ORIGINAL ARTICLE

Evaluation of the factors interfering with drug treatment compliance among Brazilian patients with schizophrenia

Avaliação dos fatores de aderência ao tratamento medicamentoso entre pacientes brasileiros com esquizofrenia

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Original version accepted in Portuguese

Abstract

***Background**: Treatment noncompliance among schizophrenic patients is as high as 50%. In order to rate compliance and assess the most significant differences between compliant and noncompliant patients, a Brazilian population of schizophrenic outpatients was followed for one year. **Methods**: Fifty outpatients were selected. Clinical interview, the Brief Psychiatric Rating Scale – Anchored version (BPRS-A) and an expanded version of the Rating of Medical Influences (ROMI) scale (used to rate patient attitudes toward compliance) were applied at baseline. The BPRS-A was used in the follow-up visits (approximately once a month). Missing two consecutive appointments without explanation or taking less than 75% of the medication (by written family report) was considered noncompliance. **Results**: Noncompliance was 48% over one year. Patients in the noncompliant group presented initial worsening of psychotic symptoms ($p < 0.05$) and had been treated for a shorter length of time ($p = 0.007$). The ROMI scale showed that "perceived day-to-day benefit" was most strongly correlated with compliance, and feeling "distressed by side effects" was most strongly correlated with noncompliance. **Discussion**: This study evaluates the frequency of noncompliance and the main reasons for complying in a population of schizophrenic outpatients. **Conclusions**: Severity of psychopathology was found to correlate with noncompliance (although not necessarily as its cause), as well as with duration of treatment. Noncompliance rates are high and must be taken into account in any treatment program.*

***Keywords**: Schizophrenia/therapy; Patient compliance; Antipsychotic agents/therapeutic use; Patient acceptance of health care; Treatment refusal*

Resumo

***Introdução**: A não aderência ao tratamento em pacientes com esquizofrenia chega a 50%. Com a finalidade de avaliar a taxa de aderência e as principais diferenças entre pacientes aderentes e não aderentes, uma população de pacientes esquizofrênicos em tratamento ambulatorial foi acompanhada por um ano. **Métodos**: Cinqüenta pacientes foram selecionados. Foi realizada uma entrevista clínica e aplicadas as escalas BPRS-A (Escala Breve de Avaliação Psiquiátrica – Versão Ancorada) e uma versão expandida da ROMI (Escala de Influências Medicamentosas) na avaliação basal. A BPRS-A foi utilizada nas visitas seguintes (cerca de uma vez por mês). A falta consecutiva a duas consultas sem explicação ou a ingestão de menos de 75% (segundo relato familiar escrito) da medicação foram consideradas não aderência ao tratamento. **Resultados**: A taxa de não aderência encontrada foi de 48% em um ano. O grupo não aderente teve uma piora na sintomatologia psicótica inicial ($p < 0,05$) e havia estado em tratamento por um tempo mais curto ($p = 0,007$). A escala ROMI mostrou que a "percepção de benefício diário" foi o fator mais associado à aderência e o sentimento de "desconforto por efeitos colaterais" estava mais associado à não aderência. **Discussão**: Este estudo avalia a freqüência de não aderência e as principais razões para aderir ao tratamento numa população de pacientes esquizofrênicos. **Conclusões**: A gravidade da sintomatologia pode ser um fator relacionado com a aderência, mas não necessariamente sua causa, bem como o tempo de duração do tratamento. As taxas de não aderência são altas e devem ser consideradas em qualquer programa de tratamento.*

***Descritores:** Esquizofrenia/terapia; Cooperação do paciente; Antipsicóticos/uso terapêutico; Aceitação do paciente de cuidados de saúde; Recusa do paciente ao tratamento*

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Introduction

Treatment noncompliance is one of the main obstacles to controlling schizophrenia.[1] Noncompliance significantly increases the rate of relapse (a worsening of symptoms, not necessarily leading to hospitalization),[2] as well as the rate of rehospitalization[3] and the length of readmissions.[4] There is also a strong correlation between compliance and risk of future hospitalization.[3] The need for maintenance therapies with antipsychotics in schizophrenia is currently acknowledged unanimously. Although antipsychotics are not perfect, most can control the disorder, leading to relief from the so-called positive symptoms.

Socioeconomic factors are also important. In the USA, the annual cost of hospital admissions due to schizophrenia relapse is approximately US$ 2.3 billion. The accumulated cost for readmission within two years after discharge is approximately US$ 2 billion.[5] Noncompliance to antipsychotic therapy accounts for approximately 37% of these costs.[5]

It has been reported that one-year rates of noncompliance are 41% (range, 10 to 76%) when oral antipsychotics are used and 25% (range, 14 to 36%) when deposit antipsychotics are used.[6] For the two methods of administration, a mean rate of 55% (range, 24 to 88%) has been reported.[7]

Determining the magnitude of each of the factors that influence compliance is not an easy task. There are at least three scales currently available to carry out this task. These scales assess patient attitude toward treatment compliance. They are the Van Putten & May Scale[8] (for measuring neuroleptic dysphoria), the Drug Attitude Inventory[9] (a widely used scale that has even been translated into several languages)[10-14] and the Rating of Medication Influences (ROMI) scale[15] (also widely used).[16-17] The last is the most comprehensive, especially for rating compliance in outpatient clinics. A Portuguese translation of the ROMI scale is currently available.[18]

In Brazil, there have been few studies of treatment compliance in schizophrenia. The present study was carried out in order to rate compliance among schizophrenic outpatients at two public health clinics in the city of São Paulo over a one-year period.

Methods

1. Subjects

Fifty outpatients from two public health clinics in the city of São Paulo (*Hospital das Clínicas*, n = 23, and *Santa Casa de Misericórdia de São Paulo*, n = 27), diagnosed with schizophrenia according to the DSM-IV,[19] were randomly selected to be monitored regarding treatment compliance for a period of one year. Patients were selected by inviting the first patient to be treated on each Tuesday from January to June of 1996. The *Hospital das Clínicas* (HC) has a specific day (Tuesdays) for treating patients diagnosed with schizophrenia, whereas the *Santa Casa* (SC) does not. Tuesdays were chosen because that was the day that the assessor could be present at both clinics. This was not considered a source of error. Patients could be either starting treatment or returning for a regularly scheduled appointment.

Patients who were using clozapine were excluded due to their unique profile. First of all, they tend to be more refractory patients. In addition, since they require weekly blood tests over a period of 18 weeks, they present a different pattern of compliance.

After a full explanation of the study design, patients were invited to participate and written informed consent was obtained. Since the study was relatively simple and interfered very little with the follow-up treatment, all invited patients agreed to participate.

2. Instruments

Psychopathology was quantified at baseline using the Brief Psychiatric Rating Scale – Anchored version (BPRS-A).[20] A Brazilian (Portuguese) translation of this scale is now available.[21] It is important to mention that this version, in order to avoid misidentification of the psychopathology, adopts a rating scale ranging from 0 to 6 points, which is different from the traditional 1 to 7-point scale.[22] Therefore, the degrees of psychopathological severity tend to be lower.

The main reasons for compliance and noncompliance were evaluated using the ROMI (we used a slightly expanded version of the scale, which was provided by the author himself, Peter Weiden, but that essentially contains the same structure as the original scale). The existing version of the scale in Portuguese[18] is a simple translation, which has not been validated but helped us interpret the version we used.

The ROMI consists of two parts. The first part is semi-structured, comprising questions regarding lifestyle status (e.g. supervised or unsupervised, alone or with family, homeless or not), locale of treatment, medication regimen prescribed (specific antipsychotic, medication other than antipsychotics, oral or intramuscular administration, dosage, frequency, duration of treatment), overall patient attitude toward treatment and medication (positive or negative, voluntary or forced compliance) and overall attitude of the family, as well as of the caregiver, toward treatment and medication. The second part of the scale is divided into two sections: reasons for compliance and reasons for noncompliance. In each section, there is an initial open question ("What is your primary motivation for taking the medication?" and "What is your primary motivation for not taking the medication?"). Subsequently, the sections present "closed questions" regarding the main reasons for wanting or not wanting to take the medication. In this part of the scale, the patient is asked to indicate the degree of influence of each item of the scale (reasons for compliance and reasons for noncompliance). The graduated responses to each are "no influence", "mild influence" and "strong influence" (1, 2 and 3, respectively, or 9 when it is impossible to evaluate the degree of influence).[15]

The assessor was one of the authors and was blinded as to the compliance status of the patients.

Demographic data were also collected, and a clinical interview, concerning the total length of time in psychiatric treatment, duration of treatment at the current institution, number of previous hospitalizations, the schizophrenia subtype (according to the DSM-IV), the daily dose of antipsychotics in chlorpromazine equivalents[23-24] and the method of administration, was conducted at baseline.

3. Follow-up assessment

In the following interviews (in general, one per month, according to the appointments scheduled for each patient by the attending psychiatrist), the BPRS-A was used in order to assess the symptoms of the disorder.

Compliance was assessed through the use of a report written by a family member (who was instructed to mark with an X the pills that had not been taken since the previous

appointment). For each patient, a family member was designated as responsible for this task. When this member (always the same one) had to miss the appointments, the signed report was brought by the patient. Noncompliance was defined as taking less than 75% of the prescribed dose within the preceding 30 days (adapted from Buchanan, 1992[25]). If the patient missed two consecutive appointments without explanation, the family was contacted in order to inquire about the degree of compliance. In order to avoid deviations, patients continued to be seen by their own psychiatrists, without assessor intervention in the treatment regimen.

Patients were monitored for a period of one year unless they were noncompliant, in which case the follow-up assessment was discontinued.

After one year, the two groups (compliant and noncompliant patients) were compared.

4. Statistical analysis

The general patient profile was analyzed using the t-test, the chi-square test or Fisher's exact test.

The means of each ROMI item were analyzed using the Student's t-test.

Since the follow-up assessment was discontinued in noncompliant patients, the last observation carried forward (LOCF)[26] method was used in order to analyze their BPRS-A scores. Mean BPRS-A values (from the baseline to the end of the follow-up assessment) for each group were compared using analysis of variance for repeated measurements.

Results

1. Patient Sample

The sample comprised 20 men (40%) and 30 women (60%). The mean age was 36 ± 6.82 years (range, 18 to 45 years). Forty (80%) were Caucasian, 5 (10%) were Black, and 5 (10%) were Asian. Thirty-nine (78%) were single, 10 (20%) were married and 1 (2%) was divorced. The mean length of psychiatric treatment was 6.94 ± 6.32 years (range, 0 to 22 years). The length of treatment at the current institution was 30.54 months (SD: 33.42, variation 1-175). The mean number of previous hospitalizations was 1.56 ± 1.73 (range, 0 to 5). The schizophrenia subtype was found to be paranoid in 39 patients (78%), disorganized in 7 (14%) and residual in 4 (8%). The mean dose of antipsychotic (in chlorpromazine equivalents) was 264 ± 165.07 mg (range, 50 to 850 mg). All patients were using typical antipsychotic agents or risperidone, and the method of administration was oral. None had a history of abuse of, or dependence upon, drugs or alcohol or both.

2. Comparison of the groups

The rate of noncompliance over a one-year period was 48% (n = 24). Figure 1 shows compliance over time (in months).

Table 1 – Demographic variables of the compliant and noncompliant groups

Variable	Compliant n (%)	Noncompliant n (%)	p
Gender			
Male	13 (50)	7 (29.17)	Fisher's /
Female	13 (50)	17 (70.83)	p = 0.1122
Social class			
Lower	6 (23.08)	9 (37.5)	Fisher's /
Middle	20 (76.92)	15 (62.5)	p = 0.2111
Educational level			
Elementary school (incomplete)	4 (15.38)	5 (20.83)	Chi-square / p = 0.5012
Elementary school (complete)	7 (26.92)	11 (45.83)	
High school (incomplete)	5 (19.23)	3 (12.5)	
High school (complete)	9 (34.62)	4 (16.67)	
College or university	1 (3.85)	1 (4.17)	
Religion			
Catholic	21 (80.77)	19 (79.17)	Chi-square /
Protestant	5 (19.23)	3 (12.5)	p = 0.4709
Buddhist	0 (0)	1 (4.17)	
None	0 (0)	1 (4.17)	
Marital status			
Single	19 (73.08)	20 (83.33)	Chi-square /
Married	6 (23.07)	4 (16.67)	p = 0.5097
Divorced	1 (3.85)	0 (0)	
Race			
Caucasian	221 (80.77)	19 (79.17)	Chi-square /
Black	2 (7.69)	3 (12.5)	p = 0.8103
Asian	3 (11.54)	2 (8.33)	

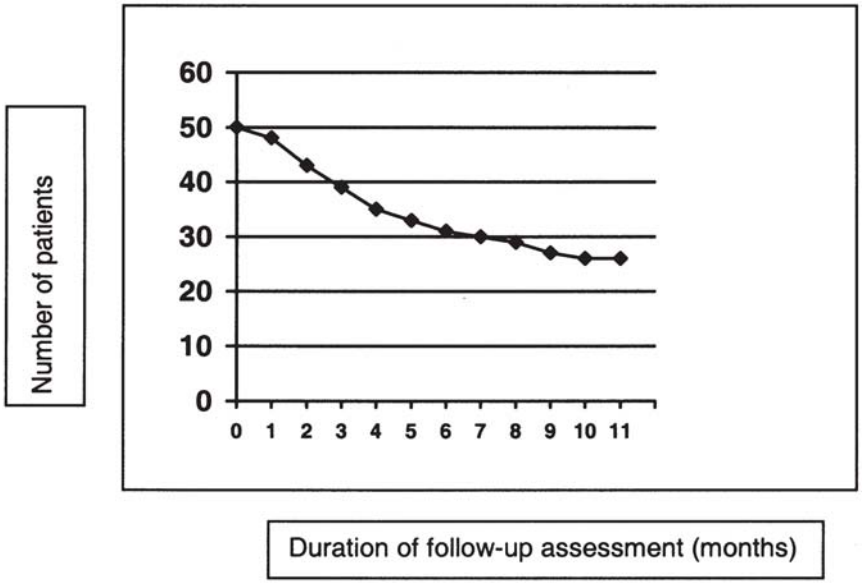

Figure 1 – Compliance over time

Comparing both groups, there were no differences in the demographic variables (Table 1), including the mean ages (33.57 ± 7.08 for compliant patients and 32.50 ± 6.62 for noncompliant patients, p = 0.581).

There were no differences in the total length of psychiatric treatment, in the number of previous hospitalizations, in the subtype of schizophrenia or in the mean daily dose of the antipsychotic.

There was a significant difference in the length of treatment at the current institution (t = -2.82, df = 48, p = 0.007). Mean length was 17.54 ± 11.59 months in the noncompliant group and 42.53 ± 41.87 months in the compliant group.

Table 2 shows the BPRS-A values for both groups. Although not significant, there was a tendency toward a worse evolution in the psychopathology of the patients of the noncompliant group.

Table 2 – Evolution of the Brief Psychiatric Rating Scale – Anchored version score over time between the groups

Duration (mos)	Group*	
	Compliant BPRS-A score	Noncompliant BPRS-A score**
0	12.50 ± 4.81	12.50 ± 5.81
1	12.61 ± 5.85	15.20 ± 7.52
2	12.57 ± 5.56	14.54 ± 7.40
3	12.42 ± 5.57	15.08 ± 7.95
4	12.26 ± 5.71	15.16 ± 8.05
5	11.96 ± 5.51	15.25 ± 8.07
6	11.88 ± 5.53	15.08 ± 7.97
7	11.80 ± 5.76	15.12 ± 8.05
8	11.88 ± 5.61	15.58 ± 8.41
9	11.84 ± 5.80	15.50 ± 8.49
10	11.69 ± 5.69	15.50 ± 8.49
11	11.46 ± 5.59	15.50 ± 8.49

** Analysis of variance for repeated measurements: df = 1; F = 2.585; p = 0.115*
***Last observation carried forward*
D: duration; BPRS-A: Brief Psychiatric Rating Scale – Anchored version

3. Comparison between the institutions

The institutions were homogeneous regarding mean age (HC: 33.6 ± 5.8 years; SC: 32.55 ± 7.5 years; p = 0.576) and the other demographic characteristics (Table 3).

There was a significant difference (p = 0.004) in compliance between the two institutions. Compliance was higher among HC patients (34%, n = 17) than among SC patients (18%, n = 9).

With regard to psychopathology, there was no difference between the groups from the two institutions (Table 4).

There was a significant difference (p = 0.001) in the item "length of treatment at the institution", which was, on average, 46.52 ± 42.92 months at the HC and 16.92 ± 11.27 months at the SC.

The "length of treatment at the institution" was also compared between the subgroups of compliant and noncompliant patients at the two institutions. Among the compliant patients, the length of treatment was significantly higher (p = 0.005) at the HC (55.58 ± 45.97 months) than at the SC (17.88 ± 14.2 months). No such difference was observed among the noncompliant patients (HC: 20.83 ± 16.27 months; SC: 16.44 ± 9.93 months, p = 0.434).

Comparison of the data regarding the disease revealed a significant difference (p = 0.0342) in the number of hospitalizations between the noncompliant patients at the HC and those at the SC (Table 5) but not between the compliant patients at the two.

Table 3 – Comparison of demographic characteristics between the groups from the two institutions

Variable	HC*	SC**	p
Gender			
Male	12 (52.2)	18 (66.7)	0.226
Female	11 (47.8)	9 (33.3)	
Social class			
Lower	4 (17.4)	11 (40.8)	0.067
Middle	19 (82.6)	16 (59.2)	
Educational level			
Elementary school (incomplete)	4 (17.4)	5 (18.5)	0.666
Elementary school (complete)	6 (26.1)	12 (44.5)	
High school (incomplete)	5 (21.7)	3 (11.1)	
High school (complete)	7 (30.45)	6 (22.2)	
Superior	1 (4.35)	1 (3.7)	
Religion			
Catholic	22 (95.65)	18 (66.7)	0.085
Protestant	1 (4.35)	7 (25.9)	
Buddhist	0 (0)	1 (3.7)	
No religion	0 (0)	1 (3.7)	
Marital status			
Single	20 (86.95)	19 (70.4)	0.115
Married	2 (8.7)	8 (29.6)	
Divorced	1 (4.35)	0 (0)	
Race			
Caucasian	21 (91.3)	19 (70.4)	0.183
Black	1 (4.35)	4 (14.8)	
Asian	1 (4.35)	4 (14.8)	

**HC: Hospital das Clínicas*
***SC: Santa Casa*

4. Comparison between the groups using the ROMI scale

None of the items of the ROMI scale differed significantly between the compliant and the noncompliant group.

5. Reasons for compliance

The responses to the ROMI open question ("What is your main motivation for taking the medication?") were grouped into four main reasons, based on the items addressed in the closed questions: "perceived day-to-day benefit", "relapse prevention", "respect for authority" and "fear of hospitalization". "Perceived day-to-day benefit" (e.g. improved sleep, tranquility, fewer voices, organization of thoughts, etc.) was the main reason for wanting to take the medication (88%, n = 44), followed by "relapse prevention" (¨6%, n = 6), "respect for authority" (4%, n = 2) and "fear of hospitalization" (2%, n = 1).

Table 4 – Comparison of the evolution of the severity (Brief Psychiatric Rating Scale – Anchored version score) of the clinical profile* between the groups from the two institutions

Duration (mos)	HC	SC
0	13.60 ± 5.33	11.56 ± 5.11
1	14.26 ± 6.02	13.51 ± 7.43
2	14.13 ± 5.86	13.00 ± 7.10
3	14.21 ± 5.96	13.25 ± 7.65
4	14.13 ± 6.05	13.25 ± 7.83
5	13.95 ± 6.10	13.18 ± 7.76
6	14.00 ± 5.97	12.92 ± 7.73
7	14.08 ± 6.17	12.81 ± 7.84
8	13.91 ± 6.10	13.44 ± 8.24
9	13.87 ± 6.18	13.37 ± 8.37
10	13.78 ± 6.01	13.29 ± 8.43
11	13.69 ± 5.99	13.14 ± 8.43

**Analysis of variance for repeated measurements: df = 1, F = 0.124, p = 0.726*
HC: Hospital das Clínicas; SC: Santa Casa

Table 5 – Number of hospitalizations among noncompliant patients at the two institutions

Number of hospitalizations	SC n (%)	HC n (%)
0	9 (50)	0 (0)
1	4 (22.22)	1 (16.67)
2	2 (11.11)	2 (33.33)
3	2 (11.11)	0 (0)
5	1 (5.56)	3 (50)

χ^2 = chi-square / p = 0.0342
HC: Hospital das Clínicas; SC: Santa Casa

With regard to the ROMI "closed questions", the item "perceived day-to-day benefit" was most often given as the main reason for compliance. Table 6 shows the degree of influence of each of the other items.

Table 6 – Rating of Medical Influences scale closed questions (reasons for compliance)

Reason for compliance	Degree of influence (%) None	Mild	Strong
Perceived day-to-day benefit	20	26	54
Positive family belief	28	26	46
Relapse prevention	36	26	38
Supervision	46	18	36
Respect for authority	48	16	36
Positive relationship with the physician	18	54	28
Fear of hospitalization	64	12	24
Family pressure	68	14	18
Pressure from the health system	80	10	10
Fulfilling life ideals	77	13	10

6. Reasons for noncompliance

In the ROMI open question ("What is your main motivation for not taking the medication?"), most of the patients denied that there were any reasons for noncompliance (40%, n = 20). The responses to this question were also grouped based on the items addressed in the closed questions (Table 7). Two of the responses given could not be categorized in any of the "closed" items. One patient reported "forgetfulness" and five mentioned "a desire to be normal" (10%).

In the "closed questions" (Table 8), the item "distressed by side effects" was the main reason given for noncompliance.

Table 7 – Rating of Medical Influences scale open questions (main reasons for noncompliance)

Main reason for noncompliance	n (%)
None	20 (40)
Inconvenience caused by side effects	18 (36)
Desire to be normal	5 (10)
Embarrassment or stigma associated with the treatment/medications	2 (4)
No perceived day-to-day benefit	1 (2)
Denial of the disease	1 (2)
No current need for medication	1 (2)
General opposition to the use of medications	1 (2)
Forgetfulness	1 (2)
TOTAL	50 (100)

Discussion

Compliance may be defined as to what degree the behavior of a person is in agreement with the counsel offered by the physician or health clinic professional.[27] For various reasons, it is a theme that is difficult to study. First, there are different ways to rate compliance, and there is little concordance among the different measurements.[7] Second, compliance is rarely an all-or-nothing proposition and may include omission errors, errors in dosage or administration of medications, as well as the influence of factors such as the use of medications that were not prescribed.[28]

In the psychiatric literature, demographic variables have not been consistently correlated with compliance in schizophrenia.[29-32] The severity of the disorder, however, has been found to correlate with such compliance,[33] which is understandable since patients presenting more severe psychopathology would be expected to be less compliant. Poor insight (in the sense of not believing that one is sick[34]) has also been correlated with noncompliance.[35] The perception of benefit and a subjective sensation of well-being seem to have been more consistently correlated with compliance.[36-37]

Comorbidity with alcohol abuse or abuse of other substances is a strong predictor of noncompliance.[38]

In one study, one-fourth to two-thirds of the patients who discontinued the use of antipsychotics reported side effects as the main reason for noncompliance.[39] Among outpatients, reporting side effects has been correlated with, or found to be predictive of, noncompliance.[25] In the literature, patients who use depot preparations present a lower rate of noncompliance than do those who use oral medications.[5]

Little or no correlation has been found between complexity of the administration of medication and compliance in schizophrenia.[9,25] Supervision of the intake of medications by family or friends seems to be correlated with higher rates of compliance.[37] Practical difficulties, such as financial inability to purchase the medicine or pay for transportation (homelessness, for example), may be important factors.[40]

Finally, the literature shows that, although the process of interaction between physicians and patients has yet to be fully investigated, a positive therapeutic alliance seems to be crucial for compliance. However, there are important methodological problems that make it difficult of draw conclusions regarding this issue.[41]

Table 8 – Rating of Medical Influences scale closed questions (reasons for noncompliance)

Reasons for noncompliance	Degree of influence (%) None	Mild	Strong
Inconvenience caused by side effects	39	22	39
Denial of the disease	60	26	14
No current need for medication	68	20	12
Embarrassment or stigma associated with the treatment/medications	72	18	10
No perceived day-to-day benefit	84	10	6
Opposition to the use of the medicines by family/friends	90	4	6
Difficulty in gaining access to treatment	92	4	4
General opposition to the use of medication	88	8	4
Financial obstacles	94	4	2
Substance abuse	94	4	2
Interference with life ideals	94	6	0
Health professional opposition to the use of medication	98	2	0
Negative relationship with the physician	100	0	0
Desire to be hospitalized	100	0	0

The rate of noncompliance found in our sample over a one-year period (48%) is in agreement with those found in the literature (approximately 50%[6,9,25]). The method used to rate compliance (written family report) has many limitations when compared to other methods such as pill counting, screening blood or urine for drugs, etc. However, Park & Lipman[42] showed that it is a reliable method for detecting gross errors in compliance. In addition, one must take into account the fact that any method used may lead to false perception of compliance (since patients may, for example, want to know the reason for such measures or modify their compliance when under study). Nevertheless, the length of follow-up assessment was prolonged, and different antipsychotics were used, which would have made it difficult to count pills or screen for medications. Although there are undoubtedly errors, this method seems to be the means of determining compliance that is most commonly used by physicians in their daily clinical practice.

The duration of treatment at the institution in question was also an important point. We found that patients who had been undergoing treatment for a longer length of time were more compliant. This difference might be seen as a consequence rather than as a cause since more compliant patients tend to stay longer at the institution. In addition, it is possible that the initial phase of treatment in a psychiatric institution can determine future compliance.

With regard to abuse of, or dependence on, drugs or alcohol or both, the results of the present study do not confirm the data in the literature. It was intriguing that there was no such report among the patients in the sample. We believe that this is due to a bias related to the patient belief that the medications should not be taken concomitantly with alcohol or other drugs and patients might be afraid of being "caught" by the assessor, who could tell their family or their physician about it. In addition, the use/abuse was not investigated in depth in the present study (using specific scales or analysis of blood and urine, for example). Another possible source of error may have been the greater number of women in the sample since women tend to present lower rates of such use/abuse.

An important point was the severity of the psychopathology among the compliant and noncompliant groups. We observed an initial worsening, which tended to remain constant during the follow-up period in the noncompliant group. This initial worsening may have been related to noncompliance, but this is difficult to analyze. In this case, as in the case of treatment duration at the institution, it is difficult to establish a causal direction since noncompliance naturally leads to a worsening of symptoms, and vice-versa.

The differences found between the institutions cannot be explained by the demographic characteristics since the group was demographically homogeneous. Longer treatment duration at the institution seems to have been the reason for greater compliance. However, this difference was observed only among compliant patients and not among noncompliant patients in follow-up treatment for the same (shorter) length of time at both institutions.

The ROMI scale did not accurately predict patient behavior toward compliance since there was a concordance in the responses given by both groups. It is unlikely that this failure was related to the use of an expanded version since the version used contains all of the items of the original scale.

The main motivation for compliance was the perception of a potential benefit in daily life. Patients need to feel better regarding something that disturbs them (e.g. sleep disturbance, anxiety, hearing voices, disorganized thoughts, etc). It is well known that improvement takes time, and patients must be aware of that.

The influence of the family manifested itself in the closed questions ("positive family belief" and "supervision").

Another interesting point is that there was a gradation of only 28%, with a strong degree of influence, in the positive relationship with the physician. In a more careful analysis, however, this item presented the lowest percentage of "no influence" responses (18%). In fact, the overall degree of influence was 82% ("mild" or "strong" influence). This item was considered somehow important for compliance.

It is intriguing to see that, on the open question, 40% of the patients stated that there was no excuse for noncompliance (Table 7), despite the fact that half of them would become noncompliant during the follow-up assessment. Fenton[7] drew attention to this dichotomy (a disjunction between belief and behavior, very likely to be found in schizophrenia).

On the open question, 36% of the patients reported that the side effects (especially anticholinergic and extrapyramidal) were the main reason for noncompliance. Taking into consideration the fact that approximately 40% denied having any reason for noncompliance, of those who had a reason, 60% said that the reason was the distress caused by side effects. The same was seen on the closed questions. We found a rate of 39% for "strong degree of influence" and 22% for "mild degree of influence".

Finally, two items appeared in the open questions and were not considered by the ROMI closed questions. The first was "a desire to be normal", which is different from "denial of the disease" or "lack of insight". The other was "forgetfulness", which, despite having been reported by only one patient, shows the importance of practical tips to help patients to remember to take the medications.[7]

Conclusions

In the present study, we found a high rate of noncompliance during the one-year follow-up of patients with schizophrenia. This has important consequences for the patients, for their families and for society.

Demographic variables were not found to be correlated with compliance in this study. The initiation of treatment at an institution seems to be the period in which the patient is most vulnerable to noncompliance. Therefore, it may be crucial to give special attention to compliance during this period.

We found the severity of the psychopathology to be greater in the noncompliant group. Although severity was not necessarily a cause for noncompliance, it may act in a bidirectional fashion (noncompliance causing worsening of symptoms and worsening leading to lower compliance).

In the present study, it was not possible to predict the behavior toward compliance using a scale at the beginning of the assessment period. This method was useful, however, for learning what patients think about the factors that influence their compliance. In their opinion, the factor that is most important for compliance is the perception of a day-to-day benefit, and the factor that is most important for noncompliance is the inconvenience caused by side effects.

Noncompliance has multiple causes, and the most important ones, alone or in combination, can and should be identified in the individual cases, thereby facilitating the prevention of such noncompliance.

In order to manage noncompliance, a broad understanding of the factors involved, including the patient, the disease, the

treatment and environmental factors, is required. Further studies should be carried out in our milieu in order to assess the possible inherent characteristics of treatment compliance in Brazilian patients.

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