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Symptom levels and initial appraisal of hospital treatment in patients with schizophrenia

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ABSTRACT

The initial appraisal of treatment by inpatients with schizophrenia has been found to be a significant predictor of clinical outcomes. The study aim was to examine whether specific types of symptoms are associated with the initial appraisal of treatment after controlling other patient characteristics. Data of 2105 inpatients with schizophrenia (ICD-10 F20-9) were pooled from three national and international multi-centre studies. Patients were interviewed within the first week of their inpatient admission. Higher levels of manic and positive symptoms were significantly associated with a less favourable initial appraisal of treatment, whilst no association was found with depression/anxiety and negative symptoms. Detained patients had more negative initial treatment appraisals, and the association with manic symptoms was significantly stronger in detained patients compared to those admitted voluntarily. Whilst patient reported outcomes in psychiatry are usually associated with mood symptoms, this appears not to be the case for the initial appraisal by inpatients with schizophrenia. The association with manic and positive symptoms may be explained by the influence of such symptoms on the hospital experience. Focusing on the initial management of mania and positive symptoms might improve patients' appraisal of treatment in the inpatient environment.

1. Introduction

Evidence indicates that patients with schizophrenia who have a more positive initial appraisal of their treatment are likely to benefit more from that treatment eventually. This applies to pharmacological treatment (Van Putten and May, 1978; Van Putten et al., 1978; Bartkó et al., 1987; Awad et al., 1995) and complex interventions (Priebe and Gruyters, 1994, 1995a; Bröker et al., 1995; Priebe et al., 2009, 2010c). In inpatients, a more positive initial appraisal of treatment was associated with lower symptom levels after one month (Richardson et al., 2010), at discharge (Bröker et al., 1995), lower social disability at 3 and 12 months (Priebe et al., 2010a), and lower subsequent involuntary readmission rates (Priebe et al., 2009). Developing a greater understanding of the factors which influence how patients initially appraise their hospital treatment would help identify those at risk of being less satisfied with their treatment, and could assist in the development of new interventions to maximise patients' initial appraisal of treatment.

Whilst previous studies have controlled the predictive association of initial treatment assessments with later clinical outcomes for socio-demographic and clinical characteristics, at present it is unclear whether specific types of symptoms are associated with a more or less favourable initial assessment of treatment. The importance of analysing the influence of symptom types, rather than global levels of psychopathology, has been emphasised in the literature (Shafer, 2005; Richardson et al., 2010). Previous findings suggest other patient reported outcomes, including patients' overall appraisal of psychiatric treatment, are negatively associated with mood, and that this could be due to a negative rating bias in people with higher levels of depressive symptoms, as opposed to specific experiences of treatment (Priebe et al., 1998; Fakhoury et al., 2002; Hansson et al., 2007). In this study we aimed to identify what types of symptoms are associated with the initial appraisal of hospital treatment in patients with schizophrenia, after adjusting the influence of socio-demographic and other clinical characteristics.

2. Methods

An exploratory cross-sectional study examining the association between patients' initial appraisal of inpatient treatment and various socio-demographic and symptom severity measures, analysing a pooled data set specifically collated

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for this purpose. All the data was obtained within the first week of treatment apart from the diagnosis, which was recorded from patient notes at the point of discharge.

2.1. Sample

The current sample was obtained from pooling data from three studies. The InvolvE study (Priebe et al., 2009) assessed characteristics and experiences of in-patients in 22 hospitals across England. The EUNOMIA study (Kallert et al., 2005; Priebe et al., 2010b) was a related study with a similar design conducted at sites in 11 European countries. Both studies had a focus on detained patients but also included voluntary patients who felt coerced to treatment. The EUNOMIA study's data from London was included as part of the InvolvE study, and so these were omitted from the EUNOMIA sample to ensure that participants were not included twice. The third study, EDEN (Kallert et al., 2007), was a randomised controlled trial comparing outcomes of voluntary patients in day hospitals with those in conventional in-patient settings. Details of the rationale, methods and findings of each of the three studies have been described elsewhere.

All three studies included consecutively admitted patients who had the capacity to provide informed consent, aged between 18 and 65. Consistent exclusion criteria were as follows: admitted because of acute intoxication, being a forensic patient, and being transferred from another hospital. In the EDEN study patients requiring 1-to-1 supervision were excluded, whilst in the EUNOMIA and InvolvE study voluntary patients who did not report a coercion level of at least three on the MacArthur Admission Experience Survey were excluded. For this study, only patients with a main diagnosis of schizophrenia or a related disorder according to ICD-10 (F20-29, WHO, 1998) were included. With respect to the EDEN study, only patients treated in conventional hospital settings were included.

2.2. Measures

Initial appraisal of treatment was obtained using the Client Scale for Assessment of Treatment (CAT; Priebe and Gruyters, 1995b; Richardson et al., 2011). The questionnaire has seven items and asks the patient whether they believe they are receiving the right care, whether their psychiatrist understands them and if other staff are pleasant to them, if they believe they are on the right medication, if they feel well respected and regarded, whether the care received has been helpful, and whether they feel other elements of their care are appropriate. Scores range from 0 (''not at all''), to 10 (''yes entirely''). Patients with missing data on four or more items were excluded from the analysis. Recent factorial analysis supports the use of the CAT as a meaningful unidimensional scale, stable over three different European countries (Richardson et al., 2011), and in previous research the CAT has been found to have excellent internal consistency (α=0.90, Priebe et al., 2009).

Symptom severity was measured on the 24-item version of the Brief Psychiatric Rating Scale (BPRS; Ventura et al., 1993). Scores range from 1 (''not present'') to 7 (''extremely severe''). In examining the severity of symptoms at a sub-syndrome level with the BPRS a number of different 4 and 5 factor models have been postulated (Van der Does et al., 1995; Berger et al., 1997; Ventura et al., 2000; Velligan et al., 2005). Of those, Velligans 4-factor model was selected. Inter-rater reliability was high in all the three studies, with researchers on the InvolvE project achieving a Cohen's Kappa score of 0.90, whilst researchers on the EDEN and EUNOMIA studies achieved an intra-class coefficient score of 0.78.

Socio-demographic details including age, gender, marital status, previous admission history and employment status were obtained using the MANSA (Priebe et al., 1999) in the InvolvE and EUNOMIA studies and the Clinical History Schedule (Kallert et al., 2000) in the EDEN studies. The categories used were identical in the three studies.

All the assessments took place within the first week following the admission (in the EDEN study always within the first two days), and were conducted by a researcher not involved in the patients' treatment.

2.3. Analysis

In univariate analyses linear regressions were conducted with the initial appraisal of treatment as the dependant variable. In addition to the BPRS subscale scores, the following variables were tested as potential predictors: age, gender, employment status, marital status, and the legal status of admission. For the employment and marital status the variables were dichotomised i.e. "employed" vs. "unemployed" (students were treated as employed for this analysis), and "married" vs. "unmarried" (which included those divorced, single and widowed). The patient was defined as involuntarily held if they were initially admitted on a voluntary basis but later detained within the first week, prior to the research assessment taking place. We did not test whether differences in the initial appraisal of treatment were explained by the study from which the data were taken, because in one of the three studies (EDEN) there were only voluntary patients. Since we aimed to analyse the impact of legal status, we did not enter study as a predictor as it would have confounded part of the analysis.

In the next step a multiple linear regression was conducted with all the considered predictor variables entered into the model simultaneously. In the final part of the analysis, interaction effects between legal status and each BPRS subscale score were added to the multivariate model separately in order to examine whether the effect of symptom severity on the appraisal of treatment differed between those legally detained and those admitted voluntarily. In order to rule out the possibility of any bias in the results occurring due to the heterogeneity of the samples used, a subgroup analysis was conducted on the largest dataset (EUNOMIA).

To tackle any potential issues which could arise through a listwise deletion of incomplete cases (Little and Rubin, 1987) a multiple imputation using a chained equation of 10 cycles was conducted. All values included in the analysis were entered both as predictors and for imputing. Twenty-five imputations were conducted (Spratt et al., 2010), with the analysis conducted on the pooled data. R^2 scores were obtained from the imputed data using the method outlined by Harel (2009), which involves conducting a Fisher's r-to-z transformation for each imputed R score, combining them in accordance with Rubin's rules (Rubin, 1987), before transforming them back to R^2. All the analysis was conducted on SPSS version 18.

3. Results

3.1. Sample characteristics

Around 2316 patients met the inclusion criteria. Of which about 211 patients were omitted due to missing or incomplete CAT scores, leaving 2105 patients in the final sample. The clinical and socio-demographic characteristics of this sample are presented in Table 1. Of the final total, 1556 were recruited as part of the EUNOMIA project, 393 as part of the InvolvE study, and 156 as part of the EDEN study. A missing value analysis indicated that 2.8% of all predictor values (653 in total) was missing, with 21.1% of cases (445) missing at least one. Of the 653 values missing in total, 53.9% (352 in total) related to the duration of illness.

3.2. Symptoms and other patient characteristics associated with initial appraisal of treatment

The univariable and multivariable associations of symptoms and other patient characteristics with the initial appraisal of treatment are shown in Table 2.

Higher levels of mania and positive symptoms, lower levels of depression/anxiety symptoms, being involuntarily admitted, unemployed and unmarried were all significantly associated with a less favourable initial appraisal of treatment in univariable analyses. After simultaneously adjusting for potential confounding by other variables; older age, being male, not being detained,

Table 1
Socio-demographic and clinical characteristics of the patients.

Characteristics	*n* or Mean	% or SD
Patients (*N*)	**2105**	
% Detained involuntarily	1530	72.7%
Age (years)	38.49	11.24
Gender (% female)	906	43.1%
Marital status (% married)	454	22.0%
Employment		
Standard paid employment	385	18.5%
Unemployed (incl. disability benefits)	1554	74.9%
Other (e.g. student, home-maker)	138	6.7%
Previous psychiatric admission (%yes)	1517	76.7%
Illness duration	7.84	9.11
BPRS		
Depression/anxiety subscale score	2.24	1.08
Mania subscale score	1.84	0.96
Negative subscale score	2.14	1.08
Positive subscale score	2.92	1.26
CAT mean score	6.00	1.28

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Table 2
Univariate and multivariate analysis of variables associated with patients' initial appraisal of treatment.

Predictor variables	Univariate analysis			Multivariate analysis		
	B	95% CI	*p*	*B*	95% CI	*p*
Socio-demographic data						
Age	0.010	0.000 to 0.020	0.061	0.021	0.009 to 0.033	0.001
Female vs. male	−0.214	−0.450 to 0.022	0.076	−0.346	−0.581 to −0.111	0.004
Past admission (Yes/No)	−0.178	0.235 to −0.473	0.235	−0.022	−0.338 to 0.293	0.889
Illness duration	−0.014	−0.028 to 0.000	0.056	−0.012	−0.030 to 0.005	0.172
Detained legal status	−1.207	−1.464 to −0.949	<0.001	−0.984	−1.247 to −0.722	<0.001
Unemployed	−0.441	−0.726 to −0.156	0.002	−0.305	−0.589 to −0.021	0.036
Married	0.319	0.034 to 0.604	0.028	0.135	−0.155 to 0.426	0.360
BPRS symptom clusters						
Depressive/anxiety subscale	0.130	0.021 to 0.239	0.019	0.017	−0.091 to 0.125	0.758
Mania subscale	−0.674	−0.794 to −0.554	<0.001	−0.490	−0.620 to −0.360	<0.001
Negative subscale	−0.190	−0.218 to −0.000	0.051	−0.005	−0.114 to 0.104	0.929
Positive subscale	−0.465	−0.557 to −0.372	<0.001	−0.226	−0.330 to −0.122	<0.001

being employed, and having a low level of manic and positive symptoms were associated with a more favourable appraisal of treatment. The variance explained by the multivariable model was $R^2=0.106$, with manic symptoms, with a detained legal status of admission and mania symptoms explaining the greatest proportion.

In the subgroup analysis with data from the EUNOMIA study only, the effect of the variables remained broadly consistent, with all of the 95% confidence intervals falling inside those from the full sample and with the same variables significant and in the same direction. The only exception to this was 'employment status' ($B=-0.305$, 95%, CI$=-0.589$ to -0.021, $P=0.036$ in the full sample, in comparison to $B=-0.230$, 95%, CI$=-0.561$ to 0.100, $P=0.172$).

3.3. Legal status of admission, symptom severity and initial treatment evaluation

The next stage of the analysis explored whether symptom levels had a similar predictive value in voluntary and involuntary patients. An interaction effect between legal status and each symptom subscale score was separately entered into the existing multivariable model (presented in Table 2). Such interaction effect was found only for manic symptoms ($B=0.372$, 95%, CI$=0.067$–0.677, $P=0.017$). A post hoc analysis was conducted in order to identify the direction of the interaction. In detained patients the association between more manic symptoms and less positive treatment appraisal was stronger ($R^2=0.062$, $P<0.001$) than in voluntary patients ($R^2=0.012$, $P=0.009$).

4. Discussion

4.1. Main findings

Mania, depression/anxiety and positive BPRS subscale scores were significantly associated with patients' initial appraisal of treatment in the univariate analysis. When the influence of all tested variables was considered however, only two types of symptoms remained significant: patients with higher levels of mania and positive symptoms tended to appraise hospital treatment more negatively. Younger age, female gender, being unemployed and being detained involuntarily were also linked with less positive appraisals in multivariable analyses.

4.2. Strengths, limitations and methodological considerations

Whilst previous research emphasised the importance of patients' initial appraisal of treatment as a predictor of treatment outcome, this is the first large study focusing on understanding the factors that determine more or less favourable initial appraisals of hospital treatment. The sample size (2105 patients) provides sufficient statistical power to detect even small effect sizes, thus allowing the interpretation of negative findings. We tested observer-ratings of symptoms as predictors of the patient-rated initial appraisal of treatment. This avoided obtaining associations as a mere effect of a generalised tendency to provide more or less positive ratings in different self-reporting measures (see Hansson et al., 2007; Fakhoury et al., 2002). The same measures of symptoms and treatment appraisal were used in all studies from which the data were pooled, and that all ratings were provided by well trained researchers who were not involved in treatment.

The major limitation of the study is a potential selection bias. In two of the three studies (InvolvE and EUNOMIA), voluntary patients were included only if they expressed a level of being coerced. In the third study (EDEN), there were no involuntary patients. Also, not all eligible patients could be recruited in the three studies. This may have influenced the absolute levels of symptoms and initial treatment appraisals, however associations between variables are assumed to be more robust against a selection bias, and exploring associations was the aim of this analysis. Another limitation is that we did not consider in the analysis what exact treatment was administered during the first days of hospital treatment and whether specific treatment components were linked with patients' appraisal of treatment. We did not have consistent data on what type and dose of antipsychotic medication patients had taken at the time of the interview, so that medication was not examined as a possible influencing or mediating factor. Finally, the multivariable model explained only about 10% of the variance of the initial assessment of treatment. Whilst such an amount of explained variance is common for this type of research, it still leaves about 90% of the variance unexplained.

4.3. Comparison with previous research

Patients' initial statements about the appropriateness of their psychiatric treatment have been the subject of research for more than 30 years. They have been referred to using terms such as initial subjective response (Van Putten and May, 1978), early subjective reactions (Priebe, 1987), and initial treatment satisfaction (Priebe et al., 2009). In this study, we used initial appraisal.

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It reflects the type of questions asked in the CAT and mirrors the nature of assessing a treatment that has just started and is unlikely to have yet had a major effect. However, when comparing the findings with the literature, one has to consider that other studies may have used a different terminology.

The literature on treatment satisfaction in psychiatry, i.e. not initial but later appraisals of treatment, suggests that mood symptoms have the greatest impact on patients' ratings. Patients who are more depressed tend to express a more negative view of their treatment. It has been suggested that this reflects a negative rating bias of patients with high levels of depression rather than a specific experience of treatment (Priebe et al., 1998; Hansson et al., 2007; Fakhoury et al., 2002; Fakhoury and Priebe, 2002). In this study, the multivariable analysis did not identify depression, but mania and positive symptoms as influential. This is unlikely to be explained by a mood dependent rating bias, but may reflect how patients with different symptoms of schizophrenia experience the in-patient setting. Given patients level of insight into their disorder has been found to negatively correlate with both positive and negative symptoms (Minz et al., 2003; De Hert et al., 2009), whilst in our study negative symptoms were found to have no impact on treatment appraisal, the finding is also unlikely to be attributable to simply how aware the patients were of their illness and the need for treatment.

The finding is partly consistent with the results of Richardson and colleagues (2010) who reported a less positive initial treatment appraisal for patients with higher levels of mania, positive and depression/anxiety symptoms. That analysis however had a different focus, used a smaller sample of exclusively involuntary patients, a different factor analysis of the BPRS to define the subsyndromes, and did not adjust for other symptoms and patient characteristics.

Patients with higher levels of manic and positive symptoms may have greater difficulty in coping with being placed in the confined environment of a hospital ward. In the ward they have reduced autonomy and limited space. They have to conform to the organisational requirements of the ward and are surrounded by other patients who are also acutely ill, many of whom can be noisy and aggressive. Manic and positive symptoms may lead to less satisfactory interactions with other service users and staff members and greater conflict, which in turn may negatively impact upon their perception of treatment still further. Patients who exhibit 'disturbed behaviour' or experience acute positive symptom exacerbation are also more likely to receive combined anti-psychotics and high doses of antipsychotic medication (Paton et al., 2008), which can lead to a higher side effect burden (Centorrino et al., 2004), which could result in a lower appraisal of the treatment they receive. In a qualitative review of experiences of involuntary inpatient treatment (Katsakou and Priebe, 2007) a number of features were highlighted that can negatively impact upon a patient's experience of admission, and these may particularly resonate with those suffering from more intense manic and positive psychotic symptoms. Patients experiencing greater levels of positive symptoms such as paranoia or hallucinations may struggle more in an unfamiliar setting which may feel frightening or insecure. Patients with severe manic symptoms are likely to be more agitated, and struggle more with being contained in an enclosed space with rigid rules and limited opportunities for activities. The finding that manic symptoms influence patients' appraisal even more in those involuntarily admitted, who therefore would experience an even greater restriction to their autonomy, lends further support to this argument.

4.4. Implications

The findings suggest that patients with different symptom profiles experience and respond to psychiatric hospital treatment in different ways and, as a result, express different appraisals within a few days after admission. Patients with schizophrenia experiencing more severe manic and positive symptoms, and manic symptoms in particular if detained involuntarily are more likely to report a more negative initial evaluation of treatment. This suggests that it is symptom characteristics which may relate specifically to being in a ward environment that have a greater impact on the initial appraisal of treatment, as opposed to mood which has been found to be the most important in predicting a range of other patient self-reported outcomes (Priebe et al., 1998; Fakhoury et al., 2002).

The findings underline the importance of assessing patients' initial appraisal of treatment as a relevant process variable in both research and routine practice. Further studies may explore environmental factors, processes of interaction between service users and staff, treatment components and mediating processes as an explanation of the association of manic and positive symptoms with more negative appraisals of hospital treatment after only a few days. In a recent review Millon (2009) has suggested that acute inpatient settings are at present too custodial and over reliant on medication, and suggests that providing more psychosocial interventions as an alternative may be a way to try and address these issues. If these are problems which disproportionally affect those experiencing higher positive and manic symptoms, then this possible solution may go some way in addressing the more negative experiences these particular patients report.

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