The Prevalence of Delusional Disorder in Prison

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Delusional disorder has important implications for forensic psychiatrists, as delusions are not infrequently related to criminal behavior. Thus, we hypothesized that delusional disorder is over-represented in correctional populations. We conducted a retrospective chart review of the electronic medical records from 2000 to 2012 of New Jersey Department of Corrections inmates who remained incarcerated as of March 2012. Potential cases of delusional disorder were initially identified by using a search for current or past diagnoses of such disorders or other diagnoses that could be misdiagnosed cases. After an initial chart review identified an inmate as having probable delusional disorder according to Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) criteria, the diagnosis was confirmed by at least one concurring independent review. We estimate a point prevalence of 0.24 percent for delusional disorder in our population, which is eight times higher than that expected in the community.

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Delusional disorder is manifested in the presence of fixed, false beliefs without the changes in personality and functional decline (besides that attributable to delusions) that are typically seen with schizophrenia.[1] In his 1896 textbook, Emil Kraepelin[2] described *dementia paranoides* as a condition distinct from *dementia praecox*, with nonbizarre delusions, no thought disorder, and few changes in affect or volition. He considered what we now call delusional disorder to be uncommon, though other texts have described it as rare or extremely rare. In the early 20th century, despite the disagreement of some colleagues as to the validity of the diagnosis and his own doubts, Kraepelin found it to be too clinically valuable to eliminate.[3] Though established as a diagnosis in the chapter on psychotic disorders since The Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised (DSM-III-R),[4] delusional disorder has remained controversial to this day. The Fifth Edition (DSM-5) eliminated the criterion that the delusions in delusional disorder must be nonbizarre in nature.[1]

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Besides the evolving professional consensus about delusional disorder, it has been found that individuals with isolated delusions are often able to function unnoticed in the community and that they rarely present themselves to mental health providers. Thus, even the basic task of quantifying the epidemiologic features of delusional disorder is fraught with challenges. Nevertheless, some estimates of the prevalence of delusional disorder have been made to date. Its lifetime prevalence may be as high as 0.2 percent, and it may be seen in up to 1 to 2 percent of psychiatric inpatients.[1,5] Its point prevalence however, is estimated to be 0.03 percent in the community.[5] In the community therefore, isolated cases of delusional disorder that call for treatment can reasonably be described as rare.

Based on our clinical and forensic experience, we hypothesized that delusional disorder is more common in forensic settings. Criminal behavior is sometimes motivated by delusional thinking. For example, individuals with persecutory delusions may act violently in pre-emptive (perceived) self-defense. Those with erotomanic delusions may stalk the object of their delusional affection, and those with jealous delusions may seek retribution for perceived infidelity. Mental illness in general is observed more often in prison than would be expected in a general community sample.[6] Psychiatric disorders may also emerge during the course of an inmate's incarcera-

tion. The distribution of the age of prisoners peaks in the early 30s and overlaps considerably with the typical age of onset of delusional disorder (i.e., between the ages of 35 and 44).[7,8] Psychosis may be brought forward in the context of stress, which is plentiful in a prison environment. A phenomenon called prison psychosis is also described in individuals who develop a brief, nonbizarre, usually persecutory delusional system in the context of solitary confinement.[9] This response may be a defense mechanism to cope with environmental stressors. In a study comparing the change in prevalence of various mental disorders over time in the French correctional system, psychotic disorders were observed less often in inmates at intake than in persons serving long or intermediate sentences, with a more pronounced difference noted for delusional disorder (odds ratio (OR) 0.29).[9]

Delusional disorder is perceived by many psychiatrists as unlikely to respond to treatment. However, this attitude is neither supported nor strongly refuted by research. Delusional disorder is notoriously difficult to study. Its relatively low prevalence discourages researchers and industry from studying it, and persons with the condition do not consider themselves to be mentally ill. Nevertheless, the best available evidence suggests that delusional disorder is treatable. Though most have methodological limitations, positive studies for the treatment of delusional disorder have been published for antipsychotics, antidepressants (particularly when used for somatic type delusions), electroconvulsive therapy (ECT), and cognitive behavioral therapy.[10–12] Kendler reviewed the demography of delusional disorder, stating that the diagnosis confers a poor chance for full recovery, but he suggested that its response rate is similar to schizophrenia.[8] Pooled data from the studies he reviewed showed that only 19 percent of patients with delusional disorder recovered fully (18% for schizophrenia). When cases of patients described as improved or much improved were included, the response rate improved to 85 percent (87% for schizophrenia).[8] In comparison, the PORT(Patient Outcomes Research Team) study of patients with schizophrenia cited a 50 to 80 percent improvement in patients prescribed antipsychotic medications other than clozapine.[13]

It is controversial whether a diagnosis of delusional disorder renders an individual appropriate for civil commitment, criminal commitment, or involuntary treatment.[14–17] Case reports of violence risk in erotomanic, jealous, and persecutory forms of delusional disorder have been reported in the literature.[18] Although there are few studies on the risk of violence associated with delusional disorder *per se*, there has been extensive research linking persecutory and grandiose delusions with serious violence. In baseline data from the CATIE (Clinical Antipsychotic Trials of Intervention Effectiveness) trial, persons with schizophrenia with high levels of positive symptoms and low levels of negative symptoms (i.e., more closely resembling delusional disorder) were the most likely to commit acts of violence.[19] A recent study on first-episode psychosis found that delusions of persecution, being spied on, and conspiracy increased the risk of both minor and serious violence, particularly when associated with anger.[20] In a naturalistic 2007 study of inpatients with delusional disorder committed to a forensic psychiatric hospital for restoration of competency to stand trial, 17 of 22 were restored to competency.[21] All had been involuntarily treated with antipsychotic medication, suggesting that their improvement was less likely to be attributable to a placebo effect. More important, the goals of hospitalization and even forcible treatment when necessary may be satisfied for defendants, inmates, or other patients with delusional disorder.

The danger of perceiving a disorder to be rare and untreatable is that it may be ignored, avoided, or minimized by researchers and clinicians. Our hypothesis for this study was that the prevalence of delusional disorder is higher in prison than would be expected in the community.

Methods

This study was initiated as a pilot attempt to estimate the prevalence of delusional disorder in prison. Approval was obtained from the New Jersey Department of Corrections Departmental Research Review Board and the University of Medicine and Dentistry of New Jersey–Robert Wood Johnson Medical School Institutional Review Board. Informed consent was waived, given the minimal risk of the study, which was a retrospective chart review with only aggregate data to be presented publicly.

We created an electronic medical record (EMR) query to identify currently incarcerated inmates who, as of March 2012, had ever had a diagnosis of delusional disorder; schizophrenia, paranoid type; psychotic disorder due to general medical condition with delusions; schizophreniform disorder; brief psy-

chotic disorder; psychotic disorder not otherwise specified; dementia with delusions or hypochondriasis. The intent of this broad search was to identify a subset of the inmate population enriched with individuals who had been diagnosed with or suspected to have delusional thought content. This strategy is biased toward the null hypothesis (that there is no difference between the prevalence of delusional disorder in prison and the community) because it misses cases of delusional thinking that do not cause dysfunction in prison, but might require contact with mental health professionals.

For each chart, investigators reviewed psychiatric evaluations to answer the following questions:

> Has the inmate ever had evidence of probable delusional thought content?
>
> Is the thought content bizarre (impossible in real life)?
>
> Are the beliefs better explained by another major psychiatric diagnosis, including drug or alcohol intoxication or withdrawal?
>
> What is the nature of the delusion? (Classify as persecutory, jealous, grandiose, erotomanic, somatic, or mixed.)

This questionnaire is based on the criteria for delusional disorder listed in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR),[5] the most recent version of the DSM at the time of the study. Psychiatric evaluations with documentation of mental status examination data were reviewed. If no evidence of delusional thought content was identified, if the content was bizarre, or if identified delusions were better explained by a psychiatric diagnosis other than a delusional disorder, the case review was terminated. If delusional thought content had clearly remitted with no specific treatment as of March 2012, the case was not counted as probable delusional disorder.

If a case was identified on primary review as probable delusional disorder, it was referred to a second reviewer. If the second reviewer agreed, the case was recorded as probable delusional disorder. If there was disagreement between the first and second reviewers, the case was referred to a third reviewer, whose decision was final. If there was disagreement on the typology of the delusion (e.g., paranoid versus mixed), a third reviewer also made the final decision on the specifier.

The estimated community point prevalence of .03 percent was used in arriving at an estimate of the number of cases based on the current inmate census. A chi-square test was used to evaluate for statistical significance between the observed and calculated estimates.

Results

Of the 1,154 inmates identified by the query of cases enriched for persons with delusions, 122 were identified on first pass as possibly meeting the criteria for delusional disorder. At least two reviewers agreed that the criteria for a delusional disorder were met in 55. Fourteen of these 55 required a third review to be categorized as achieving concurrence among the reviewers. The total New Jersey Department of Corrections (NJDOC) inmate census for the month of March 2012 was 23,045. Thus, the point prevalence of delusional disorder in the NJDOC was 0.24 percent. Using the then special-needs census of 2,767 as the denominator, we found the prevalence of delusional disorder in the NJDOC among the mentally ill to be 2 percent.

The types of delusions observed in our sample are listed in Table 1. The most common type of delusional disorder identified in this study was persecutory (63.6% of cases), followed by mixed (18.2%), grandiose (14.5%), and somatic (3.6%). All of the 10 cases identified as mixed type had an element of persecution.

On first pass, of the 1,154 inmates identified by the EMR query, 521 (45.1%) had documented evidence of delusional thought content. Of those, 371 (71.2%) were assessed as having nonbizarre thought content. The current diagnoses of inmates ultimately identified as having probable delusional disorder are included in Table 2. In those 55 cases, 50.9 percent of the inmates had a diagnosis of delusional disorder

Table 1 Typology of Cases Identified as Probable Delusional Disorder

Type	Cases	% of Cases	% of Total Inmate Census*
Persecutory	35	63.6	0.15
Grandiose	8	14.5	0.03
Somatic	2	3.6	0.01
Erotomanic	0	0.0	0.00
Jealous	0	0.0	0.00
Mixed	10	18.2	0.04
Total concurring cases	55	100.0	0.24

* N = 23,045 (NJ DOC Inmate Census as of March 2012).

Table 2 Formal Diagnoses Among Cases Identified as Probable Delusional Disorder

Formal DSM-IV-TR Diagnosis	Cases	% of Total
Delusional disorder	21	38.2
Schizophrenia, paranoid type	8	14.5
Psychotic disorder, not otherwise specified	5	9.1
History of delusional disorder	3	5.5
Rule out delusional disorder	3	5.5
Paranoid personality disorder	3	5.5
Personality disorder, not otherwise specified	2	3.6
Question of delusional disorder	1	1.8
Schizophrenia, undifferentiated type	1	1.8
Schizophrenia, residual type	1	1.8
Question of paranoid personality disorder	1	1.8
Antisocial personality disorder	1	1.8
History of psychotic disorder, not otherwise specified	1	1.8
Psychotic disorder due to a general medical condition	1	1.8
Personality change due to a general medical condition	1	1.8
Brief psychotic disorder	1	1.8
No diagnosis	1	1.8
Total	55	100.0

or had a historical or provisional diagnosis of the same. Forty-six (83.6%) were assessed to be in the psychotic disorder spectrum. Most of the remaining inmates received a personality disorder diagnosis (14.5%), and one had no diagnosis.

If we used the estimated community prevalence of .03 percent, the null hypothesis would expect us to find 6.9 cases of delusional disorder among the total inmate census of 23,045 individuals. The difference between this estimate and our observed estimate of 55 cases was statistically significant ($p < .001$).

Discussion

Our results suggest that the prevalence of delusional disorder among inmates in the NJDOC is eight times the rate expected in a community sample. Among mental health special-needs cases, we estimated the point prevalence of delusional disorder to be 2.0 percent, which is the upper end of the estimate for the prevalence of delusional disorder among psychiatric inpatients in the community. Although there are certainly seriously mentally ill inmate patients in treatment in the NJDOC, those who are able to function adequately in a general population setting make up most of the mental health special-needs population, with acuity far lower than that expected in a community inpatient psychiatric level of care. These results support our contention that delusional disorder concentrates, at least modestly so, in a correctional setting.

The most common type of delusional disorder observed in this study was persecutory, and there was an element of persecutory delusional thinking in all cases classified as mixed. Altogether, 81.2 percent of concurring cases of probable delusional disorder in the NJDOC included persecutory thought content. This finding is consistent with previous research showing persecutory type to be the most common form of delusional disorder, though the percentage is higher than in most other prevalence studies.[22] Persecutory thinking may be more likely to attract attention from correctional staff out of concern for safety, in handling requests for protection, or in response to grievances. Erotomanic and jealous types of delusional disorder were not observed in our study in their pure forms and were each observed only once mixed with persecutory thought content. These low rates may be explained by the more private nature of real and perceived relationships and the separation from love interests that usually occurs with incarceration.

There are several limitations to this study, including those inherent in a retrospective chart review, though the limitations may have variable effects on our estimate. All reviewers were investigators in the study; we were aware of the hypothesis, and were not blinded to the other reviewers' opinions. Our methodology did not call for a second review for those thought unlikely to have delusional disorder on first pass. Given that 25.5 percent of cases required a third review before the inmate was categorized as having probable delusional disorder, additional reviews of cases excluded on first pass would likely have increased our estimate. In our first-pass reviews, 28.8 percent of the cases were excluded for bizarre thought content. Although our protocol did not require us to consider whether the bizarre delusions were better accounted for by another mental disorder, had we used the DSM-5 criteria for delusional disorder (which were published subsequent to completion of our research),[1] our estimate for delusional disorder would almost certainly have been higher.

The EMR query effectively produced a sample enriched for the identification of cases of delusional disorder. Nearly half (45.1%) of the inmates identified by the query had evidence of delusional thought content, and in 71.2 percent of those, the delusions were assessed as nonbizarre. However, many of the cases of probable delusional disorder actually carried

a primary diagnosis of personality disorder. An expanded EMR query including a search for the diagnosis of paranoid personality disorder might have identified more candidates appropriate for our review. Of course, the query also missed those whose delusional thought content caused no functional impairment during the study period that might have brought them to the attention of mental health staff.

More in-depth evaluations would be expected to exclude some cases that we identified as probable delusional disorder, though they may also have identified additional cases that we excluded. Our results suggest that a rigorous study design including a face-to-face research interview, informed consent, and a psychometric test (such as a Structured Clinical Interview for DSM Disorders (SCID)) would be impractical. With an expected prevalence for delusional disorder in prison of .24 percent, we would need to interview and test more than 400 patients to identify a single case of delusional disorder. Furthermore, it is doubtful that an inmate subject with persecutory delusions would consent to respond to detailed questions or to participate in testing that may be perceived as being intrusive. Even so, there are practical opportunities for future study using the retrospective chart review methodology. For example, the criminal and disciplinary records of individuals identified as likely to have delusional disorder may be compared with those inmates with schizophrenia, another mental illness, or no mental illness. Such a comparison may better elucidate the relative risk of violence of those inmates with delusional disorder.

Even considering the limitations of this study, our results support the hypothesis that delusional disorder is more frequently observed in incarcerated individuals. Effectively identifying and, when appropriate, treating these persons has important clinical, institutional, and criminological implications. Better recognition by correctional health care professionals, custody staff, and correctional administrators would be expected to open opportunities for treatment and to increase safety for inmates, staff, and members of the community by reducing intra- and extrainstitutional criminal behavior. In addition, we believe that identifying this concentration of cases should lead to future research on those with delusional disorder, including their risk of violence and response to treatment, which can be conducted by records reviews with minimal risk to the subjects.

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