Cure or curse? Ambivalent attitudes towards neuroleptic medication in schizophrenia and non-schizophrenia patients

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Abstract

Neuroleptic non-compliance remains a serious challenge for the treatment of psychosis. Non-compliance is predominantly attributed to side effects, lack of illness insight, reduced well-being or poor therapeutic alliance. However, other still neglected factors may also play a role. Further, little is known about whether psychiatric patients without psychosis who are increasingly prescribed neuroleptics differ in terms of medication compliance or about reasons for non-compliance by psychosis patients. As direct questioning is notoriously prone to social desirability biases, we conducted an anonymous survey. After a strict selection process blind to results, 95 psychiatric patients were retained for the final analyses (69 participants with a presumed diagnosis of schizophrenia psychosis, 26 without psychosis). Self-reported neuroleptic non-compliance was more prevalent in psychosis patients than non-psychosis patients. Apart from side effects and illness insight, main reasons for non-compliance in both groups were forgetfulness, distrust in therapist, and no subjective need for treatment. Other notable reasons were stigma and advice of relatives/acquaintances against neuroleptic medication. Gain from illness was a reason for non-compliance in 11-18% of the psychosis patients. Only 9% of all patients reported no side effects and full compliance and at the same time acknowledged that neuroleptics worked well for them. While pills were preferred over depot injections by the majority of patients, depot was judged as an alternative by a substantial subgroup. Although many patients acknowledge the need and benefits of neuroleptic medication, non-compliance was the norm rather than the exception in our samples.

Introduction

Medication non-compliance remains a serious obstacle for the treatment of psychotic disorders, even in the era of atypical neuroleptics.[1,2] While estimates vary depending on the definition of non-compliance, reviews usually agree that at least half of schizophrenia patients are non-compliant.[3] The recent Clinical Antipsy-chotic Trials of Intervention Effectiveness (CATIE) even reported drug discontinuation in almost three-quarters of the patients in the course of 18 months.[4] Results from the Eur-opean First Episode Schizophrenia Trial (EUFEST) are somewhat more optimistic. Still, approximately every second patient discontinued treatment, with estimates ranging from 33% for amisulpride to 72% for haloperidole.[5] These figures are alarming, especially in view of the adverse consequences of frequent and sudden medication on and offset.[6] It should be noted, however, that medication non-compliance plagues other fields of medicine as well, including potentially life-threatening conditions such as diabetes, hypertension and HIV.[7] Interestingly, non-compliance rates in psychosis patients are comparable for neuroleptics and non-psychopharmacological medication.[8]

Investigations into neuroleptic non-compliance, using for example the 10-item Medication Adherence Rating Scale (MARS), have traditionally focused on illness insight and subjective side effects.[3] Research relying on traditional adherence measures confirms that lack of insight, poor therapeutic alliance, substance abuse, negative response to medication and neurological symptoms (side effects) predict discontinuation.[3] While neurological Parkin-son-like symptoms are rated as the most bothersome side effects by physicians,[9] many patients experience weight gain, sedation, sexual side-effects and neuroleptic caused dysphoria as almost equally troubling. This problem remains with many newer atypicals.[9-11] Despite the face validity of these data, recent studies with electronic measurement of compliance[3] did not detect an association of the aforementioned factors, including side effects, with compliance. Yet another body of literature has linked subjective well-being, as measured for example with the Subjective Well-being under Neuroleptics Scale (SWN),[12] with compliance.[13] In one study, better subjective well-being under antipsychotics was significantly associated with higher rates of compliance in outpatients with schizophrenia during long-term treatment.[14]

Moreover, a number of still neglected factors may partially account for non-compliance. Clinical observation suggests that a subgroup of psychotic patients confuses instructions about dosing or timing.[15] Some falsely assume that medication should only be taken in acute phases or initiate dosage changes without consultation of therapists. The prevalence of such misunderstandings is hard to establish accurately, as inpatients on the one hand are typically reminded of medication intake by staff and many outpatients on the other hand do not disclose such violations for various reasons (e.g. fear of criticism by their therapists). In a large recent study, the MARS items "Do you ever forget to take your medication?" and "Are you careless at times at taking medication?" were confirmed by 32% and 38% of the patients, respectively.[16] This could also be due to cognitive dysfunction which is prevalent in a large subgroup of patients.[17-19] Deficits of memory and executive functions represent both the strongest and the most consequential deficits. In view of the sometimes complex medication regimen (multiple medications that have to be taken at different time points over the day), these deficits may thus account for irregular drug intake.[15]

In our view, gain from illness is another area which has still not been sufficiently investigated.[20] This initially dynamic construct is now widely acknowledged as a maintenance factor in anxiety disorders (e.g. social support by health care workers, family and friends). Although many psychotic patients show comorbid depression[21] and low self-esteem[22] and thus have no overt benefit from illness, at least some patients acknowledge that their delusional ideas and hallucinations positively impact on their self-esteem, raise a subjective sense of importance and are sometimes experienced as comforting.[20,23,24]

The search for factors predicting neuroleptic non-compliance traditionally focuses on patients with schizophrenia. However, antipsychotics are increasingly prescribed in non-psychotic patients[25] which has sparked

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some criticism.[26] Therefore, in addition to psychosis patients, the present study approached non-psychotic psychiatric patients for their attitudes and intake behavior regarding neuroleptics to explore potential differences across patient samples. We expected that compliance would be lower in psychosis than non-psychosis patients but that motives for non-compliance would be similar.

Furthermore, we aimed to assess patients' attitudes towards depot neuroleptics which, to the best of our knowledge, have so far not been undertaken in psychosis and non-psychosis patients simultaneously. If forgetfulness and information deficits about drug intake emerge as major subjective reasons for discontinuation, depot neuroleptics could represent a valuable alternative to pills.

To look at these issues, we approached patients receiving neuroleptics via self-help forums for psychiatric diseases and asked for participation in an internet survey. We favored this strategy over a direct assessment of patients since the latter approach notoriously inflates responses into a socially desirable (i.e. compliant) direction.[3,27] Pill count and electronic monitoring are also problematic as these measures are only accepted by patients with at least moderate medication adherence.[27]

Materials and Methods

Materials and procedure

We undertook an internet survey via www.unipark.de. Members of several moderated German discussion forums for psychosis and other psychiatric disorders were invited to participate in our study which was framed as a study assessing attitudes towards and effects of neuroleptic medication. Some of these forums had already cooperated with our group previously.[28,29]

Questionnaire

At the end of the invitation, the patient could click on a web-link to access an internet questionnaire. On the introductory page, the rationale and scope of the study was repeated at length. The introduction provided some examples for typical (e.g. Haldol®) and atypical (e.g. Zyprexa®) neuroleptic agents in case some participants confused neuroleptics with psychotropic or psychopharmacological medication in general. Prior to the core assessment, sociodemographic data was collected (age, gender, current work situation) (Table 1). Participation was strictly anonymous to ensure a maximum of unbiased responses. Cookies prevented multiple access attempts from the same computer.

Table 1. Background characteristics, insight and psychopathology of the psychosis and non-psychosis group. Means and standard deviations.

Variable	Psychosis (n=69)	Non-psychosis (n=26)	Statistics
Sociodemographic characteristics			
Age	35.13 (9.56)	36.92 (11.39)	$t(93)=0.77$, $P>0.4$
Gender (male/female)	33/36	9/17	$\chi^2(1)=0.25$, $P>0.2$
Insight scale			
Attribution of symptoms	3.13 (1.10)	3.16 (1.08)	$t(93)=0.09$, $P>0.9$
Awareness of illness	3.22 (1.44)	3.54 (0.95)	$t(93)=1.05$, $P>0.2$
Need for treatment	5.17 (1.24)	5.04 (1.18)	$t(93)=0.48$, $P>0.6$
CAPE			
Positive	1.82 (0.49)	1.51 (0.30)	$t(87)=3.66$, $P<0.001$
Negative	2.30 (0.47)	2.36 (0.49)	$t(87)=0.56$, $P>0.5$
Depressive	2.31 (0.47)	2.59 (0.54)	$t(87)=2.37$, $P=0.02$

Medical history and attitudes towards (depot) neuroleptics

Questions were then asked relating to mental health. Participants were requested to answer whether they had ever sought psychological treatment and, if so, to provide details concerning the date of the first contact and the type of the initial treatment (i.e. counseling, outpatient treatment, inpatient treatment, other) as well as the overall frequency of treatments so far. Questions were also asked about diagnoses determined during treatment (more than one diagnosis could be endorsed): depression, bipolar disorder, anxiety disorder, obsessive-compulsive disorder, post-traumatic stress disorder, schizophrenia, other (to be specified), or no psychiatric diagnosis at all. Participants were then asked if they took medication and, if so, to specify the type and dose of medication. Then, they were asked to specify their present therapeutic setting (e.g. inpatient, outpatient treatment). After that, they were asked which neuroleptic(s) was/were previously prescribed, the longest intake duration and the underlying disorder for which this type of medication was prescribed.

The questionnaire proceeded with a block of 54 bipolar items on subjective effects of neuroleptics which will be presented elsewhere. Five items served as "lie" items (highly implausible neuroleptic side effects) to assert the validity of the responses (*see below*). Next, participants were asked for their attitudes regarding atypical versus conventional neuroleptics. Patients were then asked some further questions mainly relating to the cognitive and psychopathological effects and side effects of neuroleptics. Multiple response options could be endorsed. Then, we asked about compliance with neuroleptics. Again, multiple endorsements could be made. Subsequently, the question was posed "Did you ever discontinue your medication or did not take it as prescribed?" ("yes"/"no" answer required). If confirmed, reasons for medication non-compliance had to be specified. Again, patients could leave comments after this category. Next, or if the patient answered "no", participants were asked about their attitude towards depot neuroleptics. Then, two final "yes" or "no" questions asked if they had ever been offered and prescribed neuroleptic depot medication.

Illness insight and psychopathological assessment

The questionnaire proceeded with the 8-item insight scale[30] which falls into three subscales: awareness of illness, need for treatment and attribution of symptoms. Finally, the participants were presented the 42-item CAPE scale;[31] a self-report questionnaire on psychotic experiences that measures positive, negative and depressive symptoms (see Table 1 for results). Both measures are frequently used in schizophrenia research and share good to excellent psychometric properties.

At the end of the survey, participants were asked if they had honestly answered all questions ("yes"/"no"). Next, participants could leave comments and their e-mail address if they were either interested in participating in future studies or would like to be informed about the study results. They were thanked for taking part, and the postal and E-mail addresses of the first author (SM) were displayed for questions. It was announced that the results of the survey would be sent to all participants.

Participants

Participants were excluded if they canceled the survey at any phase. Complete data were available for 129 participants. Participants were retained in the final group if they: (1) confirmed intake of neuroleptic medication; (2) did not write down a non-neuroleptic medication when asked for current or previous neuroleptic medication; (3) confirmed presence of at least one psychiatric disorder; (4) did not endorse more than 2 out of 5 almost impossible neuroleptic side effects (e.g. yellow vision, bigger or smaller feet); and (5) affirmed the final question which asked for the validity of their responses. Thirty-four patients

had to be excluded blind to results following this criteria to ensure the validity of the data.

The final sample was comprised of 95 patients of whom 69 received a diagnosis of psychosis (schizophrenia spectrum disorder) and 26 received a diagnosis of another psychiatric disorder. Table 1 shows that both subsamples were comparable regarding age, gender distribution and scores on the three subscales of the insight scale. As expected, and adding to the validity of the group allocation, the psychosis group displayed significantly higher positive symptoms, whereas the non-psychosis group displayed more depressive symptoms.

Results

Extent and reasons for non-compliance

Non-compliance was accentuated in psychosis relative to non-psychosis patients: 71% of the former discontinued medication at some time while this was confirmed by 43% in the latter group ($\chi^2(1)=7.56$, P=0.006).

Reasons for non-compliance are comparable between groups with the exception that psychosis patients more often withdrew medication because of perceived stigma (Table 2). At trend level, psychosis patients also complained more often about side effects. In both groups this was the core reason for discontinuation. Almost half of the patients withdrew medication because they thought that they did not need it and one third (psychosis) or one quarter (non-psychosis) because of forgetfulness. Although not significant, distrust about the therapist was a more prominent issue for psychosis patients (29%). Non-compliance relating to gain from illness was noted by 18% (feeling of importance) and 11% (missed voices) of the psychosis but none of the non-psychosis patients. Notable other reasons were advice from friends or relatives against intake and that patients confused the intake procedure not knowing that they should take the medication regularly and not only when they felt the need.

Table 2. Reasons for discontinuation of neuroleptics medication (sorted in descending frequency for psychosis patients).

Variable	Psychosis	Non-psychosis	Statistics
Too many side effects	79%	54%	P=0.08*
Medication intake amounts to stigma as being ill	48%	15%	$\chi^2(1)=4.79$, P=0.029
I did not need antipsychotics in my view	47%	46%	$\chi^2(1)=0.00$, P>0.9
Forgot intake	32%	23%	P>0.7*
I distrust my physician/therapist	29%	15%	P>0.4*
I had the feeling that taking medication was the same as acknowledging that all I have experienced was untrue (although this is not the case)	26%	8%	P>0.2*
Does not work for me	24%	23%	P>0.9*
During psychosis, I had a feeling of importance and power which I did not want to miss	18%	0%	P>0.1*
Friends/relatives advised me not to take them	16%	15%	P>0.9*
I had fears that acquaintances might detect the medication boxes	16%	8%	P>0.6*
I falsely assumed that I should only take them when having acute symptoms	16%	0%	P>0.1*
During my illness, I become another person and for this reason from time to time I need this state	15%	15%	P>0.9*
I missed the voices	11%	0%	P>0.3*
Medication is too expensive for long-term treatment	11%	0%	P>0.3*
Intake was too complicated	7%	0%	P>0.9*

* = values according to Fisher's exact test.

Table 3. Efficacy and presumed functional mechanisms of neuroleptics (sorted in descending frequency for psychosis patients).

Variable	Psychosis	Non-psychosis	Statistics
Neuroleptics work well for me	48%	39%	$\chi^2(1)=0.86$, P>0.3
Neuroleptics take both my energy for life as well as my strange ideas	40%	29%	$\chi^2(1)=1.10$, P>0.2
Neuroleptics that worked well for me also had various side effects	39%	32%	$\chi^2(1)=0.38$, P=0.5
Because of the neuroleptics I do not have any sensory irritations and for this reason also have no senseless ideas	37%	19%	$\chi^2(1)=3.40$, P=0.06
I feel numb because of the medication and for this reason I am unable to think anything bad anymore	21%	13%	$\chi^2(1)=0.96$, P>0.3
The medication side effects and the accompanied physical and mental impairments distract me from the voices and my special ideas	8%	10%	P>0.7*

* = values according to Fisher's exact test.

Attitudes towards antipsychotics: effects and side effects of neuroleptics

No significant differences between the two groups regarding subjective attitudes and appraisal towards neuroleptics were seen (Table 3). Every second psychosis and 2 out of 5 non-psychosis patients confirmed that neuroleptics worked well for them. At the same time, many patients also complained about side effects, lack of energy due to side effects and other impairments attributed to neuroleptics. Only 8 patients (9%) confirmed that the neuroleptics worked well for them and at the same time reported no side effects and full compliance according to self-report (*see below*).

More than every third psychosis patient acknowledged that neuroleptics exert their effect via reduced sensory irritations which secondarily impact on special (delusional) ideas. Most patients did not take medication as prescribed and a subgroup of psychosis patients only pretended to take it (Table 4). The latter item, however, was not endorsed by a single non-psychosis patient. At least 70% of the entire sample confirmed that they only take it because their physician wants them to. At the same time, a large subgroup made the virtually incompatible statement that they were convinced about the necessity and usefulness of neuroleptics. The latter item was significantly more often endorsed by non-psychosis patients.

Attitudes towards typical versus atypical neuroleptics

Three-quarters of non-psychosis patients and almost every second psychosis patient were unable to decide whether conventional versus atypical neuroleptics had better tolerability (Table 5). Interestingly, while psychosis patients clearly preferred atypical over conventional neuroleptics (42% *vs.* 7%), the response pattern was slightly reversed for non-psychosis patients (5% *vs.* 11%).

Attitude towards depot neuroleptics

Generally, patients preferred pills over needles (Table 6). Concerns against depot medication related to lack of autonomy and unknown long-term consequences of depot intake. Another issue that was significantly more often expressed by psychosis patients was that needles were equated with compulsory measures. One quarter (psychosis) to one third (non-psychosis) patients, however, appreciated injections. There is also an indication that an upper arm injection is more acceptable to some patients. Only a few patients (13% in each group) confirmed that they felt uncomfortable getting undressed in front of their physicians. Depot neuroleptics as a means to conceal the disorder were confirmed by 9% (psychosis) and 10% (non-psychosis) of the patients, respectively. Depot neuroleptics were prescribed for 27% of the psychosis patients and 13% of the non-psychosis patients ($\chi^2(1)=2.24$, P>0.1). Of those who had not received depot neuroleptics, it was offered to 20% of the psychosis and 7% of the non-psychosis patients which was marginally significant ($\chi^2(2)=5.75$, P=0.056).

Gender effects

Females reported more side effects than males (t(93)=3.12, P=0.002), less efficacy (t(93)=2.39, P=0.019), greater discontinuation because of forgetfulness (t(93)= 2.58, P= 0.01) and that neuroleptics would take away their delusions but at the same time also their life energy (t(93)=2.54, P=0.013). Males acknowledged more often took medication irregularly than females (t(93)=2.89, P=0.005).

Table 4. Attitudes and compliance (sorted in descending frequency for psychosis patients).

Variable	Psychosis	Non-psychosis	Statistics
Take them freely but irregularly	83%	87%	P>0.7*
I only take them because my physician wants me to take them	78%	70%	$\chi^2(1)=0.87$, P>0.3
I am convinced about their usefulness for me	40%	63%	$\chi^2(1)=5.00$, P=0.025
Take them freely and regularly	33%	37%	$\chi^2(1)=0.14$, P>0.7
I reject neuroleptics	24%	17%	$\chi^2(1)=0.68$, P>0.4
I only pretend that I am taking them	17%	0%	P=0.035*
I reject medication intake in general	17%	13%	P>0.9*

* = values according to Fisher's exact test

Table 5. Opinions towards atypical versus conventional neuroleptics relating to tolerability.

Variable	Psychosis	Non-psychosis	Statistics
Atypicals are far more tolerable	24%	0%	P=0.017*
Atypicals are somewhat more tolerable	18%	5%	P>0.2*
Equally tolerable	3%	11%	P>0.2*
Conventional neuroleptics are somewhat more tolerable	5%	11%	P>0.3*
Conventional neuroleptics are far more tolerable	2%	0%	P>0.9*
Cannot say	48%	74%	$\chi^2(1)=3.75$, P=0.05

* = values according to Fisher's exact test

Table 6. Attitude towards depot neuroleptics (sorted in descending frequency for psychosis patients).

Variable	Psychosis	Non-psychosis	Statistics
I prefer pills over needles. This allows me to decide the when and how of intake	62%	57%	$\chi^2(1)=0.27$ P>0.6
I have reservations against injections as in my view there is too little information about their long-term consequences	39%	27%	$\chi^2(1)=1.49$ P>0.2
I find needles inhumane as this means that force is imposed upon me	25%	7%	$\chi^2(1)=4.74$, P=0.029
Good idea, no need to remember intake myself	23%	33%	$\chi^2(1)=1.25$, P>0.2
I would more easily accept an injection in the upper arm than in my buttocks	21%	30%	$\chi^2(1)=1.08$, P>0.2
I fear needles or the pain caused by a wrongly set needle	20%	10%	$\chi^2(1)=1.43$ P>0.2
Would try that	15%	20%	P>0.5*
I do not want to undress before my physician	13%	13%	P>0.9*
Injections have the advantage of concealing the disorder from others (no pill boxes lying around)	9%	10%	P>0.9*
To get a needle is embarrassing	6%	0%	P>0.3*
I would prefer a needle over pills as I have problems with swallowing	2%	7%	P>0.2*

* = values according to Fisher's exact test

Discussion

To the best of our knowledge, this is the first study contrasting rates and motives of neuroleptic non-compliance in psychosis versus non-psychosis patients. While neuroleptic non-compliance was high in both groups, it was far more pronounced in the former: 71% of the psychosis and 43% of the non-psychosis patients acknowledged that they discontinued or had not taken medication as prescribed. Previous studies[3,4,14,16] vary widely regarding compliance rates, which is partially due to treatment setting differences (outpatients more than inpatients) and differences regarding illness severity (multiple episode more than first episode) Non-compliance rates in the present study were somewhat higher than in other investigations. Several factors may come into play here. First, non-adherent patients are underrepresented in conventional non-anonymous compliance studies[3,27]. Second, we asked for prior (i.e. lifetime) compliance, whereas most studies looked at compliance for a particular observation period.

Third, patients organized in self-help forums may be more critical towards psychopharmacological treatment.

The present study largely agrees with reports in the literature that non-compliance is related to side effects, low illness insight (i.e. no need for treatment) and distrust towards the therapist.[3,27] However, as expected, non-compliance is a complex phenomenon encompassing additional factors. Many of the patients named forgetfulness as a further reason[16] which agrees with prior reports[32] and meta analyses on compromised memory and executive functioning in this population.[17] What is more surprising, however, is that this variable has been much neglected[27], perhaps because forgetfulness is sometimes considered a weak excuse for non-compliance by clinicians. This argument does not apply to an anonymous internet survey like ours, where acknowledging non-compliance has no obvious impact on treatment and the therapeutic alliance. Gain from illness was another reason for non-compliance which was confirmed by a subgroup of 11-18% of the psychosis patients. In addition to the decrement of a delusionally inflated self-esteem, well-being may be further decreased by side effects and a state of indifference which is reported by many patients medicated with neuroleptics.[33]

We think that a switch to depot neuroleptics may represent a good alternative for some patients in order to increase compliance, particularly for cognitively disturbed patients. Our results are also compatible with recent speculations that this alternative is more appreciated by patients than health care professionals.[34] A considerable minority of the patients would welcome this alternative, even more would welcome the option of an injection in the arm. Still, only 13% (non-psychosis) and 27% (psychosis) were ever prescribed depot, which agrees with a recent statistic by Patel and colleagues[35], and no more than every fifth patient was ever offered this alternative. Depot may not only be a good alternative because of cognitive dysfunction. Some patients also misunderstand that pills, unlike for example benzodiazepines, should be taken regularly and not only when feeling unwell (such misunderstanding was confirmed by 16% of the psychosis patients). However, patients also raised concerns against this variant, especially because of anxiety about pain, unknown long-term side effects and loss of autonomy. Consequently, a switch to depot always needs to be carefully weighed against prejudices and the possibility of increased side effects. As in a recent study,[34] depot treatment was rejected by the majority of the respondents and was often regarded a compulsory measure. While atypical neuroleptics were subjectively preferred over conventional neuroleptics[13,36] most patients made no preference, which could either reflect indecisiveness, or a lack of experience with the other types of prescription.

Several limitations of the present study should be brought to the readers' attention. Although we have actively decided against a conventional interview-based or electronic measurement of compliance (*see Introduction*), internet surveys face other problems and criticism. Among the pitfalls is the fact that it is impossible to formally diagnose patients and to preclude abuse. For this reason, studies with in- and outpatient samples should be conducted to back up our conclusions. Its advantages over conventional studies are greater economy and anonymity countering desirability biases. To guard against invalid and multiple entries we adopted several precautions: cookies were set so that participants were unable to log on more than once, and several "lie" questions were provided to exclude participants with unreliable responses. Recent studies have asserted that responses obtained from internet studies are generally comparable in reliability and validity to "pen and paper" administration.[37-39] These findings also apply to severely impaired psychiatric patients.[29,40] Moreover, studies have asserted that subjective reports by schizophrenia patients are an important source of information that is not unreliable per se[13]. There are several similarities between our data and that in literature which partially confirm the validity of our approach. Finally, we have clearly not covered all risk factors of non-compliance. For example, personality factors and traumatic experiences have previously been implicated in non-compliance.[41]

Conclusion

Overall, the study paints a somewhat ambiguous picture of patients' attitudes towards neuroleptics. To return to our initial question, most patients seem to see neuroleptics neither as a curse nor a cure but as a "necessary evil". Only 9% endorsed "neuroleptics work for me" without endorsing a single negative response option (multiple endorsements were possible for this question) and a period of discontinuation. Three-quarters of the patients withdraw their medication, and as clinicians we must find ways to improve compliance with neuroleptics as long as alternative treatment such as new agents, cognitive-behavioral therapy or metacognitive training[42,43] are not yet ready to replace these agents. Depot neuroleptics are one alternative, although they are only favored by a minority of patients.[3] Memory aids, comprehensible customer-oriented information about neuroleptics addressing common concerns and prejudices (e.g. addictive potential) and easier treatment may be other approaches. Our study also showed that especially psychosis patients are very sensitive to stigma and forced medication. A trusting therapeutic alliance, therefore, is a pivotal prerequisite of compliance. Patients must also be given clear guidelines on what to do or who to turn to if medication is discontinued or taken other than prescribed.

References

1. Voruganti LP, Baker LK, Awad AG. New generation antipsychotic drugs and compliance behaviour. Curr Opin Psychiatry 2008;21:133-9.
2. Dolder CR, Lacro JP, Dunn LB, Jeste DV. Antipsychotic medication adherence: Is there a difference between typical and atypical agents? Am J Psychiatry 2002;159: 103-8.
3. Byerly MJ, Nakonezny PA, Lescouflair E. Antipsychotic medication adherence in schizophrenia. Psychiatr Clin North Am 2007;30:437-52.
4. Lieberman JA, Stroup TS, McEvoy JP, et al. Effectiveness of antipsychotic drugs in patients with chronic schizophrenia. N Engl J Med 2005;353:1209-23.
5. Kahn RS, Fleischhacker WW, Boter H, et al. Effectiveness of antipsychotic drugs in first-episode schizophrenia and schizophreniform disorder: an open randomised clinical trial. Lancet 2008;371:1085-97.
6. Moncrieff J. Does antipsychotic withdrawal provoke psychosis? Review of the literature on rapid onset psychosis (supersensitivity psychosis) and withdrawal-related relapse. Acta Psychiatr Scand 2006;114:3-13.
7. World Health Organization. Adherence to long-term therapies. Evidence for action. Geneva (Switzerland): World Health Organization; 2003.
8. Dolder CR, Lacro JP, Jeste DV. Adherence to antipsychotic and nonpsychiatric medications in middle-aged and older patients with psychotic disorders. Psychosom Med 2003;65:156-62.
9. Finn SE, Bailey JM, Schultz RT, Faber R. Subjective utility ratings of neuroleptics in treating schizophrenia. Psychol Med 1990;20:843-8.
10. Schimmelmann BG, Paulus S, Schacht M, et al. Subjective distress related to side effects and subjective well-being in first admitted adolescents with early-onset psychosis treated with atypical antipsychotics. J Child Adolesc Psychopharmacol 2005;15:249-58.
11. Leucht S, Corves C, Arbter D, et al. Second-generation versus first-generation antipsychotic drugs for schizophrenia: a meta-

analysis. Lancet 2009;373:31-41.
12. Naber D, Moritz S, Lambert M, et al. Improvement of schizophrenic patients' subjective well-being under atypical antipsychotic drugs. Schizophr Res 2001; 50:79-88.
13. Naber D, Karow A, Lambert M. Subjective well-being under the neuroleptic treatment and its relevance for compliance. Acta Psychiatr Scand 2005;(427):29-34.
14. Karow A, Czekalla J, Dittmann RW, et al. Association of subjective well-being, symptoms, and side effects with compliance after 12 months of treatment in schizophrenia. J Clin Psychiatry 2007;68:75-80.
15. Moritz S. Cognitive dysfunctions. In: Lambert M, Naber D, eds. Current schizophrenia. London: Science Press In press.
16. Fialko L, Garety PA, Kuipers E, et al. A large-scale validation study of the Medication Adherence Rating Scale (MARS). Schizophr Res 2008;100:53-9.
17. Heinrichs RW, Zakzanis KK. Neurocognitive deficit in schizophrenia: a quantitative review of the evidence. Neuropsychology 1998;12:426-45.
18. Keefe RSE, Fenton WS. How should DSM-V criteria for schizophrenia include cognitive impairment? Schizophr Bull 2007;33:912-20.
19. Moritz S, Ferahli S, Naber D. Memory and attention performance in psychiatric patients: lack of correspondence between clinician-rated and patient-rated functioning with neuropsychological test results. J Int Neuropsychol Soc 2004;10:623-33.
20. Moritz S, Werner R, von Collani G. The inferiority complex in paranoia readdressed: a study with the Implicit Association Test. Cogn Neuropsychiatry 2006;11:402-15.
21. Buckley PF, Miller BJ, Lehrer DS, Castle DJ. Psychiatric comorbidities and schizophrenia. Schizophr Bull 2009;35:383-402.
22. Freeman D, Garety P, Fowler D, et al. The London-East Anglia randomized controlled trial of cognitive-behaviour therapy for psychosis IV: Self-esteem and persecutory delusions. Br J Clin Psychol 1998;37:415-30.
23. Garety PA. Making sense of delusions. Psychiatry 1992;55:282-91.
24. Morrison AP, Wells A, Nothard S. Cognitive and emotional predictors of predisposition to hallucinations in non-patients. Br J Clin Psychol 2002;41:259-70.
25. Fountoulakis KN, Nimatoudis I, Iacovides A, Kaprinis G. Off-label indications for atypical antipsychotics: A systematic review. Ann Gen Hosp Psychiatry 2004;3:4.
26. Haw C, Stubbs J. Off-label use of antipsychotics: are we mad? Expert Opin Drug Saf 2007;6:533-45.
27. Klingberg S, Schneider S, Wittorf A, et al. Collaboration in outpatient antipsychotic drug treatment: analysis of potentially influencing factors. Psychiatry Res 2008; 161:225-34.
28. Moritz S, Jelinek L. Inversion of the "unrealistic optimism" bias contributes to overestimation of threat in obsessive-compulsive disorder. Behav Cogn Psychother 2009;37:179-93.
29. Moritz S, Laroi F. Differences and similarities in the sensory and cognitive signatures of voice-hearing, intrusions and thoughts. Schizophr Res 2008;102:96-107.
30. Birchwood M, Smith J, Drury V, Healy J, Macmillan F, Slade M. A self-report Insight Scale for psychosis: reliability, validity and sensitivity to change. Acta Psychiatrica Scandinavica 1994;89:62-7.
31. Konings M, Bak M, Hanssen M, van Os J, Krabbendam L. Validity and reliability of the CAPE: a self-report instrument for the measurement of psychotic experiences in the general population. Acta Psychiatr Scand 2006;114:55-61.
32. Velligan DI, Lam F, Ereshefsky L, Miller AL. Perspectives on medication adherence and atypical antipsychotic medications. Psychiatr Serv 2003;54:665-7.
33. Mizrahi R, Rusjan P, Agid O, et al. Adverse subjective experience with antipsychotics and its relationship to striatal and extrastriatal D2 receptors: a PET study in schizophrenia. Am J Psychiatry 2007;164:630-7.
34. Heres S, Schmitz FS, Leucht S, Pajonk FG. The attitude of patients towards antipsychotic depot treatment. Int Clin Psychopharmacol 2007;22:275-82.
35. Patel MX, de Zoysa N, Bernadt M, David AS. A cross-sectional study of patients' perspectives on adherence to antipsychotic medication: depot versus oral. J Clin Psychiatry 2008;69:1548-56.
36. Karow A, Naber D. Subjective well-being and quality of life under atypical antipsychotic treatment. Psychopharmacology 2002;162:3-10.
37. Jones SR, Fernyhough C, de-Wit L, Meins E. A message in the medium? Assessing the reliability of psychopathology e-questionnaires. Pers Individ Dif 2008 2008;44:349-59.
38. Ritter P, Lorig K, Laurent D, Matthews K. Internet versus mailed questionnaires: a randomized comparison. J Med Internet Res 2004;15;6:e29.
39. Riva G, Teruzzi T, Anolli L. The use of the internet in psychological research: comparison of online and offline questionnaires. Cyberpsychol Behav 2003; 6:73-80.
40. Chinman M, Young AS, Schell T, et al. Computer-assisted self-assessment in persons with severe mental illness. J Clin Psychiatry 2004;65:1343-51.
41. Lecomte T, Spidel A, Leclerc C, et al. Predictors and profiles of treatment nonadherence and engagement in services problems in early psychosis. Schizophr Res 2008;102:295-302.
42. Moritz S, Woodward TS. Metacognitive training in schizophrenia: from basic research to knowledge translation and intervention. Curr Opin Psychiatry 2007; 20:619-25.
43. Zimmerman G, Favrod J, Trieu VH, Pomini V. The effect of cognitive behavioral treatment on the positive symptoms of schizophrenia spectrum disorders: A meta-analysis. Schizophr Res 2005;77:1-9.