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Assessment of Prescribing Pattern of Anti-diabetic Drugs in a Tertiary Care Teaching Hospital

S. Rahul[1], Ajmal Abdullsalam[2], H. Doddayya[3]

[1]Assistant Professor, N.E.T Pharmacy College
[2]Student, N.E.T Pharmacy College
[3]Principal, N.E.T Pharmacy College

ABSTRACT

Background*:* There is increasing importance of PPMS because of a boost in marketing of new drugs, variations in pattern of prescribing and consumption of drugs, growing concern about delayed adverse effects, and cost of drugs and volume of prescription. Diabetes mellitus is a pandemic disease that has struck each corner of the world. According to the Indian Council of Medical Research – Indian study (ICMR), a national diabetes study, India currently has 62.4 million people with diabetes. This is set to increase to over 100 million by 2030.

Objective: The aim of this study is to evaluate the prescribing pattern of drugs used to treat Diabetes Mellitus in a tertiary care teaching hospital.

Methodology: A hospital based retrospective cross-sectional observational study was performed in Navodaya Medical College & Hospital, Raichur over a period of 6 months from May 2022 to October 2022. The study was performed among 80 patients having diabetes mellitus and associated comorbidities that satisfy the study criteria.

Results: In this study, among 80 cases of DM diseases assessed, the incidence of diabetes mellitus is common in females (51.25%) than males (48.75%). Most frequently prescribed combination was the insulin, metformin (25%) followed by metformin, glimepiride (12.5%). Among three drug combination was most prescribed metformin, glipizide, and insulin (10%)

Conclusion: Diabetes should be managed properly to enhance the quality of life of patients. metformin is the most common choice of oral antidiabetic drugs, but the use of insulin preparation treatment of type 2 DM is increasing continuously. Metformin is the most prescribed antidiabetic drugs in monotherapy.

Keywords: Prescription pattern monitoring studies, drug utilization studies, Diabetes mellitus.

INTRODUCTION

Prescription pattern monitoring studies (PPMS) are drug utilization studies with the focus on prescribing, dispensing, and administering of drugs.[1] They promote appropriate use of monitored drugs and reduction of abuse or misuse of monitored drugs. PPMS also guide and support prescribers, dispensers, and the general public on appropriate use of drugs, collaborate and develop working relationship with other key organizations to achieve a rational use of drugs.[2] Prescription Patterns explain 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.[3] There is increasing importance of PPMS because of a boost in marketing of new drugs, variations in pattern of prescribing and consumption of drugs, growing concern about delayed adverse effects, and cost of drugs and volume of prescription.[4] The aim of PPMS is to facilitate the rational use of drugs in a population. Irrational use of medicines is a major problem worldwide.[5] The term Diabetes mellitus (DM) refers to a group of metabolic diseases characterized by increased blood glucose level above the normal average as a result of defect in insulin secretion; insulin action; or both. Chronic Hyperglycaemia is associated with long-term damage, dysfunction, or failure of various organs, especially the eyes; kidneys, nerves, heart, and blood vessels are the main are the organs that get damaged.[6] Diabetes mellitus is a major public health problem due to its prevalence and enormous financial burden associated with it.[7] In India the prevalence of diabetes mellitus is rising steeply which is about 11.8%.[8]

Diabetes mellitus is the number one risk factor for cardiovascular disease, stroke, neuropathy, nephropathy, and obesity. [9]

MATERIALS AND METHODS

A retrospective cross-sectional study was carried out for 6 months in Navodaya Medical College Hospital & Research Centre, Raichur. 80 participants were collected. Data was pooled and analysed. Ethical permission to conduct the study was granted by the institutional ethics committee.

Study population:

Data were collected from case sheets using a specially designed data entry form from patients who are admitted in the hospital in medical record department (MRD) during the study period. Participants with both males and females and all age patients are included in the study.

Analysis of data: The data were analysed and monitored for the following variables:

- Patient demographics
- Medication chart of the patient
- Prescribing pattern of anti- diabetic drugs therapy

Data was collected and analysed using Microsoft excel. Results were presented as tables or expressed as percentages and frequency distribution according to type of information collected.

RESULTS

Total 80 patients who met the inclusion criteria were recruited in the study by calculating the sample size based on the prevalence method. Among 80 cases collected, the patients most belonged to 51 – 60 and 61 – 70 age groups. This is depicted in Table1.

Table No. 1- Distribution of participants according to age group (n=80)

Age in years	No. of patients	Percentage (%)
1-10	2	2.5%
11-20	2	2.5%
21-30	8	10%
31-40	10	12.5%

41-50	14	17.5%
51-60	24	30%
61-70	18	22.5%
71-80	2	2.5%

Distribution of the diabetes patients according to drug prescription pattern:

Among the 80 cases collected, majority of patients 36 (45%) were 2 drug combinations followed by 24 (30%) monotherapies. This is depicted in Table 2.

Table No. 2- Distribution of the diabetes patients according to drug prescription pattern

Drugs	No. of patients (n=80)	Percentage (%)
Monotherapy	24	30%
2 Drug combination	36	45%
3 Drug combination	20	25%

Table No. 3- Prescription pattern of anti-diabetic drug therapy (Monotherapy)

Among the monotherapies was most prescribed metformin 12 (15%) followed by insulin 8 (10%). This is presented in Table 3

Drugs	No. of patients (n=24)	Percentage (%)
Insulin	8	10%
Metformin	12	15%
Glimepiride	4	5%

Prescription pattern of anti-diabetic drug therapy (Two drug therapy):

Among two drug combinations therapy was most prescribed metformin + insulin 20 (25%) followed by metformin + glimepiride 10 (12.5%). This is depicted in Table 4.

Table No. 4- Prescription pattern of anti-diabetic drug therapy (Two drug therapy)

Drugs	No. of patients(n=36)	Percentage (%)
Metformin + Glimepiride	10	12.5%
Metformin + Insulin	20	25%
Metformin + Sitagliptin	3	3.75%
Metformin + Voglibose	2	2.5%
Glipizide + Insulin	1	1.25%

Prescription pattern of anti-diabetic drug therapy (Three drug therapy)

Among 3 drug combinations therapy was most prescribed metformin + glipizide+ insulin 8(10%) followed by metformin+ glimepiride pioglitazone 5 (6.25%). This is shown Table 5.

Table No. 5- Prescription pattern of anti-diabetic drug therapy (Three drug therapy)

Drugs	No. of patients(n=20)	Percentage (%)
Metformin + Glipizide +Insulin	8	10%

Metformin + Glimepiride + pioglitazone	5	6.25%
Metformin + Glipizide + Voglibose	2	2.5%
Metformin + Saxagliptin + Insulin	3	3.75%
Metformin + Teneligliptin + Voglibose	1	1.25%
Metformin + Pioglitazone + Insulin	1	1.25%

DISCUSSION

Diabetes mellitus is a chronic disorder and leading cause of death worldwide. Its prevalence is continuously increasing in developed countries and it requires a lifelong treatment.[10] There are many classes of drugs were used widely for the treatment of diabetes and in the initial stages.[11] Single oral agents can be used to control the glucose level, but in later stages combination therapy may be needed for better glycaemic control and prevention of micro and macro vascular complication.[12]

The study found a higher incidence of diabetes among elderly patients and more prevalent in the age group 51-60(30%) and followed by 61-70(22.5%).

The proportion of anti-diabetic medications in the prescriptions under study was assorted and it was observed that monotherapy, two drug therapy, three drug therapy were prescribed for DM.

Metformin and Insulin is an unavoidable drug of choice for diabetic population in our study. This line with the study conducted by Mohd H et all (2016), insulin was highly preferred over oral hypoglycaemic agents to control the glycaemic level, and metformin accounted for the most prescribed OHAs in the second generation of sulfonylureas class glimepiride were most prescribed.

Diabetes should be managed properly to enhance the quality of life of patients. Metformin is the most common choice of oral antidiabetic drugs but the use insulin preparations in the treatment of type 2 DM is increasing continuously. Among the monotherapy was most prescribed metformin 12(15%) followed by insulin 8(10%). The prescribing trends also appears to be shifting towards combination therapies to improve the quality and efficiency of the life. Among two drug combinations therapy was most prescribed metformin + insulin 20(25%) followed by metformin + glimepiride 10(12.5%). Among three drug combinations therapy was most prescribed metformin + glipizide + insulin 8 (10%) followed by metformin + glimepiride + pioglitazone 5 (6.25%).

CONCLUSION

The prescribing trends also appears to be shifting towards combination therapy. In combination therapy most frequently prescribed metformin, insulin and followed by metformin, glimepiride. among three drug combination most prescribed metformin, glipizide and insulin and followed by metformin, glimepiride, and pioglitazone.[13] To maintain the clinical standard of prescribing, a constant effort is mandatory for every physician to follow the guidelines recommended by various international bodies.[14]

The observations from the study will help us to formulate prescribing policies at our institution. Similar studies can also be done at primary and secondary health care centres to get a clear picture about antidiabetic drug prescribing patterns in this part of the country at large. [15]

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REFERENCES

1. Pushpa VH, Nagesh HN, Ramesh HN. Study on prescribing pattern and rational use of antidiabetic drugs in elderly patients with type 2 diabetes mellitus in tertiary care hospital. Natl J Physio Pharm Pharmacol. 2020; 10(10): 825-828.
2. Mohammed Haghighatpanah, GirshThunga, Ateendra Jha, Survulivelrajan Mallaya samy. Study on Prescribing pattern of anti- diabetic drugs among type-2 diabetes patients with complication in south Indian teaching hospital. Asian J Pharm.Clin Res 2016;(4) 194-197.
3. Sahu G, Gohain S, Brahma A. Drug utilization pattern of anti-diabetic drugs among indoor diabetic patients in a tertiary care teaching hospital in Jorhat. Biomedicine.2021;40(1):512-515.
4. Ramachandran G, Rohith V, Isabella Topno. Evaluation of prescribing pattern of anti-diabetic drugs using WHO prescribing indicators in a tertiary care hospital in Puducherry: A cross-sectional study. J.Pharm.Innov. 2015;4(5):76-80.
5. Majid Davari, Yahya Bayazidi, Alireza Esteghamati, Bagher Larijani, Abbas Kebriaeezadh. The prescription pattern of anti- diabetic medication and glycaemic control in type 2 diabetes in Iran; A patient-level study. ISSN.2019;(2), 57-65.
6. Agarwal AA, Jadhav PR, Deshmukh YA. Prescribing pattern and efficacy of anti-diabetic drugs in maintaining optimal glycaemic levels in diabetic patients. J Basic Clin Pharma. 2014; 5(1):79-83.
7. Prasanna Kumar, Seshadri K, Aravind. Evaluation of prescribing pattern of anti-diabetic drugs in type 2 diabetes mellitus at a tertiary care hospital, Chennai 2021(2):81-92.
8. Chow A, Sen N, Banik S. Prescribing pattern of antidiabetic drugs in type 2 diabetic patients of Noakhali city in Bangladesh. Marmara Pharm J. 2017; 21(4): 1010-14.
9. Das AK, Dutta A, Maity A, Sarkar DK,Nandy M, Ghosh j. Prescribing pattern of antidiabetic drugs in type 2 diabetes mellitus at a tertiary care hospital in Eastern India. Int J Community Med Public Health. 2021; 8:721-726.
10. Mahmood M, Reddy RC, Lahari SJR, Fatima S, Shindhe P, Reddy SA. Prescription Pattern analysis of antidiabetic drugs in diabetes mellitus and associated comorbidities. Clin Invest. 2017;8(1):5-12.
11. Muhas C, Salim CM, Mufeeda TP, Shamna M. Prescription pattern of anti-diabetic drugs in a rural area of South Malabar region of Kerala, South India. Int J Res Med Sci. 2018;7(6):4082-6.
12. Lalit Kumar, Dr. SK Gupta and Dr. Anupam Prakash. Prescribing pattern of antidiabetic drugs in type-2 diabetic patients. Pharma Innovation 2018;7(5):392-394.
13. Upadhyaya P, Goyal J, Abhijit K, Jain S, Seth V, et al. A systematic review of prescription pattern monitoring studies and their effectiveness in promoting rational use of medicines. Perspect Clin Res 2015;7(6):86-90.
14. Sora ML,Jane G, Kelly IQ,William AA, Brent LK, Manitoba care project. Examining trends in diabetes therapy prescribing patterns in Manitoba. Can J Diabetes.2006; 30(1):248-55.
15. Ofori-Asenso R, Agyeman AA. Irrational use of medicines—a summary of key concepts. Pharmacy. 2016; 4(4):35.