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Original Research Article

Pharmacoeconomics of antidepressants in a tertiary care teaching hospital of rural India

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ABSTRACT

Mental disorders constitute a wide spectrum ranging from sub-clinical states to very severe forms of disorders. Mental health problems can attain the disorder/disease/syndrome level, which are usually considered easy to recognize, define, diagnose and treat. To study the cost effectiveness of antidepressant drugs in a tertiary care teaching hospital of rural India and various factors associated with it. A cross sectional study was performed and the prescriptions were analyzed. The data from OPD was studied in a structured format. Drugs was categorized as per the pharmacological classification. The drugs were evaluated for their pharmacoeconomics. In an extensive study of 2 months, 250 cases of psychiatric opd were evaluated. Depression (76%) was the most prevalent psychiatric ailment followed by anxiety (13%) and schizophrenia (11%). The prevalent age group was 21-40 years (38.4%). Females (71.54%) had the majority as compared to males (28.46%). Fluoxetine was the most prescribed antidepressant (45%). 76% of the patients were on monotherapy. Escitalopram-Clonazepam (45%) was the most frequently prescribed fixed dose combination. Average cost of therapy was calculated. Paroxetine (Rs 221) had maximum medication cost while Imipramine (Rs 21) had minimum medication cost.

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1. Introduction

Depression is the leading cause of disability worldwide, the United Nations (UN) health agency reported, estimating that it affects more than 300 million people worldwide – the majority of them women, young people and the elderly. An estimated 4.4 percent of the global population has depression, according to a report released by the UN World Health Organization (WHO), which shows an 18 percent increase in the number of people living with depression between 2005 and 2015.¹⁻³

Depression is a major mental-health cause of disease burden. Its consequences further lead to significant burden in public health, including a higher risk of dementia,

premature mortality arising from physical disorders, and maternal depression impacts on child growth and development.⁴ Approximately 76% to 85% of depressed people in low- and middle-income countries do not receive treatment;⁵ barriers to treatment include: inaccurate assessment, lack of trained health-care providers, social stigma and lack of resources.⁶

The stigma comes from misguided societal views that people with mental illness are different from everyone else, and they can choose to get better only if they wanted to.⁷ Due to this more than half of the people with depression do not receive help with their disorders. The stigma leads to a strong preference for privacy.

The Greco-Roman world used the tradition of the four humors to attempt to systematize sadness as "melancholia".

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This concept remained an important part of European and Islamic medicine until falling out of scientific favor in the 19th century.⁸ Emil Kraepelin gave a noted scientific account of depression (*German: das manisch-depressive Irresein*) in his 1896 psychology encyclopedia "Psychiatrie".⁹

According to a survey, the Indian pharmaceutical market is 3rd in volume and 13th in value in the world. Branded generic drugs market is 70-80% in India. Even though production is more in India, still all people do not get.

Medicines because of high cost.⁷ In Indian pharmaceutical market there is a huge number of formulations of antidepressant drugs, and the same formulations are sold under different brands.⁸ Prices of drugs are kept at high by manufacturing company and it makes the drug less affordable for poor people.⁹ Pharmaco-economics plays an important role in practice of medicine in developing countries. Majority of healthcare expenditures are paid by the population (67%-70%), whereas the government accounts for only 30%-33%. The compliance to treatment by the patient is significantly dependent on the cost of the prescribed medicines.^{7,8}

Antidepressant drugs are available in many different brands and costs of all brands are different. Patients of depression have to take the antidepressant drug for a longer duration. If the cost of a drug is high, the patient has to pay more money for complete treatment. It can result in noncompliance and treatment failure.⁹ Lack of knowledge about the cost of various brands of different antidepressant drugs can lead to difficulties in prescribing the same effective treatment regime at low cost for the patient. So this study was designed to evaluate the cost of antidepressant drugs of different generic classes and different brand names and to analyze price variation among various antidepressant drugs available in India.

The present study was performed to evaluate the cost effectiveness of various drugs prescribed for depression at a rural teaching hospital.

1.1. Objective of the present study

1. To devise a well approved strategy while prescribing the drugs so as to lessen the burden on low socioeconomic group patients without posing additional burden on the teaching hospital of a rural background.
2. It also aims at propagating combination therapies for better patient outcomes.

2. Materials and Methods

A cross sectional study was performed by collecting the data from the outdoor patient department of the Psychiatric department. Patients of all ages and both sexes were included in the study. Indoor patients, referred patients

and as well as patients suffering from concomitant disease like hypertension, diabetes mellitus, epilepsy were excluded from the study. Cost of the prescribed antidepressants both single and fixed dose combinations of different companies were obtained from Current Index of Medical specialties (CIMS),

Issue- July-August 2015 and also verified from pharmacy.

The prescription pattern was evaluated for following parameters:

1. Completeness of data
2. Number of antidepressants prescribed
3. Most commonly prescribed antidepressant
4. Percentage of polytherapy
5. Average daily dose

The pharmacoeconomic evaluation comprised of:

1. Cost/10 tablets
2. Average cost of therapy

The data was analyzed using Microsoft excel.

3. Results

The study was carried for a period of two months. Total 250 cases was reviewed.

Depression (76%) was the most prevalent psychiatric ailment followed by anxiety (13%) and schizophrenia (11%). Figure 1

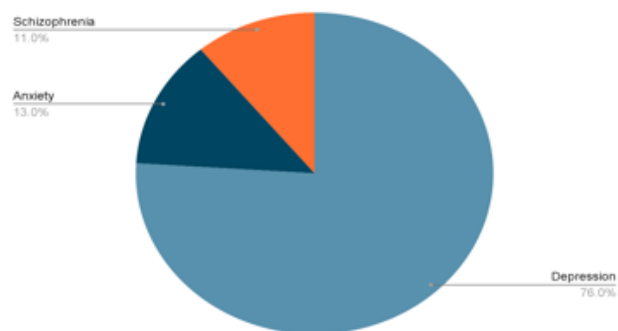


Fig. 1: Prevalence of psychiatric ailments

Depression was most prevalent in the age group of 21-40 years (38.4%). Females were more sufferers of depression (71.54%).

Fluoxetine was prescribed to most of the patients (45%) followed by citalopram (28%),

Table 1: The drugs prescribed were classified as follows

Class	Drug
Selective Serotonin reuptake inhibitor	Citalopram
	Escitalopram
	Fluoxetine
	Paroxetine
	Sertraline
Tricyclic Antidepressants	Amitriptyline
	Nortriptyline
	Clomipramine
	Imipramine

Sertraline(17%), Paroxetine(5%), Escitalopram(3%), Clonazepam(2%).Figure 2

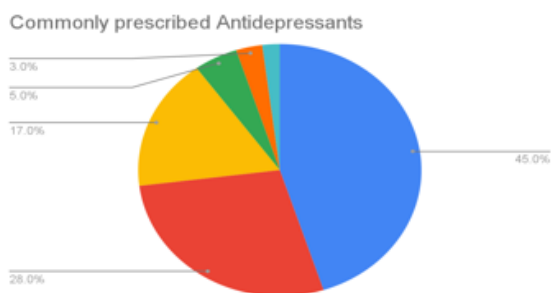


Fig. 2: Percentage of prescribed antidepressants

Fixed dose combination most commonly prescribed was of Escitalopram and Clonazepam 45%.Figure 3

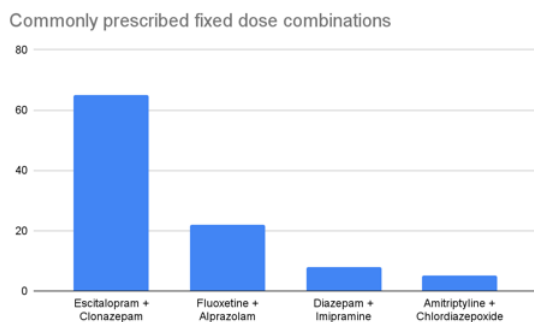


Fig. 3: Percentage of prescribed fixed dose combinations

Out of the 250 patients antidepressant monotherapy was found in 76% patients. The cost of therapy was taken out by prescribing the drugs for a period of 30days on an average.The most expensive therapy was Paroxetine(Rs 221), the cheapest was Imipramine(Rs 21).Tables 2 and 3.

4. Discussion

In our study it was observed that Depression was the most diagnosed psychiatric condition at the opd(76%).Majority

of the patients reported were females(71.54%) in the age group of 21-40years(38.54%) which is in accordance with the study of Bohra, Neena et al. “Depression in women in Indian context.” *Indian journal of psychiatry* vol. 57, Suppl 2 (2015): S239-45. doi:10.4103/0019-5545.161485

Rational use of medicines is that the patient receives medication appropriate to the clinical need, at the proper dose, for the proper duration and at the lowest cost. So for rational prescribing, prescriber should also consider the cost while writing prescription along with other criteria of rational use of the drug.¹⁰

Cost of the drug is an important factor and prescribers are not aware of all different brands of drugs available and their prices. So studies about comparing the cost of a different class of drugs and their different brands can provide some knowledge to prescriber about the cost of different drugs in the specific disease condition.93.2% of prescriptions had antidepressants included in them.3.6% of prescriptions were those having two or more drugs.

This survey revealed fluoxetine was the most popular antidepressant as analogous to the study Rossi, Andrea et al. “Fluoxetine: a review on evidence based medicine.” *Annals of general hospital psychiatry* vol. 3,1 2. 12 Feb. 2004, doi:10.1186/1475-2832-3-2. In the study by Dunlop, Boadie W, and Paula G Davis. “Combination treatment with benzodiazepines and SSRIs for comorbid anxiety and depression: a review.” They reported that the combination of benzodiazepines with SSRIs was beneficial for the outcomes which was also confirmed in our study.

As mentioned in the study by Melton ST, Kirkwood CK, Farrar TW, Brink DD, Carroll NV. Economic evaluation of paroxetine and imipramine in depressed outpatients. *Psychopharmacol Bull.* 1997;33(1):93-100. PMID: 9133757, the cost of Paroxetine therapy was most expensive while that of Imipramine was cheapest,the same results were found in our study.

5. Conclusion

Economic evaluations of treatments for depression should, where possible and appropriate, take place alongside pragmatic studies of the effectiveness of interventions, have adequate power to demonstrate significant differences in cost and cost-effectiveness, use universal outcomes such as quality-of-life scales alongside the usual condition-specific scales so that different interventions can be compared and take a wide view of costs, given the importance of productivity losses in depression.

6. Source of funding

None.

Table 2: Analysis of prescription of antidepressants

Total number of Prescriptions analyzed	250
Incomplete data	17
No antidepressant prescribed	03
Prescriptions having antidepressants	233
Prescriptions having two or more drugs	09

Table 3: Cost of drugs prescribed in the study

Drugs	Dose (mg)	Cost/10 tablets(Rs)	Average daily dose(mg)	Average cost of therapy(Rs)
Fluoxetine	20, 60	38.5, 102	40	121.5
Citalopram	5,10	50, 100	15	125
Sertraline	50,100	55, 86	75	113.5
Paroxetine	10, 20	78, 182	10	221
Escitalopram	5,10	25.5, 87.5	15	100.25
Amitriptyline	25, 75	36, 60	100	66
Imipramine	25,75	10, 22	50	21
Clonazepam	0.25, 0.5	15, 34	0.75	32

7. Conflict of Interest

None.

References

1. UN health agency reports depression now 'leading cause of disability worldwide; 2017. Available from: <https://news.un.org/en/story/2017/02/552062-un-health-agency-reports-depression-now-leading-cause-disability-worldwide>.
2. Solomon A. Opinion | Our Great Depression". The New York Times; 2006. Available from: <https://www.nytimes.com/2006/11/17/opinion/17solomon.html>.
3. Depression is leading cause of disability worldwide, says WHO study". The Guardian. ISSN 0261-3077; 2017. Available from: <https://www.theguardian.com/society/2017/mar/31/depression-is-leading-cause-of-disability-worldwide-says-who-study>.
4. Reynolds CF, Patel V. Screening for depression: the global mental health context. *World Psychiatry*. 2017;16(3):316–7.
5. Wang PS, Gaxiola SA, Angermeyer AJ, Borges MC, Bromet G. Use of mental health services for anxiety, mood, and substance disorders in 17 countries in the WHO world mental health surveys. *Lancet*. 2007;370(9590):841–50.
6. Archived from the original on 26; 2019. Available from: www.who.int.
7. WHO. Stigma and Discrimination"; 2021. Available from: www.psychiatry.org.
8. Patel V, Weobong B, Nadkarni A, Weiss HA, Anand A, Naik S. The effectiveness and cost-effectiveness of lay counsellor-

delivered psychological treatments for harmful and dependent drinking and moderate to severe depression in primary care in India: PREMIUM study protocol for randomized controlled trials. *Trials*. 2014;15(1):101.

9. Weobong B, Nadkarni A, Weiss HA. The effectiveness and cost-effectiveness of lay counsellor-delivered psychological treatments for harmful and dependent drinking and moderate to severe depression in primary care in India: PREMIUM study protocol for randomized controlled trials. *Trials*. 2014;15(1):101.
10. Graumann CF. The historical vicissitudes of mental diseases: Their character and treatment; 1996. p. 204–216.

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