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Study on Drug Utilization Evaluation of Antidepressant Drugs in Psychiatry Department at a Tertiary Care Hospital

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ABSTRACT
An estimated 3.8% of the world's population suffers from depression, including 5.0% of adults and 5.7% of persons over the age of 60. Around 300 million people worldwide suffer from depression. This was a six-months prospective and observational study to assess the utilization of antidepressants conducted in the outpatient department (OPD) of the psychiatry department in a tertiary care hospital. In all, 302 prescriptions were examined over the study period. Total 46.35% males and 53.64% female patients were distributed according to gender in the study. Age group between 21-40 years account for the majority of patients who received antidepressants (53.97%). According to the distribution of social habits among patients, 4.30% patients were oral tobacco users, 9.60% patients were alcoholics, and 11.58% patients were smokers. According to the distribution of patients by occupation, housewives made up the bulk of participants 45.69%. In terms of socio-economic status, majority of patients 51.32% belonged to lower class. The majority of study participants were married 78.80%. Among all the antidepressants, Selective Serotonin Reuptake Inhibitors (SSRIs) were the most commonly prescribed drug category. Our study shows that major depressive disorder was the most common psychiatric diagnosis in the population and among the antidepressant drugs Escitalopram was the most commonly prescribed psychotropic medicines. The polypharmacy was found to be 14.56. The cost per prescription per day can be reduced by prescribing more generic drugs when compared to the brand drugs.
Keywords: *Depression, Antidepressants, Prescription, Psychiatry*

INTRODUCTION

The World Health Organization (WHO) defined drug utilization evaluation as the marketing, distribution, prescribing and use of drugs in society in 1977, with a focus on the ensuing medical, social, and economic effects. Drug Utilization Evaluation (DUE) is a continuous, sanctioned, and systematic procedure for quality improvement that is designed to: deliver response of results to clinicians and the related groups, formulate standards and norms which interpret proper use of the drug, facilitate ethical use of the drug by providing proper educationand check proper usage of the drug and the pattern of prescription [1]. Depression is becoming an important health problem worldwide because of its relatively high lifetime prevalence, significant disability, suffering, dysfunction, and economic burden caused by it. India is among one of the countries with the highest number of people suffering from depression [2]. People from different origins and stages of life, from early childhood to the end stages, might be affected by depression [3]. Depression is thought to affect more than 300 million people worldwide, and the World Health Organization (WHO) lists it as the primary reason for impairment in the globe. There is a great deal of clinical and sociological relevance to major depression, a serious condition. At present, the essence of major depressive disorder (MDD) is a clinical course that is defined by one or more major depressive episodes without a history of manic, mixed, or hypomanic episodes, according to the criteria of the Diagnostic and Statistical Manual of Mental Health, Fourth Edition (DSM-IV)[4]. Depression's lifetime prevalence is as high as 20% among the wider population worldwide with a female to male ratio of about 5:2. We have to assume that only about one third of patients are in treatment, maybe not due to ignorance, but due to the fact that symptoms may not be qualitatively different from those of everyday experience. Typically, the course of the disease is recurrent and most patients recover from major depressive episodes. Another very important aspect of

depression is the high rate of comorbidity with other psychiatric disturbances. Anxiety, especially panic disorder, is often associated with affective disorders, while the magnitude of the association with alcohol or drug abuse is less pronounced. Interestingly, the onset of anxiety generally precedes that of depression, whereas alcohol misuse is equally likely to the onset of depression [5-7]. Antidepressants are drugs that alleviate the signs of depression. They were first developed in the 1950s and have been used regularly since then. Tricyclic antidepressants, selective serotonin reuptake inhibitors, serotonin, and noradrenaline reuptake inhibitors, and newer atypical antidepressants form the drug treatment of depression. Since drug use, safety, and cost of antidepressants differ among races, choosing the best medication for treating depression has clinical and economic implications [8]. Over the past few years, new antidepressants like selective serotonin reuptake inhibitors (SSRIs) have gradually replaced older medications like tricyclics and MAO inhibitors in antidepressant prescribing trends around the world. The prevalence of antidepressant usage in the community is rising globally[9]. There is an urgent need to ensure that patients are always given evidence-based, cost-effective, and rational treatments. Gaining insight into physician patterns in order to identify prescribing issues is the first step in improving prescription quality and patient care[10]. The present study was undertaken to fulfill the objectives to assess the prescribing patterns of antidepressant drugs, to analyze cost of antidepressant drugs per prescription and to assess the drugs prescribed according to Essential Medicine List as per WHO and Indian guidelines.

MATERIAL AND METHODS
The study was a prospective observational study carried out among patients attending psychiatric outpatient department irrespective of age and gender with prescription having at least one antidepressant drug. This study was carried out after getting the approval from the ethical committee. Patients who meet the study criteria were enrolled in the study. Patients or their relatives/ caregivers were asked prior for their willingness to participate in the study before collecting the data and the informed consent form was required to sign in the written format. Demographic details like name, age, gender, occupation, monthly household income, social habits, marital status, symptoms and chief complaints, disease diagnosis, past medical and medication history were entered into a data collection form. The antidepressants being prescribed and the use of concomitant medications were noted. The details of medication to be collected from the patients includes name of the prescribed drug, dose, frequency, duration, dosage form and cost of medication.

RESULTS
A total of 302 patients, who meets the study criteria were enrolled in the study. Out of the total patients, 140 (46.35%) were males and 162 (53.64%) were females (Figure 1). The majority of patients who received the antidepressant drugs belongs to the age group of 21-40 years (53.97%) followed by the age group of 41-60 years (30.1%) and the age group of >60 years (8.94%) while the age group of <20 years contributed minimum patients (6.95%). (Figure 2). The distribution of social habits among patients showed that 29 (9.60%) patients werealcoholic, 13 (4.30%) were oral tobacco users and 35 (11.58%) were smokers (Table 1). Occupation wise distribution of patients showed that the majority of patients in the study 138(45.69%) were housewives, followed by 55 private jobs (18.21%), 39 students (12.91%), 29 retired (9.60%) while 21 government job (6.95%) and 20 businessmen (6.62%) contributedminimum number of patients (Figure 3). Out of the 302 patients, the socio-economic distribution of patients depicted that the majority of patients were from lower class (51.32%) followed by middle class (46.36%) and the minority of patients belonged to higher class (2.32%) (Table 2). Marital status wise distribution of patients showed that the majority of patients in the studywere married (78.81%) while unmarried (21.19%) (Table 3).
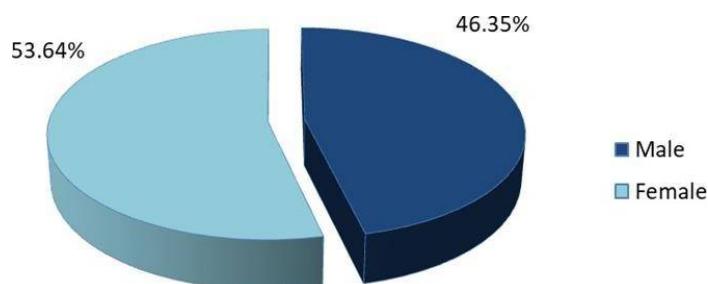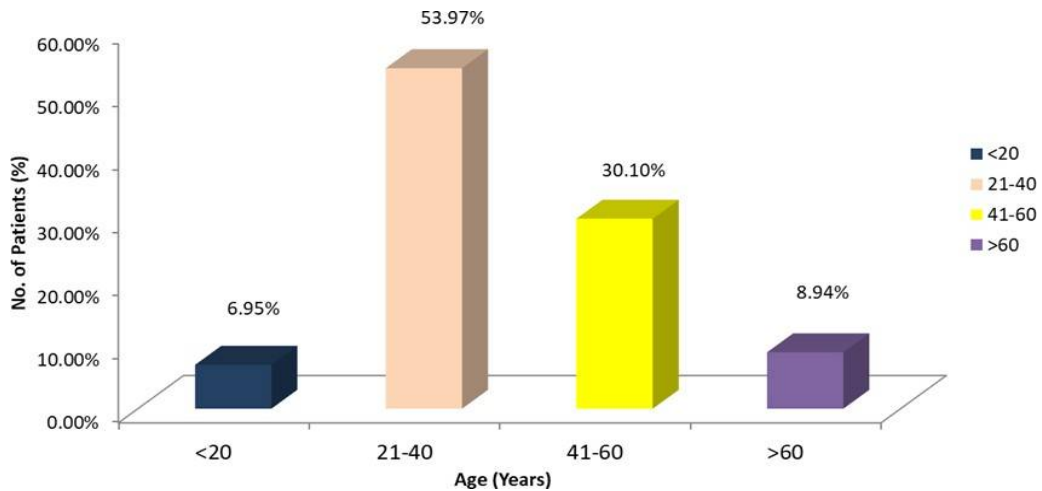

Figure 1: Gender wise distribution of patients

Figure 2: Age wise distribution of patients

Table 1: Social habit wise distribution of patient

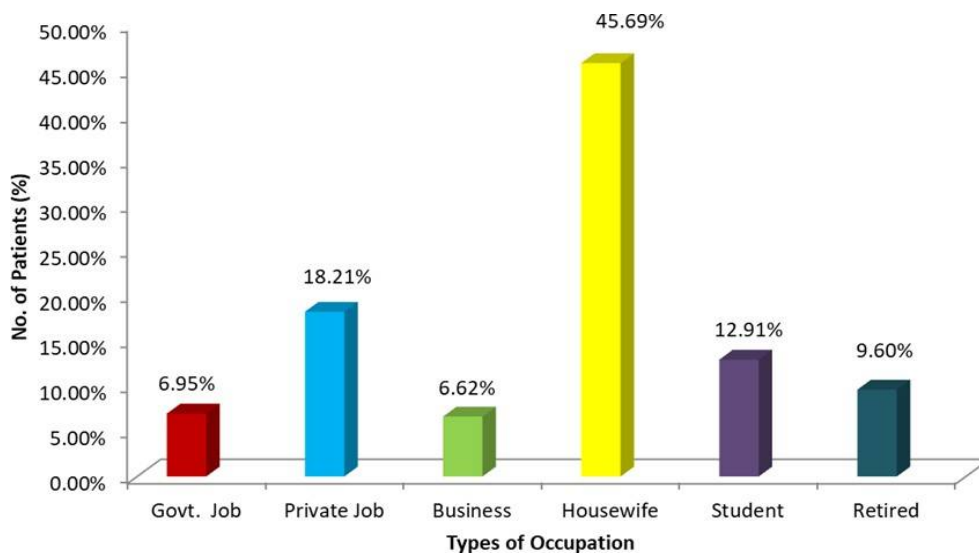| S.No.	Social Habit	Number of Patients (%) (n=302)
1.	Alcoholic	29 (9.60)
2	Oral Tobacco	13 (4.30)
3	Smoking	35 (11.58)

Figure 3: Occupation wise distribution of patients

Table 2: Socio-economic wise distribution of patients

S.No.	Socio-economic Status (Family Income in Rs. Per month)	Number of Patients (%) (n=302)
1.	Lower Class (<25,000)	155 (51.32)
2.	Middle Class (25,000-50,000)	140 (46.36)
3.	Higher Class (>50,000)	07 (2.32)

Table 3: Marital status wise distribution of patients

S.No.	Marital Status	Number of Patients (%) (n=302)
1.	Married	238 (78.81)
2.	Unmarried	64 (21.19)

Among the patients receiving antidepressant drugs, monotherapy was observed with 96.35%while the combination therapy was observed with 17.54% (Figure 4). Among the patients receiving antidepressant

drugs, the dosage form wise distribution of the study shows that the tablets 90.98% were the most commonly prescribed dosage form followed by capsules 9.01% (Figure 5). Out of 302 patients, 258 (85.43%) of patients received 1 antidepressant drug in their prescriptions followed by 41 (13.57%) of patients who received 2 antidepressant drugs, followed by 3 (0.99%) of patients who received 3 antidepressant drugs (Figure 6). Among all the antidepressant drugs, Escitalopram (38.74%) was the most commonly prescribed drug followed by Fluoxetine (18.21%), Desvenlafaxine (11.59%), Mirtazapine (8.60%), Sertraline (6.95%), Nortriptyline (5.62%), Paroxetine (5.62%) Venlafaxine (4.96%), Vortioxetine (2.99%), Bupropion (2.31%), Fluvoxamine (2.31%), Amitriptyline (1.99%), Vilazodone (1.98%), Duloxetine (0.66%), Doxepin (0.33%) (Table 4).Out of all the patients receiving antidepressant medications, major depressive disorder (MDD) 26.82% was the most common diagnosis, followed by anxiety disorder 22.51%, mixed anxiety & depression 19.20%, schizophrenic depression (SD) 16.55%, bipolar disorder (BD) 6.95%, other disorders 6.29% and opioid dependence disorder (ODD) 1.65% (Table 5). Furthermore, the average cost of antidepressant drugs per prescription for the males wasfound to be Rs 310.13 and Rs 266.64 for females (Table 6). The average number of days drug prescribed per prescription for males was found to be 22.38 days whereas 22.61 days for the females (Table 7). For the analysis of the prescriptions various drug use indicators were applied, the results of the analysis were shown in the Table 8.
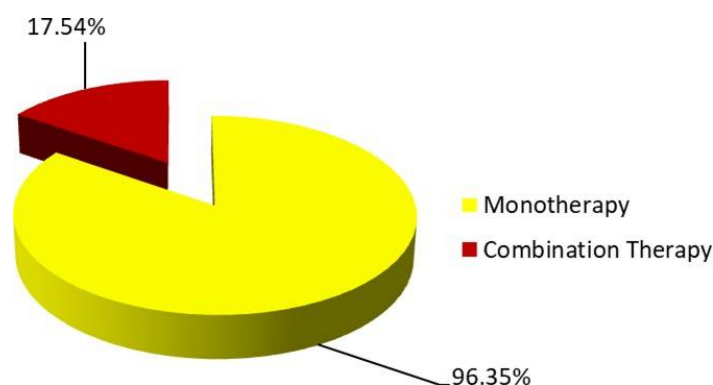

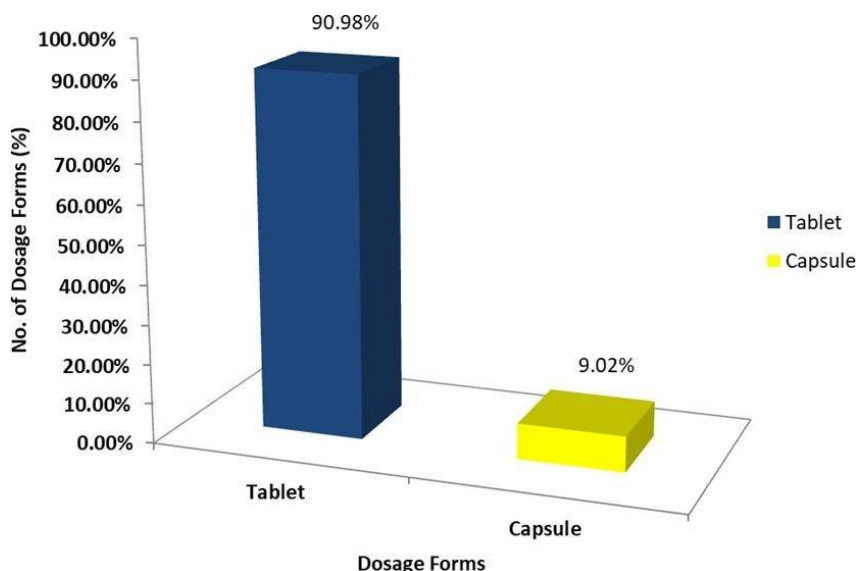**Figure 4: Assessment of mono therapy v/s combination drug therapy**

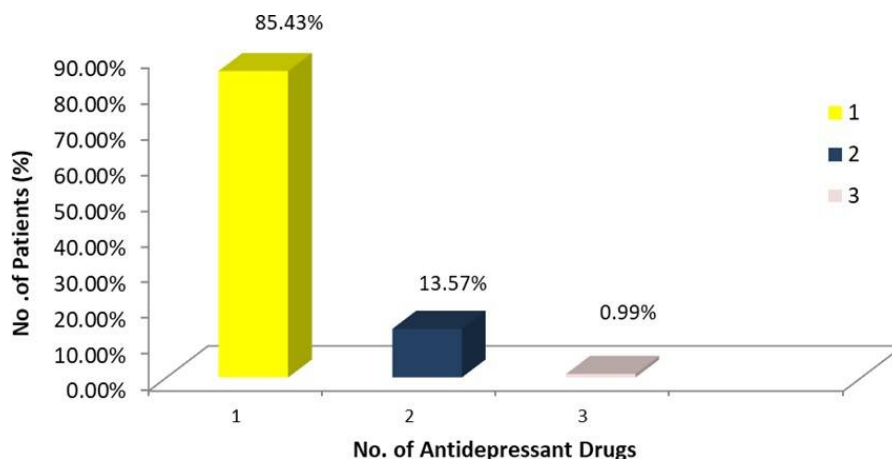**Figure 5: Dosage form wise distribution of patients**

Figure 6: Number of Antidepressant Drugs per prescription

Table 4: Types and Number of Antidepressant Drugs prescribed

S.No.	Antidepressant Drugs	Number of Antidepressant Drugs prescribed in Females	Number of Antidepressant Drugs prescribed in Males	Total number of drugs (%) (n=302)
1.	Escitalopram	58	59	117 (38.74)
2.	Vilazodone	04	02	06 (1.98)
3.	Fluoxetine	28	27	55 (18.21)
4.	Mirtazepine	11	15	26 (8.60)
5.	Sertraline	10	11	21 (6.95)
6.	Desvenlafaxine	23	12	35 (11.59)
7.	Paroxetine	12	05	17 (5.62)
8.	Venlafaxine	07	08	15 (4.96)
9.	Fluvoxamine	03	04	07 (2.31)
10.	Nortriptyline	12	05	17 (5.62)
11.	Vortioxetine	04	05	9 (2.99)
12.	Doxepin	01	0	01 (0.33)
13.	Trazodone	02	01	03 (0.99)
14.	Amitriptyline	03	03	06 (1.99)
15.	Bupropion	04	03	07 (2.31)
16.	Duloxetine	01	01	02 (0.66)

Table 5: Types of Indication per Prescription

S.No.	Indications	No. of Patients (%) (n=302)
1.	Major Depressive Disorder (MDD)	81 (26.82)
2.	Anxiety	68 (22.51)
3.	Mixed Anxiety & Depression	58 (19.20)
4.	Schizophrenic Depression	50 (16.55)
5.	Bipolar Disorder (BD)	21 (6.95)
6.	Opioid Dependence Disorder (ODD)	05 (1.65)
7.	Other Disorders	19 (6.29)

Table 6: Average Cost of Antidepressant Drugs per prescription

Cost	Male	Female	Both Male and Female
Total Cost (Rs.)	43418.5	43196.42	86614.92
Average Cost (Rs.)	310.13	266.64	288.38

Table 7: Average Number of Days per prescription

Days	Male	Female	Both Male and Female
Total Number of Days	3134	3664	6798
Average Number of Days	22.38	22.61	22.50

Table 8: Analysis of prescription as per WHO / INRUD Drug Use Indicators

S.No.	Drug Use Indicators	Result
1.	Total no. of prescriptions	302
2.	Total no. of drugs	498
3.	Total no. of antidepressant drugs	344
4.	Average no. of drugs per prescription [Mean ± SD]	1.64
5.	Average no. of antidepressant drugs per prescription [Mean ± SD]	1.44
6.	Percentage of the antidepressant drugs prescribed by generic names	1.2
7.	Percentage of the antidepressant drugs prescribed from Essential Drug List (National List of Essential Medicines-2015, India)	43.75
8.	Percentage of polypharmacy	14.56

DISCUSSION

The present study shows that there was a higher prevalence of antidepressant prescribing for women than men. The age group wise distribution of patients added support to the evidence of the study that those patients with age group between 21-40 were mostly diagnosed with psychotic disorders. Occupation wise distribution of patients showed that the majority of patients in the study were housewives followed by private jobs, students, retired while government job and businessmen contributed minimum number of patients. In analyzing standard of living, the data was found to be more common in patients of lower class; followed by middle class and then higher class. This study shows that among all the antidepressant drugs, selective serotonin reuptake inhibitors (SSRIs) were the most commonly prescribed drug category whereas Escitalopram was the most commonly prescribed antidepressant drug and the least prescribed drug was Doxepin. Antidepressants were prescribed for many indications other than depressive disorders and the psychiatrists' choice of the drug was influenced by the diagnosis, the severity of the disease/ disorder, co-morbidity, drug efficacy and the considerations for the patients' tolerability, but not primarily on the cost of medication. It was concluded that major depressive disorder (MDD) was affecting a large population of patients. A larger proportion of drugs have been prescribed in their brand names. Among the patients receiving antidepressant drugs, the dosage wise distribution of the study shows that tablets were the most commonly prescribed dosage form followed by capsules. Among the patients receiving antidepressant drugs, it was concluded that monotherapy is higher as compared to the combination therapy. The principles of rationality in prescribing the drugs were followed according to the various drug use indicators given by WHO and NEML.

CONCLUSION

There was a higher prevalence of antidepressants prescribing for women. A majority of the antidepressants were prescribed to the age group between 21 and 40 years. Antidepressant drugs were prescribed for many indications other than depressive disorders. Our study shows that major depressive disorder was the most common psychiatric diagnosis in the population and among the antidepressant drugs Escitalopram was the most commonly prescribed psychotropic medicines. The polypharmacy was found to be 14.56%. The documentation of the follow-up data of patients gave a better idea of the drug consumption. Newer antidepressant drugs like duloxetine are costlier when compared to SSRIs. The cost per prescription per day can be reduced by prescribing more generic drugs when compared to the brand drugs. It was seen that psychiatrists tend to prescribe SSRIs when compared to newer antidepressants. This study provides important and useful information on prescribing pattern of antidepressants. The prescribing habits among psychiatrists can be improved by creating awareness about the choice of drugs according to the standard treatment guidelines and from the Essential Medicines List. Prescriber education can also focus on the reduction in the prescriptions of concomitant sedative-hypnotics. The prescribers should also be encouraged to check for the patient's compliance with the prescribed medications and to record them in the case sheets. Such measures will promote the rational use of medicines and ultimately, the quality of healthcare. Generic prescribing and the use of Essential Medicines List should be encouraged.

CONFLICT OF INTEREST
All authors have no conflict of interest or any affiliation or involvement in any organization academic, commercial, financial, personal and professionally relevant to the work.

AUTHOR'S CONTRIBUTION
All authors have given equal contribution of work.

REFERENCES
1. World Health Organization. (2003). Introduction to Drug Utilization Research, WHO, Oslo.
2. Thakkar KB, Jain MM, Billa G, Joshi A, Khobragade AA. (2013). A drug utilization study of psycho-tropic drugs prescribed in the psychiatry outpatient department of a tertiary care hospital. Journal of Clinical and Diagnostic Research ; 7(12): 2759- 64.
3. Meitei KT and Singh HS. (2019). Prevalence of depression among Indian population. Online Journal of Health and Allied Science; 18(4): 12.
4. American Psychiatry Association. (1994). Diagnostic and Statistical Manual of Mental Disorders. 4th ed. Washington, DC: American Psychiatric Association.
5. Weissman MM, Bland RC, Canino GJ, Faravelli C, Greenwald S, Hwu HG, Joyce PR,Karam EG, Lee CK, Lellouch J, Lepine JP. (1996). Cross-national epidemiology of major depression and bipolar disorder. JAMA. 276(4): 293-9.
6. Angst J. (1997). Depression and anxiety: implications for nosology, course, and treatment. J Clin Psychiatry; 58(suppl. 8): 3-5.
7. Merikangas KR, Angst J, Eaton W, Canino G, Rubio-Stipec M, Wacker H, Wittchen HU, Andrade L, Essau C, Whitaker A, Kraemer H, Robins LN, Kupfer DJ. (1996). Comorbidity and boundaries of affective disorders with anxiety disorders and substance misuse: results of an international task force. Br J Psychiatry Suppl; (30): 58-67.
8. Kehinde OA, Anyika EN, Abah I. (2017). Drug utilization patterns of antidepressants in Federal Neuro-Psychiatric Hospital Lagos, Nigeria. Journal of Hospital Administration; 6(5): 12-13.
9. Lahon K, Shetty HM, Paramel A, Sharma G. A (2011). Retrospective Drug Utilization Study of Antidepressants in the Psychiatric Unit of a Tertiary Care Hospital. Journal of Clinical and Diagnostic Research; 5(5): 1069-1075.
10. Sultana F, Rahman A, Paul TR, Sarwar MS, Islam MAU, Rashid M. (2015). Prescribing Pattern and Prescription Errors: A Study at a Tertiary Care Hospital of Bangladesh. Bangladesh Pharmaceutical Journal; 18: 20-24.