

Drug Utilization Trend of Psychotropic Drugs in the Psychiatric Out-patient Department of Crimson Hospital, Rupandehi

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Abstract:- Mental disorders are the group of disease of brain which includes anxiety disorder, bipolar disorder, depression, schizophrenia, insomnia, eating disorder etc. The main objective of our study is to know about the prescription pattern of psychotropic drug in psychiatric out-patient department based on the WHO drug prescribing indicators. The study design was observational cross-sectional study; Total 192 patients were included with mental disorder. The result of this study shows that most of the patients were from age group 20-39. Female patients were more than male and most of the patients were come from rural region. Brahman patients were mostly found and most of the patients' occupation was housewife. Married patients were more and most of the patients were illiterate. Most of the patients were Hindu and many patients have nuclear family structure. Out of 545 drugs psychotropic drugs were 305. Average number of drugs and psychotropic drugs prescribed were 2.84 and 1.59 respectively. Only 1.84% drugs were prescribed by generic name and 29.54% drugs were prescribed from essential medicine list of Nepal. The most commonly prescribed drug was clonazepam followed by escitalopram. In anxiety disorder clonazepam, in depression escitalopram and in schizophrenia olanzapine were most commonly prescribed. On increasing the number of drugs, increasing the percentage of drug-drug interaction and increasing the age of the patient, polytherapy was decreasing. Polytherapy of psychotropic drugs were more and we found that 9.83% drug-drug interactions were severe. It is concluded that, psychotropic drugs was mostly prescribed in which clonazepam drug show highest percentage of prescription. The prescribing pattern can be improved by prescribing from essential medicine list and generic drugs and by reducing drugs per prescription.

Keywords:- Essential medicine list, Mental disorders, Psychotropic drugs, Polytherapy, World Health Organization.

I. INTRODUCTION

Psychotropic drugs are those drugs that affect brain activities associated with mental processes and behavior; categories into antipsychotics, antidepressants and benzodiazepines drugs (Whitaker, 2005). Mental disorders are the important public health priority and major causes of morbidity. Worldwide out of top ten health conditions four are mental disorders which contributing to the Disability Adjusted Life Years (DALYs). Mental disorders are the group of disease of brain which includes anxiety disorder, bipolar disorder, depression, schizophrenia, insomnia, eating disorder etc. Depression has a mortality rate that is 2.22 times higher than those without mental disorders. The WHO estimated that in 2020 the major depressive disorder would be the second most leading cause of disability in the world. Some socio-demographic factors like; age, gender, occupation, marital status, education, and income are variability in the prevalence of mental disorder (Yerkade and Siddiqui, 2017). According to World Health Organization (WHO) drug utilization is defined as "the marketing, distribution, prescription and the use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences" (Dutta *et al.*, 2013). Many psychotropic drugs are available for the treatment of mental disorder. In last two decade psychiatrists are used newer psychotropic medications like Selective Serotonin Reuptake Inhibitors (SSRIs), atypical anti-psychotics and benzodiazepines (BZDs) in psychiatric practice because of their utilization and consequences on real life effectiveness and safety in actual clinical practice (Ruths *et al.*, 2013). Psychotropic treatment regimens are generally divided into two broad categories: (1) Monotherapy (Single drug regimen) (2) Polypharmacy (Multiple drug regimens), (Koshy *et al.*, 2017). Many researcher are interested in drug utilization research (DUR) because many newer drugs are developed in the market, different-different patterns of drug prescribing and consumption, and the increasing concern about the cost of drugs (Mudhaliar *et al.*, 2017).

Risk factor of mental disorders (Blanco et al., 2012)		Sign and symptoms of mental disorders (URL 1)
Mental disorders	<ul style="list-style-type: none"> • Low self-esteem • Family history of depression • Childhood sexual abuse • Years of education • Number of traumatic experiences • Disturbed family environment • Marital Status • Stressful life situations • Chronic medical condition • Race • Age • Life style 	<ul style="list-style-type: none"> • Restlessness • Palpitation • Feeling sad or down • Reduced ability to concentrate • Excessive fears or worries • Extreme feelings of guilt • Extreme mood changes of highs and lows • low energy • Insomnia • Delusions or hallucinations • Alcohol or drug abuse • Major changes in eating habits • Excessive anger • Suicidal thinking • Feeling of unreality

Table 1

Complication of Mental disorders (URL 1)

Complication of mental disorder	
Mental disorders	<ul style="list-style-type: none"> • Unhappiness and decreased enjoyment of life, • Family conflicts • Relationship difficulties • Social isolation • Problems with tobacco, alcohol and other drugs • Missed work or school • Legal and financial problems • Poverty and homelessness • Self-harm and harm to others, including suicide or homicide • Heart disease and other medical conditions

Table 2

The rationality of prescribing pattern is most importance because, bad prescribing habits includes misuse , overuse and underuse of medicines which can lead to unsafe treatment, exacerbation of the disease, health hazards, economic burden on the patients and wastage of resources (Goyal *et al.*, 2016). In 1985 WHO, defined the rational use of medicines as “patients receive medications appropriate to their clinical needs, in doses that meet their own requirements, for an adequate period of time and at lowest cost to them and their community”. One of the recommendations to reduce medication errors and harm was to use the “five rights”: the right patient, the right drug, the right dose, the right route, and the right time (Venkatesh *et al.*, 2018). According to World Health Organization (WHO) 50% of all drugs utilization, dispensed or sold inappropriately and that half of all patients fail to take them properly. Because of irrational use of drugs many problems are arises like; failure of therapy, loss of resources,

deterioration of patient’s condition, erosion of patients confidence in the medical system.

II. OBJECTIVES

- *General objective*
 - To study about prescription pattern of psychotropic drug in psychiatric out-patient department of Crimson Hospital, Rupandehi.
- *Specific Objective*
 - To study the demographics and diagnosis of the patients prescribed with psychotropic drugs.
 - To evaluate the prescription based on the WHO drug prescribing indicators.
 - To study about the drugs prescribed from essential drug lists of Nepal.
 - To delineate preferred classes of drugs used in their prescription pattern of the patient.

- To analyze polypharmacy in prescription and correlate with concerned factors.
- To evaluate the drug-drug interaction in the prescriptions.

III. METHODOLOGY

Study site: **Crimson Hospital** (50 bedded) with multidisciplinary facilities, located at Tilottama Municipality -6, Manigram, Rupandehi, Nepal.

Study type: Observational cross-sectional study.

Study duration: Two months from July 2018 – September 2018.

Sample size: Sample size was calculated by following formula.

$$n = \frac{Z^2 P(1 - P)}{d^2}$$

Where,

Z = Standard normal variate with value 1.96 at 95% confidence interval,

P = Prevalence of disease

q = 1-p, if p is in %

d = Maximum tolerable limit will be taken as 5%

The total number of sample required is 150 with prevalence rate 11% (Tausig *et al.*, 2004)

We selected 192 patients.

➤ Patient Profile Form

This was developed manually by the researcher. The duly filled form contains patient demography data like name, address, age, gender, occupation, marital status, education, ethnicity, religion, social habits, life style, symptoms, prescribed medication and final diagnosis.

➤ Patient selection

• Inclusion criteria:

The inclusion criteria of this study were:

1. Patients of all age and both the sexes were included in the study.
2. The study population included all patients whose diagnosis/ clinical history suggest a mental disorder and those patients prescribed with at least one psychotropic drug were prescribed.

• Exclusion criteria:

The exclusion criteria of this study were;

1. Patients who were not prescribed with psychotropic drugs were excluded from this study.
2. Patients who were suffering from CVs chronic disease, pregnant and lactating were excluded from this study.
3. Epilepsy patients and those patients who are unable to speak were excluded.

❖ Method

The method of entire study was carried out in three phases as discussed below:

A. PHASE: I

➤ Pilot study and literature review

A pilot study was carried out for a period of two weeks to find the feasibility and scope of the project. After ensuring the feasibility and scope, the study proposal was designed and its necessary was explained to the department of pharmacy using final protocol.

➤ Procuring the consent from hospital authority

For the obtaining the consent the study proposal was prepared containing proposed title, study site including various department required, duration, inclusion and exclusion criteria, objectives and a brief methodology about the work to be executed. Then the protocol of the study was submitted to the medical superintendent of the hospital. The medical superintendent permitted to utilize the hospital facilities through a letter. All the health care professionals of the respective departments in the hospital were informed about the project work through the circular from medical superintendent's office.

➤ Patient selection

All the out-patient with psychiatric disease (Mental disorder) diagnosed by a consultant psychiatrist in the Crimson Hospital were included in the study, prescribed with psychotropic drugs, patient of all age and sex were included in the study.

Designing of Data Entry Form a separate data entry format for incorporating details was designed incorporating Patient Profile Form. The format contains provisions to enter the details such as name, address, hospital number, age, gender, occupation, marital status, education, ethnicity, religion, social habits, life style, symptoms, prescribed medication, dose/frequency, duration of treatment and provisional and final diagnosis.

➤ Study Design

The study design was prospective observational study carried out by purposive sampling technique for period of two month.

B. PHASE: II

The study was planned to investigate more than 150 patient records as roughly estimated to be admitted during 2 month of data collection. Patient's records are obtained from the psychiatric out-patient department of the hospital. Prescription including psychotropic drugs along with supportive medications were collected from the out-patient department and analysed. The generic names of the drugs were provided by the hospital pharmacy of the Crimson Hospital.

➤ *Assessing the prescription*

Prospective data from patient profile form records with prescribed psychotropic drugs were obtained with regard to name, address, age, sex, race, occupation, education, religious, marital status, social habits, life style, symptoms, prescribed medication, dose/frequency, duration of treatment and provisional and final diagnosis.

C. PHASE: III

➤ *Data Entry*

The prescription of the patient medication were recorded from the outpatient department (OPD) of psychiatric ward from July 2018 to September 2018 paying due to attention to inclusion and exclusion criteria and data were evaluated prospectively for the presence and fulfillment of the following variable:

- Patient’s Details: Name, Address, Age, Sex, Race, Occupation, Education, Marital status, Religious, Social habits and life style.
- Date of data collection
- Symptoms
- Diagnosis
- Dosage form
- Prescribed drugs
- Strength and Dose

All the information on the patient profile form were noted and entered into the personal computer (MS-Excel and SPSS version-16). Data were coded, checked for completeness and consistency.

➤ *Data evaluation*

The data collected from all the patient medication records were evaluated in MS-Excel and SPSS. All the

information regarding the prescription pattern of the psychotropic drugs in a patient medication record including the study of the demographic characteristics and diagnosis of patient with psychotropic drugs in the different age and gender are evaluated, and also evaluated the drug- drug interaction based on severity (BNF 76).

➤ *Report prescription:*

Information regarding the inappropriate use of psychotropic drugs resulting the development of drugs resistance and the risk for patients with various adverse effects, drug interaction and other factors related were incorporated in the report. For descriptive statistics, results were expressed in term of percentages and presented using tables according to the types of tool used. The data generated out of the study are presented in the form of tables and figures in the following section.

➤ *Report submission:*

After completing, the report was submitted to the department of the pharmacy, Crimson College of Technology and to the Crimson Hospital Hopping for the proper implementation for expected outcomes for appropriate utilization of drugs for psychiatric disorder patients and with the anticipation to appreciate in future.

IV. RESULT

➤ *Age-wise distribution of the patients:*

All together 192 patients were included in this study. The details about the age wise distribution of the patients are given below in the Table . In our study, most of mental illness patient from age group 20-39 years 49% followed by 40-59 years 32.3% and more than 60 years 10.9%.

Age group (Years)	Number of patients	Percentage (%)
Less than 19	15	7.8
20-39	94	49
40-59	62	32.3
More than 60	21	10.9

Table 3:- Age-wise distribution of the patients (n=192)

Habitat distribution of the patients: The details about the habitat distribution of the patients are given below in Figure 1. In our study, we found that 60% of patients were from the rural region and 40% patients from urban region.

➤ *Gender-wise distribution of the patients:*

The details about the gender wise distribution of the patients are given below in Figure 2. In our study, we found that 60% patients were female and 40% male patients.

Occupation wise distribution of the patients: The details about the occupation wise distribution of the

patients are given below in Figure 3. In our study, we found that highest number of patients was housewife 39.1% followed by others 24% and farmer 20.8%. Among them, others includes; Teacher, labour, job holder, army retirement and none.

➤ *Marital status of the patients:*

The details about the marital status of the patient are given below in Figure 4.

In our study, we found that highest percentage of patients were married 82.3% followed by unmarried 14.6%, single 2.6% and divorced 0.5%.

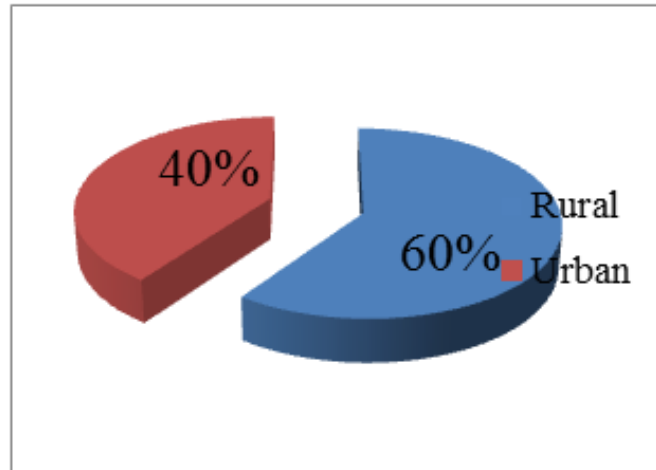


Fig 1:- Habitat distribution of the patients

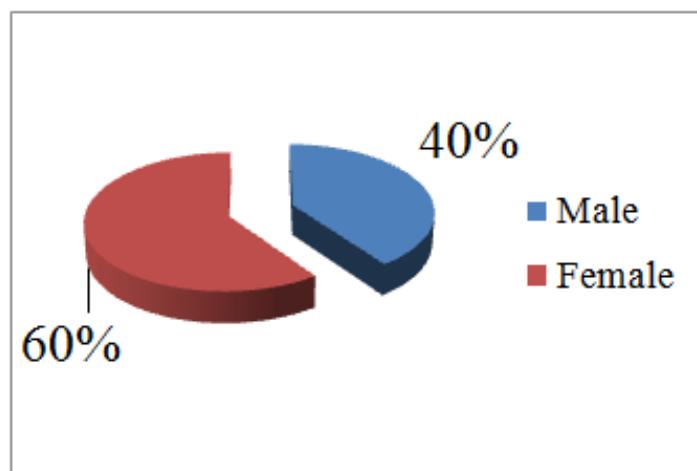


Fig 2:- Gender-wise distribution of the patients

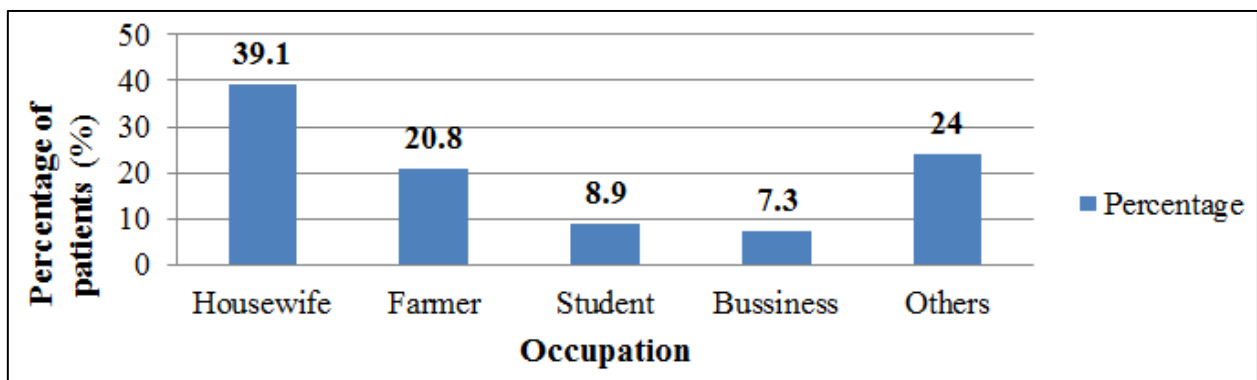


Fig 3:- Occupation wise distribution of the patients

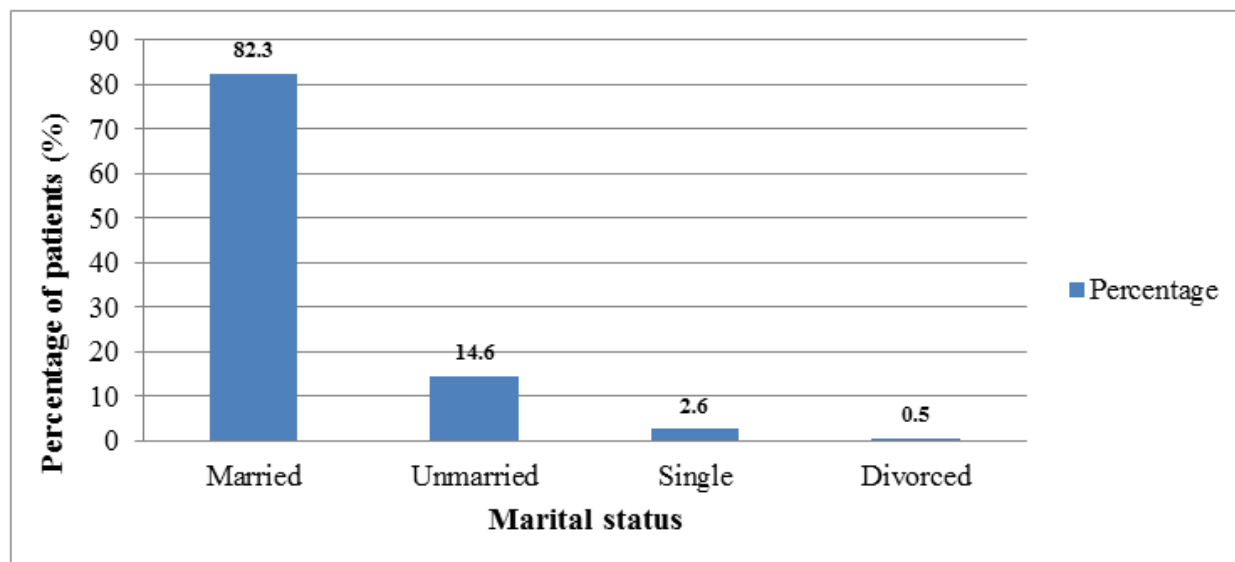


Fig 4:- Marital status of the patients

Racial distribution of patients: The details about the racial distribution of patients are given below in Figure 5. In our study, we found that Brahman were more 33.3% followed by others 25.5% and Chhetri 19.3%. Among them others include; Yadav, Newar, Lodh, Khatun, Nisha, Ojha, Gupta, Kalun, Thakur, Mishra etc

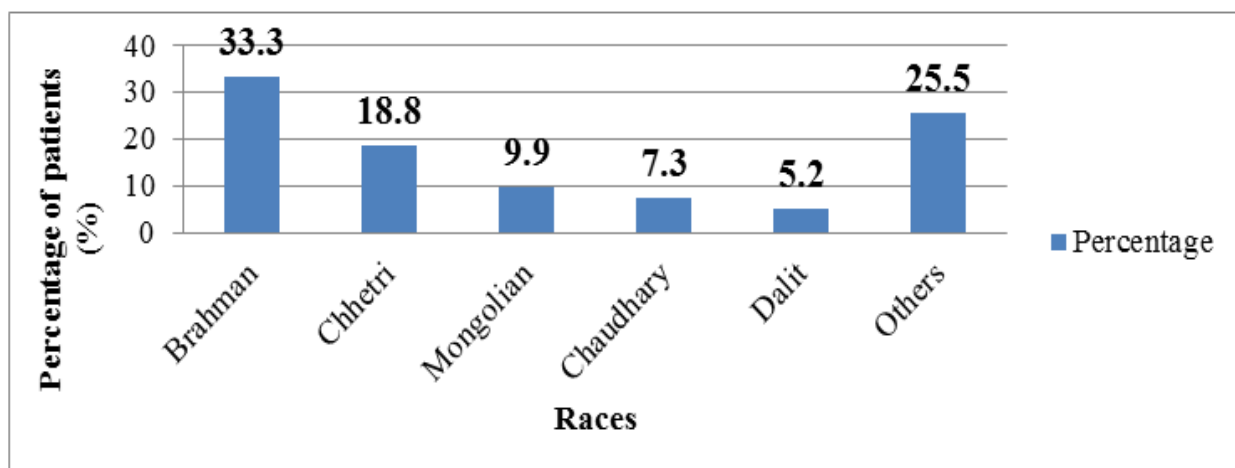


Fig 5:- Racial distribution of the patient

Education status of the patients: The details about the education status of the patients are given below in Table 4. The distribution of study patient according to skill level of ISCO-88 indicators in our study we found that, no formed skill level are highest 39.1% followed by 2nd skill level 35.9% and 1st skill level 18.8%.

Skill level	Number of patients	Percentage (%)
1 st Skill level	36	18.8
2 nd Skill level	69	35.9
3 rd Skill level	7	3.6
4 th Skill level	5	2.6
No Formed Skill	75	39.1

Table 4:- Education status of the patients (n=192)

➤ *Religion wise distribution of the patients:*

The details about the religion wise distribution of the patients are given below in Figure 6. In our study, we found that Hindu religion were more 95.8 and others 4.2%.

Social habits of the patients: The details about the social habits of the patients are given below in Figure 7.

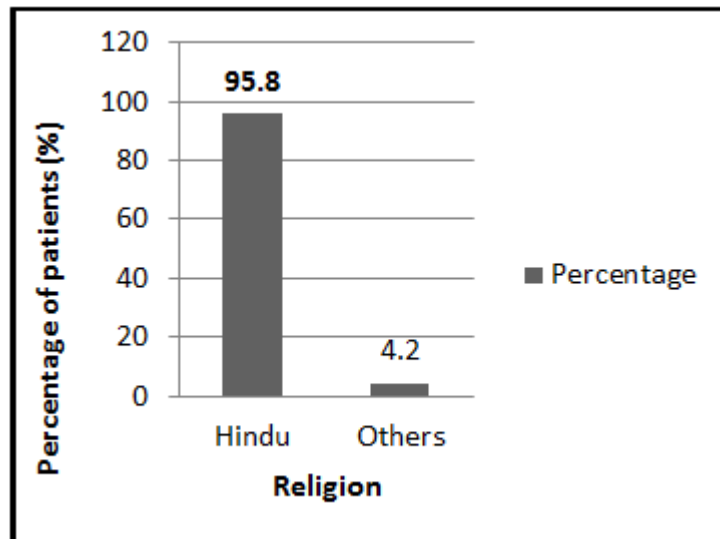


Fig 6:- Religion wise distribution of the patient

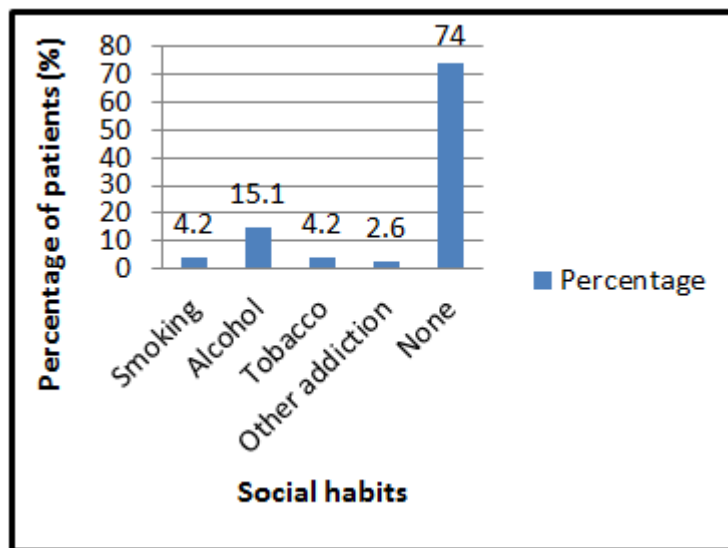


Fig 7:- Social habits of the patients

Family structure of the patients: The details about the family structure of the patients are given below in Figure 8. In our study, family structure of the patients, we found that nuclear family was more 66% followed by joint family 34%.

Diagnosis of the patients with mental disorder: The details about the diagnosis of the patients with mental disorder are given below in Figure 9. In our study, anxiety disorder were diagnosis more 44.8% followed by others 20.8% and depression 16.1%. Among them others include;

Dissociative disorder, bipolar disorder, alcohol dependence syndrome, deliberate self harm, organic psychosis, dementia with depression.

➤ *Classification of psychotropic prescribed medication:*

The details about the classification of prescribed medication are given below in Table 5. In the present study, classification of the psychotropic prescribed medication, we found that antidepressants drugs were more prescribed 56.35% followed by sedative and hypnotic drugs 26.21% and antipsychotic drugs 17.35%.

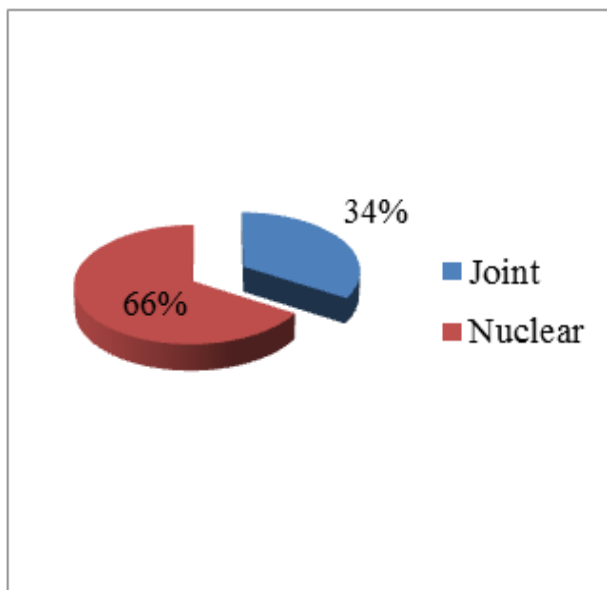


Fig 8:- Family structure of the patients

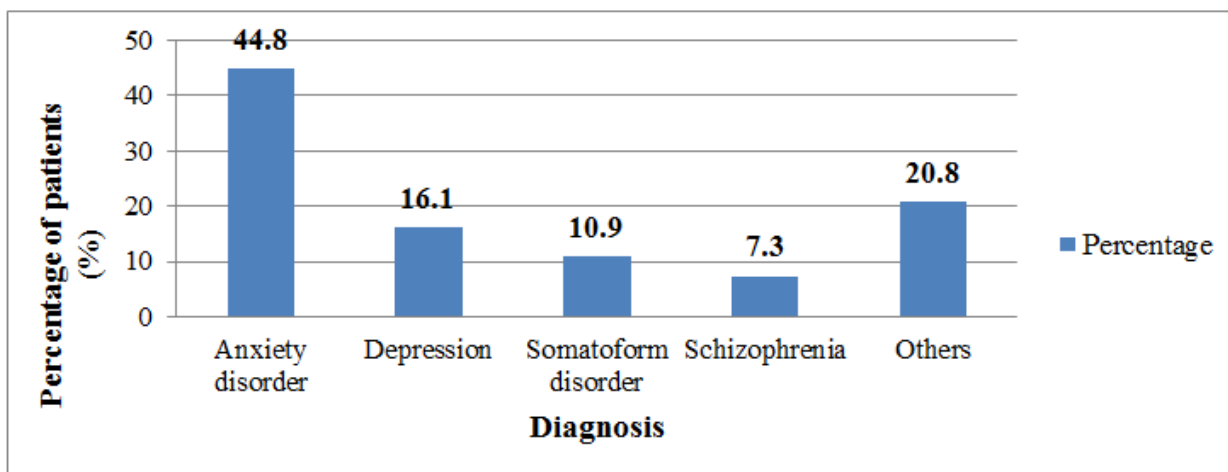


Fig 9:- Diagnosis of the patients with mental disorders

S.N.	Classification of drugs	Group of drugs	Name of drugs	Number of drugs	Percentage of prescribed drugs (%)
1	Antidepressant (56.35%)	SSRIs (37.36%)	Escitalopram	36	11.80
			Paroxetine	30	9.83
			Sertaline	23	7.54
			Fluoxetine	25	8.19
		TCA (12.78%)	Amitriptyline	25	8.19
			Dosulepin	14	4.59
		TUA (3.93%)	Mirtazapine	12	3.93
		SNRIs (1.96%)	Venlafaxine	3	0.98
			Doluxetine	3	0.98
		MAOI (0.32%)	Selegilin	1	0.32

2	Antipsychotic (17.35%)	Second Generation Antipsychotic drugs (17.03%)	Olanzapine	32	10.49
			Risperidone	8	2.62
			Amisulpride	7	2.29
			Aripiprazole	4	1.31
			Quetiapine	1	0.32
		Miscellaneous structure drugs (0.32%)	Pimozide	1	0.32
3	Sedative and Hypnotic (26.21%)	Benzodiazepine (26.21%)	Clonazepam	61	20
			Lorazepam	10	3.27
			Clobazam	3	0.98
			Chlordiazepoxide	3	0.98
			Zolpidem	3	0.98

Table 5:- Classification of psychotropic prescribed medication (n=305)

➤ *Percentage of drugs prescribed in anxiety disorder:*

The details about the drugs prescribed in anxiety disorder are given below in Table 6. In our study, percentage of drug prescribed in anxiety disorder, we found that clonazepam were prescribed more 27.13% followed by paroxetine 20.93 and escitalopram 13.95%.

S.N.	Classification of drugs	Group of drugs	Name of drugs	Number of drugs	Percentage of prescribed drugs (%)
1	Antidepressant	SSRIs	Escitalopram	18	13.95
			Paroxetine	27	20.93
			Sertaline	15	11.62
			Fluoxetine	7	5.42
		TCA	Amitriptyline	8	6.20
			Dosulepin	5	3.87
		TUA	Mirtazapine	2	1.55
		SNRIs	Venlafaxine	3	2.32
MAOI	Selegilin	1	0.77		
2	Antipsychotic	Second Generation Antipsychotic drugs	Olanzapine	2	1.55
			Risperidone	1	0.77
			Amisulpride	2	1.55
		Miscellaneous structure drugs	Pimozide	1	0.77
3	Sedative and Hypnotic	Benzodiazepine	Clonazepam	35	27.13
			Lorazepam	1	0.77
			Clobazam	1	0.77

Table 6:- Percentage of drugs prescribed in anxiety disorder (n=86)

➤ *Percentage of drugs prescribed in depression:*

The details about the drugs prescribed in depression are given below in Table 7. In our study, percentage of drug prescribed in depression, we found that escitalopram were prescribed more 23.33% followed by clonazepam 18.33% and both fluoxetine and mirtazapine 11.66%.

S.N.	Classification of drugs	Group of drugs	Name of drugs	Number of drugs	Percentage of prescribed drugs (%)
1	Antidepressant	SSRIs	Escitalopram	14	23.33
			Sertaline	3	5
			Fluoxetine	7	11.66
		TCA	Amitriptyline	5	8.33
			Dosulepin	1	1.66
TUA	Mirtazapine	7	11.66		
2	Antipsychotic	Second Generation Antipsychotic drugs	Olanzapine	4	6.67
			Risperidone	1	1.66
			Amisulpride	4	6.67
			Aripiprazole	2	3.33
3	Sedative and Hypnotic	Benzodiazepine	Clonazepam	11	18.33
			Chlordiazepoxide	1	1.66

Table 7:- Percentage of drugs prescribed in depression (n=31)

➤ *Percentage of drugs prescribed in somatoform disorder:*

The details about the drugs prescribed in somatoform disorder are given below in Table 8. In our study, percentage of drug prescribed in somatoform disorder, we found that amitriptyline were prescribed more 32.14% followed by both escitalopram and clonazepam 14.28%.

S.N.	Classification of drugs	Group of drugs	Name of drugs	Number of drugs	Percentage of prescribed drugs (%)
1	Antidepressant	SSRIs	Escitalopram	4	14.28
			Paroxetine	2	7.14
			Fluoxetine	1	3.57
		TCA	Amitriptyline	9	32.14
			Dosulepin	3	10.71
		SNRIs	Duloxetine	3	10.71
2	Sedative and Hypnotic	Benzodiazepine	Clonazepam	4	14.28
			Zolpidem	1	3.57
			Clobazam	1	3.57

Table 8:- Percentage of drugs prescribed in somatoform disorder (n=21)

➤ *Percentage of drugs prescribed in schizophrenia:*

The details about the drugs prescribed in schizophrenia are given below in Table 9. In our study, percentage of drug prescribed in schizophrenia, we found that olanzapine were more prescribed 39.13% followed by lorazepam 17.39% and both fluoxetine and risperidone 13.04%.

➤ *WHO recommended prescribing indicators:*

The details of WHO recommended prescribing indicators are given below in Table 10. In our study, total 545 drugs were prescribed where, 305 were psychotropic drugs. Average number of drugs per prescription was 2.84 and average number of psychotropic drugs per prescription was 1.59. Only 1.84% drugs were prescribed by generic name, 29.54% were prescribed from Essential Medicines List of Nepal.

S.N.	Classification of drugs	Group of drugs	Name of drugs	Number of drugs	Percentage of prescribed drugs (%)
1	Antidepressant	SSRIs	Fluoxetine	3	13.04
		TCA	Dosulepin	1	4.34
2	Antipsychotic	Second Generation Antipsychotic drugs	Olanzapine	9	39.13
			Risperidone	3	13.04
			Amisulpride	1	4.34
			Quetiapine	1	4.34
3	Sedative and Hypnotic	Benzodiazepine	Clonazepam	1	4.34
			Lorazepam	4	17.39

Table 9:- Percentage of drugs prescribed in schizophrenia (n=14)

S.N.	WHO recommended prescribing indicators	Result
1	Total number of drugs prescribed	545
2	Average number of drugs per prescription	2.84
3	Total number of psychotropic drugs prescribed	305
4	Average number of psychotropic drugs per prescription	1.59
5	Percentage of drugs prescribed by generic name	1.84%
6	Percentage of drugs prescribed from an Essential Medicine List of Nepal	29.54%

Table 10:- WHO recommended prescribing indicators

➤ *Distribution of mental disorders based on gender:*

The details about the distribution of mental disorders based on diagnosis are given below in Table 11. In our study, distribution of mental disorders based on gender, we found that the female are more than male in anxiety disorder, depression and somatoform disorder, where in schizophrenia male are more than female.

➤ *Polypharmacy with psychotropic drugs:*

The details about the number of psychotropic drugs prescribed are given below in Figure 10. In our study, we found that highest percentage of psychotropic drugs prescribed were one 48.4% followed by two 44.8% and three 6.2%.

➤ *Percentage of drug-drug interaction based on number of drugs per prescription:*

The details about percentage of drug-drug interaction based on number of drugs per prescription are given below in Figure 11.

➤ *Percentage of drug-drug interaction based on number of drugs per prescription:*

The details about percentage of drug-drug interaction based on number of drugs per prescription are given below in Figure 11. In our study, we found that 100% drug- drug interaction when prescription containing 6 drugs followed by 78.57% drug-drug interaction when prescription containing 4 drugs and 75% drug-drug interaction when prescription containing 5 drugs.

➤ *Number of drug-drug interaction based on severity:*

The details about the number of drug- drug interaction with different types of severity are given below in Table 12. In our study, we found that out of 61 drug-drug interaction 37 are mild, 18 are moderate and 6 are severe interaction according to Medscape and British National Formulary (BNF) 76.

- *Severe drug drug interaction with their potential hazard*
- Fluoxetine + Dosulepin = Both increases the serotonin level.
- Fluoxetine + Amitriptyline = Both increases the serotonin level and also increases QTc interval.
- Paroxetine + Amisulpride = Both increases QTc interval.

- Dosulepin + Risperidone = Both increases QTc interval.
- Amitriptyline + Amisulpride = Both increases QTc interval.
- Escitalopram + Amitriptyline = Both increases QTc interval.

Gender	Anxiety disorder n=86	Depression n=31	Somatoform disorder n=21	Schizophrenia n=14	Others n=40
Male	34.89%	41.93%	28.58%	64.29%	47.5%
Female	65.11%	58.07%	71.42%	35.71%	52.5%

Table 11:- Distribution of mental disorders based on gender

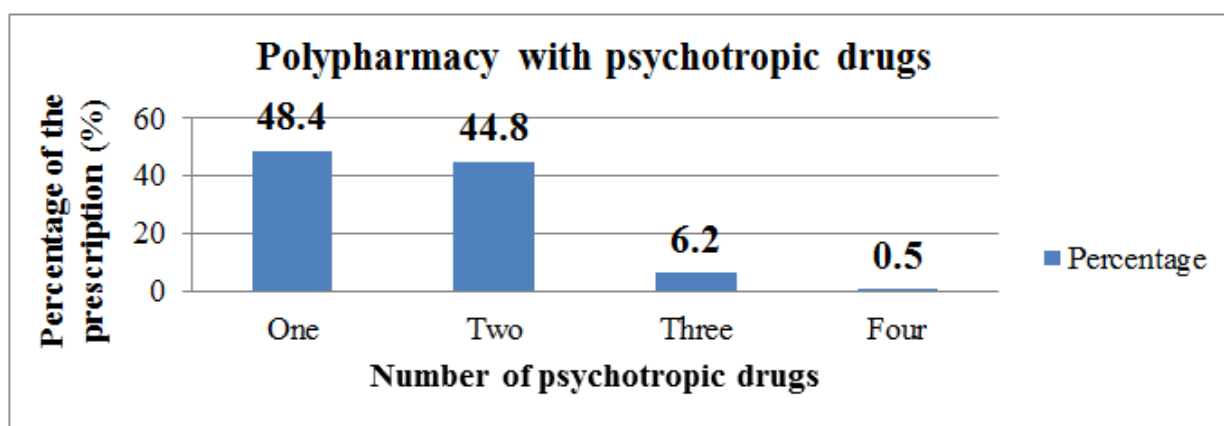


Fig 10:- Psychotropic drugs per prescription wise distribution of patients.

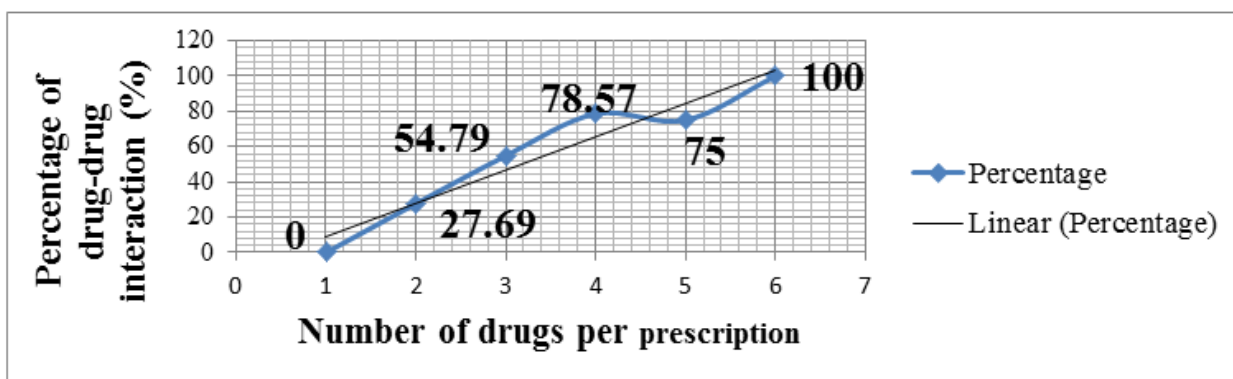


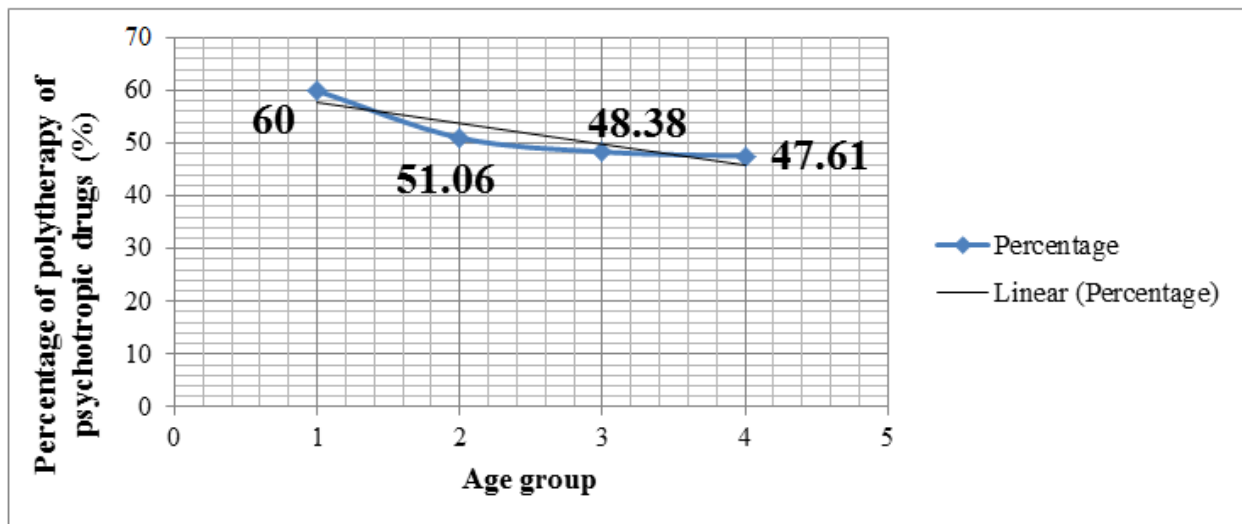
Fig 11:- Number of drugs per prescription Vs percentage of drug-drug interaction

S.N.	Types of severity	Number of drug-drug interaction	Percentage (%)
1	Severe	6	9.83
2	Moderate	18	29.50
3	Mild	37	60.65
Total		61	100

Table 12:- Number of drug-drug interaction with different types of severity (n= 61)

➤ *Percentage of polytherapy of psychotropic drugs based on age group:*

The details about the percentage of polytherapy based on age group are given below in Figure 12. In our study, we found that the percentage of polytherapy of psychotropic drugs were more 60% in age group less than 19, followed by 51.06% in age group 20-39 and 48.38% in age group 40-59.



Where, 1= Less than 19, 2= 20-39, 3=40-59, 4=More than 60

Fig 12:- Age group Vs percentage of polytherapy of psychotropic drugs

V. DISCUSSION

In our study, total 192 number of mental disorder patients were analyzed which contain 60% female and 40% male. The present study show that, the patients age group of 20-39 years (49%), followed by 40-59 years (32.3%) and more than 60 years (10.9%). We found that (60%) of patients were from rural region followed by (40%) from urban region.

In our study, most of the patients occupation were housewife (39.1%), followed by others (24%) and farmer (20.8%). In our study, we found that most of the patients were married (82.3%), followed by unmarried (14.6%) and single (2.6%). In case of racial distribution of patient, the highest number of patient were Brahman (33.3%) followed by others (25.5%), and chhetri (19.3%). In our study, we found that most of the patients were Hindu (95.8%) followed by others (4.2%). This could be due to the fact that in Nepal Hindu's population were more so we expect most of the patients are Hindus. In the study, we found that most of the patients were no formed skill (illiteracy) (39.1%), followed by second skill level (35.9%) and first skill level (18.8%). In case of social habites, we found that most of the patients have none social habits (74%), followed by Alcohol habits (15.1%) and both smoking and tobacco (4.2%). In our study, we found that most of the patients family structure were nuclear (66%) followed by joint family (34%). The stable family structure has a bearing on recovery from all illnesses and particularly more from psychiatric diseases. In this study, we found that most of the patients were diagnosis an anxiety disorder (44.8%), followed by others (20.8%) and depression (16.1%).

The present study shows that 21 drugs were prescribed from psychotropic groups. These were antidepressant drugs (selective serotonin reuptake inhibitors (SSRI): fluoxetine, paroxetine, sertraline, escitalopram; tricyclic antidepressants (TCA): amitriptyline, dosulepin; tetracyclic and unicyclic antidepressant: mirtazepine;

serotonin norepinephrine reuptake inhibitors (SNRIs): venlafaxine and duloxetine; monoamine oxidase inhibitors (MAOIs): selegilin), sedative-hypnotic drugs (clonazepam, lorazepam, clobazam, chlordiazepoxide and zolpidem), antipsychotic drugs (Second generation antipsychotic drugs: risperidone, olanzapine, clozapine, aripiprazole, quetiapine and amisulpride; and miscellaneous structure drugs: pimozide). Six psychotropic drugs out of these 21 were prescribed from 2016 Essential Medicine List of Nepal. In the present study, classification of the psychotropic prescribed medication, we found that Antidepressants drugs were more prescribed 56.35% followed by sedative and hypnotic drugs 26.21% and antipsychotic drugs 17.35%. The most commonly prescribed medicines were clonazepam (20%) from sedative-hypnotic drugs, followed by escitalopram (11.80%) from antidepressant drugs and olanzapine (10.49%) from antipsychotic drugs, the other drugs commonly co-prescribed were vitamin D, multivitamins, calcium supplements, PPI's etc. In this study, the most commonly prescribed drugs based on diagnosis were, in anxiety disorder (clonazepam 27.13%), depression (escitalopram 23.33%), somatoform disorder (amitriptyline 32.14%) and in schizophrenia (olanzapine 39.13%). In our study, we found that the distribution of mental disorder based on gender in anxiety disorder (male 34.89% and female 65.11%), depression (male 41.93% and female 58.07%), somatoform disorder (male 28.58% and female 71.42%), schizophrenia (male 64.29% and female 35.71%) and others (male 47.5% and female 52.5%). In the present study, we found that, total 545 drugs were prescribed. Among these, 305 were psychotropic drugs. Average numbers of drugs per prescription was found to be 2.84 and average number of psychotropic drugs per prescription was 1.59. The slightly higher value of this indicator suggests that there may be more chances of drug interaction, adverse drug reaction and also unnecessary increase in the cost of therapy. So it is advisable to reduce the number of prescribed drugs as far as practically possible. Only 1.84% drugs were prescribed by generic name. The lower value of

this indicator suggests that there may be more probability of duplication of drug products and increasing the cost of drugs. So to minimize the overall cost of therapy and to reduce the duplication of drug product 100% drugs were prescribed by generic name. In our study only 29.54% drugs were prescribed from Essential Medicines List (2016) of Nepal. The lower the value of this indicator suggests that the practices conform to the current National Drug Policy were not followed. So the 100% drugs use from the Essential Drug List should be promoted for optimal uses of limited financial resources and for insure the safety. And also minimize the drug interaction, adverse drug reaction and also satisfy the health care needs of the patients.

The present study shows that psychotropic drugs polytherapy 51.6% were slightly higher than monotherapy 48.6%. In our study, we found that 100% drug- drug interaction when prescription containing 6 drugs followed by 78.57% drug-drug interaction when prescription containing 4 drugs and 75% drug-drug interaction when prescription containing 5 drugs. The similar study was not found. We found that total 61 drug-drug interactions where, 60.65% are mild, 29.50% are moderate and 9.83% are severe interaction according to British National Formulary (BNF) 76. We found also the percentage of polytherapy of psychotropic drugs were more 60% in age group less than19, followed by 51.06% in age group 20-39 and 48.38% in age group 40-59. The similar study was not found.

VI. CONCLUSION

During our study, we found antidepressant drugs were more prescribed 56.35% followed by sedative and hypnotic drugs 26.21% and antipsychotic drugs 17.35%. The most commonly prescribed drugs were clonazepam, followed by escitalopram and olanzapine, where least prescribed drugs were selegilin, quetiapine and pimozide. Anxiety disorder was the most common diagnosis followed by others (dissociative disorder, bipolar disorder, alcohol dependence syndrome, deliberate self harm, organic psychosis, dementia with depression) and depression. In anxiety disorders, the most commonly prescribed drug was clonazepam and for depression the most commonly prescribed drug was escitalopram. It was found that female patients were diagnosed more with anxiety disorder, depression, somatoform disorder and others where as male patients were diagnosed higher in number only in schizophrenia. About half of the total patients were age group from 20-39 years. The study showed that the average number of drugs per prescription was 2.84 where, average number of psychotropic drugs per prescription was 1.59. Out of total drugs prescribed, only one fourth of the drugs were found to be prescribed from the Essential Medicine List. We found that the psychotropic drugs polytherapy was higher in percentage as compared to the monotherapy in psychotropic drugs.

The percentage of psychotropic drugs polytherapy was found more in age group less than19. The drug-drug interaction were found more in age group 40-59. As the number of drugs per prescription increased, the percentage of drug-drug interaction was found to be increased. Out of 61 drug-drug interaction six were found to be severe in nature. The prescribing pattern can be improved by reducing the number of drugs per prescription. The generic drug prescribing and Essential Medicine List should be promoted for optimal uses of limited financial resources and for insure the safety. And also minimize the drug interactions, adverse drug reaction and satisfy the health care needs of the patients.

LIMITATION OF THE STUDY

- Purposive sampling was done instead of random sampling because of lack sufficient patient availability and time.
- The study was conducted in out-patient department only but not in inpatients where are more prone to polypharmacy and drug interaction.
- The standard treatment guideline was not developed in the hospital due to lack of Pharmacy and Therapeutics Committee.
- The use of drug in pregnancy and breast feeding were not included.
- The data presented here represents the prescribing pattern of psychotropic drugs in Crimson Hospital at Manigram Rupandehi only and not of whole NEPAL.
- The prescribed daily dose and average cost of prescription were not evaluated due to lack of time.

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