of the funding bodies

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