

Study from Johns Hopkins

Reliability, Validity and Usefulness of
Touch-Screen Administration of Quality
of Life and Adherence Instruments in an
Outpatient Clinic

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Background

- Patient assessed outcomes are collected using questionnaires by:
 - self-administration
 - interview administration
- Self- and interview administration:
 - require staff time
 - delay data entry
 - incur costs

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Touch-Screen Technology

- Touch-screen PC (Assist Technology) captures information directly from patients
- Questions presented one at a time
- Skipped questions and missing data reduced
- Well-suited to skip patterns and branching logic
- No performance comparisons with conventional modes of administration

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Objective

- Compare the reliability, validity and feasibility of touch-screen PC, interview and self-administration of quality of life, symptom and adherence questionnaires

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Study Design

- Cross-sectional survey at the Johns Hopkins Moore (HIV) Outpatient Clinic
- Patients randomized to one mode of administration:
 - Touch-Screen PC
 - Self-Administration
 - Interview
- Questionnaires included:
 - MOS-HIV Health Survey
 - ACTG Baseline Adherence Questionnaire
 - ACTG Symptom Distress Questionnaire

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Johns Hopkins Moore (HIV) Clinic

- Primary and subspecialty clinic for HIV/AIDS
- Largest provider of HIV services in Maryland (N=2400)
- Demographic characteristics:
 - 81% African-American
 - 63% Injection drug user
 - 34% Women
 - 48% Uninsured
 - 38% Medicaid

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The Medical Outcomes Study HIV (MOS-HIV) Health Survey

- 35-item HIV-targeted instrument with demonstrated reliability and validity
- 10 subscales: general health perceptions, pain, physical function, role function, social function, mental health, energy, cognitive function, health distress, quality of life
- Physical Health Summary (PHS) and Mental Health Summary (MHS) scores

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Adherence and Symptoms

- ACTG Adherence Questionnaire
 - 42 items
 - Social support
 - Medication-taking behavior
 - Health habits
- ACTG Symptom Distress Questionnaire
 - 18 symptom version

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Eligibility

- Inclusion
 - HIV/AIDS diagnosis
 - Routine, scheduled visit
 - Currently taking antiretroviral therapy
 - Age \geq 18 years
- Exclusion
 - Acute visit
 - Non-English speaking
 - Cognitive impairment

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Analysis

- Reliability
 - Internal consistency (Cronbach’s alpha)
 - Test-retest
- Construct Validity
 - Comparison of MOS-HIV by symptoms and CD4 count (Spearman correlation)
- Feasibility
 - Data completeness
 - Time to completion
 - Patient acceptability
- Score by mode of administration - ANOVA

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Patient Characteristics (n=164)

	Computer (n=63)		Self-Administration (n=51)		Interview (n=50)		p-value
Demographics	Frequency	%	Frequency	%	Frequency	%	
• Age – mean	40.9		41.8		41.8		.85
• Male	44	70	38	74	38	76	.74
• African American	46	73	37	73	39	78	.49
• Injection drug use	14	22	16	31	21	42	.08
• Income <\$10,000/year	40	64	30	59	34	68	.26
Clinical characteristics	Mean	S.D.	Mean	S.D.	Mean	S.D.	
• CD4 (cells/mm ³)	383.2	265.4	281.6	276.6	341.9	365.4	.25
• Number of symptoms	9.7	4.0	11.2	5.0	9.2	4.6	.08

No difference in demographics, CD4 and symptoms by mode of administration

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MOS-HIV by Mode of Administration

MOS-HIV scales	Touch-Screen (n=63)		Self-Administration (n=51)		Interview (n=50)		p-value
	Mean	S.D.	Mean	S.D.	Mean	S.D.	
General health	39.3	20.7	39.8	23.1	39.6	27.5	.99
Social function	63.8	28.2	67.4	30.2	79.6	25.7	.01
Role function	37.3	43.9	45.0	44.3	42	44.4	.65
Energy	44.8	21.6	52.2	20.4	59.1	27.2	.005
Health distress	59.5	26.7	58.7	27.1	67.5	27.8	.19
Pain	62.3	23.9	72.7	24.2	73.0	29.5	.04
PHS	40.1	10.3	44.3	10.4	45.3	11.9	.03
MHS	41.5	11.2	44.9	10.5	47.5	12.2	.03
Symptom #	9.7	4.0	11.2	5.0	9.2	4.6	0.25

0-100 scale with 100 = optimal health

•MOS-HIV scores (except general health, distress and role) differed significantly by mode of administration

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Reliability

Cronbach's alpha

MOS-HIV: adequate (0.69 - 0.94)

Symptoms: good (0.79 - .89)

Similar for different modes

Test-Retest Reliability (n=20)

MOS-HIV scales	Intraclass correlations (Shrout-Fleiss reliability)
General health	0.68
Cognitive function	0.76
Social function	0.54
Role function	0.59
Energy	0.74
Health distress	0.56
Pain	0.67
PHS	0.64
MHS	0.88

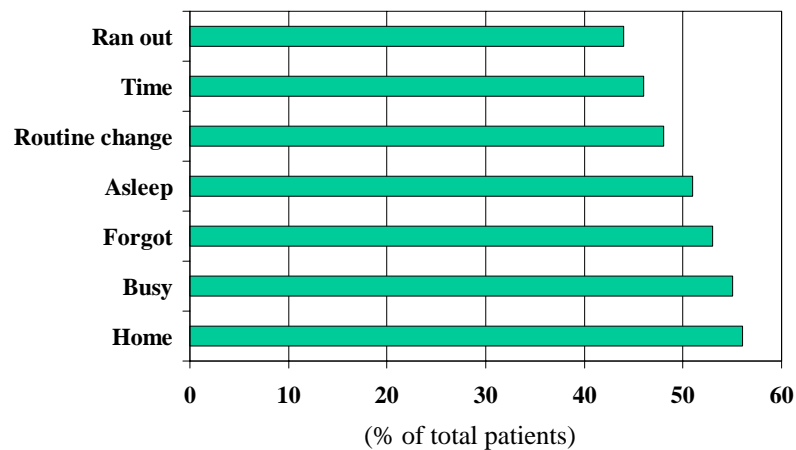
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Relationship of MOS-HIV scores to Symptoms by Mode of Administration

- MOS-HIV scores significantly correlated with number of symptoms within each mode of administration
- Correlations of MOS-HIV scores and symptoms
 - greatest for interview (range -.49, -.75)
 - intermediate for touch screen (range -.33, -.63)
 - lowest for self-administration (range -.01, -.54)

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Reasons for Missed Medications



47% of patients missed medications within the past 2 weeks
Reports of missed medications similar for all 3 modes of administration

Feasibility

	Computer (n=61)	Self-Administration (n=51)	Interview (n=49)	p-value
Completion time for MOS-HIV and Adherence surveys – minutes (SD)	15.9 (7.1)	12.8 (6.8)	12.3 (4.2)	.003
% (total) of missing items on MOS-HIV, Adherence and Symptoms surveys	0.02% (total 5 items)	0.31% (total 63 items)	0.05% (total 10 items)	
% of patients comfortable with computers	76.2	64.7	40.0	0.25
% of patients who prefer computer to interviewer or self- administration	60.3	15.7	16.0	.001

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Summary

- Touch screen administration
 - Had reliability comparable to other modes
 - Validity intermediate between interview and self-administration
 - QOL scores similar to self-administration, lower than interview
 - Completion time slightly longer
 - Number of missing items reduced vs self-administration
 - Received favorably by patients

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Conclusions

- Touch-screen PC administration of quality of life, adherence and symptoms surveys was a reliable and valid method to collect patient-reported outcomes data