EMORY LANEY GRADUATE SCHOOL

EMORY NELL HODGSON WOODRUFF SCHOOL OF NURSING

#ADHERENCE2015

Depressive symptoms mediate the influence of HIV-related symptoms on adherence to antiretroviral medications

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Background

- Possibly interactive relation among disease symptoms and side effects, mood, and medication adherence
- Symptoms and side effects may decrease adherence
- Symptoms and side effects may increase depressive symptoms
- Level of depression inversely related to adherence

Background

- Mechanisms underlying the relation of symptoms to adherence is unclear
- Whether there are specific groups of symptoms and side effects that influence lower adherence is unknown

Purpose

- To identify groups of HIV symptoms and side effects in a widely-used questionnaire, and
- To evaluate relations among groups of symptoms and side effects, depressive symptoms, and antiretroviral medication adherence

Methods

- 124 persons living with HIV (PLWH) who completed baseline self-report measure via ACASI for a larger multi-visit intervention study
- Study variables included HIV-related symptoms and side effects, depression, and medication adherence
  - Covariates: cognitive function, memory, race, age, gender

HIV Symptoms and Side Effects

- 20-item HIV Symptom Index (Justice et al., 2001)
  - Symptoms: fatigue, fever, dizziness, hand/foot pain, memory loss, n/v, diarrhea, sadness, anxiety, sleep difficulty, rash, cough, HA, loss of appetite, bloating/gas, muscle/joint pain, low libido, body image, weight/hair loss
  - A 5-point Likert scale to indicate whether the symptom is present and if present, how bothersome the symptom has been
  - Symptoms were considered if they occurred during the past 4 weeks

Symptoms of Depression

- Seven items drawn from the CES-D (Radloff, 1977)
  - Respondents were asked:
  - "In the past week how often did you…"
    - "Feel like you couldn't shake off the blues even with help from your family and friends?"
    - "Have trouble keeping your mind on what you were doing?",
    - "Feel that everything you did was an effort?"
    - Have trouble sleeping?"
    - "Feel lonely?"
    - "Feel sad?"
    - "Feel like you just couldn't 'get going'?"
  - Items were rated on a 0 – 3 scale

Medication Adherence

- Medication Event Monitoring System System (MEMS, Aardex Group Ltd, Sion Switzerland)
  - Records date and time of bottle opening
  - Percentage of doses taken correctly during each 24-hour period over the 30 days following the baseline

Description of the sample

	N	Minimum	Maximum	Mean	Std. Deviation
Age	124	20	67.00	47.10	8.69
CD4+ T cell[a]	124	62	1734.00	501.23	289.29
Viral Load[b]	124	0[c]	2321K	23K	21K
Years Since First Treatment	123	.25	24.00	11.60	7.18
HIV Meds Doses Per Day	124	1	8.00	2.83	1.50
MEMS Correct (%)	118	6.9	100.0	81.46	20.95

a. CD4+ T cell count was measured in cells/mm^3
b. Viral load was measured in copies/mL
c. Undetectable level

Description of the sample

How participant became infected

	Men N = 88	Women N = 36	Blacks N = 78	Whites N = 45
Sex with man	47	29	38	38
Sex with woman	37	6[b]	37	6
Shared needles	16	4	10	10
Transfusion	9	6	12	3
Other	9	2	7	4
Don't Know	21	11	29	3
Totals[a]	139	58	133	64

a. Totals exceed sample size due to several participants indicating multiple risk factors.

b. Of women reporting sex with another woman as a risk factor, only one did not report another risk factor, such as sex with a man or sharing needles.

Description of the sample

Education

	Men	Women[a]	Blacks	Whites[b]
11th grade or less	29	17	42	4
HS or GED	30	15	24	21
2 years college/AA/Tech	17	1	7	11
College graduate	9	2	3	8
Master degree or greater	2	0	1	1

Note: HS=high school; GED=General Educational Development; AA=Associate of Arts Degree.

a. Test of the association of gender and educational status: $\chi^2 = 8.12$ (df = 4) $p = 0.09$.
b. Test of the association of race and educational status: $\chi^2 = 28.31$ (df = 4) $p < 0.001$.

Analysis

- Factor analysis to evaluate groups of side effects and symptoms on the HIV Symptom Index scale
- Bifactor model
  - One general factor
  - One specific factor reflects GI symptoms
- Structural equation model (SEM)
  - Allows exploration of relation among symptoms, depression, and adherence

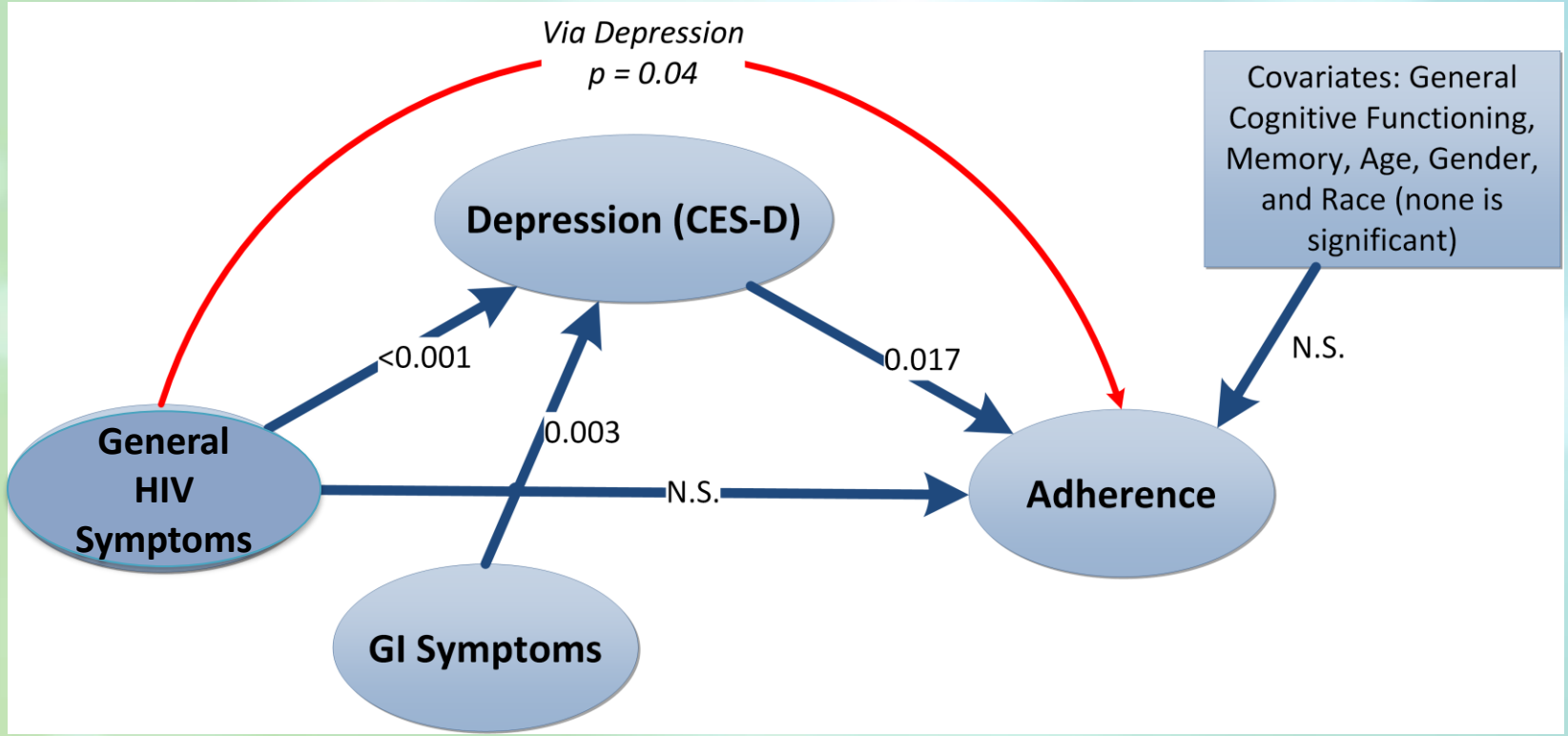
Results

- SEM showed that
  - both general HIV symptoms and GI symptoms were related to higher levels of depressive symptoms, and
  - higher levels of depressive symptoms were related to lower levels of medication adherence.
  - general HIV symptoms were not directly associated with adherence,
  - they were *indirectly* associated with adherence via depression

Structural Model

		Coefficient	SE	Z score	*p*
Predicted Variable	*Predictor Variables*				
CES-D					
	General symptoms	**0.44**	**0.12**	**3.75**	**< .001**
	GI Symptoms	**0.39**	**0.13**	**2.95**	**.003**
Adherence					
	General symptoms	2.91	2.06	1.41	.16
	GI Symptoms	0.70	2.35	0.3	.77
	CES-D	**-5.16**	**2.10**	**-2.46**	**.01**
Adherence					
	Age	0.32	0.22	1.45	.15
	Gender	-4.11	4.67	-0.88	.38
	Race	-5.77	4.45	-1.3	.20
	Crystallized Abilities	-0.43	0.48	-0.91	.36
	Fluid Abilities	0.45	0.55	0.82	.41
	WMS Delayed Recall	0.39	0.69	0.57	.57

Relations among variables



Conclusion

- HIV symptoms and side effects may influence adherence via depressive symptoms
- Depressive symptoms may be one mechanism by which symptoms are related to lower adherence
- Importance of early recognition and evaluation of symptoms of depression to improve medication adherence

Limitations

- Convenience sample
- Cross-sectional study
  - But note that data on adherence were collected 30 days *after* data on symptoms and mood
- Secondary data analysis
- Self-report measures
- Small sample size

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