

Evaluation of adherence to treatment by patients seen in a psychosocial care center in northeastern Brazil

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In the treatment of mental disorders, nonadherence to medication, the main cause of psychiatric morbidity, is observed in about 50% of the cases and is responsible for numerous losses. This study evaluated adherence to drug treatment by patients seen in a Psychosocial Care Center (CAPS) in northeastern Brazil. Adherence to treatment was evaluated using the Haynes-Sackett and Morisky-Green-Levine tests. All patients registered in the CAPS were included in the study (n= 101). Only 11.88% of the patients adhered to drug treatment. The main reasons not to use medication were: oblivion (68.83%), feeling unwell after taking the medication (54.22%), not having money to buy the medication (43.83%), not finding the medication in the public health service (39.94%) and fear of harm that might be caused by the drug (28.90%). Furthermore, 85.1% of the patients did not know their diseases, 88.1% did not know their treatment, 86.4% did not feel good when they took their medication, and 88.1% took their medication incorrectly. The results revealed that the lack of information about diseases and drugs used, the nuisance posed by drug therapy and the low access to medications reduce adherence to treatment and, consequently, treatment effectiveness.

Uniterms: Treatment adherence. Drug therapy/adherence to treatment. Mental health. Psychosocial Care Center.

No tratamento de desordens mentais, a não-adesão ao tratamento ocorre em cerca de 50% dos casos e é responsável por inúmeros prejuízos, além de ser a principal causa de morbidade psiquiátrica. O presente estudo objetivou avaliar a adesão ao tratamento medicamentoso de pacientes atendidos em um Centro de Atenção Psicossocial (CAPS) no Nordeste do Brasil. A avaliação da adesão ao tratamento foi feita através dos testes de Haynes-Sackett e Morisky-Green-Levine. Todos os pacientes cadastrados no CAPS foram incluídos no estudo (n = 101). Observou-se que apenas 11,88% dos pacientes aderiram ao tratamento medicamentoso. As principais razões para o não uso dos medicamentos foram: esquecimento (68,83%), sentir-se mal após a ingestão de medicamentos (54,22%), não ter dinheiro para comprar medicamentos (43,83%), não encontrar os medicamentos no serviço público de saúde (39,94%) e medo dos danos causados pelos medicamentos (28,90%). Além disso, observou-se que 85,1% dos pacientes não conheciam suas doenças, 88,1% não conheciam seus tratamentos, 86,4% não se sentiam bem quando usavam medicamentos e 88,1% usavam os medicamentos incorretamente. Os resultados demonstram que a falta de informação sobre doenças e medicamentos, os danos decorrentes da terapia medicamentosa e o baixo acesso aos medicamentos comprometem a adesão ao tratamento e, conseqüentemente, a eficácia do tratamento.

Unitermos: Adesão ao tratamento. Terapia medicamentosa/adesão ao tratamento. Saúde mental. Centro de Atenção Psicossocial.

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INTRODUCTION

Poor adherence to medications prescribed for chronic conditions has been cited as a global problem that may lead to increased morbidity and mortality (WHO, 2003; NEHI, 2009). It increases the costs within healthcare systems and contributes to substantial worsening of disease control and quality of life because patients who discontinue treatment are more likely to experience progression of their disability (Rio *et al.*, 2005). Furthermore, adherent patients have a better quality of life and less neuropsychological impairment (Devonshire *et al.*, 2011).

The World Health Organization (WHO) estimates an average rate of only 50% adherence for patients with chronic medical conditions (WHO, 2003), and some studies showed that more than 25% of all prescribed doses are not taken by patients (DiMatteo, 2004; Gimenes *et al.*, 2010). Poor adherence has also been implicated in unnecessary and costly procedures and hospitalizations (De Oliveira *et al.*, 2004).

Costs estimates of nonadherence in the US revealed an investment of more than \$100 billion per year, with \$30 billion in direct medical costs and \$70 billion in lost productivity, wages, and other economic losses (Sterz *et al.*, 2006).

The concept of adherence varies widely in the literature, but the term can be defined as the use of prescription drugs or other procedures at least 80% of the total observing time, dose and treatment time (Leite, Vasconcellos, 2003). Adherence to treatment refers to the extent to which patients accept and follow the recommendations made by physicians or other health professionals regarding the use of a particular therapy (Cramer *et al.*, 2008; Rosa *et al.*, 2006; Dewulf *et al.*, 2006; Santin, Cereser, Rosa, 2005).

The WHO defined adherence as “the extent to which a person’s behavior – taking medication, following a diet, and/or executing lifestyle changes - corresponds with agreed recommendations from a healthcare provider” (WHO, 2003).

Several models suggest that the primary factors in adherence to treatment are: state of illness, treatment regimen, patient’s relationship with health professionals, poor access to medications in the public service and high costs of medicines (Russel, 2010; Cánovas, Hernández, Esteban, 2001).

Nonadherence to treatment by patients with mental disorders, the main cause of psychiatric morbidity and rehospitalization, is observed in about 50% of cases and is responsible for numerous losses. More than 85% of these patients suffer the consequences of their behavior at some time in the course of their disease (Gray, Wykes, Gournay, 2002; O’Connor, 2006).

This study evaluated, in an unprecedented way in the state of Sergipe, the adherence to drug treatment by patients seen in a Psychosocial Care Center (CAPS) in northeastern Brazil.

MATERIAL AND METHODS

This study was conducted between August 2009 and May 2010 at the Psychosocial Care Center (CAPS) Valter Correia in the city of Sao Cristovao, Brazil. CAPS, a community-based mental health service in Brazil, aims to promote the psychosocial rehabilitation of patients.

Adherence to treatment was evaluated during interviews with patients (and/or their caregivers) by assessing the knowledge of patients (and/or their caregivers) about their medications and diseases and applying the Haynes Sackett and Morisky-Green-Levine tests. In addition, we evaluated the possible causes for nonadherence to treatment.

All patients registered in the CAPS (or their caregivers) were included in the study (n=101). The study was approved by the Ethics Committee of Federal University of Sergipe. The results were organized and analyzed statistically using the EPI-INFO 3.5.1 software.

We evaluated statistically significant differences ($p < 0.05$) in the correlations between adherence to drug treatment and the study parameters. Table I shows the parameters and their variables correlated with adherence to treatment.

RESULTS

During the study, CAPS Valter Correia had 101 patients. Most were men (58.4%), illiterate (51.5%) and without any monthly income (49.5%). The average age of patients was 42.2 years (SD = 12.0), and schizophrenia was the most frequent mental disorder (31.5%). The average number of medications by patient was 3.11 (SD=1.41), and the older group of patients (75-80 years) had the largest consumption of medications (5.50 drugs/patient).

The Haynes-Sackett and Morisky-Green-Levine tests revealed that only 11.88% of the patients adhered to drug treatment. The main reasons reported by patients (and/or their caregivers) for not using medications are shown in Figure 1.

Table II describes the behavior of patients seen at CAPS regarding their illnesses, health problems and drug use.

Table III shows the main types of discomfort reported by patients (and/or their caregivers) during the use of medications.

TABLE I - Parameters and variables correlated with adherence to treatment of patients seen at a Psychosocial Care Center (CAPS) in northeastern Brazil (August 2009 to May 2010)

Parameters	Variables
Sex	Female and Male
Regime	Intensive, Semi-intensive and Non-intensive
Age group	20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74 and 75-80 years
Income	No income, 1 minimum wage, 2 minimum wages and 3 minimum wages
Education	Illiterate, incomplete primary school, primary school, incomplete secondary school and secondary school
Benefit/pensions	Recipient and Non-recipient
Marital status	Single, Married, Divorced and Widowed
Number of disorders	1, 2, 3 and 4
Number of mental disorders	1, 2 and 3
Number of associated diseases	0, 1, 2 and 3
Number of medications	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 and 14
Number of psychotropic medications	0, 1, 2, 3, 4, 5 and 6
Number of non-psychotropic medications	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11
Nuisance posed by the use of medications	Much, Little and No
Knowledge about the disease	Yes and No
Knowledge about medications	Yes and No
Help received with treatment	Yes and No
Use of medications	Correct and Incorrect
Drug interactions	Yes and No
Difficulty in taking medications	Yes and No
Alcohol consumption	< 2 cups/week, > 6 cups/week, 2-6 cups/week, occasionally, did not consume and trying to stop
Smoking	< 1 pack/day, > 1 pack/day, did not smoke
Coffee consumption	< 2 cup/day, > 6 cups/day, 2-6 cups/day, occasionally, history of dependence, did not consume and trying to stop
Illicit drug consumption	> 6 times/week, 2-6 times/week, occasionally, history of dependence and did not consume
Consumption of tea	< 2 cups/day, > 2 cups/day, occasionally, did not consume

We observed statistically significant differences ($p < 0.05$) in the correlations between adherence to drug treatment and some parameters of this study, as shown in Table IV.

DISCUSSION

Mental disorders are socially relevant health problems because of their high incidence in populations of different countries and culturally distinct societies. It is estimated that the prevalence of mental disorders in the Brazilian population varies from 20% to 56%, af-

fecting mainly women and workers (Santos, Siqueira, 2010).

The Brazilian Mental Health Policy is essentially based on the Caracas Declaration (PAHO/WHO, 1991; Ministry of Health, 2005). Its four main points are described as follows: a) to guarantee civil rights for people with mental disorders according to the Principles for the Protection of Persons With Mental Illness and the Improvement of Mental Health Care; b) to decentralize psychiatric care; c) to protect patients under treatment in the existing hospitals; and d) to develop a diverse network to provide access and efficiency for those patients.

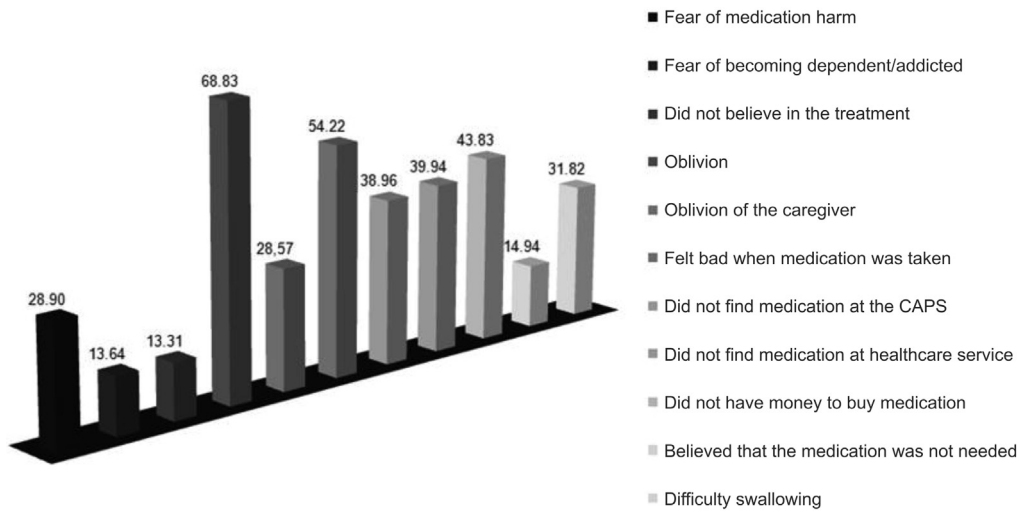


FIGURE 1 - Main reasons for not using medications reported by patients (and/or their caregivers) at a Psychosocial Care Center (CAPS) in northeastern Brazil (August 2009 to May 2010).

TABLE II - Behavior of patients seen at a Psychosocial Care Center (CAPS) in northeastern Brazil regarding their illnesses, health problems and drug use (August 2009 to May 2010)

Parameters	Variable	%
Do you know your disease(s)?	No	85.15
	Yes	14.85
Do you know your treatment?	No	88.17
	Yes	11.83
Did you receive help with treatment?	Yes	32.67
	No	67.33
Do you use the medication?	Sometimes	20.45
	No	25.97
	Yes	53.57
Do you use the medication properly?	No	88.12
	Yes	11.88
What is the dose used?	Below prescribed	40.91
	Above prescribed	14.94
	Prescribed	44.16
How did it feel when you used it?	Not well	86.36
	Well	11.04
	Great	2.60
Do you feel any discomfort?	A lot	69.16
	A little	20.45
	No	10.39

The Brazilian Ministry of Health supported the project for a Mental Health Law, which essentially proposes the progressive replacement of psychiatric beds with Com-

TABLE III - Main types of discomfort during the use of medications reported by patients (and/or their caregivers) at a Psychosocial Care Center (CAPS) in northeastern Brazil (August 2009 to May 2010)

Discomfort	Relative frequency (%)
Anxiety	63.37
Dry mouth	45.54
Difficulty concentrating	88.12
Decreased libido	23.76
Headache	68.32
Stomachache	57.43
Lack of appetite	30.69
Weight change	26.73
Nausea	70.30
Paresthesias	22.77
Memory loss	35.64
Drowsiness	84.16
Tremor	50.50
Dizziness	75.25

munity Social Psychiatric Centers, called Psychosocial Care Centers (CAPS) (Ministry of Health, 2004).

CAPS have become the cornerstone of the Brazilian Psychiatric Reform. These community services are responsible for treating severe mental disorders and articulating the liaison with primary care units to coordinate psychiatric care in a defined catchment area. The matrix of mental health care should be centralized at the CAPS level, where many actions should take place, such as su-

TABLE IV - Correlation with statistically significant differences ($p < 0.05$) between the study parameters and adherence to treatment of patients seen at a Psychosocial Care Center (CAPS) in northeastern Brazil (August 2009 to May 2010)

Parameters	Correlation with adherence to treatment
Regime	100% of intensive, 0% of semi-intensive and 0% of non-intensive patients adhered to treatment. Among patients who adhered, 100% were taking the intensive regime.
Income	20.4% of those who earned one, 100% of those who earned two, 100% of those who earned three minimum wages and 0% of those without income adhered to treatment. Among patients who adhered, 83.3% earned one, 8.3% earned two and 8.3% earned three minimum wages.
Education	0% of illiterate patients, 0% of those with an incomplete primary education, 0% of those with a complete primary education, 100% of those with an incomplete secondary education and 100% of those with a complete secondary education adhered to treatment. Among patients who adhered, 33.3% had an incomplete secondary education and 66.7% had a complete secondary education.
Benefits/pension	0% of those who received no benefit and 23.5% of those who received benefits adhered to treatment. Among patients who adhered, 100% received benefits.
Marital status	70.6% of married, 0% of divorced, 0% of unmarried and 0% of widowed patients adhered to treatment. Among patients who adhered to treatment, 100% were married.
Number of medications	100% of those who did not use drugs, 100% of those who used 1 drug, 11.1% of those who used 2 drugs and 0% of those who used more than 3 drugs adhered to treatment. Among patients who adhered, 8.3% did not use drugs, 66.7% used 1 drug and 25% used 2 drugs.
Number of psychotropic medications	100% of those who did not use drugs, 80% of those who used 1 drug, 8.8% of those who used 2 drugs and 0% of those who used more than 3 drugs adhered to treatment. Among patients who adhered to treatment, 8.3% did not use drugs, 66.7% used 1 drug and 25% used 2 drugs.
Nuisance posed by the use of drugs	0% of those who experienced a lot of nuisance, 0% of those who experienced a little nuisance and 100% of those without any nuisance adhered to treatment. Among patients who adhered, 100% did not experience any nuisance.
Knowledge about the disease	62.5% of those who knew the disease and 2.4% of those who did not know it adhered to treatment. Among patients who adhered, 83.3% knew the disease and 16.7% did not know it.
Knowledge about medications	100% of those who knew the medication and 0% of those who did not know the medication adhered to treatment. Among patients who adhered, 100% knew the medication.
Received help with treatment	27.3% of those who received help and 4.4% of those who did not receive any help adhered to treatment. Among patients who adhered, 75% received help and 25% did not receive any help.
Use of medications	91.7% of those who used the medications correctly and 1.1% of those used it incorrectly adhered to treatment. Among patients who adhered, 91.7% used it correctly and 8.3% used it incorrectly.
Difficulty in taking medication	100% of those who had no difficulty and 0% of those who had difficulty in taking medication adhered to treatment. Among patients who adhered, 100% had no difficulty in taking medication.
Alcohol consumption	15.8% of those who did not consume, 0% of those who consumed < 2 cups/week, 0% of those who consumed > 6 cups/week, 0% of those who consumed 2-6 cups/week, 0% of those who consumed it occasionally and 0% of those who were trying to stop drinking adhered to treatment. Among patients who adhered, 100% did not consume alcohol.
Smoking	19% of those who did not smoke, 0% of those who smoked < 1 pack/day and 0% of those who smoked > 1 pack/day adhered to treatment. Among patients who adhered, 100% did not smoke.
Consumption of tea	33.3% of those who did not consume tea, 0% of those who consumed < 2 cups/day, 0% of those who consumed > 2 cups/day and 0% of those who consumed it occasionally adhered to treatment. Among patients who adhered, 100% did not consume tea.

pervision and brief training of mental health workers and the involvement of families and patients to combat stigma. CAPS should also be the main center of referral for severe cases, averting in-ward admissions (psychiatric hospitals

or psychiatric wards in general hospitals) whenever possible. The purpose of CAPS is both to provide for the various needs of patients with serious mental disorders and to act in coordination with the primary care services to treat

those mental disorders that are most prevalent among the population (Mateus *et al.*, 2008).

Poor adherence to medication is growing and is recognized as a significant source of waste in the Brazilian health care system. Poor adherence often leads to preventable worsening of the disease, posing serious and unnecessary health risks, particularly for patients with chronic illnesses. Nonadherence to medication, found in about 50% of all cases, is responsible for numerous losses and the main cause of psychiatric morbidity and readmissions (O'Connor, 2006; Osterberg, Blaschke, 2005).

In addition, nonadherence alone has been shown to result in \$100 billion in excess hospitalizations each year. The NEHI estimates that nonadherence, together with suboptimal prescribing, drug administration and diagnosis, may result in as much as \$290 billion in avoidable medical spending per year, or 13 percent of the total health care expenditures (NEHI, 2009).

Our study found that only 11.88% of all patients adhered to drug treatment. The main reasons reported by patients (and/or their caregivers) for not using medications (Figure 1) were oblivion, feeling unwell after taking medications, low access to medications, difficulty swallowing, fear of harm that might be caused by drug and fear of dependence/addiction. These results are in agreement with findings reported in another study, which claimed that nonadherence to drug treatment for patients with mental disorders is determined by different factors (Kurita, Pimenta, 2004). In general, more expensive, time consuming, disruptive or complex treatment regimens lower the odds of adherence by the patient and interfere with the disease and, consequently, the patient's quality of life, which decreases the safety and effectiveness of pharmacotherapy (OPAS, OMS, 2001; Freitas, Maia, Iodes, 2006).

Only a minority of people with mental disorders worldwide consult a physician (Andrews *et al.*, 2000; Kapczinski *et al.*, 2001). Although there is evidence from industrialized countries that not all people with mental disorders receive adequate treatment, health systems in developing countries are often not able to provide even the most essential mental health care (Andrews *et al.*, 2000).

Emotional and cognitive issues may also be important; patients with decreased memory function, or increased levels of anxiety or fatigue, have lower levels of adherence; patients with a current mood or anxiety disorder were almost five times more likely to be nonadherent (Bruce *et al.*, 2010).

Furthermore, we observed (Table II) that 85.15% of the patients did not know their diseases, 88.17% did not know their treatments, 67.33% did not receive help with

the treatment, 86.36% did not feel good when using their medications and 88.12% used the medications incorrectly. These results suggest that the lack of information compromises adherence and treatment effectiveness (Cipolle, Strand, Morley, 2000), whereas the active participation of the user and/or caregiver and their responsibility for the treatment are vital to the success of drug therapy (Rathod *et al.*, 2008; Miklowitz *et al.*, 2003).

The main types of discomfort reported by patients (and/or their caregivers) during the use of medications (Table III) were: difficulty concentrating, drowsiness, dizziness, nausea, headache, anxiety, stomachache, tremor and dry mouth. These results were similar to those reported in other studies, which demonstrated the relationship between the process of using drugs and the morbidity and mortality associated with drugs that may trigger adverse reactions. In those studies, problems such as adverse reactions, noncompliance, overdose and inadequate therapy lead to treatment failure, and, if not detected and resolved, may lead to death (Hafner *et al.*, 2002; Lara, Abreu, 2000; Hepler, Strand, 1999; Spina *et al.*, 2008).

The behavior of nonadherence is a complex and universal phenomenon. In the course of psychiatric treatment, noncompliance develops gradually and is related to disease aggravation (Davis, Chen, 2003; Bechelli, 2003).

We observed statistically significant differences ($p < 0.05$) in the correlations between adherence to drug treatment and the following parameters (Table IV): regime, income, education, benefit/pension, marital status, number of medications, number of medications prescribed by the CAPS doctor, nuisance posed by the use of medications, knowledge about the disease, knowledge about medications, help received with treatment, use of medications, difficulty in taking medications, alcohol consumption, smoking and consumption of tea. These results are supported by key factors that affect patient adherence according to the WHO (2003). Briefly, they are:

- Social and Economic Factors, including socioeconomic status, degree of literacy/education, employment/non-employment, social support networks, distance from treatment centers, cost of transportation, cost of medication, culture and beliefs about illness and treatment and family function/dysfunction, which are some of the key elements falling within this category.

- Healthcare Team and System-Related Factors, including the provider-patient relationship. Poorly developed health services with inadequate reimbursement, poor medication distribution systems, lack of knowledge/training about managing chronic disease for healthcare providers, all impact adherence negatively.

- Condition Related Factors reflect various illness-

related factors faced by the patient, including severity of symptoms, level of disability, comorbidities, and physical and psychological effects of the illness.

- Therapy Related Factors, including complexity of the medication regime, duration of treatment, side effects, previous treatment successes/failures, and immediacy and visibility of beneficial effects.

- Patient Related Factors, covering such areas as patient's knowledge and beliefs about their illness, perceptions of personal need for the medication/treatment, anxieties/stress about possible side effects, expectations regarding the outcome of treatment and the patient's cost/benefit analysis of adhering to the regimen.

To be truly successful, an adherence program must operate on all these levels identified by the WHO, and be a cooperative effort between the patient, healthcare providers, Government and industry.

CONCLUSION

The results of this study revealed that nonadherence to treatment by patients with mental disorders is a serious and persistent problem correlated with lack of information about diseases and drugs used, nuisance posed by drug therapy, low access to medications, poor monitoring by health service, poor education, large number of medications used, alcohol consumption, smoking and consumption of tea.

Cost-effective strategies to promote adherence, maximize the benefits and minimize the risks to patients should be identified and associated with the different factors that affect patient adherence.

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CONFLICT OF INTERESTS

Authors report no conflicts of interest. Authors alone are responsible for the content and writing of this paper.

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