

Factors Associated with Non-adherence to Medication among Patients with Schizophrenia consulting from January to June 2021 at Ndera Neuropsychiatric Hospital

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ABSTRACT

Introduction: Non-adherence to medications is a common and complex challenge among patients with schizophrenia, leading to poor outcomes and low quality of life. However, there is a lack of studies to determine factors associated with poor adherence to antipsychotic medications at Ndera Neuropsychiatric Hospital, which is the largest hospital treating mental health disorders in Rwanda.

Methods: This mixed-method study employed a cross-sectional design using a self-administered questionnaire and face-to-face interviews. Descriptive analysis and chi-square test were performed, and SPSS (Version 21) was used to analyze quantitative data. Qualitative data were also analyzed by using thematic method analysis.

Results: Among 343 patients recruited, 26.2% were adherent to antipsychotic medications, 57.2% were partially adherent, and 16.9% were not adherent to medications. Education, residence, employment, and marital status were significantly associated with adherence ($p < 0.001$, $p < 0.001$, $p = 0.045$, and $p = 0.013$, respectively). During interviews, participants reported a lack of understanding of the disease and benefits of the treatment, poor perceptions, fear of treatment side-effects, chronicity of the disease and long-term uptake of medications, financial constraint and lack of social support, religious and cultural beliefs, and poor healthcare provider-patient relationship and communication are factors preventing them from adhering to medications.

Conclusions: This study revealed a high prevalence of non-adherence to prescribed medications among schizophrenia patients, with multiple complex factors contributing to this issue. Addressing these challenges requires a multifaceted approach encompassing education, social and financial support, and raising awareness at the individual and community levels.

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INTRODUCTION

Schizophrenia is a chronic mental disorder that profoundly impacts an individual's emotions, thoughts, and behavior. The prevalence among the

general population is estimated to be approximately 1% [1,2]. Though adhering to prescribed medications is a vital aspect of patient care, between 30% and 50% of patients do not adhere to their prescribed drug regimens as recommended

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by healthcare providers [3,4]. Non-adherence to medication increases the risk of relapse, which results in numerous emergency service admissions, re-hospitalizations, increased costs within the healthcare system, and increased demand for healthcare professionals [5]. Medications play a crucial role in symptom management and overall improvement in individuals with schizophrenia, and factors contributing to medication non-adherence, including lack of knowledge, often lead patients to underestimate the importance of consistent medication use [6]. Medication side effects, such as weight gain and sedation, can deter adherence, as can the complexity of multi-drug regimens. Stigma and social isolation associated with mental illness further impede treatment compliance, as does substance abuse, which frequently co-occurs with schizophrenia [4,7]. Other factors include inadequate family care, negative self-perception, and the duration of illness [8].

Understanding factors associated with non-adherence is crucial for healthcare providers and improving treatment outcomes for individuals with schizophrenia. However, there is a lack of consensus regarding the specific factors contributing to this non-adherence, which may stem from problems related to treatment, the disease itself, or environmental factors [8,9]. No known studies have been conducted to evaluate the prevalence and factors associated with non-adherence to schizophrenia medications at Ndera Neuropsychiatric Hospital, the largest hospital exclusively caring for patients with mental illness in Rwanda. Therefore, this study aimed to determine the prevalence and factors associated with non-adherence to medications among schizophrenia patients treated at Ndera Neuropsychiatric Hospital.

METHODS

Study design and setting: This cross-sectional study used mixed methods (a self-administered questionnaire and face-to-face interviews), and was conducted at Ndera Neuropsychiatric Hospital, Kigali, Rwanda among outpatients consulted from January to June 2021. Ndera Neuropsychiatric Hospital was founded by the Brothers of Charity in 1968 to provide services such as outpatient consultations, admissions, occupational therapy, physiotherapy, clinical psychology, and neurology.

Study population: This study targeted patients diagnosed with schizophrenia who visited the outpatient department for follow-up at Ndera Neuropsychiatric Hospital. Schizophrenia patients aged 18 and above, with the ability to understand relevant information and respond and give informed consent, were included. We excluded patients aged less than 18, those with other diagnoses, and patients unable to effectively communicate, understand, and those unfit to give informed consent.

Sampling: We calculated the sample size using the formula of Lesli Kish, as follows:

$$N = Z^2 \times P \times Q / D^2$$

N: Sample size

Z: Z-score at 95% confidence interval = 1.96

P: Expected prevalence of schizophrenia at Ndera Neuropsychiatric Hospital (66.84%) q: 1-P (Expected non-prevalence): 1-0.6684= 0.3316

D: Relative desired precision (5%) or 0.05

Therefore, our sample size was 341

We selected patients fulfilling the inclusion criteria mentioned above using a purposive sampling method until the targeted sample size was reached.

Data collection procedures: The quantitative data were collected by using a three-part questionnaire. The first part collected socio-demographic data. The second part collected information related to adherence using the Medication Adherence Rating Scale (MARS) [10]. The last part collected information on demographic factors contributing to poor adherence to medication.

We conducted face-to-face interviews, and participants were asked for more details about factors that might cause them not to adhere to prescribed medication

The investigators approached patients after being attended to at the hospital and signed a consent form. The investigators handed over questionnaires to the participants and conducted interviews in a private and comfortable environment.

Data analysis: Qualitative data were transcribed in Kinyarwanda and then translated to English. Collected data were analyzed using two methods. Quantitative data were analyzed using SPSS version 21. Descriptive statistics were used for data summarization, while chi-square was used

to determine the relationship between adherence to prescribed medication and other variables. A P-value of < 0.05 was considered statistically significant. Thematic analysis was performed to analyze qualitative data in order regarding the capacity, opportunity, and motivation model of behavior.

Ethical approval: The Research Ethics Committee of Ndera Neuropsychiatric Hospital and the Institution Review Board of the University of Rwanda, College of Medicine and Health Sciences approved the study.

The questionnaire used was anonymous to ensure confidentiality and interviews were conducted in a private, safe and secure room, and no identifications of patients were recorded.

The participants were informed the structure of the research and its purpose. Then they were invited to voluntarily participate and had all rights to withdraw at any time.

The data collected were used exclusively for the purpose of the study and no one other than the investigators had access to them.

RESULTS

Demographic characteristics: The study included 343 outpatients diagnosed with schizophrenia and treated at Ndera Neuropsychiatric Hospital. The majority (43.1%) of the participants were under 35 years of age. Almost half (50.7%) of them were males. Most (37.3) participants attended at most primary school. Most were unemployed (57.4%). Most (51.0%) participants were from urban regions, and were Protestants (42.3%). Table 1 shows further details on the demographic characteristics of 343 outpatients diagnosed and treated at Ndera Neuropsychiatric Hospital.

Adherence to medications: The majority of participants (56.9%) were partially adherent, 26.2% were adherent, and 16.9% were not adherent to the prescribed medications

Demographic factors associated with poor adherence among our study participants: Participants from urban regions were significantly more adherent to prescribed medication than those from rural areas ($p < 0.001$). Secondary/university level of education was associated with more adherence to medication ($p < 0.001$).

Table 1: Socio-demographic characteristics of the study population consulting from January up to June 2021

Characteristics	Number	%
Age		
18-25	58	16.9
26-35	90	26.2
36-45	70	20.4
46-55	77	22.4
56-65	40	11.7
>65	8	2.3
Gender		
Male	174	50.7
Female	169	49.3
Marital status		
Single	119	34.7
Widow	68	19.8
Married	117	34.1
Divorced	39	11.4
Education		
None	121	35.3
Primary	128	37.3
Secondary	65	19.0
University	29	8.5
Occupation		
None	197	57.4
Self-employed	88	25.7
Employed	51	14.9
Student	7	2.0
Region		
Urban	175	51.0
Rural	168	49.0
Religion		
Protestant	145	42.3
Muslim	105	30.6
Catholic	93	27.1

*Protestant includes all types of christian religions other than Catholic

Married and employed patients were more likely to be adherent to medication than other categories ($p = 0.045$ and $p = 0.013$, respectively). No statistically significant difference was observed among different age groups, genders, and religious groups regarding adherence (Table 2).

Face-to-face interviews

Comprehension of disease and treatment: Most

participants mentioned that a low understanding of their disease is the major factor contributing to their poor adherence to antipsychotic medications.

“I don’t even understand my condition, which limits me from taking well the prescribed medications” [Participant 61]

“...I don’t have enough information on my condition and the medications they give me because sometimes I think that I am not suffering from any medical condition, and this makes me hate myself and lose the courage to take the medications” [Participant 43]

Perception of illness: Participants mentioned that they don’t accept that they have schizophrenia, leading to non-adherence to the medications.

“I don’t accept that I am sick of any disease..... I don’t agree with health providers because they don’t explain well the disease to me” [Participant 173]

“I hear a voice that prohibits me from taking medications, I don’t get well, and I don’t even accept that I have this disease....” [Participant 231]

“I don’t know enough about this disease, but sometimes I hear voices telling me to stop

Table 2: Association between adherence and participants’ characteristics

Characteristics	Adherence category			P value
	Non-adherent	Partially adherent	Adherent	
Age				
18-35 years	39 (19.9%)	107 (54.6%)	50 (25.5%)	0.232
36-55 years	19 (12.9%)	88 (59.9%)	40 (27.2%)	
Education				
No education	32 (26.4%)	63 (52.1%)	26 (21.5%)	<0.001
Primary	24 (18.8%)	74 (57.8%)	30 (23.4%)	
Secondary/University	2 (2.1%)	58 (61.7%)	34 (36.2%)	
Gender				
Male	33 (19.0%)	100 (57.5%)	41 (23.6%)	0.391
Female	25 (14.8%)	95 (56.2%)	49 (29.0%)	
Marital status				
Single	26 (21.8%)	63 (52.9%)	30 (25.2%)	0.045
Widow	15 (22.1%)	40 (58.8%)	13 (19.1%)	
Married	12 (10.3%)	65 (55.6%)	40 (34.2%)	
Divorced	5 (12.8%)	27 (69.2%)	7 (17.9%)	
Employment status				
None	44 (22.3%)	109 (55.3%)	44 (22.3%)	0.013
Employed	6 (11.8%)	27 (52.9%)	18 (35.3%)	
Self-employed	6 (6.8%)	55 (62.5%)	27 (30.7%)	
Student	2 (28.6%)	4 (57.1%)	1 (14.3%)	
Region				
Urban	16 (9.1%)	100 (57.1%)	59 (33.7%)	<0.001
Rural	42 (25.0%)	95 (56.5%)	31 (18.5%)	
Religion				
Catholic	15 (16.1%)	55 (59.1%)	23 (24.7%)	0.737
Protestant	22 (15.2%)	86 (59.3%)	37 (25.5%)	
Muslim	21 (20.0%)	54 (51.4%)	30 (28.6%)	

the medications...God will heal me, I know” [Participant 29]

Belief about treatment: Participants expressed that they don't take their medications well because of fear of the side effects of the medications.

“...and these medications cause me dizziness, weakness, and deep sleep, and it also causes me to gain more weight” [Participant 7]

“These medications make me weak, and they cause me to sleep a lot and to have erectile dysfunction” [Participant 27]

“The medications make my body weak. Sometimes they make me sleepy, and they cause me to get more weight, but I try my best to take them even though they cause me side effects” [Participant 30]

“The medications cause me tremors, too much saliva secretions, gaining weight, and they also make me very sleepy” [Participant 161]

Outcome expectations: Participants mentioned that the other reason for not adhering to the treatment is that they are bored and tired of having a long-term disease that requires them to take medications on a timely basis.

“It's been more than 10 years of taking the medications but no improvement, and for now, I feel tired of taking them, and sometimes I forget to take them.” [Participant 13]

“I usually forget to take the medications as it has been seven years since I took them. I feel tired and bored of this disease and don't get better at all...” [Participant 10]

“I feel tired of this disease because it is now five years taking medications and I don't get well, and the disease persists” [Participant 16]

Cost and lack of social support: Participants mentioned the lack of means to buy medications prescribed by health providers and money to travel to the health facility for follow-up and prescription refills.

“I take two types of medications, which I find to be too much for me because to get the medications is difficult because I live too far from here, and it is not easy to get money for transport and even for buying them....” [Participant 2]

“I live far from here, and coming to the hospital costs me a lot, and sometimes I can't find money to pay the transport or medications, and my family does not care about me anymore as they now call me a fool” [Participant 8]

“It is difficult to get money as I don't have a job, and my family/friends do not care about me.” [Participant 5]

Some participants mentioned that they get busy with their daily work and do not get the time to come to the health facility to get prescription refills and follow-up tests, which contributes to their poor adherence to antipsychotic medications

“My occupation doesn't allow me to come here regularly for follow-up and for getting medications at the time, and this causes me to skip some doses.” [Participant 39]

“My daily work makes me lose time to come here to the hospital regularly...” [Participant 59]

Stigma of disease: Participants reported that discrimination in their families, neighborhood, and among their relatives and friends resulted in poor self-esteem and made them change their behavior and values in society, leading to the refusal to follow up on their disease, start getting drunk, and other bad behaviors.

“.... Coming here at Ndera Hospital always makes me ashamed of myself because people call me mad...” [Participant 11]

“In my family, they isolate me, which makes me feel ashamed of myself and also makes me want to drink a lot to get over everything because when I am drunk, I feel better....” [Participant 17]

“I feel ashamed coming here at Ndera Neuropsychiatric Hospital because when I come here, people neglect me, calling me a fool....” [Participant 19]

Religious and cultural beliefs: Many participants expressed religious and social beliefs, including praying for the disease, drinking alcohol, and smoking tobacco to make them feel comfortable with their condition instead of taking the prescribed medications.

“Prayers make me feel better than medications, and God revealed to me that He will do a miracle for me one day.” [Participant 5]

“I love to smoke and drink alcohol a lot. When I take tobacco or alcohol, I feel much better....” [Participant 18]

“When I drink alcohol or smoke, I feel good and forget about my condition....” [Participant 34]

Healthcare provider-patient relationship and communication: Participants mentioned that they face the challenge of communicating with

healthcare providers when they present for consultations and follow-up, which discourages them and contributes to their poor adherence to medications.

“I am not happy with the quality of services we get from here because we ask questions about how long we are going to take medications and time to stop. They do not explain well. It discourages me a lot....” [Participant 48]

“I take two types of medications which I find to be too much for me, and they do not involve us in decision making or explain well some side effects from medications....” [Participant 2]

“We encounter poor customer care because of a very long waiting time where you may come in the early morning and get back at the very night, and they do not give you the reason why it is like that every time” [Participant 7]

DISCUSSION

Non-adherence to medication among patients diagnosed with schizophrenia is a complex and multifaceted public health problem with various contributing factors [3,8,9]. Our study aimed to identify the factors contributing to non-adherence to prescribed medication in this patient population. We meticulously recorded their social and demographic characteristics and assessed their level of adherence to prescribed medications. Our findings showed that only 26% of the participants adhered consistently to their prescribed medications, indicating that 74% struggled with adherence. Among these non-adherent participants, 56.9% exhibited partial adherence, while 17% were entirely non-adherent. This is a higher non-adherence rate compared to the 40%-50% range reported in previous studies [11]. Furthermore, it is higher than the 35.8% non-adherence rate identified in a study involving 217 schizophrenic patients in South Africa [7]. Interestingly, our findings show a higher rate than the 50% non-adherence rate reported by the World Health Organization (WHO) for patients with chronic diseases in developed countries [12], while slightly higher than 67.5% non-adherence rate observed in a previous study at the University Teaching Hospital of Kigali psychiatry department [13].

Geographic location emerged as a significant factor, with urban-dwelling participants exhibiting greater adherence to prescribed medication

compared to their rural counterparts ($p > 0.001$). This finding suggests that a patient's residential area may influence their compliance and behavior toward healthcare provider recommendations. This aligns with previous studies showing that urban residence was associated with increased medication adherence [14–16]. Ndera Neuropsychiatric Hospital and its branches are located in urban areas, contributing to limited access to its services for rural participants. Participants reported that that lack of time and financial means for transport to the hospital contribute to missing appointments, aligning with another finding that adherence was better among employed participants since they have the financial capacity to attend appointments and buy medications. Employed patients also have access to better insurance to cover the cost of medications, leading to better adherence compared to unemployed patients [17]. Additionally, we found that educational attainment was associated with adherence, as participants with higher levels of education demonstrated better adherence ($p < 0.001$). This aligns with other previous studies [6,18]. Patients with higher education levels often have a better understanding of their condition and treatment, promoting medication adherence [19]. The persistence of symptoms and the chronic nature of the disease also played a role. These findings aligned with those from an Indian study, which identified common factors for poor adherence: limited access to healthcare facilities, lack of family or social support, stigma, a perceived lack of symptom improvement, and financial constraints [7]. This Indian study also highlighted side effects from medication, negative perceptions, occupational demands, stigma, and a lack of caregivers as factors of non-adherence, aligning with other previous studies [4,20]. Our study's participants similarly cited fear of medication side effects as a deterrent to adhere to medications, in addition to lack of family and social support, limited awareness of their condition, long-term duration of illness, and busy daily schedules. Other studies align with our findings by showing that patients who experienced side effects and who have limited awareness of the disease tended to discontinue prescribed antipsychotic drugs [6,21,22]. Richardson et al. also noted that the duration of illness and symptom improvement influenced non-adherence [23].

Our study's participants mentioned alcohol consumption and tobacco use as factors

contributing to their poor medication adherence. Some believed they felt better when under the alcohol influence, leading them to skip medications. These findings paralleled those of a study in Nepal by Singh, where substance use accounted for 19% of non-adherence cases [21]. Furthermore, denial of the disease and poor knowledge emerged as significant barriers to adherence, highlighting the need for regular and comprehensive patient education and community awareness programs. Stigmatization within communities also hindered follow-up attendance, emphasizing the necessity for community education regarding psychotic disorders as manageable and not stigmatized conditions. These findings were also reported by other studies conducted previously that stigma and shame about the diseases and treatment result in poor adherence [24,25]. Patients with mental illness are stigmatized in society and are considered fools or mad, which may discourage patients from adhering to medications. Our participants reported that some community members call them fools, and when they visit the hospital, they become targets as fools in the fools' hospital. This discourages them from attending appointments and going for refills of their prescribed medications.

This study was limited by its cross-sectional design, which is prone to selection and recall biases. It is also limited in establishing control for confounding factors, making isolating the true relationship between the variables of interest challenging.

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This study relied on self-report statements, which might lead to over- or under-reporting and response biases. This might affect the generalizability of its findings. Therefore, longitudinal and intervention studies prospectively studying schizophrenia patients in Rwanda are recommended.

CONCLUSION

Our study revealed a high prevalence of non-adherence to prescribed medications among schizophrenia patients, with multiple contributing factors, including low educational levels, unemployment, financial constraints, lack of support (familial and social), rural residence, fear of side effects from medications, lack of understanding of the disease, stigma, chronicity of the condition and social behaviors. Addressing these challenges requires a multifaceted approach encompassing education, support, and raising awareness at the individual and community levels. Healthcare providers should enhance patient education sessions at the waiting areas and improve the patient-healthcare provider relationship regarding information provision to patients about their diseases. Ndera Neuropsychiatric Hospital is recommended to organize regular outreach activities to areas without psychiatric centers to facilitate patients with psychotic disorders to get services. Family members need to be involved in the follow-up of schizophrenic patients and provide financial and social support to them.

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