

Financial Dissatisfaction and Medication Adherence Problems in the Treatment of Schizophrenia

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“Drugs don’t work in patients
who don’t take them.”

C. Everett Koop, M.D.

Osterberg & Blaschke, 2005, “Adherence to Medication” NEJM.

Data on Out-of-Pocket Spending & Medication Adherence in Mental Illness

Out-of pocket health care spend > 20% of disposable income

- 8.8% of those with mental disorders vs. 4.3% of all non-elderly¹
 - Comparable to many other chronic conditions

Financial barriers to MH services significantly more likely in US vs. Ontario or Netherlands²

- Especially true among low income

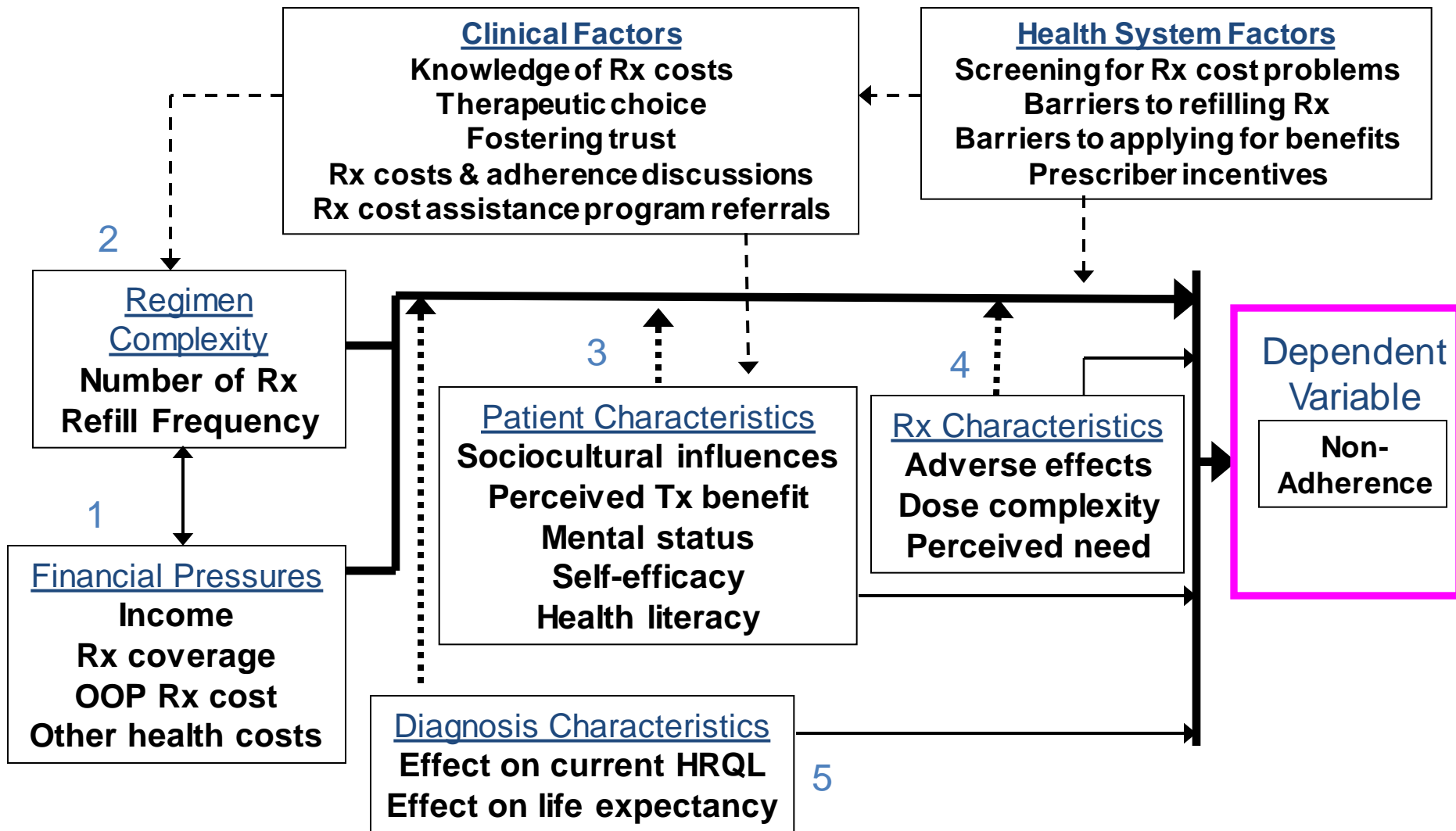
Medication adherence & persistence in schizophrenia is low

- 64 – 82% discontinued initial medication within 18 months³

Effects of adherence problems

- Even short medication gaps have consequences
 - 1.7⁴ to 2.0⁵ increased risk of hospitalization with gaps as short as 10 days

Conceptual Framework: Domains & Factors Affecting Response of Chronically Ill Patients to Medication Cost Pressures



Modified from Piette et al, (2006) "A Conceptually based approach to understanding chronically ill patients' responses to medication cost pressures" *Social Science & Medicine*, 62: 846-857.

Gaps in Schizophrenia Adherence Research Knowledge

Few studies examine role of financial pressures

- If financial pressures examined, often in isolation

Few studies include variables in each of the multiple domains affecting adherence

- Due to limitations of available data

Conceptual framework for cost pressures derived from a variety of studies & medical conditions

- Data in the current study
 - Allows testing of framework in 1 medical condition
 - Includes variables in 5 major domains

Frequency of Use & Usefulness of Information to Assess Adherence

Source of Information	Frequency	Usefulness
Ask patient about recent medication adherence (behavior)	Very frequent	Sometimes
Ask about problems patient having or anticipates	Frequent	Useful
Ask about attitude towards medication	Somewhat Frequent	Useful
Use level of symptoms to estimate adherence		Not useful
Speak with other members of the treatment team		Sometimes
Ask patients to bring in medication for review /pill count		Useful
Ask family / caregiver about adherence (w/ permission)		Useful
Obtain plasma levels of medication	Rarely	Useful
Review pharmacy refill records	Rarely	Useful
Use standardized instrument (e.g. BARS)	Rarely	Sometimes
Use technological tools (e.g. smart pill containers)	Rarely	Useful

Velligan, et al, Journal of Psychiatric Practice, 2010.

Data

Schizophrenia Care & Assessment Program (SCAP)

- 2,327 U.S. Schizophrenia patients ≥ 18
- Usual care treatment at 1 of 6 sites
- Assessed at baseline & every 6 months for 3 years
- Study conducted from 1997 to 2003

Exclusions for this analysis

- Reported no prescriptions for psychiatric medications
- Reside in hospital, nursing home or correctional facility
- Received injection antipsychotics

Number of Patients Remaining for Analysis

- 1,339 patients
- Very similar patient characteristics as overall sample

Dependent Variable – Reduced Adherence

In the last 4 weeks, how regularly did you take the medications you were given for your mental, emotional, or nervous problems?

Strict Definition

- **Stopped taking altogether**
- **Took less than $\frac{1}{2}$**
- **Missed several times / took $\frac{1}{2}$ or more**

- **Missed couple times / took all**
- **Never missed taking**

Relaxed Definition

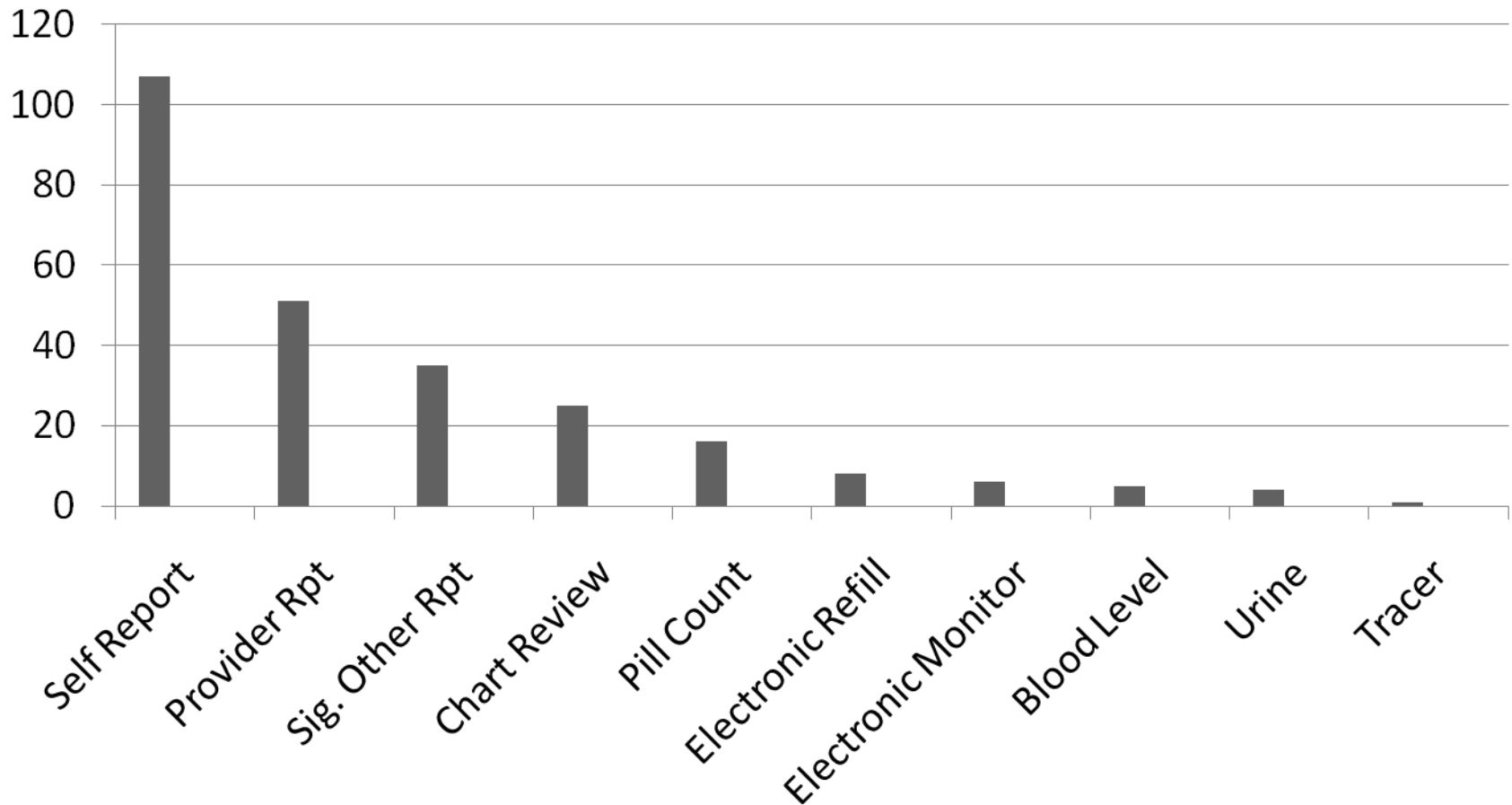
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Reduced Adherence

Detailed results presented using the relaxed definition
Differences in results noted

Methodologies Used to Assess Antipsychotic Adherence



Velligan et al, Schizophrenia Bulletin, 2006

Methods

Associations between individual financial pressures variables & reduced adherence?

- Chi-square comparisons with p-values

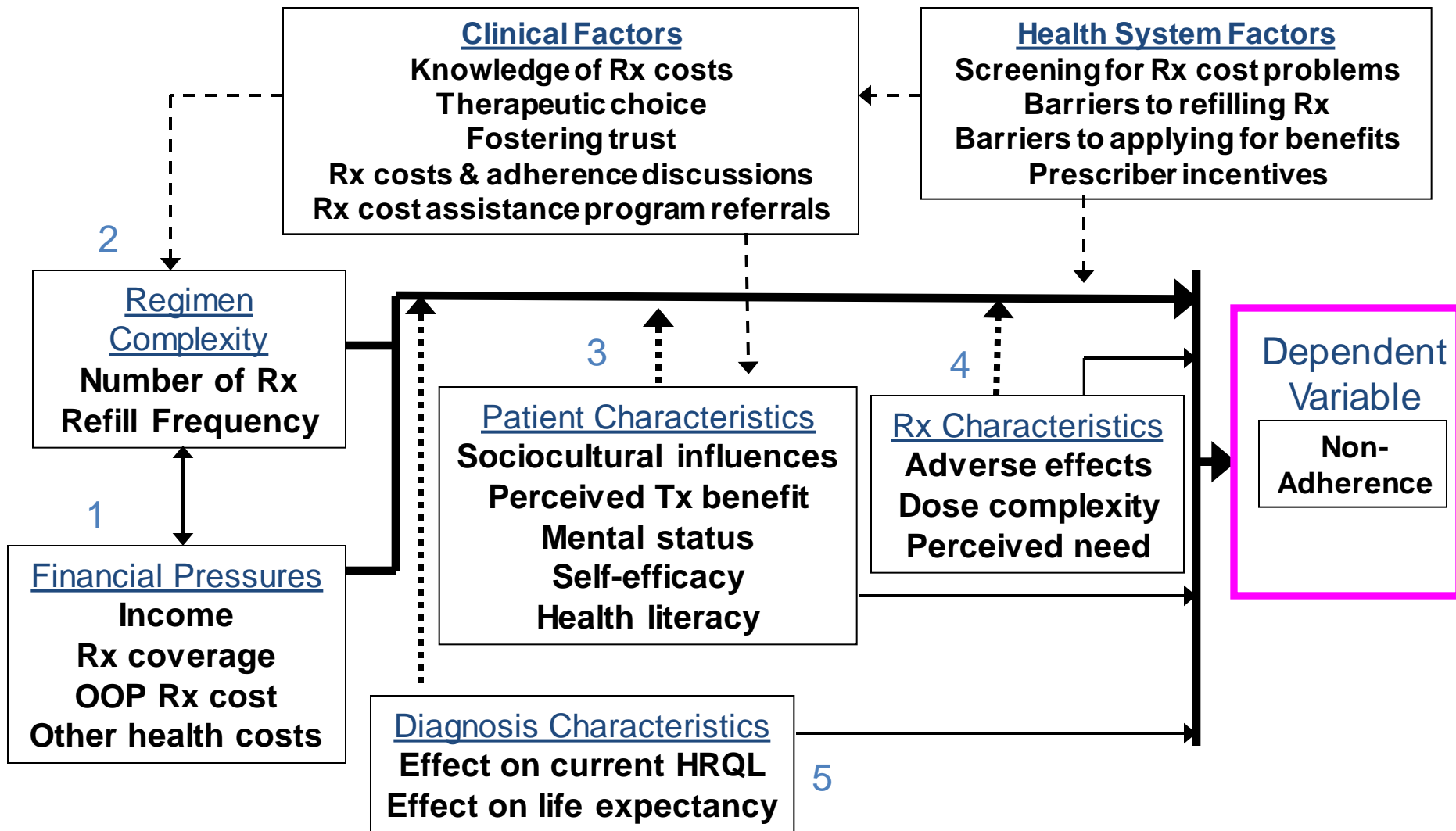
Do other variables moderate the association between financial pressures & reduced adherence?

- Multivariate Analyses with Generalized Estimating Equations (GEE)
 - Accounts for repeated observations for each patient

How does changing the definition of reduced adherence alter which predictors are significant?

- Comparison of significant predictors with each definition

Conceptual Framework: Domains & Factors Affecting Response of Chronically Ill Patients to Medication Cost Pressures



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Summary of Principal Findings

Associations between dissatisfaction with finances & reduced adherence to psychotropic medications

- Financial pressures only: 1.6 - 1.7x ↑ odds*
- Add Regimen complexity: Little change from above*
- Add Patient characteristics: 1.4 - 1.5x ↑ odds*
- Add Rx characteristics: 1.3 - 1.4x ↑ odds*
- Add Diagnosis characteristics: 1.2 - 1.3x ↑ odds⁺

* = $p < 0.001$

+ = $p < 0.01$

Odds of Adherence Problems (Full Model)

Financial Pressures Variables

Parameter	Odds Ratio	95% C.I.
Financial Dissatisfaction (ref. = no)	1.24	(1.11, 1.39)
Insurance Coverage (ref. = Medicare + Medicaid)		
Uninsured	1.00	(0.77, 1.31)
Medicaid Only	0.84	(0.73, 0.97)
Medicare Only	0.85	(0.71, 1.03)
VA Only	1.02	(0.79, 1.32)
All Other Insurance	0.97	(0.80, 1.18)
Income \leq \$10,435 (~125% FPL in 2000)	0.84	(0.73, 0.96)
Employment Status (ref. = unemployed)		
Sheltered Work	1.18	(0.93, 1.49)
Regular Work	1.34	(1.16, 1.54)

Odds of Adherence Problems (Full Model)

Regimen Complexity Variables

Parameter	Odds Ratio	95% C.I.
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# Medications in Med. Records (ref. = 0)		
1-3	1.19	(0.96, 1.47)
>3	1.21	(0.96, 1.52)
Help with Medications (ref. = no)	0.84	(0.72, 0.99)

Odds of Adherence Problems (Full Model)

Patient Characteristic Variables (not modifiable)

Parameter	Odds Ratio	95% C.I.
Age Group (ref. = 18 – 35)		
36-50	0.75	(0.66, 0.86)
>50	0.60	(0.50, 0.72)
Male (ref. = female)	1.08	(0.96, 1.22)
Racial/Ethnic Group (ref. = Caucasian)		
Hispanic (White)	0.99	(0.76, 1.27)
Black / African American	1.08	(0.96, 1.22)
Hispanic (Black)	1.43	(0.87, 2.37)
Other Minority	0.92	(0.75, 1.13)

Odds of Adherence Problems (Full Model)

Patient Characteristics Variables

Parameter	Odds Ratio	95% C.I.
Marital Status (ref. = Unmarried)		
Married, Living Apart	0.97	(0.79, 1.22)
Married, Living Together	1.04	(0.85, 1.28)
Widowed or Divorced	1.14	(0.99, 1.31)
Education (ref.= non high school graduate)		
High School Graduate or G.E.D.	0.87	(0.76, 1.00)*
Some College	1.24	(1.07, 1.44)
College Graduate or more	0.84	(0.69, 1.01)

* = 0.998 at 3 decimal places

Odds of Adherence Problems (Full Model)

Patient Characteristics Variables

Parameter	Odds Ratio	95% C.I.
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Living Situation (ref. = alone)		
With Family or a Friend	0.99	(0.87, 1.13)
With Professional MH Assistance	0.78	(0.65, 0.93)
Homeless	1.69	(0.78, 3.64)
Sad or Blue (ref. = no)	1.36	(1.19, 1.57)
Medication → Clear Thoughts (ref. = no)	0.76	(0.68, 0.85)

Odds of Adherence Problems (Full Model)

Prescription Characteristics Variables

Parameter	Odds Ratio	95% C.I.
Medication Side Effects (ref. = none)		
Interferes with Thinking	1.47	(1.25, 1.73)
≥ 1 Other Side Effect	1.21	(1.04, 1.40)
Take Medication(s) > 2x Daily (ref. = no)	1.17	(1.01, 1.36)

Odds of Adherence Problems (Full Model)

Diagnosis Characteristics Variables

Parameter	Odds Ratio	95% C.I.
Recent MH Diagnosis (ref. = no)	1.20	(0.96, 1.51)
Very Good or Excellent Health (ref. = no)	0.80	(0.71, 0.91)
Limited Climbing Stairs (ref. = no)	1.16	(1.04, 1.31)
Use of Alcohol or Illegal Drugs (ref. = no)	1.74	(1.54, 1.96)
Suicidal Thought or Attempt (ref. = no)	1.86	(1.61, 2.15)

Dependent Variable – Reduced Adherence

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Relaxed Definition

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Reduced Adherence

Detailed results presented using the relaxed definition
Differences in results noted

Significant Variables

With Both Adherence Definitions

Parameter	Relaxed	Strict
Suicidal thought or attempt (ref = no)	1.86	1.89
Substance Use (ref = no)	1.74	1.84
Age >50 (ref = age 18-35)	0.60	0.39
Sad or Blue (ref = no)	1.37	1.42
Regular work (ref = unemployed)	1.34	1.38
Financial Dissatisfaction (ref = no)	1.24	1.32
Age 36-50 (ref = age 18-35)	0.76	0.63
Rx makes thoughts clear (ref = no)	0.76	0.60
V. Good/Excellent Health (ref = no)	0.80	0.77
Help with Medications (ref = no)	0.84	0.68
High school grad/GED (ref = no HS grad)	0.87	0.74

Significant Variable With One Adherence Definition:
Between 0.05 and 0.10 with Other Definition

Parameter	Relaxed	Strict
Rx interferes w/thinking (ref = no side effects)	1.47	1.35 (ns)
Live w/prof. MH assist (ref = live alone)	0.78	0.72 (ns)
College grad or more (ref = no HS grad)	0.83 (ns)	0.67
Medicaid Only Coverage (ref = dual)	0.84	0.80 (ns)
Widowed or divorced (ref = unmarried)	1.14 (ns)	1.27 (ns)

Significant Variables With One Adherence Definition
 But $p > 0.10$ Using Other Adherence Definition

Parameter	Relaxed	Strict
Hispanic (Black) (ref = Caucasian)		4.00
Hispanic (White) (ref = Caucasian)		2.18
Black/African American (ref = Caucasian)		1.78
Married, living apart (ref = unmarried)		1.64
Married, living together (ref = unmarried)		1.51
Male (ref = female)		0.73
Some college education (ref = no HS grad)	1.24	
≥ 1 Other Side Effect (ref = no side effects)	1.21	
Take medication > 2x daily (ref = no)	1.17	
Limited climbing stairs (ref = no)	1.16	
Income ≤ \$10,435 (~125% FPL in 2000)	0.84	

Conclusions

Financial dissatisfaction increases the risk of adherence problems among individuals with schizophrenia

Limitations

- Dependent variable
 - Based upon self-report
 - Collected only once every 6 months
- Predictor variables
 - Incomplete listing of medications
 - Incomplete knowledge of whether insurance coverage includes coverage of prescription drugs
 - Incomplete information regarding co-morbid medical conditions
 - No data to test domains for clinical & health system factors

Identifying Factors That Affect Adherence

Substance Use

- How much alcohol do you drink during a typical day? What about on the weekend?
- What kind of street drugs or prescription drugs that you have not told me about are you using?
- Do you find that you are more likely to miss taking your medication when you are using?

Other important predictors affecting adherence

- Suicidal thoughts or attempts.
- Depression / feeling sad or blue.

Help with medications

- Do family members encourage you to take your medication?
- Does anyone help you or remind you to take your medication?

Velligan et al, 2010, Assessment of Adherence Problems in Patients with Serious and Persistent Mental Illness: Recommendations from the Expert Consensus Guidelines
J. Psych Practice, 16(1):34-45.

Identifying Factors That Affect Adherence

Attitudes Toward Medication

- How do you feel about taking this medication?
- What do you think are reasons to take this medication? What about reasons not to take it?
- Do you believe you benefit from taking this medication?
- Has there been a day when you intentionally decided not to take your medication? What was that about?
- Do you feel better when you stop your medication?

Awareness of demographics

- Not modifiable but awareness can ID those at greater risk

Financial

- How do you pay for your medicine?
- Do you have a co-pay? How do you manage to pay it?

Velligan et al, 2010, Assessment of Adherence Problems in Patients with Serious and Persistent Mental Illness: Recommendations from the Expert Consensus Guidelines
J. Psych Practice, 16(1):34-45.

Policy Implications

Policies that ↑ financial dissatisfaction are likely to result in unintended negative consequences

- Recommend exemptions for schizophrenia

Enhance or maintain current protections

- Limited cost sharing, classes of clinical concern

Invest in programs that improve adherence

- Housing with professional MH support
 - But also seek greater assistance with Rx in that setting
- Assistance with taking medications
 - Improves adherence yet <20% of those with adherence problems received help

Consider coordinating application for Medicare/
Medicaid with Patient Assistance Programs

- Public / private collaboration

Simple question to screen for financial dissatisfaction

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