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Anti-depressant Prescribing Patterns among Prison Inmates with Depressive Disorders

194054

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Abstract

Background: Although prison inmates are reported to exhibit elevated rates of depressive disorders, little is known about anti-depressant prescribing patterns in correctional institutions.

Methods: The study population consisted of 5,305 Texas Department of Criminal Justice inmates who were diagnosed with one of three depressive disorders: major depression, dysthymia, and bipolar disorder (excluding those with manic episodes only). Information on medical conditions, sociodemographic factors, and pharmacotherapy was obtained from an institution-wide medical information system.

Results: Over 50 percent of all inmates diagnosed depression disorders were treated with tricyclic anti-depressants; approximately 31 percent were treated with selective serotonin re-uptake inhibitors (SSRI); and over 20 percent were not treated with any form of anti-depressant medication. Prescribing patterns varied substantially according to a number of sociodemographic factors under study.

Limitations: Because the present study relied on retrospective, clinical data, the investigators had limited ability to assess: specific symptomatology for each diagnosed depressive condition under study; socio-economic status, pre-incarceration access to health care, and other factors; and the overall reliability and validity of the data.

Conclusion: Describing anti-depressant prescribing patterns is the first step to developing a better understanding of the current mental health care practices in US prisons.

Such information will assist correctional health care administrators in more efficiently allocating scarce resources to meet the needs of inmates with depressive disorders.

1. Introduction

The widespread movement to de-institutionalize mentally ill people, which began in the 1970s, resulted in the closing of large public hospitals and treatment centers. This trend produced an increase in the number of mentally ill people incarcerated in US prisons (Thorburn, 1995). Not surprisingly, a number of investigators have reported that US prison inmates exhibit elevated rates of mental illness (Diamond et al., 1999; Booke et al., 1996) and of depressive disorders in particular (Baillargeon et al., 1999; Teplin, 1990; 1994). Because of the limited number of mental health practitioners in most correctional settings, pharmacotherapy is the primary mode of treatment for the vast majority of inmates with depressive disorders (Thorburn, 1995). Such treatment relies predominantly on two major classes of drugs: tricyclic antidepressants (TCAs) and selective serotonin reuptake inhibitors (SSRIs). While TCAs are reported to yield efficacy equivalent to that of SSRIs (Anderson, 1998; Anderson & Tomanson, 1993; Kernick, 1997), they are also reportedly associated with greater side effects (Fairman, 1998; Simon et al, 1995; Katzelnick et al, 1996), and consequently poorer patient adherence (Anderson & Tomanson, 1993; Fairman et al, 1998; Hotopf et al, 1996; Katzelnick, 1996; Simon, 1993). TCAs are, however, substantially less expensive than SSRIs (Hotopf et al, 1996). Clinicians must therefore determine how to allocate scarce resources to best address the pharmacotherapeutic needs of their inmate patients. Little information is currently available on anti-depressant medication prescribing patterns among prison inmates. Describing anti-depressant prescribing patterns in a correctional setting is the first step in assessing how mental health care needs of inmates with depressive disorders are being met.

2. Methods

The cohort under study consisted 5,305 prison inmates who were incarcerated in the Texas Department of Criminal Justice (TDCJ) system for any duration dating from

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December 1, 1998 through March 1, 1999 and who were diagnosed with one of three depressive disorders: major depression, dysthymia, and bipolar disorder. Because antidepressant medication is generally not prescribed for treatment of manic episodes, the present study excluded from analysis all inmates with bipolar disorder who presented with manic episodes but no depressive symptoms during the study period. Texas houses one of the largest prison populations in the US and together with California houses almost one-third of all US prison inmates. Diagnoses of major depression, dysthymia, and bipolar disorder were made by physicians or mid-level practitioners at the time of each inmate's initial evaluation and/or subsequent medical encounters. All inmates in Texas are required to have medical and mental health examinations at the time of intake. This evaluation consists of a detailed medical and mental health history, a comprehensive medical physical examination, and a number of diagnostic procedures. Medication prescription data are maintained on all inmates who are prescribed medication during their incarceration. Inmates at all TDCJ facilities are required to pick up each dose of their prescribed medication at a designated "pill window." Each dose is then recorded and entered into a computerized database. The present study examined two broad classes of anti-depressant medication: TCAs and SSRIs. Other classes of anti-depressants represented a small percentage of the prescribed treatment in the study cohort and were, therefore, not included in the present study.

All clinical, pharmacological, and sociodemographic data used in the present investigation were obtained from an institution-wide medical information system. This system is routinely updated to ensure that the information is reflective of the inmates' current health status. The present study assessed only those medical conditions that were present during the period of investigation. Inmates who were not identified as white, black or Hispanic comprised less than one percent of the population, and were therefore included in the white category.

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For the bivariate statistical analyses used in the present study, the percentages of inmates prescribed specific classes and combinations of anti-depressant drugs were compared according to sociodemographic factors by generating the prevalence and associated 95 percent confidence intervals (CI) for each subgroup under study. Subgroups with confidence intervals that did not overlap were considered to be significantly different from one another. Logistic regression was used to assess the association of the explanatory variables of gender, age, and race with the dichotomous response of whether or not the inmate was prescribed TCAs, SSRIs, or no pharmacotherapy.

3. Results

The first column of table 1, which presents the sociodemographic characteristics of the entire TDCJ population, shows that the vast majority of TDCJ inmates were male and between 30-49 years of age. Whites and Hispanics constituted 28.7 and 26.3 percent, respectively, of the study population while blacks comprised 45.0 percent. The subsequent columns of table 1 present the prevalence of depressive disorders according to the sociodemographic factors. The table shows that the prevalence of depressive disorders was almost three times as high among females as among males. Likewise, the prevalence of depressive disorder among whites was substantially higher than among Hispanics or blacks. No clear disease patterns, however, were exhibited according to age category.

Table 2 shows the percentage of TDCJ inmates who were prescribed TCAs. Overall, 60.6 percent of all TDCJ inmates with depressive disorder were prescribed TCAs. Interestingly, among inmates with bipolar disorder the percentage of prescribed TCAs was substantially lower than among inmates with either major depression or dysthymia. Overall, females were less frequently prescribed TCAs than males, although this pattern was reversed for bipolar disorder.

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Table 3 shows the percent of TDCJ inmates who were prescribed SSRIs. Across all diagnostic categories, whites were more frequently prescribed SSRIs than blacks or Hispanics. Overlap of the ninety-five percent confidence intervals associated with these estimates, however, indicates that this difference reached statistical significance only in the analysis focused on all affective disorders. Examination of the confidence intervals of the final column, which presents estimates for all inmates with bipolar disorder, shows that the percentage of whites who were prescribed SSRIs was significantly greater than that of blacks but not that of Hispanics.

Table 4 shows the percentage of TDCJ inmates who were diagnosed with depressive disorders but who were prescribed no form of anti-depressant medication. It is important to note, however, that inmates may have received other forms of treatment, including psychotherapy. For all major diagnostic categories, males exhibited higher proportions of non-treatment than females. None of these differences, however, reached statistical significance. Of the three ethnic groups under study, Hispanics consistently exhibited the highest prevalence of no pharmacotherapy. In fact, for all depressive disorders and major depression diagnostic categories, Hispanics exhibited significantly higher percentages of nontreatment than blacks. Very few substantial associations were exhibited between rates of non-treatment and age. Interestingly, however, among inmates with major depression and bipolar disorder, those in the 50 and over age-group exhibited non-significantly elevated rates of no pharmacotherapy.

Table 5 presents results from several logistic regression models predicting anti-depressant medication prescribing patterns. The first three columns, which present prescribing patterns for all TDCJ inmates with depressive disorders, show that females are more likely than males to be prescribed SSRIs, but are less likely than males to be prescribed no pharmacotherapy. Relative to whites (the referent), both blacks and Hispanics were less likely to be placed on SSRIs, but were more likely to have been prescribed no anti-depressant treatment. Blacks, however, were more likely to be

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prescribed tricyclic anti-depressants than either whites or Hispanics. Prison inmates who were between the ages of 30-49 exhibited a reduced number of SSRI prescriptions but an elevated percentage of tricyclic anti-depressant prescriptions.

Among all TDCJ inmates diagnosed with major depression, females were more likely than males to have been prescribed SSRIs. Blacks and Hispanics, were less likely to have been prescribed SSRIs than whites. In comparison to whites, TCA therapy was more frequently prescribed among blacks, but less common among Hispanics. The logistic regression model assessing the outcome, no pharmacotherapy, showed that: Hispanics were much more likely than either whites or blacks to be prescribed no anti-depressant medication and the percentage of inmates with major depression on no anti-depressant medication increased in a stepwise fashion according to age.

Among inmates with dysthymia, both blacks and Hispanics were less likely than whites to be prescribed SSRIs. Interestingly, Hispanics exhibited an elevated rate of no pharmacotherapy. For inmates diagnosed with bipolar disorder, females exhibited an elevated prevalence of SSRI prescription and a reduced prevalence of no pharmacotherapy. Hispanics were more likely to not be placed on no pharmacotherapy than either whites or blacks; and blacks once again, had a significantly lower prevalence of SSRI prescription.

4. Discussion

The purpose of the present study was to describe anti-depressant prescribing patterns for Texas Department of Criminal Justice (TDCJ) prison inmates diagnosed with depressive disorders. Overall, 3.8 percent of the TDCJ inmate population exhibited one of the three depressive disorders under study: major depression, dysthymia, or bipolar disorder. TCAs were prescribed in 50 percent of the study population, while SSRIs were prescribed in only 30 percent; and no anti-depressant medication was administered to 22 percent of the inmate population. These estimates are in contrast with those reported for

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non-incarcerated populations. For example, in their study of a medium-sized group model HMO, Katzelnick and colleagues (1996) reported that SSRIs constituted 56 percent of all anti-depressants prescribed, whereas tricyclics accounted for only 31 percent. Moreover, in a 1993-94 survey of psychiatrists in private practice, Olfson and colleagues (1998) reported that psychiatric patients on anti-depressant medication were nearly evenly divided between those who did and did not receive SSRIs.

Until recently, TCAs have been the first line class of anti-depressants used in most patient populations (Trindade et al, 1998). SSRIs, however, were introduced in the late 1980s and now account for a substantial proportion of initial prescriptions for depressive disorders (Katzelnick et al, 1996; Kernick, 1997). While both TCAs and SSRIs are associated with side effects (Trindade et al, 1998), some investigators hold that patients treated with SSRIs are more likely than those treated with TCAs to discontinue their treatment because of side-effects (Fairman, 1998; Simon et al, 1993; Katzelnick et al, 1996). Alternatively, other studies have reported no statistically significant differences between TCAs and SSRIs in the rate of discontinuation of treatment due to side effects (Anderson & Tomasen, 1996; Trindade et al, 1998). While SSRIs are more expensive than TCAs (Kernick, 1997), no consensus has been reached on which class of anti-depressant yielded more cost-effective overall treatment. Some investigators contend that the increased expenses of SSRIs are offset by a decrease in unneeded medical work-ups and costs associated with untreated depression (Katzelnick et al, 1996). Others hold that using TCAs as the first choice with SSRIs reserved for patients not doing well initially is the most cost-effective treatment policy (Woods & Rizzo, 1996).

The present study revealed that anti-depressant prescribing patterns varied substantially according to a number of sociodemographic factors. For example, female inmates diagnosed with depressive disorders were more frequently prescribed SSRIs, but were less frequently prescribed TCAs and no treatment, than their male counterparts. A number of previous investigations report that female inmates are more frequently

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prescribed medication than males (Feiman, 1986; Somers & Baskin, 1991). Because these studies did not adjust for the underlying disease status, however, the reported rates are likely driven by the higher rates of underlying diagnosed disease among females. The present investigation shows that even after restricting on inmates diagnosed with depressive disorders, females consistently exhibited higher rates of medication treatment than males. It is difficult to determine whether the present study's finding reflects gender-related differences in presentation of symptoms, or simply a propensity for practitioners to more readily prescribe medication for female inmates. Alternatively, the higher prevalence of pharmacotherapy, particularly SSRI use, among female inmates may simply reflect higher rates of treatment prior to incarceration. Research indicates that in the general population, females are more likely to receive psychiatric treatment than males (Olfson et al, 1998). It is likely that for those inmates who had already been prescribed medication at the time of incarceration, practitioners would continue with existing treatment.

Assessment of variation patterns by race showed that Hispanics exhibited a higher prevalence of no pharmacotherapy than whites or blacks. Given the retrospective nature of the data, it was difficult to determine why the rates of Hispanics were consistently lower than that of whites and Blacks. One possible explanation is that Hispanics presented with a different symptomatology than whites or Blacks. Alternatively, a language barrier may have hindered practitioners' ability to assess both the efficacy and side-effects of anti-depressant treatment. This, in turn, may have resulted in a reluctance on the part of practitioners to proceed with drug therapy. The findings also show that for each depressive disorder under study blacks were prescribed SSRIs less frequently than whites or Hispanics. It is possible that these race-differentiated rates are driven by medication patterns that existed among inmates prior to incarceration. Research indicates that in the general population, whites are much more likely than Hispanics or blacks to receive psychiatric treatment (Freiman & Cunningham, 1997).

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It is noteworthy that inmates age 50 and over with a diagnosis of major depression were less frequently prescribed pharmacotherapy than their younger-aged counterparts. Prisoners who are age 50 and over now constitute a rapidly growing segment of the US prison population, due to more restrictive release policies, longer sentences, and the aging of the general population (Camp, 1990). Given that elderly inmates are reported to exhibit higher rates of depressive disorders than their same-aged counterparts from the general population (Koenig et al, 1995) understanding why pharmacotherapy was prescribed less frequently among older TDCJ inmates holds important treatment implications.

A number of methodologic limitations restricted assessment of prescribing patterns in the TDCJ inmate population. First, because the present study relied on retrospective, clinical data, it was not possible to assess all of the factors that contributed to each treatment decision. For example, information on pre-incarceration prescribing patterns, pre-incarceration access to health care, and socioeconomic status was not available. It will be important for future investigations, particularly those that employ prospective study design, to examine these factors. Second, the age distribution of prisoners is substantially different from that of the general population. In interpreting results it is important to consider that prison populations are, on average, younger than the general population. Third, diagnoses of medical conditions were made by multiple practitioners at several prison sites. While practitioners relied on standardized institutional clinical guidelines to make all diagnoses, no system-wide data on the reliability and validity of such diagnoses was available for assessment. Consequently, prevalence of disease reported in this study is subject to biases generally associated with clinically obtained data.

5. Conclusion

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The findings of the present study show that the Texas prison system prescribes a substantially larger percentage of TCAs and a smaller percentage of SSRIs than practitioners in non-correctional settings. In view of the higher cost of SSRIs, a recommendation for the increased use of these new agents in correctional settings will require strong evidence that they are superior with regard to efficacy, adherence, and overall cost-effectiveness. The current lack of such evidence has prompted a call for prospective studies to assess the cost-benefits of SSRIs compared with TCAs (Katzelnick et al, 1996). Some practitioners cite evidence that SSRIs are safer in overdose than TCAs (Hotopf et al, 1996). However, because prison inmates are administered medication under supervision, the threat of overdose is not a factor in correctional mental health care treatment decisions. Finally, it will be important to determine whether the sociodemographic differentials in prescribing patterns represented in the present study are reflective of: patient factors, such as attitudes toward treatment, presentation of symptoms; physician-related biases in diagnosis; or simply pre-incarceration prescribing patterns. Understanding the driving forces behind these differences will help practitioners more efficiently deliver mental health care in the correctional setting.

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Table 1: Rates of depressive disorders, by sociodemographic factors

Variable	All Inmates (n=139,573)		All Depressive Disorders (n=5,305)	Major Depression (n=2,767)	Dysthymia (n=1,839)	Bipolar Disorder (n=1,149)
	N	%				
Entire Cohort	139,573	100	3.8	2.0	1.3	0.8
Gender						
Male	130,506	93.5	3.2	1.7	1.1	0.6
Female	9,067	6.5	9.2	4.4	2.7	2.7
Race						
White	40,040	28.7	7.0	3.4	2.3	2.0
Hispanic	36,676	26.3	1.8	1.0	0.6	2.6
Black	62,858	45.0	2.9	1.7	1.1	0.4
Age						
18-29	44,842	32.1	3.2	1.7	1.2	0.7
30-49	83,396	59.8	4.1	2.2	1.4	0.9
50+	11,336	8.1	3.5	1.8	1.2	0.6

Table 2: Proportion of inmates with depressive disorders on tricyclic anti-depressant medication, by sociodemographic factors ^a

Variable	All Depressive Disorders	Major Depression	Dysthymia	Bipolar Disorder
	%	%	%	%
Overall	60.6 (59.3-61.9)	64.8 (63.0-66.5)	64.5 (62.3-66.6)	50.3 (47.4-53.2)
Gender				
Male	61.0 (59.2- 62.8)	65.1 (62.7-67.5)	64.9 (62.0-67.9)	49.7 (45.6-53.8)
Female	58.3 (54.2-62.5)	63.0 (57.1-68.9)	61.7 (54.2-69.1)	52.5 (44.6-60.4)
Race				
White	59.3 (56.7- 61.8)	63.6 (59.9-67.3)	65.3 (60.9-69.7)	50.4 (45.5-55.4)
Hispanic	56.2 (50.8-61.8)	57.0 (50.2-63.9)	61.3 (52.3-70.3)	49.5 (35.3-63.7)
Black	64.1 (60.9-67.2)	68.9 (64.9-73.1)	64.4 (59.3-69.6)	50.2 (41.2-59.1)
Age				
18-29	60.1 (56.6-63.7)	66.9 (62.0-71.8)	63.5 (57.7-69.3)	45.1 (37.3-53.0)
30-49	61.6 (59.3-63.9)	65.2 (62.1-68.4)	65.2 (61.2-69.1)	53.5 (48.4-58.6)
50+	53.3 (46.4-60.2)	53.1 (43.9-62.4)	62.5 (51.0-74.0)	39.7 (23.4-56.1)

^a= 95 percent confidence intervals are presented in parentheses

Table 3: Proportion of inmates with depressive disorders on SSRI anti-depressant medication, by sociodemographic factors ^a

Variable	All Depressive Disorders	Major Depression	Dysthymia	Bipolar Disorder
Overall	30.9 (29.6-32.1)	35.1 (33.3-36.9)	28.9 (26.8-31.0)	30.5 (27.9-33.2)
Gender				
Male	29.9 (28.3-31.7)	34.6 (32.2-37.0)	28.4 (25.6-31.2)	28.1 (24.4-31.8)
Female	35.6 (31.7-39.6)	38.0 (32.2-43.8)	31.9 (24.8-38.9)	39.3 (32.0-46.5)
Race				
White	36.0 (33.6-38.5)	42.0 (38.4-45.6)	32.9 (28.8-37.0)	34.6 (30.1-39.1)
Hispanic	27.1 (22.1-32.2)	33.2 (26.4-40.0)	24.9 (20.1-29.8)	23.7 (10.7-36.7)
Black	24.3 (21.3-27.3)	26.9 (22.8-30.9)	23.9 (15.4-32.4)	19.6 (11.4-27.8)
Age				
18-29	35.2 (31.8-38.6)	40.1 (35.8-45.0)	33.5 (28.0-38.9)	35.0 (27.8-42.2)
30-49	28.8 (26.6-31.0)	32.7 (29.6-35.9)	26.9 (23.2-30.6)	28.4 (23.8-33.1)
50+	33.0 (26.6-31.0)	37.2 (27.9-46.5)	27.9 (17.1-38.8)	31.5 (16.4-46.6)

^a= 95 percent confidence intervals are presented in parentheses

Table 4: Proportion of inmates with depressive disorders on no anti-depressant medication, by sociodemographic factors ^a

Variable	All Depressive Disorders	Major Depression	Dysthymia	Bipolar Disorder
Overall	21.8 (20.7-23.0)	17.8 (16.4-19.3)	19.1 (17.4-21.0)	29.9 (27.4-32.7)
Gender				
Male	22.5 (21.0-24.0)	17.9 (15.9-20.0)	19.7 (17.3-22.1)	32.6 (28.9-36.3)
Female	18.3 (14.8-21.9)	17.0 (12.3-21.7)	15.3 (9.2-21.4)	19.8 (12.7-27.0)
Race				
White	20.5 (18.4-22.8)	16.5 (13.6-19.4)	17.0 (13.4-20.6)	26.9 (22.4-31.4)
Hispanic	27.7 (23.2-32.3)	23.3 (17.8-28.8)	25.7 (18.3-33.0)	38.1 (25.2-51.1)
Black	21.7 (19.0-24.4)	17.5 (14.2-20.8)	19.7 (15.5-23.9)	36.7 (28.6-44.9)
Age				
18-29	21.7 (18.7-24.7)	15.2 (11.3-19.1)	21.2 (16.5-26.0)	31.9 (24.7-39.1)
30-49	21.7 (19.7-23.6)	18.3 (15.8-20.9)	18.4 (15.1-21.6)	28.2 (23.5-32.8)
50+	23.9 (18.0-29.7)	22.2 (14.8-29.7)	16.9 (7.5-26.4)	39.7 (24.7-54.7)

^a= 95 percent confidence intervals are presented in parentheses

Table 5: Estimated odds ratios from logistic regression predicting anti-depressant medication prescribing patterns^a

Treatment	All Depressive Disorders			Major Depression			Dysthymia			Bipolar Disorder		
	SSRI	Tricyclic	None	SSRI	Tricyclic	None	SSRI	Tricyclic	None	SSRI	Tricyclic	None
Gender^a												
Female	*1.40	0.87	*0.78	*1.31	0.89	0.91	1.30	0.86	0.74	*1.71	1.06	*0.53
Race^b												
Hispan.	*0.66	0.88	*1.48	*0.68	*0.74	*1.57	*0.61	0.84	*1.66	0.61	0.95	*1.64
Black	*0.56	*1.22	1.09	*0.49	*1.25	1.10	*0.65	0.97	1.22	*0.47	0.96	1.60
Age^c												
30-49	*0.73	1.07	1.02	*0.72	0.92	*1.27	*0.70	1.08	0.88	*0.72	*1.40	0.86
50+	0.83	0.78	1.16	0.78	*0.57	*1.66	0.71	0.95	0.80	0.86	0.80	1.42

* 95 percent confidence interval does not include 1.00

^a Reference category= males

^b Reference category= whites

^c Reference category= age group 18-29

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