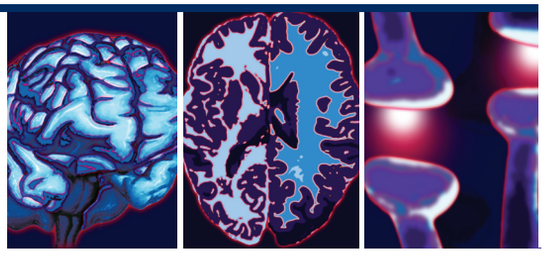
SPECIAL REPORT



Prevalence of delusional disorder among psychiatric inpatients: data from the German hospital register

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Practice points

- Delusional disorders are rare and account for 0.5% of all psychiatric admissions.
- Females are more often affected than men.
- The mean age of patients with delusional disorder is higher than that of schizophrenia.
- Schizophrenia outnumbers delusional disorders by 20:1.

SUMMARY Little is known about the prevalence of delusional disorder. An analysis of data from official German hospital statistics for the period between 2000 and 2006 indicate that 10% of psychiatric patients (cases) were admitted for psychotic disorders, predominantly schizophrenia, but only approximately 0.5% of patients met the diagnosis of delusional disorder. Therefore, patients with schizophrenia outnumbered patients with delusional disorder by approximately 20:1. It was also found that patients with delusional disorders were more likely to be female and older compared with schizophrenia.

The concept of paranoia was formed in the late 19th century and defined by Kraepelin [1–3]; it was later renamed 'delusional disorders'. The term was suggested in 1977 by Winokur [4] and was adopted and operationalized by the *Diagnostic and Statistical Manual of Mental Disorders* (DSM)-III-R in 1987 [5].

Despite common features, the syndrome was considered to be distinct from schizophrenia but rather rare [6]. Delusional disorder, as defined in the DSM-IV and the International Classification of Psychiatric Disorders (ICD)-10 [2], is characterized by the presence of nonbizarre delusions in the relative absence of other symptoms of psychosis or schizophrenia. Delusional disorders can be subtyped according to the predominant delusional theme into persecutory, erotomanic, somatic, jealous, grandiose, mixed and unspecified type. The diagnosis is very stable over time [6]. Delusional disorder may also develop in the context of medical disorders or alcoholism. In psychotic disorders related to alcoholism, patients usually suffer from auditory but also visual hallucinations and delusions of persecution and especially jealousy [7]. There is no evidence for a common genetic basis of delusional disorder with schizophrenia [8–12].

Clear epidemiological data on the prevalence of delusional disorders are missing [6,11] and, until recently, there were only two general population studies on the prevalence of delusional disorders [12,13]. In his recent review,

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Manschreck concluded that various studies from the beginning of the 20th century indicate an incidence of 0.7–3.0 out of 100,000 cases of delusional disorders and a prevalence of 24–40 out of 10,000 [14]. On the basis of these figures, delusional disorders would account for 1–2% of all admissions to psychiatric hospitals and the lifetime morbidity risk would be 0.05–0.01%. Other studies have estimated the prevalence to be 0.03% [2,12]. It has been speculated that women are more prone to delusional disorders than men but again there are few data on this issue [13]. There are some very recent studies on this subject: in a case register study from De Portugal *et al.*, 56.5% of the patients with delusional disorder were female and 42% of all patients had a comorbid axis II diagnosis, the majority with paranoid personality disorder [15]. A recent and important study by Perälä *et al.* examined a nationally representative sample of 8028 persons in Finland and reported a prevalence rate of 0.18% for delusional disorder, 0.24% for paranoid schizophrenia, 0.42% for undifferentiated schizophrenia and 0.16% for disorganized schizophrenia [16].

There is little research interest into delusional disorder, probably in part because of its relative infrequency, and subsequently, few studies have focused on its treatment [17–19]. Data from hospital and mental health service utilization may help to explore the prevalence of this syndrome and relevant sociodemographic correlates.

Materials & methods

A general overview on the frequency and demographics of schizophrenia, psychotic disorders and delusional disorders can be obtained from official German hospital statistics reporting ICD-10 codes for all patients discharged from hospital after full-time inpatient treatment [101]. The register is compulsory and comprehensive, all inpatients are recorded with primary diagnosis. The figures and analysis indicates that 132,592 (year 2000) to 137,736 (year 2006) patients (cases) fulfilling ICD-10 codes F20–F29 are treated [20]. No detailed information on diagnostic subtypes are available from the register. We obtained and analyzed further data from this register for the 7-year period from 2000 to 2006 to investigate the prevalence (as well as the mean age and sex ratio) of schizophrenia and delusional disorders among patients with a psychiatric diagnosis. It is worth noting that this register counts cases of inpatient treatment, not patients, and no outpatient treatments. Diagnosis are recorded at the end of the treatment and are usually given by the treating physician.

Results

In 2000 916,968 patients (cases) were treated as inpatients for psychiatric disorders nationwide in Germany. Of these patients, 91,923 (10.0%) had an ICD-10 diagnosis of schizophrenia, 4700 of delusional disorder (0.5%) and 2768 of organic delusional disorder (0.3%). Therefore, schizophrenic patients outnumbered those with delusional disorder by nearly 20:1. The number of admissions and relative proportion of different diagnoses were remarkably stable between 2000 and 2006 **(Table 1)**.

While the majority of patients with a diagnosis of schizophrenia were male (56–58%), patients with delusional disorders were predominantly female (58–59%) and also older than schizophrenic patients **(Figure 1)**.

Discussion

An analysis of the German hospital statistics may provide figures to complement epidemiological studies examining the prevalence of psychiatric disorders in the community. Data indicated that approximately 10% of all psychiatric inpatients meet the diagnosis of a psychotic disorder, especially schizophrenia. These figures are in line with previous publications. Only a few studies have been published on the prevalence of delusional disorders and the database is limited [6,16]. The assessment of this apparently rare syndrome requires experience in psychiatry and may be difficult in field studies. We conclude from the German hospital statistics that delusional disorders are rare, at least among psychiatric inpatients, especially compared with schizophrenia. Delusional disorders account for 0.5% of admissions to psychiatric hospitals as measured over a 7-year period. Cases of organic delusional disorders (0.3%) are even less frequent. Data from this study also indicate that patients with schizophrenia outnumber patients with delusional disorders by approximately 20:1.

Very similar figures have been reported in the Halle Delusional Syndrome (HADES) study [6]. In a sample of 9969 psychiatric inpatients 0.43% met the diagnosis of a persistent delusional disorder accounting for 2.12% of all patients who met a F2 diagnosis according to the ICD-10.

Table 1. Number of total psychiatric admissions, diagnoses of schizophrenia, delusional disorder, organic hallucinosis and organic delusional disorder for the years 2000–2006.

Year	Psychiatric admissions (total)	Schizophrenia (ICD-10: F20)			Delusional disorder (ICD-10: F22)			Organic delusional disorder (ICD-10: F06.2)	Ratio F20:F22
		Total	Number of men (%)	Number of women (%)	Total	Number of men (%)	Number of women (%)	Total	
2000	916,968	91,923	51,881 (56.4)	40,042 (43.6)	4700	1969 (41.9)	2731 (58.1)	2768	19.5:1
2001	981,269	93,886	53,065 (56.5)	40,821 (43.5)	4980	2100 (42.2)	2880 (57.8)	3536	18.8:1
2002	986,237	96,285	54,722 (56.8)	41,563 (43.2)	4409	1812 (41.1)	2597 (58.9)	4193	21.8:1
2003	993,732	97,685	56,144 (57.5)	41,541 (42.5)	4508	1862 (41.3)	2646 (58.7)	4533	21.7:1
2004	1,019,154	97,129	56,525 (58.2)	40,604 (41.8)	4706	1973 (41.9)	2733 (58.1)	5451	20.6:1
2005	1,046,365	96,021	55,980 (58.3)	40,041 (41.7)	4668	1894 (40.6)	2774 (59.4)	6074	20.6:1
2006	1,057,564	94,926	55,451 (58.4)	39,475 (41.6)	4678	1923 (41.1)	2755 (58.9)	6480	20.3:1

ICD: International Classification of Psychiatric Disorders.

If assumed that the figures on psychiatric diagnosis in psychiatric inpatients reflect the 'real' prevalence ratio of schizophrenia compared with delusional disorder based on lifetime prevalence estimates of 0.6–1.0% for schizophrenia, these figures would suggest a prevalence of delusional disorder of 0.03–0.05%. Although this approach is rather speculative, the figures are surprisingly close to previous estimates [12,13], as discussed by Manschreck [14].

Hospital admission rates may not always reflect prevalence rates for a certain syndrome in the community. For example, few patients with alcohol-induced psychotic disorders are admitted for inpatient treatment in alcohol dependence, less than for alcohol delirium but epidemiological data suggest alcohol-induced psychotic disorder is more frequent than alcohol delerium [21–25]. A recent surprising study by Perälä *et al.*, examining data from a general population sample, found a much higher rate of alcohol-induced psychotic disorder, even higher than for schizophrenia in this group [26]. If this is true, hospital admission rates suggest a too low prevalence rate at least for alcohol-induced psychotic disorder, which has, contrary to delusional disorder, usually a good prognosis [6].

As for schizophrenia, long-term studies indicate a more chronic course of delusional disorders in most cases [27]. The diagnostic stability of psychotic disorders is higher than that of other psychiatric disorders [28] so the number of admissions for hospital treatment may well reflect the relative proportion of such disorders in the community. Unfortunately, corresponding figures on outpatient treatment are not available.

The best evidence for the prevalence of delusional disorders come from general population surveys, although the syndrome may be more difficult to diagnose compared with other psychiatric disorders in such a setting. Recent data from a general population survey of psychotic disorders indicate a lifetime prevalence of 0.87% for schizophrenia, 0.32% for schizoaffective disorder, 0.18% for delusional disorder, 0.42% for substance-induced psychotic disorder and 0.21% for psychotic disorder caused by a general medical condition [16]. These figures are higher than in most previous studies [29]. However, there is still a consensus that schizophrenic disorders are much more frequent in the general population than delusional disorders, which also represent a rarer condition among admissions for hospital treatment. Finally, our data also indicate that patients with delusional disorders tend to be female and older but are not exclusively found in the group aged 45 years and older, as was reported by Perälä *et al.* [16]. Again, these findings are in line with previous research [6,13,14,30–33]. Peräla *et al.* also reported delusional disorder to be characterized by late age of onset and a relatively good outcome [16]. These longitudinal data also suggest some patients closely resemble the original description of paranoia by Kraepelin [1].

With respect to cross-sectional register data the diagnosis of delusional disorder may also be difficult and inconsistent in the early phase of the disorder [32,33]. Therefore, more longitudinal studies are necessary to assess the 'true' prevalence of delusional disorders. In particular, the role of age distribution as discussed earlier must be studied in future longitudinal studies.

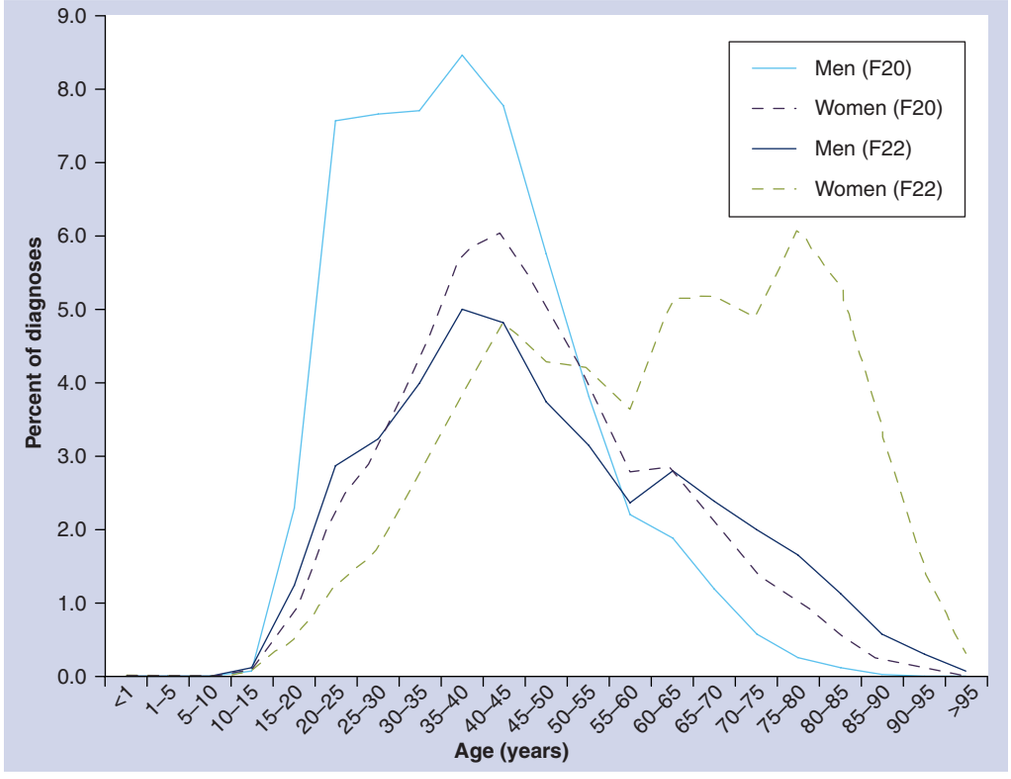

Figure 1. Age distribution by gender for schizophrenia (International Classification of Psychiatric Disorders-10: F20) and delusional disorder (F22), shown by percentage of respective diagnosis from the year 2000 to 2006.

Data from this study also indicate a relatively high proportion of patients with organic delusional disorders, which also indicates the role of age distribution. The number of females at high age with delusional disorder was striking in this sample.

There are a number of obvious strengths and limitations to this dataset. Since all German hospitals must report data, the catchment area is the whole country. These are administrative data based on clinical diagnosis, differences in the reported data may in part reflect methodological problems and difficulties in making this diagnosis, as the criterion for duration of the delusions is different in the ICD-10 (3 months) and the DSM-IV (1 month). Many patients with delusional disorder may hide their symptoms, which may therefore be difficult to be obtained in interviews in a field study. Therefore, administrative data like those reported in our study may help interpreting data from epidemiological studies. In addition, while most of the patients with schizophrenia may receive inpatient care, recent data from Perälä *et al.* indicates that only half of the subjects with a lifetime diagnosis of delusional disorder have been treated in a hospital [16]. This must be kept in mind when comparing the data obtained in this study with data from field studies.

Another obvious limitation is the lack of information on how detailed the diagnostic procedure was, including the assessment of organic factors, treatment response, comorbidity and other clinical areas of interest. A recent paper by de Portugal indicates a substantial proportion of patients with delusional disorder suffering from additional comorbid disorders [34]. Overall, the data from these studies indicate a low prevalence of delusional disorders and match data from recent epidemiological studies.

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The authors have no relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript. This includes employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties.

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