ORIGINAL ARTICLE

Assessment of adherence to psychotropic medications among out-patients at the Pharmacy Department of a Psychiatric Hospital, in Benin City, Nigeria

Hillary O. Odo, Sunday O. Olotu[1], Imafidon O. Agbonile[1], Peter O. Esan, Jeffrey S. Soni[2], Bawo O. James[1]

Departments of Pharmacy and [1]Clinical Services, Federal Neuropsychiatric Hospital, [2]Department of Clinical Pharmacy and Pharmacy Practice, University of Benin, Benin, Edo, Nigeria

Patient adherence to medication regimens determines the success of the illness remission. Poor-adherence among patients diagnosed with psychiatric illnesses is associated with poor clinical outcomes and high economic and human resource utilization. The aim was to evaluate the level of patients' adherence to psychotropic drugs and also to explore factors associated with poor medication adherence. A cross-sectional questionnaire survey of 200 ($n = 200$) conveniently sampled patients in an out-patient pharmacy setting using a sociodemographic questionnaire and the eight-item Morisky medication adherence scale. Descriptive and inferential statistics were used to summarize and test for associations in the variables. Adherence varied from poor-adherence (55.5%) through moderate (36%) to high adherence (8.5%) among participants. No significant associations were observed between poor medication adherence and the socio-demographic characteristics of patients. More than half of the psychiatric out-patients were poorly adherent to prescribed medications. Strategies to improve adherence are crucial in psychiatric care.

Key words: *Medication adherence, out-patients, pharmacy, psychiatry, psychotropic*

INTRODUCTION

Historically, monitoring medication adherence has been vital to successful treatment outcomes.[1] In recent years, it has become a major source of concern to healthcare professionals who treat psychiatric disorders.[2,26] Adherence to medication regimens has been defined as the extent to which patients take medications as prescribed by their healthcare providers.[1] It includes information on dose-taking as well as the timing of doses.

Poor-adherence to medications, on the other hand, is the degree to which the patient fails to carry out the clinical recommendations of a treating physician.[3] Poor-adherence to treatment is a significant challenge in all patient categories, affecting children[4] as well as the elderly.[5] Adherence rates are generally higher among patients with acute conditions, as against those with chronic ailments[6] (including psychiatric disorders) and tend to worsen the longer a patient continues on drug therapy.[7]

Estimates from the World Health organization indicate that only about 50% of patients with chronic diseases living in developed countries follow recommended treatment.[27] In psychiatry, poor medication adherence rates reported for patients with psychosis ranged from 10% to 76% while those treated for depression ranged between 10% and 60%.[2] Some patients will never start their medications or will even stop therapy completely within the first 12 months, and only a minority will continue taking drugs as advised.[5] A review of the literature on medication adherence found no differences in adherence rates between population with physical ailments compared to those with psychiatric disorders.[5]

Address for correspondence:
Hillary O. Odo,
Senior Pharmacist, Department of Pharmacy, Federal Neuropsychiatric Hospital, P.M.B 1108, Benin City, Edo State, Nigeria.
E-mail: hilaryonyenkem@yahoo.com

Access this article online

Quick Response Code:

Website: www.asiapharmaceutics.info

DOI: 10.4103/0973-8398.143925

Because earlier studies[8] show that the impact of the type of psychiatric condition of the patients on adherence is insignificant, this study was carried out across all categories of psychiatric patients.

Studies on patients' adherence to psychotropic drugs in Nigeria show that co-morbidity, medication side effects, forgetfulness, high cost of medications, inability of practitioners to explain timing, and dose or benefits of medications and educational status of the patients were factors associated with poor or nonadherence.[8-12] Furthermore, findings from a recent study from Benin City, Nigeria concluded that higher frequency of medication dosing, illness severity, and stigma were predictors of poor medication adherence among the psychiatric patients.[13]

This study sought to determine the prevalence and socio-demographic factors associated with poor medication adherence among individuals with mental illnesses while they received medication counseling in the Pharmacy Department of the Regional Psychiatric Hospital in Benin City, Nigeria. A more reliable and structured adherence measure compared with that used in previous local studies[13] was used to determine the pattern of medication adherence behavior.

SUBJECTS AND METHODS

Study design

The study design was cross-sectional.

Study site

This study was conducted at a regional tertiary psychiatric facility in south-south Nigeria. The hospital has a 220-bed capacity and serves a catchment area of about 13 million[14] people.

Participants

The patients who participated in this study were adults aged 18 years and above who have been diagnosed with any of the psychiatric disorders in accordance with the International classification of diseases 10th revision by a psychiatrist. The participants recruited in this study included those who have been receiving treatment for at least 6 months prior to the commencement of the study, were mentally stable, able to understand, and follow the nature of the study at the time of data collection and gave consent.

Ethical approval

The Ethics Committee of the hospital reviewed and approved the study protocol.

Sample size determination

The study was conducted between Thursday 1st and Friday 30th November, 2012. A total number of 2100 out-patients was seen within this study period. Out of this number, 650 patients met the inclusion criteria, while a convenience sample of 200 was randomly selected using a simple ballot each clinic day.

Data collection process

Patients' adherence to psychotherapeutic drugs was assessed using a socio-demographic questionnaire as well as the Morisky's medication adherence scale (MMAS),[15] which was administered to a convenience sample of 200 out-patients. The questionnaire was divided into two sections. The first section sought to obtain information about the patients' demographic characteristics; age, state of residence, employment status, the highest level of education, marital status, having a caregiver, and history of co-morbidity.

The second section comprised the eight-item MMAS-8 which is a reliable and validated eight-item self-reported measure of medication use behavior.[11,15] Each item on the scale measures a specific medication-taking habit.[15] Each question on the MMAS requires only a "yes or no" answer. The patients were asked about their extent and tendency to forget to take their medications. They were also asked if they discontinue their medication upon feeling better or worse. It also included the patients' beliefs on whether their treatment plans were seen as an inconvenience or not. Due to the likelihood of patients giving a false-positive answer, the questions on the MMAS were appropriately worded in a particular manner to prevent this from happening. Answers were awarded scores of 0 and 1, with 1 corresponding to positive answers. The scores obtained were summed up to give the overall level of medication adherence. The MMAS scores range from 0 to 8 and have been divided into three levels to classify the level of medication adherence:[8] MMAS score of 8 indicates high adherence, 5-7 indicate moderate adherence, while MMAS score of ≤ 4 shows poor medication adherence. The MMAS-8 was tested for face validity by a consultant psychiatrist and a cardiologist. It also was well understood by a pilot group of 10 patients who were excluded from the study. It also had a good test-retest reliability following re-administration 2 weeks apart.

Data analysis

The data collected were stored in an Excel 2007 database and later imported into Statistical Package for Social Sciences (SPSS) V 17.0 (Chicago, IL, USA) software for analysis. Results were summarized using descriptive statistics and the Chi-squared test was used to examine associations between socio-demographic characteristics and poor medication adherence. Significance was calculated at $P < 0.05$.

RESULTS

Sociodemographic characteristics

Out of the 200 patients who participated in this study, just over a third (35% [70/200]) was between the ages of 21 and 30 years. Over half (51% [102/200]) were males, and a third were self-employed; 34% (68/200) and 27.5% (55/200)

unemployed. Over half 60.5% (121/200) were single, 38.5% (77/200) had children, while the remainder did not have. 47.5% (95/200) had a secondary education, with most 76.5% (153/200) residing in Edo state, and 78% (256/200) had a caregiver at home while 17% (34/200) of the patients had co-morbidity as shown on Table 1.

Table 1: Patients' sociodemographic characteristics

Variables	Patients (*n*=200)	Percentage
Age group		
18-20	6	3.0
21-30	70	35.0
31-40	64	32.0
41-50	31	15.5
>51	29	14.5
Gender		
Female	98	49.0
Male	102	51.0
Occupation		
Employed	119	59.5
Student	26	13.0
Not employed	55	27.5
Marital status		
Single	121	60.5
Married	60	30.0
Separated/widowed	19	9.5
Education		
No formal education	10	5.0
Primary	52	26.0
Secondary	95	47.5
Tertiary	43	21.5
State of residence		
Within Edo state	153	76.5
Outside Edo state	47	23.5
Care giver		
Yes	156	78.0
No	44	22.0
Co morbidity?		
Yes	34	17.0
No	166	83.0

Medication treatment compliance behavior

Over half, 61.5% (123/200) of the participants reported that they took their medication the day before the interview, while 38.5% (77/200) of the participants did not. Moreover, 64% (128/200) stated that they have never cut back nor stopped taking their medication upon feeling that their condition has worsened or improved. 52% (104/200) of the respondents stated that they never forget to take along their medication when they leave home or travel as shown on the table. The 7th item on the Morisky adherence scale had the highest percentage positive endorsement; 78%, mean (standard deviation [SD]), 0.7 (0.415), while scale 4 had the least positive endorsement (52%) with a mean (SD) of 0.52 (0.501) as shown in Table 2.

Over half, 55.5% (111/200) were identified to have a low level of adherence, 36% (72/200) had moderate adherence, while only 8.5% (17/200) had good adherence level to their prescribed medications. To identify associations between poor-adherence and sociodemographic characteristics, we grouped moderate and good adherents into one and compared with poor adherents. There were no significant associations with age ($P = 0.74$), gender ($P = 0.50$) employment status ($P = 0.09$), having children ($P = 0.97$), having a caregiver ($P = 0.60$), marital status ($P = 0.87$), duration of formal education ($P = 0.72$), or a co-morbidity ($P = 0.99$) as shown on Table 3.

DISCUSSION

This study finds that over half of patients attending a psychiatry out-patient clinic were poorly adherent to their medications. The use of a more reliable and validated tool (MMAS-8)[15] to assess adherence provides strength to the validity of the results. The lack of an association between socio-demographic and clinical characteristics with poor-adherence may have been limited by the sampling method and the sample size, which limited the study power. This study thus, provides more evidence of the magnitude of medication nonadherence and indicates that multi-disciplinary efforts are needed to reduce poor-adherence to medication rates. Poor or nonadherence to medication regimens has several implications for health care delivery. It may reveal a variance in patient and physician goals and priorities with regards to treatment and its schedule.[16] Patients who adhere poorly to medications are often more severely ill at the point of readmission to hospital, are prone to more frequent readmissions, are more likely to be admitted forcefully, and have prolonged inpatient stays.[17] It has been shown that increasing the effectiveness of adherence interventions has a greater impact on the health of the population than any improvement in specific medical therapy.[18] Therefore, information regarding factors influencing optimal drug utilization is vital.[6] General and periodic assessment of medication adherence of patients leads to a better understanding of reasons for poor-adherence in psychiatric patients and lays the groundwork for interventions aimed at increasing adherence.[15]

Level of patient adherence to medications

Over half of the patients in this study demonstrated poor-adherence. These results do not differ from previous studies which found high levels (between 50% and 60%) of nonadherence.[19-21] In addition, our findings are comparable to that obtained from a study in South Africa, which found 50.6% of patients with moderate adherence and 12.6% with high adherence level.[7] When compared with local studies, the adherence rate in this study is much lower than the over 50% medication adherence identified in a study by Adelufosi *et al*.[29] and about twice lower than that reported

Table 2: Frequency distribution for participants for questions on the MMAS-8

Morisky questions	*n* (%)		Mean±SD
	Adherence	Nonadherence	
Do you sometimes forget to take your medication?	118 (59)	82 (41)	0.59±0.493
Over the past two weeks, were there any days when you did not take your medicine?	116 (58)	84 (42)	0.58±0.495
Have you ever cut back or stopped taking your medication without telling your doctor because you felt worse when you took it?	128 (64)	72 (36)	0.64±0.481
When you travel or leave home, do you sometimes forget to bring along your medications?	104 (52)	96 (48)	0.52±0.501
Did you take your medicines yesterday?	123 (61.5)	77 (38.5)	0.62±0.488
When you feel like your illness is under control, do you sometimes stop taking your medicine?	127 (63.5)	73 (36.5)	0.64±0.483
Do you ever feel hassled about sticking to your treatment plan?	156 (78)	44 (22)	0.78±0.415
How often do you have difficulty remembering to take all your medications	106 (53)	94 (47)	0.53±0.500

SD: Standard deviation, MMAS: Morisky medication adherence scale

Table 3: Comparisons of patients' demographic characteristics with poor medication adherence

Patient demographics	Poor adherence	Moderate/ good adherence	Statistics
Employment status			
Employed	96	23	χ^2=2.845
Unemployed	57	24	*P*=0.09
Gender			
Male	76	26	χ^2=0.459
Female	77	21	*P*=0.50
Have children?			
No	94	29	χ^2=0.001
Yes	59	18	*P*=0.974
Age (years)			
≤40	108	32	χ^2=0.107
>40	45	15	*P*=0.74
Caregiver?			
No	35	9	χ^2=0.291
Yes	118	38	*P*=0.60
Co-morbidity?			
No	127	39	χ^2=0.01
Yes	26	8	*P*=0.99
Marital status			
Single	92	29	χ^2=0.037
Married	61	18	*P*=0.87
Education (years)			
≤12	121	36	χ^2=0.132
>12	32	11	*P*=0.72

by Adewuya *et al*.[28] from a study in southwest Nigeria. The difference in rates may be attributable to the difference in the psychometric properties of the MMAS-8 which is more reliable compared to the MMAS-4[15] which was used in previous studies in Nigeria.

Effects of the patient variables on adherence

The impact of socio-demographic variables such as employment status, having caregiver, age, gender, occupation, educational status, residential status, marital status, and co-morbidity on adherence were insignificant. This corroborates the findings in a study conducted in an out-patient psychiatric setting in Durban, South Africa by Sanele *et al*.[8] However, a large number of participants (78% [156/200]) reported that they had caregivers. Although availability or otherwise of caregivers did not prove to be significantly associated with adherence in this study, it is important to note that the degree of support provided by caregivers correlates with a perceived improvement in the prognosis of mental illnesses.[8] Earlier studies have identified social support as one factor that is consistently associated with out-patient medication adherence.[22] The support provided by caregivers reinforces medication usage, while higher medication usage elicits supportive behaviors from caregivers and hence leading to what is known as therapeutic chain of events.[22] The lack of a significant relationship between caregiver support and medication adherence may be attributable to some factors; first, the belief systems of the caregivers may limit their willingness to encourage continuous medication use. Many lay persons in this environment attribute mental illness to magico-religious factors and are more willing to encourage the use of recommended treatments by spiritual healers which may conflict with orthodox therapy.[13] Second, caregivers may not live with the patients. They may only assist with hospital visits and payments for medicines and thus do not directly oversee medication adherence. We, however, did not determine caregiver relationships which may affect the ability to supervise or encourage medication-taking. For example, a parent may be more persuasive compared to a niece. Perhaps in future reports, this apparent lack of association may be corrected using operational criteria for who a caregiver is.

Forgetfulness is one of the principal factors affecting adherence in the setting studied. As illustrated in Table 2, about 43.3% (87/200) of the participants had one form of forgetfulness or the other according to the MMAS. This supports the earlier studies which have related non adherence to forgetfulness.[8-12,23] Furthermore, 36% (72/200) of the

patients reported to have stopped taking their medication upon experiencing side-effects. This finding is in line with previous research which quoted side-effects as a major barrier to adherence.[24,25]

Limitations of the study

The adherence questionnaire was only served to patients who either understood English or Bini language. Hence, the result of this study might not apply to those patients who only speak their native languages. Again, the study was conducted in one institution, therefore; the results may not be generalizable to out-patients in other psychiatric settings in the country.

CONCLUSION

This study found that many of the psychiatric out-patients have low adherence level to their prescribed medications and that medication adherence in the study site is not influenced by socio-demographic factors. Forgetfulness and side-effects were the major predictors of nonadherence in this study. Therefore, efforts should be made especially during patient medication counseling to ensure that patients remember to adhere to their medication treatment plan by the use of reminders and also by associating each patient's daily activities with medication-taking.

ACKNOWLEDGMENT

This study was self-funded.

REFERENCES

1. Osterberg L, Blaschke T. Adherence to medication. N Engl J Med 2005;353:487-97.
2. Cramer JA, Rosenheck R. Compliance with medication regimens for mental and physical disorders. Psychiatr Serv 1998;49:196-201.
3. Kaplan HI, Sadock BJ. Kaplan and Saddock's Synopsis of Psychiatry. 8th ed. Baltimore: Lippincott Williams and Wilkins; 1998. p. 940-1.
4. Matsui DM. Drug compliance in pediatrics. Clinical and research issues. Pediatr Clin North Am 1997;44:1-14.
5. Spagnoli A, Ostino G, Borga AD, D'Ambrosio R, Maggiorotti P, Todisco E, *et al.* Drug compliance and unreported drugs in the elderly. J Am Geriatr Soc 1989;37:619-24.
6. Haynes RB, McDonald HP, Garg AX. Helping patients follow prescribed treatment: Clinical applications. JAMA 2002;288:2880-3.
7. Morris LS, Schulz RM. Patient compliance - An overview. J Clin Pharm Ther 1992;17:283-95.
8. Sanele M, Thandinceba M, Suyabonga N, Farzana NM, Londeka N, Justine P, *et al*. Medication adherence of psychiatric patients in an out-patient setting. Afr J Pharm Pharmacol 2012;6:608-12.
9. Taj F, Tanwir M, Aly Z, Khowajah AA, Tariq A, Syed FK, *et al*. Factors associated with non-adherence among psychiatric patients at a tertiary care hospital, Karachi, Pakistan: A questionnaire based cross-sectional study. J Pak Med Assoc 2008;58:432-6.
10. Ishedjan M, Einarson TR, Mackeigh LD, Shear N, Addis A, Mittmann N. Relationship between daily dose frequency and adherence to antihypertensive pharmacotherapy: Evidence from meta-analysis. Clin Ther 2004;24:302-6.
11. Morisky DE, Green LW, Levine DM. Concurrent and predictive validity of a self-reported measure of medication adherence. Med Care 1986;24:67-74.
12. Okoh A. An assessment of rational drug use in public tertiary hospitals in Edo. Available from: http://www.glif12.org/. [Last accessed on 2010 Aug 10].
13. James BO, Omoaregba JO. Prevalence and predictors of poor medication adherence among out-patients at a psychiatric hospital in Benin City, Nigeria. Int J Psychiatry Clin Pract 2011;15:27-34.
14. Agbonile IO, Famuyiwa O. Psychiatric drug prescribing in a Nigerian psychiatric hospital. Int Psychiatry 2009;6:96-7.
15. Morisky DE, Ang A, Krousel-Wood M, Ward HJ. Predictive validity of a medication adherence measure in an outpatient setting. J Clin Hypertens (Greenwich) 2008;10:348-54.
16. Weiden PJ, Shaw E, Mann J. Causes of neuroleptic non-compliance. Psychiatr Ann 1986;16:571-5.
17. Soumitra RP, Carol P. Psychotropic drug treatments. ABC Ment Health 1998;71:11-19.
18. Haynes RB, McDonald H, Garg AX, Montague P. Interventions for helping patients to follow prescriptions for medications. Cochrane Database Syst Rev 2002;2:CD000011.
19. Cardoso L, Galera SA. Mental patients and their profile of compliance with psychopharmacological treatment. Rev Esc Enferm USP 2009;43:161-7.
20. Rosa MA, Elkis H. Joined in schizophrenia. Rev Psiquiatr Clin 2007;34:189-92.
21. Nicolino PS, Vedana KG, Miasso AI, Cardoso L, Galera SA. Schizophrenia: Adherence to treatment and beliefs about the disorder and the drug treatment. Rev Esc Enferm USP 2011;45:708-15.
22. Fenton WS, Blyler CR, Heinssen RK. Determinants of medication compliance in schizophrenia: Empirical and clinical findings. Schizophr Bull 1997;23:637-51.
23. Zaghloul SS, Cunliffe WJ, Goodfield MJ. Objective assessment of compliance with treatments in acne. Br J Dermatol 2005;152:1015-21.
24. Ngoh LN. Health literacy: A barrier to pharmacist-patient communication and medication adherence. J Am Pharm Assoc (2003) 2009;49:e132-46;147.
25. Elliott RA, Marriott JL. Standardised assessment of patients' capacity to manage medications: A systematic review of published instruments. BMC Geriatr 2009;9:27.
26. Kyngäs H, Duffy ME, Kroll T. Conceptual analysis of compliance. J Clin Nurs 2000;9:5-12.
27. World Health Organization. Adherence to Long-Term Therapies: Evidence for Action Geneva: WHO; 2003. Available from: http://www.who.int/chp/knowledge/publications/ac. [Last accessed on 2013 Feb 12].
28. Adewuya AO, Owoeye OA, Erinfolami AR, Coker AO, Ogun OC, Okewole AO, *et al*. Prevalence and correlates of poor medication adherence amongst psychiatric outpatients in southwestern Nigeria. Gen Hosp Psychiatry 2009;31:167-74.
29. Adelufosi AO, Adebowale TO, Abayomi O, Mosanya JT. Medication adherence and quality of life among Nigerian outpatients with schizophrenia. Gen Hosp Psychiatry 2012;34:72-9.

How to cite this article: Odo HO, Olotu SO, Agbonile IO, Esan PO, Soni JS, James BO. Assessment of adherence to psychotropic medications among out-patients at the Pharmacy Department of a Psychiatric Hospital, in Benin City, Nigeria. Asian J Pharm 2014;8:211-5.

Source of Support: Study was self-funded. **Conflict of Interest:** None declared.