

## Psychotropic Medication Use in a National Probability Sample of Children in the Child Welfare System

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### ABSTRACT

**Objectives:** The aim of this study was to estimate the point prevalence of psychotropic medication use, and to describe relationships between child-level characteristics, provider type, and medication use among children in the child welfare system.

**Methods:** The National Survey of Child and Adolescent Well-Being is the first nationally representative study of children coming into contact with the child welfare system. We used data from its baseline and 12-month follow-up waves, and conducted weighted bivariate analyses on a sample of 3114 children and adolescents, 87% of whom were residing in-home.

**Results:** Overall, 13.5% of children in child welfare were taking psychotropic medications in 2001-2002. Older age, male gender, Caucasian race/ethnicity, history of physical abuse, public insurance, and borderline scores on the internalizing and externalizing subscales of the Child Behavior Checklist were associated with higher proportions of medication use. African-American and Latino ethnicities, and a history of neglect, were associated with lower proportions of medication use.

**Conclusions:** These national estimates suggest that children in child welfare settings are receiving psychotropic medications at a rate between 2 and 3 times that of children treated in the community. This suggests a need to further understand the prescribing of psychotropic medications for child welfare children.

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## INTRODUCTION

CHILDREN AND YOUTH in the child welfare system have disproportionately high rates of emotional and behavioral problems (Clausen et al. 1998; Pilowsky 1995; Halfon et al. 1995; Landsverk et al. 2002; Glisson 1996; Zima et al. 2000a) and mental health service use (Halfon et al. 1992a; Halfon et al. 1992b; Takayama et al. 1994; Harman et al. 2000; Garland et al. 1996). Consequently, they may be more likely to be prescribed psychotropic medications. Estimates of children in child welfare settings with behavioral, emotional, or developmental symptoms warranting services range widely between 27% and 80% (Halfon et al. 1995; Clausen et al. 1998; Zima et al. 2000a), and 40%–60% of children in foster care meet criteria for at least one *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV) diagnosis (Landsverk et al. 2002). In a Los Angeles county study of school-aged children in foster care, almost 20% had a clinical presentation for which medication treatment is either of demonstrated efficacy or recommended by clinical consensus and, of these children, slightly less than one half had ever received medication treatment (Zima et al. 1999a).

During the past decade, psychotropic medication prescriptions among children in general have increased two- to three-fold (Rushton and Whitmire 2001; Olfson et al. 2002; Zito et al. 2002; Zito et al. 2003), with a particularly rapid rise among youth enrolled in Medicaid (Goodwin et al. 2001; Martin et al. 2002; Martin et al. 2003; Olfson et al. 2003). Prescription of combinations of psychotropic medications has also appreciably increased during this time, outpacing the scientific evidence to support their effectiveness and safety (Jensen et al. 1999; Olfson et al. 2002; Zito et al. 2003). In addition, findings from earlier studies of prescription medication trends suggest that girls and children from African-American and Latino ethnicities are less likely to receive psychotropic medication treatment (Jensen et al. 1999; Rushton and Whitmire 2001; Martin et al. 2002; Olfson et al. 2002; Safer et al. 2003; Zito et al. 2003), but national data suggest such disparities in medication use may be narrowing (Olfson et al. 2002).

Furthermore, psychotropic medication prescribing may vary by provider type. Of all physician office visits that included a psychotropic medication prescription nationally, 61% were to a primary-care provider, 25% were to a psychiatrist, and the rest were to other physicians (Zito et al. 1999). This higher ratio of primary-care physician visits is also seen in adult samples of individuals with a psychotropic medication prescription (Pincus et al. 1998). In a national managed-care organization sample, pediatricians were more likely to be the first prescribers of stimulant medication and psychiatrists were more likely to prescribe SSRI medication (Shatin and Drinkard 2002).

Few studies, however, have examined psychotropic medication use among children in the child welfare system, or explored how such use varies by child-level factors or provider type. A study of school-aged children in out-of-home placement found that 16% had ever taken psychotropic medication, and Caucasian and biracial children had very high odds of receiving such treatment, compared to their Latino and African-American counterparts after adjusting for clinical need (Zima et al. 1999b). Another study of Medicaid-enrolled foster-care youths found that 30% had received psychotropic medications (dosReis et al. 2001). Nevertheless, few definitive conclusions can be drawn, as these studies were limited to single counties. Also, these studies focused on children in foster care. The majority of children who enter the child welfare system and receive health and child welfare services are, however, maintained within their own homes (are placed "in-home"). Less than one fifth of all children investigated for child maltreatment are placed "out-of-home"—a placement category that includes children placed in foster care (U.S. Department of Health and Human Services 2004). Hence, while these studies increase our understanding of children in foster care, they are not representative of the overall population of maltreated children in the child welfare system.

To begin to address this gap, we estimate the prevalence rate of psychotropic medication use among the first nationally representative sample of children in the child welfare system. We describe how medication use varies by pre-

disposing (i.e., sociodemographic characteristics, maltreatment history), enabling (i.e., insurance, placement), and need (behavior problems) variables, using a well-established help-seeking model (Andersen and Davidson 2001). We then explore differences in medication use between children with a past-year history of three types of provider visits—specialty mental health provider only, primary-care provider only, or both types of providers.

## METHODS

### *Data sources*

The National Survey of Child and Adolescent Well-Being (NSCAW) is the first national probability study of children investigated for child abuse and neglect. NSCAW is a longitudinal panel study whose baseline wave sampled 92 primary sampling units (PSUs) spread across 97 counties nationwide. NSCAW defined PSUs as geographic areas served by a single child welfare agency. These PSUs were generally contiguous with counties (although some small counties were aggregated into a single PSU), and were sampled proportionate to the size of the child welfare population resident within them. The original design called for sampling 100 PSUs, but child welfare regulations within 8 of these PSUs precluded survey administration, resulting in the final sample of 92 PSUs.

Within each PSU, children who were subjects of child abuse and neglect investigations by the child welfare system within a 15-month time period, beginning in October 1999, were sampled. These children were aged from birth to 14 years (at the time of sampling). The majority of these children (87%) resided within their own homes, and the rest were placed out-of-home (a category that included children in family foster care). Data within NSCAW is obtained from interviews of children, their caregivers, their child welfare workers, and teachers. Unweighted response rates were 84% for child welfare workers, and 72% for primary caregivers. NSCAW uses weighting procedures to ensure that response biases are minimal and do not affect findings from the

study. These and other details regarding the design and information contained within the NSCAW data are available elsewhere (Dowd et al. 2002; NSCAW Research Group 2002).

We used data from the baseline wave to generate our independent variables, and data from the 12-month follow-up wave (fielded between October 2000 and March 2002) to obtain information about our dependent variable of psychotropic medication use. We used data on all children for whom an investigation had been opened by child welfare agencies within NSCAW's 15-month sampling time frame. NSCAW also contains an additional sample of children in foster care for approximately 1 year at the time of sampling. We excluded these children because their addition would have skewed the prevalence of psychotropics upward, and would have limited the generalizability of our findings. We also excluded children below 2 years of age because our indicator of clinical need is not normed for this age range. Our final sample consisted of 3114 children.

### *Study variables*

*Dependent variable.* From NSCAW's 12-month follow-up data, we extracted the variable of current use of psychotropic medication. NSCAW defines this variable as "a prescription or medication for emotional, behavioral, learning, attentional, or substance-abuse problems." We chose current use in order to be certain that the provider visit preceded in time the consumption of the psychotropic medication.

*Independent variables.* *Predisposing characteristics* included child age, gender, and race or ethnicity (extracted from NSCAW's caregiver interviews), and maltreatment history (extracted from NSCAW's child welfare worker interviews). Categories of physical abuse, sexual abuse, neglect, and abandonment were dichotomized such that a child could have more than one type of abuse coded.

*Enabling resources* included child placement status (in-home versus out-of-home), as identified by the child's welfare worker, and the insurance categories of public insurance (Medicaid), private insurance, federal (CHAMPUS),

and uninsured obtained from caregiver interviews. Because only 39 children had a federal health insurance policy, and because federal insurance programs resemble private insurance more than Medicaid, we grouped them along with privately insured children into a single category of "Private+Federal."

Our *need* variable was the identification of a probable behavioral disorder if the child had scored in the borderline clinical range for an internalizing or externalizing behavior problem, as defined as a standardized score above 60, on the respective subscale of the Child Behavior Checklist (CBCL) (Achenbach and Edelbrock 1983). The CBCL is a well-established screening measure of childhood behavior problems that has been successfully used in foster-care child samples (Zima et al. 2000a; Garland et al. 1996), and has moderately high reliability and validity (Achenbach and Edelbrock 1983). The CBCL is norm-referenced for large populations, and, therefore, socioeconomic status and race have little effect on the measured scoring indices (Achenbach and Edelbrock 1983).

*Provider visit variable.* From NSCAW's caregiver interviews, we obtained data on whether the child had seen a specialty mental health provider (psychiatrist, psychologist, a psychiatric nurse, or a psychiatric social worker), a nonspecialty provider ("family doctor or any other medical doctor"), or both types of providers for an "emotional, behavioral, learning, attentional, or substance abuse problem" in the 12-month period following the baseline interview. Children who had been to a "... mental health or community health center for any of those problems" were also classified as having sought specialty care.

#### *Analyses*

Data were weighted to account for the sampling design that involved stratification and sampling within PSUs (stratum and PSU weights), as well as probability of selection.

Bivariate analyses were conducted using chi-square tests for categorical variables. All *p* values were calculated on design-based *F* tests that accounted for the weighting.

All analyses were performed in version 8 of Stata (StataCorp 2003). This secondary data analysis was conducted under a certificate of exemption from review obtained from our Institutional Review Board.

## RESULTS

### *Sample characteristics*

Children in the sample had a mean age of 8 years (95% CI, 7.7, 8.2), 46% (*n* = 1479) were boys, 47% were Caucasian, 28% were African-American, and 18% were Latino/Latina (all percentages are weighted). Physical abuse was the most frequent type of abuse experienced (33%), followed by neglect (17%) and sexual abuse (12%). The most frequent insurance coverage was Medicaid (62%), and most children were living at home (87%). On the CBCL, 39% of children had a score above 60 on the externalizing scale, and 28% of children had a score above 60 on the internalizing scale. Fourteen percent of the children saw a specialty mental health provider only, 3% saw a nonspecialty mental health provider only, and 5% saw both a specialty and nonspecialty provider for a mental health problem.

### *Characteristics of children taking psychotropic medications*

A total of 13.5% of children (*n* = 473) were taking psychotropic medication at NSCAW's 12-month follow-up (Table 1). The mean age of children on medication was 10 years (95% CI, 9.5, 10.5) while that of children who were not on medication was 8 years (95% CI, 7.3, 7.9; *p* < 0.001). The proportion of medication use among children aged between 12 and 16 years was seven times greater than that among children aged between 2 to 5 years. Male gender, Caucasian race/ethnicity (*F* = 19.7; *p* < 0.001), history of physical abuse, public insurance status, and having a score above 60 on either subscale of the CBCL were significantly associated with medication use. African-American (*F* = 6.7; *p* = 0.01) and Latino race/ethnicity (*F* = 9.0; *p* = 0.003), history of

TABLE 1: CHARACTERISTICS OF CHILD WELFARE CHILDREN BY MEDICATION STATUS

Variable name	Taking psychotropic medication (unweighted n)		Weighted % of children taking medication	p value
	Yes	No		
Total	473	2641	13.5	
<i>Predisposing Characteristics</i>				
Child age				
2-5 years	43	901	3.6	<0.001
6-11 years	265	1153	16.4	0.03
12-16 years	160	571	21.6	0.002
Child gender				
Boy	308	1171	19.6	<0.001
Girl	165	1470	7.7	
Child race/ethnicity				<0.001
African-American	115	786	9.2	
White	273	1191	18.2	
Latino/Latina	49	463	7.4	
Other race	35	197	14.5	
<i>Enabling Resources</i>				
Type of abuse				
Physical	181	760	19.6	<0.001
Sexual	84	445	13.9	0.9
Neglect	47	411	8.3	0.04
Abandonment	25	111	15.6	0.7
Type of insurance				
Public	385	1763	16.0	0.007
Private + Federal	73	630	11.2	0.2
Uninsured	15	234	5.4	0.02
Placement				
Out-of-home	178	603	18.1	0.08
In-home	295	2038	12.8	
<i>Need</i>				
CBCL score				
>60 on the externalizing scale	350	883	27.2	<0.001
>60 on the internalizing scale	285	680	30.8	<0.001
<i>Provider Type</i>				
Past year visit to				
Specialty provider	190	396	41.8	<0.001
Nonspecialty provider	42	43	41.7	<0.001
Both types of providers	139	62	69.6	<0.001

Observations with incomplete data were not excluded in bivariate analyses, and so Ns may vary slightly across two-way analyses. CBCL, Child Behavior Checklist.

neglect, and being uninsured were negatively associated with medication use. Histories of provider visits were equally significant in being associated with psychotropic medication use, although a greater proportion of co-managed children (i.e., those who saw both specialty and nonspecialty providers) were taking psychotropic medications.

#### *Characteristics of children taking medications by provider type*

Table 2 shows the characteristics of children taking psychotropic medication by type of provider visit. A greater proportion of sexually abused children taking psychotropic medications had seen specialty providers or had co-managed visits (68%) than nonspecialty providers (3.2%). Nearly twice the proportion of children taking psychotropic medications who had a borderline clinical score for an externalizing disorder were co-managed (26%) when compared to children who had normal scores on that subscale of the CBCL (only 13.9% of these children were co-managed;  $p = 0.049$ ) (not shown in Table 2). Children with a borderline clinical score for an internalizing disorder who were taking psychotropic medications had a greater proportion of specialty provider visits (48.6%) compared to children who had normal scores on that subscale of the CBCL (29.8%;  $p = 0.04$ ) (not shown in Table 2).

## DISCUSSION

This is the first study to describe the prevalence of psychotropic medication use in a national sample of children in the child welfare system. Studies that have analyzed statewide Medicaid samples have generally reported prevalence rates of 5%–6% of psychotropic medication use among children (Martin et al. 2003; Zito et al. 2003). The rates of medication use among commercially insured children are even lower—approximately 4% (Hong and Shepherd 1996, Stein et al. 2001). Our rate of 13.5%, thus, represents a two- to three-fold greater prevalence of psychotropic medication use among children being treated in the child welfare system. Also, because of our desire to

ensure that the provider visit preceded medication use, we focused on current use of psychotropic medication at the time of the follow-up interview. Our estimate is, therefore, an estimate of point prevalence. It is likely that many more children in the child welfare system will consume psychotropic medications if measured over a period of time.

Because our data set lacks a measure of need for psychotropic medication use (such as diagnostic information), we are unable to comment on the appropriateness of such use. It is well known that children in child welfare are a population with high needs for mental health care (Clausen et al. 1998; Halfon et al. 1995; Landsverk et al. 2002; Zima et al. 2000a), and may have greater access to services through the efforts of their assigned child welfare workers (caseworkers). Our findings, then, may be a reflection of the ability of child welfare systems to obtain mental health services for children under their care.

On the other hand, there may still be high unmet needs occurring among this population; 28% and 39% of our sample had borderline clinical scores on the internalizing and externalizing subscales of the CBCL, respectively. Some of these children might have disorders requiring medication. And given that Zima et al. (1999a) found that more than half of school-aged foster care children in a county-wide sample who had a psychiatric disorder that merited a medication evaluation had not received medication, it seems clear that child welfare children have significant barriers to medication use. Further research that incorporates diagnosis and other clinical measures of need is required to better understand medication use among these children.

That a greater proportion of older children, boys, and those of Caucasian race/ethnicity receive psychotropic medications is consistent with studies examining this issue among foster children (Zima et al. 1999a), and among children receiving services through public-sector agencies (Leslie et al. 2003). Our finding of medication use among a greater proportion of physically abused children and a lower proportion of neglected children is also consistent with studies that report greater service use for children who are "actively" maltreated (physi-

TABLE 2. CHARACTERISTICS OF CHILD WELFARE CHILDREN TAKING PSYCHOTROPIC MEDICATION

Variable name	Type of provider visited in past year		
	Only specialty n (weighted %)	Only non-specialty n (weighted %)	Both types of providers n (weighted %)
TOTAL <sup>1</sup>	190 (42)	42 (10.6)	139 (33.1)
<i>Identifying Characteristics</i>			
Child age			
2-5 years	11 (30.7)	6 (13.9)	17 (33.4)
6-11 years	111 (42.3)	27 (13.3)	69 (30.0)
12-16 years	64 (43.9)	9 (5.6)	53 (26.1)
Child gender			
Boy	120 (42.7)	26 (9.5)	93 (24.0)
Girl	70 (40.6)	16 (13.2)	46 (10.9)
Child race/ethnicity			
African-American	46 (39.1)	10 (8.7)	32 (31.8)
White	104 (40.5)	28 (12.3)	83 (19.1)
Latino/Latina	22 (53.8)	2 (4.3)	14 (28.6)
Other race	17 (47.3)	2 (9.5)	10 (28.0)
<i>Enabling Resources</i>			
Type of abuse			
Physical	80 (48.8)	10 (6.5)	54 (28.6)
Sexual	35 (51.0)	8 (3.2)**	26 (17.0)
Neglect	18 (56.7)	3 (6.3)	14 (11.4)
Abandonment	13 (37.0)	1 (4.3)	8 (37.0)
Type of insurance			
Public	157 (41.5)	30 (11.6)	114 (20.8)
Private + Federal	27 (43.3)	10 (8.4)	22 (28.5)
Uninsured	6 (44.8)	2 (4.6)	3 (35.7)
Placement			
Out-of-home	71 (40.3)	12 (12.6)	62 (26.1)
In-home	119 (42.4)	30 (10.2)	77 (22.5)
<i>Need</i>			
CBCL score			
>60 on the externalizing scale	150 (43.3)	26 (10.2)	112 (25.7)*
>60 on the internalizing scale	126 (48.6)*	20 (9.1)	92 (22.3)

\* &lt;0.05. \*\* &lt;0.01.

<sup>1</sup> These percentages do not add up to 100 either because some children were taking psychotropic medications prior to entry into NSCAW, or because they received their medications during the course of a hospitalization rather than an ambulatory visit.

cally or sexually abused) rather than "passively" maltreated (neglected or abandoned) (Garland et al. 1996). While previous research has shown little or no impact of insurance on use of ambulatory mental health services among children (Glied et al. 1997; Glied et al. 1997; Burns et al. 1995; Burns et al. 1998), we

found—like Olsson et al. (2002)—that a smaller proportion of uninsured children (5.4%) were taking psychotropic medications when compared to those insured (14.4%;  $p = 0.02$ ). Most of the research cited above relies on data collected prior to 1995, and it is likely that our data reflect changes in the health-care market-

place beginning in the late 1990s, such as the penetration of Medicaid managed care into child-serving systems.

Interpretation of these findings should take into account several limitations. Partly owing to small sample sizes, our study does not permit us to identify many associations between type of provider visit and use of psychotropic medication. Our preliminary finding that a greater proportion of children with a history of sexual abuse receive specialty or co-managed care is consistent with literature that suggests the existence of defined referral pathways toward specialty care for such children (Garland et al. 1996). Similar pathways may operate for children with higher behavioral symptom scores.

Also, because our provider history is based upon parent and caregiver report, we do not have a way to determine with certainty which category of provider prescribed the psychotropic to the child. The lack of diagnostic information limits discussion on the appropriateness of care received by the children in our sample. Finally, our data set does not contain information on the type, dosage, and duration of psychotropic medications consumed by the child, further limiting conclusions regarding appropriateness.

### CONCLUSIONS

In conclusion, this study presents the first nationally representative estimates for psychotropic medication use among child welfare populations. Further research examining the types of psychotropic medications prescribed to children, the diagnostic indicators for such prescription, and the characteristics of the provider doing the prescribing is needed to develop programs to improve the quality of care for this highly vulnerable population.

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