

# Predictors of clinical and social outcomes following involuntary hospital admission: a prospective observational study

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**Abstract** The Study aimed to assess clinical and social outcomes following involuntary admissions over 1 year and identify socio-demographic and clinical patient characteristics associated with more or less favourable outcomes. Seven hundred and seventy-eight involuntary patients admitted to one of 22 hospitals in England were assessed within the first week after admission and at 1 month, 3 month and 12 month follow-ups. Outcome criteria were symptom levels, global functioning, objective social outcomes, and subjective quality of life (SQOL). Baseline characteristics and patients' initial experience were tested as predictors. Symptom levels and global functioning improved moderately. Objective social outcomes showed a small, but statistically significant deterioration, and SQOL a small, but significant improvement at 1 year. In

multivariable analyses, admission due to risk to oneself and receiving benefits predicted poorer symptom outcomes. Female gender and higher perceived coercion were associated with better objective social outcomes, whilst higher initial satisfaction with treatment predicted more positive SQOL at follow-ups. Over a 1-year period following involuntary hospital admission, patients on average showed only limited health and social gains. Different types of outcomes are associated with different predictor variables. Patients' initial experience of treatment, in the form of perceived coercion or satisfaction with treatment, has predictive value for up to a year following the admission.

**Keywords** Commitment of mentally ill · Coercion · Patient admission · Outcome assessment (health care) · Inpatients

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## Introduction

Involuntary admissions to psychiatric hospitals are practiced throughout the world. Whilst there have been fierce debates on their ethical justification, legislation in most countries provides a basis for involuntary admissions if patients have a mental disorder and are deemed to be a risk to themselves and/or others. The exact definitions and inclusion criteria vary, and often include a concern for the patient's health beyond a specific risk, such as "grave disability" in the United States and "danger to the patient's health" in England. In any case, such legislation contains the explicit or implicit understanding that hospital admission and subsequent treatment will be beneficial to the patient, although the patient does not anticipate those benefits at the time of the admission and, hence, does not agree to voluntary treatment and requires compulsory action [8, 27, 30]. Thus, the assumption that admission and treatment will lead to clinical or social benefits for the patient is central to the ethical argument, but is not based on extensive empirical evidence.

Ideally, such evidence should be generated in rigorous randomised controlled trials, which for various ethical and pragmatic reasons are difficult, if not impossible, to implement. In the absence of experimental studies, observational research should identify long-term outcomes following involuntary treatment. Observational studies should also identify patient characteristics that are associated with more or less positive outcomes. Such evidence may guide clinical decisions on admissions and focus service development on groups with particularly poor outcomes.

Existing studies suggest that most involuntarily admitted patients show improvements in symptoms and functioning at discharge and at follow-ups. However, the follow-up periods were only 4–8 months, and the studies used mainly single global functioning scores [14, 15, 19]. Most importantly, the sample sizes were too small to identify predictor variables of more or less favourable outcomes [11, 12].

Against this background, we conducted a multi-centre study in England and assessed both clinical and social outcomes following involuntary hospital admissions over a 1-year period in the largest national study to date [11, 26]. We explored whether socio-demographic and clinical characteristics of the patients, reasons for admission and initial experiences of the patients in the hospital were associated with more or less favourable outcomes.

## Subjects/materials and methods

### Setting and patients

Involuntary psychiatric patients were consecutively recruited in 67 wards in 22 hospitals across England.

Patients aged between 18 and 65 years were included if they were admitted involuntarily under a section of the Mental Health Act (MHA) 1983 or voluntarily admitted and subsequently placed on a section of the MHA within the first week after admission.

### Study design

This was an observational prospective study. Four research teams, each including a service-user researcher, recruited patients in the participating hospitals that were geographically spread across urban and rural areas. Further details of the study procedure have been published elsewhere [26].

### Outcome measures

Symptom levels, global functioning, objective social outcomes and subjective quality of life (SQOL) were assessed as outcome criteria. They were measured at baseline and at follow-ups at 1 month, 3 months and 1 year. Symptom levels were assessed on the 24-item version of the Brief Psychiatric Rating Scale (BPRS) [17], global functioning on the Global Assessment of Functioning (GAF) [1], and objective social outcomes on the Objective Social Outcomes Index (SIX) [29]. SIX is a simple measure summarising objective indicators of social outcomes, i.e. employment (0 = none; 1 = sheltered employment; 2 = competitive employment), housing (0 = homeless or permanently in hospital; 1 = supervised accommodation; 2 = independent accommodation), living status (0 = alone, 1 = with partner and/or family) and social contacts (0 = no meeting with a friend in the last week, 1 = at least one such meeting). As an objective measure, it has practically no measurement error and has been shown to be sensitive to change. SQOL was obtained on the Manchester Short Assessment of Quality of Life (MANSA), which has 12 satisfaction items with life in general and specific life domains. They are rated from 1 (lowest satisfaction) to 7 (highest satisfaction) [24], which is similar to the method of the Quality of Life Interview [16].

Thus, the outcomes included observer-rated measures (BPRS and GAF), an objective index (SIX) and a patient reported outcome (MANSA). For each outcome, we used only one score, rather than sub-scales or individual items, to base the analysis on scores with established psychometric properties and limit problems of multiple testing.

### Putative predictors

As potential predictor variables we assessed socio-demographic characteristics, clinical variables and initial patient experiences that may be assumed to be of importance for treatment processes and outcomes. Socio-demographic,

clinical and index admission process data were obtained from medical records for all eligible patients. More specifically, data on age, gender, ethnicity (the United Kingdom 2001 census categories were collapsed into two groups: white and ethnic minority including Black, Asian and mixed or other ethnic backgrounds), clinical diagnosis (ICD-10 categories collapsed into three groups: schizophrenia or other psychosis, i.e. F20-29, affective disorder, i.e. F30-39, and others) and length of index admission was collected.

Additional data were obtained from medical records and/or during interviews for participating patients. These included data on documented reasons for the index admission (due to risk to self, risk to others, severe danger to health, inability to care for self, all yes versus no), past hospitalisations (yes versus no), education (no qualifications versus completed school education or higher), living situation (living alone versus living with other people), and whether participants received state benefits (yes versus no). Patients rated their perceived coercion at admission (the McArthur Perceived Coercion Scale, MPCS, range 0–5, 5 indicating the highest level of coercion, total score used) [6], and their initial satisfaction with treatment on the Client's Assessment of Treatment scale (CAT). The CAT has been widely used in the evaluation of inpatient care and consists of seven items on different aspects of hospital treatment. The ratings range from 0 (lowest satisfaction) to 10 (highest satisfaction) [10, 23, 25].

## Procedure

Researchers regularly checked data on new involuntary admissions in each hospital. Within a week after admission they approached patients who met the inclusion criteria. After complete description of the study to the subjects, written informed consent was obtained, and baseline interviews (including all assessments) were conducted. All researchers interviewing patients were trained in the assessment methods and held repeated training sessions on the rating procedures.

The Multi-Centre Research Ethics Committee (ref: MREC/03/0/96) approved the study. The collection of data on eligible, but not participating patients, was approved by the Patient Information Advisory Group (ref. PIAG 2-10(d)/2005). The study was therefore performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

## Statistical analysis

The total eligible sample and the samples interviewed at different time points were compared on age, gender, ethnicity and diagnostic group. Samples interviewed at

different time points were compared using all 14 baseline characteristics that were tested as potential predictors of outcomes.

To account for possible correlations among repeated measurements, linear mixed effects (LME) models were fitted, by maximum likelihood, in Stata version 9 using the *xtmixed* command. We carried out the modelling in three steps [4]. In step 1, in the fixed part of the model using a likelihood ratio (LR) test, we tested whether time of assessment should be declared as discrete or continuous. The test favoured the former. In the random part of the model, we declared time as continuous. Using an LR test, we compared the model with an independent covariance structure for the random effects to a model with an unstructured covariance matrix. The test favoured the latter. We did pairwise tests of the regression coefficients as follows: each follow-up versus baseline, 3 months and 1 year versus 1 month, and 1 year versus 3 months to assess evidence for changes over time in the four outcome measures. In step 2, controlling for length of stay in hospital, baseline outcome measure and assessment time point, we tested, in turn, the inclusion of each of the socio-demographic and baseline clinical covariates. In step 3, those that were significant at the 5% level were entered into a multivariable LME model. Non-significant covariates were then deleted one-by-one until the model included only significant covariates, at which point the interactions between these covariates and assessment time point were tested. We only retained these interaction terms if the LR test for their inclusion was significant at the 5% level. In each of the final models, we controlled for length of stay in hospital, the baseline measurement of the outcome, assessment time point and the interaction between the latter two. Missing values at follow-up assessments were assumed to have occurred at random.

## Results

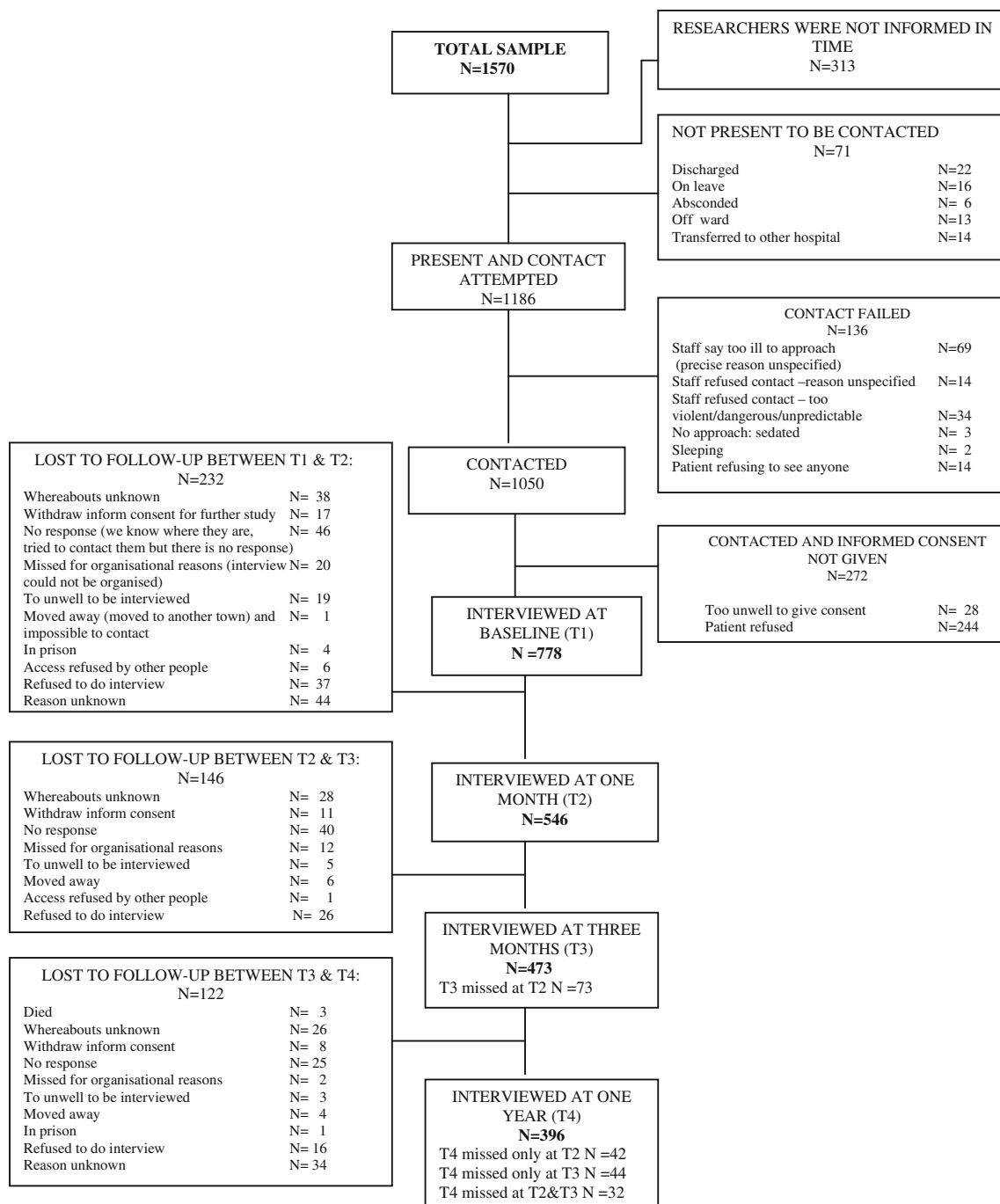
### Description of the sample

Figure 1 summarises the patient flow and reasons for missing interviews over the study period.

Out of all 1,570 patients who met the inclusion criteria, 778 (50%) participated in baseline interviews. Out of those, 546 (70%) completed the 1-month follow-up, 473 were interviewed (61%) at 3 months, and 396 (51%) at 1 year.

Table 1 shows the characteristics of the total eligible sample and the samples interviewed at baseline and each follow-up.

In the final 1-year follow-up, only about 25% of the originally eligible sample were interviewed. Yet, the distribution of the characteristics of the total eligible sample



**Fig. 1** Recruitment and follow-up

and the samples interviewed at each point of time remained similar.

#### Clinical and social outcomes

A summary of clinical and social outcome variables at baseline and the three follow-ups is presented in Table 2.

#### Symptoms

Symptom levels improved between baseline and follow-ups. The mean BPRS score dropped from 54.5 (SD = 14.24) at baseline to 40.6 (SD = 12.72) 3 months after admission. No further significant improvement was observed between 3 months and 1 year follow-ups.

**Table 1** Baseline characteristics for eligible sample, sample interviewed at baseline and samples re-interviewed at 1 month, 3 months and 1 year

	Eligible sample N = 1,570		Sample interviewed at baseline N = 778		Sample re-interviewed at 1 month N = 546		Sample re-interviewed at 3 months N = 473		Sample re-interviewed at 1 year N = 396						
	N	% or mean SD	N	% or mean SD	N	% or mean SD	N	% or mean SD	N	% or mean SD					
Age	1,554	38.35	11.95	767	37.07	11.32	583	37.06	11.45	466	37.19	11.40	391	38.10	11.58
Gender															
Female	719	46		299	38		211	39		186	39		169	43	
Male	851	54		479	62		335	61		287	61		227	57	
Ethnicity															
White	1,111	74		564	73		392	72		341	72		303	77	
Ethnic minority	384	26		209	27		153	28		131	28		90	23	
Education															
No qualification				197	30		131	29		117	29		101	29	
Completed school (or higher)				450	70		324	71		281	71		243	71	
Receiving benefits				485	66		340	65		301	66		247	65	
Living alone				549	73		389	74		333	70		290	75	
Past hospitalisation(s)				571	75		400	75		353	75		299	77	
Diagnosis															
Schizophrenia	719	57		383	55		284	57		239	55		201	55	
Affective	351	28		201	29		154	31		136	31		116	32	
Other	194	15		112	16		63	12		59	14		46	13	
Admission due to risk to self <sup>a</sup>				201	26		142	26		123	26		106	27	
Admission due to risk to others <sup>a</sup>				308	40		220	40		177	37		156	39	
Admission due to severe danger to health <sup>a</sup>				410	53		305	56		262	56		235	60	
Admission due to inability to care for self <sup>a</sup>				195	25		147	27		125	27		143	26	
Perceived coercion at admission (MPCS)				733	4.28		515	4.27		452	4.24		375	4.23	
Satisfaction with treatment (CAT)				675	5.52		474	5.46		424	5.41		347	5.43	
Severity of symptoms (BPRS)				757	54.48		542	53.60		469	54.00		387	56.16	
Length of index hospital stay in days	1,535	79.81	88.40	767	77.06	84.77	542	85.82	88.60	470	87.54	92.25	392	82.16	89.01

<sup>a</sup> The reasons for admission are not mutually exclusive

**Table 2** Outcomes at baseline, 1 month, 3 months and 1 year

Variable	Baseline <i>N</i> = 778			1-month follow-up <i>N</i> = 546			3-months follow-up <i>N</i> = 473			1-year follow-up <i>N</i> = 396		
	<i>N</i>	Mean	SD	<i>N</i>	Mean	SD	<i>N</i>	Mean	SD	<i>N</i>	Mean	SD
Severity of symptoms (BPRS)	757	54.51	14.24	523	44.05*	13.78	450	40.63* <sup>#</sup>	12.72	381	40.86* <sup>#</sup>	13.52
Global functioning (GAF)	763	33.56	11.63	531	43.78*	14.40	461	47.94* <sup>#</sup>	15.16	394	50.18* <sup>#,§</sup>	16.43
Objective social outcomes (SIX)	662	3.11	1.42	436	2.97*	1.44	404	2.96*	1.33	356	2.94*	1.46
Subjective quality of life (MANSA)	711	4.52	1.04	511	4.48*	1.08	444	4.58*	1.06	376	4.66* <sup>#</sup>	1.01

\*  $P < 0.05$  for comparison with baseline

<sup>#</sup>  $P < 0.05$  for comparison with follow-up at 1 month

<sup>§</sup>  $P < 0.05$  for comparison with follow-up at 3 months

### Functioning

GAF scores improved markedly between baseline (33.56, SD = 11.63) and 1 month (43.78, SD = 14.40) and between baseline and 1 year after admission (50.18, SD = 16.43). Significant improvements also occurred between 1 month and 3 months and between 3 months and 1 year after admission, but the size of the improvements was smaller.

### Social outcomes

SIX scores deteriorated significantly between baseline (3.11, SD = 1.42) and 1 month (2.97, SD = 1.44) and then remained relatively stable between 1 month and 1 year after admission, so that all follow-ups showed a small, but significant deterioration when compared to the time of admission.

### Subjective quality of life

MANSA scores showed a small but significant decrease between baseline (4.52, SD = 1.04) and 1 month (4.48, SD = 1.08,  $P = 0.476$ ). At 3 months (4.58, SD = 1.06,  $P = 0.285$ ) and at 1 year (4.66, SD = 1.01), SQOL showed a significant improvement when compared to baseline.

### Correlations between outcomes

BPRS and GAF scores were strongly correlated at all time points (baseline:  $r = -0.55$ , 1 month:  $r = -0.69$ , 3 months:  $r = -0.68$ , 1 year:  $r = -0.73$ ). Correlations between other outcome criteria were all weak to moderate not exceeding  $r = -0.51$ . As BPRS and GAF were consistently and strongly correlated, we continued the analyses using only BPRS, MANSA and SIX as outcome criteria.

### Do any baseline factors predict outcome?

The multivariable models predicting each outcome are shown in Table 3.

### Symptom levels

Two baseline variables remained significantly associated with symptom outcomes in the multivariable model: patients on benefits and those who were admitted due to being a risk to themselves had higher symptom levels. In step 2, education was significantly associated with symptoms, with those who had school leaving qualifications or higher displaying less severe symptoms ( $B = -0.09$ , 95% CI =  $-0.17$  to  $-0.01$ ,  $P = 0.035$ ). However, it lost significance in the multivariable model.

**Table 3** Predictor variables associated with severity of symptoms, objective social outcomes and subjective quality of life (adjusted for baseline score of the given outcome and length of stay in hospital)

Outcomes	Predictor variables	B	95% CI		<i>P</i>
Severity of symptoms (BPRS)	Admission due to risk to self	0.16	0.08	0.24	<0.001
	Receiving benefits	0.12	0.05	0.20	0.001
Objective social outcomes (SIX)	Male gender	-0.14	-0.26	-0.03	0.013
	Perceived coercion at admission	0.05	0.01	0.09	0.005
Subjective quality of life (MANSA)	Baseline satisfaction with treatment	0.04	0.01	0.06	<0.001

For each outcome above, we controlled for baseline score, length of stay and assessment time and included the interaction between baseline and assessment time as fixed effects. We included assessment time as a random effect

## Objective social outcomes

Two baseline variables were identified in step 2 as predictors of social outcomes and remained significant in the multivariable model: Male patients displayed worse objective social outcomes, whereas patients who perceived more coercion at admission scored higher in SIX, i.e. had more favourable outcomes.

## Subjective quality of life

Only one baseline variable was significantly associated with SQOL outcomes: Patients who were more satisfied with their treatment at baseline showed more favourable SQOL scores over time.

None of the final models included the interactions between the fixed covariates and assessment time point, as they were not significant.

## Discussion

### Main findings

The findings suggest that the clinical and social benefits patients experience following involuntary admission and subsequent treatment are on average rather limited. Patients even deteriorate on objective social outcomes. Predictor variables are inconsistent across the three outcomes. However, findings on predicting objective social outcomes and SQOL suggest that patients' initial experience of treatment, in form of perceived coercion or satisfaction with treatment, has predictive value for up to a year following the admission. Patients who perceive treatment as more coercive and appraise treatment more positively tend to have more favourable outcomes.

### Strengths and limitations

This is by far the largest study of 1-year outcomes of involuntary hospital admission to date [9, 12]. It has several strengths: All treatments were regulated by the same legislation, which applies consistently across England. The study assessed observer-rated outcomes, objective social outcomes and a patient reported outcome, and the sample size allowed for the analysis of predictor variables and was large enough to interpret negative findings. A further strength is that we obtained some data from all eligible patients so that differences between interviewed and non-interviewed patients could be analysed.

There are also a number of shortcomings: The study was purely observational, and the analysis exploratory. The study recorded outcomes following involuntary hospital

admission over a 1-year period, and 1-year outcomes may have been more influenced by the nature and extent of community care following hospital treatment than by the quality of the hospital treatment itself.

Out of all eligible patients, only about 50% were recruited to baseline interviews, and out of these only about 50% were still followed-up after a year. This may have introduced a significant selection bias, although the comparison of characteristics available for all patient groups did not provide evidence for such bias. One may assume that any selection bias would have affected the overall assessment of outcomes more than the identification of predictors. The latter are based on correlations that are usually more robust against selection biases than the mere distribution of outcome data.

### Outcomes

Patients admitted in a crisis commonly have high symptom levels, which are likely to reduce after a while due to spontaneous improvements, and it remains unclear to what extent hospital treatment contributed to the improvement. All previous studies on involuntarily admitted patients reported some symptom reduction over time, although they used shorter follow-up periods [9, 12, 14, 15]. The findings of this study can be directly compared with those of voluntary inpatients in five European countries [10, 25], who were followed-up using the same assessment method over 1 year within a trial. Symptom levels of involuntary patients were higher at both baseline and follow-ups with similar relative improvements over time. Symptom levels were also consistently higher than those of voluntary inpatients with schizophrenia who participated in a trial on cognitive-behavioural therapy, which, however, used different assessment methods [31].

SQOL as a patient reported outcome showed a small improvement between baseline and 1 year follow-up. In comparison, a diagnostically mixed sample of voluntary inpatients in a trial reported a more negative SQOL at admission, which was followed by more positive changes over 1 year [10], whilst patients with a first voluntary admission for schizophrenia [28] had similar SQOL scores at baseline and 9-month follow-up. The slight improvement of SQOL found in this study at the 1-year follow-up might be seen as a sign of successful adaptation to a disadvantaged living situation [21].

The only tested outcome that is not affected by acute problems or rating tendencies in a crisis is SIX, which summarises objective social outcomes. On this criterion patients deteriorated. In samples of patients with severe mental illness in long-term community care and rehabilitation programs SIX scores were similar at baseline, but either stayed unchanged or improved over periods of



18–24 months [29]. The small, but statistically significant deterioration in this study may reflect a continuous increase in social disabilities and an ongoing tendency towards social exclusion in patients with severe and often persistent mental illnesses [5], who—because of a negative attitude towards psychiatric treatment [18]—may not access available care options.

Comparisons with studies of voluntary patients may put the findings into context, but are of limited practical and scientific value. Involuntarily admitted patients did not accept voluntary treatment and are by definition a different group than voluntary patients. Whether outcomes would have been worse without involuntary admission and to what extent more appropriate treatment may have improved outcomes, remain open questions.

### Prediction of outcomes

The identified predictor variables were not consistent across the three types of outcomes, and each of the variables that were found to be of significant predictive value was associated with only one of the three outcomes. This may reflect the relative independence of the three analysed outcome criteria and the complex nature of clinical and social changes in this patient group over a 1-year period. Distinct processes might influence symptom change, objective social outcomes and SQOL.

Patients who felt more coerced tended to have better social outcomes. Involuntary admission is by definition a coercive process, and perceiving a high level of coercion during its process may be an appropriate response and reflect a sense of realism. This may be associated with a higher motivation to avoid a repetition of the experience and for positive change in life as well as a realistic attitude for how to achieve this.

Higher initial satisfaction with treatment was associated with more favourable changes in SQOL. A similar association of patients' initial treatment satisfaction and positive outcomes was found in a previous analysis of the study data focusing on re-hospitalizations and patients' retrospective justification of the involuntary admission [26]. The association is not explained by other predictor variables. What patients feel and say about the treatment even at initial stages of treatment is an important predictor. This is consistent with a number of studies that have linked patients' initial views of different types of psychiatric treatments with outcomes and found a predictive value of such views in pharmacotherapy, voluntary and involuntary inpatient treatment and day hospital treatment [3, 11, 22, 32]. Clinicians may tend not to emphasise the views of involuntary patients within the first week of treatment, when symptom levels are often still high and acute problems require attention. Yet, the findings of this study

suggest that patients' views of treatment should be elicited and taken seriously from the first day onwards.

Being on benefits is likely to indicate a higher level of social exclusion, possibly with more difficult access to, and acceptance of, psychiatric treatment, which may result in less symptom improvement. Admissions due to a risk to oneself or others, and not because of grave disability, tend to predict poorer outcomes. It may be assumed that the initially assessed risks continue to complicate further care and impact on outcomes. The association of a specific risk with poorer outcomes might also be seen as a trade-off between the tasks of reducing risk and achieving clinical and social improvements in involuntary patients. If patients are admitted because a specific risk needs to be contained, the task of improving the patients' health and social situation may be less prominent than in patients who pose no specified risk, but require treatment because of a severe deterioration of health or an inability to care for themselves [20].

The poorer social outcomes in male patients may reflect the less favourable course of some severe mental disorders in men [2, 7]. Perceiving coercion was associated with better social outcomes. Involuntary admission is by definition a coercive process and perceiving a high level of coercion during its process may be an appropriate response and associated with a higher motivation to avoid a repetition of the experience and for positive change in life.

The study did not provide evidence for the importance of several factors that clinically might be assumed to be of relevance for outcomes. For example, previous hospitalisations and the diagnostic category did not have a predictive value for any of the outcomes in these analyses.

### Conclusion

It may be argued that the main aim of involuntary admission is the avoidance of harm rather than therapeutic improvement. However, beneficence is usually seen as a major aspect of any ethical consideration of health interventions, and the rather limited clinical and social gains of the patients concerned here might be considered in an ethical debate about involuntary hospital admission [27]. The predictive associations found in this study were not strong enough to determine definite prognoses in individual cases. Yet, they are worth considering in both clinical practice and research.

The identified predictors point towards the importance of discussing the appropriateness of all aspects of treatment with involuntary patients from the first day onwards. The findings may also be seen as underlining the need for social inclusion programmes for severely ill patients.

Quantitative and qualitative research should explore the mechanisms linking specific predictor variables with



different outcomes [11, 12, 13]. Finally, experimental studies may be used to develop and test complex interventions to improve outcomes for all involuntarily admitted patients or specific subgroups.

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**Conflict of interest** The authors declare that they have no conflict of interest.

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