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Effect of Psychotropic Medication on Foster Care Experience and Outcomes: A Causal Analysis using Administrative Data

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Abstract

Children in foster care experienced abuse, neglect, or dependency, and for the safety and well-being of the child, must be taken out of their biological home. Not surprisingly, children in foster care have higher rates of serious emotional and behavioral problems. Although pharmacological treatments can be an important component of the treatment plan, there seems to be a higher rate of use than would be expected. An estimated 13-25% of foster children are prescribed mind- and mood-altering medication vs. 4% in the general population.

Children in foster care are considered a vulnerable population and research involving these children justifiably requires additional measures to ensure their protection. As a result, studies on the use of psychotropic medication among youth in foster care have relied primarily on secondary data, typically administrative data. This study used linked administrative datasets to rigorously examine the effect of psychotropic medication on foster care experiences and outcomes among children who entered foster care in North Carolina between March 2006 and June 2012. The dataset was constructed by linking the North Carolina's child welfare administrative records (also known as the Services Information System [SIS]) with the Medicaid claims database (also known as the Eligibility Information System [EIS]) for medical and mental health services received by the foster youth. Inverse probability of treatment weighting was calculated and applied to mimic a randomized study. Results revealed that children on medication stayed in care longer, less likely to experience placement disruption, and more likely to exit to adoption.

Comments

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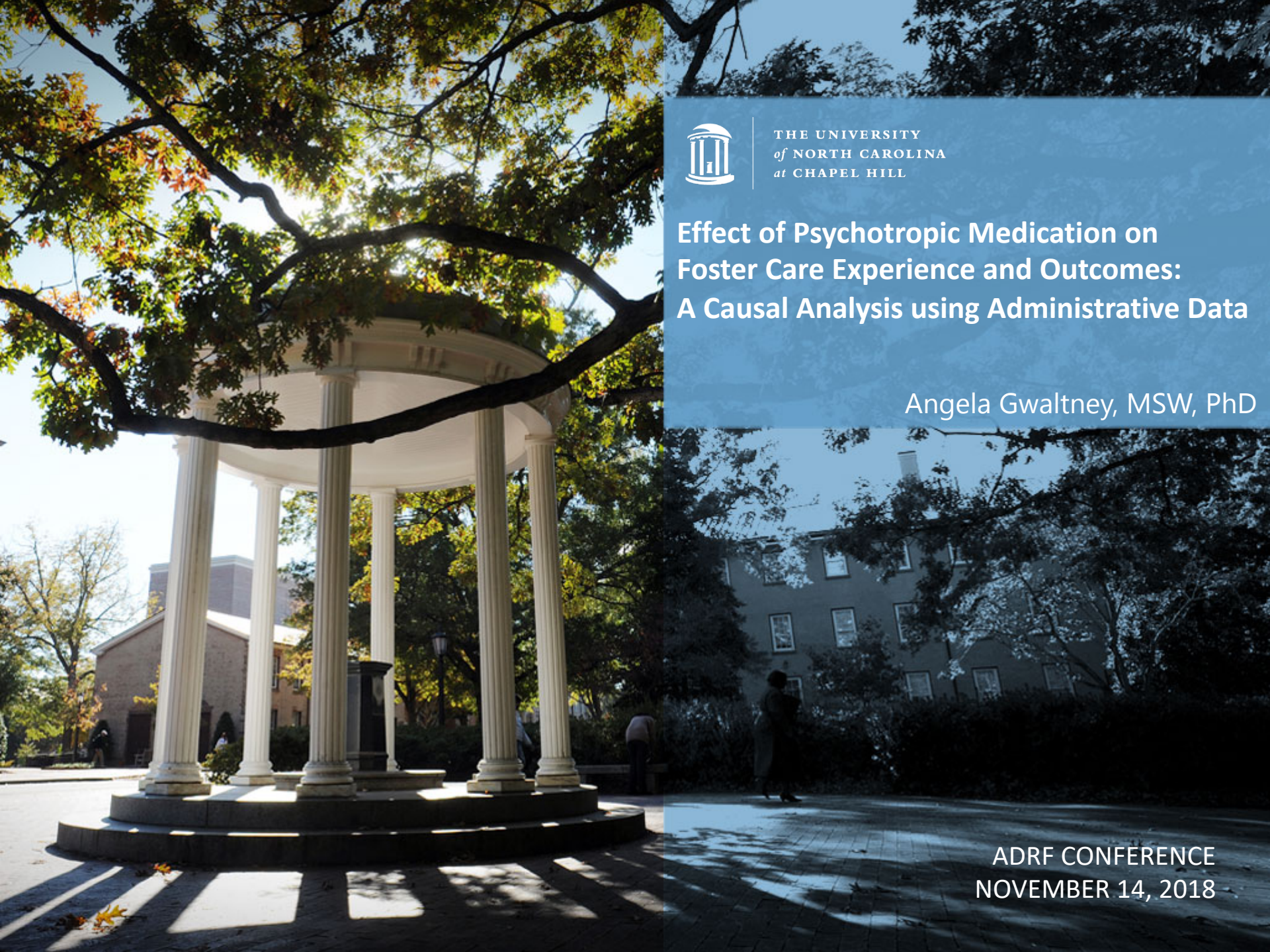

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Effect of Psychotropic Medication on Foster Care Experience and Outcomes: A Causal Analysis using Administrative Data

Angela Gwaltney, MSW, PhD

ADRF CONFERENCE
NOVEMBER 14, 2018

Introduction

On any given day, approximately **400,540** children in foster care in the US [1, 2]

Trauma Experienced

Abuse or Neglect	Homelessness	Exposure to domestic violence
Exposure to substance abuse	Multiple placements	Loss of Control

Introduction

- 50-80% of children have moderate to severe mental health problems [3, 4, 5]
- Many prescribed psychotropic medication (reports ranging from 20% to 40%) [6]
- Children in foster care more likely to be prescribed psychotropic medication (2.7 to 4.5 times the rate of non-foster youth) [6, 8]

What are psychotropic medications?

Psychotropic medications are medicine capable of affecting the mind, emotions, and behavior; denoting drugs used in the treatment of mental illness.

Psychotropic medications [6,7]

Stimulants	Treats: ADD/ADHD
Strattera, Vyvanse, Ritalin, Concerta, Adderall, Dexedrine, Dextrostat	Adverse effects: Decreased appetite, tics, psychosis, flat effect, difficulty sleeping
Antianxiety	Treats: Generalized anxiety disorder, PTSD, social phobias
Klonopin, Ativan, Xanax	Adverse effects: Dependence, drowsiness and dizziness, blurred vision, nightmares, headaches
Antidepressants	Treats: Depression, anxiety, OCD, social phobia
Prozac, Celexa, Zoloft, Paxil, Lexapro, Effexor, Cymbalta, Wellbutrin	Adverse effects: Suicidal thoughts, sleeplessness or drowsiness, agitation, sexual dysfunction, Weight gain, nausea and vomiting

Psychotropic medications (cont.) [6, 7]

Antipsychotics	Treats: bipolar disorder, schizophrenia, Tourette's syndrome
Thorazine, Haldol, Risperdal, Zyprexa, Seroquel, Geodon, Abilify	Adverse effects: rigidity, tremor, tardive dyskinesia, diabetes, high cholesterol, weight gain, neuroleptic malignant syndrome
Mood stabilizers	Treats: Bipolar disorder, depression
Lithium, Depakote, Tegretol, Lamcital, Trileptal	Adverse effects: suicidal thoughts; loss of coordination; hallucinations; kidney, thyroid, liver and pancreatic damage; polycystic ovarian syndrome; weight gain
Alpha-adrenergic agonists (AAAs)	Treats: ADD/ADHD, insomnia and sleep problems, PTSD
Clonidine, guanfacine	Adverse effects: Sedation, headache, excitability, restlessness

Problem Statement

Concern 1: Off-Label Use

- These medications are often “off-label”
- Off-Label:
  - Untested for efficacy and safety in pediatric populations or indication [9]
  - Different dosage than approved for an indication by the FDA

Problem Statement

Concern 2: Side Effects

Host of negative side-effects [11]

- Weight gain and metabolic changes
- Sedation
- Low blood pressure (Orthostatic Hypotension)
- Abnormally rapid heart rate (Tachycardia)
- Menstrual problems
- Blurred vision
- Skin rashes
- Sun sensitivity

Problem Statement

Concern 3: Lack of Oversight

- Children in foster care are particularly vulnerable due to lack of oversight by caretaker and agency [6]
- One study found that 34 of 48 states had not implemented a system to identify prescriptions with dosages exceeding current recommended maximum recommendations [5]

Gap in Research

- Children in foster care are a particularly vulnerable population with high need and high rates of psychotropic medication
- Research in this area have only covered the prevalence rates of psychotropic medication thus far
- Few studies conducted beyond descriptive analysis that look at long-term causal effects of medication use
- More research is needed to understand the short- and long-term effects of foster youth receiving psychotropic medication
    - Placement types
    - Placement changes
    - Exit type
    - Health
    - Educational
    - Behavioral
    - Social

Rigorous research challenging with foster youth: need innovative statistical techniques to take advantage of existing administrative data

Outcome Measures

Since the passage of the Adoption and Safe Families Act of 1997, the U.S. Department of Health and Human Services has established several important objectives and outcomes of interest that relate to the safety and well-being of children in foster care:

- Length of Time in Care
- Placement Stability
- Permanency

Research Questions

1. How does medicating children in foster care effect how long they are in care?
2. How does medicating children in foster care effect placement stability?
3. How does medicating children in foster care effect how they exit to permanency?

Methods Overview

Data management

Propensity score analysis (IPTW)

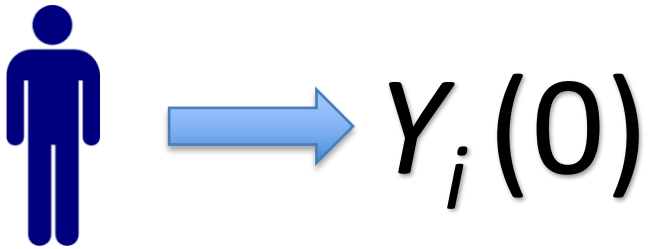
Outcome analysis

METHOD

Causal Analysis

Potential Outcomes Model

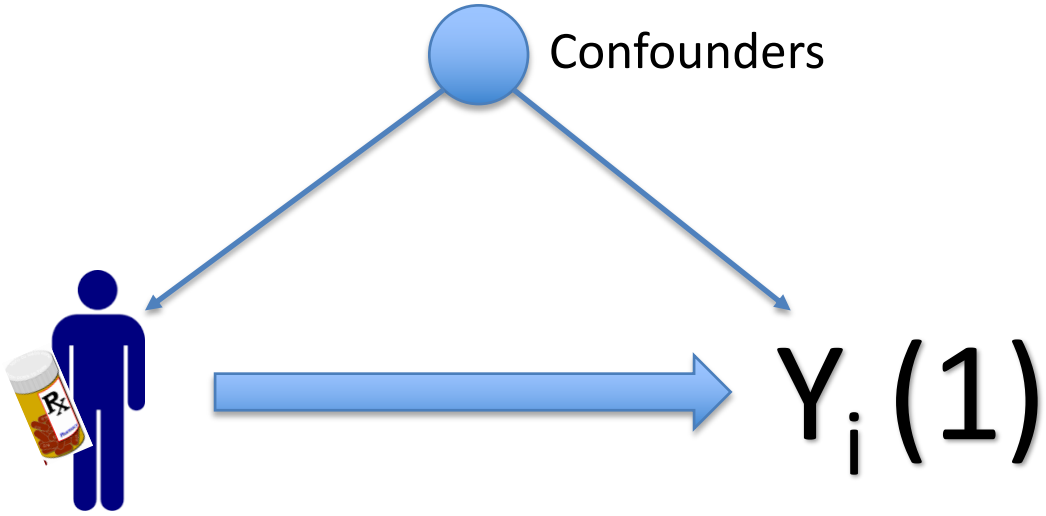
Causal effect is the difference between the potential outcome that would arise for an individual under two different treatment/exposure conditions[1]



$$T_1 = Y_i(1) - Y_i(0)$$

Criteria for Causality[2]

- X precedes Y
- X is related to Y
- No plausible alternative explanations for Y exist other than X

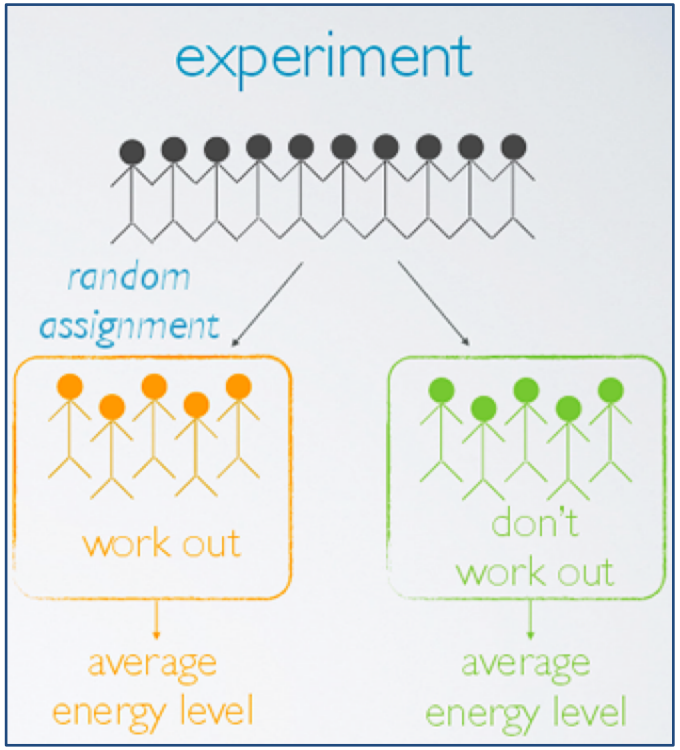


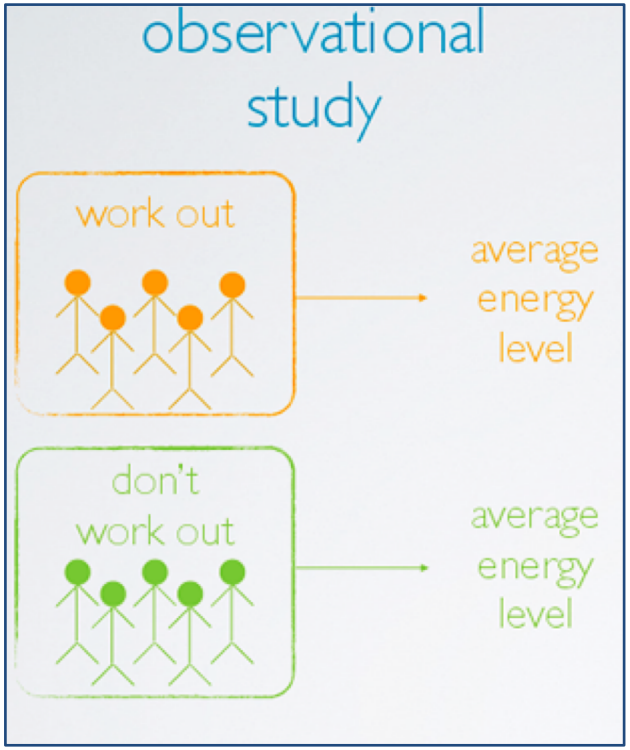
METHOD

METHOD

Causal Analysis:

Random Assignment vs. Observational Study





METHOD

Propensity Score Analysis

- PSA increasingly used to use observational studies to estimate treatment effects and outcomes [3]
- Reduces the effect of confounding due to differences in the distribution of measured baseline characteristics between treatment groups
- PSA mimics randomized treatment groups by comparing outcomes in treated and untreated subjects who have a similar distribution of measured baseline covariates

Propensity Score (e)

A propensity score is a conditional probability of being assigned (or selected) to a treatment group [4]

$$e_i = \Pr(Z_i = 1 | \mathbf{X}_i)$$

Treatment Group
(e.g., Medication)

Baseline covariates

METHOD

Propensity Score Analysis Methods

METHOD

Four methods of using propensity scores [5]

1. Propensity score matching
2. Stratification on the propensity score
3. Inverse probability of treatment weighting (IPTW) using the propensity score
4. Covariate adjustment using the propensity score

METHOD

Inverse Probability of Treatment Weighting (IPTW)

- ✓ Survival outcomes
- ✓ More complex study designs and research questions (e.g., time-varying confounders)
- ✓ No loss of sample (like matching and stratification)

Types of Treatment Effect

- Average Treatment Effect (ATE)
  - Treatment effect for the *overall target population* in the study (treated and untreated subjects together)
- Average Treatment Effect among the Treated (ATT)
  - Treatment effect for the *treated* subjects only

METHOD

METHOD

Inverse Probability of Treatment Weighting (IPTW)

- Estimated propensity scores were inverted to create IPTWs

$$w_{ate} = \frac{Z}{e} + \frac{1-Z}{1-e}$$

- Very large weights can cause instability: therefore stabilize weights by multiplying the IPTW by the marginal probability of receiving the actual treatment received

$$w_{ate,stab} = \Pr(Z=1)\frac{Z}{e} + \Pr(Z=0)\frac{1-Z}{1-e}$$

- Trim weights to 5th and 95th percentile

METHOD

Steps to Propensity Scoring

Steps	Method
1. Create weights on probability of being in medication treatment group based on variables from prior knowledge	• Logistic regression with logit link • Invert to IPTWs • Stabilize weights • Truncate extreme weights
2. Assess weight distributions and overlap	• Histogram • Box-plot
3. Assess balance of baseline covariates before and after weighting	• Standardized mean differences

METHOD

Outcome Analysis

Outcome	Analysis
1. Time to permanency	Cox proportional hazards regression model with IPTW
2. Placement stability	Poisson count regression with IPTW
3. Exit to permanency	Multinomial logistic regression with IPTW

METHOD

Outcome Analysis

1. Time to Permanent Exit

Weighted Cox Proportional Hazards Model with time-varying variables

$$\log h_i(t) = \alpha(t) + \beta_1 x_{i1} + \beta_2 x_{i2}(t)$$

METHOD

Outcome Analysis

2. Placement Stability

Poisson Count Regression exposure (time) offset

$$\log(E(y)) = b_0 + b_1 x + b_1 x(t) + \log(t_{exposure})$$

where

y = dependent variable (count)

E(y) = Expected count value

x = Independent variables

b_0, b_1 are regression coefficients

t = time period observed (exposure)

Log(t) is the offset variable

METHOD

Outcome Analysis

3. Exit type

Weighted multinomial logistic regression with time-varying covariates

For m=2, …M (outcomes)

$$P(Y_i = m) = \frac{\exp(Z_{mi})}{1 + \sum_{h=2}^{M} \exp(Z_{hi})}$$

For reference category,

$$P(Y_i = 1) = \frac{1}{1 + \sum_{h=2}^{M} \exp(Z_{hi})}$$

Literature Review:

Predictors of Psychotropic Medication Use Among Foster Youth

Significant

- Older [1, 2, 3, 5, 6, a]
- Physical abuse [1, 2, 3]
- White [1, 2, 3, 4, 5, b]
- Male [1, 2, 3, 6]
- Poor health [1, 2, 3]
- Group home/out-of-home placement [1, 2, 3, 4, 5, b]
- Externalizing behavior [1, 2, 3, 4]
- Internalizing behavior [2, 3, c]

Non-Significant

- Abandonment [1, 2, 3, 6]
- Sexual [1, 3, 6, d]
- Neglect [1, 2, 3, 6]
- Hispanic/Other (Ref. White) [1, 2, 3]
- Pediatrician/psychiatrist ratio [6]
- Rurality [1, 2, 3]
- Time in placement or instability [5]

METHOD

Data Management

- Linked foster care administrative dataset with Medicaid claims dataset using unique id
- Inclusion Criteria: Children entered into the North Carolina foster care system between March 1, 2006 and June 30, 2012
- If < 7 days between spells, spells were combined
- First spell only
- Excluded very young children (< 5 years of age)
- Excluded children with severe, psychotic disorders

METHOD

Measures

- Psychotropic Medication*
- Gender (Male/Female)
- Race/Ethnicity
  - White (non-Hispanic)
  - Black (non-Hispanic)
  - Hispanic
  - Other/Mixed
- Age* (0-4, 5-9, 10-14, 15-19)
- Abuse History
  - Physical abuse
  - Sexual Abuse
  - Neglect
  - Other
- Placement Type*
  - Foster care
  - Therapeutic foster care
  - Kinship care
  - Residential care
  - Other
- Entry cohort
- Physical Disability
- Parent substance abuse
- Single parent household
- Rurality
- Diagnosis*
- Number of Months in Care *

* Time-Varying

METHOD

Measures

Psychotropic Medication

1. Antidepressants
2. Antipsychotics
3. Moodstabilizers
4. Anxiolytic
5. Stimulants
6. Alpha-adrenergic agonist (AAA)

METHOD

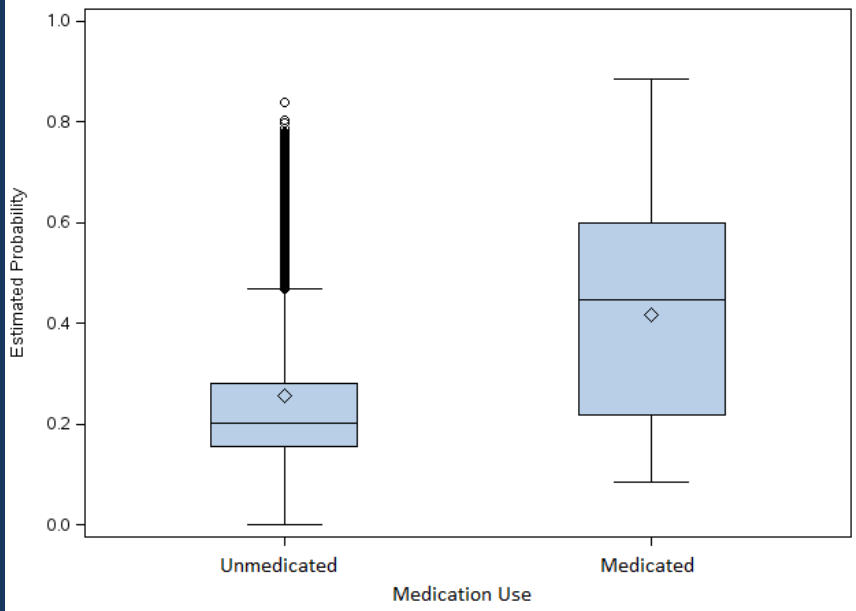
Measures

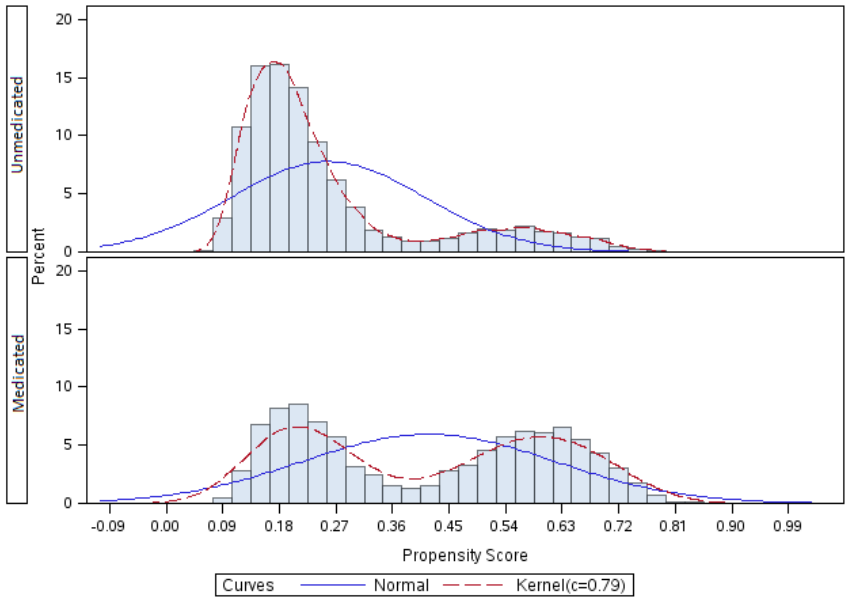
Diagnosis

1. Schizophrenia and other psychoses
2. Pervasive developmental disorders and mental retardation (PDD-MR)
3. Bipolar disorder
4. Disruptive disorders
5. Attention-deficit hyperactivity disorder (ADHD)
6. Depression disorders
7. Anxiety disorders
8. Adjustment disorder
9. Communication or learning disorders
10. Any other psychiatric diagnosis

RESULTS

IPTW Distribution





RESULTS

Balance Assessment

	Unmedicated (n=10,250[a])	Medicated (n=4,529[b])	Standardized Difference	
			Original Sample	Weighted Sample
Gender				
Male (ref. Female)	4,670 (45.6%)	2,521 (55.7%)	0.20	0.04
Race				
White	4,765 (46.5%)	2,512 (55.5%)	0.18	0.02
Black	3,770 (36.8%)	1,451 (32.0%)	0.10	0.00
Hispanic	928 (9.1%)	251 (5.5%)	0.15	0.04
Other	787 (7.7%)	315 (7.0%)	0.03	0.01
Age at Entry				
5 to 9 years	4,416 (43.1%)	1,650 (36.4%)	0.14	0.03
10 to 14 years	3,447 (33.6%)	1,706 (37.7%)	0.08	0.01
15 to 19 years	2,387 (23.3%)	1,173 (25.9%)	0.06	0.03
Physical Disability	43 (0.4%)	45 (1.0%)	0.06	0.01
Parent				
Substance abuse	2,893 (28.2%)	1,244 (27.5%)	0.02	0.01
Single parent	6,117 (59.7%)	2,694 (59.5)	0.00	0.01
Placement				
Foster care	3,668 (35.8%)	1,637 (36.1%)	0.01	0.01
Therapeutic foster care	353 (3.4%)	366 (8.1%)	0.17	0.03
Group care	1,054 (10.3%)	748 (16.5%)	0.17	0.04
Kinship care	3,388 (33.1%)	1,068 (23.6%)	0.22	0.05
Other	1,787 (17.4%)	710 (15.7%)	0.05	0.01

RESULTS

Balance Assessment

	Unmedicated (n=10,250[a])	Medicated (n=4,529[b])	Standardized Difference	
			Original Sample	Weighted Sample
Abuse History				
Physical abuse	783 (7.6)	377 (8.3%)	0.02	0.00
Sexual abuse	595 (5.8%)	277 (6.1%)	0.01	0.00
Neglect	7,838 (76.5%)	3,320 (73.3%)	0.07	0.02
Other	2,111 (20.6%)	1,063 (23.5%)	0.07	0.02
Diagnosis	1774 (17.3%)	2,418 (53.4%)	0.72*	0.04
Disruptive disorder	683 (6.7%)	1,100 (24.3%)	0.41*	0.08
ADHD	240 (2.3%)	790 (17.4%)	0.40*	0.20
Depressive disorders	138 (1.3%)	174 (3.8%)	0.13	0.00
Anxiety disorders	137 (1.3%)	100 (2.2%)	0.06	0.08
Adjustment disorder	305 (3.0%)	113 (2.5%)	0.03	0.28*
Other mental disorders	8,476 (82.7%)	141 (3.1%)	0.03	0.20
Entry cohort (median)	2008	2008	0.05	0.04
Rurality				
Urban (ref. Rural)	7,373 (71.9%)	3,335 (73.6%)	0.04	0.01

*Standardized effect sizes in absolute values greater than 0.25

[a] 69.4% of total sample

[b] 30.6% of total sample

Note. ADHD = Attention deficit and hyperactivity disorder.

The weighted sample was constructed on the standardized inverse-probability of the treatment weighted (IPTW)

RESULTS

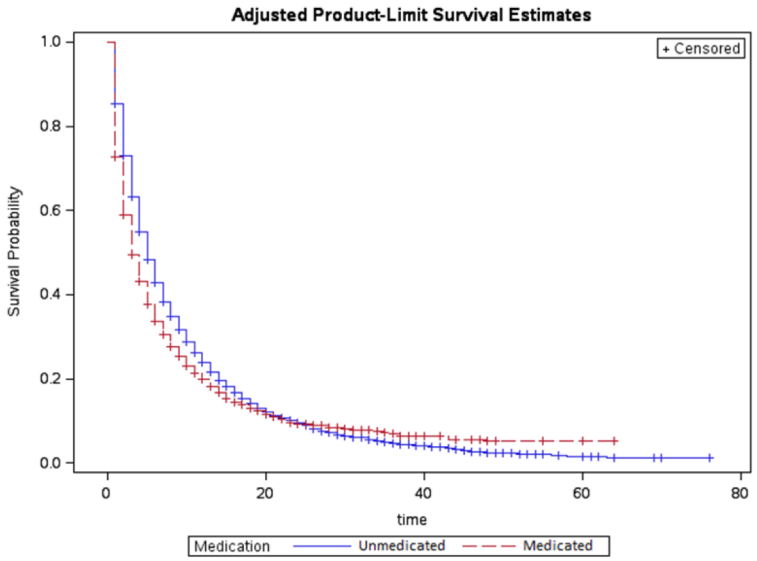
Descriptive Data (Raw)

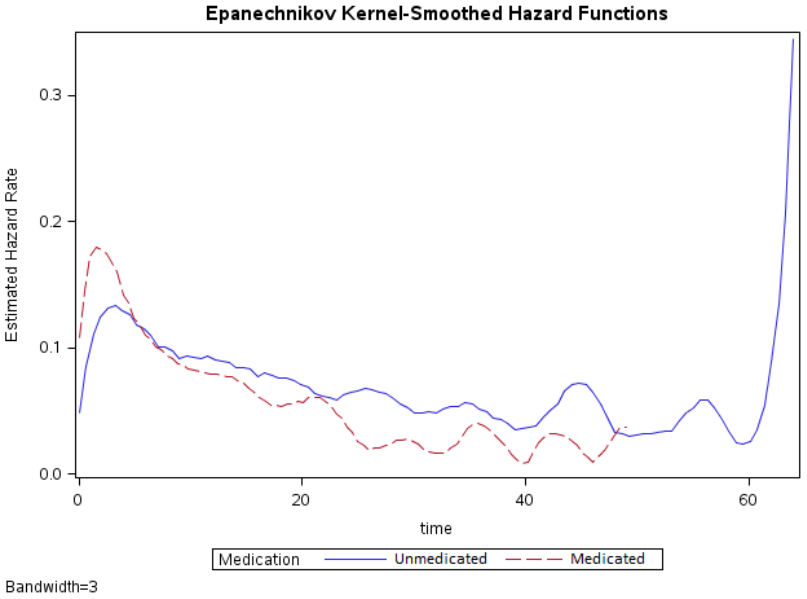
Outcome	Medicated (n=4,529)	Non-Medicated (n=10,2507)
Length of Time in Care		
Mean (*SE*; in months)	8.6 (0.17)	9.7 (0.12)
Placement Stability		
Average number of placements *(SD)*	4.8 (5.2)	2.8 (3.6)
Exit Type		
Reunification	1,650 (36.4%)	4,178 (40.8%)
Adoption	692 (15.3%)	1,344 (13.1%)
Guardianship	1,126 (24.9%)	3,072 (30.0%)
No Permanency	1,061 (23.4%)	1,656 (16.2%)

RESULTS

Outcome 1: Length of Time

Survival Analysis





RESULTS

Outcome 1: Length of Time

Cox Regression

Variable	Hazard Ratio (95% CI)	*p* value
Medication	0.40 (0.37-0.41)	< .0001
Gender		
Male (ref. Female)	0.99 (0.96-1.04)	NS
Average age	1.01 (1.01-1.02)	< .001
Race		
Black (ref. White)	1.11 (1.06-1.16)	< .0001
Hispanic (ref. White)	0.99 (0.92-1.07)	NS
Other (ref. White)	1.13 (1.04-1.22)	< .01
MH diagnosis		
Disruptive disorder	0.93 (0.87-0.98)	<.05
ADHD	0.94 (0.88-1.00)	NS
Depressive disorders	1.00 (0.90-1.10)	NS
Anxiety disorders	0.93 (0.83-1.03)	NS
Adjustment disorder	1.03 (0.94-1.14)	NS
Other mental disorders	0.88 (0.78-0.98)	<.05
Physical disability	1.01 (0.77-1.31)	NS
Placement		
Foster care	1.95 (1.82-2.08)	< .0001
Therapeutic foster care	1.82 (1.69-1.96)	< .0001
Kinship care	0.97 (0.90-1.04)	NS
Group home	1.45 (1.34-1.57)	< .0001
Other	-	-

RESULTS

Outcome 1: Length of Time

Cox Regression

Variable	Hazard Ratio (95% CI)	*p* value
Abuse		
Physical	1.11 (1.04-1.19)	< .01
Sex	1.20 (1.10-1.30)	< .0001
Neglect	1.08 (0.96-1.22)	NS
Other	1.09 (0.96-1.23)	NS
Parental characteristics		
Substance abuse	0.98 (0.94-1.03)	NS
Single parent	1.05 (1.01-1.09)	<.05
Entry cohort	2.03 (2.00-2.06)	< .0001
Metropolitan	0.99 (0.95-1.04)	NS
Number of placement changes	0.51 (0.50-0.52)	< .0001
Event and censored values:		
Events: 12,049		
Censored: 40,083		
Total: 52,132		
% Censored: 76.89		

	Without covariates	With covariates	Model chi-square	*df*	*p*
-2 log *L*	167,004.03	149,710.00	17,294.05	26	<.0001

Note. ADHD = Attention-deficit hyperactivity disorder; CI = Confidence interval; NS = Non-significant; ref. = Reference.

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Outcome 2: Placement Stability

RESULTS

Characteristic	*B*	Std. Error	*Wald 95% CI* Lower	Higher	Incidence Rate Ratio
Medication	-0.19***	0.02	-0.23	-0.15	0.83
Male					
Male (ref. Female)	0.02	0.02	-0.02	0.06	1.02
Age of Entry	0.03***	0.00	0.02	0.03	1.03
Race					
Black (ref. White)	-0.03	0.02	-0.07	0.02	0.97
Hispanic (ref. White)	-0.10**	0.04	-0.17	-0.03	0.90
Other (ref. White)	0.01	0.04	-0.06	0.09	1.01
MH diagnosis	0.22***	0.02	0.18	0.26	1.25
Physical disability	-0.04	0.11	-0.26	0.18	0.96
Placement					
Foster care	0.14***	0.02	0.10	0.19	1.15
Therapeutic FC	0.29***	0.03	0.24	0.35	1.34
Kinship care	0.01	0.02	-0.04	0.05	1.01
Group home	0.27***	0.03	0.22	0.32	1.31
Other					
Abuse					
Physical	0.02	0.04	-0.05	0.09	1.02
Sex	-0.02	0.04	-0.10	0.06	0.98
Neglect	0.01	0.06	-0.11	0.12	1.01
Other	0.05	0.06	-0.07	0.17	1.05
Parents					
Substance abuse	-0.07***	0.02	-0.12	-0.03	0.93
Single parent	0.02	0.02	-0.02	0.06	1.02
Entry Cohort	0.06***	0.01	0.05	0.07	1.06
Metro	-0.01	0.02	-0.06	0.03	0.99

Note. FC = Foster care; MH = Mental health; ref. = Reference.
* $p \leq .05$; ** $p \leq .01$.; *** $p \leq .001$

RESULTS

Outcome 3: Exit Type

Characteristic	Reunification v. No permanency OR (95% CI)		Guardianship v. No permanency OR (95% CI)		Adoption v. No permanency OR (95% CI)	
Medication	0.50 (0.43-0.58)	***	0.59 (0.50-0.70)	***	1.03 (0.85-1.25)	
Male						
Male (ref. Female)	1.06 (0.88-1.28)		1.08 (0.88-1.32)		0.85 (0.66-1.09)	
Age of entry	0.74 (0.72-0.76)	***	0.73 (0.71-0.76)	***	0.58 (0.56-0.61)	***
Race						
Black (ref. White)	0.65 (0.53-0.79)	***	0.75 (0.60-0.93)	*	0.72 (0.55-0.94)	*
Hispanic (ref. White)	0.62 (0.43-0.88)	**	0.75 (0.49-1.14)		0.75 (0.49-1.15)	
Other (ref. White)	0.84 (0.57-1.24)		0.92 (0.59-1.41)		1.02 (0.62-1.68)	
MH diagnosis						
Disruptive disorder	0.78 (0.68-0.90)	***	0.69 (0.59-0.81)	***	0.74 (0.60-0.91)	**
ADHD	0.88 (0.70-1.10)		0.97 (0.77-1.22)		1.17 (0.90-1.53)	
Depressive disorder	0.84 (0.65-1.08)		0.96 (0.73-1.28)		1.08 (0.69-1.70)	
Anxiety	1.07 (0.79-1.43)		0.81 (0.58-1.13)		1.70 (1.23-2.34)	**
Adjustment	0.87 (0.71-1.07)		0.97 (0.78-1.20)		1.13 (0.89-1.45)	
Other	1.05 (0.81-1.35)		1.07 (0.81-1.42)		1.09 (0.77-1.55)	
Physical disability	0.36 (0.15-0.83)	*	0.30 (0.12-0.77)	*	0.27 (0.08-0.87)	*
Placement						
Foster care (ref. Other)	0.42 (0.36-0.50)	***	0.57 (0.47-0.69)	***	2.03 (1.55-2.64)	***
Therapeutic FC (ref. Other)	0.26 (0.21-0.32)	***	0.38 (0.29-0.50)	***	1.70 (1.23-2.34)	**
Kinship care (ref. Other)	0.64 (0.53-0.78)	***	2.39 (1.94-2.94)	***	3.56 (2.65-4.78)	***
Group home (ref. Other)	0.57 (0.49-0.66)	***	0.67 (0.55-0.81)	***	1.57 (1.14-2.18)	**

Outcome 3: Exit Type

RESULTS

Characteristic	Reunification v. No permanency OR (95% CI)		Guardianship v. No permanency OR (95% CI)		Adoption v. No permanency OR (95% CI)	
Abuse						
Physical	1.07 (0.77-1.50)		0.95 (0.65-1.39)		1.05 (0.69-1.62)	
Sex	0.74 (0.52-1.05)		0.69 (0.47-1.00)		0.78 (0.49-1.23)	
Neglect	0.87 (0.54-1.39)		0.64 (0.39-1.06)		1.34 (0.65-2.76)	
Other	0.77 (0.46-1.27)		0.51 (0.30-0.88)	*	0.81 (0.37-1.77)	
Parents						
Substance abuse	0.89 (0.71-1.12)		1.20 (0.94-1.53)		1.18 (0.89-1.56)	
Single parent	0.81 (0.67-0.97)	*	1.08 (0.88-1.33)		0.93 (0.73-1.19)	
Entry Cohort	1.07 (1.02-1.12)	*	1.06 (1.01-1.12)	*	1.09 (1.02-1.16)	*
Number of months in care	0.95 (0.94-0.96)	***	0.96 (0.95-0.97)	***	1.05 (1.04-1.06)	***
Metropolitan (ref. Rural)	0.89 (0.72-1.09)		0.72 (0.57-0.91)	**	1.22 (0.91-1.62)	
Placement changes	0.94 (0.90-0.97)	**	0.96 (0.92-1.00)	*	0.71 (0.66-0.76)	***

Note. ADHD = Attention-deficit hyperactivity disorder; FC = Foster care; MH = Mental health; ref. = Reference.
* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Discussion

DISCUSSION

Major Findings

1. Medicated children stayed in care longer
   - Medication is not a quick-fix solution
   - Possible delays when medicated:
     - Court order mandating mental health treatment goals met
     - Delays in establishing appropriate specialist[6, 7]

DISCUSSION

Major Findings

2. Placements of medicated children were more stable

- Time exposure may be suppressing placement instability rates as medicated children tend to be in care longer
- Medicating may address problem behavior that is a risk factor of placement disruptions[8]
- Placement disruptions associated with increased mental health need and poor social emotional outcomes[9, 10, 11, 12]
- More studies on disruptive behavior on placement stability

DISCUSSION

Major Findings

3. Medicated children less likely to achieve permanency
   - Medication treatment modality only addresses the child, not their parents
   - Meeting needs of parents a greater challenge

DISCUSSION

Clinical Relevance

- Medication may help children exit faster in the beginning months by stabilizing them although does not have this effect in later months
- Medicating children may help improve placement stability
- Provide a holistic approach to treatment

DISCUSSION

Policy Relevance

- Ensure that family services are part of the treatment plan in addition to medication to help improve exits to permanency
- Facilitate cross-system data sharing

DISCUSSION

Limitations and Strengths

Strengths

- Large sample size
- Longitudinal
- Human, safe, and non-intrusive
- Propensity scoring with IPTW
- Time-varying covariates
- Causal analysis

Limitations

- Unobserved confounders
- No behavioral covariates
- Abuse severity unknown
- The tenuous overlap of propensity scores may lead to imprecise estimates and sensitive to misspecification
- Some samples needed to be deleted (need larger sample size)

DISCUSSION

Further Considerations and Future Work

- Incorporate time-varying nature of treatment (e.g., marginal structural modeling)
- Other outcome measures (e.g., health, education, juvenile justice, etc.)

Conclusions

- Medicated children less likely to exit to permanency
- Medicated children in care longer
- Medicated children more stable
- IPTW is promising and viable technique for causal analysis involving observational datasets
- Potential to use for other outcomes to determine whether care and services help children lead healthy and productive lives

Overall Limitations

Administrative Data

Disadvantages

- Variables limited to what is collected
- Data quality management

Advantages

- Wealth of data
- Big sample size
- Longitudinal
- Unobtrusive

Overall Limitations

Propensity Score Analysis

Disadvantages

- Assumes there are no unmeasured confounders that influenced treatment assignment
- Requires very large samples

Advantages

- Cheaper and quicker than RCTs
- Study treatments that would be infeasible or unethical to randomize
- Useful when adjusting for a large number of risk factors

Summary

- A substantial percentage of children in foster care are treated with psychotropic medication
- Existing literature vary in quality and findings
- Few studies go beyond exploratory research
- Advanced statistics can be applied to large, administrative datasets to mimic randomized control trials and help make causal inferences
- Cross-systems data provide even more rich information on experiences and outcomes of children in foster care

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