# MEDICATION COMPLIANCE AMONG PATIENTS WITH SCHIZOPHRENIA AT A SELECTED TERTIARY HOSPITAL IN BANGLADESH: A CROSS-SECTIONAL STUDY

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***Abstract:*** *: This study aimed to determine the medication compliance of schizophrenic patients at the National Institute of Mental health, Sher-e-Bangla Nagar, Dhaka, Bangladesh. This was a descriptive cross-sectional study. A semi-structured questionnaire was used for data collection. Of the 303 patients who were suffering from Schizophrenia, most of the patients (63.4%) were from urban, more than three-quarters (85.1%) were female, almost three-quarters (74.3%) were Muslim, mostly (82.2%) were married, and more than half (53.5%) were housewives. The mean age was 36.5, and the monthly family income mean of the patients was 27693.1. In our study, we found that about 85.0% of the respondents with low medication compliance. Factors for instance problems while getting admitted, relationships with the healthcare providers, forget to take medication, careless taking of medication, medicate when feeling sick, unnatural control by medication, thoughts are clear on medication, and feeling weird while on medication are significantly associated with suffering from Schizophrenia. Thus, the prevalence of medication non-compliance was found to be high among patients with Schizophrenia. Educating the patients to better understand the illness, medications, and their potential side effects might be a proper helpful intervention strategy to improving compliance to antipsychotic medication treatment.*

***Keywords:*** *Socio-demographic characteristics, Medication compliance, Schizophrenic patients, NIMH, Bangladesh.*

## Introduction

Schizophrenia is a severe, chronic, life-long, and debilitating mental disorder worldwide with a substantial socioeconomic burden, mainly indirect costs like loss of jobs and direct fees like loss of employment and social support. Compliance with antipsychotic medication plays an essential role in patients with schizophrenia, and regular treatment has been shown to reduce symptoms and lower relapse rates[1]. On the other hand, treatment for lack of medication compliance has proven to be one of the most extraordinary and significant challenges for psychiatry[2]. A comprehensive review showed the rate of medication non-compliance to be as high as 40-50%[3]. . Lack of medication compliance worsens the conditions of the illness, which results in severe consequences to patients, society, and healthcare systems.

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The medication compliance of schizophrenic patients in Bangladesh is even worse due to poor medical facilities and observation[4]. Medication compliance is considered a significant challenge in treating Schizophrenia globally due to the long duration of therapy and numerous other related factors. Schizophrenia is a severe form of mental illness affecting about 7 per 1000 adults globally. The worldwide prevalence of Schizophrenia is about 1%[5]. The prevalence rate of Schizophrenia in Bangladesh is the same magnitude as in developed countries as it has the exact global prevalence (National Institute of Mental Health (NIMH), 2012). However, the mortality rate of patients with schizophrenia diagnosis is 2 to 4 times greater than in the general population. Additionally, increased comorbidities, including cardiovascular disorders, diabetes mellitus, hypertension, hyperlipidemia, and other mental illnesses, are often reported among patients with schizophrenia population6. A trend was observed from a systematic review where the increase in the risk of suicide was associated with non-compliance to antipsychotic medicine[7, 8]. Incompliance with prescribed antipsychotic medication intake was also related to exacerbation of psychotic symptoms, increases aggression, and worse prognosis, which could develop a resistance to drugs and the development of chronic psychotic symptoms[9]. It was also found that there is an increased risk of violence among non-compliant patients instead of the compliant ones.

Furthermore, medicinal non-compliance may lead to relapse, significantly requiring more frequent visits to the emergency rooms, re-hospitalization, and high demand for clinical intervention, which substantially affects the healthcare systems[10]. Medication compliance is also considerably affected due to loss of job, dangerous behavior, arrest drug and alcohol consumption, psychiatric emergencies, poor mental performance, and low satisfaction with life[11]. In areas like the United Kingdom and the United States (US), the annual expenditure on Schizophrenia is roughly 400 million euros and 10 billion US dollars[12]. The risk of psychotic relapse in schizophrenia patients increases nearly five times in 5 years, reaching 81.9%[13]. Among the main factors frequently associated with medication, compliance is insight, the general attitude towards their illness and medication, past experiences with their disease and treatment, substance abuse, history of drug reactions, and presence of social support[7, 10, 14].

Standard intervention methods to improve medicinal compliance include encouraging acceptance of the illness, drawing analogs to the treatment to non-chronic mental illness, involving the patient in decision making, and motivating them to share their experience with the disease to improve the chances of diagnosing potential problems and solutions[15, 16]. However, socio-demographic factors of the patients are not consistent predictors of poor medication compliance[7, 14]. A qualitative study done in rural Ethiopia explored the reasons for non-compliance to antipsychotic medications in people with Schizophrenia from the perspectives of patients, their caregivers, health professionals, and research field workers. Many of the factors regarding non-compliance include inadequate availability of food, lack of family or social support, lack of insight, failure to improve with treatment, substance abuse, medication side effects, stigma, and dissatisfaction with the attitude of health care providers[17].

Therefore, it essential to identify the predictors of non-compliance is to enable suitable intervention strategies to be designed[18]. Interventions specially designed to target non-compliance were found to be more effective than broadly range treatment interventions[19]. Therefore, this study aimed to determine the rate of medication compliance of schizophrenic patients of a tertiary hospital in Bangladesh.

## Materials and Methods

### Setting and study design

A descriptive cross-sectional survey was conducted at the NIMH, Sher-e-Bangla Nagar, Dhaka, Bangladesh. The survey covered schizophrenic patients admitted to every department and ward in NIMH.

### Study Sample and procedures

Schizophrenic patients present in NIMH were asked to participate in the study. Patients were selected based on their ability to understand the relevant information, appreciate a situation and its consequences, and reason rationally by the clinicians to identify suitable patients meeting the following inclusion criteria: aged between 12 and 65 years of age; a diagnosis of Schizophrenia; capacity to give informed consent; and continuous therapy at least for three months before the study. Exclusion criteria were comorbid mood disorder, serious medical condition, and mental retardation.

The sample size was determined using the formula for a single population proportion for a cross-sectional study, based on the non-compliance proportion of 50% (to achieve maximum representative sample size) and 5.5% margin of error at a 95% confidence level. The total sample size calculated was 303.

### The following formula was used to determine the sample size:

Where,
 n = sample size,
P = Proportion/probability of success, Q = 1-P, $n = \frac{z^2 P Q}{e^2}$
e = allowable margin of error (5.5%)
Assumptions:
z = 1.96 (The value of the standard variation at 95% confidence level),
P = 0.5, Q = 0.5, e = 0.06 (precision level 6%)
Therefore, using this formula the sample size (n) has been calculated
 n = (1.96^2) *(0. 5)*(0.5) / (0.055^2) = (3.8416*0.25) / (0.003) = (0.9604/0.003) = 320
However, due to response error, after cleaning the sample size was 303

### Data Collection

Data were collected using a semi-structured questionnaire by face-to-face interview of the respondents. At first, a questionnaire was developed in English then translated into Bengali. After that, the finalization of the questionnaire was done by pre-testing, and then data collection started with the final version of the questionnaire. A psychiatric admitted and outpatient department in NIMH was accompanied in the study.

### Data Analysis

The data were entered and analyzed by Statistical Program for Social Sciences (SPSS) version 22.0. Descriptive statistics were calculated to understand the socio-demographic characteristics. Chi-Square ($x^2$) test was used to find the associations between skin diseases other influencing factors. The p-value less than 0.05 is considered as the level of significance for statistical test[20, 21].

**Ethical Issues**

This study was conducted on 303 patients who were suffering from Schizophrenia. Among the patients with Schizophrenia, most (63.4%) of the patients were from urban, more than three-quarters (85.1%) of patients were female, almost three-quarters (74.3%) of patients were Muslim, mostly (82.2%) patients were married, and more than half (53.5%) of patients were housewives. In addition, the average age was 36.5, and the monthly family income of the patient was 27693.1 (Table 1).

**Table 1. Socio-demographic characteristics of schizophrenia participants**

| Variable | Categories | Frequency | Percentage |
|---|---|---|---|
| Gender | Male | 45 | 14.9 |
| | Female | 258 | 85.1 |
| Age (years) | Mean (±SD) | 36.5 (±11.9) | |
| Religion | Muslim | 225 | 74.3 |
| | Non-Muslim | 78 | 25.7 |
| Marital status | Married | 249 | 82.2 |
| | Widowed | 9 | 3.0 |
| | Divorced | 24 | 7.9 |
| | Separated | 21 | 6.9 |
| Education | No formal Education | 36 | 11.9 |
| | Primary | 105 | 34.7 |
| | SSC | 63 | 20.8 |
| | HSC | 54 | 17.8 |
| | Bachelor degree & above | 45 | 14.9 |
| Occupation | Housewife | 162 | 53.5 |
| | Student | 33 | 10.9 |
| | Small business | 42 | 13.9 |
| | Service holder | 60 | 19.8 |
| | Daily laborer | 6 | 2.0 |
| Residential status | Urban | 192 | 63.4 |
| | Rural | 111 | 36.6 |
| Income (TK) | Mean (±SD) | 27693.1 (±11460.3) | |

### Factors associated with antipsychotic medication compliance

Table 2 shows the percentage of psychiatric symptoms and patients suffering from Schizophrenia. Table 3 reveals that gender, religion, and marital status are the significantly associated factors for suffering from Schizophrenia at a 5% level of significance.

Factors such as problems while getting admitted, relationship with the healthcare providers, forget to take medication, careless taking of drugs, medicate when feeling sick, unnatural control by medication, thoughts are clear on medication, and feeling weird while on medication are significantly associated with suffering from Schizophrenia. However, feel better: stop the medication, feeling worse after taking medication, the drug prevents becoming sick, tiredness from medicine and sluggishness are not significantly associated with suffering from Schizophrenia (Table 4).

### Table 2. Psychiatric symptoms and patients suffering from Schizophrenia

| Categories | Suffering Schizophrenia | | |
| --- | --- | --- | --- |
| | <12 months | 12-24 months | >24 months |
| | n (%) | n (%) | n (%) |
| Feeling sad | 12 (19.00) | 18 (28.60) | 33 (52.40) |
| Confused thinking | 12 (20.00) | 12 (20.00) | 36 (60.00) |
| Reduced ability to concentrate | 3 (11.10) | 6 (22.20) | 18 (66.70) |
| Excessive fears or worries | 9 (25.00) | 12 (33.30) | 15 (41.70) |
| Feeling of guilt | 3 (12.50) | 9 (37.50) | 12 (50.00) |
| Extreme mood changes | 6 (22.20) | 15 (55.60) | 6 (22.20) |
| Withdrawal from activities | 9 (30.00) | 9 (30.00) | 12 (40.00) |
| Significant tiredness | 3 (25.00) | 3 (25.00) | 6 (50.00) |
| Low energy | 3 (33.30) | 3 (33.30) | 3 (33.30) |
| Problems Sleeping | 3 (33.30) | 3 (33.30) | 3 (33.30) |

**Table 3. Association between Socio-demographic characteristics and suffering duration of schizophrenia**

| Socio-demographic characteristics | | Suffering Schizophrenia | | | Chi-Square | P-Value |
|---|---|---|---|---|---|---|
| | | <12 months | 12-24 months | >24 months | | |
| | | N (%) | N (%) | N (%) | | |
| Gender | Male | 18 (40.0) | 6 (13.3) | 21 (46.7) | | |
| | Female | 51 (19.8) | 84 (32.6) | 123 (47.7) | 11.66 | 0.003 |
| Religion | Muslim | 57 (25.3) | 57 (25.3) | 111 (49.3) | | |
| | Non-Muslim | 12 (15.4) | 33 (42.3) | 33 (42.3) | 8.74 | 0.013 |
| Marital status | Married | 60 (24.1) | 69 (27.7) | 120 (48.2) | | |
| | Widowed | 3 (33.3) | 0 (0.0) | 6 (66.7) | | |
| | Divorced | 3 (12.5) | 9 (37.5) | 12 (50.0) | 13.53 | 0.034 |
| | Separated | 3 (14.3) | 12 (57.1) | 6 (28.6) | | |

**Table 4. Association between medication compliance and Suffering from Schizophrenia**

| Factors | | Suffering from Schizophrenia | | | Chi-Square | p-value |
|---|---|---|---|---|---|---|
| | | <12 months | 12-24 months | >24 months | | |
| | | n (%) | n (%) | n (%) | | |
| Problem while getting admitted | Yes | 30 (33.3) | 33 (36.7) | 27 (30.0) | | |
| | No | 39 (18.3) | 57 (26.8) | 117 (54.9) | 16.63 | <0.001 |
| Relationship with the healthcare providers | Good | 63 (25.3) | 66 (26.5) | 120 (48.2) | | |
| | Moderate | 6 (16.7) | 18 (50.0) | 12 (33.3) | | |
| | Poor | 0 (0.0) | 3 (20.0) | 12 (80.0) | 15.89 | 0.003 |
| Forget to take medication | Yes | 63 (24.4) | 81 (31.4) | 114 (44.2) | | |
| | No | 6 (13.3) | 9 (20.0) | 30 (66.7) | 7.82 | 0.020 |
| Careless taking medication | Yes | 24 (21.1) | 21 (18.4) | 69 (60.5) | | |
| | No | 45 (23.8) | 69 (36.5) | 75 (39.7) | 14.57 | 0.001 |
| Feel better: stop the medication | Yes | 45 (19.7) | 69 (30.3) | 114 (50.0) | | |
| | No | 24 (32.0) | 21 (28.0) | 30 (40.0) | 5.01 | 0.080 |
| I feel worse when in taking medication | Yes | 60 (24.4) | 75 (30.5) | 111 (45.1) | | |
| | No | 9 (15.8) | 15 (26.3) | 33 (57.9) | 3.36 | 0.186 |
| Medicate when feeling sick | Yes | 60 (25.6) | 72 (30.8) | 102 (43.6) | 7.45 | 0.024 |
| | No | 9 (13.0) | 18 (26.1) | 42 (60.9) | | |
| Unnatural that controlled by medication | Yes | 54 (29.0) | 48 (25.8) | 84 (45.2) | | |
| | No | 15 (12.8) | 42 (35.9) | 60 (51.3) | 11.318 | 0.003 |
| My thoughts are clear on medication | Yes | 6 (10.5) | 18 (31.6) | 33 (57.9) | | |
| | No | 63 (25.6) | 72 (29.3) | 111 (45.1) | 6.295 | 0.043 |
| Medication prevent getting sick | Yes | 57 (25.7) | 66 (29.7) | 99 (44.6) | | |
| | No | 12 (14.8) | 24 (29.6) | 45 (55.6) | 4.575 | 0.102 |
| Feel weird on medication | Yes | 30 (32.3) | 33 (35.5) | 30 (32.3) | | |
| | No | 39 (18.6) | 57 (27.1) | 114 (54.3) | 13.393 | 0.001 |
| Medication tired and sluggish | Yes | 30 (18.9) | 54 (34.0) | 75 (47.2) | | |
| | No | 39 (27.1) | 36 (25.0) | 69 (47.9) | 4.292 | 0.117 |

## Discussion

This study aims to determine the medication compliance of schizophrenic patients at the NIMH, Sher-e-Bangla Nagar, Dhaka, Bangladesh. In this study, out of 303 participants, 258 reported that they forget to take medications, which is around 85% of the respondents with low medication compliance. This condition is far worse than the non-compliance rates of other areas such as Egypt 74%, Central Ethiopia 41%[22], Southwest Ethiopia 41.2%[17], Hong Kong 30%[23], and England 29%[24], similar to the study in Bangladesh showed the non-compliance rates to be as high as 87%[4]. Hence, it can be said that the non-compliance rates in Bangladesh are significantly higher than that of other countries. Furthermore, it was found from this study that non-compliance to antipsychotic medication was associated with a relationship with healthcare providers problems during admission are among the vital critical factors regarding medicinal compliance. This may be the reason for the significantly worse non-compliance rates in Bangladesh since the healthcare condition for psychiatric patients in Bangladesh is relatively poor compared to many other countries[25, 26].

Along with these factors, our study found that taking medicine carelessly was also an essential factor in non-compliance. This may be because of unusual side effects that can deter patients from antipsychotic medication. Developments such as feeling weird and showing unnatural behavior after taking medication. Several other adverse effects include uncontrollable movements of the face, hands, and feet[27]. In addition, some of the newer drugs had negative effects such as cardiovascular effects, metabolic effects, akathisia, sexual dysfunction, sedation, dizziness, dry mouth, reduced brain volume, and shortened life span[28-30]. However, some of these adverse effects, such as feeling rotten and tired after taking medication, don't seem to affect the rate of medication compliance significantly.

In general, lack of care by the healthcare providers and a lack of insight into the psychiatric condition of the patient care among the primary root cause of non-compliance among schizophrenic patients. In addition to it, the socio-demographic characteristics such as education, occupation, age, gender, and living location also play a significant role in making the patients aware of the harmful effects of non-compliance to antipsychotic medication.

Some of the intervention strategies to improve non-compliance rates are educating healthcare professionals on how to improve their relationship with the patients and reduce problems during admission. In addition, the patients should be routinely reminded about the importance of medication compliance to keep the symptoms of their illness in check.

One of the limitations of this study is that it only covers one hospital in Bangladesh. If more hospitals can be covered in the same way, a more comprehensive picture of the rate and cause of non-compliance may be determined. Also, the number of studies on this topic in Bangladesh is deficient; hence, drawing a very detailed comparison was tough.

## Conclusions

We can conclude that low medication compliance among schizophrenic patients in Bangladesh is very high. The lack of medication compliance of schizophrenia patients significantly worsens their symptoms, making them unable to live a comparatively healthy life. Counseling on medication compliance among schizophrenia patients is recommended. A further study with a larger sample size may be required on a similar issue to understand the depth of the problem in a broader context.

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