ORIGINAL ARTICLE

Delusional disorder: no gender differences in age at onset, suicidal ideation, or suicidal behavior

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Objective: To investigate gender differences in age at onset, psychopathology, and suicidal behavior rates in delusional disorder (DD).
Methods: We conducted a prospective longitudinal study of 97 patients with DD. Demographic and clinical data at baseline were recorded. Gender differences were investigated by applying analysis of covariance, using age at onset and age at first psychiatric consultation as dependent variables, comorbid depression and gender as between-subject factors, and employment status, social support, and DD types as covariates.
Results: Seventy-six percent of the patients were women. The average age at onset was 48.76 ± 12.67 years, mean age at first psychiatric consultation was 54.13 ± 13.67 years, and men were more likely to be employed than women ($p = 0.041$). Despite the earlier age at onset and at first psychiatric consultation in men, these differences tended to disappear when adjusted for potential confounders. There were no significant gender differences in depressive comorbidity, presence of suicidal ideation and behavior, or compliance rates at follow-up.
Conclusions: Our findings could not confirm that male and female DD patients differ in age at onset, age at first psychiatric consultation, or suicidal ideation and behavior, even after controlling for potential confounders.

Keywords: Delusional disorder; paranoia; gender; compliance; suicidal behavior

Introduction

Gender differences in affective disorders and schizophrenia have been widely studied in the last three decades. Regarding gender differences in age at onset, several studies have shown that men develop psychotic disorders earlier than women.[1] Moreover, women with schizophrenia usually present a second peak of onset between the fourth and fifth decade of life.[1-3] A later onset and a second peak in women with schizophrenia have been related to the estrogenic hypothesis of psychoses, which might explain many gender differences found in recent studies.[4,5] Gender investigations focusing on age at onset and clinical features have also been conducted in delusional disorder (DD).[6-9] However, other demographic and clinical factors have also been reported in association with earlier onset in male DD patients than in women. A recent study on psychiatric comorbidity in DD showed that 64.8% of the subjects suffered from a comorbid disorder, with depressive disorders being the most common.[6] The authors found that DD patients with

comorbidity exhibited an earlier age at onset and at first psychiatric appointment in comparison with those without psychiatric comorbidity. These findings are in agreement with data from other authors who found that patients with DD and psychiatric comorbidity had an earlier age at onset and presented for a first appointment at an earlier age.[7] Despite these differences, in the study mentioned above, types of DD were reported to differ according to the presence or absence of lifetime comorbid disorders. By contrast, in a cross-sectional study of 86 outpatients with DD, de Portugal et al.[8] found no differences regarding age at onset, age at first psychiatric consultation, or functionality outcomes between patients with and without comorbid disorders.

In the last decades, some studies have also explored the possibility that age at onset of DD could be related to DD types.[9] Specifically, in a sample of 51 outpatients, patients with somatic-type DD were found to be the youngest, whereas patients suffering from persecutory-type DD presented the oldest age at onset.

Recent meta-analyses have suggested that duration of untreated psychosis can influence clinical course, prognosis, and treatment response in psychotic patients.[10] However, very few comparative studies have investigated gender differences in compliance with appointment-keeping for psychiatric services and pharmacological treatment intake in DD patients.

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The study of gender differences in DD may help us to better understand this disease, because demographic variables have a clear influence on functioning, and may explain differences in rates for depressive comorbidity and suicidal behavior, as has been previously reported in schizophrenia patients.[1]

Wustmann et al.[11,12] found that women were more likely to present low social functioning at admission, but were more compliant at follow-up and received pharmacological medications more frequently. In line with these results, men showed significantly more severe psychotic symptoms and worse functionality in comparison with women in a large and representative sample, as part of the DELIREMP study.[13,14] Despite increasing interest on DD, gender differences in psychopathology, clinical course, and treatment response have been poorly studied.[15-17]

Our goal was to examine gender differences in demographic variables, clinical features, antidepressant and antipsychotic prescription rates, and suicidal ideation and suicidal attempts in a clinical group of patients with DD. Furthermore, we aimed to elucidate whether gender differences exist in age at onset and age at first psychiatric appointment, when adjusted for depressive comorbidity, DD type, employment status, and other psychosocial factors.

Our hypothesis is that men with DD have an earlier age at onset and an earlier first contact with psychiatric services, while women have a later onset of the disorder and greater frequency of depressive symptoms. In our study, we considered depressive comorbidity, psychosocial factors, and DD type as potential confounders in gender investigations regarding age at onset and at first psychiatric appointment in DD patients.

Methods

Setting and recruitment

We carried out a prospective observational study with a 1-year follow-up period in a sample of patients with DD, as part of a first phase of the Development and Course of Delusional Disorder in Middle Age and the Elderly Study (DEVCODEL), which aims to study demographic and clinical features in DD so as to provide a better therapeutic approach in these patients. These patients were identified by chart review, asked to participate in our study, and recruited into the study in a prospective design. Some demographic and clinical variables were recorded retrospectively at baseline. All subjects were treated at the Department of Psychiatry of Hospital Clínic de Barcelona, Spain, from 2000 to 2012; fulfilled DSM-IV-TR criteria[18] for DD; and were followed up at our Outpatient Psychiatric Clinic. Subjects were evaluated by at least two senior psychiatrists and one psychiatry resident using diagnostic criteria for DSM-IV. Inclusion criteria for the study were as follows: 1) age at onset over 18 years; and 2) confirmed diagnosis of DD (DSM-IV-TR F22.X) after 1 year of follow-up in our psychiatric service. Patients with a previous diagnosis of schizophrenia,

mental retardation, or organic psychosis were not included in the study.

The present study is a part of an ongoing investigation. All aspects were approved by the Ethics Committee of Hospital Clínic (protocol no. 2007/3699).

Demographic and clinical data

At first psychiatric appointment, all subjects were administered a systematic questionnaire designed to collect demographic data on age, educational level, years of education, marital status, employment status, and number of children and cohabiters, as main psychosocial factors. DD type, age at onset of DD, age at first psychiatric consultation, presence of non-prominent hallucinations, comorbid depressive disorders, suicidal attempts and suicidal ideation, route of admission, and motives leading to consultation were also recorded. Global functioning at first psychiatric contact was evaluated with the Global Assessment of Functioning (GAF) scale,[18] which is a clinician-rating scale (0 through 100) used by mental health clinicians and physicians to subjectively rate the social, occupational, and psychological functioning of adults. Furthermore, we recorded follow-up rates, use of oral and long-acting injectable antipsychotics, and use of antidepressants and benzodiazepines at follow-up.

Statistical analysis

Statistical analysis was carried out using SPSS version 19. Gender differences in demographic and clinical features were tested by using univariate analysis. The t test was used for continuous variables, and the chi-square or Fisher's exact test for categorical variables. Analysis of variance (ANOVA) was performed to examine the relationship between age at onset of DD, age at first psychiatric appointment, and gender and depressive comorbidity. In case of a significant interaction between depressive comorbidity and gender, ANOVAs were followed up by separate gender analyses. Moreover, to investigate whether gender differences in age and onset and age at first contact to psychiatric services were biased by confounding factors, analysis of covariance (ANCOVA) was conducted using gender and depressive comorbidity as between-subject factors, and DD type, employment status, and presence of psychosocial support as covariates. The significance level was set at 0.05.

Results

Ninety-seven patients were included in the study. All subjects were diagnosed with DD, according to DSM-IV-TR criteria, at baseline, as well as at the end of the follow-up period.

Sample description

Seventy-four patients (76.3%) were women and 23 were men (23.7%). Mean current age was 61±12.64 years,

mean age at onset was 49±12.67 years, and average age at first psychiatric contact was 54±13.66 years. The most common employment status was employed (42.3%), followed by retired (29.9%). Single (42.3%) was the most common marital status, and 27.8% of the sample had between 8 and 9 years of education. The mean number of children was nearly one (0.84±1.11), as was the number of cohabiters (0.89±1.07). Behavioral disorders were the most frequently reported motives leading to consultation (56.7%).

Although 10% of the sample had never been admitted to hospital previously or at follow-up, 90% of DD patients were in our clinic ward at least once. Presentation to the emergency department (57.7%) was the most common route leading to admission, followed by court order (14.4%). Regarding DD types, the persecutory (74.2%) and erotomanic (8.2%) types were most common, and non-prominent hallucinations were reported in 24% of the sample (9.3% auditory, 9.3% tactile). Furthermore, 31% of the subjects had a comorbid depressive disorder according to the DSM-IV-TR criteria, 22.7% reported suicidal ideation, and 12.4% had attempted suicide at least once.

Comparison of sociodemographic and clinical features by gender

Demographic and clinical characteristics, separated by gender, are presented in Tables 1 to 3. Except for a higher rate of employment in male patients (p = 0.041), no statistically significant differences in demographic features were found between men and women on univariate analysis.

Age at onset of DD did not differ according to gender, but men had an earlier age at first psychiatric consultation (p = 0.047) than women. However, when ANOVA was performed, no statistically significant gender vs. depressive comorbidity interactions were found, suggesting that

gender effects did not differ between patients who exhibited depressive comorbidity and those who did not. Furthermore, these results did not change when DD type, employment status, and presence of social support were included into the ANCOVA models as covariates.

Regarding motives leading to consultation, significant gender differences were found (p = 0.016). Men were more likely to present with behavioral disorders and depressive symptoms at a first contact in comparison with women. There were no gender differences in route leading to hospitalization, DD type, or presence of non-prominent hallucinations.

Comparison of depressive comorbidity, suicidal ideation, and suicidal behavior by gender

No gender differences were found regarding the presence of depressive comorbidity, suicidal ideation, or suicidal behavior at follow-up. Information regarding these topics can be found in Table 3.

Comparison of pharmacological prescriptions and compliance with psychiatric appointment-keeping at follow-up, by gender

No statistically significant gender differences could be found in antipsychotic, antidepressant, and benzodiazepine prescription rates during the follow-up period. Information regarding pharmacological prescriptions can be found in Table 3.

While 31.81% of female DD patients did not attend their psychiatric outpatient clinic visits for more than 6 months during follow-up, 15% of DD males were lost to follow-up after the 6-month period. Although the difference was statistically non-significant (p = 0.313), rates of compliance with appointment-keeping were higher in men than in women (80 vs. 62%) at the end of the follow-up period.

Table 1 Sociodemographic features in 97 patients with delusional disorder

	All N=97	Women n=74	Men n=23	Statistic
Current age, mean (SD)	60.59 (12.64)	61.67 (12.9)	57.13 (11.66)	T = 1.505, df = 94, p = 0.136
Marital status, n (%)				χ^2 = 6.236, df = 3, p = 0.101
Single	41 (42.3)	28 (37.84)	13 (56.52)	
Married/cohabiting	28 (28.9)	20 (27.03)	8 (34.78)	
Separated/divorced	23 (23.7)	21 (28.38)	2 (8.7)	
Widowed	5 (5.2)	5 (6.76)	0 (0)	
Educational level (years), n (%)				χ^2 = 5.687, df = 3, p = 0.128
< 8	19 (19.6)	16 (21.62)	3 (13.04)	
8-9	27 (27.8)	24 (32.43)	3 (13.04)	
10-11	25 (25.8)	17 (22.97)	8 (34.78)	
⩾ 12	26 (26.8)	17 (22.97)	9 (39.13)	
Employment status, n (%)				χ^2 = 8.233, df = 3, p = 0.041*
Unemployed	25 (25.8)	19 (25.68)	6 (26.09)	
Employed	41 (42.3)	30 (40.54)	11 (47.83)	
On benefits	29 (29.9)	25 (33.78)	4 (17.39)	
Incarcerated	2 (2.1)	0 (0)	2 (8.7)	
Number of children, mean (SD)	0.84 (1.11)	0.92 (1.14)	0.57 (0.99)	T = 1.332, df = 94, p = 0.186
Number of cohabiters, mean (SD)	0.89 (1.07)	0.78 (1.003)	1.22 (1.24)	T = -1.716, df = 94, p = 0.089

df = degrees of freedom; SD = standard deviation.
* p < 0.05.

Table 2 Baseline clinical features in 97 patients with delusional disorder

	All N=97	Women n=74	Men n=23	Statistic
Age at onset, mean (SD)	48.76 (12.67)	49.96 (12.53)	44.57 (12.63)	T = 1.797, df = 94, p = 0.076
Age at first consultation, mean (SD)	54.13 (13.66)	55.62 (14)	49.13 (11.73)	T = 2.009, df = 94, p = 0.047*
Motives leading to consultation, n (%)				χ^2 = 12.217, df = 4, p = 0.016*
Delusional thoughts	18 (18.6)	17 (22.97)	1 (4.35)	
Behavioral disorder	55 (56.7)	41 (55.41)	14 (60.87)	
Anxiety	10 (10.3)	8 (10.81)	2 (8.7)	
Depressive symptoms	5 (5.2)	1 (1.35)	4 (17.39)	
Suicidality	9 (9.3)	7 (9.46)	2 (8.7)	
Route leading to hospitalization, n (%)				χ^2 = 4.574, df = 5, p = 0.470
Never admitted	10 (10.3)	8 (10.81)	2 (8.7)	
Emergency department	56 (57.7)	40 (54.05)	16 (69.57)	
Court order	14 (14.4)	10 (13.51)	4 (17.39)	
Outpatient psychiatric clinic	6 (6.2)	5 (6.76)	1 (4.35)	
Voluntary admission	8 (8.2)	8 (10.81)	0 (0)	
Community-based mobile emergency service	3 (3.1)	3 (4.05)	0 (0)	
DD type, n (%)				χ^2 = 4.071, df = 5, p = 0.539
Persecutory	72 (74.2)	53 (71.62)	19 (82.60)	
Erotomanic	8 (8.2)	8 (10.81)	0 (0)	
Grandiose	2 (2.1)	1 (1.35)	1 (4.35)	
Somatic	7 (7.2)	6 (8.11)	1 (4.35)	
Jealous	5 (5.2)	4 (5.41)	1 (4.35)	
Mixed	3 (3.1)	2 (2.70)	1 (4.35)	

DD = delusional disorder; df = degrees of freedom; SD = standard deviation.
* p < 0.05.

Figure 1 shows attendance rates for appointments at 1-year follow-up by gender.

Discussion

In our sample, DD was more frequent in women than in men,[13] which is in agreement with previous meta-analyses and recent studies.[19-21] However, as an outpatient sample has several limitations, epidemiological findings should be treated with caution.

Without controlling for potential confounders, women became ill and received psychiatric care at a later age than men. As previous studies have already shown, several clinical features have been associated with an

Table 3 Clinical features, comorbidities, and psychopharmacological prescriptions in 97 patients with delusional disorder, n (%)

	All N=97	Women n=74	Men n=23	Statistic
Presence of hallucinations				χ^2 = 5.482, df = 4, p = 0.241
Auditory, non-prominent	9 (9.3)	9 (12.16)	0 (0)	
Visual, non-prominent	2 (2.1)	1 (1.35)	1 (4.35)	
Tactile	9 (9.3)	6 (8.11)	3 (13.04)	
Olfactory	4 (4.1)	4 (5.41)	0 (0)	
Gustatory, non-prominent	0 (0)	0 (0)	0 (0)	
Depressive comorbidity				p = 0.204, FET
Present	30 (30.9)	25 (33.78)	5 (21.74)	
Absent	67 (69.1)	49 (66.22)	18 (78.26)	
Suicidal ideation, lifetime	22 (22.7)	17 (22.97)	5 (21.74)	p = 0.575, FET
Suicidal behavior, lifetime	12 (12.4)	10 (13.51)	2 (8.7)	p = 0.421, FET
Atypical antipsychotics at follow-up				χ^2 = 4.724, df = 3, p = 0.193
Risperidone, oral	33 (34.0)	27 (36.49)	6 (26.09)	
Risperidone, long-acting injectable	22 (22.7)	19 (25.68)	3 (13.04)	
Paliperidone palmitate, long-acting injectable	9 (9.3)	7 (9.46)	2 (8.7)	
Other atypical antipsychotics	33 (34.0)	21 (28.38)	12 (52.17)	
Antidepressant use at follow-up				p = 0.503, FET
Yes	36 (37.1)	27 (36.5)	9 (39.1)	
No	61 (62.9)	47 (63.5)	14 (60.9)	
Benzodiazepine use at follow-up				p = 0.297, FET
Yes	48 (49.48)	35 (47.3)	13 (56.5)	
No	49 (50.52)	39 (52.7)	10 (43.5)	

DD = delusional disorder; df = degrees of freedom; FET = Fisher's exact test.
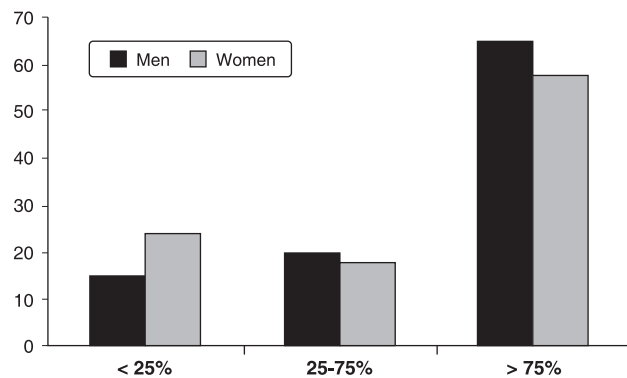
Figure 1 Attendance rates for appointments at 1-year follow-up, by gender

earlier age at onset in DD. Maina et al. found depressive comorbidity as an explanatory finding of an earlier age at onset of DD.[7] In previous studies, age at onset differed significantly according to the delusional theme.[9] For this reason, in the present study we included the presence of depressive comorbidity, DD type, and other psychosocial factors as covariates in the ANCOVA models. After adjustment for these confounding factors, no gender differences were found regarding age at onset and age at first psychiatric contact. These findings are in contrast with recent studies[11,12] that reported an earlier age at onset and for first psychiatric consultation in men as compared with women, a finding similar to the well-established gender differences often found in schizophrenia.[22] By contrast, in our preliminary published data of a 78-inpatient sample, women with DD had a later age at onset and needed a longer duration of hospitalization.[23]

In our study, we detected significant gender differences in motives leading to consultation, with behavioral disorders being the most frequent reason in male patients with DD, whereas other studies have found no gender differences in aggressive behavior during the course of DD.[11]

Furthermore, we found that the most common DD type was the persecutory type, followed by the erotomanic type, as has been reported by several authors.[24,25] In agreement with previous studies, no gender differences were found regarding DD type[9,13,14,26] or presence of non-prominent hallucinations.

Another important finding in our study is that 30.9% of the sample had at least depression as a comorbidity, and suicidal ideation was present in 22.7% of patients overall. These results are consistent with previous studies carried out in the last decades[7,8] and those performed in patients with schizophrenia.[27,28] In agreement with the Halle Delusional Syndromes Study (HADES-Study),[11,12] we found no gender differences in the presence of depressive symptoms, depressive episodes, suicidal ideation, or suicide attempts during follow-up.

When compliance at follow-up was recorded, men were more likely to present higher rates of compliance with appointment-keeping than women, although statistical significance was not reached.

Furthermore, there were no gender differences regarding prescription of antidepressants, benzodiazepines, or antipsychotics. These findings contrast with those reported by Wustmann et al.,[11] who found that women were more compliant and received psychopharmaceuticals more often than men.

In summary, no gender differences could be detected in demographic and clinical features in our sample of patients with DD, except for a higher frequency of employment in males as compared with females. Furthermore, our data indicate that depressive comorbidity, suicidality, and follow-up rates do not differ according to gender, and when age at onset and at first psychiatric consultation are adjusted for potential confounders, gender shows no main effect on these variables.

In contrast to other studies, the strengths of our analysis were that we investigated gender differences in depressive comorbidity, suicidal ideation and behavior, and compliance rates at follow-up in a representative sample of 97 patients with DD. When age at onset and age at first psychiatric consultation were analyzed, we also controlled for all important confounding factors reported in previous studies, such as presence of depressive comorbidity, DD type, employment status, and number of cohabiters, as main psychosocial factors.

Limitations of this study could include the small sample size and the lack of evaluation of psychopathological symptoms with assessment instruments such as the Positive and Negative Syndrome Scale (PANSS) or the Brief Psychiatric Rating Scale (BPRS), due to the naturalistic design of the study. Patients were recruited from clinical practice and no psychopathological scales were assessed at baseline. For these reasons, we consider that longer and larger studies are warranted to better clarify this lack of gender differences at follow-up. Nevertheless, in comparison with previous studies, a sample of 97 outpatients could be considered a strong point in the investigation of a clinical group of patients with DD.

Disclosure

The authors report no conflicts of interest.

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