

Medication adherence in Schizophrenia and type 2 Diabetes Mellitus: A Comparative Analysis of Prevalence and Correlates of Medication Non-Adherence in Uyo, Nigeria

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ABSTRACT

Non-adherence to prescribed medications in chronic illness requiring long term treatment remains one of the most important modifiable risk factors for suboptimal treatment outcomes in healthcare delivery services worldwide. This study was conducted to assess treatment non-adherence and its correlates in subjects with schizophrenia and diabetes mellitus. This was a cross-sectional study conducted on a sample of one hundred and twenty three out-patients diagnosed with schizophrenia and diabetes mellitus respectively. They were assessed for treatment adherence and attitude to medications using self report questionnaires. Multivariate analysis was used to determine significant predictor variables associated with suboptimal treatment adherence. The mean age of participant was 36.02±11.8 for schizophrenia and 59.68±11.3 for diabetes mellitus. Subjects with diabetes (70.7%) were comparatively more likely to comply with medications compared to subjects with schizophrenia (52.8%) (p= 0.04). Adherence to treatment was significantly associated in all study groups with treatment supervision (p= 0.01) and attitude to medication (p= 0.01). Suboptimal treatment adherence among patients on long-term medication is common but appears to be greater among the mentally ill compared to the physically ill. There is need to improve adherence through strategic interventions targeting both patients and caregivers.

Keywords: Medication adherence, schizophrenia, diabetes mellitus, attitude to medication

INTRODUCTION

Non adherence to medical treatment is a critical issue affecting healthcare provision in many medical disciplines. It has been estimated that 20-50% of any patient population is at least partially non-adherent and that in patients with schizophrenia and related psychotic disorders rates can run as high as 70-80%¹.

Optimal treatment outcomes require both efficacious treatment and adherence to those treatments. Across diseases, medication adherence is the single most important modifiable factor that compromises treatment outcome. The World Health Organization (WHO) defines adherence as “the extent to which a person's behaviour e.g taking medication, following a diet and/or executing life style changes, corresponds with agreed recommendations from a health care provider”^{2,3}. It includes data on dose taken (taking the prescribed number of pills each day) and the timing of doses (taking pills within prescribed period), failure to enter a treatment programme and premature termination of therapy.

Factors influencing treatment adherence are medication factors, patient factors and factors depending on the therapeutic relation with the clinician.⁴ Adherence rates are typically higher among patients with acute conditions compared with chronic conditions irrespective of whether the disease is a mental or physical disorder. This trend worsens with long duration of medication intake⁵.

Non adherence to antipsychotics agents range from 20% to 89% with an average of approximately 50% being reported in the literature^{6,7}. About 30% of all patients with psychiatric disorders discontinue their medication in the first month and 44% discontinue it within the first 3 months of initiation of treatment². The recent CATIE (Clinical Antipsychotic Trials of Intervention Effectiveness) study reported that patients on antipsychotics discontinue their assigned treatment because of inefficacy and intolerable side-effects of medication. In total, 74% of the 1 493 schizophrenia patients recruited discontinued their assigned study medication within 18 months of initiation of treatment⁸.

The adverse effect burden has been cited as an important reason for poor attitude towards antipsychotic medications in the mentally ill⁹ as well as lack of insight^{10,11,12} Cramer JA et al reported that patients with psychiatric disorders

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show greater degree of medication non-adherence compared to those with physical disorder. It also reported that patients with non psychiatric physical disorders like diabetes mellitus, show non-adherence range from 20% to 75%¹³.

Diabetes mellitus runs a chronic course just like schizophrenia. It is a chronic metabolic disease in which there is deficiency of insulin or a diminished response to it. Patient's failure to adhere to treatment regimen may lead to elevated blood glucose and complications of diabetes mellitus over time¹⁴.

Many of the studies aimed at identifying risk factors for treatment non adherence in chronic disease were conducted in western cultures leaving a gap in knowledge as to which risk factors may be implicated in a resource poor setting like Nigeria.

This study was done to assess the prevalence and correlates of poor medication adherence in schizophrenia and compares same with diabetes mellitus in a developing country like Nigeria.

MATERIALS AND METHODS

This was a hospital based cross sectional study conducted at the mental health department and the endocrinology unit of University of Uyo Teaching Hospital.

Participants

The sample size was computed using a public domain software available on-line (www.statpages.org)¹⁵. It is a statistical software for calculating sample size when comparing two groups. Using a prevalence of 52% reported by Adewuya *et al.*¹⁶ for schizophrenia and 71% reported by Joan *et al.*¹⁷ for diabetes mellitus for calculation of sample size, a minimum sample size of 224 was computed but 266 participants were recruited.

A subject was enrolled if the following eligibility criteria were met: a diagnosis of schizophrenia or diabetes mellitus, having an illness duration of one year prior to commencement of the study, six months duration of oral medication intake before the commencement of study, adults above the age of 18 years, and granting consent to participate in the study. The main exclusion criteria were patients being too ill to answer questions or having current florid psychopathology capable of impairing response and those who are unwilling to participate in clinical interview. The Mini

International Neuropsychiatric Interview (MINI) English Version 5.0.0¹⁸ was further used to confirm the diagnosis of schizophrenia in the participants. For diabetes mellitus, individuals included in this study were participants diagnosed with type 2 diabetes at least one year previously and were on treatment with oral hypoglycaemic agents at least for six months. Those on insulin therapy were not included.

A systematic random selection of the patients who met the inclusion criteria, based on their case file numbers were made, giving a total of two hundred and forty-six participants consisting of one hundred and twenty three participants each of schizophrenia and diabetes mellitus respectively.

Procedure

Written informed consents were obtained from the participants after explaining the aims and objectives of the study. All the questionnaires used in this study were translated into Ibibio language separately by two bilingual translators. The two versions were combined and revised and then back translated into English by another bilingual translator. The translation was refined after back translation until agreement was obtained among the four people involved in the translations. Data collection was done through a structured interviewer administered questionnaire in English or Ibibio language depending on correspondent language fluency.

Measures evaluated included socio-demographic details (age, gender, years of formal education, marital status, and employment status). Living situation was also assessed as living independently, living with family members, or being homeless. The degree of available medication supervision was assessed as either independently responsible for the administration of his/her medication or all aspects of medication were managed by a third party.

Non-adherence was assessed using patients self report of adherence with medications on a daily basis in the one week preceding the interview. They were asked to recall if they missed any doses of medication on day by day bases over a period of one week. A review of patient's medical records yielded information on the doses actually prescribed. Adherence was calculated as a percentage of doses taken over the total number of doses

prescribed.

Attitude to medication was also measured as a discreet variable using a questionnaire that consisted of ten questions that were designed to assess different aspects of attitude to medication that affect adherence to medication (side effects, beliefs about damage, wellbeing/discomfort, doctor-patient relationship). Each question of the attitude scale was rated on a five point (1-5) likert scale of agreement, ranging from “strongly disagree” to “strongly agree”. To classify attitude, answers to the questionnaire are added and divided by the number of items. A result of 4 or 5 was classified as a positive attitude and a result of 1 to 3 was classified as a negative attitude¹⁹

Statistical analysis

Descriptive statistics such as frequencies, median, mean and standard deviation were computed for socio-demographic, clinical characteristics and other variables of the participants. Inferential statistics such as chi-square was used to determine the relationship between outcome and independent variables. Binary logistic regression was then conducted to determine the independent predictors of non-adherence among the subjects. Significance was computed at $p < 0.05$.

RESULTS

Socio-demographic and clinical characteristics of all subjects

Two hundred and forty sixty subjects, i.e one hundred and twenty three each for subjects with schizophrenia and diabetes mellitus respectively, were interviewed for this study. The mean age of the subjects with Schizophrenia was 36.02 ± 11.8 years (range 20-60 years). More than half of them were females (55.3%). Majority of the participants (79.3%) were never married and about 98.4% of them had formal education to at least primary school level while 59.3% of them

were unemployed. The mean duration of illness was 9.92 years and about 89.4% of them were living with someone.

Among the participants with diabetes mellitus, the mean age was 59.68 ± 11.3 (29-80 years). More than half of them (67.5%) were females and about (85%) were married. Majority of the subjects (85.4%) had formal education to at least primary school level. Most (75.6%) were unemployed and all of the subjects were living with someone.

The prevalence of medication non-adherence in subjects with schizophrenia was significantly higher (52.8%) when compared to subjects with diabetes mellitus 29.3% ($\chi^2=8.33$, $df=1$, $p=0.04$).

More of the subjects with type-2 Diabetes mellitus (65.9%) had supervised treatment, had good understanding of drug regimen (50.4%) (in terms of dosing frequency) and a more positive attitude to medication (70.7 %) compared to subjects with schizophrenia where less than half (43.1%) had supervision during medication intake, (37.2%) had good understanding of drug regimen and (47.2%) had a positive attitude to medication.

Among subjects with type2- diabetes mellitus, 49.9% were taking more than three tablets per day compared to 22.1% of those with schizophrenia. About 60.2% of subjects with schizophrenia and 21.1% of subjects with type 2 diabetes mellitus had reported experience of side effects of medication as a reason for poor medication compliance.

At the univariate level of analysis, there were statistically significant differences between the study groups in terms of their age, sex, marital status, education, employment, living situation, experience of medication side effects and the availability of supervision during medication intake (see table 1)

DISCUSSION

Table 1 Socio-demographic and clinical characteristics of respondents

Characteristics	Schizophrenia N (%)	DM N (%)	p-value
Age in Years (=40 years)	41 (33.3)	122(99.2)	<0.01
Sex (male)	68(55.3)	40(32.5)	<0.01
Marital status (single)	89(72.4)	18(14.6)	<0.01
Education Status (=6yrs)	28(22.8)	89(72.4)	<0.01
Employment status (employed)	50(40.7)	30(24.4)	0.06
Living arrangement (with someone)	110(89.4)	123(100)	<0.01
Supervision (not supervised)	70(56.9)	42(34.1)	<0.01
Duration of illness in years (=10years)	90(73.2)	89(72.4)	0.87
Tablets taken per day (=3 tablets)	95(77.9)	81(65.9)	0.03
Experience of side effects (yes)	74(60.2)	26(21.1)	<0.01
Rating scales			
Adherence (optimal adherence)	62(52.8)	87(70.7)	0.04
Attitude to medication (positive)	58(47.2)	87(70.7)	<0.01

Predictors of non-adherence

Among the subjects with schizophrenia, supervised treatment attitude to medication, and medication side effects predicted non-adherence in multivariate analysis whereas among the

subjects with diabetes the predictors of non-adherence were level of education, employment, supervised treatment, attitude to medication and duration of illness.

Table 2. The predictors of non-adherence by multiple regression analysis

Subjects with schizophrenia			
Variables	Odds ratio	95% C.I	p-values
Employment	0.49	0.18-1.33	0.163
Supervised treatment	0.08	0.0310-0.225	<0.01
Number of tablets	2.63	0.79-8.74	0.114
Living arrangement	0.95	0.23-3.93	0.941
Attitude to medication	0.09	0.038-0.210	<0.01
Experience of side effects	2.25	1.077-4.69	0.03
Subjects with Diabetes mellitus			
Education	3.66	1.03-12.85	0.044
Employment	0.28	0.076-1.020	0.054
Supervised treatment	0.02	0.004-0.0055	<0.01
Attitude to medication	0.015	0.004-0.005	<0.01
Duration of illness	5.97	2.052-17.38	0.01

This study estimated the prevalence of medication non adherence in both mental and physical health domains to highlight the scope of the challenge of non adherence in chronic illnesses.

The non adherence rates were 47.9% and 29.3% for schizophrenia and type 2- diabetes mellitus respectively. This means that about one

in every two subjects with schizophrenia and about three in every ten subjects with type 2 diabetes mellitus were non adherent to medication. The medication non adherence rate for the mental and physical disorder in this study compares to average rates of 42% and 24% respectively reported in previous study by Cramer *et al*¹³. In this study, the medication non

adherence rate for antipsychotic medication in this study is similar to the rate reported by Adewuya *et al.*¹⁶ in southwest Nigeria, Ibrahim *et al.*²⁰ in Northeast Nigeria and different from Amr *et al.*²¹ in Egypt who reported higher rates of medication non adherence among subjects with schizophrenia.

For subjects with diabetes mellitus, medication adherence rate of 70.7% in this study compares with the finding of 72% in South-Western Nigeria by Adisa *et al.*²² and the finding of 71% in a similar study in Uganda by Joan *et al.*¹⁷. This study has shown that medication non adherence appears to be a common problem in patients across all divide and also seem to be greater among the mentally ill subjects compared to the physically ill. In this study, we observed that experience of side effects is a significant predictor of medication non-adherence among subjects with schizophrenia but not in subjects with diabetes mellitus. Casey²³ had also reported that patients who experienced extrapyramidal symptoms (EPS), were more reluctant to take antipsychotic medication than were those who had no such symptoms. Ibrahim AW et al in their study opined that the experience of antipsychotic side effects is associated with significant reduction of the quality of life of patients²⁰.

The study found that treatment supervision by care givers and family members is a strong predictor of treatment adherence among all study participants. More subjects with type 2-diabetes had supervised treatment compared to subjects with schizophrenia. The adherent enhancing role of family member's participation in treatment have been reported by Olfson *et al.*²⁴ in their study. These differences in supervised treatment between both groups of subjects may account for the differences in adherence rates observed in this study. This finding implies that strategic interventions that focus on relatives and caregivers have the potential of enhancing treatment adherence. Furthermore, from a cultural perspective, It can be argued that the belief in spiritual causation of mental illness, issues of stigma and social distance towards the mentally ill prevalent in this culture may be responsible for the poor family support compared to a greater empathy and more social support extended to the physically ill. Also, many relatives tend to prefer unorthodox spiritual and traditional treatment alternatives rather than modern scientific treatments for mental illness.

Clearly, this shows lack of understanding of the nature of chronic mental illness in the populace. This gap in knowledge presents a focus for strategic intervention to improve treatment adherence.

Our study had some limitations. These include reliance on self report of subjects to estimate adherence among the participants can be faulted as this method of assessing adherence is reported to overestimate their adherence². They may have recall bias and recall difficulties. Also, the cross sectional nature of the study does permit a good reflection of adherence behaviour which may fluctuate with time.

In conclusion, this study has shown that treatment non-adherence in a resource poor setting is a challenge in both the physical and mental illnesses but appears to be a more serious challenge with the mentally ill subjects. The healthcare providers must implement simple intervention strategies to improve adherence to treatment especially family support.

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