



Non-adherence to antidepressant treatment and its  
predictors among outpatients with depressive disorders,  
a hospital-based cross-sectional study  
in Addis Ababa, Ethiopia

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## Acronyms

DSM 5 = Diagnostic and statistical manual of mental disorders fifth edition

GUHPC = Gondar University Hospital Psychiatry Clinic OPD = Out Patient

Department

MDD = Major Depressive Disorder

LMICs = Low- and Middle-Income Countries

MMAS= Morisky Medication Adherence Measurement Scale

JUSH = Jimma University Specialized Hospital

OPD = Outpatient department

PI = Principal Investigator

SPSS = Statistical package for the social sciences

SSRI = Selective serotonin reuptake inhibitors (SSRIs)

TASH = Tikur Anbessa Specialized Hospital

TCA =Tricyclic antidepressants

TIP = Treatment Initiation and Participation Program

WHO = World Health Organization

ADMs= Antidepressant Medications

## Abstract

**BACKGROUND:** In Ethiopia, there is inadequate information on non-adherence to antidepressant treatment in patients with depressive disorders. Having awareness of the pattern of adherence is important in future prognosis, quality of life and functionality in these patients. This study will be conducted to assess the prevalence of Non-Adherence to Antidepressant treatment and its predictors among Psychiatry Outpatients with Depressive Disorders.

**METHODS:** A hospital-based cross-sectional quantitative study was conducted at the psychiatry clinic of Tikur Anbessa Specialized Hospital. A sample of 216 consecutive outpatients with Depressive disorders who visited the Psychiatry clinic since June 2019 and who had at least two visits prior to their last visit were enrolled. Data was collected using questionnaires through in-person and phone call interviews. The eight-item Morisky scale, a scale extensively used in the Ethiopian setting, was used to assess the pattern of medication adherence. Other specially developed tools were used to obtain sociodemographic and clinical information from electronic medical records and patient interviews. Data was analyzed using the Statistical Package for the Social Sciences (SPSS), Version - 25. Univariate and multivariable analyses were carried out to assess factors associated with non-adherence.

**RESULTS:** Ninety percent of the participants who were taking antidepressant medication were found to have a primary diagnosis of Major Depressive Disorder. Based on the 8-item Morisky Medication Adherence Scale, the prevalence of non-adherence was found to be 84.7%. Living distance between 11 to 50 kms from hospital (AOR= 11, 95% CI (29,46.6)), post-secondary level of education (AOR= 8.3, 95% CI (1, 64.4)), taking multiple medications (AOR= 6.1, 95% CI (1, 34.9)) were found to have significantly increased odds of non-adherence.

**CONCLUSION:** The prevalence of non-adherence is very high among patients with depressive disorders. Non-adherence was significantly associated with factors such as increased living distance from the hospital, relatively higher educational level, and polypharmacy. Proper and patient centered psychoeducation to patients, addressing the communication gap between patients and doctors, clinicians' adherence to prescribing guidelines, avoiding polypharmacy unless indicated, and working on accessibility of treatment for common mental disorders is essential to decrease non-adherence. Larger analytical studies to further establish causal relationships to non-adherence and its impact on depression treatment outcomes are recommended.

**KEYWORDS:** Medication Adherence, Depressive disorders, Tikur Anbessa Specialized Hospital, Ethiopia

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## Introduction

Depression has an impact on the health and social life of society putting a great burden (1). Globally, the total number of people having depressive disorders was estimated to surpass 300 million in 2015(2). Recently depression has been defined as the fourth cause of disability globally, and it was projected to become the second leading cause by 2020 (3).

Since depression has a profound impact on a patient's health, individual and family quality of life, activities of daily living and daily functioning, it needs closer attention and proper management. At the start of the treatment of severe depression, it is recommended that the combination of pharmacotherapy and psychotherapy are more effective than either of these treatments alone (4). Among psychotherapies are psychoanalytic therapy, cognitive therapy, behavioral therapy, interpersonal therapy, etc., (5)

In a study done in Ethiopia, among pharmacologic interventions, the most commonly prescribed antidepressants were the tricyclic antidepressants. Amitriptyline is among the most frequently ordered medication followed by the Selective Serotonin Reuptake Inhibitors such as Fluoxetine(23) The pharmacological treatment of an episode of depression constitutes three phases (6). The aim of the acute treatment phase is for the relief of symptoms with a length that may differ depending on responsiveness to treatment. Next to the acute phase, continuation therapy for a length of 4 to 9 months follows. Adherence during this period is advised for a more complete resolution of the episode, and to avoid the relapse once the resolution of symptoms is achieved (7). By achieving remission for a sustained period, patients are less likely to have a recurrence of the depressive episode. However, few patients with depression achieve this goal, most are left with residual symptoms and the likelihood of recurrence (8). In a study conducted among a sample of 4,312 privately insured outpatients from the US, the adherence rate was found to be 51% at week 16 of initiation of treatment and further decreased to 21% at week 33 (9). Similarly, the Vantaa depression Study showed the one-year continuation rate to be as low as 50% in Finland (10).

According to the World Health Organization (WHO), medication adherence is defined as the extent to which a person's behavior for taking medications, following a diet, and/or executing lifestyle changes, is in correspondence with agreed recommendations of a healthcare provider. Adherence to the treatment provided is one of the determinant factors playing a great role in having a good treatment outcome. Physicians who work at chronic outpatient departments (OPDs) tend to overlook adherence related issues because of the heavy workload (11)(12).

Adherence following drug prescription is a complicated process. According to the ascertaining barriers to compliance (ABC) model of adherence, non-adherence can be divided into non-initiation, suboptimal implementation and non-persistence. Treatment initiation refers to the patients first filling their prescriptions at a pharmacy. Implementation refers to the extent to which patients take the prescribed regimen in day to day life. Persistence refers to the time between treatment initiation and the last dose taken, with non-persistence occurring when patients discontinue the prescribed drug before the intended treatment duration period (13).

Many factors have been examined for their association with adherence/non-adherence and are generally grouped in categories. The WHO has categorized these factors into five broad groupings as: patient, condition, therapy, socioeconomic and health system-related (14). Non-adherence to Psychotropic medications puts a major challenge to the success of mental health care (15). In recent years, this has become a major challenge to healthcare professionals who are in charge of following patients with psychiatric disorders (17).

There is no sufficient information globally including in our country about the magnitude of adherence to antidepressant medications of patients with depression. Knowing the pattern of the overall adherence of patients would enable us to evaluate the effectiveness of our interventions. In a third world country like Ethiopia where there is a huge treatment gap, lack of access to healthcare, limited facility and human resource, those who have access to treatment should get the most benefit out of it. An increase in medication adherence may eventually result in a reduction in the pharmaceutical costs of depression treatment by a decrease in hospital stays, ensuring greater remission of symptoms leading to a reduction in morbidity and mortality with its consequent medical, social and economic benefits. To deeply evaluate patients' behaviors in taking medications and different profiles in adherence among antidepressants, both persistence and compliance need to be examined in a daily clinical pattern. If professionals providing mental healthcare are aware of the magnitude of non-adherence in patients with depression, they will be better equipped to provide interventions that are tailored to address factors related to non-adherence. Therefore, this study aimed to provide an insight into the magnitude of non-adherence to antidepressant medications among patients with depressive disorders and the factors related to it. The findings of this study will serve as inputs towards designing coping strategies against the deleterious effects of non-adherence on recovery and quality of life of these patients.

## Statement of the problem

The risk of continuation of preventable diseases, increased admission to hospitals, avoidable visits to doctors and emergency rooms, and other problems arising from poor health, which can significantly raise costs are increased by non-adherence.

Medication non-adherence has a sufficiently great negative outcome for people as well as for the country. psychiatric illnesses often end in 3.7 times higher rates of relapse and exacerbation of symptoms, higher hospitalization, and poorer community adjustment (11)(12).

However, there are few studies done in our country on the pattern of non-adherence to antidepressant medication among patients with Depressive disorders and the factors related to it.

As multiple factors result in treatment non-adherence, knowing the pattern of adherence to prescribed antidepressant medication would help take early measures in terms of the factors that are associated with it and thus improve the outcome of the depressive disorder being treated.

## Significance of the study

How much an individual sticks to the provided medical advice is a major concern in every medical specialty. Information on depressed patients' adherence to their treatment is limited in Ethiopia even if the disease course, relapse, future recovery, cost of health care and the outcome for the patient are significantly affected by non-adherence. Knowledge on adherence plays a great role in terms of future prognosis, quality of life and functionality of patients. This study was conducted to assess the Adherence to Antidepressant Medication Treatment among Psychiatry Outpatients with Depressive Disorders. The study analyzed the pattern of Antidepressant treatment adherence of depressed patients by investigating the sociodemographic data, the type of medication prescribed and clinical factors associated. This study is essential for evaluating patient care to improve service delivery through awareness creation.

## Literature review

### Antidepressant Adherence in Worldwide settings

In some countries of the world there are researches done on Adherence and Non-adherence to antidepressant medication treatment. In our study, studies done at worldwide settings such as those from New York, Netherlands, Japan, Nigeria and different parts of Ethiopia were revised and compared. (14),(17),(9),(16)

A relatively older retrospective study on two site randomized clinical trial was done at primary care practices in New York on Adherence to Depression Treatment on 231 middle-aged and older adults randomly assigned to the Treatment Initiation and Participation Program (TIP) intervention. TIP participants showed a 24.9% improvement in depressive symptoms at 6 weeks which was 14.2% higher than those undergoing treatment as usual. The result confirmed that the psychosocial intervention was effective in improving early adherence in newly antidepressant-initiated patients.

The key risk factors for nonadherence listed in this study include: age, presence of comorbid conditions, treatment related beliefs, and worry over adverse events. Additional risk factors in the elderly included patient variables such as the lack of a medication routine, holding on to discontinued medications, combining prescriptions, and multiple storage locations. Medication adherence is also affected by the total number of drugs prescribed. The most important factors affecting adherence are negative attitudes. Perceived stigma speculates poorer medication adherence and treatment discontinuation among depressed elderly people. Older adults worry about having a diagnosis of depression itself. Low perceived symptom severity is associated with poorer adherence and even when distress is acknowledged, many older adults feel like they don't need help from a professional. (14)

A longitudinal cohort study in primary care was done on Non-adherence to antidepressant medications on 1512 older patients  $\geq 60$  years with depression in Netherland. This study aimed to determine the degree of non-adherence to antidepressants in older adults in primary care, based on non-initiation, suboptimal implementation or non-persistence. The study finding showed that non-initiation in 11.4%–21.0% of patients was the cause of non-adherence, varying with the type of antidepressant prescribed. The prescribed antidepressants were taken inconsistently by 12.0%–16.4% of those on treatment. Increased comorbidity and drug use burdens were associated with non-adherence. Using a drug prescribed for a longer duration was linked to a lower risk of non-adherence. When taking into consideration all antidepressants, none of the predictors were significantly associated with non-initiation. However, a higher socioeconomic status was found to be associated with SSRIs. Taking other antidepressants into consideration, females had higher odds of non-initiation. Increased age was also associated with increased odds of non-persistence with any antidepressant as well as with SSRIs. Having psychological comorbidity was associated with non-persistence with SSRIs (17).

Another study which was done on 2009 on adherence to antidepressant treatment in patients with depression on a total of 367 patients in Japan having an objective of establishing a basis for closer communication between patients and their physicians also found that the overall persistence rate at month six to be as low as 44%. The extent of adherence in this study (56%) was lower when compared to that of schizophrenia (79%) and epilepsy (74%). More than 60% of dropouts discontinued their initial antidepressant treatment without talking through with their physician. The study also showed that males showed a better adherence and compliance rate. Benzodiazepine-derivative anxiolytic usage and a higher persistence rate in the beginning of the treatment were found to have a significant association. It was noted by the study done in New York that patients who were not involved in the TIA intervention had poor adherence to antidepressants. The above study done in Japan shows that a large number of patients discontinued their treatment without discussing with their physicians which if they did might have had a positive impact (9).

A knowledge gap is a primary explanation for medication non-adherence.

According to an analysis conducted by Health Dialog, approximately 11% of patients may not be adherent to their prescriptions because of knowledge gaps. Prescription labels and instructions with lots of clinical information can be confusing and sometimes overwhelming for patients. Health literacy is often little; nine out of 10 adults struggle to understand and use health information (CDC). Oftentimes, providers don't have enough time during a routine visit to provide details about medication gains and the importance of taking them rightly. (24)

Lack of knowledge can derive from a variety of distinct patient scenarios such as:

- What if the patient doesn't speak the language in use and no one takes the time to notify him or her about how to use medication properly?
- What if the patient's cultural background lends to being wary of doctors and he or she doesn't believe the medication is really necessary?
- What if the physician uses vernacular language and the patient is too embarrassed to admit they don't understand it?
- What if the patient is afraid of their condition and doesn't ask the right questions because they're afraid to know the answers?
- What if the patient takes other additional medications and doesn't know how to incorporate "another pill" into their daily regimen?

## Antidepressant Adherence in Africa

A cross-sectional study was done at a regional tertiary psychiatric center in south Nigeria from November 1 to November 2012 for the evaluation of the persistence use of psychotropic medications among outpatients at the Pharmacy Department. The aim was to check for the level of patients' adherence to psychotropic medications and also to find out factors associated with poor medication adherence. 61.5% of the patients took their medication the day before the interview, while 38.5% did not take. Furthermore, 64% of them have never stopped taking their medicine upon feeling that their health has worsened or improved. 52% of the participants stated that they never forget to take along their medication when they leave home or have a journey. Over half, 55.5% were having a low level of adherence, 36% had moderate adherence, while only 8.5% had good adherence level to their ordered medications. Forgetfulness is listed as one of the main factors affecting adherence in the setting studied. An additional factor reported by patients for non-adherence was experiencing of side-effects (16).

## Antidepressant Adherence in Ethiopian situation

A systematic review and meta-analysis was also done in Ethiopia on 2020 on Psychotropic medication non-adherence and its associated factors on patients with major psychiatric disorders. Overall, 4504 studies noted in the English language until December 31, 2017, were explored from the main databases ( $n = 3125$ ) (PubMed (MEDLINE), Embase, CINAHL, PsycINFO, and Web of Science) and other appropriately related sources (mainly from Google Scholar,  $n = 1379$ ). 46 researches were included in the systematic review. Among these, 35 studies (schizophrenia ( $n = 9$ ), depressive ( $n = 16$ ), and bipolar ( $n = 10$ ) disorders) were taken in the meta-analysis. The research aimed to determine the pooled proportion of psychotropic medication non-adherence and synthesize the linked-up factors with treatment non-adherence among major psychiatric disorder patients. Almost half (49%) of participants with major psychiatric disorders did not adhere to their psychotropic medication. Medication non-adherence among patients with major depressive disorder was 50%. It also stated that medication non-adherence is influenced by various factors such as patients' behavior, social or family support, clinical or illness and treatment-related, and overall health care system-related factors (18).

A hospital-based cross-sectional quantitative study was done at Hiwot Fana Specialized University Hospital and Dil Chora Hospital from May to June, 2015 on Psychotropic Medication Non-Adherence among patients with a psychiatric disorder. A systematic sampling method was used to recruit 660 patients older than 18 years with major psychiatric disorders at two selected hospitals in the eastern part of Ethiopia. The objective of this study was to evaluate the prevalence of psychotropic medication non-adherence and its related factors among psychiatric patients at two chosen hospitals in eastern Ethiopia. The study participants by their diagnosis were schizophrenia (69.2%), major depressive disorder (21.5%) and bipolar-disorder (5%) respectively. Generally, the prevalence of psychotropic medication non-adherence among the patients with major psychiatric disorders was 61.2% (95% CI: 57.3-65.0%). And it was found that the prevalence of medication non-adherence among the patients with schizophrenia, major depressive disorder and bipolar I disorder were 60.9%, 62.9% and 58.9% respectively. In this study, skipping of medications (58.1%), fear of possible side-effects (69.0%), inadequate information about their illness (54.8%), inadequate information about their medication (56.3%), lack of social support (50.1%), perceived stigma (53.7%) and history of different substance abuse (58.3%) were the most common causes for psychotropic medication non-adherence (20).

A cross-sectional study was also done in 2014 on Medication adherence and its determinants among psychiatric patients at Ayder Referral Hospital, Northern Ethiopia. A total of 423 patients were selected by a systematic random sampling technique from all patients attending the psychiatric clinic at the hospital. The research aimed to evaluate medication persistence use and

its correlates on psychiatric patients. A total of 387 patients participated in the interview. Two hundred and sixteen (55.8%) and 113 (29.2%) were patients of schizophrenia and mood disorder, respectively, while 35 (9%) and 23 (5.9%) had a substance abuse and autistic disorder. Two hundred and seven (71.6%) patients were found to be persistent user of their medication. When the type of illness was considered and adherence rates were observed, 60 (53.1%), 24 (68.6%), 149 (69%), and 18 (78.3%) of patients with mood disorder, substance abuse, schizophrenia, and autism, respectively, were persistent user of their medications. Age 26–35 years, female gender, tertiary education, living with family and shorter treatment duration were among the variables associated with better outcome effect. Whereas feeling better after illness and forgetting to take medications were the main reasons reported for missed doses (21).

Another prospective cross-sectional study was done on 217 patients on side effects of drugs, Medication Adherence, and Clinical Outcomes from patients with depression at the psychiatry clinic of Gondar University Hospital. The aim of the study was to determine the magnitude of side effects of antidepressants and their impact on the level of adherence and clinical outcome. The most common ordered single medication was amitriptyline (61; 28.1%) followed by fluoxetine (59;27.2%). Chlorpromazine plus amitriptyline (25; 11.5%) was frequently prescribed dual therapy. More than half of patients 125 (57.6%) had additional psychiatric illness. More than half of the subjects had poor adherence to their medications (124; 57.1%). Nearly one-third of them had moderate adherence (70;32.3%). Only 23(10.6%) of them achieve good adherence level. This study reported that the chance of non-adherence was increased by long-standing depression and comorbid psychiatric features (19).

A hospital-based cross-sectional study was done on November 2011 at Jimma University Specialized Hospital psychiatry department on Medication non-adherence among adult Psychiatric outpatients. A total of 422 adults with psychiatric illness in the psychiatric outpatients were selected with 40.3% females and 59.7% males. Most, (41.3%), of the participant patients had non-affective psychotic disorder followed by depressive disorder, 125(29.8%), and bipolar disorder, i.e. 98(23.4%). The rest 5.5% were having anxiety and/or other disorders. This study was done to evaluate the degree of non-adherence and factors associated with it. (41.2%) of the patients were non-adherent to medications ordered by their health care providers. For non-adherent patients, the number one reported reason was forgetting 136(78.2%) and feeling better 77(44.3%). Irregular follow-up, lack of social support and prescription of complex drug regimen were also factors associated with non-adherence (22).

Based on the researches revised in our study, the prevalence of non-adherence to Anti-depressant medication treatment in Ethiopia is significantly higher than that seen in studies done in other countries. The prospective cross-sectional study that was done in Gondar University Hospital psychiatry clinic from September 2016 to January 2017 listed the highest prevalence of non-adherence (89.4%) compared to the other studies done in our country and worldwide.

## Objective of the study

To determine the pattern of non-adherence to Antidepressant Medication treatment among Psychiatry Outpatients with Depressive Disorders who are on an antidepressant medication.

### General objective

To study the pattern of treatment adherence of patients with Depressive disorders that are on antidepressant treatment at Tikur Anbessa Specialized Hospital.

### Specific objectives

- To describe the prevalence/pattern of adherence and non-adherence to Antidepressant medication treatment in patients with depressive disorders,
- To identify sociodemographic factors associated with non-adherence to antidepressant treatment in patients with Depressive disorders,
- To identify clinical and medication-related factors that are associated with non-adherence to antidepressant treatment in patients with Depressive disorders.

## Methodology

### Study design

The study was a hospital-based cross-sectional quantitative study.

### Study setting

The study was conducted at one of the largest hospitals in Ethiopia; Tikur Anbessa Specialized Hospital (TASH). TASH is one of the largest hospitals in Ethiopia that give outpatient mental health service. There is no inpatient mental health service but there are 5 clinics at the outpatient department (OPDs) giving Mental health service in the hospital. The Psychiatry department at AAU has a total number of 33 Psychiatrists, 5 Clinical Psychologists, 45 Psychiatry Residents, 13

Clinical Psychology students and a total of 4 nurses. The number of available professionals may vary from time to time because of their allocation to other hospitals to give similar mental health services. There are many patients with depressive disorders treated at these clinics and depressive disorders have been one of the 3 most common mental disorders seen at this clinic along with Schizophrenia and Bipolar disorders. Depressive disorders at these clinics are managed by Psychotherapy, Pharmacotherapy or a combination of both treatment options. The most commonly available and prescribed classes of antidepressants are SSRIs such as Fluoxetine and Sertraline, and TCAs such as Amitriptyline. Psychiatrists and Psychiatry residents are the ones that are responsible for prescribing medications at the Psychiatry clinic in TASH.

## Source population

All adult outpatients with depressive disorders receiving antidepressant medication treatment as outpatients in hospitals in Ethiopia.

## Study Population

216 adult outpatients with depressive disorders that received antidepressant medication treatment at TASH psychiatry clinic over the past one-year period (Since June 2019).

## Inclusion and exclusion criteria

### Inclusion criteria

- All consenting patients aged 18 years and above with established (recorded) depressive disorders according to DSM-5.
  1. Major depressive disorder
  2. Persistent Depressive Disorder (Dysthymia)
  3. Premenstrual Dysphoric Disorder
  4. Substance/ Medication-induced Depressive Disorder
  5. Depressive Disorder due to Another Medical Condition
  6. Other Specified Depressive Disorder
  7. Unspecified Depressive Disorder
- Those who have received treatment at TASH outpatient psychiatry clinic with one or more antidepressant medications with a minimum of two prescription fills before their most recent visit.
- Those that had their most recent visit within the past 12 months (since June 2019)

- Patients whose medical record includes all the necessary sociodemographic information.

### Exclusion criteria

- Those receiving antidepressant medications for non-depressive disorders as the primary diagnosis (comorbidities to primary depressive disorders will not be excluded).
- Patients that were managed only by non-pharmacological interventions.
- Acutely unwell patients requiring emergency treatment.
- Patients with cognitive impairment who are unable to communicate.
- Patients who are unable to communicate in the language of the interview, Amharic.
- Patients who do not give consent.

### Sample Size

The sample size was determined using a single population proportion formula as described below.

$$n = z^2 (p (1-p))/d^2$$

Where: n= is the minimum sample size required

p = is an estimate of the prevalence rate for the population (50%).

1-p= is the degree precision, 1-0.5 = 0.5

d = is the margin of error tolerated = 0.05

z = is the standard normal value = 1.96 at 95% confidence level.

$$\text{Thus, } n = z^2 (p (1-p))/d^2 = (1.96)^2 (0.5) (0.5) / (0.05)^2 = 384$$

Since our source population size was <10,000 i.e. 400, correction formula was needed.

$n/(1+n/N)$  where, N is the source population & n is the previously calculated sample size.

Result = 196 with 10% for the non-respondents, we get **216** (which was the final sample size).

### Sampling method

Consecutive patients who had a visit to the OPD during the specified period and fulfill inclusion criteria were included until enough sample size was obtained. Because an adequate sample size was not obtained, the period was extended beyond June 2019.

## Data collection

The registry found at the Department of Psychiatry at TASH was used to identify cases to be included in this study based on the inclusion criteria. Trained Psychiatry residents with the supervision of the PI screened and identified eligible patients.

Data was collected using two methods:

1. The Medical record of eligible patients was accessed by trained psychiatry residents and data on the profile of the patient sociodemographic, chief complaint, history of present illness, past psychiatric, both psychiatric and medical diagnosis, and management was collected using the data extraction tool.
2. Trained psychiatry residents conducted brief face to face (for those who came for follow up) or telephone interview to check medication adherence using a structured questionnaire.

## Data collection tools

The following instruments were used.

- Socio-demographic profile sheet; especially developed for this study was used to record the relevant sociodemographic data on age, gender, education, marital status, and locality.
- A checklist especially developed for associated clinical factors with non-adherence.
- The eight-item Morisky Medication Adherence Measurement Scale (MMAS-8) was used to measure non-adherence. Although it has not been validated in our setting it has been extensively used both locally and in other low- and middle-income countries (LMICs).

## Operational Definition

According to Morisky Medication Adherence Measurement Scale-Eight (MMAS- 8):

- Low level of adherence- a score of less than 6
- Moderate level of adherence- a score of 6-7 and
- High level of adherence- a score of 8.

For our study, low and moderate level are interpreted as non-adherence while high adherence as adherence.

## Study variables

**Independent variables:** All the listed Sociodemographic and Clinical factors.

**Dependent variables:** Morisky Medication Adherence Measurement Scale-Eight (MMAS- 8) score.

## Data management analysis

The Data extraction sheets were coded and data entry, cleaning, and analysis were done by the Principal Investigator using the Statistical Package for the Social Sciences (SPSS) version 25. Descriptive statistics and multiple regressions were calculated to determine the prevalence and associated factors of non-adherence. First univariate logistic regression was done to identify independent variables of non-adherence. Then variables with a P-value of less than 0.25 were selected and further analyzed with multivariable logistic regression to control confounders. Adjusted odds ratio (AOR) was used to show association; the significance of the association was considered for variables with p-value less than 0.05 with 95% CI.

## Ethical considerations

Ethical permission was sought from the Department of Psychiatry, College of Health Sciences, Addis Ababa University, and ethics committee at Tikur Anbessa Specialized Hospital. The Names of patients and the professionals who treated the patients were not mentioned in the study to keep confidentiality. Verbal consent was also provided to every patient who was contacted through a phone call. In the process of doing this research if any risk to the patient such as mismanagement of the illness, non-adherence issues or risk to suicide etc... were identified proper measures such as communication with the treating physician, consultation to a senior physician, psychoeducation to the patient and if necessary, referral for admission were undertaken.

## Results

### Sociodemographic Characteristics of participants

In the current study, a total of 216 patients with age ranging from 18years to 77years with depressive disorders and who are on antidepressant treatment participated. Out of these, more than half of the participants were females 123(56.9%) and the rest 93(43.1%) were males. The majority (29.6%), of them were between the age range of 25-34 years old with a mean (standard deviation) age of 39.14± 14.319 and a median age of 38 years. Most of the participants 104(48.1%) reported

to travel a distance of 11kms up to 50kms and 29(13.4%) reported to travel more than 51kms. Most of the participants, 152 (70.4%) have attended post-secondary education, the majority of them,100(46.3%), were single and 166(76.9%) had caregiver support.

The results of these and the rest sociodemographic factors are summarized in detail in the following table (Table 1).

**Table 1:** Sociodemographic characteristics of Participants

*Sociodemographic Characteristics (N=216)*

	N	Percentage
<b>Age in years</b>		
18 to 24	36	16.7
25 to 34	64	29.6
35 to 44	36	16.7
45 to 54	46	21.3
Older than 55	34	15.7
<b>Gender</b>		
Male	93	43.1
Female	123	56.9
<b>Living distance from hospital in KM</b>		
Up to 10Kilometers	83	38.4
11 to 50Kilometers	104	48.1
51 to 100Kilometers	16	7.4
More than 100Kilometers	13	6%
<b>Marital status of participants</b>		
Single	100	46.3
Married	90	41.7
Divorced/Separated	19	8.8
Widowed/Widower	7	3.2
<b>Number of Children of Participants</b>		
None	114	52.8
Only 1 child	36	16.7
2 to 3	32	14.8
4 to 5	16	7.4
More than 5	18	8.3
<b>Occupation</b>		
Housewife	18	8.3
Student	3	1.4
Government employee	70	32.4
Private employee	37	17.1
Farmer	6	2.8
Merchant/ Business owner	28	13.0

<i>Unemployed</i>	54	25.0
<b>Religion of Participants</b>		
<i>Christian</i>	186	86.1
<i>Muslim</i>	30	13.9
<b>Level of education of Participants</b>		
<i>Not literate</i>	11	5.1
<i>Primary education (up to grade eight)</i>	8	3.7
<i>Secondary Education (grade 9 to 12)</i>	45	20.8
<i>Post-secondary education</i>	152	70.4
<b>Presence of care giver</b>		
<i>Yes</i>	166	76.9
<i>No</i>	50	23.1

## Clinical Characteristics of participants

Major depressive disorder (MDD) was the commonest among the depressive disorders accounting for 194(89.8%) participants followed by Persistent depressive disorder (Dysthymia) 21(9.7%) and Other specified depressive disorder 1(0.5%).

The severity of the depressive disorders was excluded from being one independent variable as this factor was missing for all participants except for one.

One hundred sixty-four (75%) of the participants didn't have a record of co-morbid mental illness. Among the recorded co-morbid mental illnesses, the Schizophrenia spectrum and other psychotic disorders accounted for 14(6.6%) followed by anxiety disorders 11(5.1%) and somatic symptom disorders 7(3.3) %.

Similarly, 118(54.6%) participants didn't have a record of co-morbid medical illness. Among the recorded co-morbid medical illnesses, Diabetes Mellitus (DM) has the highest record of occurrence 15(7.7%) followed by Hypertension (HTN) 14(6.7%) and Retroviral infection (RVI) 12(5.7%).

Fluoxetine was found to be the most frequently prescribed medication among the Antidepressant medications accounting for 106(49.1%), followed by Amitriptyline 73(33.8%), Sertraline 26(12.1%) and Imipramine 11(5.1%).

The majority of the participants, 112(51.9%) do not have documented prescription of medications other than Antidepressants. Among those who take non-antidepressant medications, second-generation antipsychotics account for the largest percentage 49 (22.8%), the commonly prescribed medications being Risperidone 39(18.105%) and Olanzapine 10(4.7%). Anticonvulsant medications such as Carbamazepine, Phenobarbital, Phenytoin, Sodium Valproate and Lamotrigine together accounted for 7.2% of the total medications other than antidepressants. HAART accounts for 10(4.3%).

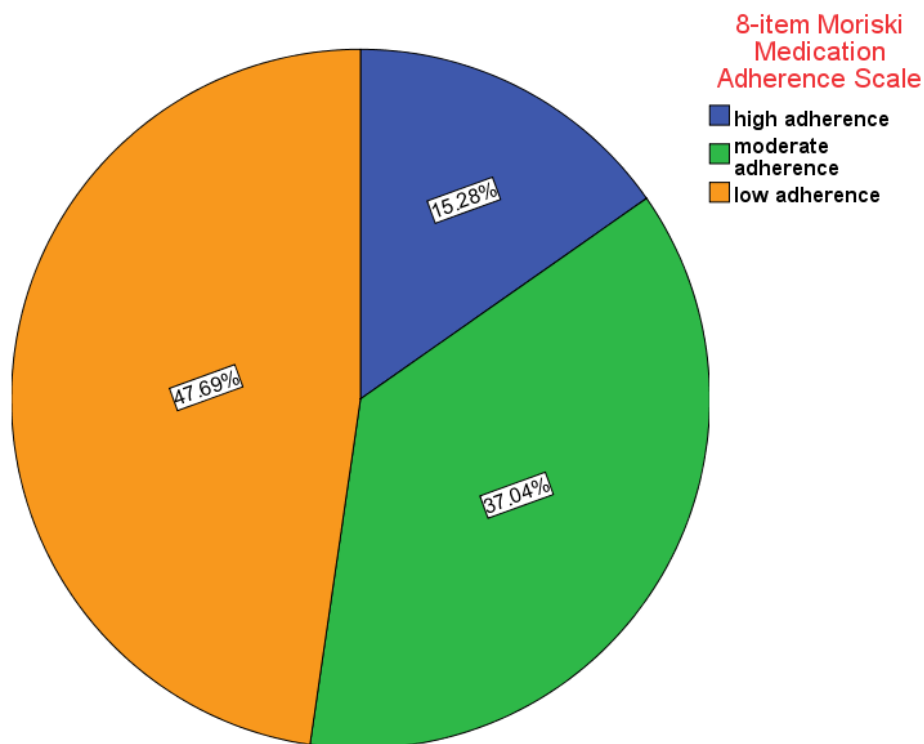
One hundred forty-eight (68.5%) of the participants reported having no medication adverse effect. The commonest types of adverse effects as reported by the majority of the participants are dry mouth 31(14.4%), gastrointestinal symptoms such as dyspepsia, nausea, constipation constituting for 30(14%) Followed by headache 7(3.2%) and weight gain 5(2.3%).

Please refer to table 3 for details of the clinical characteristics of the study participants.

## Levels of Medication adherence

Based on the 8-item Morisky Medication Adherence Scale, the majority of the participants 103(47.7%) were found to have low adherence whereas the remaining 80(37%) moderate adherence and 33(15.3%) high level of adherence as shown in Figure 1. In this specific study, those who have low and moderate adherence are categorized as Non-Adherent (84.7%) and those with high adherence as Adherent (15.3%).

**Figure 1:** Levels of adherence to antidepressant medication in patients with depressive disorders based on MMAS score



Sixty percent of participants reported that they sometimes forget to take their prescribed medicine. Over the past 2 weeks before the data collection, only 31.9% of the participants reported that there was at least a day on which they didn't take their medicine while the rest 68.1% of participants didn't miss their medicine for even a day. On the contrary, 82.9% of participants didn't take their prescribed medicine in the preceding day from the data collection date.

Ten percent of the participants reported stopping their medication as they feel worse while taking it. Majority of participants (80.1%) reported that they don't forget to bring their medication when they travel or leave their homes. 60.6% of participants didn't stop taking their medication even though they felt like their health is improving and only 9.3% of the participants believed that it was difficult to stick to their treatment plan.

**Table 2:** 8-item Morisky Medication Adherence Scale score of Participants

<i>MMAS-8 questions</i>	<b>Yes</b>	<b>No</b>
<i>Do you sometimes forget to take your prescribed medicines?</i>	60.2%	39.8%
<i>Over the past 2 weeks, were there any days when you did not take your prescribed medication?</i>	31.9%	68.1%
<i>Have you stopped taking medications because you feel worse when you take it?</i>	10.6%	89.4%
<i>When you travel or leave home, do you sometimes forget to bring along your meds?</i>	19.9%	80.1%
<i>Did you take your prescribed medicine yesterday?</i>	17.1%	82.9%
<i>When you feel like your health is under control, do you sometimes stop taking your medications?</i>	39.7%	60.3%
<i>Do you feel hassled about sticking to your prescribed treatment plan?</i>	9.3%	90.7%
<i>How often do you have difficulty remembering to take all your prescribed medicine?</i>	Never-	32.4%

## Adherence status of participants based on sociodemographic and clinical characteristics

As shown in Table 3, ninety-one percent of participants who had a high adherence rate (MMAS-8 score of 8) were living in a radius of 10kms from TASH. Regarding the level of education of participants, it was found out that most (73.8%) of those who had low adherence levels had post-secondary education level. Most of those who don't have a caregiver 92% also had low adherence level. When we see adherence level regarding the professional title of the prescriber, 48.3% of participants whose medication was prescribed by psychiatry residents had low adherence level while 37.8% had moderate adherence and only 13.9% had high adherence. From those participants with low adherence, 78(75.7%) claimed that information about their illness was not provided to them by their treating physician. their physician. 92 (87.6%) of participants on multiple

medications were found to have low adherence level. Similarly, 30 (90.9%) of highly adherent participants have only a single medicine to take. From the participants with low level of adherence, those with no specifier account for 71/103 (68.9%), followed by specifiers of Psychotic features 25 (24.3%). From those with low level of adherence, those that don't use Khat account for 91 (88.3%) followed by those that use Khat 12 (11.7%).

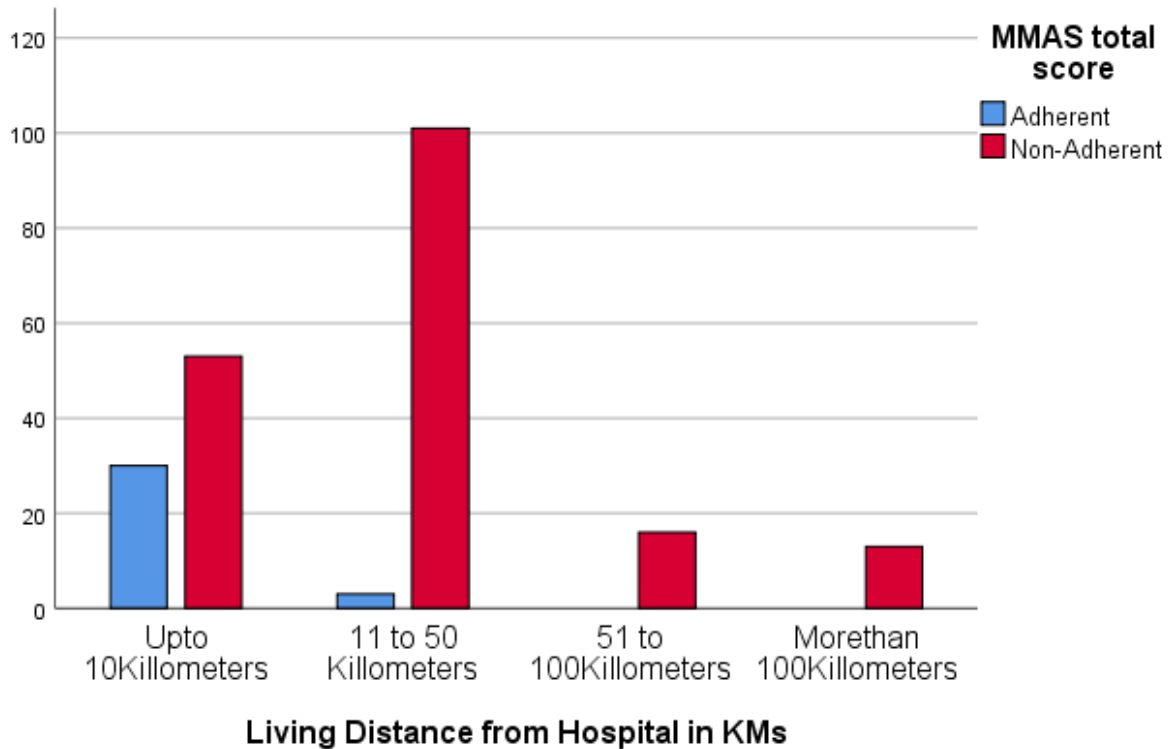
**Table 3:** Clinical characteristics and adherence levels of participants

<i>Clinical Characteristics</i>			<i>Adherent</i>	<i>Non-Adherent</i>	<i>Frequency from Total (N=216)</i>
<i>Psychiatric diagnosis of Participants</i>	<i>MDD</i>	n	29	165	194
		%	87.9%	90.2%	89.8%
	<i>PDD (Dysthymia)</i>	n	4	17	21
		%	12.1%	9.3%	9.7%
	<i>Other specified depressive disorders</i>	n	0	1	1
		%	0.0%	0.5%	0.5%
<i>Professional Title of the prescriber</i>	<i>Psychiatry resident</i>	n	28	173	201
		%	84.8%	94.5%	93.1%
	<i>Psychiatrist</i>	n	3	10	13
		%	9.1%	5.5%	6.0%
	<i>Other</i>	n	2	0	2
		%	6.1%	0.0%	0.9%
<i>Duration of illness</i>	<i>0 up to 3months</i>	n	0	3	3
		%	0.0%	1.6%	1.4%
	<i>4 to 6 months</i>	n	9	45	54
		%	27.3%	24.6%	25.0%
	<i>7 months to 12 months</i>	n	13	60	73
		%	39.4%	32.8%	33.8%
	<i>13 months to 5 years</i>	n	8	70	78
		%	24.2%	38.3%	36.1%
	<i>More than 5 years</i>	n	3	5	8
		%	9.1%	2.7%	3.7%
<i>Was information about their illness provided to the participants</i>	<i>Yes</i>	n	20	56	76
		%	60.6%	30.6%	35.2%
	<i>No</i>	n	13	127	140
		%	39.4%	69.4%	64.8%
<i>Was information about the prescribed drug provided to the participants</i>	<i>Yes</i>	n	29	157	186
		%	87.9%	85.8%	86.1%
	<i>No</i>	n	4	26	30
		%	12.1%	14.2%	13.9%

Non-adherence to antidepressant treatment and its predictors among outpatients with depressive disorders, a hospital-based cross-sectional study in Addis Ababa, Ethiopia

<b>Medication variants prescribed to the participants</b>	<i>Single medication</i>	n	30	81	111
		%	90.9%	44.3%	51.4%
	<i>Multiple medications</i>	n	3	102	105
		%	9.1%	55.7%	48.6%
<b>Cost of the prescribed Drugs</b>	<i>Free</i>	n	12	42	54
		%	36.4%	23.0%	25.0%
	<i>Payment</i>	n	21	141	162
		%	63.6%	77.0%	75.0%
<b>Specifiers of the diagnosed illness</b>	<i>None</i>	n	29	141	170
		%	87.9%	77.0%	78.7%
	<i>Anxious distress</i>	n	1	8	9
		%	3.0%	4.4%	4.2%
	<i>Anxious distress &amp; Psychotic features</i>	n	0	3	3
		%	0.0%	1.6%	1.4%
	<i>Psychotic features</i>	n	3	30	33
		%	9.1%	16.4%	15.3%
<i>GMC</i>	n	0	1	1	
	%	0.0%	0.5%	0.5%	
<b>Overall substance use of participants</b>	<i>Yes</i>	n	6	12	18
		%	18.2%	6.6%	8.3%
	<i>No</i>	n	27	171	198
		%	81.8%	93.4%	91.7%
<b>Khat use</b>	<i>Yes</i>	n	0	13	13
		%	0.0%	7.1%	6.0%
	<i>None</i>	n	33	170	203
		%	100.0%	92.9%	94.0%
<b>Cigarette use</b>	<i>Yes</i>	n	2	3	5
		%	6.1%	1.6%	2.3%
	<i>None</i>	n	31	180	211
		%	93.9%	98.4%	97.7%
<b>Alcohol use</b>	<i>Yes</i>	n	2	7	9
		%	6.1%	3.8%	4.2%
	<i>None</i>	n	31	176	207
		%	93.9%	96.2%	95.8%
<b>Concerns of the participants over medication adverse effects</b>	<i>Yes</i>	n	13	40	53
		%	39.4%	21.9%	24.5%
	<i>None</i>	n	20	143	163
		%	60.6%	78.1%	75.5%

**Figure 2:** Adherence status to antidepressant medication based on distance from the hospital in patients with depressive disorders.



## Factors associated with non-adherence to antidepressant medications

Among the factors found to be significantly associated with non-adherence on univariate analysis, specifiers of the depressive disorders, participants concern over side effects, the cost of the drug and the presence of a caregiver were not found to be statistically significant predictors of antidepressant medication non-adherence when other factors were controlled for.

However, our findings indicate, among the factors associated with medication non-adherence, living distance from the hospital showed the highest association with increased odds of medication non-adherence both in univariate and multivariable analyses. Participants who are living in a radius of 51kms to 100kms had 11 times more at odds of being non-adherent than those living in a radius of less than 10kms (AOR= 11, 95%CI (29,46.6)).

In addition, those participants who have a post-secondary level of education were more likely to be non-adherent than those who didn't take formal education (AOR=8.3, 95% CI (1, 64.4)). Participants who were taking multiple medications were also found to have 6-fold increased odds of non-adherence than those who were on single medicine (AOR=6.1, 95% CI (1, 34.9)).

**Table 4:** Summary of factors associated with non-adherence to antidepressant medications

<i>Variable</i>		<i>COR at 95% CI</i>	<i>P value</i>	<i>AOR at 95% CI</i>	<i>P value</i>
<i>Level of education of the participant</i>	Illiterate	1 (Reference)	-	-	-
	Primary school	4 (0.35,45.3)	-	-	-
	Secondary school	-	-	-	-
	Post-Secondary school	4.8 (1.28,18.4)	<0.02	8.3 (1, 64.4)	<0.043
<i>Specifiers of the dx illness</i>	None	1 (Reference)	-	-	-
	Anxious distress	1.05 (0.5,2.2)	-	-	-
	Anxious distress and psychotic features	2.8 (1.3,5.8)	0.007	-	-
	Psychotic features	-	-	-	-
	GMC	-	-	-	-
<i>Living distance</i>	Up to 10 kms	1 (Reference)	-	1(Reference)	-
	11-50 kms	19 (5.5,65.3)	<0.001	11 (29,46.6)	<0.001
	51 -100 kms	-	-	-	-
	More than100 kms	-	-	-	-
<i>Concern over side effects</i>	Yes	1 (Reference)	-	-	-
	None	2.3 (1,5)	-	-	-
<i>Cost of drug</i>	Free	1 (Reference)	-	-	-
	Paying	1.9 (.87,4.2)	<0.105	-	-
<i>Presence of care giver</i>	Yes	1 (Reference)	-	1 (Reference)	-
	No	11.7 (1.5,87.9)	<0.017	-	-
<i>Medication variants</i>	Single medication	1 (Reference)	-	1 (Reference)	-
	Multiple medications	12.6 (3.7,42.7)	<0.001	6.1(1,34.9)	0.042

N.B:

- These variables in the table are those found to be significantly associated in univariable analysis which were picked for multiple logistic regression.
- Empty cells indicate lack of significant association in at the multiple logistic regression.

## Discussion

In this study, a total of 216 adult out-patients with Depressive disorders, age ranging from 18years to 77 years, who received antidepressant medication treatment at TASH psychiatry clinic over the past one-year period participated. The objective of the study was to evaluate their pattern of non-adherence to antidepressant medication treatment and identify the socio-demographic and clinical factors affecting their antidepressant medication adherence. The study assessed the prevalence of non-adherence to antidepressant medication taking into account the common antidepressants available in our country and also considering all disorders that are listed under depressive disorders

at the DSM-5. Accordingly, it was found out that the majority of the participants were non-adherent (84.7%) to their antidepressant medication and the rest 15.3% were adherent. The following socio-demographic and clinical factors were identified to affect adherence: living distance from the hospital in kms, presence of multiple medications and post-secondary education.

As compared to other studies, the prevalence of non-adherence of our study is relatively comparable to those studies done both in Africa and Ethiopia. However, it has a significant difference from studies conducted in Europe and America. This might be because of the difference in the level of awareness about the treatment plan, quality of psychoeducation given, the level of acceptance of long-term psychotropic medication use, and the financial burden that comes with missing working days for follow up visits, medication and transportation costs. In addition, patients from low-income countries are more likely to default treatment and resort to traditional or non-pharmacological interventions when failing to see an adequate response to treatment. Although not explored in our study, a local study has indicated that levels of non-adherence are significantly affected by patterns of using traditional treatments.(22)

Every measurement method has its strengths and weakness and therefore, the high level of non-adherence found in this study can also be attributed to the Morisky Medication Adherence Scale (MMAS).

Distance from the hospital was found to be a predicting factor of non-adherence to antidepressant medications. This might be due to scarcity and high cost of transport service, with uncomfortable roads which leads the patient to default treatment or to start follow up in another nearby health facility. It could also be due to high costs related to city life to get essential services like food and room services during follow-up visits.

With regards to higher levels of education being associated with non- adherence, this can be partly explained by the need for patient-tailored psychoeducation, more empowerment and involvement of depressed patients in their own treatment planning and self-management. The majority of our participants have indicated that they were not well informed about the illness and the medications they were taking. As compared to those who are less educated, who might prefer more directive care, those who are educated might have been led to lose trust and doubt the decision-making of the treating physician resulting in treatment non-adherence. (9), (14)

The association of non- adherence with the number of medications being taken has been reported in several other studies. In this particular setting, it can be explained by the increased cost of medicines, the possible drug to drug interactions resulting either in increased side effects or decreased effects of medicines and generally due to factors associated with pill burden and polypharmacy. (14)

## Strength and limitations of the study

There were several measures that were employed to ensure the quality of data collection, analysis and our findings. We used comprehensive data acquisition methods (face-to-face & phone call interview and document/record reviews). Inferential statistical methods were also applied to control confounders and maintain the credibility of the finding. However, this study is not without limitations.

This study used a standard but not adapted measurement tool (MMAS-8) to assess antidepressant medication non-adherence and associated sociodemographic and clinical factors. This will limit the validity of the non-adherence findings and caution needs to be taken when interpreting the findings.

Convenience sampling of patients who are actively coming for follow up visits might have also resulted in selection bias and could have excluded those who might have defaulted their treatment and follow up as a whole. Although we found a high level of non-adherence, the possibility of recall bias should always be considered, more so in patients with depression who could have changes in cognition, as it might lead to underestimation of medication non-adherence. Even though 83% of our participants admitted not taking their medication in the preceding day, only 69% reported that there were days in the last 2 weeks that they did not take their medications; this can be a reflection of recall bias. The effect of social desirability when being questioned by physicians from the same treatment center may be reflected by the low endorsement of non-adherence related questions.

For non-adherence related factors, associations from this cross-sectional study cannot be used to conclude causality. This hospital-based cross-sectional study design might not establish cause and effect relationship in showing a temporal effect on medication adherence; thus, the findings from this study need to be rechecked in a prospective study.

Moreover, we also acknowledge the presence of several other factors, that were not taken as variables in our study, which could be important predictors of non-adherence among the patients with depression; taking other variables into the predictive model is worth exploring in future studies.

In addition, the emergence of the Coronavirus pandemic could also have contributed to non-adherence. Solutions that are suggested, like social distancing, to control the spread of the virus might have affected special patient populations like those with depression who are now unable to access healthcare facilities for their routine care and medicines management.

## Conclusion and recommendations

The level of non-adherence was high among participants of this study. Most of the participants were taking antidepressant medication for the diagnosis of Major Depressive Disorder.

The majority of our participants reported forgetting to take their prescribed medicine in the prior 2 weeks. Living distance from the hospital, prescription of multiple medications and post-secondary education were found to be significant predictors of antidepressant non-adherence.

Identifying and targeting modifiable factors will have a significant impact on treatment outcome depressive disorders.

Based on this study we recommend the following,

- Bridging the communication gap between patients and doctors, providing patient-tailored psychoeducation that addresses the needs of each patient based on their background and level of understanding of the illness and treatment plan.
- Clinicians' adherence to prescribing guidelines, avoiding polypharmacy and medication interaction unless clearly indicated.
- Advocating for accessibility of treatment for common mental disorders at primary care level to tackle issues or non-adherence related to the distance of treatment centers.
- Conducting larger analytical studies to further establish causal relationships to non-adherence and its impact on depression treatment outcome.

## Dissemination and Utilization of Results

The results of the study will be presented to the Department of Psychiatry as part of a Postgraduate thesis. The findings of the study will also be reported to relevant clinicians and administration. We also aim to publish this study in a peer-reviewed scientific journal.

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## Annexes

### Annex-1

#### Informed consent (to be read to the patient through phone call)

Non-adherence to Antidepressant Medication treatment among Psychiatry Outpatients with Depressive Disorders at TikurAnbessa Specialized Hospital.

Dear participant Mr./ Miss/ Mrs..... , the main purpose of this study is to see the prevalence of non-adherence to medications provided for those diagnosed with depressive disorders. This study is going to be conducted by me, Dr. Selam Mulugeta. I am doing my final year residency at TikurAnbessa Specialized Hospital department of psychiatry. This study is being done for the thesis on the topic and purpose that has been mentioned above. It has been approved by the department of psychiatry. I would really appreciate your participation and I am asking you to complete a survey. The participation is completely voluntary and you are participating in this study only because you want to participate. If you choose to participate, please show your agreement and complete the survey according to the directions provided.

Tick here if consent gained .....

Date .....

Thank you for your time and participation in the matter. Dr. Selam Mulugeta

#### Amharic Version

የተከበሩ ተሳታፊ አቶ/ወይዘሮ....., የዚህ ጥናት ዋና ዓላማ ለድብርት ህመም የሚሰጡ መድሃኒቶች በአግባቡ መወሰድ አለመወሰዳቸውን እና ተያያዥ የሆኑ ችግሮችን ማየት ነው ::

ይህ ጥናት በእኔ በዶ/ር ሰላም ሙሉጌታ ይካሄዳል። በጥቁር አንበሳ የመጨረሻ አመት የአዕምሮ ህክምና ተማሪ ነኝ። ይህ ጥናትም በሳይካትሪ ዲፓርትመንቱ ጸድቋል።

ስለተሳትፎዎት እያመሰገንኩ ይህንን የዳሰሳ ጥናት እንዲያጠናቅቁ በትህትና እጠይቃለሁ። ተሳትፎዎት ሙሉ በሙሉ በፈቃደኝነት ላይ የተመሰረተ ይሆናል።

ለመሳተፍ ከመረጡ እባክዎን ስምዎን ያሳዩ እና በቀረቡት መመሪያዎች መሰረት ጥናቱን ይሙሉ።

ስምዎን ከተገኘአዚህምልክት ያድርጉ.....

ቀን.....

ስለጊዜዎ እና ተሳትፎዎ እና መሰግናለን :: ዶ / ር ሰላም ሙሉጌታ

## Annex-2

### Sociodemographic data extraction sheet

1. Date – dd \_\_\_\_/mm\_\_\_\_/YYYY\_\_\_\_\_
2. Identification data -
  - 2.1 Medical Card No -\_\_\_\_\_
  - 2.2 Age -\_\_\_\_\_
  - 2.3 Gender Male\_\_ Female\_\_
  - 2.4 Address (distance from hospital in hours)- \_\_\_\_\_
  - 2.5 Marital Status- Single\_\_\_\_ Married\_\_\_\_ Divorced\_\_\_\_ Widowed\_\_\_\_
  - 2.6 Number of children- \_\_\_\_\_
  - 2.7 Occupation- \_\_\_\_\_
  - 2.8 Religion- Christian \_\_\_\_ Muslim \_\_\_\_ Atheist \_\_\_\_ Other \_\_\_\_
  - 2.9 Educational level- Illiterate \_\_\_\_ Early childhood education \_\_\_\_ Primary education \_\_\_\_ Secondary education \_\_\_\_ Tertiary(higher) education \_\_\_\_
  - 2.10 Caregiver- Yes \_\_\_\_ No \_\_\_\_
3. Psychiatric assessment/ Diagnosis:
  - 3.1 Major depressive disorder \_\_\_\_\_
  - 3.2 Persistent Depressive Disorder (Dysthymia) \_\_\_\_\_
  - 3.3 Premenstrual Dysphoric Disorder \_\_\_\_\_
  - 3.4 Substance/ Medication induced Depressive Disorder \_\_\_\_\_
  - 3.5 Depressive Disorder due to Another Medical Condition \_\_\_\_\_
  - 3.6 Other Specified Depressive Disorder \_\_\_\_\_
  - 3.7 Unspecified Depressive Disorder \_\_\_\_\_
4. Co morbid Mental Illness
5. Prescribed Antidepressant medication with PO dose per 24hours
  - 4.1 Fluoxetine \_\_\_\_\_ mg/day

- 4.2 Sertraline \_\_\_\_\_ mg/day
- 4.3 Amitriptyline \_\_\_\_\_ mg/day
- 4.4 Imipramine \_\_\_\_\_ mg/day
- 6. Other prescribed non-antidepressant medication  
\_\_\_\_\_.
- 7. Prescriber
  - 6.1 Psychiatrist \_\_\_\_\_
  - 6.2 Psychiatry resident \_\_\_\_\_

## Annex-3

### MMAS-8 Adherence questions

1. Do you sometimes forget to take your prescribed medicines? Yes (0) \_\_\_\_ No (1) \_\_\_\_
2. Over the past 2 weeks, were there any days when you did not take your prescribed medicines? Yes (0) \_\_\_\_ No (1) \_\_\_\_
3. Have you stopped taking medications because you feel worse when you take it?  
Yes \_\_\_\_ No \_\_\_\_
4. When you travel or leave home, do you sometimes forget to bring along your meds?  
Yes (0) \_\_\_\_ No (1) \_\_\_\_
5. Did you take your prescribed medicine yesterday? Yes (0) \_\_\_\_ No (1) \_\_\_\_
  
6. When you feel like your health is under control, do you sometimes stop taking your meds? Yes (0) \_\_\_\_ No (1) \_\_\_\_
7. Do you feel hassled about sticking to your prescribed treatment plan?  
Yes (0) \_\_\_\_ No (1) \_\_\_\_
8. How often do you have difficulty remembering to take all your prescribed medicine?  
Never/ Rarely (1) \_\_\_\_  
Once in a while (0) \_\_\_\_  
Sometimes (0) \_\_\_\_  
Usually (0) \_\_\_\_  
All the time (0) \_\_\_\_

## Amharic Version

1. የታዘዘልዎትን መድሃኒቶች መውሰድ አንዳንድ ጊዜ ይረሳሉ? አዎ (0) \_\_\_\_\_ የለም (1) \_\_\_\_\_
2. ባለፉት 2 ሳምንታት ውስጥ በሐኪም የታዘዙትን መድሃኒቶች ያልወሰዱ ባቸው ቀናት ነበሩ? አዎ (0) \_\_\_\_\_ የለም (1) \_\_\_\_\_
3. በሚወስዱበት ጊዜ መጥፎ ስሜት ስለተሰማዎት መድሃኒት መውሰድ አቁመዎል? አዎ \_\_\_\_\_ አይ \_\_\_\_\_
4. ሲጓዙ ወይም ከቤት ሲወጡ ፣ አንዳንድ ጊዜ መድሃኒቶችን ያይዘው መሄድ ይረሳሉ? አዎ (0) \_\_\_\_\_ የለም (1) \_\_\_\_\_
5. የታዘዘልዎትን መድሃኒት ተናት ወስደዋል? አዎ (0) \_\_\_\_\_ የለም (1) \_\_\_\_\_
6. ጤንነት ያላቸው እንደሆነ ሲሰማዎት አንዳንድ ጊዜ መድሃኒቶችን መውሰድ ያቆማሉ? አዎ (0) \_\_\_\_\_ የለም (1) \_\_\_\_\_
7. የታዘዘልዎትን መድሃኒት በታዘዘሎት መሰረት ለመውሰድ እንደ ከባድ ያሰማዎታል? አዎ (0) \_\_\_\_\_ የለም (1) \_\_\_\_\_
8. የታዘዘልዎትን መድሃኒቶች በሙሉ አስታውሶ ለመውሰድ ይቸገራሉ? በጭራሽ/አልፎ አልፎ (1) \_\_\_\_\_  
አንድ ጊዜ (0) \_\_\_\_\_  
አንዳንድ ጊዜ (0) \_\_\_\_\_  
አብዛኛውን ጊዜ (0) \_\_\_\_\_  
ሁል ጊዜ (0) \_\_\_\_\_  
አጠቃላይው ጤነት: \_\_\_\_\_

## Annex-4

### Clinical factors related to Adherence to Antidepressant treatment

1. Duration of illness  
\_\_\_\_\_
2. Information about illness  
Yes \_\_\_\_ No \_\_\_\_
3. Information about drug  
Yes \_\_\_\_ No \_\_\_\_
4. Medications provided  
Monotherapy \_\_\_\_ Polypharmacy therapy \_\_\_\_
5. Cost of drug  
Free \_\_\_\_ Paying \_\_\_\_
6. Severity of illness  
Mild \_\_\_\_ Moderate \_\_\_\_ Severe \_\_\_\_

7. Specifiers used

With:

Anxious distress \_\_\_\_\_

Mixed features \_\_\_\_\_

Melancholic features \_\_\_\_\_

Atypical features \_\_\_\_\_

Mood congruent psychotic features \_\_\_\_\_

Mood incongruent psychotic features \_\_\_\_\_

Catatonia \_\_\_\_\_

Peripartum onset \_\_\_\_\_

Seasonal pattern \_\_\_\_\_

8. Substance use

Overall substance uses            Yes \_\_\_\_\_    No \_\_\_\_\_

Chew Khat            Yes \_\_\_\_\_    No \_\_\_\_\_

Cigarette smoking            Yes \_\_\_\_\_    No \_\_\_\_\_

alcohol drinking            Yes \_\_\_\_\_    No \_\_\_\_\_

9. Comorbid medical illnesses

Yes \_\_\_\_    No \_\_\_\_

10. Concerns over medication adverse effects

Yes \_\_\_\_\_    No \_\_\_\_\_

If yes, what was the type of adverse effect noted?

Insomnia \_\_\_\_

Nausea \_\_\_\_

Headache \_\_\_\_

Weakness \_\_\_\_

Diarrhea \_\_\_\_

Anxiety \_\_\_\_

Sexual problem (Ejaculation disorder) \_\_\_\_

Dry mouth &/or Constipation \_\_\_\_

## Amharic Version

1. አጠቃላይ የስምምነት

2. ስለ ህመም-በቁመረጃ

- ተሰጥቶኛል \_\_\_\_\_ አልተሰጠኝም \_\_\_\_\_
3. ስለመድሃኒቱ በቁመረጃ  
ተሰጥቶኛል \_\_\_\_\_ አልተሰጠኝም \_\_\_\_\_
4. የታዘዘሎት መድኃኒት  
አንድ \_\_\_\_\_ ሁለት እና ከዛ በላይ \_\_\_\_\_
5. የመድኃኒት አቅርቦት  
ነፃ \_\_\_\_\_ በክፍያ \_\_\_\_\_
6. የህመም ክብደት  
መካከለኛ \_\_\_\_\_ መካከለኛ \_\_\_\_\_ ከባድ \_\_\_\_\_
7. ሱስ  
አጠቃላይ ሱስ ነት አለ? አዎ \_\_\_\_\_ አይ \_\_\_\_\_  
ጫት መቃም \_\_\_\_\_  
ሲጋራ ማጨስ \_\_\_\_\_  
የአልኮል መጠጥ መጠጣት \_\_\_\_\_
8. ሌሎች ተጋዳኝ ህመሞች  
አሉ \_\_\_\_\_ የሉም \_\_\_\_\_
9. በመድኃኒት ምክንያት ሊመጡ የሚችሉ የሚያሳስቡ የጎንዮሽ ጉዳዮች አሉ?  
አዎ \_\_\_\_\_ አይ \_\_\_\_\_  
መልስ ይሰጡ ፣ ምን ዓይነት አሉ ታወቀዎት? ለእነዚህ ታይቷል?  
እንቅልፍ ማጣት \_\_\_\_\_  
ማቅለሽለሽ \_\_\_\_\_  
ራስ ምታት \_\_\_\_\_  
ድክመት \_\_\_\_\_  
ተቆማጥ \_\_\_\_\_  
ጭንቀት \_\_\_\_\_  
የወሲብ ችግር \_\_\_\_\_  
የአፍድር ቀት እና/ወይም የሆድ ድርቀት \_\_\_\_\_