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A STUDY ON THE PRESCRIBING PATTERN OF BENZODIAZEPINES IN A TERTIARY CARE HOSPITAL: AN OBSERVATIONAL STUDY

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ABSTRACT

The study was carried out to assess the utilization pattern of benzodiazepines in a tertiary care hospital in Calicut. Retrospective observational study method was followed and conducted for a period of 6 months from November 2017 to April 2018. Drug therapy details in medication charts of the patients treated with benzodiazepines was analyzed to observe the prescribing pattern of benzodiazepines in the study site. A total of 200 prescriptions were analyzed during the study period. The most number of benzodiazepines were prescribed for females (58%). Majority to benzodiazepine containing prescriptions were found in case of the age group of 36-60 years (41.5%). The most common clinical condition treated with benzodiazepines was anxiety (45%) and sleep disorder 69 (31.36%). The majority of patients were prescribed with clonazepam 114 (51.81%), long acting benzodiazepine. Among the total prescriptions analyzed 90% of the patients were prescribed with one type of benzodiazepines for a single indication and 10% patients were prescribed with more than one type of benzodiazepines in a single prescription for different indications. For 16 patients benzodiazepine dual therapy was followed for the indications such as anxiety and seizures. The study found that the prescribing patterns of benzodiazepines for the various indications observed in the study were

in accordance with the NICE guideline and Maudsley guideline. The study concluded that the benzodiazepines were rationally prescribed by the medical practitioners in the study site.

KEYWORDS: Prescribing Pattern, Benzodiazepine, NICE Guideline, Maudsley Guideline.

INTRODUCTION

Prescription pattern monitoring studies focuses on prescribing, dispensing and administering of drugs. The process promotes appropriate use of monitored drugs and reduction of abuse or misuse of monitored drugs. It guides and supports prescribers, dispensers and the general public on appropriate use of drug/s, and collaborates and develops working relationship with other key organizations. It explains the extent and profile of drug use, trends, quality of drugs, and compliance with regional, state or national guidelines like standard treatment guidelines, usage of drugs from essential medicine list and use of generic drugs and promotes the rational use of drugs. Prescribing patterns has been observed to be widely varying in accord to the geographical areas and is widely influenced by patient characteristics, disease prevalence, cultural and environmental factors, socioeconomic status, availability of newer drugs and prescribing habit of physicians.[1,2]

Benzodiazepines are drugs used for psychiatric and non-psychiatric indications such as anxiety, insomnia, treatment of delirium tremens and other withdrawal symptoms, pre-operative sedation, epileptic fits and relief of muscle spasticity. The common adverse effects associated with benzodiazepines are sedation, anterograde amnesia and rebound insomnia. The occurrence of dependence and withdrawal symptoms is directly dependent on the duration of its use.[3] Benzodiazepines are listed as DEA (Drug Enforcement Administration) Schedule IV controlled substances. Studies reviewed has shown a high prevalence of benzodiazepines use in the general population ranging from 6.2% in developed countries and up to 36% in developing countries.[4]

As a result of the irrational use there could be an increased risk of developing adverse drug reactions such as motor disturbances, unwanted sedation and reduced coordination. Limited data are present on the rates and pattern of use of benzodiazepines in India. The present study was done to assess the pattern of benzodiazepines use in the prescriptions for the clinical conditions in various specialties and observe the rationality based on the extend of adherence to the standard guidelines.

MATERIALS AND METHODS

The study was a retrospective observational study design carried out at PVS Hospital (P) Ltd, a tertiary care hospital in Calicut for a period of six months from November 2017 to April 2018. The study was conducted after the approval from the Institutional Ethics Committee of the hospital. Data were collected from the benzodiazepines containing prescriptions from inpatient and outpatient department from January 2017 to December 2017 (retrospective). The medication charts were collected from the medical record room and the appropriate data were entered into the data collection form. Details of drugs recorded included name of drug, dosage, frequency, route of administration, duration of treatment and number of drugs per prescription. Indication for prescribing benzodiazepines and classification into long-acting (half-life more than 24 hours), short-acting (half-life less than 10 hours) and intermediate-acting (half-life 10 – 24 hours) were done. Pre-anaesthetic patients, patients who are pregnant and lactating mothers were excluded from the study. Maudsley and NICE (The National Institute for Health and Care Excellence) guideline were used as the standards for checking the rationality of benzodiazepine prescribing.

RESULTS AND DISCUSSION

A total of 200 prescriptions from inpatient and outpatient department were collected from the medical record room. The following were the findings made during the study.

1. Demographic details

Among the 200 prescriptions analyzed 84 (42%) prescriptions were for males and 116 (58%) for females. The most number of benzodiazepines were prescribed for the age group of 36-60 years- middle aged (41.5%).

Table No. 1: Demographic characteristics of the prescriptions studied.

Sl. No.	Characteristics	Subclass	No. of patients	Percentage
1.	Gender	Male	84	42
		Female	116	58
2.	Age (yrs)	< 2	9	4.5
		2-12	10	5
		13-18	1	0.5
		19-35	20	10
		36-60	83	41.5
		> 60	77	38.5

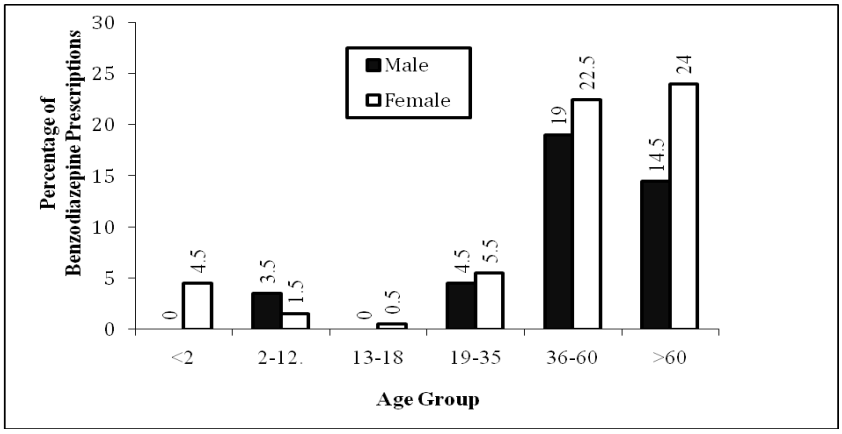

Fig. No. 1: Demographic characteristics based on prescribing of benzodiazepines.

2. Prescribing Pattern of Benzodiazepines: The most commonly used benzodiazepines were clonazepam (51.8%), lorazepam (18.1%), followed by alprazolam (15.9%), and the least commonly used were chlordiazepoxide (5.5%), clobazam (5.5%), nitrazepam (1.8%), and diazepam (1.4%). Long-acting benzodiazepines were mostly prescribed (64.2%) followed by intermediate-acting (18.1%) and short-acting (17.7%).

3. Distribution pattern of patients according to clinical condition: The most common clinical conditions of patients treated with benzodiazepines was anxiety disorder 99 (45%) and the drug of choice were clonazepam, diazepam, lorazepam and alprazolam followed by sleep disturbances 69 (31.4%), and least observed clinical condition was depression 7 (3.2%). The details of various clinical conditions for benzodiazepines are prescribed are summarized in table-1.

Table No. 2: Indications for prescribing benzodiazepines.

Drug	Indications					Total
	Anxiety	Seizure	Alcohol withdrawal	Sleep disorder	Depression	
Clonazepam (Long-acting)	50 (49.5%)	2 (6.06%)	-	56 (81.15%)	6 (85.71%)	114 (51.8%)
Clobazam (Long-acting)	-	12 (36.36%)	-	-	-	12 (5.5%)
Diazepam (Long-acting)	1 (0.9%)	1 (3.21%)	-	1 (1.5%)	-	3 (1.4%)
Chlordiaxepoxide (Long-acting)	-	-	12 (100%)	-	-	12 (5.5%)
Lorazepam (Intermediate acting)	15 (14.9%)	18 (58.1%)	-	6 (8.8%)	1 (14.3%)	40 (18.1%)
Alprazolam (Short-acting)	33 (32.7%)	-	-	2 (2.8%)	-	35 (15.9%)
Nitrazepam (Short-acting)	-	-	-	4 (5.7%)	-	4 (1.8%)
Total	99 (45%)	33 (15%)	12 (5.45%)	69 (31.36%)	7 (3.18%)	220

4. Monotherapy and Dual therapy with Benzodiazepines: 180 (90%) patients were prescribed with one type of benzodiazepines and 20 (10%) patients were prescribed with more than one type of benzodiazepines in a single prescription for different indications. About 16 patients were undergone benzodiazepine dual therapy, 25% were treated with clonazepam along with lorazepam for anxiety and 75% were treated with clobazam along with lorazepam for seizures.

5. Concordance with Standard Guidelines: The prescription pattern of benzodiazepines were compared with that of Maudsley and NICE (The National Institute for Health and Care Excellence) guideline. The prescription patterns of benzodiazepines for the indications were found to be in accordance with the guidelines.

DISCUSSION

This study assessed the prescription pattern of benzodiazepines in a tertiary care hospital. Among benzodiazepines user's females were prescribed with more number of benzodiazepines when compared to the males. Findings showed similarity to the results of Wijdan H Ramadan et. al., and Mehrunissa Kazimet et al.[4,7] Facts that might explain this finding could be the higher prevalence of anxiety among females.[4] In the present study benzodiazepines were mostly prescribed to the middle aged adults (36-60 years). Chlordiazepoxide, Lorazepam and Nitrazepam were mostly prescribed for the indications such as alcohol withdrawal, anxiety and sleep disorder to middle aged adults. The most commonly prescribed benzodiazepines were clonazepam which is long-acting benzodiazepines with relatively rapid onset of action. Long-acting benzodiazepines were mostly prescribed in our study, there is a higher rate of withdrawal symptoms among users of short-acting benzodiazepines.[7] According to the World Health Organization, anxiety is the most prevalent condition were benzodiazepines are prescribed.[4] The present showed the same findings that anxiety was the common indication for which benzodiazepine was prescribed, 45% of patients were taking benzodiazepines for anxiety and 31.4% for sleep disturbance. The present study found that medical practitioner prescribes the benzodiazepines as per Maudsley and NICE (The National Institute for Health and Care Excellence) guideline and prescribe the drug at the lowest therapeutic dose for the shortest duration of time.

CONCLUSION

Benzodiazepines are most widely and frequently used psychoactive substances in the world. They have an important role in medicine and are used in numerous conditions like anxiety

sleep disorder, mania, muscle relaxation, seizures. Development of tolerance and dependence is a major issue with these drugs due to irrational sale of such drugs. Developing countries are more likely to be affected by misuse and dependence of drugs like benzodiazepines. As a result of this irrational use, there is an increased risk of developing adverse drug reactions such as motor disturbances, unwanted sedation, and reduced coordination. Understanding the pattern of benzodiazepines use in tertiary care hospital is essential for reduction of its misuse and abuse. Our study has shown that prescribing pattern of benzodiazepines by medical practitioners in our study site was in accordance with the guidelines and satisfactory. Extension of the study in future into the community set-up and follow-ups of the cases might give a more apt descriptive knowledge.

DECLARATIONS

Ethical Committee Approval

Approved by the Institutional Ethics Committee, PVS Hospital (P) LTD, Calicut, Kerala.

Consent to publish

Permission was obtained from the hospital authority to publish this work.

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Authors' Contributions

SS was the convener and was involved in the study design and manuscript writing.
KS, IT, NG and DB was involved with the data collection and analysis.
GB, AG and SRM were advisories.
All the authors have reviewed the manuscript before it submission.

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CONFLICT OF INTEREST

All authors declare that there is no conflict of interest regarding the publication of this manuscript and it is not published elsewhere.

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