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Prevalence of Medication Non-adherence and Associated Factors Among Psychotic Patients in Dessie Referral Hospital, Amhara Region, North East Ethiopia, 2019

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Abstract: Introduction: Psychotic disorders are severe, impairing and typically a chronic mental disorders and the clinical presentations of psychotic symptoms are diverse and affect a person's thoughts and actions. Therefore, it is psychiatric disorder significantly contribute to the burden of diseases worldwide. Then, non-adherence is a major problem among Psychotic patients. Objective: To assess the prevalence of medication non adherence and associated factors among psychotic patients in psychiatric outpatient department in Dessie Referral Hospital 2019. Methods and materials: A hospitalized based cross sectional study was conducted from October 1/2018 to January 10/2019. The final sample consisted of 395 psychotic patients with on medication were selected by systematic random sampling technique. Morsiky medication adherence rating scale, Birchwood insight scale and oslow social support rating scale were used for data collected. Data was entered, cleaned and stored in EPI info version 3.1 and exported into SPSS version 21 for further analysis. Result: The response rate of the study was 93.6%%. A total of 199 (50.4%) females were participated in this study. The mean age of participants was 37 (SD±14 years) and age ranged from 18 to 88 year. The overall prevalence of medication non -adherence was found to be 44.3%. The factors such as being widowed (AOR=0.324, 95% CI, (0.135-.779), being daily labor (AOR=.344, 95% CI, (.124-.957) and have been suicidal ideation (AOR=0.322, 95% CI, (0.140-0.740) were negatively associated. Whereas being unable to read and write (AOR=2.611, 95% CI, (1.076-6.333) and length of the medication < 6 months (AOR=2.069, 95% CI, (1.127-3.799) were found to be positively associated with medication non-adherence. Conclusion and Recommendation: The result of this study showed that non adherence among psychotic patients was found to be high and indicted independent associated factors. And this finding has significant implications to enhance level of non-adherence by tackling determinant factors (above mentioned in result) and critical intervention program required and further research should be needed.

Keywords: Non Adherence, Psychotic Disorder, Dessie, Ethiopia

1. Introduction

1.1. Background

Non-communicable diseases are the leading causes of death in the world, about 85% of deaths secondary to non-communicable diseases occur in low- and middle-income countries [1]. WHO (World health organization) forecasting that deaths from NCDs (Non communicable diseases) will rise globally by 17% over the next ten years where the greatest increase will be in the African region by 27% (28 million deaths from NCDs). Especially in Africa, projections indicated deaths from non-communicable diseases (NCDs) are the burden and the most common causes of death by 2030. This implies that NCDs indicated a leading threat to health, economies and overall human development in the African

region [2, 3]. The WHO predicate in 2014 showed that in Ethiopia 30% of deaths was due to non-communicable diseases in 2012 [4-6].

Mental health disorders, HIV/AIDS and tuberculosis combined represented 54% of the burden of all illness globally and predicted to increase to 65%of the world burden of disease in 2020. Then, in the world one in four people will be affected by mental disorder at some point in their life. The WHO study showed that in 2011 that about 450 million people worldwide suffer from these conditions there by placing mental health disorders among the leading causes of illness [6, 7].

Mental illness is among the prevalent non-communicable diseases worldwide. Then, mental Illness negatively affects both the patient and the family members financially and socially [8-10].

Psychosis is grossly impairment realities testing with persons incorrectly evaluates the accuracy of their perception and thoughts and then make incorrect inferences about external reality with in the face contrary to evidence [11].

There are two groups of psychotic symptoms-these are known as positive symptoms and negative symptoms. Positive Symptoms are hallucinations, disorganized and delusional beliefs. Negative symptoms such as apathy or loss of interest, finding it hard to get motivated to do things, talking less, and changes in emotions so you feel flat or don't respond to something happening [12].

There are the numbers of psychotic disorders, such as schizophrenia, schizophreniform, schizoaffective, delusional disorder brief psychotic disorder; substance induced psychotic disorder, psychotic disorder not otherwise specified and psychotic disorder due to general medical condition [13]. Schizophrenia by itself it is not a disease. It is clinical syndrome of variables but profoundly disruptive psychopathology that involves cognition emotion perception and other aspects of behavior. Although the prevalence of schizophrenia different from one country to another. The study conducted in Cape Town in 2009 it affects around 0.3% to 0.7% of people worldwide at some point in their life time [14].

Antipsychotic agents (also referred to as narcoleptics) are able to give up and resolve the psychotic symptom which acts in the dopamine path way that categorized in to two major groups. Those are first generation (typical) and second generation (atypical) [15, 16].

Antipsychotic medication adherence plays a key role in patients with psychotic disorder and regular treatment has been proven to resolve symptoms and reduce relapse rates. Therefore, they take in the form of tablets or injectable, both of which can be affected by non-adherence behaviors' by patients [17].

Non-adherence to antipsychotic medication has a negative impact on the course of illness resulting in consequences to patients, society, countries and healthcare systems. Many studies found that hospitalization rates were significantly higher among non-adherent patients compared with adherent ones [6, 8].

Non-adherence can cause increase rates of relapse within 5 years of recovery from the first episode. Thus, non- adherence to pharmacological treatment is associated with worsening of symptoms, poor prognosis, high costs and unnecessary adjustments in the medical prescriptions of drugs [18, 19]. The study conducted in Qatar in 2014 non-adherence to antipsychotic medication ranged from 4% to 72% with a mean of 41% [20].

Data regarding the prevalence and associated factors of medication non-adherence among psychotic patient's developing countries, especially Ethiopia is insufficient. When we have seen the knowledge of the present researchers although certain study were done on non-adherence of chronic medical illness. But there is no adequate study done on medication non- adherence in Ethiopia particularly in Dessie [21]. So thus study aimed to assess the prevalence of medication no-adherence and factors associated with it among psychotic patients at Dessie referral hospital 2019.

1.2. Statement of the Problem

Non-adherence in drug therapy for psychotic disorders can cause increased morbidity, mortality and an enormous cost to the health-care system. The economic impacts of non-adherences are substantial resource implications in the form of higher service use levels and cost of drugs and other medical interventions are increased. However, Weiden and Olfsen in 1995 reported that non-adherence accounts for approximately 40% of re-hospitalization costs for patients with schizophrenia in the two years after discharge from in-patient treatment. Then, that result from non-adherence [6, 22].

The non- adherence project has adopted the following definition of not adherent to long-term therapy the extent to which a person's behavior taking medication, following a diet, and or executing life style changes, corresponds with didn't agree recommendations from a health care provider [23].

Adherence to medication is a core component of recovery from illness and it is an important modifier of health system effectiveness, so that improving adherence also enhances patients' safety. But, non-adherence to treatment of chronic disease is a global problem of striking magnitude and its impact grows as the burden of chronic disease particularly in psychotic disorder grows worldwide and its consequences are poor health outcomes and raised health care costs [24].

Non- adherence to medication is a major cause of psychotic relapse and is a major problem in the treatment of Psychotic Disorder. Increasing the effectiveness and efficiencies of adherence intervention may have a far greater impact on the health of the population. There was no sufficient study conducted regarding medication non-adherence previously. Of this study could be conducted to evaluate non-adherence rates to psychotic patients, to identify possible reasons and factors for non-adherence to medications in psychotic disorder [24].

A number of studies, predominantly from high income countries (HIC), have investigated non-adherence to medication. The Lieberman and his colleagues in 2005 reported that the prevalence of non-adherence range from 20% to 89% among people living with schizophrenia [25].

Although a few studies have been conducted in LMIC, such as Ethiopia and Tanzania in 2013 and 2014 respectively there have been no studies that have investigated medication non-adherence among psychotic patients in Dessie referral hospital. Therefore, the present study addresses this gap by investigating the prevalence and associated factors of medication non-adherence among patients suffering from psychotic disorder in Dessie referral hospital [26].

2. Prevalence and Associated Factors of Non-adherence to Antipsychotic Medication

2.1. Prevalence of Non-adherence to Antipsychotic Medication

In the world, medication non-adherence prevalence rate are raised and its consequence are very serious and pioneer of morbidity with mortality among psychotic patients. So, the study conducted in 1983-1996 revealed non-adherences to medication range from 24 to 88% with a median of 55% and in 2002 rates of non-adherence ranging from 4% to 72% with a mean of 41% [27, 28].

In the world the number of studies conducted about prevalence of medication non-adherence in psychotic patients in varies countries. Among this in HIC have shown that relatively high rates of non-adherence to their medication. For instance, a study conducted in France in 2008 found that the prevalence of non-adherence to medication among clients suffering from schizophrenia was 30%. And In a study conducted in South Korea in 2008, 54% of patients with schizophrenia receiving oral antipsychotics reported non-adherence. The high prevalence of non-adherence was also found in England in 2013 of those participants suffering from schizophrenia was 77% non- adherence their medication. The study conducted in the United States in 2012, an analysis of medication adherence using the database linking hospital admissions also indicated poor medication adherence in patients suffering from schizophrenia with mean medication non-adherence proportion rate was 55%. Furthermore, the studies conducted in Asian Americans in 2009 with schizophrenia, 41% of the patients were non-adherent to their medication [18, 28-30].

Medication non- adherence in patients with schizophrenia attending outpatient clinics in Hong Kong in 2006 determined a self-reported on-adherence rate of 26%, and identified that non -adherence was predicted by awareness of illness, attitudes towards treatment, perceived benefits of medication and younger age [25, 31].

High rates of non-adherence were also reported by psychiatrists in a combined study in 13 Asia-Pacific Countries (APAC). This study investigating psychiatrist's awareness of non-adherence or partial adherence among patients suffering from schizophrenia, found that psychiatrists across APAC regions perceived that 56% of patients were non-adherent or partially adherent to their medication in 2013 [22, 32].

The study conducted in low middle income countries (LMIC) like in the North Eastern Nigeria in 2015, among 358 psychotic patients participated from this 54.2% was non-adherence to their medication. Other study conducted in Egypt in 2013 among 107 Muslim schizophrenic patients 74% of patients was non-adhere to their medication [33, 34].

The study conducted in Ethiopia in 2012 and 2014 reveal that 48% and 50% of psychotic patients were non-adherent to their medication respectively [23]. The overall prevalence of non-adherence among patients with mental disorders in Mekele hospital was 38%. However, 50% of the non-adherents were suffering from schizophrenia. Other study conducted in Mekelle in 2015 reveal that 26.5% schizophrenic patients were non-adherent to their medication [22, 32]. The study conducted in Adama in 2016 reveal that 43.5% schizophrenic patients were non-adherent to their antipsychotic medication [23]. The study conducted at Emmanuel specialized hospital in 2017 reveal that 48.4% schizophrenic patients were non-adherent to their medication [21]. The study conducted in Hiwot Fana specialized hospital in Harer in 2017 with total of 154 schizophrenic patients was interviewed, and 39.6% were non adherent to their antipsychotics medication [35]. The studies conducted in central Ethiopia in 2017 reveal that 41% of schizophrenic patients were non-adherence to their medication [24].

2.2. Associated Factors for Medication Non-adherence

2.2.1. Patient-Related Factors

There are a number of patient-related factors identified in the literature that could potentially impact on adherence. Age is one of the social demographic factors has been found to affect adherence differently in varies studies. For example study conducted in the United States in 2004 found that patients younger than 45 years of age were more likely to be non-adherent to medication than patients aged 45 years to 64 years of age [29, 36].

The study conducted in Ethiopia in 2014 individuals with ages ranging from 26 to 35 years were more significantly adherent to their medication than those in the age range of 15 to 25 years. Therefore, that study showed that being female, of tertiary education and living with family were associated with better adherence to their medication [37].

Ibrahim and his colleagues study conducted in 2015, gender and occupation class also were found to be independent predictors of non- adherence. For instance, males were over 3 times more likely to be adherent than females; and those that had lower levels of occupation were more likely didn't to adhere to medication. Similarly in 2006 reported that patients who were younger and who had a psychiatric admission, or predominant treatment with first-generation antipsychotics were more likely to have consistently non- adherence [38].

Co-morbid conditions can also have an impact on adherence to psychiatric medication. The study conducted in 2012 in a Californian study assessed group treatment adherence among HIV positive and psychotic disorder participant who were taking both ART and psychiatric

medication. In this study, non-adherence rate for psychiatric medication in the group of HIV positive and with psychotic disorder was 33% as compared to the group of HIV positive and without psychotic disorder which was 17% [20].

The other factors which has been reported to predict medication non-adherence were alcohol and substance use. For instance, in 2006 reported that patients with substance use disorder and a psychiatric hospitalization had significantly poorer adherence to their medication compared to those that had no substance use disorder [36, 38].

Kulkami and Reeve were conducted a study in an Australian in 2015 on perspectives of physicians on reasons of non-adherence to antipsychotic medication, it was found out that one of the reasons for non-adherence were drug and alcohol abuse. In the other study in 2008, almost half of the participants of those that were suffering from schizophrenia reported to have used alcohol and missed antipsychotic medication. Novic and his colleagues reported in the UK in 2010 found similar results: alcohol dependence and substance abuse were predictive factors for non-adherence [29, 39].

Danzer and Rieger study conducted in 2016 systematic review on improving medication adherence for severely mentally ill adults, concluded that non-adherence to medication is associated with an increase in substance use and abuse and in violence and other high-risk behaviors'. A similar finding was notified in a study on non-adherence to mood stabilizing medication, where co-morbid substance abuse and negative attitudes toward medication are some of the primary determinants of medication. Then, they had good adherence to their medication. They had more severe illnesses and who were sedated for non-adherence to their medication [17, 22].

2.2.2. Medication-Related Factors

Apart from patient related factors, medication-related factors can also affect medication adherence. Different literatures' illustrated that side effects of antipsychotic medication highly prevalent and significantly associated with lower adherence rate then it potentiate relapse [10, 23]. Root of administration of the antipsychotic drugs was other medication related factor that affect medication non-adherence of psychotic patents. Depot medication increase medication adherence. Other thing, patients who were taking their medication per-mouth increase medication adherence rate [24, 37].

In South Africa in 2008, side-effects appeared to be one of the factors associated with poor adherence and likely to increase the risk of a relapse. Furthermore, a study done in Tanzania 2014 found out that non-adherence was due to the severity of drug side effects [29, 40].

2.2.3. Environment-Related Factors

Finally, an environmental-related factor like social support, was also found to be Potential contributor to non-adherence to their medication. Social support had been found to have an impact on adherence in some studies. A review by Velligan and his colleagues reported in 2009, factors that were associated with non-adherence included disorganized or chaotic living situation, while family and social support predicted good adherence to antipsychotic medication. Similarly, lack of social support has been reported in 2004, one of the most common barriers to adherence [18, 25, 29].

Again, in a study done by Robinovitch and his colleague in 2009, non-adherent patients were less likely to have received a good level of social support, similarly to other studied in 2002, found that non-adherent patients were less likely to have a family member involved in their treatment [16].

In a systematic review by Acosta and his colleague conducted in 2012, environments of poor familial and social support were found to be associated with non-adherence both by patients with schizophrenia and by patients experiencing their first episode of psychosis. In the same systematic review, living alone was also found to be a risk factor to non-adherence [27, 28, 31].

3. Methods

3.1. Study Settings

The study was conducted in Dessie referral hospital. Wollo has 5,026,344 total populations in 2011 E. C. From this 3,294,428 total population are South Wollo and has 22 woreda and Dessie city total population are 2, 23,639 [39]. So, Dessie is one of the oldest cities found in Ethiopia and on the previous name known as Lacomenza and then currently with the main business activity is trade.

The hospital is a regional referral hospital that was established in 1962 and the hospital initiated outpatient psychiatric service in 1989. Referral hospital is located in North Eastern Ethiopia, South Wollo Zone of Amhara regional state, 401 KMs away from Addis Ababa, which is the capital city of Ethiopia and 480 KMs from Bahir Dar, the capital city of Amhara regional state. It is now giving many health care services in deferent unit such as orthopedics Internal medicine, Gynecological with obstetrics care, Surgery with surgical care, Emergence, Psychiatry, Epilepsy, Derma, Cervical cancer screening and pediatrics thorough promotive, preventive, curative and rehabilitative care for patients coming from all Woredas and Zones of Eastern Amhara and Afar.

Therefore, the hospital is fully implemented community based health insurance and all clients have been serving by this way with best linkage in different government health facility. It has about 634 workers from this 6 are psychiatric professional and gives outpatient inpatient and continuously follow up services for about more than 5984 psychiatric patients in a year; according to the data obtained from the hospital's human resource management office and the psychiatric outpatient department (OPD) registration book of 2011 E. C. Currently it has also about 03 psychiatric professionals who work in psychiatric OPD and gives all service on the as the above mentioned number.

3.2. Study Design and Period

A hospitalized based cross sectional study design was

implemented from October 01/2018 to January 10/ 2019.

3.3. Source Population and Study Population

3.3.1. Source Population

All adult patients with psychotic disorder diagnosis who were on follow up at Dessie Referral Hospital.

3.3.2. Study Population

A sample of patients who had psychotic disorder diagnosis age 18 years and above who were coming for follow-up at DRH at psychiatric clinic during the study period from October 1/ 2018 up to January 10/2019.

3.4. Eligibility Criteria

3.4.1. Inclusion Criteria

1. Age 18 years or older
2. Psychotic disorder patients who were registered at the psychiatric clinic of DRH.
3. Patients who were received maintenance therapy for at least 3 months.

3.4.2. Exclusion Criteria

1. Patients who were unable to gave information.
2. Patients who were critical ill.

3.5. Sample Size Determination

3.5.1. Sample Size Determination

A single population proportion formula was implemented to estimate the sample size and the following assumptions were made: the study conducted in Amanuel specialized hospital, using proportion 48.4% (p=0.484) [19] level of significance be 5% (a=0.05), 95% confidence level (Za/2=1.96) and absolute precision or margin of error to be 5% (d=0.05).

Therefore,

$$n = \frac{(Z\,a/2)P(1-P)}{D^2}$$

Where, n=sample size

p=proportion of medication non adherence (48.4%)

Z=standard normal distribution curve value for the 95% confidence interval (1.96)

d=the margin of error or accepted error (0.05).

$$n = \frac{(1.96)2 * 0.484\ (1-0.484)}{(0.05)2} = 383.77 \approx 384$$

With the above inputs the minimum sample required for the study was 384. Had been taking 10% non-response rate the final sample size could be 422.

3.5.2. Sampling Procedures

Study participants were selected using systematic random sampling method the total number of psychotic patients divided to the calculated sample size (Number of psychotic patients 1440/422)=k. k=3.41~3. Then, the class interval is 3. The first card (participant) was selected by lottery method which was the 2nd. Lather, every 3rd (2nd, 5th, 8th) continued to until the required numbers of samples (422) were collected.

3.6. Operational Definitions and Definition of Terms

Psychotic is defined as grossly impaired reality testing and severe mental disturbance.

Anti-psychotic drug is a medication which defined as able to give up or reduced psychotic symptoms.

Adherence is defined as the extent to which a patient's or client's drug taking matches that agreed with prescriber.

Drug non adherence: Mean the persons who having psychotic disorder taking drugs and other medications by using 8-items of Morisky medication adherence rating scale determined. Then, the score interpreted as"0-2=adherent and "3-8"=non- adherent to their medications [41].

Birchwood Insight Scale: The participants that had less than score of 9 on the total sum were categorized as to have poor insight. Total score of 9 and above were regarded as having good insight.

Positive attitudes towards treatment: A cut of point greater than or equal to six by using DAI screening out of ten items. Then, it has 10-item true/false scale, so positive total score indicates a positive attitude towards medication, where as a negative total score, a negative attitude towards the medication [42].

Substance use: In the current study it is defined as ever use of at least one of specific substance during period of treatment follow up (Alcohol, chat, cigarette etc).

Social support: Based on Oslo-3 Social Support Scale (OSS-3).

Therefore, the OSS-3 scores ranged from 3-14

-The score of 3-8=poor support;

-9-11=moderate support and

-12-14=strong support [43].

3.7. Study Variables

3.7.1. Dependent Variable

Medication non- adherence (yes/no)

3.7.2. Independent Variables

1. Socio demographic variable (age, sex, marital status, ethnicity, religion, residence, educational status, occupation, monthly income) insight on illness
2. Use of social drugs (khat, cigarette, alcohol, cannabis, cocaine, hallucinogen, pethidine benzodiazepines…)
3. Social support (lack of social support)

3.8. Data Collection (Instruments and Procedure)

3.8.1. Data Collection Instruments

Semi-structured questionnaires had been adopted in English language, after review of literature and consultation with the experts in psychiatric. The English version of the questionnaire was translated to Amharic language by bilingual speaker. And also back to English to saw the consistency of information. For actual data collection, the Amharic version of the questionnaire could be used. The data was collected interview from the patients and patient's chart. Medication non-adherence-8 item scale (Morisky-8), Oslow social support scale, abnormal involuntary movement scale for drug side effects and

Brichwood scale about the illness had been implemented.

3.8.2. Data Collection Procedure

Data was collected by three trained data collectors thorough face to face interview of the patient's using semi-structured questionnaires regarding to the socio demographic characteristics of his/ herself, the medical problem during the psychotic illness, types of psychotic disorder, Antipsychotic drug, medication non- adherence tools and extra pyramidal side effect screening tools are some of items were included in the questionnaires.

3.8.3. Data Quality Control

The quality of the data was assured by: translated to the local language (Amharic) to made the questions easily understandable and training was given for the data collectors focusing on the questionnaire content to ensure consistency of data, obtaining consent, maintaining neutrality, privacy issues, personal relation and ethics in research for one-day duration. Pretest that was 5% of the sample size had carried out at Borumeda hospital before the actual data collection period, then correction and modification had undertaken before the actual data collection time. Filled questionnaires were checked daily for completeness and consistency of the responses to reduced possible errors.

3.9. Data Processing, Analysis and Presentation

The collected data was checked manually for completeness and it was entered cleaned and stored into EPI info version 3.1 and transported into statistical package for social sciences (SPSS) version 21 software for analysis. Data entry was made by the principal investigator. Frequency proportion means were performed; binary logistic regression was used to determine the association between different factors and the outcome variable. Variables, which had p – value < 0.25 in the multiple logistic regression. The degree of association between dependent and independent variables were examined using odds ratio with 95% confidence interval. P-value less than 0.05 were considered as statistically significances. Finally, result was compiled and presented using tables, graphs and texts.

3.10. Ethical Consideration

Ethical clearance and approval was obtained from the Ethical review Committee of department of community and mental health nursing, college of medicine and health science, Wollo University. Then, letter from the Research Ethics Committee were submitted to Dessie Referral Hospital. After explaining the objectives of the study in detail, informed verbal consent had collected from all study participants before data collection begin.

4. Result

4.1. Socio Demographic Characteristics of the Study Participants

Out of 422 questionnaires, 395 of them filled properly and give the response rate of 93.6%. Among these respondents 196 (49.6%) were males and 199 (50.4%) were females. The mean ages of respondents were 37 with standard deviation of (SD±14 year). Majority of respondents were Amhara in ethnicity 348 (88.1%) and followed by Afar 22 (5.6%). Around seventy percent of the respondents were Muslim (265 (67.1%). Most of the respondents 147 (37.2%) were single and followed by 139 (35.2%) were married. Therefore, greater than half of them 220 (55.7%) came from urban area (See tabe 1).

Table 1. *Socio-demographic characteristics of among Psychotic patients in Dessie Referral Hospital psychiatric OPD (N=395), in 2019.*

Variables	Categories	Frequency	Percent
Age	25-34	159	40.3%
	35-44	94	23.8%
	45-54	48	12.2%
	18-24	46	11.6%
	Above 65	28	7.1%
	55-64	20	5.1%
Gender	Female	199	50.4%
	Male	196	49.6%
Marital status	Single	147	37.2%
	Married	139	35.2%
	Separated	62	15.7%
	Widowed	47	11.9%
Ethnicity	Amhara	348	88.1%
	Afar	22	5.6%
	Oromo	14	3.5%
	Tigri	11	2.8%
Religion	Muslim	265	67.1%
	Orthedox	97	24.6%
	Protestant	17	4.3%
	Catholic	14	3.5%
	Others	2	0.5%
Residence	Urban	221	55.9%
	Rural	174	44.1%
Education	Able to read and write	110	27.8%
	Unable to read and write	85	21.5%
	Completed primary School	76	19.2%
	Secondary and Preparatory School	67	17.0%
	Diploma and Above	57	14.4%
Occupation	Jobless and retirement	133	33.7%
	Farmer	114	28.9%
	Government employee	44	11.%
	Daily Labor	41	10.4%
	Student	37	9.4%
	Business Men	26	6.6%

4.2. Clinical Characteristics of the Respondents

Around Seventy percent of the participants had a diagnosis of schizophrenia, 268 (67.8%) and followed Schizoaffective Disorder 79 (20%). Then, most participants were on either typical or atypical antipsychotic medication or taking medication which were in pill form. The 139 (35.2%) of the participants were reported using medication in low potency antipsychotics and about 320 (81%) had taken single antipsychotic drugs. The duration that participants were on a particular medication was also explored, and most participants were on medication for a period of more than 25 months (41.1%, n=163). The respondents reported as, 286 (72.4%)

were negative attitudes towards the medication (See table 2).

Table 2. *Clinical characteristics of Psychotic patients in Dessie Referral Hospital, Ethiopia (N=395) in 2019.*

Variables	Categories	Number	Percent
Psychotic-Diagnosis	Schizophrenia	268	67.8%
	Schizoaffective	79	20%
	Schizophreniform	23	5.8%
	Substance induce Psychotic Dr	13	3.35%
	Delusional Dr	6	1.5%
	Psychotic Dr due to GMC	3	0.8%
	Psychotic Dr Not Otherwise specified	3	0.8%
Other Mental Disorders	Borderline personality disorder	1	9%
	Dementia	6	55%
	Generalized Anxiety Disorder	1	9%
	Intellectual Disability	3	27%
Medical Co morbidity	Hypertension	10	26%
	Diabetic Miletus	4	11%
	HIV/AIDS	10	26%
	Epilepsy	5	13%
	Others	9	24%
Medical Treatment	Antiasthma tic	3	19%
	Insulin and oral hypoglycemic agent	4	11%
	Antihypertensive	10	27%
	Anti-Tuberculosis	3	19%
	ART	10	27%
	Phenobarbitone	5	13%
	NSAIDS	2	5%
Perceived Stigma	Having stigma	45	11.4%
	Not having Stigma	350	88.6%
Psychotropic Drugs	Low potency	139	35.2%
	High Potency	67	17.1%
	Atypical	113	28.6%
	Antipsychotic with Antidepressant	47	12%
	Antipsychotic With mood Stabilizer	28	7%
	Antipsychotic, Antidepressant with Mood Stabilizer	1	0.25%
Drug Regimen	Mono therapy ((only one drug)	320	81%
	Binominal therapy (2 drug Combination)	74	18.7%
	Poly therapy (3 drug combination)	1	0.3%
Frequency of Drugs	Once every day	329	83.3%
	Twice a daily	66	16.7%
For How long Have been Antipsychotics	Less than 6 months	70	17.7%
	6-12 Months	98	24.8%
	13-24 Months	64	16.2%
	Above 25 Months	163	41.1%
Mental Illness Treated by Medicine	Yes	267	67.6%
	No	128	32.4%
Experienced Side effect	Yes	165	41.8%
	No	230	58.2%
Medication Adherence	Non- adherence	175	44.3%
	Having adherence	220	55.7%
Insight for Illness	NO Insight	14	3.5%
	having Insight	381	96.5%
Attitude towards The Medication	Negative attitude	286	72.4%
	Positive Attitude	109	27.6%

4.3. Distribution of Substance Use Among Psychotic Patients in Dessie Referral Hospital in 2019

Regarding substance use characteristics of respondents, 315 (79.7%) and 291 (73.7%) of them had never tobacco used and alcohol drunk in their life time. The most ever used type of alcohol products were beer and local 'tella. About 21 (5.3%) of respondents reported that they have been chewing khat more than four day per week (See table 3).

Table 3. *Distribution of Substance use characteristics among Psychotic patients (N=395) in Dessie Referral Hospital in 2019.*

Variables	Categories	Number	Percent
Khat chewing	Never	217	54.9%
	Less than once a month	51	12.9%
	1-3 days per month	55	13.9%
	1-3 days per week	51	12.9%
	More than 4 days per week.	21	5.3%
Alcohol Drunker	Never	291	73.7%

Variables	Categories	Number	Percent
	Less than a month	48	12.2%
	1-3 days per month	36	9.1%
	1-3 days per week	17	4.3%
	More than 4 days per week	3	0.8%
	Never	315	79.7%
	Less than a month	42	10.6%
Tobacco uses	1-3 days per month	17	4.3%
	1-3 days per week	16	4.1%
	More than 4 days per week	5	1.3%
Cannabis and cocaine	Yes	10	2.5%
	No	385	97.5%

4.4. Prevalence of Medication Non-adherence Among Clients with Psychotic Disorder

The 93 (58.5%) of the study participant were the aged to 25-34. And also, 107 (54.6%) male respondents' adhere to drug which they took while 143 (54%) of Islam followers adherent to their antipsychotic medication. About 123 (55.7%) live in Urban area, 120 (44.8%) were schizophrenic patients, and 141 (44.1%) had taken single drug were non- adherent to their medication. Therefore, nearly 44.3% of participants reported being non-adherent to antipsychotic medication (n=175). The prevalence of non-adherence was higher for males, 89 (45.4%) than for females, 86 (43.2%) (COR=1.09, 95% CI, 0.74-1.6) (Table 4).

Table 4. *Cross-tabulation of medication non-adherence among psychotic patients in Dessie Referral Hospital in 2019.*

Variables	Characteristics	Non-adherence	Adherence
	18-24	25 (54.3%)	21 (45.7%)
	25-34	66 (41.5%)	93 (58.5%)
Age	35-44	53 (56.4%)	41 (43.6%)
	45-54	12 (25%)	36 (75%)
	55-64	7 (35%)	13 (65%)
	Above 65	12 (42.9%)	16 (57.1%)
Gender	Male	89 (45.4%)	107 (54.6%)
	Female	86 (43.2%)	113 (28.6%)
	Single	67 (45.6%)	80 (54.4%)
Marital status	Married	63 (45.3%)	76 (54.7%)
	Widowed	13 (27.7%)	34 (72.3%)
	Separated	32 (51.6%)	30 (48.4%)
	Orthodox	46 (47.4%)	51 (52.6%)
	Muslim	122 (46%)	143 (54%)
Religion	Protestant	4 (23.5%)	13 (76.5%)
	Catholic	2 (14.3%)	12 (85.7%)
	Others	1 (50%)	1 (50%)
	Government Employee	15 (34.1%)	29 (65.9%)
	Student	22 (59.5%)	15 (40.5%)
Occupation	Farmer	45 (39.5%)	69 (60.5%)
	Business men	7 (26.9%)	19 (73.1%)
	Daily labor	17 (41.5%)	24 (58.5%)
	Jobless and retirement	69 (51.9%)	64 (48.1%)
	Less than 1199	139 (44.7%)	172 (55.3%)
Income	1200-2000	11 (42.3%)	15 (57.7)
	Greater than 2000	25 (43.1%)	33 (56.9%)
Stigmatization due to psychotic	Having stigma	17 (37.8%)	28 (62.2%)
drug	Not having stigma	158 (45.1%)	192 (54.9%)
Frequency	Once every day	152 (46.2%)	177 (53.8%)
Of Drugs	Twice a daily	23 (34.8%)	43 (65.2%)
	Less than 6 months	38 (54.3%)	32 (45.7%)
For How long Have been	6-12 Months	55 (56.1%)	43 (43.9%)
Antipsychotics	3-24 Months	27 (42.2%)	37 (57.8%
	Above 25 Months	55 (33.7%)	108 (66.3%)
Attitude towards	Negative attitude	133 (46.5%))	153 (53.5%)
Medication	Positive ttitude	42 (38.5%))	67 (61.5%)
Suicidal Ideation	Having suicidal ideation	8 (19.0%)	34 (81.0%)
	Not having suicidal ideation	167 (47.3%)	186 (52.7%)
	Never	96 (44.2%	121 (55.8%)
Khat chewing	Less than once a month	17 (33.3%	34 (66.7%)
	1-3 days per month	24 (43.6%	31 (56.4%)
	1-3 days per week	25 (49.0%	26 (51.0%)

The prevalence of medication non-adherence delusional on disorder was 83.3%. (See figure 1).

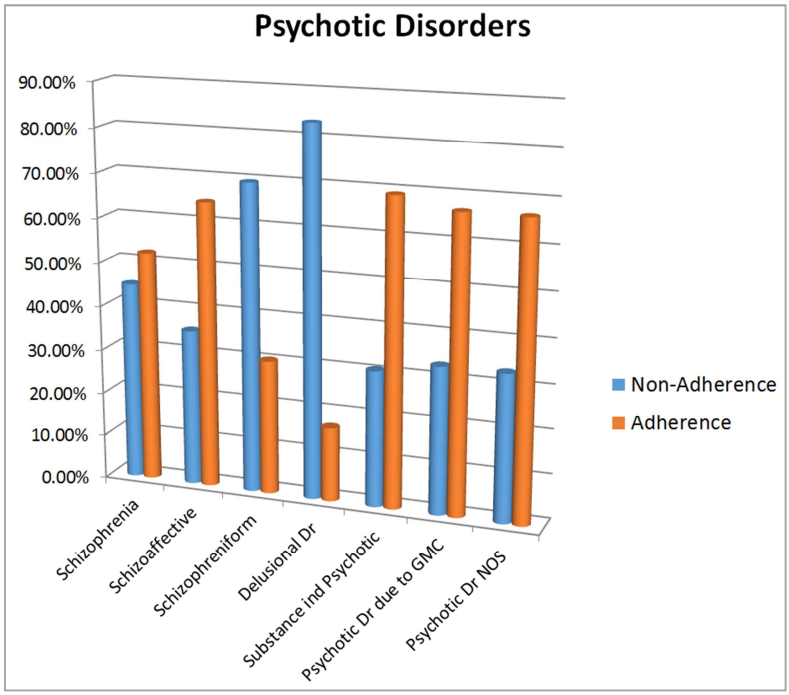

Figure 1. *Prevalence of medication non-adherence and adherence based on psychotic disorders among the respondents in Dessie Referral Hospital at Psychiatric OPD in 2019.*

4.5. Factors Associated with Drug Non Adherence Among Psychotic Patients

During binary logistic regression analysis of medication non-adherence in relation to with the following variables: age, marital status, ethnicity, educational background, occupational status, for how long you have been taken drugs, attitude towards the medication, khat chewing, tobacco use and currently having suicidal ideation were variables that the p-value below 0.25 and were further analyzed by multiple logistic regression.

The following variable had been associated in the final model (multiple logistic regressions) such as, marital status, educational background, and occupational status, length the drug was taken and currently have been suicidal ideation.

During the multiple logistic regression; marital status, educational background, occupational status, for how long you have been taken drugs and currently have been suicidal ideation were found to be statistically significant.

Patients who was widowed about, 68% less likely to be non-adherent than patients who was separated. (AOR=0.324, 95% CI, (0.135-.779). As educational status patients who were unable to read and write in educational background about nearest to three times more likely to be non-adherent as compared to patients who were graduate Diploma and above educational background (AOR=2.611, 95% CI, (1.076-6.333). Regarding to occupational status among study participants, patients who had been worked in business activities were about 48.7% less likely to be non-adherent to their medication when compared to patients who had worked in government employed (AOR=0. 513, 95% CI, (0.292-0.902) and psychotic patients who were worked in daily labor about 66% less likely to be non-adherent to their antipsychotic medication rather than who were in civil servants (AOR=.344, 95% CI, (.124-.957).

Concerning about for how long you have been on medication; patients who had taken drug less than six months and had been taking drug six up to twelve months were found to be about two times and two point six times more likely non-adherent to their medication than patients who had been taking a medication more than 25 months with (AOR=2.069, 95% CI, (1.127-3.799) and (AOR=2.637, 95% CI, (1.507-4.615) respectively.

Similarly study participants who had suicidal ideation about 68.7% less likely to be non-adherent to their medication as compared to patients who hadn't suicidal ideation (AOR=0.322, 95% CI, (0.140-0.740)

Table 5. *Variables that have been statistical associated with medication non-adherence among psychotic patients in Dessie Referral Hospital in 2019.*

Variables	Categories	COR	AOR	P. value
Age	18-24	1.6 (0.62-4.1)	.869 (.732-1.032)	.108
	25-34	.95 (.42-2.13)	.874 (.744-1.027)	.101
	35-44	1.7 (.74-4.042)	.873 (.743-1.025)	.098
	45-54	.44 (.17-1.20)	.869 (.741-1.020)	.086
	55-64	.71 (.22-2.35)	.866 (.738-1.017)	.079
	Above 65	Ref	*	

Variables	Categories	COR	AOR	P. value
Marital status	Single	.78 (.43-1.42)	.739 (.378-1.443)	.375
	Married	.77 (.12-.41)	.931 (.482-1.800)	.832
	Widowed	.36 (.16-.81)	.324 (.135-.779)	.012
	Separated	Ref	*	*
Ethnicity	Amhara	Ref		
	Tigre	1.5 (.62-3.7)		.568
	Oromo	.16 (.02-1.63)	.916 (.685-1.224)	.552
	Afar	.98 (.24-3.93)	.876 (.684-1.224)	.542
Education	Unable to read and write	2.44 (1.208-4.920	2.611 (1.07-6.33)	.034
	Able to Read and write	1.81 (.92-3.54)	1.871 (.814-4.301)	.140
	Completed primary school	1.41 (.67-2.91)	1.466 (.609-3.525)	.393
	Completed Secondary	1.98 (.95-4.13)	1.916 (.818-4.489)	.135
	Diploma And above	REF	*	
Occupation	Government Employee	Ref	*	
	Student	.48 (.24-.976)	.722 (.299-1.742)	.468
	Farmer	1.4 (.65-2.849)	1.394 (.605-3.212	.436
	Business men	.61 (.36-1.004)	.513 (.292-.902)	.021
	Daily labor	.34 (.135-.867)	.344 (.124-.957)	.041
	Others	.66 (.32-1.334)	.630 (.296-1.339)	.230
For How long Have been Antipsychotics	Less than 6 months	.3 (1.32-4.13)	2.069 (1.127-3.799	.019
	6-12 Months	2.51 (12.50-4.2)	2.637 (1.507-4.615)	.001
	13-24 Months	1.43 (.79-2.59)	1.577 (.837-2.970)	.159
	Above 25 Months	Ref	*	
Attitude towards Medication	Negative attitude	Ref	*	
	Positive Attitude	1.39 (.88-2.18)	.795 (.495-1.278)	.344
Khat chewing	Never	Ref	Ref	
	Less than once a month	.49 (.19-1.23)	1.125 (.943-1.341)	.191
	1-3 days per month	.31 (.11-.89)	1.106 (.941-1.299)	.220
	1-3 days per week	.48 (.17-1.33)	1.103 (.939-1.295)	.233
	More than 4 days per week.	.59 (.21-1.67)	1.103 (.939-1.296)	.232
Suicidal Ideation	Having suicidal ideation	.26 (.12-.582)	.322 (.140-.740)	.008
	Not having suicidal ideation	Ref	*	
Drug side-effect	YES	.38 (.25-.58)	0.26 (0.21-0.34)	
	No	Ref	Ref	

5. Discussion

Drug non adherence with prescribed medication is one of the most difficult to solve issues in medicine, and particularly in patients with psychotic disorder. So, this study was aimed to assess the prevalence and factors associated with drug non adherence among psychotic patients. The current study showed that the prevalence of medication non-adherence was found to be 44.3%.

Then, the overall prevalence of drug non- adherence in the current study area was found to be lower than study done in England, United states and North eastern Nigeria which were 77%, 55% and 54.2% [18, 28 33] respectively. The possible reason for the difference in the prevalence may be due to socio cultural differences in the study design used, study population, measurement of medication non adherence and treatment related factors.

This is in line with the study conducted in Ethiopia in 2012 and 2014 reveal that 48% and 50% of psychotic patients were non-adherent to their medication respectively [21, 44]. This similarity could be due to socio-demographic characteristics and data collecting sampling procedure.

The current results aligned the study conducted in Hiwot Fana specialized hospital and central tendency of Ethiopia prevalence of medication non-adherent among psychotic patients were 39.6% [21] and 41% [24]. This could be due to similarity of cultures among the two studies was conducted in Ethiopia. And also there may be similar stress level among students since they are in the same academic status but the difference could be due to lack of admission wards, poor psycho education for initial visit patients with care givers and sustainable availability of psychotropic drug in the hospital and higher cost in private pharmacy with all patients has got the service on outpatient way.

The study conducted in France and Hong Kong in 2008 and in 2006 found that the prevalence of non-adherence to Antipsychotic medication among clients suffering from Schizophrenia was 30% and 26% [25, 28] respectively. The current study yields higher result. The expected reason for the difference in the magnitude of prevalence can be due to the socio cultural difference in the study population and clinical related factors. About 81% of study subjects in the current study area were taking single antipsychotic drug and patients who had taken less than six months were 54.3%. The other possible factors that cause higher non adherence in this study area might be poor educational status, jobless, inadequate quality of service were given and substance uses higher in the stud area compares to the above and the difference in the sample size and inclusion criteria.

This study showed that patients who was widowed about, 68% less likely to be non-adherent as compared with patients who was separated in marital status. So this is the unique finding, due to that being widowed could be they controlled

the whole prosperity after the death of his/her spouse.

Patients who were unable to read and write nearest to three times more likely to be non-adherent to their prescribed medication than patients who were graduate Diploma and above. The world health organization study showed that patients who have poor educational status 2-3 times risk for medication non-adherence. It might be explained as they don't know the benefit and drawbacks of the drug and negative consequence of drug discontinuation and strongly focused spiritual views.

This study showed patients who had done in business activity and daily labor by 48.2% and 66% less likely antipsychotic medication non-adherent than government employed. This is the new finding that might be due to the burden of government new reform activities and negative influence by government sector head and they may give

Poor efficiency score (balance sore card) and they are busy and insufficiency monthly salary compare to daily labor and business men.

This finding had seen, patients who had been taking medication less than 6 months and 6-12 months about two times and two point six times more likely medication non-adherent compare to medication had taken greater than 25 months. I have not got another study. This is due to that for the initial visit patients couldn't know the drug beneficence and poor psycho education, and don't great concern for new comers and fear of untoward drug side effect with negative believes for drug and peer pressure.

The current study showed that patients who has been suicidal ideation about 68.7% to be less likely non-adherent to medication than hadn't suicidal ideation. This is the unique finding, the possible reason fear of death and positively reinforced by families and colleagues.

6. Conclusion and Recommendation

In current study the magnitude of medication non-adherence were found to be huge (44.3%) among psychotic patients who are on follow up treatment at Dessie referral hospital. Factors such as being widowed in marital status, unable to read and write, daily laborer, duration of drug has been taken less than 12 months and suicidal ideation were found to be statistically significance associated with drug non- adherence. Treating clinician should educate important ness of medication adherence in every contact of those patients.

Limitation of the Study

Given that this study was cross sectional and was conducted in one referral hospital, the results cannot be generalized to the whole country. The subjective method of assessing adherence as compared to objective methods like pill counts, plasma concentration, electronic monitors and pharmacy records. Since this study design used cross sectional study design it is difficult to determine cause and affect the result.

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