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COST VARIATION ANALYSIS OF BENZODIAZEPINES AVAILABLE IN THE INDIAN MARKET: AN OBSERVATIONAL STUDY

Pharma

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ABSTRACT

Introduction Anxiety disorders are considered as most frequently occurring category of mental disorder in the general population. Prevalence of anxiety disorder is around 10-25%. The prevalence of chronic insomnia in general population is 30%. Benzodiazepines are commonly used for panic disorder, generalized anxiety disorder, insomnia, and seizures. **Objective:** To analyse the cost ratio and percentage cost variation among various brands of Benzodiazepines available in the Indian market. **Methodology** The cost of oral Benzodiazepines [in (Indian Rupees)] manufactured by different pharmaceutical companies in India was collected from the Jan aushadhi sugam app, India drug index and 1mg app. The difference in the maximum and minimum price in (per 10 tablets of the same strength) was noted and the percentage cost variation was calculated. Data was analysed and represented using descriptive statistics. **Results** Percentage cost variation was highest (26,205%) for Alprazolam 1mg and lowest (138.5%) for Diazepam 2mg. **Conclusion** This study provides awareness about cost variation among different brands of Benzodiazepines used in the treatment of insomnia and anxiety. Wide variation can cause dissatisfaction, poor compliance and economic burden among patients.

KEYWORDS

Anxiety, Insomnia, Oral Benzodiazepines, percentage cost variation

INTRODUCTION

Anxiety disorders are considered the most common type of mental disorder in the general population. The prevalence of anxiety disorder is around 10-25%[1] Prevalence of chronic insomnia in the general population is 30%. People with insomnia and anxiety suffer from persistent sleep disturbances, which can lead to a higher risk of accidents, work absenteeism, lower job performance, and decreased quality of life.[2]

Beginning with chlordiazepoxide in 1960, benzodiazepines have been used extensively for the treatment of anxiety and related disorders.[3] Benzodiazepines are commonly used for panic disorder, generalized anxiety disorder, insomnia, seizures, and also in emergency like status epilepticus.[4] Though anxiety disorders are usually treated with Selective Serotonin Reuptake Inhibitors or Tricyclic Antidepressants, benzodiazepines are used to reduce anxiety and help the patients sleep better in the early phase of treatment.[5]

BZDs act by enhancing presynaptic/postsynaptic inhibition through a specific BZD receptor which is an integral part of the GABAA receptor–Cl^- channel complex.[6] The duration of action following a single dose depends upon the rate and extent of drug distribution and of metabolic degradation by hepatic microsomal enzymes.[7]

The cost of these drugs influences the patient compliance with treatment and thereby the clinical outcome significantly. Hence this study aims to make the prescribers aware of the different brands of oral Benzodiazepines available in the market & their cost variations so that they can prescribe appropriately.

OBJECTIVE

To analyse the cost ratio and percentage cost variation among various brands of Benzodiazepines available in the Indian market.

MATERIALS AND METHODS

The study was conducted in the Department of Pharmacology, Bangalore Medical College and Research Institute, Bengaluru, Karnataka, India. As the current study is based on available published data and did not involve any human or animal subjects, it was exempted from ethical review.

The cost of oral Benzodiazepines [in (Indian Rupees)] manufactured by different pharmaceutical companies in India was collected from the Jan Aushadhi Sugam app, India drug index, and 1mg app. The difference in the maximum and minimum price in □ (per 10 tablets of the same strength) was noted and the percentage cost variation was calculated.

Assessment tool – Cost ratio and percentage cost variation were derived from the above data using the formula

1) Cost ratio = $\frac{\text{Maximum cost}}{\text{Minimum cost}}$

2) Percentage cost variation = $\frac{\text{Maximum cost} - \text{Minimum cost}}{\text{Minimum cost}} \times 100$

Data was analysed and represented using descriptive statistics.

RESULTS

The prices of various brands of Benzodiazepines available in the Indian market were analyzed.

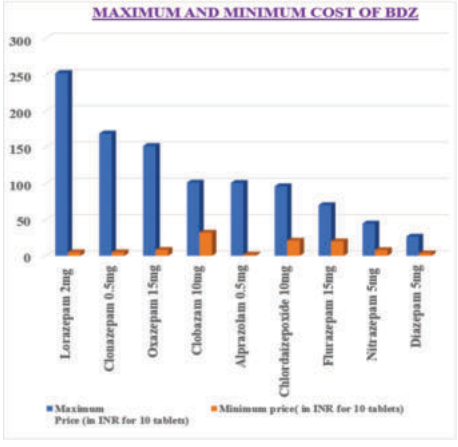

Figure 1 shows the drug name, dose, maximum and minimum price of various brands of benzodiazepines

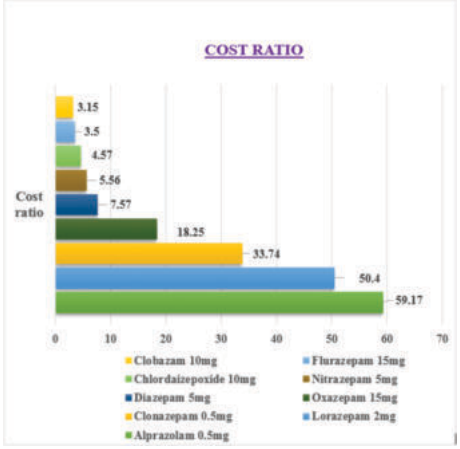

Figure 2 - shows the cost ratio difference between benzodiazepines

The cost ratio difference was highest (59.17%) for Alprazolam 0.5mg and lowest (3.15%) for Clobazam 2mg.

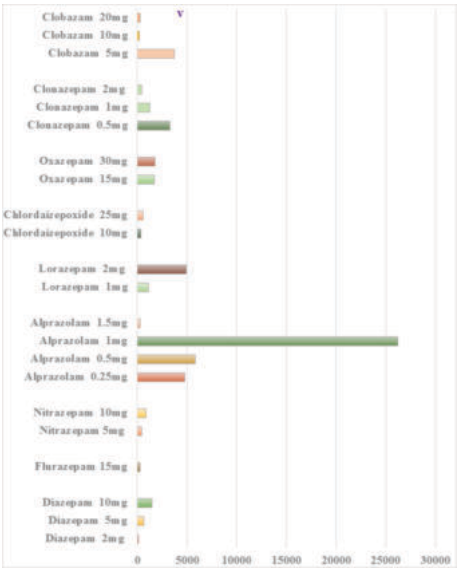

Figure 3 - Shows the Percentage cost variation of Benzodiazepines

Percentage cost variation was highest (26,205%) for Alprazolam 1mg and lowest (138.5%) for Diazepam 2mg.

DISCUSSION

In daily life, people are under unprecedented pressure and can experience severe psychological problems, such as depression, anxiety, and insomnia.[8,9] Chronic insomnia is a state marker of both anxiety disorder and depression.[10] If insomnia is not treated at the proper time, it leads to the development of anxiety and depression which further worsens the patient's quality of life.

Our study has shown that the prices of various brands of benzodiazepines available in the Indian market show high variation in terms of cost. This huge variation warrants the need for the promotion of more generic drugs and the need for awareness of the price variation among the prescribers. There was no previous study done on the cost variation analysis of Benzodiazepines, the results cannot compare with other studies.

Out of 9 Benzodiazepines available in the Indian market, only 3 Benzodiazepines (Diazepam, Clobazam, Lorazepam).[11] If the drugs are high priced, it can reduce patient compliance particularly for people with chronic illnesses and low income.[12]

The findings of our study will help in understanding the cost variation among different brands of benzodiazepines which leads to more rational utilization and helps constrain healthcare expenditures in India. The limitation of our study is that the efficacy and safety parameters of drugs were not compared and also our study only measures the price of the drug, but there are several other direct and indirect costs that are not included as a part of our study. Further studies in the same direction are needed.

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