Models of Case Mix Adjustment for Ohio Mental Health Consumer Outcomes among Children and Adolescents

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Overview

- Background and need
- Definitions and methods
- Purpose of Study
- The current Study
  - Method
  - Results
  - Conclusions

Background – Age of Accountability

- Convergence
  - System of Care and need for service
  - Limited resources
  - Questions of service quality
- Outcome research
- Outcome evaluation
- Outcome management

Background

"It has become increasingly common for outcome data to be used to rate the performance of mental health providers, set reimbursement rates, and function as criteria for accreditation."

(Phillips, Kramer, Compton, Burns, & Robbins, 2003).

Background - Worries

- Agencies/providers are wary of comparisons
  - Clients are not randomly assigned
  - Systematic differences in populations receiving services at an agency (or in caseloads among clinicians) may influence outcome
  - Concerns about how data will be used


Definition of case mix adjustment

- "(t)he process by which health status of a population is taken into consideration when . . . evaluating patterns or outcomes of practice" (Weiner, 2004).

- The goal of risk adjustment is to eliminate biases that do not correspond to actual differences between agencies in terms of the quality of care (Elliot, 2001).

Purpose

To investigate factors that influence outcome on the Ohio Mental Health Consumer Outcome System and to develop initial models of case mix adjustment.

1: Are demographic, clinical, and family variables at intake related to the outcome (problem severity and functioning) for children receiving services?

2: When comparing providers on the outcome of services, do adjusted models present a significantly different picture of providers when compared to unadjusted models? (The focus of this presentation)

Method - Sample
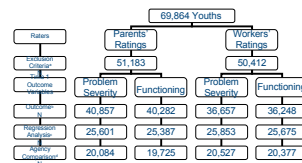
Method – Outcome Variables

- Ohio Scales –
  - Problem Severity (parent rated)
  - Functioning (parent rated)
  - Problem Severity (agency worker rated)
  - Functioning (agency worker rated)

- Only results using parent rated problem severity will be presented today.

Outcome

- Used Jacobsen and Truax's notion of reliable change to divide the youth into three outcome groups:
  - Improved (decrease of 10 or more pts)
  - Deteriorated (increase of 10 or more pts)
  - No Change (Between 10 and -10 pts change)

Method – Case mix variables

1) child age,
2) child sex,
3) child race (White, Black/African-American, Hispanic, Native American, Asian, or Multiethnic),
4) Weighted ROLES (Hawkins et al., 1992),
5) diagnosis (disruptive behavior disorder, mood disorder, schizophrenia, anxiety disorder, pervasive and other developmental disorders, other childhood disorders, and other disorders),

Method – Case mix variables

6) days in detention (none or 1+),
7) arrests (none or 1+),
8) suspensions from school (none or 1+),
9) self-harm attempts (none or 1+),
10) number of agencies, and
11) elapsed time between time 1 and time 2 assessments.

Method - Analyses

- Rank order agencies with 200+ clients

- Use multinomial logistic regression to predict outcome (improved, no change, deteriorated) using case mix variables (including all agencies and clients)

- Rank order agencies (200+ clients) again using adjusted models

Provider	% Improved	% Deterioration	Improved minus Deterioraters	Rank
A	50	11	39	1
B	44	10	34	2
C	44	12	32	3
D	41	12	29	4
E	40	12	28	5
F	39	11	28	6
G	37	12	25	7
H	40	15	25	8
I	38	15	23	9
J	34	12	22	10
K	37	16	21	11
L	38	18	20	12
M	33	20	13	13

Multinomial Logistic Regression Predicting Outcome

Predictor Variable	LR Test	Exp(B) worse	Exp(B) Same
Time between ratings	51.65*	1.08	.64*
Age	3.54	.98	.99
ROLES	16.43*	1.13*	1.01
# of agencies	22.09*	1.24*	1.02
Sex	2.64	.90	.98

Multinomial Logistic Regression Predicting Outcome

Predictor Variable	LR Test	Exp(B) worse	Exp(B) Same
Race: Black	3.02	1.00	.93
Race: Hispanic	1.93	.91	1.19
Race: Native American	.11	.86	.93
Race: Asian	.40	1.05	.76
Race: Multi-racial	.80	.91	1.03

Multinomial Logistic Regression Predicting Outcome

Predictor Variable	LR Test	Exp(B) worse	Exp(B) Same
Diagnosis: Adjustment Disorder[2]	13.42*	.87	.79*
Diagnosis: Mood Disorder	2.53	1.04	1.10
Diagnosis: Schizophrenia	1.98	2.12	.97
Diagnosis: Anxiety Disorder	2.80	1.15	1.14
Diagnosis: Pervasive Developmental	.34	1.03	.85
Diagnosis: Other Childhood Disorders	4.11	1.82	1.05
Diagnosis: Other Diagnosis	3.98	1.05	.76

Multinomial Logistic Regression Predicting Outcome

Predictor Variable	LR Test	Exp(B) worse	Exp(B) Same
# of detentions	6.26*	1.24*	1.17*
# of self-harm attempts	21.46*	1.58*	1.44*
# of suspensions	9.46*	.99	1.19*
# of arrests	4.87	.84	1.13

Results – Agency Rank

Provider	Actual %	Case Mix Adjusted %	Rank	Rank 2
A	39	10	1	1
B	34	7	2	3
C	32	8	3	2
D	29	4	4	4
E	28	3	5	5
F	28	0.0	5	6
G	25	-1	7	7
H	25	-1	7	7
I	23	-3	9	9
J	22	-3	10	9
K	20	-9	11	12
L	20	-6	11	11
M	13	-12	13	13

Discussion

1. Agency differences in outcome using the index (improved minus deteriorated) ranged from 13 to 39.
2. Certain case mix variables were related to outcome – time between initial and follow-up, ROLES, # of agencies, adjustment disorder diagnosis, # of detentions, self-harm attempts, and suspensions.

Discussion - continued

3. Total amount of variance accounted for in the case mix model was small.
4. Comparison of agencies using adjusted outcome were not substantively different from comparisons using unadjusted outcome. (A few agencies were ranked slightly different)

Discussion - continued

5. Real differences in agencies exist in outcome even after accounting for case mix variables thought to be important predictors of outcome.