Original article

Satisfaction of psychotic patients with care and its value to predict outcomes

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A B S T R A C T

Background: A key indicator of quality of treatment from the patient's perspective is expressed by satisfaction with care. Our aim was to (i) explore satisfaction and its relation to clinical outcome measures; and (ii) explore the predictive value of satisfaction for the course of outcomes over three years.
Methods: Data of 654 patients with a non-affective psychosis included in a naturalistic longitudinal cohort study were analyzed. We included 506 males and 148 females with a mean age of 30.47 (SD 7.24) from The Netherlands. Satisfaction was measured with the self-rating Client Satisfaction Questionnaire-8. A wide range of interviewer-rated (e.g., Positive and Negative Symptom Scale) and self-rated (e.g., World Health Organization Quality of Life); outcomes of low, intermediate and high satisfied patients were compared using ANOVA, Chi^2 or Kruskal–Wallis tests. The predictive value of satisfaction level on clinical outcomes after three years was tested using regression models.
Results: Satisfaction levels were low (19.4%), intermediate (48.9%) or high (31.7%). High satisfied patients showed significantly better interviewer-rated outcomes, e.g., less severe psychotic symptoms, and self-rated outcomes, e.g., better quality of life, compared to patients with intermediate or low satisfaction. Higher levels of satisfaction with care at baseline predicted a reduction of positive symptoms three years later ($B = -.09$, P-value = .013).
Conclusions: Satisfaction of patients with psychosis is a valuable monitoring measure since high satisfied patients show more favorable outcomes ranging from psychopathological symptoms to quality of life. Further research into explanations of lower levels of satisfaction is commendable in order to improve outcomes.

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1. Introduction

Patient-centered care is increasingly acknowledged as a cornerstone of the current health care systems [1]. Care providers therefore are encouraged to engage patients in their own health care, for example by shared decision-making. Patient satisfaction with care is thought to represent a distinctive dimension of quality of care [2,3] and its importance has been acknowledged a long time before today's expansive use. The first statements about patient satisfaction date back to 1966 and we have seen a growing tendency to use it as outcome measure in trials [4,5].

Despite the importance of quality of mental health care, it has been little researched among psychiatric patients so far. An important report entitled 'Can psychiatry cross the quality chasm?' called for large studies to bridge the gap of quality measurement and improvement [6]. A review concluded that self-ratings, such as treatment satisfaction are a valuable measure in psychiatry despite the fact that severe mentally ill patients could have cognitive deficits and severe psychopathological symptoms [7]. Although satisfaction was found to be a major predictor of self-rated quality of life in a general mental health population, no long-term studies have yet demonstrated the predictive value of satisfaction in patients with psychosis [8]. One cross-sectional study by Ruggeri et al. in 404 patients with schizophrenia showed that dissatisfaction was associated with poorer self- or interviewer-rated outcome measures, such as more involuntary admissions, more severe psychopathology, more unmet needs and a lower quality of life

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[9]. To our knowledge, long-term follow-up studies in large samples of patients with psychosis are lacking.

In this study, therefore, we investigated the role and predictive value of satisfaction with care of patients in a large group of patients with a non-affective psychotic disorder. Our aims were to:

- explore satisfaction with care and related patient characteristics, including treatment history;
- investigate differences between satisfaction levels for self-rated and interviewer-rated outcome measures, such as psychopathological symptoms, level of functioning and quality of life;
- investigate the predictive value of satisfaction with care on the course of interviewer-rated and self-rated outcomes in a longitudinal design.

We expected patients who are highly satisfied with care to be more adherent to treatment. Hence, we hypothesized that satisfied patients have better cross-sectional outcomes and show improved outcomes over time as compared to less satisfied patients.

2. Methods

2.1. Design

Patients included in the present study were part of the Genetic Risk and Outcome of Psychosis (GROUP) study. The procedure and population characteristics of the GROUP study have been described in detail in a separate paper [10]. GROUP is a naturalistic follow-up study in which 1119 patients diagnosed within the psychotic spectrum, 1059 siblings, 920 parents and 586 unrelated control subjects were included at baseline. The main outcome parameter of the current research "patient satisfaction" was only administered at the first follow-up assessment (T1), three years after the start of the GROUP study. The current research therefore consists of a subsample of patients for whom this data was available (n = 654). Patients were identified by clinicians from four study sites and a total of 36 mental health institutes in The Netherlands and the Dutch-speaking area of Belgium. Patients were identified through clinicians working in regional psychosis departments or academic centers, whose caseload was screened for inclusion criteria. Subsequently, a group of patients presenting consecutively at these services either as outpatients or inpatients were recruited for the study. The AMC was the only inpatient center where a specialized first-episode treatment program was implemented. Individuals could participate if diagnosed with a non-affective psychotic disorder according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition [11]. Trained investigators conducted interviews with patients and applied several rating instruments. Interviewers assessed also the history of provided mental health care during the previous three years and sociodemographic variables. We analyzed patients who had complete datasets for satisfaction levels and symptomatology at T1 (three years after inclusion to GROUP). Sociodemographic variables of patients with missing data at T1 were compared with those of patients with complete data at T0. All participants were invited to take part in a final follow-up measurement six years after inclusion (T2). This study has been approved by the Medical Ethical Committee of the Academic Medical Center of Amsterdam and written informed consent was obtained before inclusion.

2.2. Outcome measures

Level of satisfaction with the provided health care was assessed (at T1 only) using the validated Dutch translation of the short version of the Client Satisfaction Questionnaire (CSQ-8) (Table 1)

[12]. This consists of eight items scored on a scale from 1 (poor) to 4 (excellent) resulting in a total score between 8 and 32. In line with previous research [13], we classified level of satisfaction as low (8–20), intermediate (21–26) or high (27–32). Symptom severity was measured by administering the Positive And Negative Syndrome Scale (PANSS), which assesses the core symptoms of schizophrenia [14]. Items are rated on a seven-point scale (1 = absent to 7 = extremely severe). The PANSS consists of three subscales: the positive, negative and general psychopathology scale. For each patient, we computed the total score per subscale (range 7–49 for the positive and negative scale and 16–112 for the general scale). According to Andreasen et al. [15], the remission criterion was defined as scores ≤ 3 (mild) on eight items of the PANSS. Functional impairment was assessed with the Global Assessment of Functioning (GAF) scale with the two subscales psychopathology and impairment (American Psychiatric Association, 1992, 2000). Quality of life (QoL) was assessed with the World Health Organization Quality of Life (WHO-QoL) questionnaire that has previously been validated in a Dutch adult psychiatric population [16,17]. This self-report scale assesses QoL on four major domains (physical health, psychological health, social relationships, and environmental conditions). Mean scores of these domains were summed and presented as a total score (range 5–20). Need for care was assessed with the Camberwell Assessment of Need Short Appraisal Schedule (CANSAS) [18]. This instrument assesses unmet needs for care on several life domains (range 1–13), for example self-care, money and daily activities. Insight was measured with the Birchwood Insight Scale (BIS) for psychosis [19]. This brief self-rating questionnaire of eight items addresses the core components of insight; awareness of illness, need for treatment and relabeling of symptoms. The total score (range 0–12) was used in the analyses, with higher scores indicating better illness insight. Insight was included in a later phase of the GROUP study and measured at T1 and T2 only as an add-on in a subsample of patients from two specific study sites (n = 290). Add-on instruments, such as the BIS, were selected by GROUP-researchers to explore additional topics after the start of the study.

2.3. Analysis

Analyses were conducted using the Statistical Packages for Social Sciences (SPSS) 23.0. Normality was checked for all numerical variables visually (histograms and Q-Q plots) and with Kolmogorov–Smirnov tests. Differences between groups with high, intermediate and low satisfaction ratings were compared by one-way ANOVA, Chi^2 tests or non-parametric Kruskal–Wallis tests where appropriate. To control for multiple comparisons, we performed Bonferroni correction for post-hoc pairwise comparison tests and all regression analyses with a P-value of < .017 (two-sided) considered statistically significant. Reported effect sizes are expressed as η^2, R^2 or Cramer's V (range 0–1).

To analyze the predictive value of treatment satisfaction on the course of outcome measures over time, we calculated change

Table 1
Items of the Client Satisfaction Questionnaire-8 (range 8–32).

1. How would you rate the quality of service received?
2. Did you get the kind of service that you wanted?
3. To what extent has our program met your needs?
4. If a friend were in need of similar help, would you recommend our program to him or her?
5. How satisfied are you with the amount of help you have received?
6. Have the services you received helped you to deal more effectively with your problems?
7. In an overall, general sense, how satisfied are you with the service you have received?
8. If you were to seek help again, would you come back to our program?

scores for all interviewer-rated and or self-rated outcome measures (T2–T1). To evaluate selective drop out, we compared patients to follow-up at T2 to included patients on psychopathological symptoms at T1. The predictive value of treatment satisfaction for interviewer-rated and self-rated outcomes was tested in linear regression models. Total satisfaction score was used as the independent variable and change scores of outcomes as dependent variables. We applied logistic regression models to test the predictive value of satisfaction scores on being in remission after three years. Release 5.01 of the GROUP database was used for the analyses.

3. Results

3.1. Study sample characteristics and treatment history

Table 2 represents data of the 654 patients with a non-affective psychosis of whom CSQ-8 and PANSS data were available. The mean illness duration of included patients was 7.39 years (SD 3.69). Of this sample, 256 (39%) patients were first-episode patients who were mainly in remission (96%) at the time of self-rating the CSQ. Satisfaction with care was rated low by 19.4% of the 654 patients; intermediate by almost half (48.9%); and high by 31.7%. The three groups did not significantly differ in sociodemographic variables (Table 2). Post-hoc pairwise comparisons using Bonferroni correction showed significant differences between high-satisfied and low-satisfied patients with regard to the medical history. The former included more patients treated as outpatients, fewer patients residing in assisted or sheltered living facilities, a lower number of patients being (compulsory) admitted

and if admitted to hospital patients had a shorter length of stay (all P-values < 004). Patients who rated intermediate satisfaction with care significantly differed from the high-satisfied patients in that they were more frequently being compulsory admitted (P = .01). Furthermore, patients who had rated low satisfaction were more frequently hospitalized and had a longer length of stay than moderate satisfied patients (all P-values < 01).

3.2. Cross-sectional interviewer-rated and self-rated outcomes in relation to satisfaction

Table 3 shows group comparisons for interviewer-rated (symptomatology n = 654, remission status n = 654, GAF n = 614) and self-rated outcome measures (QoL n = 645, unmet needs n = 645 and insight n = 290). Significant between group differences were found for all variables. Subsequent post-hoc pairwise comparisons showed that patients in the high satisfied group had significantly lower severity of symptomatology (P < .001), were perceived to have a higher level of functioning (P < .001) and more often met remission criteria (P < .001) compared to the low and intermediate groups. All self-rated measures in the group of high satisfied patients significantly differed with those in the other two groups. We found a higher reported quality of life (P < .001) and less unmet needs (P < .001) in the high satisfied group. No significant differences in interviewer-rated or self-rated measures were found between the groups of patients with intermediate and low satisfaction. High satisfied patients showed higher scores for illness insight (P = .001) compared to patients with low satisfaction. Overall effect sizes were small (η^2 or Cramer's V < .3), except for illness insight (η^2 = .4) (Table 3).

Table 2
Study sample demographics and health care consumption of included patients.

	Low satisfaction (n = 127; 19.4%)	Intermediate satisfaction (n = 320; 48.9%)	High satisfaction (n = 207; 31.7%)	Test statistic (df)	P-value
Sociodemographic variables					
Gender				X = 0.72 (653)	.699
Male, n	100	250	156		
Female, n	27	70	51		
				F = 2.13 (651)	.120
Age in years Mean (SD)	29.31 (6.94)	30.66 (7.27)	30.90 (7.32)		
Education, full time (years) Mean (SD)	14.04 (3.44)	14.19 (3.46)	14.63 (3.51)	F = 1.46 (641)	.232
Clinical variables					
Duration of Illness in years Mean (SD)	7.33 (4.04)	7.54 (3.72)	7.21 (3.41)	F = 0.48 (629)	.618
Psychotic episodes Mean (SD)	2.27 (1.22)	2.25 (1.46)	2.21 (1.40)	F = 0.09 (650)	.919
Diagnostic classification[a], n				X = 8.01 (653)	
Schizophrenia	81	220	136		.433
Schizophreniform disorder	4	9	13		
Schizoaffective disorder	26	58	30		
Psychosis NOS	15	32	26		
Delusional disorder	1	1	2		
Mental health care history					
Psychiatric admissions (yes/no), n	66/56	124/185	65/135	X = 14.70 (630)	**.001**
From which compulsory, (yes/no), n	26/40	43/81	11/54	X = 8.91 (254)	**.012**
Number of hospitalizations Mean (SD)	0.89 (1.33)	0.72 (1.33)	0.60 (1.7)	F = 1.52 (628)	.22
Number of months hospitalized Mean (SD)	6.06 (9.40)	3.64 (7.84)	2.19 (5.57)	F = 9.84 (624)	< **.001**
Day treatment (yes/no), n	39/77	92/209	48/148	X = 3.47 (612)	.176
Outpatient (yes/no), n	93/27	261/47	178/21	X = 8.32 (626)	**.016**
Assisted living (yes/no), n	32/87	62/236	25/166	X = 9.35 (607)	**.009**
Antipsychotics (yes/no/unknown), n	83/22/22	248/31/41	153/25/29	X = 7.478 (653)	.108
Psycho-education (yes/no), n	36/85	108/198	63/167	X = 1.509 (626)	.470

NOS: not otherwise specified; Significant results are shown as bold P-values.
[a] According to the Diagnostic and Statistical Manual of Mental Disorders 4th edition; Psychosis.

Table 3
Cross-sectional interviewer-rated and self-rated outcomes in relation to satisfaction at T1 three years after inclusion in the study.

Outcome measures	Low satisfaction (n = 127; 19.4%)	Intermediate satisfaction (n = 320; 48.9%)	High satisfaction (n = 207; 31.7%)	P-value	Effect sizes
Symptomatology, median (IQR)[a]					
PANSS Positive subscale	11 (8–15)	10 (7–14)	8 (7–11)	<.001	η^2 = .04
PANSS Negative subscale	11 (8–16)	11 (8–15)	9.0 (7–12)	<.001	η^2 = .05
PANSS General subscale	24 (20–30)	23 (19–29)	20 (17–24)	<.001	η^2 = .05
Remission, n[a]					
PANSS yes/no	69/58	168/152	152/55	<.001	Cramer's V = .19
Functioning, median (IQR)[b]					
GAF Psychopathology	55 (43–70)	60 (50–70)	65 (55–75)	<.001	η^2 = .05
GAF Impairment	55 (41–70)	60 (45–70)	65 (55–80)	<.001	η^2 = .05
Quality of life, median (IQR)[c]					
WHO-QoL	14 (11–15)	14 (13–15)	15 (14–17)	<.001	η^2 = .10
Needs, median (IQR)[c]					
CANSAS unmet needs	2 (1–4)	2 (1–4)	1 (0–2)	<.001	Cramer's V = .22
Insight, median (IQR)[d]					
BIS Illness insight	8 (5–10)	9 (7–11)	10 (8–11)	**.003**	η^2 = .40

PANSS: Positive and Negative Symptom Scale; GAF: Global Assessment of Functioning; WHO-QoL: World Health Organization Quality of Life; CANSAS: Camberwell Assessment of Need Short Appraisal Schedule; BIS: Birchwood Insight Scale. Significant results are shown as bold P-values.
[a] n = 654.
[b] n = 614.
[c] n = 645.
[d] n = 290.

Table 4
Regression analyses of total satisfaction score as a predictor of change scores of outcomes.

Outcome measures	ΔT2–T1 m (SD) or n	B	SE (B)	n	Effect sizes	P-value
Symptomatology						
PANSS Positive subscale	0.88 (4.07)	−.09	0.04	503	R^2 = .01	**.013**
PANSS Negative subscale	0.21 (4.62)	−.01	0.04	500	R^2 = .01	.795
PANSS General subscale	0.18 (6.51)	−.02	0.06	488	R^2 = .01	.766
Remission						
PANSS yes/no	302/201	.06	0.02	503	OR = 1.06	**.002**
Functioning						
GAF Psychopathology	−2.68 (14.16)	.15	0.13	455	R^2 = .01	.239
GAF Impairment	−1.84 (12.97)	.05	0.12	454	R^2 = .01	.691
Quality of life						
WHO-QoL	−0.04 (1.83)	−.02	0.02	478	R^2 = .01	.366
Needs						
CANSAS unmet needs	0.30 (2.34)	−.01	0.02	501	R^2 = .01	.677
Insight						
BIS illness insight	−0.87 (3.03)	−.09	0.05	200	R^2 = .02	.043

PANSS: Positive and Negative Symptom Scale; GAF: Global Assessment of Functioning; WHO-QoL: World Health Organization Quality of Life; CANSAS: Camberwell Assessment of Need Short Appraisal Schedule; BIS: Birchwood Insight Scale. Significant results are shown as bold P-values.

3.3. Longitudinal results testing satisfaction as predictor

Three years later (T2), 23.1% (n = 151) of the patients were lost to follow-up and could not be interviewed for PANSS data. For another 7.1% (n = 49), some other relevant outcome measures were missing (e.g. GAF impairment or quality of life), therefore, the minimum sample size for longitudinal analyses with complete data sets was reduced to 69.4% (n = 454) of the patients. Since insight was only measured in a subsample, we were able to include 290 patients at T1 of whom 31.0% (n = 90) dropped out at T2, leaving 200 of the patients for longitudinal analysis concerning the influence of insight. Dropout patients who were not included in prospective analyses differed significantly from included patients regarding mean symptomatology on the positive, negative and general subscales at T1 (mean difference 1.19, P = .013, mean difference 1.47, P = .008, mean difference 1.52, P = .03) and lower satisfaction scores at T2 (mean difference −1.45, P = .002).

The predictive value of satisfaction on the course of self-rated and interviewer-rated outcome measures was investigated through regression analyses (Table 4). Higher satisfaction scores at baseline predicted a reduction of positive symptoms (B = −.09, P = .013) but not a change in negative or general symptoms.

Furthermore, patients with higher satisfaction scores at baseline were found to be more often in remission three years later (B = .06, P = .002). However, statistical significance was lost when accounting for severity of psychopathology at baseline. Satisfaction scores did not significantly predict change in self-rated outcomes (QoL and unmet needs). After applying Bonferroni correction, significance was lost for the finding in a subsample of patients that satisfaction predicted lower illness insight at follow-up (B = −.09, P = .043). Effect sizes of all longitudinal results were small (R^2 < .3) (Table 4).

4. Discussion

The current study investigated satisfaction with care of patients with non-affective psychosis. Those classified in the high satisfaction group (31.7%) showed a more favorable treatment history and significantly better interviewer-rated and self-rated outcomes compared to patients classified in the intermediate (48.9%) or low satisfaction group (19.4%). Furthermore, a higher level of satisfaction with care significantly predicted a reduction of positive symptoms three years later.

4.1. Cross-sectional interviewer-rated and self-rated outcomes in relation to satisfaction

The significant group differences regarding treatment history are relevant from a clinical perspective. High satisfaction with care was associated with a more favorable treatment history with fewer compulsory admissions, more continuity of care, e.g. more frequently being treated as an outpatient, and significantly better interviewer-rated and self-rated outcomes (quality of life and illness insight) compared to the patients with lower levels of satisfaction. The finding that higher satisfied patients have better treatment history and quality of life is in line with a previous study in 404 patients with schizophrenia [9]. Our study validates these previous results in a larger sample and adds illness insight as an outcome measure.

4.2. Longitudinal results testing satisfaction as predictor

Furthermore, our findings expand on that study, by demonstrating in a large sample of patients with non-affective psychosis that higher levels of satisfaction predict a reduction of positive symptomatology at three years follow-up. A possible explanation for this finding is that high-satisfied patients have gained more from the treatment [20]. While interpreting these results, it is important to consider the role of selection bias since those patients who were lost to follow-up were excluded from this analyses and were found to have more severe symptomatology and are likely to have lower satisfaction levels. On the other hand, they might be more content because they have fewer symptoms, and consequently need less treatment. Richardson et al. [20] tested these two hypotheses in a short-term study in involuntarily admitted psychotic patients. They found evidence that treatment satisfaction predicted change in positive symptoms one month after discharge. However, fewer symptoms at first assessment did not predict higher treatment satisfaction. Possibly the treatment effects were more substantial for positive rather than for negative or general symptoms. This seems plausible since current antipsychotic interventions have shown very limited efficacy to treat negative symptoms [21].

As mentioned above, the finding that higher patient satisfaction was a (borderline) significant predictor for a lower level of insight was unexpected; the more so because in cross-sectional analysis, satisfied patients had higher levels of illness insight. Interaction analysis was complicated by the fact that insight was measured in only a subsample of patients. However, significance was lost after applying Bonferonni correction. Besides, disentangling the interaction between insight and patient satisfaction falls beyond the scope of this study.

We did not find satisfaction to be a predictor of self-rated outcomes, such as quality of life, insight or unmet needs. While one can only speculate about the reasons for this finding, an explanation could be that patients still appraise their quality of life despite dissatisfaction with care. Importantly, all effect sizes were relatively small. Future longitudinal studies are therefore required to validate our findings and elucidate the interplay between insight and satisfaction.

4.3. Patient satisfaction with care as an outcome measure

Hence, in line with the adage 'patient-centered care', we argue that patient satisfaction with care is a valuable outcome measure. Incorporating patients' perspectives by measuring satisfaction with the care that they have received might be of utmost importance to monitor and improve care for less satisfied patients [22]. Yet, prevention and improvement of dissatisfaction could be challenging. Many patients with schizophrenia show impaired illness awareness, which often contributes to compulsory admissions [23,24]. For safety reasons, coercion is sometimes unavoidable for patients with psychotic disorders. In a previous study, it was found that dissatisfaction and coercion are clearly associated [25]. In our opinion, improving the care for patients with psychosis who suffer from severe psychopathological symptoms and are at risk for coercive measures due to safety reasons should be a priority. We argue that notably dissatisfied patients need high quality care. The reasons for dissatisfaction should be therefore explored in further (qualitative) research in order to identify interventions to improve the quality of care. An important trial compared 5-year specialized early intervention care to referral after two years to community mental health centers and found higher client satisfaction for the specialized treatment programs [26]. Three core elements of this 5-year program were assertive community treatment, family involvement, and social skill training. It could be valuable to increase the use of these specific elements for all patients with psychosis. Still, the clinical implications of satisfaction with care for quality improvement are still under debate [27]. Monitoring satisfaction in patients suffering from psychotic disorders is therefore of utmost importance.

4.4. Strengths and limitations

A major strength of our study is the inclusion of the largest sample of patients with a non-affective psychotic disorder so far in a prospective longitudinal design. A wide range of clinical variables and health outcomes were assessed. Therefore, the current study adds new insights regarding the interpretation and value of patient satisfaction. A major limitation is the natural design, which implies that causal interpretations could not be made. Furthermore, patient satisfaction was rated once (at T1), which makes it impossible to evaluate the course of satisfaction over the time. However, two large studies found that satisfaction levels of patients with severe mental illness were rather stable over the time [28,29]. Besides, we had no information available to test if the duration of untreated illness or duration of untreated psychosis was associated with patient satisfaction. This could be important to study in future research for evaluation of early intervention programs. Another limitation is the limited extent to which these results are generalizable to the general population of patients suffering from psychosis. Almost 20% of our sample was not satisfied with the provided care. Other studies into satisfaction of patients diagnosed with psychotic disorders found comparable numbers of dissatisfaction [9,30,31]. However, patients in our study complied with demanding study procedures and fulfilled follow-up measures. Taking this into consideration, it is fair to say that our sample represented a fairly high-functioning group of patients and that selection bias could be in place. We find it plausible to argue that dissatisfaction with care among patients who are less capable or willing to comply with study regulations would be even higher. This interpretation is supported by the finding that patients who were lost to follow-up had significantly higher mean scores of psychopathological symptoms at baseline. The dropout rate of patients with more severe psychopathology – and lower satisfaction rates – could have influenced our findings, probably in causing lower effect sizes. We aimed to correct for this by using change scores in the regression models. In addition, sociodemographic variables did not differ at baseline between those who participated and those who were lost to follow-up, demonstrating that the samples were comparable in this respect. Nevertheless, caution should be in place regarding the generalizability of our findings. Patients with schizophrenia are known to suffer from difficulties with respect to participating in study

procedures and decisional capacity regarding informed consent [32]. Therefore, the GROUP sample is likely to present a high-functioning group with probably better outcomes and higher satisfaction levels. Comparison of satisfaction data with other quality measures shows that the CSQ-8 neglects other important aspects of quality of care [33]. For example, complementary data that reflects quality of care, such as adding adverse events or qualitative data, would therefore be commendable in future studies [34].

In conclusion, we are the first to demonstrate in a large longitudinal sample of patients with non-affective psychosis that higher perceived satisfaction with care is associated with more favorable outcomes. Hence, this measure should be regarded as valuable to monitor the course of treatment. Furthermore, high levels of satisfaction predicted a reduction of positive symptoms over time. Since dissatisfaction is clearly associated with perceived coercion, research into efficacy of interventions to improve satisfaction for patients who receive involuntary care could give new insights. Additional research into reasons for lower levels of satisfaction and into efficacy of interventions that improve care is commendable.

Ethical standards

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

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Disclosure of interest

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