Original Article

Pharmacoeconomic Analysis and Drug Prescription Pattern of Antipsychotic Drugs

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ABSTRACT

The extent of the burden of mental disorder is difficult to assess and quantify and is consequently often ignored. Prescribing pattern of the psychotropic drug will assess the rationality of existing treatment practices and provide an overview of drug preference and rationale for drug use. Studies on prescribing models will identify issues before drug distribution and will significantly improve patient care. The main objective is to assess the pharmacoeconomic evaluation of antipsychotic drugs in a psychiatric outpatient department and assess the rationality of the prescription. Among 113 prescriptions in the study, 58% of participants were males while 42% were females. The commonly prescribed atypical antipsychotic is risperidone, followed by olanzapine, aripiprazole, and quetiapine. Haloperidol is the least commonly prescribed antipsychotic medication. Prescriptions costing less than 200 are more common, followed by prescriptions costing less than 400, and few prescriptions were in the 800-1000 range. We found that drug cost per unit ranging from 4-6 rupees per unit were most prescribed followed by a range of 8-10 rupees per unit cost. The utilization of drugs from the essential medicines list (Indian 2022) was 45%. It was revealed that antipsychotic polypharmacy has a high prevalence and burdens high costs on patients. Prescription of drugs in their generic names leads to patient compliance and less financial burden contrary to the use of brand names. The present study also revealed the use of different polypharmacy strategies in treating psychiatric patients: therefore, there is a need to watch out for drug interaction indices.

Keywords: Pharmacoeconomics, Anti-psychotics, Prescription, Medicine cost, NLEM.

INTRODUCTION

Mental health is an integral part of health. Mental health is defined as "a state of well-being in which individuals realize their abilities, cope with the normal stresses of life, work productively and fruitfully, and contribute to their communities[1]. Major psychiatric disorders are widespread and frequently have a chronic course.

WHO defines drug utilization as "the marketing, distribution, prescription, and use of drugs in a society with a special emphasis on the resulting medical, social, and economic consequences"[2]. Mental disorders are usually associated with significant impairment in socioeconomic skills and person-to-person interactions. The burden of mental disorders goes beyond that which has been defined by Disability Adjusted Life Years (DALY). The extent of the burden of mental disorders on family members is difficult to assess and quantify and is consequently often ignored[1]. Antipsychotics, also known as neuroleptics, are among the most prescribed medications in the psychiatry outpatient department (OPD). They are used to treat psychotic symptoms in a variety of disorders, including schizophrenia and bipolar disorder[3]. Antipsychotic drugs can be classified into two categories: The first-generation typical antipsychotics such as haloperidol and chlorpromazine and the second-generation or atypical antipsychotics such as clozapine and olanzapine.

Anti-psychotic medications have a remarkable influence on psychiatric practice that is indisputably revolutionary. The amount of drugs/brands currently available for each anti-psychotic drug has steadily increased, and as a result,

it is more important than ever to look at issues of comparability between various pharmacological agents, as well as individual user costs, and discuss other issues that affect prescribing and compliance. On the other hand, atypical antipsychotics have lower rates of extrapyramidal side effects and are effective at controlling both positive and negative symptoms[4]. Pharmacoeconomics adopts and applies the principles and methods of healthcare economics in the field of pharmaceutical policy. Economic evaluation, which involves analyzing the costs and outcomes of various alternative therapies, can also be a useful approach; however, it can be difficult to achieve[5]. It involves analyzing the economic impact of all the steps that occur between the time a drug is manufactured and the time it is administered to patients[6].

Pharmacoeconomics is the descriptive analysis of the cost of drug therapy to healthcare systems and society. It applies cost-minimization, cost-effectiveness, cost-benefit, and analysis of the costs of processing and conservation services and benefits and costs of alternatives under consideration[7]. Pharmacoeconomics serves as a guide to resource allocation and planning decisions[5]. It makes use of the broad range of techniques used in health economic evaluation in the specific context of medicines management[8]. The purpose of this study is to evaluate the Cost-Minimization of antipsychotic medication. Antipsychotic therapy is usually a longer course, with medication adherence being a critical determinant in therapeutic response. Reduced therapy costs can help to ensure better drug adherence. Prescriptions in generic name format and the maintenance of a hospital formulary are two ways to minimize prescription costs. It provides

opportunities for enhancing the quality of mental healthcare in the environment, through awareness creation for rational and cost-minimization use of anti-psychotic medicines.

METHODOLOGY

A prospective, observational study was conducted in the Department of Psychiatry, Adichunchanagiri Hospital and Research Centre, B.G Nagara. This study received ethical clearance from the Institutional Ethics Committee, of Adichunchanagiri Hospital and Research Centre (AH&RC) obtained before the commencement of the study. A pilot study was done among 50 patients and subsequent suggestions were incorporated before the start of the study.

Data collection

Inclusion criteria: Adults of either sex suffering from psychiatric illness coming to the psychiatric outpatient department and patients who had at least one psychotropic medication in prescription.

Exclusion criteria: Pregnant and lactating women

Data of patients meeting the above Inclusion and Exclusion criteria during the study period were collected in a customized patient data collection form from prescription /OPD patient case sheets of the psychiatric outpatient department as per ethical clearance committee approval.

 The following data was collected for analysis:

Patient demographic details like age, sex. Prescription details like number of drugs in a prescription, name of individual drug, its dosage, frequency, number of drugs prescribed by brand name.

Statistical Analysis

Data were entered into Microsoft Excel spreadsheets and cross-checked for its accuracy. The statistical analysis was performed using IBM SPSS statistics software for windows, version 25 (Armonk, NY, USA). Descriptive statistical methods were used including means, standard deviation, and frequency. Variables included in the analysis include age, sex, education level, marital status, economic status, cost of the prescription, and per unit cost of the prescription.

RESULTS

Total of 113 participants were included in the study. Table 1 shows the age distribution of 113 participants with a majority of 26.5% of age group 21-40 followed by 16.8% belong to age group more than 60. Out of total participants male count was more than the female participants which suggests that males are more affected by the psychiatric disorders.

Table 1: Patient Demographic Details

		Frequency	Percentage (%)
AGE	11-20	08	7.1
	21-30	30	26.5
	31-40	30	26.5
	41-50	12	10.6
	51-60	14	12.4
	>60	19	16.8
	Total	113	100.0
SEX	Male	66	58.4
	Female	47	41.6
	Total	113	100.0

Table 2: Monthly income status

		Frequency	Percentage (%)
Monthly income (in rupees)	5000-10000	32	28.3
	10000-20000	49	43.4
	30000-40000	29	25.7
	>40000	03	2.7
	Total	113	100.0

Table 2 shows that most of the participants belongs to 10000-20000 range of monthly income andleast were in range of more than 40000. Among the 113 participants , most of the participants income below 20000 and very less participants were belong to higher income which suggests that poor people are more affected by the psychiatric disorders.

Table 3: Smoking & Alcohol Status

		Frequency	Percentage (%)
Smoking	Smoker	36	31.9
	Non-Smoker	72	63.7
	Past smoker	5	4.4
	Total	113	100.0
Alcohol	Alcoholic	40	35.4
	Non Alcoholic	73	64.6
	Total	113	100.0

Table 3 suggests that among 113 participants, about 63.7% of them were nonsmokers followed by 32% were smokers and only 4% were past smoker. Among the 113 participants only 35% were alcoholic and 65% were non-alcoholic.

Table 4: Medicine Cost

		Frequency	Percentage (%)
Medicine cost	0-200	47	41.6
	201-400	41	36.3
	401-600	12	10.6
	601-800	10	8.8
	801-1000	03	2.7
	Total	113	100.0

As per table 4 out of 113 prescriptions of the participants majority of the medicine cost is in range of 0-200 and least medicine cost were in the range of 801-1000**.**

Table 5: Cost per unit

		Frequency	Percentage (%)
Cost Per Unit (in rupees)	2-4	15	13.3
	4-6	38	33.6
	6-8	06	5.3
	8-10	28	24.8
	>10	26	23.0
			100.0

Most of the prescribed drug cost per unit were about Rs.4-6 as followed by Rs.8-10 as showed in the Table 5.

Table 6: Drug Prescribed

		Frequency	Percentage (%)
Drug Prescribed	Aripiprazole	20	17.7
	Olanzapine	22	19.5
	Haloperidol	03	2.7
	Risperidone	30	26.5
	Clozapine	18	15.9
	Quitepine	20	17.7
			100.0

In the given table 6 shows that among 113 prescriptions Risperidone was the most prescribed drug followed by Olanzapine**.**

Table 7: Drugs prescribed in brand

		Frequency	Percentage (%)
Drugs prescribed in brand	Yes	76	67.3
	No	37	32.7
			100.0

In the given table 7 shows that 113 prescriptions which have been prescribed with the brand name is nearly double the prescriptions that have been prescribed with a generic name.

Table 8: Drugs prescribed according to NLEM

		Frequency	Percentage
NLEM	Yes	51	45.1
	No	62	54.9
	Total	113	100.0

As per the Table 8, among 113 prescriptions, drugs that were on the NLEM list were 51 and the prescriptions that don't contain NLEM list were 62 which means that most of them prescribe drugs that were not included in the NLEM list.

DISCUSSION

This current study is believed to be the first of its kind in the south Karnataka region to assess the pharmacoeconomic evaluation and prescribing pattern of antipsychotics in psychiatric outpatient department at AH&RC Hospital. A total of 113 patients meeting inclusion and exclusion criteria were identified and included in the study.

According to our research, antipsychotic medications are typically prescribed to people between the ages of 21-40 followed by individuals over the age of 60 years which is similar to the study conducted by Odo et al[9] the majority of patients belonged to the age group 18-49 years in his study. Arun k et al also saw that majority of patients belonging to the age group of 18-40 years were prescribed antipsychotic drugs.

People with incomes ranging from 10,000 to 20,000 were more affected than those with higher incomes. More people were employed than unemployed which is different from the study conducted by Banarjee et al[10] who showed that 86.7% were not employed than the employed population.

In our study, a total of 113 participants including non-smokers (64%) and non-alcoholics (65%) were more affected than smokers (32%) and alcoholics (35%). Prescriptions costing less than 200 are more common, followed by prescriptions costing less than 400, and the fewest prescriptions were in the 800-1000 range. In our study, we found that drug cost per unit ranges from 4-6 rupees per unit most prescribed followed by a range of 8-10 rupees per unit cost.

The most prescribed atypical antipsychotic is risperidone, which is followed by olanzapine, aripiprazole, and quetiapine. Haloperidol is the least commonly prescribed antipsychotic medication. Atypical antipsychotic medications are more commonly prescribed than typical antipsychotics. In our study, we found that the average number of drugs per prescription was 1 which was lower than that found in studies, where it ranged from 2 to 3 drugs per prescription in different places of India. In our study 33% of drugs were prescribed by generic names. Similarly, lower figures have been reported previously in Nigeria, Ghana, Lebanon and Nepal. In the United Arab

Emirates, a much lower value of 4.4% has been reported. High values of 75% and 99.8% of generic prescribing were reported by studies in Bangladesh and Cambodia.

In our study, we had seen some possible factors contributing to generic prescribing based on patient demographics. It showed that generic prescribing was more in females than in males although the male population was higher in our study. This finding is similar to the study conducted by Banerjee et al[10] who also saw females were more prescribed generic drugs than males in Nepal. It was also seen in our study that unemployed population were mostly prescribed with generic drugs. In our study, no injection was prescribed. Concerns about the adverse effects and cost-effectiveness of parenteral routes of drug administration are probably the reason for the low utilization of depot injection formulation in the psychiatry OPD. Similarly, no antibiotics were prescribed. Utilization of drugs from the essential medicines list (Indian 2022) was 45%. This result was higher i.e. 28.87% with the study conducted by Wagle et al [8]. The purpose of NLEM is to promote the rational use of medicines considering the three important aspects i.e. cost, safety, and efficacy.

Among the typical and atypical antipsychotics, atypical antipsychotics were prescribed more than the typical antipsychotics. This is in accordance with the current recommendations. Atypical antipsychotics are preferred over typical antipsychotics. The adverse effect profile of atypical antipsychotics is less prominent than that of typical antipsychotics, which promotes better compliance. Among the atypical antipsychotics, risperidone was commonly prescribed. If the patient has frequent relapses, or symptoms that continued to cause functional impairment, switching to an alternative monotherapy or adding a second prophylactic agent should be considered.

CONCLUSION

This study was necessary to evaluate the Pharmacoeconomics and the prescription pattern of antipsychotic drugs as part of drug utilization research in mental health, often neglected in this part of the world. It provides opportunities for enhancing the quality of mental healthcare in the environment, through awareness creation for rational and cost-minimization use of antipsychotic medicines.

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