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Differences in Prescribing Patterns of Psychotropic Medication for Children and Adolescents between Rural and Urban Prescribers

Scott J. Adams, Psy.D.
Stan Xu, Ph.D.
Fran Dong, M.S.

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Western Interstate Commission for Higher Education
Mental Health Program
3035 Center Green Drive
Boulder, CO 80301

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Dr. Adams is a researcher for the WICHE Mental Health Program. Dr. Xu is Head of Biostatistics in the Clinical Research Unit of Kaiser Permanente Health Plan and Assistant Professor in the Department of Preventive Medicine and Biometrics at the University of Colorado Health Sciences Center. Fran Dong, M.S., is the Statistical Analyst for the WICHE Mental Health Program.

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Executive Summary

Multiple studies have indicated a dramatic increase in the number of youth being prescribed psychotropic medication over the past 15 to 20 years.^{1-13,17-23} In addition to the increased rate of prescriptions of psychotropic medications for youth (as well as polypharmacy), there are differences in prescribing patterns depending on the type of prescriber (e.g., generalist physicians vs. psychiatrists),^{2,4,7,11,13,20,23} treatment setting (e.g., inpatient vs. outpatient; community vs. academic),^{3,9-10,12} type of insurance coverage,^{7,11,13} diagnosis,^{3-6,8,12,19} sex,^{2,6-7,12-13} age,^{6-7,12-13,17} and race.^{6-7,12-13,18-19} However, despite the multiple aspects of prescribing patterns presented in the research literature, there appear to be no studies examining these issues in the context of rural vs. urban prescribers.

The purpose of this project was to: 1) determine who are the primary prescribers of psychotropic medications to youths in both urban and rural areas, 2) identify types of medication being prescribed broken down by demographic information (e.g., sex, age), and 3) examine trends of prescribing patterns over time in terms of type of prescriber, medication, and rural-urban differences.

The method was a secondary analysis of the 1996-2005 National Ambulatory Medical Care Survey (NAMCS) and National Hospital Ambulatory Medical Care Survey (NHAMCS) data files, published by the National Center for Health Statistics.

The study resulted in three primary findings including:

- 1) The number and percent of rural youth receiving psychotropic medication increased at a comparable level to urban youth over a 10-year period.
- 2) Compared to their urban counterparts, significantly more rural youth received prescriptions for psychotropic medications from generalists and other prescribers than from psychiatrists.
- 3) There may have been ethnic/racial, sex, and age differences in which types of psychotropic medications were prescribed.

Rurality was determined using a Metropolitan Statistical Area (MSA) and non-Metropolitan Statistical Area (Non-MSA) designation. Therefore, the MSA and Non-MSA categories were used to define our urban and rural samples, respectively. The terms children, adolescents, and youths for the purposes of this study were defined as anyone age 17 and younger.

In conclusion, prescriptions of virtually all psychotropic drug categories increased significantly for both urban and rural populations over the 10-year period of the study. Urban youth were far more likely to be prescribed psychotropic medications by psychiatrists as opposed to generalists or other prescribers. In contrast, rural youth were far more likely to have psychotropics prescribed by generalists or other prescribers.

There were also notable differences in type of drugs prescribed according to the racial group to which youths belonged. Minority youth in both rural and urban places had much higher percentages of antipsychotic and/or bipolar medication, and much lower percentages of antidepressant and/or antianxiety medications, compared to their Caucasian peers.

A number of differences in prescribing patterns according to sex and age also emerged. Females age 0 to 5 tended to have greater percentages of antidepressant and/or antianxiety medications, as well as CNS stimulants, than their male peers. Overall, males ages 6 to 11 had a smaller percent of antipsychotic and/or bipolar medications, as well as antidepressants and/or antianxiety medications, but a far greater percent of CNS stimulants, than females of the same age. Additionally, rural females had a notably greater percent of CNS stimulants than their urban female counterparts.

On average, males ages 12 to 17 had a greater percent of antipsychotic and/or bipolar medications, smaller percent of antidepressants and/or antianxiety medications, and a far greater percent of CNS stimulants, than their female counterparts. Urban females had higher percentages of antipsychotic and/or bipolar medications, as well as CNS stimulants, than their rural female peers.

Summary Report

Context

Multiple studies have indicated a dramatic increase in the number of youth being prescribed psychotropic medication over the past 15 to 20 years.^{1-13,17-23} For instance, data indicate that the overall annual rate of psychotropic medication use by children increased from 1.4 per 100 persons in 1987 to 3.9 in 1996, with significant increases found in the use rates of stimulants, antidepressants, other psychotropic medications, and polypharmacy of different classes of psychotropic medications.¹ In a later study, rates of visits by youth resulting in a psychotropic prescription increased from 3.4 percent in 1994-1995 to 8.3 percent in 2000-2001, with annual growth rates rapidly accelerating after 1999.² These trends were evident for males and females, and also significant across drug classes.² Additionally, there appears to be an increase in the percent of visits by youth to outpatient clinics and emergency rooms that include prescriptions for psychotropic medications.¹⁻² Similar trends have been found in other countries.¹⁴⁻¹⁶

In addition to the increased rate of prescriptions of psychotropic medications for youth (as well as polypharmacy), there are differences in prescribing patterns depending on the type of prescriber (e.g., generalist physicians vs. psychiatrists),^{2,4,7,11,13,20,23} treatment setting (e.g., inpatient vs. outpatient; community vs. academic),^{3,9-10,12} type of insurance coverage,^{7,11,13} diagnosis,^{3-6,8,12,19} sex,^{2,6-7,12-13} age,^{6-7,12-13,17} and race.^{6-7,12-13,18-19} However, despite the multiple aspects of prescribing patterns presented in the research literature, there appear to be no studies examining these issues in the context of rural vs. urban prescribers. While it is important and interesting to know that prescribing patterns to youth are influenced by the aforementioned factors, it is equally important to understand how these issues play out in rural areas.

Purpose

The purpose of this project was to: 1) determine who are the primary prescribers of psychotropic medications to youths in both urban and rural areas, 2) identify types of medication being prescribed broken down by demographic information (e.g., sex, age), and 3) examine trends of prescribing patterns over time in terms of type of prescriber, medication, and rural-urban differences.

Hypotheses:

1. The number and percent of rural youth receiving psychotropic medication will increase at a comparable level to urban youth over a 10-year period.
2. Compared to their urban counterparts, significantly more rural youth will receive prescriptions for psychotropic medications from generalists or other prescribers than from psychiatrists.
3. There may be ethnic/racial, sex, and age differences in which types of psychotropic medications are prescribed.

Methods

The method was a secondary analysis of the 1996-2005 National Ambulatory Medical Care Survey (NAMCS) and National Hospital Ambulatory Medical Care Survey (NHAMCS) data files, published by the National Center for Health Statistics. The unit of analysis is the youth patient encounter/visit. Descriptive analyses include provider type, patient demographics, and youth psychotropic medications by urban and rural, and types of medications. These descriptive statistics were adjusted by weight variables created in the NAMCS and NHAMCS databases. Odds ratios of receiving psychotropic medications from psychiatrists versus generalists and other prescribers were calculated from the logistic regressions adjusting for the main interest, urban versus rural, time, with or without covariates including patient characteristics and clinical variables.

Operational Definition of Major Constructs in Data Analysis:

Rurality: We were unable to get zip code data from the NAMCS and NHAMCS files. However, those databases use a Metropolitan Statistical Area (MSA) and non-Metropolitan Statistical Area (Non-MSA) designation. Therefore, the MSA and Non-MSA categories were used to define our urban and rural samples, respectively.

Children, adolescents, and youths: These terms for the purposes of this study are defined as anyone age 17 and younger.

Physician Type: This variable subdivided physicians into three mutually exclusive groups: psychiatrists, generalists, and other prescribers.

Psychotropic Drug Visit: A psychotropic drug visit was defined as a visit in which at least one psychotropic medication was prescribed, ordered, supplied, administered, or continued. Table 1 lists the medications we will include.

Psychotropic medications were classified according to the most recent version of the *Physicians' Desk Reference*.

Table 1: Drugs Used in the Study

Antidepressants	Antipsychotic Agents	CNS Stimulants	Bipolar Agents	Antianxiety Agents
Cymbalta	Chlorpromazine	Adderall	Abilify	Librium
Effexor	Fluphenazine	Desoxyn	Depakote	Niravam
Wellbutrin	Haloperidol	Dexedrine	Equetro	Tranxene
Emsam	Loxapine	DextroStat	Geodon	Valium
Parnate	Mesoridazine	Concerta	Lamictal	Effexor
Celexa	Molidone	Daytrana	Lithobid	Paxil
Lexapro	Perphenazine	Focalin	Risperdal	Zoloft
Paxil	Promazine	Metadate	Seroquel	
Pexeva	Thioridazine	Ritalin	Symbyax	
Prozac	Thiothixene	Strattera	Zyprexa	
Zoloft	Trifluoperazine	Cylert	Antipanic Agents	
OCD Management	Clozapine	Clonidine	Klonopin	
Paxil	Olanzapine		Niravam	
Pexeva	Quetiapine		Paxil	
Prozac	Risperidone		Pexeva	
Zoloft	Ziprasidone		Prozac	

Diagnosis: The primary diagnosis field was searched for any ICD-9-CM diagnostic code representing childhood disorders (e.g., ADHD, autism), depression, anxiety disorders, psychotic disorders, bipolar disorders, eating disorders, personality disorders, and substance use disorders. **Covariates:** Sociodemographic variables included age, sex, race/ethnicity, and insurance. Clinical variables included visit reason, presenting symptoms, primary diagnoses, and secondary diagnoses.

Data Sources

A nationally representative group of visits to nonfederally employed physicians in office-based practices, as well as to the emergency departments and outpatient departments of noninstitutional general and short-stay hospitals, exclusive of Federal, military, and Veterans Administration hospitals, located in the 50 States and the District of Columbia is sampled in the NAMCS and NHAMCS databases, respectively.

Findings

The findings of this study are presented below. “Outpatient” signifies the sample of outpatient visits composed in the NAMCS and part of the NHAMCS, whereas “ER” refers to the sample of emergency room visits composed entirely in the NHAMCS database. Not all hypotheses were applicable to both outpatient and ER samples. Where this is the case, the abbreviation “N/A” is used.

1. The number and percent of rural youth receiving psychotropic medication will increase at a comparable level to urban youth over a 10-year period.

Over the 10-year period, there were significant increases in the prescription of any psychotropic medication for the combined outpatient and ER sample of both urban and rural youth. Urban youth had an average increase of 8.1% a year ($p < .0001$), while rural youth had an average of 7.6% per year ($p < .04$). There was no significant difference between urban and rural youth for a prescription of any psychotropic.

In the combined outpatient and ER sample, urban youth had significantly higher prescriptions of six out of seven of the drug categories. These were CNS stimulants, OCD agents, antidepressants, antipsychotics, and bipolar agents (see table below). Rural youth had significantly higher prescriptions of four of the seven drug categories, which included antidepressants, antipanic agents, antipsychotics, and bipolar agents. There were no significant differences between urban and rural youth for any particular drug category.

Subdividing the samples into outpatient and ER samples indicated a similar pattern for the former and only one significant trend for the latter. Specifically, the urban outpatient trend was the same in terms of specific drug categories as that reported above for the combined samples, while urban ER prescriptions of bipolar agents decreased by an average of 7.6% per year during the study period. Rural outpatient trends were mostly the same as the combined sample, except that there was also a significant increase in antianxiety agents. There were no significant trends for the ER sample and no significant differences between the urban and rural samples.

Table 1. Trend analysis for prescribing psychotropics to youths in rural and urban areas after covariate adjustment*

	Urban		Rural		Urban vs. Rural
	Pr > ChiSq	OR**	Pr > ChiSq	OR**	Pr > ChiSq
CNS Stimulant	<.0001	1.089	0.087	1.072	0.738
OCD Agent	0.017	1.048	0.069	1.112	0.336
Antianxiety Agent	0.009	1.051	0.055	1.118	0.314
Antidepressant	<.0001	1.099	0.022	1.115	0.775
Antipanic Agent	0.147	1.034	0.008	1.152	0.068
Antipsychotic	<.0001	1.186	0.041	1.208	0.853
Bipolar Agent	0.0001	1.083	0.018	1.146	0.360
Any Psychotropic	<.0001	1.081	0.038	1.076	0.917

*Covariates are age, PAYTYPE, region, SEX, minority, provtype, season only since ED data has the following variables in missing, PRIVATE, SOLO, dPRIMCARE, HMO, routine, specialty. In the model, time is treated a continuous variable. We used both linear time model and also quadratic term model to the data and found that linear time model is a better fit to our data.

**OR=Odds Ratio

2. Compared to their urban counterparts, significantly more rural youth will receive prescriptions for psychotropic medications from generalists and other prescribers than from psychiatrists.

Over the 10-year period of the study, 71.3% of prescriptions of any psychotropic medication to urban youth were made by psychiatrists, as compared to 45.4% for rural youth. Psychiatrists prescribed to urban youth the vast majority of psychotropics from specific drug categories, with a low of 68.8% (CNS stimulants) to a high of 90% (antipsychotics). By contrast, psychiatrists prescribed to rural youth a much smaller percent of psychotropics, with a low of 42.6% (CNS stimulants) to a high of 79.4% (antipsychotics). In rural, generalists prescribed a higher percent of antipanic agents than psychiatrists.

Table 2: Prescriber Type of Medication

	Rank	Urban		Rural	
		Prescriber	%	Prescriber	%
Any Psychotropic	#1	Psychiatrist	71.3	Psychiatrist	45.4
	#2	Other	15.2	Generalist	34.3
	#3	Generalist	13.5	Other	20.3
CNS Stimulant	#1	Psychiatrist	68.8	Psychiatrist	42.6
	#2	Other	16.9	Generalist	32.7
	#3	Generalist	14.3	Other	24.7
OCD Agent	#1	Psychiatrist	82.9	Psychiatrist	50.0
	#2	Generalist	11.8	Generalist	40.8
	#3	Other	5.4	Other	9.2
Antianxiety Agent	#1	Psychiatrist	79.7	Psychiatrist	50.4
	#2	Generalist	13.3	Generalist	42.6
	#3	Other	7.0	Other	7.0
Antidepressant	#1	Psychiatrist	82.5	Psychiatrist	56.6
	#2	Generalist	11.6	Generalist	34.2
	#3	Other	5.9	Other	9.3
Antipanic Agent	#1	Psychiatrist	78.5	Generalist	45.5
	#2	Generalist	12.8	Psychiatrist	44.2
	#3	Other	8.6	Other	10.4
Antipsychotic	#1	Psychiatrist	90.0	Psychiatrist	79.4
	#2	Generalist	6.2	Generalist	13.0
	#3	Other	3.9	Other	7.6
Bipolar Agent	#1	Psychiatrist	78.5	Psychiatrist	61.4
	#2	Other	12.6	Generalist	23.3
	#3	Generalist	8.9	Other	15.4

3. There may be ethnic/racial, sex, and age differences in which types of psychotropic medications are prescribed.

There were similarities between urban and rural Caucasian youth populations in terms of the specific drugs prescribed and drug categories to which they belong. Table 3 below indicates the top 10 medications prescribed to each population. The drugs listed composed 71.1% of all medications prescribed for urban youth and 72.9% for rural, Caucasian youth. When grouping specific medications by drug categories, CNS stimulants were the clear majority for both populations (30.9% for urban, 34% for rural). These medications are typically prescribed for Attention Deficit-Hyperactivity Disorder(s). Medications prescribed for either depressive or anxiety disorders were the second largest group, composing 21.6% for urban and 21.5% for rural. Finally, 18.6% of the top 10 medications prescribed for urban youth were for psychotic or bipolar disorders, while 17.4% of the same kinds of medications were prescribed for rural youth.

There were also similar trends between urban and rural minority populations. Table 4 indicates the top 10 medications prescribed for these two groups. The drugs listed composed 73.7% of all medications prescribed for urban youth and 77.4% for rural, minority youth. Similar to Caucasian populations, CNS stimulants were the most frequently prescribed medications (31.8% for urban, 33.6% for rural). However, there are striking differences in the percent of antidepressant or antianxiety and antipsychotic or bipolar medications between the Caucasian and minority populations across rural and urban (see Table 5). Of the top 10 medications for minority groups, antidepressants and/or antianxiety medications composed 15.7% and 14.1% for

urban and rural minority youth, respectively. However, antipsychotic or bipolar medications composed 26.2% and 29.7% for urban and rural minority youth, respectively.

Table 3: Top 10 most prescribed drugs for both NAMCS and NHAMCS (1996 to 2005) for Urban and Rural Caucasian Youth

Caucasian							
Urban			Rural				
	Drug	Drug Class	%	Drug	Drug Class	%	
1	Methylphen.	CNS	21.9	Methylphen.	CNS	23.5	
2	Sertraline	A-Dep, A-Anx	7.6	Divalp. Sod.	Bipolar	7.5	
3	Divalp. Sod.	Bipolar	7.4	Sertraline	A-Dep, A-Anx	7.5	
4	Risperidone	A-Psy, Bipolar	6.2	Risperidone	A-Psy, Bipolar	6.3	
5	Clonidine	CNS	5.8	Clonidine	CNS	5.5	
6	Fluoxetine	A-Dep, OCD	5.4	Fluoxetine	A-Dep, OCD	5.4	
7	Carbamaz.	Bipolar	5.0	Atomoxetine	CNS	5.0	
8	Paroxetine	A-Dep, OCD A-Anx, A-Pan	4.6	Paroxetine	A-Dep, OCD A-Anx, A-Pan	4.4	
9	Bupropion	A-Dep	4.0	Diazepam	A-Anx	4.2	
10	Atomoxetine	CNS	3.2	Carbamaz.	Bipolar	3.6	
Total % of all Prescriptions			71.1	Total % of all Prescriptions			72.9

CNS = CNS Stimulant; A-Dep = Antidepressant; A-Anx = Antianxiety; Bipolar = Bipolar Agent; A-Psy = Antipsychotic; OCD = OCD Agent; A-Pan = Antipanic Agent

Table 4: Top 10 most prescribed drugs for both NAMCS and NHAMCS (1996 to 2005) for Urban and Rural Minority Youth

Minority							
Urban			Rural				
	Drug	Drug Class	%	Drug	Drug Class	%	
1	Methylphen.	CNS	23.2	Methylphen.	CNS	23.4	
2	Divalp. Sod.	Bipolar	9.8	Sertraline	A-Dep, A-Anx	9.4	
3	Carbamaz.	Bipolar	8.2	Risperidone	A-Psy, Bipolar	9.4	
4	Risperidone	A-Psy, Bipolar	8.2	Divalp. Sod.	Bipolar	7.8	
5	Sertraline	A-Dep, A-Anx	6.2	Clonidine	CNS	5.5	
6	Clonidine	CNS	5.7	Quetiapine	A-Psy	5.5	
7	Fluoxetine	A-Dep, OCS	3.4	Dextroamp.	CNS	4.7	
8	Paroxetine	A-Dep, OCD A-Anx, A-Pan	3.4	Diazepam	A-Anx	4.7	
9	Dextroamp.	CNS	2.9	Carbamaz.	Bipolar	3.9	
10	Diazepam	A-Anx	2.7	Aripiprazole	Bipolar	3.1	
Total % of all Prescriptions			73.7	Total % of all Prescriptions			77.4

CNS = CNS Stimulant; A-Dep = Antidepressant; A-Anx = Antianxiety; Bipolar = Bipolar Agent; A-Psy = Antipsychotic; OCD = OCD Agent; A-Pan = Antipanic Agent

Table 5: Percent of Top 10 most prescribed drugs for both NAMCS and NHAMCS (1996 to 2005) for Urban and Rural Minority Youth by Drug Category

Drug Category	Caucasian		Minority	
	Urban %	Rural %	Urban %	Rural %
A-Psy/Bipolar	18.6	17.4	26.2	29.7
A-Dep/A-Anxs*	21.6	21.5	15.7	14.1
CNS	30.9	34.0	31.8	33.6

Includes antidepressants, antianxiety, antipanic, and OCD medications

A comparison of prescribing patterns of drug categories between rural and urban youth populations broken down by age and sex is presented in Table 6.¹ Urban female youth age 0 to 5 had a greater percent of antipsychotic or bipolar medications than their rural counterparts. However, rural female youths from this age group had far greater percentages of antidepressants

¹ The data is based on the top 10 medications for each age group subdivided by gender and rurality. Therefore, the percentages typically do not add up to 100.

and antianxiety medications, as well as CNS stimulants. Male urban youths from the same age group had a similar percentage of antipsychotic medications to urban female youths and a greater percentage than rural male youth. Although urban and rural male youths had similar percentages of CNS stimulant medications, rural males in this age group had a far greater percent of antidepressants and/or antianxiety medications. Males tended to have, on average, a smaller percent of antidepressants and/or antianxiety medications and greater percent of CNS stimulant medications than females.

Rural and urban females age 6 to 11 had similar percentages of antipsychotic and/or bipolar medications, as well as antidepressants and/or antianxiety medications. However, rural female youths in this age group had a far greater percent of CNS stimulants than their urban peers. Rural and urban male youths in this age group had similar percentages of medication from all three categories, although rural males had a slightly higher percent of CNS stimulant medication. Overall, males in this age group had a smaller percent of antipsychotic and/or bipolar medications, as well as antidepressants and/or antianxiety medications, but a far greater percent of CNS stimulants, than females.

Urban females age 12 to 17 had a higher percent of antipsychotic and/or bipolar medications, as well as CNS stimulants, than their rural peers. However, rural females had a much higher percent of antidepressant and/or antianxiety medication than their urban counterparts. Urban and rural males in this age group were mostly similar in all three categories, with urban males having slightly higher percentages of antipsychotic and/or bipolar medications, as well as antidepressant and/or antianxiety medications. Rural males had a slightly higher percent of CNS stimulants than their urban peers. Overall, males in this age group had a greater percent of antipsychotic and/or bipolar medications, smaller percent of antidepressants and/or antianxiety medications, and a far greater percent of CNS stimulants, than their female counterparts.

Table 6: Percent of Top 10 most prescribed drugs for both NAMCS and NHAMCS (1996 to 2005) for Urban and Rural Youth by Drug Category, Age, and Sex

		Female		Male	
		Urban	Rural	Urban	Rural
	Drug Category	%	%	%	%
Age					
0-5	A-Psy/Bipolar	39.1	33.4	40.6	33.3
	A-Dep/A-Anxs	25.7	38.2	15.4	26.6
	CNS	15.0	28.6	30.0	31.1
6-11	A-Psy/Bipolar	29.3	26.2	19.0	19.8
	A-Dep/A-Anxs	14.5	14.3	6.1	5.2
	CNS	36.5	46.4	55.9	60.6
12-17	A-Psy/Bipolar	18.2	12.5	20.9	18.0
	A-Dep/A-Anxs	41.9	49.9	21.7	19.8
	CNS	10.0	5.8	28.7	32.5

Conclusions

Prescriptions of virtually all psychotropic drug categories increased significantly for both urban and rural populations over the 10-year period of the study. Urban youth are far more likely to be prescribed psychotropic medications by psychiatrists as opposed to generalists or other

prescribers. In contrast, rural youth are far more likely to have psychotropics prescribed by generalists or other prescribers. Rural youth did have psychiatrists prescribing the majority of more intensive medications, such as antipsychotics and bipolar agents.

There were also notable differences in type of drugs prescribed according to the racial group to which youths belonged. Minority youth in both rural and urban places had much higher percentages of antipsychotic and/or bipolar medication, and much lower percentages of antidepressant and/or antianxiety medications, compared to their Caucasian peers.

A number of differences in prescribing patterns according to sex and age also emerged. Females age 0 to 5 tended to have greater percentages of antidepressant and/or antianxiety medications, as well as CNS stimulants, than their male peers. Urban females and males from this age group had higher percentages of antipsychotic medication and/or bipolar medication than their rural counterparts. Urban females had greater percentages of antipsychotics than their rural peers, but rural females in this age group had greater percentages of antidepressant and/or antianxiety medications, as well as CNS stimulants, than their urban peers. A similar trend exists comparing urban and rural males in this age range, although CNS stimulant percentages were similar between these two groups.

Overall, males ages 6 to 11 had a smaller percent of antipsychotic and/or bipolar medications, as well as antidepressants and/or antianxiety medications, but a far greater percent of CNS stimulants, than females of the same age. Additionally, rural females had a notably greater percent of CNS stimulants than their urban female counterparts.

On average, males ages 12 to 17 had a greater percent of antipsychotic and/or bipolar medications, smaller percent of antidepressants and/or antianxiety medications, and a far greater percent of CNS stimulants, than their female counterparts. Urban females had higher percentages of antipsychotic and/or bipolar medications, as well as CNS stimulants, than their rural female peers.

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The WICHE Center for Rural Mental Health Research was established in 2004 to develop and disseminate scientific knowledge that can be readily applied to improve the use, quality, and outcomes of mental health care provided to rural populations. As a General Rural Health Research Center in the Office of Rural Health Policy, the WICHE center is supported by the Federal Office of Rural Health Policy, Health Resources and Services Administration (HRSA), Public Health Services, grant number U1CRH03713.

The WICHE Center selected mental health as its area of concentration because: (1) although the prevalence and entry into care for mental health problems is generally comparable in rural and urban populations, the care that rural patients receive for mental health problems may be of poorer quality, particularly for residents in outlying rural areas and (2) efforts to ensure that rural patients receive similar quality care to their urban counterparts generally requires restructuring treatment delivery models to address the unique problems rural delivery settings face. Within mental health, the Center proposes to conduct the research development/dissemination efforts needed to ensure rural populations receive high quality depression care.

Within mental health, the Center will concentrate on depression because: (1) depression is one of the most prevalent and impairing mental health conditions in both rural and urban populations, (2) most depressed patients fail to receive high quality care when they enter rural or urban treatment delivery systems, (3) outlying rural patients are more likely to receive poorer quality care than their urban counterparts, (4) urban team settings are adopting new evidence-based care models to assure that depressed patients receive high quality care for the condition that will increase the rural-urban quality chasm even further, and (5) urban care models can and need to be refined for delivery to rural populations.

The WICHE Center is based at the Western Interstate Commission for Higher Education. For more information about the Center and its publications, please contact:

WICHE Center for Rural Mental Health Research

3035 Center Green Drive

Boulder, CO 80301

Phone: (303) 541-0311

Fax: (303) 541-0230

<http://wiche.edu/wicheCenter>

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