COLLEGE OF HEALTH SCIENCES

SCHOOL OF PHARMACY

DEPARTMENT OF PHARMACEUTICS AND SOCIAL PHARMACY

Assessment of psychotropic medicines utilization pattern for mental disorders treatment in Hadiya Zone Public Hospitals, Southern Ethiopia: a cross-sectional study

By: Mengistu Girma (B. Pharm)

A thesis submitted to the Department of Pharmaceutics and Social Pharmacy, School of Pharmacy, College of Health Sciences, Addis Ababa University in the partial fulfillment of the requirements for the Degree of Master of Science in Pharmacoepidemiology and Social Pharmacy

August 2020

Addis Ababa, Ethiopia

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

This is to certify that the thesis prepared by Mengistu entitled "Assessment of psychotropic medicines utilization pattern for mental disorders treatment in Hadiya Zone Public Hospitals, Southern Ethiopia: a cross-sectional study" and submitted in partial fulfillment of the requirements for the Degree of Master of Science (Pharmacoepidemiology and Social Pharmacy) complies with the regulations of the University and meets accepted standards with respect to originality and quality.

Signed by the Examining Committee:

Examiner _____ Sign. _____ Date _____

Examiner _____ Sign. _____ Date _____

Advisor _____ Sign. _____ Date _____

_____

Chairman of Department

Acknowledgements

First, I would like to thank almighty God for giving me strength to throughout this study. Next, my profound gratitude and deepest acknowledgement goes to my instructor and main advisor Prof, Teferi Gedif for his unreserved guidance, constructive suggestions and encouragements he made during entire research process.

I am also thankful to Mr. Alemayehu Adnew for his valuable comments. I also need to thank my instructors and colleagues for their support during this study.

I owe warm thanks to all data collectors, participants, the three Hadiya zone public hospitals medical directors for their cooperativeness and facilitation my data collection and all psychiatry nurses in zonal hospitals for their help during data collection.

Finally, yet importantly, I would like to express my special thanks to Addis Ababa University for funding this research, School of Pharmacy, Department of Pharmaceutics and Social Pharmacy for facilitating my work and Wachemo University for sponsoring my study.

Table of Contents

List of Tables

List of Annexes

List of Abbreviations and Acronyms

AAU Addis Ababa University

EML Essential Medicine List

FMOH Federal Ministry of Health

HPH Hoomacho Primary Hospital

PM Psychotropic Medicines

SD Standard Deviation

SNNPR Southern Nation Nationality people region

SPH Shone Primary Hospital

SSRI Selective Serotonin Reuptake Inhibitors

TCA Tricyclic Antidepressants

WHO World Health Organization

WUNEMRTH Wachemo University Nigist Eleni Memorial Teaching Hospital

Abstract

Mental disorders are becoming issue of public health priority globally and their prevalence is increasing in recent times. Subsequently, psychotropic medicines are widely used for treatment mental disorders. However, medicines utilization studies have revealed irrational psychotropic medicines use is a serious problem worldwide and there is a dearth of information on psychotropic medicines utilization pattern in developing countries including Ethiopia. This study was conducted to assess psychotropic medicines utilization pattern in Hadiya Zone public hospitals namely Hoomacho and Shone primary hospitals and Wachemo University Nigist Eleni Memorial Teaching Hospital. Hospital based cross sectional study was conducted from June 15 2019 to December 30 2019. Medical charts were reviewed retrospectively using data abstraction format and Patients' interview and observational assessment were conducted prospectively using questionnaires. Data were entered and analyzed using EPI stata version 3 and SPSS version 20. Out of the 1200 psychiatry patients' for whom their medical charts were reviewed, majority 655(54.6%) were males; and in age group of 15-29 years 760(63.3%); with mean age 29.5 (SD±15). Regarding diagnosis, majority of psychiatric cases were diagnosed with psychosis 330(27.50%) followed by schizophrenia 188(15.67%). From the total of 1734 prescribed psychotropic medicines, most commonly prescribed medicines were antipsychotics 834(48.1%) followed by antidepressants 446(25.7%%) anticonvulsants or mood stabilizers 288(16.6%). The three most commonly prescribed antipsychotic medicines, chlorpromazine, haloperidol, and thioridazine constituted 71.34% of antipsychotic utilized in Hadiya Zone Public hospitals. Typical antipsychotics were prescribed more often 616(73.86%) than atypical antipsychotics 218(26.14%). Amitriptyline was the most frequently prescribed antidepressant 334(74.9%) followed by Fluoxetine 98(21.8%). Treatment switch was undertaken for 148(12.33%) patients and main reasons were poor control/improvement 46(33.1%), relapse 29(20.9%) and side effect

22(15.8%). Average number of psychotropic medicines per encounter was 1.5. However, the percentage of clients prescribed two or more psychotropic medicines was 36.1% that shows polyphrmacy prescribing practice. The average consultation and dispensing time were 9.1 minutes and 51.87 seconds respectively. Frequency was labeled only on 60(19.5%) dispensed medicines and 113(36.8%) patients had knowledge on doses of their medicines.

Conclusion and recommendation: Antipsychotics were most commonly utilized psychotropic medicines followed by antidepressants and anticonvulsants. Chlorpromazine, Amitriptyline and Risperidone showed higher proportion of utilized medicines. More than one-third psychiatric patients were prescribed psychotropic polyphrmacy. Close to a tenth of psychiatric patients had treatment switch. Average consultation and dispensing times was constrained. Most patients' medications were dispensed without adequate labeling and patients' knowledge about dispensed medications were limited. Further, prospective continuous study on both prevalence and use pattern need to be undertaken to get more information on psychotropic medicines utilization.

Key words: Mental disorders, psychotropic medicines, utilization pattern, antipsychotics and antidepressants

1. Introduction

1.1 Background

Mental disorders are becoming issue of public health priority and major causes of morbidity and they are usually associated with significant distress in social, economic, or other important activities areas (Thakkar et al., 2013). Mental disorder is syndrome known by clinically substantial disturbance in individuals' cognition, emotion or behavior that depicts malfunctioning in psychological, biological or development process underlying mental functioning (American psychiatry association, 2013). Worldwide, more than 792 million people were diagnosed with a mental health problem in 2017 which is more than one in ten people worldwide (10.7 percent) (Ritchie and Roser, 2018). Based on World Health Organization (WHO), mental health gap action program, 14% of the worldwide burden of disease is attributed to mental disorders and seventy five percent of this burden goes to developing countries (WHO, 2019).

In Ethiopia, mental health problems are becoming among the top non-communicable disorders in terms of burden. The burden of mental health problems mainly in rural Ethiopia constituted for 11% of the total disease burden from which schizophrenia and depression were included in top ten most burdensome health problems lists (Abdullah et al., 2001). Prevalence of mental disorder was 18% for adult and 15% for children (Sathiyasusuman, 2011). One study in Hadiya and Kambata adult community showed that prevalence of mental illness 17.2% with high (60%) male proportionality and stress and family history were most determinant factors related to mental illness (Solomon, 1989).

Medicines utilization study is as assessment of "marketing, distribution, prescription and use of medicines in general public with special emphasis given to subsequent clinical, social, and

economic results. Medicines utilization studies offer insights on medicines use and prescribing pattern, which is extent and profiles of medicines use and trends in medicines use and costs over time. It also helps to figure out determinants of medicines use such as user socio-demographic conditions, prescribers' education status and cost affordability (WHO, 2003). Although there is significant improvement in availability, accessibility and control of medicines, unreasonable utilization of medicines is worldwide problem and if not resolved; the problem could result in adverse medicines responses, increased morbidity and mortality rates, wastage of resources (Sitanshu et al., 2010). Psychotropic Medicines are widely used treatment of mental disorders and their major impacts are on mental functions. These medicines not only improve the conditions of patients but also they are known to cause long-term central nerve system potentially harmful adverse effects unless used appropriately (Mersey Care, 2017). Due to these adverse effect profiles, psychotropic medicines need special storage place like locked cabinet and access limitation to certain pharmacists and psychiatry experts prescribers by using special prescription paper (WHO, 1998). Given that mental health disorders are chronic conditions, it is important to track psychotropic medicines use regularly to ensure better quality of life for clients from long term psychotropic medicines use point of view. In psychiatric disorders treatment, it is recommended to initiate with monotheraphy for nearly all cases. Contrary to the recommendation, psychiatry health care professionals frequently use combination therapies, which often revealed by little or no scientific reasoning (Stahl, 1999).

Psychotropic medications play vital role in mental disorders treatment and their utilization in actual psychiatry service needs ceaseless assessment (Hardman et al., 2006). However, it is common that many psychiatry clinic clients get irrational prescriptions, which do not give benefit to the patients and leads to unintended side effects. This is frequently observed in treatment of

mental disorders like schizophrenia in which psychotropic medicines combination are commonly utilized. Psychotropic combination treatment may include combinations of different antipsychotic medicines or combination of antipsychotics with antidepressants, mood stabilizers, or anxiolytics/hypnotics (Messer, 2006). Medicines utilization studies are pertinent to ensure the rational use of psychotropic medicines; it is basic to monitor utilization pattern medicines. They also provide insights on quality of utilization, determinants of psychotropic medicines use, medicines prescribing, dispensing and utilization practice and recommendation for appropriate interventions. However, there is dearth of studies on psychotropic medicines in Ethiopia. Without assessing of how medicines are being utilized, it is difficult to recommend measures for improvement (WHO, 2003). There is lack of information on psychotropic medicines utilization pattern in current study area and it was therefore important to conduct current study.

1.2 Statement of the problem

Prevalence of mental disorders is increasing in recent times and it account for four of the world's top ten causes of disability (Murthy, 2007). Mental disorders constitute 14 per cent of the global disease burden and issues of mental health care are becoming priority concern (WHO, 2019). Subsequently, psychotropic medicines are widely used for treatment.

Psychotropic medicines utilization studies around the world have revealed widespread irrational prescribing, dispensing and use practice (Adesola et al., 2013; Shankar and Roy, 2001; Abebaw et al., 2016; Agbonile et al., 2009). Study conducted by management science for health (MSH) indicated other than prescribers, pharmacy professional contribute to irrational use of medicines (MSH, 1997). Availability and utilization of a wide variety of psychotropic medicines is associated with a wide spectrum of adverse drug reactions. Universally, more than 50% of all medicines are prescribed, dispensed, improperly, while 50% of patients come up short to take them correctly (Sitanshu et al., 2010). A rational medicine prescribing is linked to efficient use of scarce resources and quality of care. Assessing medicines utilization practices at a health facilities would ultimately help to promote rational medicines use (Desta et al., 2002).

Psychotropic medicines polyphrmacy is a critical problem in psychiatric problems treatment practice and it could put utilizers of medicines at risk of drug interactions, side effects and unintended costs (Mojtabai and Olfson, 2010; Agbonile et al., 2009). Research findings demonstrated in spite of progresses in psychopharmacology and better understanding of the mental health problems treatment, use of psychotropic polyphrmacy is escalating. Frequency of prescribing polyphrmacy in psychiatry ranges from 13% to 90%. Managing polyphrmacy requires an understanding of its associated factors. Education status, guidelines and algorithms for the suitable management of different conditions are compelling ways to manage unreasonable

polyphrmacy (Kukreja et al., 2013). Other study in Nigeria indicated polyphrmacy was in 92.3% of which 62.2% clients were on antipsychotic/anticholinergic combinations (Agbonile et al., 2009). Misuse of benzodiazepines is another problem encounter in psychotropic medicines utilization. Review study undertaken on benzodiazepines utilization revealed inappropriate prescribing and chronic benzodiazepines use is increasing globally in psychiatric institutions by prescribed benzodiazepines for more than 33% patients for long term use despite lack of clear indication (Gallagher, 2013).

A study in the Australian found out low habit of adherence identified for psychotropic medicines prescribing guidelines in hospitals and community mental health centers. Commonly reported problems were like over and under-dosing, polyphrmacy (prescribing two/more psychotropic medicines from the same or different therapeutic classes and medicines interactions which could result in sub-optimal prescribing and poor clinical outcomes (Goldney and Bain 2006).

To the best of literature review undertaken, there is a paucity pharmacoepidemiological studies on psychotropic medicines utilization in Ethiopia. According to study conducted in Amanual Mental Specialized Hospital, indicated prevalence of irrational antipsychotic medicines utilization was 32.6% (Abebaw et al., 2016). Another research done in Nekemit Referral Hospital revealed that more than half of the prescriptions (52.21%) were containing two psychotropic medicines (Fekadu et al., 2019). Even though there are few studies conducted different health facilities nationally, there is no study on psychotropic medicines utilization pattern in Hadiya Zone public Hospitals. Therefore, current study was conducted to assess psychotropic medicines utilization pattern in Hadiya Zone public Hospitals.

1.3 Significance of the study

This research assessed the pattern of mental illness and utilization of psychotropic medicines in Hadiya Zone public hospitals. Since psychotropic medicines play invaluable role in mental healthcare service, Assessment of their utilization patterns is necessary to improve medicines use pattern and strengthening psychiatry services in the Zone. Medicines utilization studies conducted in Ethiopia mainly investigated non-psychotropic medicines use pattern and this study will contribute a wealth of knowledge to the scarce literature on psychotropic medicines use pattern. By assessing, the practical experience on the ground on magnitude of burden of mental disorders and utilization pattern of different categories of medicines psychotropic medicines, it will provides recommendations for responsible stakeholders including psychiatry nurses, pharmacists, hospitals and zonal health administrations.

2. Literature review

2.1 Global epidemiology of mental health disorders

The World Health Organization report revealed that 14% of worldwide burden of diseases is related to mental disorders from which about three-quarter of the burdens occur in developing countries. It was estimated that in developing countries three in four individuals with mental health problems do not get proper mental health care (WHO, 2019). The burden of mental disorders account for 22.2% of the total burden of disease as measured by disability-adjusted life years in Caribbean and Latin America nations and depression was the most common mental disorder 13.2% (Rodriguez et al., 2009). WHO reported indicated that total number of people with depression was estimated to be more than 300 million and depression attributed to 7.5% of all years lived with disability in 2015 and high burden being on females than males. More than 264 million people suffer from anxiety and common among females than males (WHO, 2017).

Now days, burden of psychiatric disorders is escalating in conflict-affected society. Study conducted by WHO estimated that prevalence of mental disorders was 22.1%. These social and mental health problems sufferers are in need for mental health care (Charlson et al., 2019). Research in Karachi psychiatry clinic from 2001-2003 showed that most common psychiatric disorders were depression (49.4%), schizophrenia (16.2%). Besides females showed higher frequency for both psychosis and mood disorders as compared to males (Niaz et al., 2004).

From African countries, In Ghana, WHO estimated prevalence of mental disorders, is 13%; the prevalence of severe mental disorders like major depression and schizophrenia cover 3% and remaining ten percent estimate includes mild to moderate mental disorders (WHO, 2007). Study done by Mental Health Advocacy Programme revealed 20 % prevalence in Nigeria (Itanyi,

2012). Another study from Uganda indicated that depression was common mental disorder at primary health care setting with prevalence of 31.6 % (Wuhwezi et al., 2007).

2.2 Prevalence of common mental disorders in Ethiopia

Ethiopia, Mental illnesses are becoming common and among the top priority non-communicable disorder in terms of burden. The burden of mental health problems particularly in rural Ethiopia constituted for 11% of the total disease burden from which schizophrenia and depression were included in top ten most burdensome health problems lists (Abdullah et al., 2001). Community based study in indicated mental illness account for about 12.5% of burden of disease (Alem, 2001). Survey undertaken in community indicated prevalence of common mental illnesses particularly depression and anxiety was 22% (Kassa et al., 2018). Nationally, there is limited information on mental disorders prevalence trend through time. In Ethiopia, WHO estimated prevalence rate of mental disorders was 12-17% (WHO, 2007). The average prevalence of mental disorders in Ethiopia found was 18 % for adults and 15% for children (Sathiyasusuman, 2011). Ethiopia by mhGAP working group estimated prevalence of common mental disorders: Psychosis 0.3%, Bipolar disorder 0.5%, Depression 5% and Epilepsy 1.0% (FMOH, 2010).

Despite high prevalence and health burden of mental illness, attention given to offer mental health care was substantially low. Nationally, access for mental health service was limited and available only at hospital levels in psychiatry clinics (FMOH, 2010). In order to solve these challenge of low mental health access, WHO recommended integration of mental health care in primary health care setting which can scale up mental health services (WHO, 2007). After pretesting the recommendation of WHO, Ethiopia adopted and integrated service scale up program mental health problems diagnosis and treatment of common mental disorders in primary health care settings by involving various stakeholders (health system administrators, health care

professionals, service users and others supporting government and non-government organizations). Purpose of integration of mental disorders treatment in primary health care setting was to expanding mental health care for mental disorders diagnosing and treatment close to service users using available health care setting so that access gap for mental health service will be reduced and people utilizes mental health service whenever in need (FMOH, 2012).

2.3 Medicines utilized for mental disoders

Psychotropic medicines are widely utilized for treatment of mental disorders. Antipsychotics are psychotropic medicines that are used to treat psychosis and other mental disorders like schizophrenia bipolar and mania as monotheraphy or in combination with other psychotropic medications. There are two main categories of antipsychotics namely typical and atypical antipsychotics. These antipsychotic medicines include the traditional (typical) antipsychotic agents like Haloperidol, Chlorpromazine, Fluphenazine and Thioridazine, and the atypical agents like Risperidone, Olanzapine, and Clozapine. The typical antipsychotics are also known as first generation antipsychotics and they are mainly used to treat positive symptoms like hallucinations and paranoid thoughts. Mechanism of action of typical antipsychotics is mainly blocking of dopamine D2 receptors whereas atypical antipsychotics act mainly by blocking both dopamine D2 and serotonin receptors. Long-term treatment with typical antipsychotics may cause extrapyramidal side effects. Atypical antipsychotics have less EPS (extrapyramidal symptoms) and other side effects and better improvement of both positive as well as negative symptoms and treatment resistant problems. Best practice is to use the minimum effective dose of antipsychotic medicines (typical or atypical) (DiPiro et al., 2014). Antipsychotics are medicines of choice for schizophrenia treatment. From typical antipsychotics; Chlorpromazine, Fluphenazine, Haloperidol, Thioridazine, and from atypical antipsychotics; Olanzapine, Risperidone and

Clozapine, were included Ethiopian medicines List 6th Edition for treatment of mental disorders of psychosis, schizophrenia and other mental disorders (EFMHACA, 2010).

The other category of psychotropic medicines is antidepressants. The two commonly utilized antidepressants are Tricyclic antidepressants (TCA) and Selective Serotonin re –uptake inhibitors (SSRI). TCA are non-selective inhibitors of monoamine uptake by their mechanism of action and commonly for major depression. Some of them are Amitriptyline, Imipramine, Desipramine and Nortryptyline. The SSRI are widely utilized antidepressants that block serotonin reuptake in to presynaptic nerve terminals and hence increase serotonergic transmission in brain. These medications are much safer in overdoses than other antidepressants such as TCA. When compared to TCA, SSRIs have less muscarinic, histaminic and adrenergic side effects. Examples of these medicines are Fluoxetine, Sertraline and paroxetine (DiPiro et al., 2014).

The other category of psychotropic medicines is antianxiety/ sedative and hypnotics. They are used to treat anxiety disorders and bring sedation and sleep. Benzodiazepines like Diazepam, Lorazepam and Clonazepam are commonly used antianxiety medicines. Dosage is generally started at low level and gradually raised until symptoms diminished and individuals consume benzodiazepines medicines develop tolerance, dependence and withdrawal reactions (Gallagher, 2013). The last but not least, class of psychotropic medicines is anticonvulsants. They are used to treatment epilepsy, seizures and mood stabilizers. Commonly used anticonvulsant medicines include Phenobarbitone, Valproic acid, phenytoin, Carbamazepine, Lamotrigine and Gabapentin (James, 2001).

Number of psychotropic medicines included in Essential List of medicines of Federal ministry of health (FMOH) has shown increase. The national medicines list comprises essential psychotropic medications namely: Sertraline, Risperidone, Olanzapine, Bromazepam, Amantadine,

Orphenadrine hydrochloride and Phenytoin sodium (Mental health gap action plan (mhGAP-Ethiopia Working Group 2010)). National treatment guidelines recommended common mental disorders treatments with commonly used psychotropic medicines: antidepressants (Amitriptyline, imipramine and Fluoxetine), antipsychotics (Chlorpromazine, Haloperidol, Fluphenazine, Thioridazine and Risperidone), Anticholinergic (Benzhexol) and anticonvulsants (Phenobarbital, Phenytoin, Carbamazepine and Sodium valproate) (FMOH, 2013).

2.4 Importance of medicines utilization studies

Medicines utilization study is as assessment of "marketing, distribution, prescription and use of medicines in general public with special emphasis given to subsequent clinical, social, and economic aspects. The main aim of medicines utilization studies is to quantify the current state, overtime use trends and monitor utilization of medicines. It also helps estimate prevalence rate for each health problem and plan for medicines availing. Descriptive epidemiologic approaches focus on study of the processes of medicines utilization and analytic studies on factors associated with medicines utilization patterns (WHO, 2003).

Irrational use of psychotropic medicine is a major challenge of recent clinical practice especially in developing countries that comprises the health care system, prescriber of medicine, dispenser, service utilizer and community. Psychotropic polyphrmacy refers to utilization of two or more psychotropic medicines combinations concurrently to a psychiatric patient. It can be from same-category, multi-category and these increase total number of medicines per encounter (Kukreja et al. 2013). The consequences irrational medicines uses are adverse medicines reaction, unintended cost and side effect. Factors related to the irrational use of medicines are: availability of a number of medicines, irrational prescribing by health prescribers and irrational dispensing by pharmacy experts and lack of knowledge on rational of medicines (Haldar et al., 2011).

To monitor irrational utilization of medicines, International Network for Rational Use of Drugs and the WHO collaboratively prepared indicators that being used in assessment of medicines use pattern. The core medicines utilization indicators are prescribing, patient care and facility indicators. Prescribing indicators measures performance of service providers (prescribers) in key areas of proper use of medicines. One of prescribing indicator is average number of medicines per encounter, which is computed by dividing total number of medicines prescribed for total number of encounters. The other is percentage of encounters with psychotropic injection prescribed. It is calculated by dividing the number of patient encounters with an injection for total number of encounters multiplied by 100 (WHO 1993). Patient care indicators measurements assess key aspects of what clients experience at health facilities, and how well they have been prepared to deal with medicines prescribed and dispensed. These patient care indicators of medicines utilization studies are average consultation and average-dispensing time, percentage of medicines actually dispensed, percentage of medicines adequately labeled and patients knowledge about dispensed medicines basic information namely dose, dosage regimen, duration and its indication. To compute average consultation and dispensing time, total time taken for a series of consultations and dispensing is divided for the number of consultations and dispensing encounters respectively. To compute patient's knowledge of correct dose, frequency, duration of use and intended use, the number of clients who are able to report right response for dose, frequency, duration of use and intended use for each questions is divided for total number of clients inquired, multiplied by 100. Facility indicators assess for availability of a copy of EML or formulary and key medicines in the stock (WHO, 1993).

Benzodiazepines are commonly prescribed psychotropic medicines for short-term use (maximum for one month) or use when needed clinically. In long-term use, the adverse effects outweigh the

benefits and their utilization should be based on the rational prescribing practice (Shamkuwar et al., 2013). Nevertheless, studies revealed growing number of improper, frequent misuse benzodiazepine in with up to 33 per cent of patients receiving these medications for the long term. Study conducted on utilization pattern benzodiazepine depicted that almost half of all patients to a psychiatric hospital were prescribed for such medications, typically with a lack of strong clinical need (Gallagher, 2013).

A cross-sectional survey conducted in Psychiatry hospital in German showed that antipsychotics were the commonly prescribed psychotropic medicines (67.5%) followed by anxiolytics (42.2%) and antidepressants (28.3%) (Voirol et al., 1999). Survey result in Hungary psychiatry hospital indicated, about 30% of schizophrenia patients were treated with typical antipsychotics and 80% with atypical. From total clients 30%, 35%, 23% and 12% dispensed one, two three and four or more psychotropic medicines respectively. Switching from **o**ne antipsychotic to another was 30% (Kovac, 2005). The utilization of newer antidepressants was higher in Italy psychiatry hospital where SSRI represent (73%) of use whereas TCA (27%) (Rondondo et al., 2003). Comparable study in France depicted that 45% of the clients took SSRI with fluoxetine leading 30% of others and use of TCA was 39 % (Olie et al., 2002). Study done in Taiwan indicated that carbamazepine (57%) was commonly prescribed anticonvulsant followed by phenytoin (32%) and sodium valproate (31%) (Chen et al., 2000).

Polyphrmacy is a significant problem in mental health care practice and this can put patients at risk of drug interactions and leads to unintended costs (Mojtabai and Olfson, 2010). Study done on antipsychotic medication utilization among adult psychiatric patients in psychiatry hospital showed that prevalence of antipsychotic polyphrmacy 12% and factor associated with Polyphrmacy was diagnosis with schizophrenia (Ortiz, Hollen et al., 2016). Another study

finding from India psychiatry outpatient clinic showed average number of psychotropic medicines per encounter was 2.1 ± 0.8. Utilization frequency for, antidepressants and antipsychotics psychotropic medicine were 25.46%, 25.37% respectively. From whole 1092 psychotropic medicines utilized, 1056 (96.7%) were oral formulations (Sonali et al., 2014). Research report from India psychiatry outpatient indicated anti-anxiety (36.1%), antidepressants (13%) were most commonly utilized psychotropic medicines, and polyphrmacy was 22%. Tricyclic antidepressant with benzodiazepines most commonly used combination (Shamkuwar et al., 2013). Study undertaken in 600 prescriptions in India indicated that average number of psychotropic medicines per encounter was 1.72±1.02. Diazepam was combined with other psychotropic medicines for 17.8% service utilizers. Trifluoperazine with Trihexiphenydyl, Carbamazepine, Amitriptyline and Diazepam were used commonly for Schizophrenia, Bipolar, Depression and Anxiety treatment (Thakkar et al., 2013). Another drug utilization study in India revealed sedative-hypnotics constitute 43% of prescribed medicines, followed antidepressants, antipsychotics and mood stabilizers. From antidepressants, sertraline utilization account one third of prescriptions and succeeded by Fluoxetine. From atypical antipsychotics, Risperidone (41%) and Olanzapine (40%) were utilized commonly. Atypical antipsychotics were utilized more often than typical antipsychotics owing to their better safety (Piparva et al., 2011).

Study conducted on psychotropic medicines use in Saudi Arabia indicated most commonly utilized psychotropic medicines were antipsychotic (33%) antidepressants (23.2%), Anticholinergic (22.0%) and anticonvulsants (12.9%). Fluphenazine deconoate and haloperidol deconoate were foremost used injectable antipsychotics. Polyphrmacy prescribing (85%) was common practice with anticonvulsants (Al-ghamdy et al., 1999). Study reported from Nigerian psychiatric center revealed average number of psychotropic medicines per encounter was 3.5 and

percentage of injection prescribing was 13.8% (Moses et al., 2014). Another similar study conducted in Nigeria showed, Average number of medicines per encounter was 3.3 and injection prescribing was 29.5%. Availability of psychotropic medicines at the point of dispensing was 85.7%. A copy of the national EML or hospital medicines

formulary was not available. The antipsychotics were foremost utilized (94.7%) (Itanyi and Tayo 2016). Another similar study done on psychotropic medicines utilization on psychiatry outpatient unit in Nigeria revealed average number of medicines per encounter was 2.1. Antipsychotics use cover highest share 82%, followed by antidepressants, 13 % (Charles et al., 2013).

In study conducted in Amanual mental specialty hospital indicated that the prevalence of irrational prescribing was 32.6%. Polyphrmacy prescribed in half of assessed prescriptions. On average 1.6 prescriptions were prescribed per encounter. Around twenty percent of prescriptions encounters with injections, and benzodiazepines were prescribed for 4.7% cases. Chlorpromazine 271(45.2%) and Risperidone 154(25.7%) were commonly utilized antipsychotics. Average computed dispensing and consultation time was 29 seconds and 5.1 minutes respectively. The study revealed that 354(59%) of the clients had knowledge on right dosage of medicines offered for use. Clients load, knowledge gap, insufficient communication were factors related with psychotropic medicines utilization (Abebaw et al., 2016).

Study done in Nekemit Referral hospital indicated majority of the patients attending the psychotropic medication were within the age of between 20-49 years. The most commonly prescribed medicines were antipsychotics (40%) from which chlorpromazine constitute 21%. Tricyclic antidepressants (TCAs) utilization was 24% from which amitriptyline use cover 13%. More than half of the prescriptions (52.21%) were containing two drugs (Fekadu et al., 2019).

3. Objectives

3.1 General Objective

To assess the pattern of psychotropic medicines utilization in Hadiya zone public hospitals

3.2 Specific Objectives

To identify commonly prescribed categories of psychotropic medicines for treatment mental disorders

To assess psychotropic medicines use trend and

To assess treatment shifts

To assess psychotropic medicines use pattern using WHO core medicines use indicators

To describe types of mental health problems treated in the hospitals

4. Methodology

4.1 Study areas and study period

This study was conducted in psychiatry clinics of three public hospitals in Hadiya Zone. Hadiya zone is one of the 14 Zones in Southern Nations Nationalities and Peoples Regions of Ethiopia. It has a total area of 3850.2 square kilometers that is divided into ten woredas. This Zone has nearly 1.6 million populations, of which 817,267 are males and 826,201 are females. The Zone has four public hospitals from which three of them offer mental health service in their psychiatry clinics. These are Homacho Primary Hospital (HPH), Shone Primary Hospital (SPH) and Wachemo University Nigist Eleni Mohammed Memorial Hospital (WUNEMRTH) (Hadiya Zone Health Bureau report, 2011). SPH is located in Shone town, which is capital of Badawacho woreda and situated at about 345 Kms away from country's capital city Addis Ababa. WUNEMRTH is found in Hossana town which is located in 230 km away from the country's capital city Addis Ababa. Hoomacho primary hospital is located in Hoomacho town, which is 355 km far from Addis Ababa. Since 2010 E.C, WUNEMRTH is incorporated to Wachemo University and there are four psychiatry nurses from which two of them are senior first-degree holders in psychiatry nurses with 4 to 6 years experiences in the Hospital and remaining two were employed in 2012 E.C. Based on WUNEMRTH Health Management Information Service (HMIS) report, the total outpatient psychiatric patients served 2007 to 2011 E.C were 2563, 4763, 5271, 2673 and 3947 respectively. Based on psychiatry clinic mental disorder cases report, mental disorders are common in 15 years and above age group. From the total cases, new visited cases treated over the five years period whose age was greater than 15 years and above were less than 600. On average, 20 patients with various mental disorders, visit psychiatry clinic daily (HMIS, 2019). SPH and HPH started outpatient psychiatry service since 2009 E.C and staffed by

two psychiatry nurses, one for each. The study was conducted from June 15 to December 30 2019 G.C.

4.2 Study design

Hospital based cross sectional study was conducted from June 15 to December 30 2019 using both prospective (observation and interview) and retrospective (medical chart review) data collection techniques.

4.3 Source and study population

4.3.1 Source population

All medical charts of mental illness patients who visited the three Hadiya zone public hospitals outpatient psychiatry clinics were source population in retrospective medical chart review. All clients who visited the outpatient psychiatry clinics of the study hospitals during the data collection time were source population for assessment of patient care indicators.

4.3.2 Study population

Medical charts of all mental illness patients who were 15 years old and above and visited the three Hadiya Zone Public hospitals, psychiatry clinics from September 2007 to 2011 E.C were study population in retrospective medical chart review. All clients who visited the outpatient psychiatry clinics of the study hospitals during the data collection time and selected randomly to reach the study participant using the sampling frame of patients' card number were study population for patient care indicators assessment. Patient medical charts and prescriptions that were incomplete and illegible, severely ill clients and those who were not involuntary to participate were excluded from the exit interviews.

4.4 Sampling technique and sample size

For retrospective review, medical charts of mental illness patients who were 15 years old and above and treated in the hospitals during September 2007-2011 E.C were taken as study population and patient charts were sampling units. Based on the WHO guideline of how to investigate medicines utilization in health care settings, it is recommended minimum of 600 samples for medicines utilization studies with great number if possible. Besides, it recommends ten essential medicines selection based on ten top disease list of the hospital to assess their availability in determining facility indicators with great number if possible (WHO, 1993). Since mental illness cases were less frequent than other cases and total numbers mental disorder cases within one-year period were less than 600, All medical charts of mental disorder patients who visited the three public hospitals and fulfilled the inclusion criteria were included in the retrospective assessment.

For prospective assessment of patient care indicators on psychiatry outpatient services, the sample size was determined using the single population proportion formula taking following assumption. By taking Z α/2 in 95% confidence interval value of 1.96, 0.5 for P (Extent and nature of psychotropic medicines use which is unknown in study area) and margin error of 0.05, the sample size was 384.

$$\mathbf{n} = \frac{\mathbf{z2\alpha/2\ p(1-p)}}{\mathbf{d2}}$$

$$= \frac{(\mathbf{1.96})\mathbf{2}(\mathbf{0.5})(\mathbf{0.5})}{(\ \mathbf{0.05})\ \mathbf{2}} = 384$$

Where n =required sample size

p = Extent and nature of psychotropic use=50% (chosen to get maximum sample size)

d =Margin of error

However, total new and repeat psychiatry cases was 3,947 in WUNEMRTH (HMIS, 2019), 300 in SPH and 200 in HPH (as per psychiatry nurses) gives 4,447. Since to total population is less than 10,000, then the minimum sample size required was calculated using sample size reduction formula.

nf =n/1+n/N=354, where nf= final sample

as per zonal psychiatry nurses' estimation, on average 1000, 200 and 100 patients are served annually without considering refill visit in WUNEMRTH, SPH AND HPH respectively. Total sample was allocated for each hospital depending on average number of patients' in outpatient clinics and finally 270, 54 and 27 patients were allocated from WUNEMRTH, SPH and HPH respectively.

However, due to financial limitation to stay on and wait psychiatric patients' visit the clinics who were not interviewed it was possible to interview three hundred seven exit interviews were conducted for prospective assessment of patient care indicators. The samples were selected by simple random sampling technique. The sampling frame was psychiatry patients' card number. Study participants were selected by taking every other psychiatry outpatient clients. The first patient was selected randomly by lottery method. In case of clients who had revisit and interviewed during study period, patients identification was crosschecked and upcoming client was considered. In between, brief information was provided about purpose of study and oral informed consent obtained.

4.5 Variables

4.5.1 Dependent variable

Utilization pattern of psychotropic medicines

4.5.2 Independent variables

Socio-demographic characteristics: Age, sex, marital status, educational, Occupation and residency

Clinical characteristics: Diagnosis

Availability of essential medicines, presence/absence of standard treatment guideline/formulary

4.6 Data collection and management

4.6.1 Data collectors

For data collection, three pharmacists and three psychiatry nurses who work in study hospitals were recruited and trained for one day on the standard instruction and data collection tools for both chart review and prospective interview. In order to maintain consistency, completeness of the data collected was checked every day during the data collection by the principal investigator.

4.6.2 Data collection

A quantitative data collection method was employed to gather information. A total of 1200 patient medical charts were reviewed using data abstraction format.]For patient care indicators assessment, medicines dispensed were evaluated for pattern of labeling basic information. The data collectors computed consultation time and dispensing time and psychiatry clinic clients were interviewed for their knowledge about dispensed psychotropic medicines on exit interview. Dose labeling was assessed for existence of written information on dose of psychotropic medicine/s, frequency of taking the medicine/s, quantity of medicines and direction of use of dispensed medicines. Patients' knowledge was assessed by yes or no responses for dose of dispensed medicine/s, frequency of taking it/them, duration of given medicine/s and reason or indication for taking dispensed medicines.

4.6.3 Data collection instruments

Data was collected using a structured forms adopted from WHO medicines use evaluation questionnaires (WHO, 1993). Data collection instrument was prepared to collect information about epidemiology of mental illness, medicines utilization pattern, medicines related information, patient socio demographic and clinical characteristics.

4.6.4 Data entry and analysis

Collected data was checked for appropriateness, and quality, and entered in to Epi stata version 3.0, and analyzed using statistical package for social science (SPSS) version 20. Descriptive statistics such as frequency, percentage, mean, median and interquartile range were used to summarize patients' characteristics. Tables was used to present the results.

4.7 Ethical consideration

This study was conducted after obtaining Ethical approval from the Ethics Review Committee of the School of Pharmacy, AAU (ERB/SOP/105/06/2019) and obtaining the permission from the hospitals. Participants were informed about purpose of study and, verbal consent was obtained from each participant before the interview. They were told that they have full right to refuse their participation at any time, and this by no means affects the service they get from the Hospitals. Privacy of participants was ensured by interviewing in a separate room where interview questions and responses cannot be overheard. Confidentiality of information kept during patient interview and review of patient medical charts by avoiding writing any personal identifiers in questionnaires. Information collected was used only for current study purpose.

4.8 Operational definition

Combination of psychotropic medicines- two or more psychotropic medicines that are prescribed and dispensed together to treat mental illness

Psychotropic medicines- Medication usually prescribed for mental health problems and their major effects are on mental functions. Psychotropic medicines are in this thesis defined as antipsychotics, anxiolytics, hypnotics and antidepressants and anticonvulsants/mood stabilizers.

Psychotropic polyphrmacy: Two or more combination of psychotropic medicines prescribed at the same time

Treatment shift: Change in medication from one or two psychotropic medicine to another type of psychotropic medicines or dose increasing and decreasing of psychotropic medicines.

5. Results

5.1 Demographic characteristics of study participants

As shown in Table 1 below, 1200 patients' charts were reviewed; of whom 655(54.6%) were males, 760(63.3%) aged between 15-29 years. The mean age was 29.5 (SD±13.8) years. Male to female ratio was 1.2:1

Table 1: Demographic characteristics of the psychiatry patients treated from 2007-2011 E.C in Hadiya Zone Public Hospitals, SNNPR, Ethiopia, 2019

Hospitals	Characteristics		Years											
			2007		2008		2009		2010		2011		Total	
			n	%	n	%	n	%	n	%	n	%	n	%
WUNEMRTH	Sex	Male	141	52.4	104	54.7	91	58.0	78	52.7	167	54.8	581	54.3
		Female	128	47.6	86	45.3	66	42.0	70	47.3	138	45.2	488	45.7
		Total	269	100	190	100	157	100	148	100	305	100	1069	100
	Age	15-29	171	63.6	120	63.2	101	64.3	94	63.5	190	62.3	676	63.2
		30 – 64	86	32.0	59	31.1	51	32.5	52	35.1	103	33.8	351	32.8
		65+	12	4.5	11	5.8	5	3.2	2	1.4	12	3.9	42	3.9
		Total	269	100	190	100	157	100	148	100	305	100	1069	100
SPH	Sex	Male					22	42.3	5	50.0	4	66.7	31	45.6
		Female					30	57.7	5	50.0	2	33.3	37	54.4
	Age	15-29					32	61.5	9	90.0	4	66.7	45	66.2
		30 – 64					20	38.5	1	10.0	2	33.3	23	33.8
		65+					0	0.0	0	0.0	0	0.0	0	0.0
		Total	-	-	-	-	52	100	10	100	6	100	68	100
HPH	Sex	Male					8	61.5	22	64.7	13	81.2	43	68.3
		Female					5	38.5	12	35.3	3	18.8	20	31.7
	Age	15-29					11	84.6	21	61.8	7	43.8	39	61.9
		30 – 64					2	15.4	10	29.4	9	56.2	21	33.3
		65+					0	0.0	3	8.8	0	0.0	3	4.8
		Total	-	-	-	-	13	100	34	100	16	100	63	100

Note: Until 2009 E.C, there was no mental health service in SPH and HPH at psychiatry clinics level.

5.2 Types of common mental health problems

From a total of mental disorders treated from 2007-2011 E.C, the majority 330(27.50%) were psychosis, followed by schizophrenia 188(15.67%), Epilepsy 156(13.00%) and Depression 143(11.92%) (Table 2).

Table 2: Mental health problems seen in study period (2007-2011 E.C) in Hadiya Zone Public Hospitals, SNNPR, Ethiopia, 2019

Diagnosis	n	n %
Relapsed psychosis	61	5.1
Psychosis	269	22.4
Schizophrenia	188	15.7
Bipolar I	106	8.8
Depression	143	11.9
Anxiety	96	8.0
Epilepsy	156	13.0
Seizure	12	1.0
Others*	169	14.1
Total	**1200**	**100.0**

Others: Posttraumatic stress disorder, suicide attempt, mood disorders, Dementia, Delusion, Bipolar II, insomnia, Bipolar and depression with psychotic feature.*

In WUNEMTH, psychosis has shown increase in proportion from 36.4% in 2007 to 42.4% in 2009 and then decrease in 2010 and 2011, whereas schizophrenia has shown increase throughout study period 5.6% in 2007 to 16.7% in 2011 E.C. The proportion of patients treated with depression increased from 9.3% in 2007 to 20.3% in 2011 E.C. In SPH and HPH, a decreasing trend in the proportion of Epilepsy patients was observed from 86.5% in 2009 to 16.7% in 2011 in SPH and 53.8% in 2009 to 31.2% in 2011 E.C in HPH (Table 3).

Table 3: Trends in the proportion of patients with mental disorders treated over the five years period (2007-2011 E.C) in Hadiya Zone Public Hospitals, SNNPR, Ethiopia, 2019

Hospitals	Diagnosis	Years											
		2007		2008		2009		2010		2011		Total	
		n	%	n	%	N	%	n	%	n	%	n	%
WUNEMRTH	Relapsed psychosis	14	5.2	14	7.3	16	10.3	6	4.1	11	3.6	61	5.7
	Psychosis	84	31.2	40	20.9	50	32.1	30	20.3	49	16.1	253	23.7
	Schizophrenia	15	5.6	19	9.9	30	19.2	42	28.4	73	23.9	179	16.7
	Bipolar I	9	3.3	20	10.5	21	13.5	20	13.5	33	10.8	103	9.6
	Depression	25	9.3	16	8.4	12	7.7	14	9.5	63	20.7	130	12.2
	Anxiety	42	15.6	6	3.1	14	9.0	17	11.5	16	5.2	95	8.9
	Epilepsy	41	15.2	41	21.5	0	0.0	0	0.0	0	0.0	82	7.7
	Seizure	1	0.4	3	1.6	0	0.0	0	0.0	0	0.0	4	0.4
	Others*	38	14.1	32	16.8	13	8.3	19	12.8	60	19.7	162	15.2
	Total	269	100	191	100	156	100	148	100	305	100	1069	100
SPH	Psychosis					2	3.8	4	40.0	4	66.7	10	14.7
	Schizophrenia					4	7.7	1	10.0	0	0.0	5	7.4
	Depression					0	0.0	0	0.0	1	16.7	1	1.5
	Anxiety					1	1.9	0	0.0	0	0.0	1	1.5
	Epilepsy					45	86.5	5	50.0	1	16.7	51	75.0
	Total	-	-	-	-	52	100	10	100	6	100	68	100
HPH	Psychosis					1	7.7	5	14.7	0	0.0	6	9.5
	Schizophrenia					1	7.7	2	5.9	1	6.2	4	6.3
	Bipolar I					2	15.4	1	2.9	0	0.0	3	4.8
	Depression					0	0.0	4	11.8	8	50.0	12	19.0
	Anxiety					0	0.0	0	0.0	0	0.0	0	0.0
	Epilepsy					7	53.8	11	32.4	5	31.2	23	36.5
	Seizure					1	7.7	7	20.6	0	0.0	8	12.7
	Others*					1	7.7	4	11.8	2	12.5	7	11.1
	Total	-	-	-	-	12	100	30	100	14	100	56	100

Others: Posttraumatic stress disorder, suicide attempt, mood disorders, Dementia, Delusion, Bipolar II, insomnia, Dipolar and depression with psychotic feature.*

With regard to sex and age distribution of patients treated over five years period (2007-2011 E.C), proportion of male to female psychosis patients was equal 165(50%) whereas the proportion of males was higher in females schizophrenia (56.4% versus 43.6%). The proportion of depression was higher in males than females (55.2% versus 44.8%). Majority of psychosis cases 210 (63.6%) were in age group (15-29). This age range is also common for schizophrenia 119(63.3%), depression 93(65%), and epilepsy 114 (73%) (Table 4).

Table 4: The sex and age distribution of patients with mental health disorders treated over the period (2007 to 2011 E.C) in Hadiya Zone Public Hospitals, SNNPR, Ethiopia, 2019

	Sex of patient			Age of patient			
Diagnosis of patient	Male	Female	Total	15-29	30 – 64	65+	Total
	29	32	61	34	25	2	61
Relapsed psychosis	47.5%	52.5%	100.0%	55.7%	41.0%	3.3%	100.0%
	136	133	269	176	85	8	269
Psychosis	50.6%	49.4%	100.0%	65.4%	31.6%	3.0%	100.0%
	106	82	188	119	64	5	188
Schizophrenia	56.4%	43.6%	100.0%	63.3%	34.0%	2.7%	100.0%
	60	46	106	88	18	0	106
Bipolar I	56.6%	43.4%	100.0%	83.0%	17.0%	0.0%	100.0%
	79	64	143	93	44	6	143
Depression	55.2%	44.8%	100.0%	65.0%	30.8%	4.2%	100.0%
	57	39	96	45	45	6	96
Anxiety	59.4%	40.6%	100.0%	46.9%	46.9%	6.2%	100.0%
	78	78	156	114	39	3	156
Epilepsy	50.0%	50.0%	100.0%	73.1%	25.0%	1.9%	100.0%
	5	7	12	8	4	0	12
Seizure	41.7%	58.3%	100.0%	66.7%	33.3%	0.0%	100.0%
	105	64	169	83	71	15	169
Others*	62.1%	37.9%	100.0%	49.1%	42.0%	8.9%	100.0%
	655	545	1200	760	395	45	1200
Total	54.6%	45.4%	100.0%	63.3%	32.9%	3.8%	100.0%

Others: Posttraumatic stress disorder, suicide attempt, mood disorders, Dementia, Delusion, Bipolar II, insomnia, bipolar and depression with psychotic feature.*

5.3 Commonly prescribed psychotropic medicines categories

With regard to psychotropic medicines utilization, In Wachemo University Hospital, the most prescribed category of psychotropic medicines was antipsychotics 793(74.2%) followed by antidepressants 428(40.0%) and anticonvulsants 207(19.4%); whereas in the Shone and Hoomacho Primary Hospitals, anticonvulsants were commonly prescribed medicines in 48(70.6%) and 33(52.4%) of the cases, respectively (Table 5). In WUNEMRTH, utilization of antipsychotic showed increase from 184(46.9%) in 2007 to 241(54.4%) in 2011 whereas consumption of anticonvulsants showed decrease from 55(14%) in 2007 to 37(8.4%) in 2011. Anticonvulsants use showed decrease in the two primary hospitals from 2009 to 2011 E.C.

Table 5: Psychotropic medicines categories prescribed during the five-years (2007-2011 E.C) in Hadiya Zone Public Hospitals, SNNPR, Ethiopia, 2019

Hospitals	Medicines categories	Years											
		2007		2008		2009		2010		2011		Total	
		n	%	n	%	n	%	N	%	n	%	n	%
WUNE MRTH	Antianxiety	27	7.0	17	6.0	16	7.0	8	4.0	54	12.2	122	7.8
	Anticonvulsant	55	14.0	67	23.5	23	10.0	25	12.5	37	8.4	207	13.4
	Antidepressants	126	32.1	73	25.6	62	27.0	56	28.0	111	25.0	428	27.6
	Antipsychotics	184	46.9	128	44.9	129	56.0	111	55.5	241	54.4	793	51.2
	Total	392	100	285	100	230	100	200	100	443	100	1550	100
SPH	Antianxiety					1	1.9	1	9.1	0	0.0	2	2.9
	Anticonvulsants					44	83.0	3	27.3	1	16.7	48	68.6
	Antidepressants					2	3.8	0	0.0	1	16.7	3	4.3
	Antipsychotics					6	11.3	7	63.6	4	66.6	17	24.2
	Total	-	-	-	-	53	100	11	100	6	100	70	100
HPH	Antianxiety					1	5.3	3	8.1	2	9.1	6	7.7
	Anticonvulsants					10	52.6	18	48.7	5	22.7	33	42.3
	Antidepressants					1	5.3	5	13.5	9	40.9	15	19.2
	Antipsychotics					7	36.8	11	29.7	6	27.3	24	30.8
	Total	-	-	-	-	19	100	37	100	22	100	78	100

Note: In the two primary Hospitals psychiatry clinics service started since 2009 E.C

Overall, foremost prescribed category of psychotropic medicines was antipsychotics 834(48.1%) followed by antidepressant 446(25. 7%) and anticonvulsant or mood stabilizers 288(16.6%). Among the psychotropic medicines, most utilized antipsychotics were Chlorpromazine 259(15%), followed by Risperidone 216(12.5%) and Haloperidol 198(11.4%). From antidepressants, Amitriptyline 334(19.2%) followed by Fluoxetine 96(5.5%) and Phenobarbitone 148(51.4%) from anticonvulsants (Table 6).

Table 6: Psychotropic medicines prescribed during the five-years (2007-2011 E.C) in Hadiya Zone Public Hospitals, SNNPR, Ethiopia, 2019

Psychotropic medicines categories	Psychotropic medicines	n	n %	Total n %
Antianxiety	Diazepam	64	49.2	3.7
	Diazepam inj	66	50.8	3.8
	Total	130	100.0	7.5
Anticonvulsants/mood stabilizers	Carbamazepine	52	18.1	3.0
	Phenobarbitone	148	51.4	8.5
	Phenytoin	20	6.9	1.2
	Sodium valproate	68	23.6	3.9
	Total	288	100.0	16.6
Antidepressants	Amitriptyline	334	74.9	19.2
	Fluoxetine	96	21.5	5.5
	Imipramine	16	3.6	0.9
	Total	446	100.0	25.7
Antipsychotics	Chlorpromazine	259	31.0	15.0
	Fluphenazine inj	21	2.5	1.2
	Haloperidol	198	23.7	11.4
	Haloperidol inj	64	7.7	3.7
	Risperidone	216	26.0	12.5
	Thioridazine	74	8.9	4.3
	Olanzapine	2	0.2	0.1
	Total	834	100.0	48.1
Anticholinergic	Benzhexol	36	100.0	2.1
Total Psychotropic medicines prescribed		1734	100.0	100.0

5.4 Common combination of psychotropic medicines

As shown on table 7 below, most common combinations were Chlorpromazine with amitriptyline, Haloperidol injection with diazepam injection.

Table 7: Combination psychotropic medicines observed during the period 2007-2011 E.C in Hadiya Zone Public hospitals, SNNPR, Ethiopia, 2019

Psychotropic medicine	Chlorpromazine	Risperidone	Phenobarbitone	Amitriptyline	Na. Val	Haloperidol	Carbamazepine	Thioridazine	Fluoxetine	Diazepam	Haloperidol inj	Diazepam inj
Chlorpromazine	259	216	148									
Amitriptyline	60	15	1	334								
Na. Val	8	28	1	0	68							
Haloperidol	2	1	3	40	10	198						
Carbamazepine	9	1	3	0	0	28	52					
Thioridazine	1	0	0	27	0	1	0	74				
Fluoxetine	9	30	1	0	2	10	0	0	96			
Diazepam	2	30	1	1	8	15	0	1	11	64		
Imipramine	3	2	0	0	0	3	0	1	0	0		
Hal inj	26	9	0	6	3	21	5	3	1	5	64	
Diazepam inj	26	10	0	6	3	22	5	3	1	5	64	66
Benzhexol	11	2	0	6	3	19	2	2	1	0	4	4
Fluphenazine inj	2	2	0	3	1	0	0	0	1	1	4	4

Hal inj- Haloperidol injection, Na.val-Sodium valproate.

Note: Medicines with rare combinations were excluded from table and they are given in annex 10

5.5 Treatment shift

As indicated in Table 8, in WUNEMRTH, treatment shift observed in over five years period (2007-2011 E.C) was 139(11.58%) of cases. Major 46(33.1%) reason for treatment shift was poor control/improvement with initial treatment to prescribed medicines, relapse 29(20.9%), side effect 22(15.8%) and non-adherence 19(13.7%). Treatment shift were rare in both SPH and HPH.

Table 8: Treatment shift during the period (2007-2011 E.C) at WUNEMRTH, SNNPR, Ethiopia, 2019

Hospital	Reasons for Rx shift	Years											
		2007		2008		2009		2010		2011		Total	
		N	%	n	%	n	%	n	%	n	%	N	%
WUNEMRTH	Due to poor control/no improvement	12	32.4	10	38.5	6	26.1	7	28.0	11	39.3	46	33.1
	Due to relapse or reemission	9	24.3	4	15.4	3	13.0	8	32.0	5	17.9	29	20.9
	Due to no adherence	8	21.6	6	23.1	2	8.7	1	4.0	2	7.1	19	13.7
	Due to side effect/EPS	3	8.1	3	11.5	5	21.7	5	20.0	6	21.4	22	15.8
	Unavailability of medication/s	3	8.1	0	0.0	2	8.7	1	4.0	0	0.0	6	4.3
	Unknown reason	1	2.7	0	0.0	5	21.7	2	8.0	2	7.1	10	7.2
	Others**	1	2.7	3	11.5	0	0.0	1	4.0	2	7.1	7	5.0
	Total	37	100	26	100	23	100	25	100	28	100.0	139	100
Switch from typical antipsychotic to atypical antipsychotic(only Risperidone)													14.38%
Switch from typical antipsychotic to typical antipsychotics and other classes*													85.62%

Others**include treatment shift (dose decrease due to improvement, cost, diagnosis change, no complaint etc.). SPH and HPH excluded due to very rare (no existent) treatment changes.

Other class* includes (antidepressant, anticonvulsants and antianxiety), Rx means treatment

5.6 WHO Core medicines use indicators

5.6.1 Prescribing indicators

On 1200 medical charts reviewed, the overall average number of psychotropic medicines per encounter was 1.5. Average number of drugs per encounter were 1.53, 1.04 and 1.18 in Wachemo University Hospital, Shone and, Hoomacho Hospital, respectively. Percentage of one, two, three and four psychotropic medicines prescribed in 1200 medical charts reviewed was 767/1200(63.9%), 352/1200(29.3%), 58/1200(4.8%) and 23/1200(2%) respectively. Percentage of encounters with psychotropic medicines injections prescribed in was 91/1200(7.6%). Benzodiazepine was prescribed for 131/1200 (11%) of participants.

5.6.2 Patient care indicators

As shown in table 9, from 307 participants, 7 were excluded due to incompleteness of their socio demographic data. Majority 180(60.0 %) were males, in age group (15 – 29) years (56.3%). The median age was 27 with age range of 15-75 years. 140(46.7%) were single, 138(46.0%) attended upto primary school (1-8), 89 (29.7%) jobless and 80(26.7%) farmers and 255(85.0%) pay for service.

Table 9: Socio-demographic characteristics of patient care interview participants in Hadiya Zone Public hospitals, SNNPR, Ethiopia, 2019

Characteristics	Category	n	%
Sex	Male	180	60.0
	Female	120	40.0
Age	<=29	169	56.3
	30-50	105	35.0
	50+	26	8.7
Marital status	Single	140	46.7
	Married	134	44.7
	Divorced	26	8.6
Education status	Not attend school(unable to read	66	22.0
	Primary school(Grade 1-8)	138	46.0
	Secondary& above	96	32.0
Occupation of patient	Government employee	24	8.0
	No job	89	29.7
	Farmer	80	26.7
	Merchant	17	5.7
	Others*	90	30.0
Religion	Orthodox	45	15.0
	Catholic	37	12.3
	Protestant	165	55.0
	Muslim	53	17.7
Access to service	Paying	255	85.0
	Free	45	15.0
Place of residence	Hadiya zone	232	77.3
	Out of Hadiya zone	68	22.7

Others* include private company workers, retired and house wives

As indicated in table 10, patient care indicator assessment results revealed that the average consulting time was only 9.1min. The average dispensing time was 52sec. 209(68.1%). One psychotropic medicine for 68.5% patients. Regarding the labeling information, only 60(19.5%), 158(51.5%), 79(25.7%), patients medications were labeled with, dose, frequency and quantity respectively. 113% (36.8%) patients know dose of their medicines.

Table 10: Patient care indicators assessment result among mental health service utilizers at outpatient pharmacy in Hadiya Zone Public hospitals, SNNPR, Ethiopia 2019

Parameters		Hospitals types							
		WUNEMRTH		SPH		HPH		Total	
		n	%	n	%	N	%	N	%
Number of medicines dispensed	1	142	59.6	54	100.0	14	93.3	210	68.5
	2	85	35.7	0	0.0	1	6.7	86	28.0
	3	10	4.2	0	0.0	0	0.0	10	3.3
	4	1	0.4	0	0.0	0	0.0	1	0.2
Medicines dose labeled	No	195	81.9	43	79.6	9	60.0	247	80.5
	Yes	43	18.1	11	20.4	6	40.0	60	19.5
Medicines frequency labeled	No	97	40.8	38	70.4	14	93.3	149	48.5
	Yes	141	59.2	16	29.6	1	6.7	158	51.5
Medicines quantities labeled	No	176	73.9	44	81.5	8	53.3	228	74.3
	Yes	62	26.1	10	18.5	7	46.7	79	25.7
Medicines direction of use labeled	No	60	25.2	16	29.6	7	46.7	83	27.0
	Yes	178	74.8	38	70.4	8	53.3	224	73.0
Patient knows dose of medicines	No	156	65.5	28	51.9	10	66.7	194	63.2
	Yes	82	34.5	26	48.1	5	33.3	113	36.8
Patient knows frequency of taking medicines	No	15	6.3	20	37.0	11	73.3	46	15.0
	Yes	223	93.7	34	63.0	4	26.7	261	85.0
Patient knows duration of medicines	No	38	16.0	26	48.1	6	40.0	70	22.8
	Yes	200	84.0	28	51.9	9	60.0	237	77.2
Patient knows reason for use of medicines	No	18	7.6	9	16.7	3	20.0	30	9.8
	Yes	220	92.4	45	83.3	12	80.0	277	90.2
Consultation time(min)								9.1 minutes	
Dispensing time(sec)								51.87 sec	

5.6.3 Facility indicators results

Facility indicator assessment identified that all the three hospitals have no essential medicines formulary that is updated or clinical guidelines for use of medicines in psychiatric disorder treatment at the time of prescribing. Among the 10 key (tracer) psychotropic medicines which were selected by the expert suggestion, namely (Chlorpromazine, Thioridazine, Haloperidol, Fluphenazine Deconoate, Risperidone, Phenobarbitone Carbamazepine, Sodium Valproate, Fluoxetine, Amitriptyline and Diazepam), most of them were available during the study period at WUNEMRTH whereas very few (Chlorpromazine and Phenobarbitone) were available in the two primary hospitals. On top that, in all zonal hospitals, there were no psychotropic special prescription papers for psychotropic medicines prescribing. Psychiatry nurses were prescribing on narcotic and ordinary prescription, which is against psychotropic medicines prescribing rules.

6. Discussion

In current study, psychiatric patients' medical chart review finding showed that the number of males was higher among those with mental disorders who were treated over five years period. In line with this study male dominance of mental disorders cases was reported from study in Butajira (60% male versus 40%) (Solomon, 1989). It is also related with the study conducted in India that showed (55.61% versus 44.39%) and (51.5% versus 48.5%) (Sonali et al., 2014; Piparva et., 2011) respectively. It might also be related to visibility of symptoms, community response culture, and different levels of support for males and females (Senait et., 2020). In rural community culturally, male work to get livelihood and hence possibility they are treated might be higher than females. The majority of mental disorders treated over the five years covered in this study were in age group 15-29 years. This age range was common for most mental disorders in other studies (Shibre et al., 2003; Sonali et al., 2014; Piparva et. 2011; Fekadu et al., 2019). Most of adult mental disorders have juvenile onset and the problems persist if they could not get timely intervention (Ones, 2013).

The study indicated that from the total mental disorders treated in Hadiya Zone Public hospitals, psychosis cases constituted (27.5%) of these 61(5.08%) were relapsed psychosis. Underlying causes for relapses could be lack of adherence and inappropriate treatment due to stock out of medicines. A study conducted in southwest Ethiopia revealed odds of developing relapse psychosis among treatment adherent clients was 69% lower than non-adherent (Fikereyesus et al., 2016). Schizophrenia was second most treated mental disorder (15.67%). This was lower than the findings reported from Pakistan Karachi psychiatry clinic prevalence of schizophrenia 18% (Niaz et al., 2004) and India psychiatry outpatient prevalence 45% (Piparva et al., 2011). It is also lower than study reported from Amanuel mental specialized hospital (76.7%) (Abebaw et

al., 2016). Schizophrenic individuals' poor socioeconomic status due to limited job opportunities might limit mental health service utilization and contribute for its low proportion (Kebede et al., 1999). In current study, Epilepsy was the third most occurring psychiatric outpatient case 156(13%) considering only three years data (2007-2008 E.C) from WUNEMRTH. Most mental disorders onset occurs ages of childhood and adolescence and such undetected and untreated cases may result in chronic mental disorders (De Girolamo et al., 2012).

The proportion of patients with depression out of the total patients with mental disorders in present study was (11.92%) which was found to be lower than study findings in Amanuel mental specialized hospital (13.3%) (Abebaw et al., 2016) and community based done in North West Ethiopia indicated that the prevalence of depression was 17.5 % (Molla et al., 2016). It was also lower than studies reported from Uganda (31.6 %) and India (39.5%) (Wuhwezi et al., 2007; Piparva et al., 2011). The discrepancy might be due to the negligence by both individuals with depression and community to visit psychiatry clinics. Awareness of society on depression is limited, and its occurrence is related with commonly psychosocial problems like marriage and poverty. Habit of visiting mental health service centers and getting treatment for depression is limited, and depressions is still undetected in health facilities, which impede proper and effective treatment (FMOH, 2012).

Regarding utilization of psychotropic medicines, over the five years in WUNEMRTH foremost utilized psychotropic medicines category for mental disorders was antipsychotics (51.2%) followed by antidepressants 428(27.6%) and anticonvulsants 207(13.4%). High antipsychotic utilization suggesting that psychosis is major mental disorder treated. This finding is consistent with the finding of other studies that indicated antipsychotics medicines as the most highly utilized medicines from psychotropic medicines due to their expanding indication (Stephen et al.,

2006; Itanyi and Tayo 2016; Fekadu et al., 2019; Voirol et al., 1999). In WUNEMRTH utilization of antipsychotic showed increasing trend which may related to increasing cases of psychosis whereas consumption of anticonvulsants showed decreasing trend which might be related to shift of epilepsy treatment of general outpatient department. Anticonvulsants or mood stabilizers utilization showed decreasing trend in the two primary hospitals which mostly offer epilepsy and seizure cases treatment services. This might be related with availability of psychotropic medicines in hospitals consistently and low demand or patient flow for mental health service. Study conducted on epilepsy treatment in rural pat of Ethiopia indicated that though anticonvulsants medicines are mainstay of epilepsy treatment, majority of individuals with epilepsy could not get appropriate treatment. From all epilepsy cases who are expected to take anticonvulsant medications, only 13% receive anticonvulsant medication for life time without discontinuing (Berhanu and prevett, 2004).

Foremost prescribed psychotropic medicines categories in Hadiya Zone Public hospitals were antipsychotics 834(48.1%) antidepressants 446(25.7%) and anticonvulsants/mood stabilizers 288(16.6%). This finding was consistent with other studies **(**Stephen et al., 2006; Itanyi and Tayo 2016; Fekadu et al., 2019 and Voirol et al., 1999) in which antipsychotics medicines were most highly utilized medicines of psychotropic medicines due to their expanding indication. The three frequently prescribed antipsychotic medicines; namely, chlorpromazine, haloperidol and thioridazine constituted 595/834 (71.34%) of antipsychotics utilization at Hadiya Zone Public hospitals. Similar research finding from Taiwan also indicated that the above three medicines constituted from 66%-74% of antipsychotics use (Wysowski and Baum, 2003). Among the antipsychotics, chlorpromazine was foremost prescribed 259/834 (31.01%) medicine for patients, followed by Risperidone 216/834 (25.9%). This result was similar with study done in Amanuel

mental specialized hospital which showed psychiatric patients frequent prescription with Chlorpromazine 271(45.2%) followed by Risperidone 154(25.7%). Another study from Nekemit Referral hospitals indicated 132 (20.95%) patients were prescribed Chlorpromazine (Abebaw et al., 2016; Fekadu et al., 2019).

The current study results depicted that typical antipsychotics were utilized more often 616/835(73.86%) than atypical 216/835(26.14%). This finding was similar with above the two studies findings in Ethiopia, which also revealed preferences for typical antipsychotics over atypical (Abebaw et al., 2016; Fekadu et al., 2019). However, it was in contrast with the study conducted in India which showed increased use of atypical antipsychotics (43.83%) compared to typical antipsychotics (26.32%) owing to their better safety and tolerability profiles. Another study done in Hungary psychiatry hospital schizophrenia outpatient revealed 30% of patients were treated with first generation antipsychotics and 80% with atypical (Piparva et., 2011; Kovac, 2005). Present study results showed that psychiatry nurses were more accustomed to prescribe typical psychotropic medicines over atypical antipsychotics. These might be due to accessibility and availability of those psychotropic medicines in the hospitals and cost affordability for consumers compared to newer atypical antipsychotics and limited availability of atypical antipsychotics (only Risperidone). Typical antipsychotics are being changed by atypical antipsychotics in developed countries through time but they are continued utilized foremost in developing nations due their relative cost affordability compared with atypical antipsychotics (Ayano, 2016).

Antidepressants were second highly prescribed medicines category found in the present study 446(25.7%). From TCA, amitriptyline was the most commonly prescribed 334/446(78.5%) antidepressant followed by Fluoxetine from newer SSRI 98/446(21.5%) which is similar with

study in Nekemit referral hospital (Fekadu et al., 2019). This is in contrast with study in Italy where SSRI represent (73%) of use whereas TCA (27%) (Rondondo et al., 2003), France where 45% of the patients took SSRI with fluoxetine leading 30% of others and use of TCA was 39 % (Olie et al., 2002), and India (36.66%) SSRI and (21.96%) TCA (Piparva et., 2011). Even though both antidepressant types have been shown to have similar onset of action and therapeutic efficacy, SSRIs are generally significantly favored over other antidepressant types. This is because SSRIs have less muscarinic, histaminic and adrenergic side effects relatively safer at higher doses that promote better compliance (Potter and Hollister, 2007). Hence, SSRI were recommended as first line psychotherapy for depression (NICE, 2007).

Anticonvulsants/ mood stabilizers were third highly consumed medicines class identified in this study 288/1734 (16.6 %%) and from which Phenobarbitone 148/288 (51.3%), Sodium valproate 68(23.6%) and carbamazepine 52(18.1%) were commonly prescribed. Study result reported from Gondor indicated that most commonly utilized anticonvulsants were Phenobarbitone 61.89%, phenytoin 11.27% and Carbamazepine 3.3% (Wubshet et al., 2012). Another comparable study reported from Jimma indicated Phenobarbitone (55%) was commonly prescribed anticonvulsant (Gurshaw et al., 2014). The difference might be due to difference in medicines availability and affordability in mental health service centers. Study conducted in Taiwan showed that the most frequently prescribed anticonvulsants were Carbamazepine, phenytoin and sodium valproate with 56.9%, 31.96% and 30.73% respectively (Chen et al., 2000).

Concerning psychotropic medicines combination, rational behind combination of medicines is boosting effectiveness of monotheraphy. In current study, Antipsychotics were combined with antidepressants for 200 mental disorders cases and Chlorpromazine and Amitriptyline were foremost combined psychotropic medicines followed by Haloperidol with Amitriptyline and

Risperidone with Fluoxetine. This indicates both psychosis and depression being common comorbidity in psychiatry clinics. Combinations of TCAs and antipsychotic medicines in individuals with psychosis depression have been shown to be effective but advisable to be administered initially at low dose and increase gradually. Because of the suppression of their metabolism arising from their pharmacological activity, the two classes are considered to have sedative and anticholinergic effects that may be prolonged and enhanced when used in combination. The concomitant use of more than one psychotropic medicine needs to be reviewed to improve the quality and safety of patients. It also needs caution when increasing or withdrawing the medications to avoid the risk of seizures that may be increased by lowering the seizure threshold (Moore et al., 2001).

Clinically, switching from one antipsychotic to another antipsychotic may be indicated when there is a symptom of unsatisfactory response, adverse effect and treatment is ineffective (Weiden et al., 1997). In present study, treatment change was occurred undertaken in 148(12.33%) of patients from which 139/1200 (11.5 percent) psychiatric patients were from WUNEMRTH and the main reasons for the shift were inadequate control/ improvement, relapse, side effect and non-adherence. Study result reported from Indian psychiatry hospital indicated that antipsychotic treatment change made in 26% patients and stated justification were lack of efficacy with prior medicine, stock out of medicines, adverse drug reaction and high cost of medicines (Kumar et al., 2017). Another study finding reported from United states of America demonstrated that underlying reasons mentioned for treatment switching were ineffectiveness of previous treatment, side effect, and other or unknown reasons (Nyhuis et al., 2010). Study conducted in Turkey indicated that 60.4% of antipsychotic changes occurred due to lack of efficacy with prior antipsychotics, intolerability with given medicines, lack of adherence and

stock out psychotropic medicines. Lack of effectiveness and clients request for treatment change mostly observed with Chlorpromazine treatment (Meta and Koksal, 2005). Since Chlorpromazine was commonly utilized in current study area, it might be reason for most treatment change. Switching from typical antipsychotics into atypical antipsychotic (only Risperidone) was only 14.38% whereas the remaining switching was undertaken from one typical antipsychotic to another typical antipsychotic mainly fluphenazine, haloperidol and chlorpromazine and other classes of psychotropic medicines. This within typical antipsychotic switch might be due to limited access, availability and cost unaffordability of atypical antipsychotics. Study done in schizophrenia clients' reported that 27.4% antipsychotic treatment shift from which 47.4% shift reason being ineffectiveness of treatment (Tsutsumi et al., 2011).

Regarding number of psychotropic medicines per encounter, the average number of psychotropic medicines per encounter in all three hospitals was 1.5. This finding is lower than study reported from India 2.1+0.8, Nepal 1.72, in Nigeria 3.5 (Sonali et al. 2014; Shankar and Roy, 2001; Moses et al., 2014). It is comparable to study in Amanuel mental specialized Hospital which showed average number of psychotropic medicines per encounter was 1.6 (Abebaw et al. 2016). This finding shows that the number of medicines per encounter is consistent with the WHO standard value of less than two. However, the number of clients who were prescribed two or more psychotropic medicines was 36.1%, which shows polyphrmacy practice. The current study result is higher than polyphrmacy results reported from India (20%) polyphrmacy and lower than studies reported from Amanual specialized hospital (50%) polyphrmacy and Nekemit referral hospital 52.21% (polyphrmacy) (Shamkuwar et al., 2013; Abebaw et al. 2016; Fekadu et al., 2019). It is also lower than studies done psychiatry hospitals in Hungary that showed 70% polyphrmacy and in Nigeria that again reported 92.3% polyphrmacy (Kovac, 2005; Agbonile et

al., 2009). Polyphrmacy leads to adverse drug effect burden, poor adherence and unnecessary cost to services users put patients at risk of drug interactions (Mojtabai and Olfson, 2010). Use of combination of psychotropic medicines is reasonable in few cases when justified by co-morbidities, to manage medicines side effect and to enhance efficacy of first treatment. However, prescribing many of psychiatric medicines is based on practical experience rather than evidence (Kingsbury and Simpson, 2001). Hence, it is important challenge polyphrmacy prescribing malpractice by reminding side effect burden by creating awareness and recommendation so that prescribers decrease prescribing more than one psychotropic medicines unless it is clinically bold to do so for sake of patient safety.

The present study also showed that the percentage of encounters with a prescribed injection was 7.6; this is lower the WHO standard of less than 20% and 13.8% in Nigeria (Moses et al., 2014). From total injection prescribed, 21/91(23%) were depot injections which are mainly utilized in non-adherent and acute phases and maintenance treatments It was found out that benzodiazepines were prescribed in 11% of encounters which is lower than studies done India (17.8%) (Thakkar et al., 2013). Even though it is low compared with others, it indicate routine prescribing trend need to be reduced to short term (<1 month) when symptoms are severe so that patients will not suffer from adverse effect such as tolerance and dependence.

Psychiatry nurses took low average consultation time (9.1 minutes) which is lower than WHO recommended average consulting time. Current study average consultation time is higher than finding reported from Amanuel mental specialized hospital 5.1 minutes (Abebawu et al., 2016) and comparable with studies reported from Ghana (8 minutes) and India 8.25 minutes (Daniel and Tetteh, 2014; Chawla et al., 2017). Two-way communication is main way assessment and evaluation in mental disorders treatment, consultation time was compromised in current study.

Short time spent with psychiatric patients indicates the insufficient time allotted to make the minimum time required to undergo appropriate patient assessments to ensure the proper prescribing decision-making and counseling about the use of psychotropic medicines products and psychotherapy. Average dispensing time was 51.87 seconds which high compared to a finding reported from Amanuel mental specialized hospital (29 seconds) and comparable study from India 49.5 seconds (Abebawu et al., 2016; Chawla et al., 2017). It hardly enables clients to be correctly informed about the medication and counseled in this short run. This was revealed in the fact on patient knowledge assessment that showed only 113(36.8%) of patients were familiar with the dose of the medication to be taken and medicines direction of use labeled 224(73%). This is lower than study report from Amanuel mental specialized hospital that depicted 59% of the clients had knowledge on right dosage of medicines offered for use (Abebawu et al., 2016). Labeling pattern assessment indicated most patients psychotropic medications were dispensed without adequate labeling indicating inadequate dispensing time spent with medicines utilizers and lack of commitment from pharmacists. Unavailability of copies of prescribing guideline/standard treatment guidelines may imply none compliance to refer and stick to guidelines and experience based prescribing practice. Observational assessment on availability of key psychotropic medicines at point of dispensing indicated that about 85% availability in WUNEMRTH. Very few (Chlorpromazine and Phenobarbitone) were available the two primary hospitals which indicates limited access to key psychotropic medicines.

7. Limitation of study

- Prescribed and dispensed doses appropriateness, cost of medicines and adherence for given psychotropic medicine were not assessed which might have effect on use pattern
- Since 2009 E.C, Epilepsy cases were not treated in psychiatry clinics of WUNEMRTH and they were not considered due to service center shift to outpatient department
- This hospitals based cross sectional study cannot establish cause and relation on psychotropic medicines utilization and factors associated with it

8. Conclusion and recommendation

Conclusion

Typical antipsychotic medicines were the most commonly prescribed psychotropic medicines, followed by antidepressants and anticonvulsants/ mood stabilizers. Chlorpromazine was the most frequently prescribed medicine from atypical antipsychotics followed by Risperidone from atypical. Amitriptyline was the most frequently prescribed antidepressant and Phenobarbitone was most commonly utilized anticonvulsant. More than one-third of the psychiatric patients were prescribed with psychotropic polyphrmacy. Chlorpromazine and Amitriptyline were foremost combined psychotropic medicines followed by Haloperidol with Amitriptyline and Risperidone with Fluoxetine. Utilization of antipsychotic showed increase in WUNEMRTH and decreased in the two primary hospitals. Treatment shift occurred mostly due to poor improvement, relapse, side effect and non-adherence. Average consultation and dispensing times was constrained. Most patients' medications were dispensed without adequate labeling and patients' had limited knowledge on dispensed psychotropic medications.

Recommendation

Based on present findings, the following recommendations suggested for responsible bodies,

- Combined psychotropic medicines utilization should be periodically reviewed to improve the quality and safety of psychiatric care
- Both psychiatry nurses and pharmacists should get consistent support and supervision and in-service training opportunity on appropriate psychotropic prescribing, dispensing, and compromised consultation and dispensing time.
- It is highly required to improve access to psychotropic medicines
- Psychotropic prescriptions should be available for in current study Hospitals
- Further prospective continuous study that look into both prevalence and consumption trend is needed in order to have more information psychotropic utilization pattern.

9. References

Abdulahi H, Haile-Mariam D, Kebede D (2001). Burden of disease analysis in rural Ethiopia. Ethiopian Medical Journal; 39:271–81.

Abebaw D, Haile K, Kassaw C, Belete A, Fanta T, Azale T, and Gedamu M (2016). "Pattern of Rational use of Psychotropic Drugs for People with Severe Mental Illness in a Mental Specialized Hospital in Addis Ababa, Ethiopia. Journal of Family Medicine; 3(11): 1099.

Academy of Managed Care Pharmacy (2008). Drug use evaluation. Alexandria.

Adesola A.O., Anozie, I.G., Erohubie, P. and James, B.O (2013). Prevalence and correlates of "high dose" antipsychotic prescribing: Annals of medical and health sciences; 3(1) 62-66.

Alem A (2001). Mental Health Service and Epidemiology of Mental Health problems in Ethiopia. Ethiopian medical journal; 39:153-163

Al Ghamdy, Y.S., Qureshi, N.A., Abdel Ghadir, M.H., Al Habeeb, T.A. and Ahmad, S.A (1999). Psychotropic drugs prescriptions in Saudi Arabia, Eastern mediterian Health journal; 5(1): 27-34.

Agbonile.I and Famuyiwa.O (2009). Psychotropic drug prescribing in a Nigerian psychiatric hospital. International Psychiatry; 6(4), pp.96-98.

American Psychiatric Association (2013). Diagnostic and statistical manual of mental disorders 5th ed., Washington D.C.

Ayano G (2016). First generation antipsychotics: pharmacokinetics, pharmacodynamics, therapeutic effects and side effects: a review. RRJCHEM; 5(3):53–63.

Baldessarini RJ, Tarazi FI. Pharmacotherapy of psychosis and mania (2006). In: Hardman JG, Limbird LE, Gilman AG, editors. Goodman and Gilman's The Pharmacological basis of therapeutics. 11th ed. New York: McGraw-Hill, p. 429-54.

Berhanu, S. and Prevett M (2004). Treatment of Epilepsy in Rural Ethiopia: 2 Year Follow-up. Ethiopian Journal of Health Development; 18(1): p. 33-34.

Charles C. Ezenduka, Vincent N. Ubochi and Brian O. Ogbonna (2014). Utilization Pattern and Costs Analysis of Psychotropic Drugs at a Neuropsychiatric Hospital in Nigeria. British Journal of Pharmaceutical Research; 4(3): 325-337

Charlson F., van Ommeren, M., Flaxman, A., Cornett, J., Whiteford, H. and Saxena, S (2019). New WHO prevalence estimates of mental disorders in conflict settings: a systematic review and meta-analysis. The Lancet; 394(10194), pp.240-248.

Chawla S, Monika Agarwal, Sharma.S and Jiloha.R (2017). Drug Utilization Study of Psychotropic Medicines among Psychiatric Outpatients in a Tertiary Care Hospital Indian J Pharm Sci; 79(6): 1008-1013. DOI: 10.4172/pharmaceutical-sciences.1000319

Chen LC, Chen FY,Yang LL, Chou MH and Lib MF (2000). Drug utilization pattern of antiepileptic medicines in general hospitals in Taiwan: pharmacoepidemiological study. J Clin pharm; 25(2):125-9

Daniel K and Tetteh R (2014). A Description of the pattern of rational medicines use in Ghana police Hospital. International journal of pharmacy and pharmacology; 3:143-148

De Girolamo G, Dagani J, Cocchi A, McGorry P (2012). Age of onset of mental disorders and use of mental health services: needs, opportunities and obstacles. Epidemiol Psychiatr Sci; 21(01):47–57.

Desta Z, Abula T, and Gebre-Yohannes A (2002). "Drug prescribing patterns for outpatients in three hospitals in north-west Ethiopia." Ethiop J Health; 16(2): 183–189.

DiPiro JT, Robert, L, Gary, C., RM, G., Barbara, G., and Posy, L (2014). Pharmacotherapy, A Pathophysiologic approach (9th ed.). New York: McGraw – Hill

EFMHACA (2010). List of medicines for Ethiopia. Food, Medicine and Healthcare Administration and Control Authority of Ethiopia Available: http://apps.who.int/medicinedocs/documents/s17816en/s17816en.pdf

Fekadu G, Mosisa B, Gebre M (2019). Assessment of Prescription Pattern of Psychotropic Drugs in Nekemte Referral Hospital, Wollega, Western Ethiopia. ASEAN Journal of Psychiatry; 20:10-17.

Fikreyesus M., Soboka M. & Feyissa, G. T (2016). Psychotic relapse and associated factors among patients in Southwest Ethiopia: a cross-sectional study. BMC psychiatry; 16, 354.

FMOH (2012). National Mental Health Strategy 2012/13-2015/16. Addis Ababa: Ministry of Health.

Gallagher, H (2013). "Addressing the issue of chronic, inappropriate benzodiazepine use: how can pharmacists play a role?" Pharmacy; 1(2): 65-93.

Goldney and Bain (2006). Prevalence of psychotropic use in a South Australian population. Australasian Psychiatry; 14(1): 379–383.

Gurshaw M , Agalu A , Chanie T (2014). Antivonvulsant medicines utilization and treatment outcome among epileptic patients on follow-up in a resource poor setting. JYP; 6(3): 47–52.

Haldar D, Naskar TK, Sarkar TK, Ray SK, Taraphdar P and Biswas A (2011). "Prescribing and dispensing pattern: Implication in right of access to essential medicine."Health; 2(4): 143-144.

Ira DG, Trisha S, Charles D,Rona JH and Stephen M (2001). Psychopharmacologic treatment for depression, Bipolar and schizophrenia: treatment update. Psych central; 134:47-60.

Itanyi (2012). "Mental Health Leadership and Advocacy Programme (mhLap)." psychiatry 1(1).

Itanyi and Tayo (2016). "Evaluation of psychotropic drugs utilization in a Nigerian psychiatric hospital." West African Journal of Pharmacy; 27(1): 145-156.

James OM (2001). Drugs used in epilepsies. Joel GH, Lee EL (ed.s). Goodman Gillman's, pharmacological basis of therapeutics. 10th edition, McGraw Hill publishing, New York.

Kassa, G.M. and Abajobir, A.A (2018). Prevalence of common mental illnesses in Ethiopia: A systematic review and meta-analysis. Neuropsychiatry; 30, pp.74-85.

Kebede D, Alem A (1999). Major mental disorders in Addis Ababa, Ethiopia. Schizophrenia, schizoafective and cognitive disorders. Acta Psychiatr Scand Suppl: 397:11–7

Kingsbury SJ, Yi D, Simpson GM (2001). Psychopharmacology: rational and irrational polypharmacy. Psychiatry Service; 52: 1033–6.

Kovac SG (2005). Prescription of psychotropic medicines for schizophrenia outpatients in Hungary. Neuropsychopharmacology hung; 7(1):4-10.

Kukreja, Kalra, Shah and Shrivastava (2013). "Polypharmacy in psychiatry: a review." Mens sana monographs;11(1): 82.

Kumar S., Chawla, S., Bimba H., Dutta S (2017). Analysis of Prescribing Pattern and Techniques of Switching Over of Antipsychotics in Outpatients of a Tertiary Care Hospital in Delhi: A Prospective, Observational Study. Journal of Basic and Clinical Pharmacy; 8(1).

Mersey Care. Clinical Guideline / Formulary Document (2017). Side Effects of Psychotropic Medicines. 1–11.

Messer T, Tiltscher C, Schmauss M. Polypharmacy in the treatment of schizophrenia (2006). Fortschr Neuropsychiatry; 74:377-391

Meta S and Koksal A (2005). The inter-continental schizophrenia out patients health outcome, Baseline clinical and functional characteristics. Antipsychotics in Turkey; 2:5-10

MhGAP-Ethiopia Working Group (2010). Mental Health Gap Action Programme in Ethiopia: final document. Addis Ababa: Ministry of Health.

Mojtabai and Olfson (2010). "National trend in psychotropic medication polypharmacy." office based psychiatry; 67(1): 26-36.

Molla GL, Sebhat HM, Hussen ZN, Mekonen AB, Yimer TM.(2016). Depression among Ethiopian adults. Journal of Psychiatry;1(1).

Moore S, Montane KL, Jaime KL, Marahajh H, Ramtahal I, Reid S, et al (2002). Prescribing of psychotropic drugs in mental health services in Trinidad. Rev Panam Salud Publica; 12(3) 207-214

Moses A, Cecilia I, Tomas E (2014). prescribing patterns and perception of health care professionals about rational drug use in specialty clinic. J public health in Africa; 5.242

Muhwezi ,w.w, Agren, H and Musisi, S (2007). Detection of major depression in Ugandian primary health care setting using simple questions frm a subjective well being subscale. social psychiatry epidemiology; (42)61-69. https://doi.org/10.1007/s00127-006-0132-5

Murthy RS (2007). Mental health Programme in 11th five year plan. Ind J Med Res; 125(6):707-11.

National Institute for Health and clinical Excellence (2007). Depression management of depression in primary and secondary care. http://www. nice.org.uk.

Niaz V,Hassein S, Husaini H Siddiqui SS (2004). Cross sectional study on frequency of psychiatry clinic morbidity. Pakistan Journal of medical sciences; 20(4):277-334

Nyhuis, AW, Faries, DE, Ascher-svanum, H. et al., (2010). Predictors of switching antipsychotic medications in the treatment of schizophrenia. BMC psychiatry; 10:75

Ones, P (2013). Adult mental health disorders and their age at onset. British Journal of Psychiatry; 202(S54), S5-S10. doi:10.1192/bjp.bp.112.119164

Olie JP, Elomari F, Spadone C and Lepine JP (2002). Antidepressant consumption in France.Encephale; 28(5):411-7

Ortiz, Hollen and Schacht (2016). "Antipsychotic medication prescribing practices among adult patients discharged from state psychiatric in patient hospitals." journal of psychiatry; 22(4): 283-297.

Oteri, Giampiero and Serene (2016). " Prescribing pattern of antipsychotic drugs : a population based data base study in Europe with a focus on torsadogenic drugs." British Journal of clinical pharmacology; 82(487-49769).

Piparva KG, Parmar DM, Singh AP, Gajera MV, Trivedi HR (2011). Psychotropic medicine use Study. Indian J Psychol Med; 33(1): 54–58. doi: 10.4103/0253-7176.85396

Potter W, Hollester L. Antidepression Agents (2007). In: Katzung B, editor. Basic and Clinical Pharmacology. 10th ed. Boston: McGraw-Hill; p. 475–88.

Ritchie H and Roser M (2018). Mental Health: https://ourworldindata.org/mental-health

Rodríguez, J.J., Kohn, R. and Aguilar-Gaxiola (2009). Epidemiología de los trastornos mentales en América Latina y el Caribe (No. 632). Pan American Health Org.

Rondonndo CS, Garrrige BM and plapobladork (2003). Monitoring antidepressant use in italy Farm Hosp; 27(2):101-104.

Sathiyasusuman, A (2011). "Mental health services in Ethiopia: Emerging public health issue." public health; 125(10): 714-716.

Senait Gebrehiwet, Tithi Baul,Juliana L Restivo, Teshome Shibre, Anne Stevenson, Bizu Gelay, Abebaw Fikadu, Maji Hailemariam, Eshetu Girma, Solomon Teferra (2020).Gender specific experiences of serious mental illness in rural Ethiopia. Global public health; 15(2),185-199

Shamkuwar, Chakravorty, Shrivastava and Deshmukh (2013). "Pattern of prescription and drug use in psychiatry outpatient department of private practitioners of Central India " International Journal of Basic & Clinical Pharmacology; 2(6): 777-782.

Shankar P and Roy. S (2001). " Pattern of Prescription and Drug Use in a Psychiatry Department in a Teaching Hospital in Western Nepal." International Journal of Pharmacology; 1(2)

Shibre T, Kebede D, Alem A, Fikadu A, Jacobsson L and Kullgren G (2003). Schizophrenia: Illness impact on family memembers in rural Etiopi. Soc psychiatry Epidemiology; 38;27-37

Sitanshu, Himanshu and Guru (2010). " Concept of Essential Medicines and Rational Use in Public Health." Indian J Community Med; 35(1): 10-13.

Solomon T (1989). "Determinants of mental illness in rural Ethiopian adult- population."

Solomon Yimer, Zegeye Yohannis, Wondale Getinet, Tesfa Mekonen, Wubalem Fekadu, Habte Belete, Melak Menberu, Amsalu Belete (2016). Patient Preference and Adherence; 10 1847–1852

Sonali B. Rode, Rajesh K. Ajagallay, Harsh V. Salankar and U. Sinha (2014). "A study on drug prescribing pattern in psychiatry out-patient department from a tertiary care teaching hospital." International Journal of Basic & Clinical Pharmacology; 3(3).

Stahl SM (1999). Antipsychotic Polyphrmacy; Therapeutic option. J Clin Psychiatry; 60:425-426

Stephen MS, Jude Sl, Vic W, Welyn N, Kay S, David C and Richard M (2006). Pharmacology of atypical antipsychotics. Califorinia Medicines use review committee.

Thakkar B, Jain M, Billa G, Joshi A, Khobragade A and Akash A (2013): A Drug Utilization Study of Psychotropic Drugs Prescribed in the Psychiatry Outpatient Department of a Tertiary Care Hospital. Journal of Clinical and Diagnostic Research; 7(12): 2759-2764.

Tsutsumi, C., Uchida, H., Suzuki, T., Watanabe, K., et al., (2011). Antipsychotic switch and polyphrmacy in natural practice—a longitudinal perspective. Schizophrenia research; 130, 40-46

Voiro P, Robert PA, Meister P, Oros L, Baumann P (1999). Psychotropic prescription in psychiatry university hospital in Germany. Pharmaco psychiatry; 32(1):29-37.

Weiden, P.J.,Aquila, R., Dalheim, Standard,J.M.,(1997). Switching antipsychotic medications. Journal of clinical psychiatry; 58,63.

World Health Organization (WHO) (2017). Depression and Other Common Mental Disorders: Global Health Estimates.

World Health Organization (WHO) (1993). How to investigate drug use in health facilities. selected health use indicators. Geneva: Switzerland.

WHO International Working Group for Drug Statistics Methodology (2003). Introduction to drug utilization research. Geneva: WHO Collaborating Centre for Drug Utilization Research and Clinical Pharmacology. http://www.whocc.no/filearchive/publications/drug_utilization_research.pdf.

World Health Organization (2019). Mental Health Gap Action Programme (MH-GAP): Scaling up Care for mental, neurological and substance use disorders

World Health Organization (2007). Geneva. Integrating mental health services into primary health care: Mental Health Policy Planning and Service Development Information Sheet 3.

WHO (1998). Psychoactive drugs: improving prescribing practices. 1st Ed; 57-63.

Wubshet H, Wondemagegn T, Alemayehu B, Bayew T, Zeryawkal E, Endalkachew A (2012). Prescription pattern of psychotropic, narcotic and anticonvulsant drugs in Gondar University. Int. J. Pharm & Ind. Res; 02 (4) 411 – 415

Wuhwezi, W., Agren, H and Musisi,S. (2007). Detection of major depression in Ugandan primary health care setting using. Social Psychiatry epidemiol; (42)61-69

Wysowski K and Barum C (2003). Antipsychotic medicines use in Taiwan from 1997-2001. Advanced therapy; 20(6):344-351.

10. Annexes

Annex 1: Retrospective chart review data abstraction form on type's mental disorders, psychotropic medicine utilized and treatment shift (if any, its reasons) in Hadiya Zone public hospitals psychiatry clinics, SNNPR, Ethiopia, 2019

Facility name_____ Investigator Name _____Date_____

Seq. no	ID	Date of Rx	Age (Yrs)	Sex	Diagnosis	Number of medicine/s prescribed	Types of PM prescribed (combination)	Injection (0/1)*	Treatment change, if any (reason and new psychotropic medicines)
	Total								
	Average								
	Percentage								

*0=No, 1=Yes

Annex 2**: Patient care indicator data collection form on psychotropic medicines use in Hadiya Zone public hospitals psychiatry clinics, SNNPR, Ethiopia, 2019**

Facility name _____Investigator Name _____Date_____

Seq.	Patient ID	Consultation time (Minute)	Dispensing Time (Second)	Number of medicines prescribed	Number of medicines dispensed	Medicines adequately labeled (**0/1)***				Patient Knows Dosage **(0/1)***			
						Dose	Frequency	#	Direction for use	Dose	Frequency	Duration	Reason for use
Count													
Total													
Average													
Percentage													

*0=No, 1=Y

Annex 3: Facility summary form for assessment of psychotropic medicines use in Hadiya Zone public hospitals psychiatry clinics, SNNPR, Ethiopia, 2019

Essential drug list/formulary available at facilities? (0/1)*_____		
Key drugs in stock to treat psychiatry disorders	In stock (0/1)	% in stock in the facility

Annex 4: Socio-demographic characteristics of patient care assessment participants (English version)

1.1. You are: Male □ □ Female

1.2. How old are you? Age in years_____

1.3. Marital Status

□ Single □ Married

□ Divorce □ Widowed

1.4. What is the highest level of Education that you finished?

□ Not attended school (Unable to read and write)

□ Primary School (Grades 1-8)

□ Secondary& Above

1.5. Status of Employment _____

□ Governmental employee□ □ No job

□ Employee of private company □ Farmer

□ Merchant (Businessman/Businesswoman) □ Other, Please Specify _____

1.6. Religion □ Orthodox □ Catholic □ Protestant□ □ Muslim

1.7. Address □ Hadiya Zone □ Out of Hadiya Zone

1.8. Payment Status: □-paying □ Free

Annex 5: **English version of informed consent form**

ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCE

SCHOOL OF PHARMACY

Verbal consent form before conducting interview

Greeting

Hello, my name is _Mengistu Girma_ I am postgraduate student in Addis Ababa University. I am doing research on psychotropic drug use pattern in Hadiya zone public hospitals, Southern Ethiopia. The purpose of this study is to assess the psychotropic medicines use pattern in Hadiya zone public hospitals, which will be helpful in improving services.

You have been chosen by randomly to participate in the study. I want to assure you that all of your answers will be kept strictly secret. The interview would take 5-10minutes of your time. I will not keep a record of your name or address. You have the right to stop the interview at any time, or to skip any questions that you do not want to answer. There are no rights or wrong answers. Your participation is voluntary but your experiences could be very helpful to people in the region as well as in the country. Do you have any questions? Do you agree to be interviewed?

Yes ☐ No ☐

Date of interview_____time of interview _____

Annex 6: **Informed consent (Amharic Version)**

አዲስ አበባ ዩኒቨርሲቲ

ፋርማሲ ትምህርት ቤት

ፋርማሲቲዩክስና ሶሳል ትምህርት ክፍል

የአገልግሎቱ ተጠቃሚዎች በጥናቱ ለመሳተፍ ፋቃደኝነታቸዉን የሚገልፁበት ቅጽ

ጤና ይስጥልኝ! እኔ_____ እባለለዉ፡፡ በአሁኑ ወቅት በአዲስ አበባ ዩኒቨርሲቲ፣ ፋርማሲ ትምህርት ቤት፣ የፋርማሲዩቲክስና ሶሳል ፋርማስ ትምህርት ክፍል የ2ኛ ድግሪ ተማሪ ነኝ፤ በመሰራት ለይ ያለው ጥናት በሀድየ ዞን ውስጥ ባሉ ሆስፒታሎች የስነ አእምሮ መድሃኒት አጠቃቀም ላይ ሲሆን ባጠቃሊይ ጥናቱ የስነ አእምሮ ጤና አገልግልቱን ለማሻሻል ይረዳል፡፡ ይህንን እውን ለማድረግ በዚህ ሆስፒታል የስነ አምሮ ክፍል ስላገኘዎት ስለአገልግሎቱ ያሎዎትን አስተያየት በመረዳት የተወሰኑ ጥያቄዎችን ልጠይቅዎት ነው ፣ መጠይቁ ከጊዜዎ ከ 5 —10 ደቂቃ የሚወስድ ሲሆን በዚህ ጥናት ውስጥ የርስዎ ተሳታፉነት ሙለ በሙለ በርስዎ ፈቃደኝነት ላይ የተመሰረተ ነዉ፤ በዚህ ጥናት ውስጥ መሳተፍም ሆነ አለመሳተፍ መወሰንዎ በሆስፒታለ ውስጥ በሚያገኙነት አገልግሎት ላይ ምንም አይነት ተጽእኖ የማይኖረው ሲሆን ቃለ መጠይቁን በማንኛውም ሰዓት ማቋረጥ ወይም ጥያቄዎችን አለመመለስ ይችላሉ፡፡ በጥናቱ ውስጥ ለተነሱት ጥያቄዎች የሚሰጡት ምላሽ ሙለ በሙለ በምስጥር የሚጠበቁ ሲሆን የርስዎም ስም በማንኛዉም መልኩ በጥናቱ ውስጥ አይገለጽም፤ እንዱሁም የሚአጡት መልስ ከርስዎ ማንነት ጋር በማንኛውም መልኩ አይያያዝም፡፡

በጥናቱ ለመሳተፍ ፈቃደኛ ነዎት አዎ ☐ አይደለሁም ☐

መጠይቁ የተደረገበት ቀን _____ የተጠየቀበት ሰዓት_____

Annex 7: Socio-demographic characteristics of patient care indicators assessment participants (Amharic version)

1. **እርስዎን በተመለከተ አጠቃለይ መጠይቅ**

1.1 ፆታ ☐ ወንድ ☐ ሴት

1.2 እድሜዎት ምን ያህሌ ነው; _____አመት

1.3 የጋብቻ ሁኔታ

☐ ያላገባ/ች ☐ አግብተው የፈቱ ☐ ባለትዳር ☐ የትዳር ጓደኛን በሞት ያጡ

1.4 በአሁኑ ወቅት ያሎዎት የትምህርት ደረጃ

☐ ማንበብና መፃፍ አልችልም ☐ አንደኛ ደረጃ ትምህርት (ከ 1ኛ-8ኛ ክፍሌ)

☐ ሁለተኛ ደረጃና ከዚያ በለይ

1.5 የስራ ቅጥር ሁኔታ ☐ የመንግስት ሰራተኛ ☐ ሥራ የሌለው/የላት ☐ አርሶ አደር ☐ የግል መሥሪያ ቤት ተቀጣሪ

☐ ነጋዳ (በግል የንግዴ ሥራ የተሰማሩ) ☐ መንግስታዊ ያልሆነ ተቀጣሪ ☐ ተማሪ

☐ ጡረተኛ/ በጡረታ ከሥራ የተገለላ/ለለች ☐ ሌላ፣ ይገለፅ_____

1.6 ሃይማኖት ☐ ኦርቶዶክስ ☐ ካቶሊክ ☐ ፕሮቴስታንት ☐ ሙስሉም

1.7 የመኖሪያ አድራሻ ☐ ሀድያ ዞን ውስጥ ☐ ከሀድያ ዞን ውጭ

1.8 የክፍያ ሁኔታ በጥሬ ገንዘብ በነፃ ታካሚ

Annex 8: Combination psychotropic medicines observed during the period 2007-2011 E.C in Hadiya zone public hospitals psychiatry clinics, SNNPR, Ethiopia, 2019

Medicines	Chlorpromazine	Risperidone	Phenobarbitone	Phenytoin	Amitriptyline	Na.valprote	Haloperidol	Carbamazepine	Thioridazine	Fluoxetine	Diazepam	Olanzapine	Imipramine	Haloperidol inj	Diazepam inj	Benzhexol	Fluphenazine inj
Chlorpromazine	**259**																
Risperidone	0	216															
Phenobarbitone	0	1	148														
Phenytoin	0	0	2	20													
Amitriptyline	60	15	1	0	334												
Na val	8	28	1	4	0	68											
Haloperidol	2	1	3	0	40	10	198										
carbamazepine	9	1	3	1	0	0	28	52									
Thioridazine	1	0	0	0	27	0	1	0	74								
Fluoxetine	9	30	1	0	0	2	10	0	0	96							
Diazepam	2	30	1	0	1	8	15	0	1	11	64						
olanzapine	0	0	0	0	0	0	0	1	0	0	0	2					
Imipramine	3	2	0	0	0	0	3	0	1	0	0	0	16				
Halop inj	26	9	0	0	6	3	21	5	3	1	5	0	0	64			
Diazepam inj	26	10	0	0	6	3	22	5	3	1	5	0	0	64	66		
Benzhexol	11	2	0	0	6	3	19	2	2	1	0	0	1	4	4	36	
Fluphenazine inj	2	2	0	0	3	1	0	0	0	1	1	0	0	4	4	1	21

Annex 9: Treatment shift and reason for shifting in psychiatric patients during the period 2007-2011 E.C in Hadiya zone public hospitals psychiatry clinics, SNNPR, Ethiopia, 2019

Hospitals	Reasons for treatment shift	Years											
		2007		2008		2009		2010		2011		Total	
		n	%	n	n%	n	%	n	%	n	%	n	%
WUNEMRTH	Due to poor control/no improvement	12	32.4	10	38.5	6	26.1	7	28.0	11	39.3	46	33.1
	Due to relapse or reemission	9	24.3	4	15.4	3	13.0	8	32.0	5	17.9	29	20.9
	Due to no adherence	8	21.6	6	23.1	2	8.7	1	4.0	2	7.1	19	13.7
	Due to side effect/EPS	3	8.1	3	11.5	5	21.7	5	20.0	6	21.4	22	15.8
	Unavailability of medication/s	3	8.1	0	0.0	2	8.7	1	4.0	0	0.0	6	4.3
	Unknown reason	1	2.7	0	0.0	5	21.7	2	8.0	2	7.1	10	7.2
	Others*	1	2.7	3	11.5	0	0.0	1	4.0	2	7.1	7	5.0
	Total	37	100	26	100	23	100	25	100	28	100	139	100.0
SPH	Due to poor control/no improvement	0	0.0	0	0.0	1	20.0	0	0.0	0	0.0	1	20.0
	Due to relapse or reemission	0	0.0	0	0.0	2	40.0	0	0.0	0	0.0	2	40.0
	Due to no adherence	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Due to side effect/EPS	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Unavailability of medication/s	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Unknown reason	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Others*	0	0.0	0	0.0	2	40.0	0	0.0	0	0.0	2	40.0
	Total	0	0.0	0	0.0	5	100	0	0.0	0	0.0	5	100.0
HPH	Due to poor control/no improvement	0	0.0	0	0.0	1	100	1	33.3	0	0.0	2	50.0
	Due to no adherence	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Due to side effect/EPS	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Unavailability of medication/s	0	0.0	0	0.0	0	0.0	1	33.3	0	0.0	1	25.0
	Unknown reason	0	0.0	0	0.0	0	0.0	1	33.3	0	0.0	1	25.0
	Total	0	0.0	0	0.0	1	100	3	100.0	0	0.0	4	100.0