

A REVIEW ON PRESCRIPTION PATTERN ANALYSIS OF ANTIDIABETIC DRUGS

Patel Rutvi Narendrabhai^{1*}, Dr. Priyanka A. Rathod², Ms. Paridhi Vyas³

¹ M. Pharm Scholar

Shri Sarvajanic Pharmacy College, Nr. Arvind Baug,
Mehsana – 384001, India

² Associate Professor

Dr. Priyanka A. Rathod, M. Pharm., Ph.D.
Shri Sarvajanic Pharmacy College, Nr. Arvind Baug,
Mehsana – 384001, India

³ Assistant Professor

Ms. Paridhi Vyas, M. Pharm.
Shri Sarvajanic Pharmacy College, Nr. Arvind Baug,
Mehsana – 384001, India

Abstract

Diabetes mellitus is a chronic metabolic disorder characterized by persistent hyperglycemia due to defects in insulin secretion, insulin action, or both. The increasing prevalence of type 2 diabetes mellitus (T2DM) worldwide, especially in India, necessitates rational and evidence-based pharmacotherapy. Prescription pattern analysis plays a crucial role in evaluating drug utilization, ensuring adherence to standard treatment guidelines, and promoting rational drug use. This review focuses on prescribing trends, commonly used antidiabetic drugs, monotherapy versus combination therapy, and adherence to guidelines such as ICMR and WHO prescribing indicators. Studies reveal that metformin remains the most commonly prescribed drug, with increasing use of combination therapy and newer agents like DPP-4 inhibitors and SGLT2 inhibitors. However, issues such as irrational combinations, low generic prescribing, and cost burden persist. Continuous prescription audits are essential to improve therapeutic outcomes and minimize complications in diabetic patients.

Keywords: Diabetes mellitus, Prescription pattern, Antidiabetic drugs, Drug utilization, Rational therapy, ICMR guidelines

1. Introduction

Diabetes mellitus (DM) is a major public health problem globally and in India, with rapidly increasing prevalence and associated morbidity and mortality. It is characterized by chronic hyperglycemia leading to long-term complications affecting the cardiovascular system, kidneys, nerves, and eyes.

India is considered the “diabetes capital of the world,” with millions affected, and the number is expected to rise significantly in the coming years.

Effective management of diabetes involves lifestyle modification along with pharmacological therapy. Various classes of antidiabetic drugs are available, including:

- Biguanides
- Sulfonylureas
- DPP-4 inhibitors
- SGLT2 inhibitors
- Thiazolidinediones
- Insulin

Prescription pattern analysis is an important tool to evaluate the rational use of these drugs and ensure adherence to standard treatment guidelines.

2. Need for Prescription Pattern Analysis

Prescription pattern studies help in:

- Assessing rational drug use
- Evaluating adherence to clinical guidelines
- Identifying trends in drug utilization
- Reducing medication errors and adverse effects
- Minimizing cost burden on patients

Drug utilization studies also help to improve healthcare quality and optimize therapeutic outcomes in diabetic patients.

3. Methodology of Prescription Pattern Studies

Prescription pattern analysis is conducted using observational study designs (prospective or retrospective). Data is collected from prescriptions and evaluated using WHO prescribing indicators such as average number of drugs per encounter, generic prescribing, and use of essential medicines. The results are compared with standard guidelines like ICMR and ADA.

4. Classification of Antidiabetic Drugs

Antidiabetic drugs are classified based on their mechanism of action:

4.1 Oral Hypoglycemic Agents (OHA)

- Biguanides (Metformin)
- Sulfonylureas (Glimepiride, Glibenclamide)
- Thiazolidinediones (Pioglitazone)
- Alpha-glucosidase inhibitors
- DPP-4 inhibitors (Sitagliptin, Vildagliptin)
- SGLT2 inhibitors (Empagliflozin, Dapagliflozin)

4.2 Injectable Agents

- Insulin (short-acting, intermediate, long-acting)
- GLP-1 receptor agonists

Among these, oral hypoglycemic agents are most commonly prescribed.

5. Trends in Prescription Pattern

5.1 Most Commonly Prescribed Drugs

- Metformin is the most frequently prescribed first-line drug
- Sulfonylureas are commonly used as second-line agents
- DPP-4 inhibitors and SGLT2 inhibitors are increasingly used

Studies show that metformin is prescribed in the majority of patients due to its efficacy, safety, and cost-effectiveness.

5.2 Monotherapy vs Combination Therapy

- Monotherapy is used in early stages of diabetes
- Combination therapy is more common in clinical practice

Recent studies indicate:

- Combination therapy is used in up to 85% of patients
- Dual or triple drug therapy is frequently prescribed

Combination therapy helps achieve better glycemic control and delays disease progression.

5.3 Insulin Utilization

- Insulin is used in advanced stages or uncontrolled diabetes
- Usage increases with duration of disease

Approximately 40–50% of patients may require insulin in later stages.

5.4 Fixed Dose Combinations (FDCs)

- Common combinations:
 - Metformin + Glimepiride
 - Metformin + DPP-4 inhibitors

These combinations improve patient compliance and glycemic control.

6. WHO Prescribing Indicators in Diabetes

Important findings from various studies:

- Average drugs per prescription: 2–5
- Generic prescribing: often low (5–60%)
- Essential drug use: moderate to high
- Injection use: mainly insulin

These indicators help evaluate rational drug use in clinical practice.

7. Challenges in Prescription Pattern

- Polypharmacy
- Irrational drug combinations
- Low generic prescribing
- High treatment cost
- Poor patient adherence
- Lack of individualized therapy

8. Role of Clinical Pharmacist

Clinical pharmacists play an important role in:

- Prescription auditing
- Identifying drug interactions
- Promoting rational drug use
- Patient counseling
- Improving adherence

9. Future Perspectives

- Increased use of newer agents (SGLT2 inhibitors, GLP-1 agonists)
- Personalized medicine approach
- Digital prescription monitoring
- Strengthening guideline-based therapy

10. Conclusion

Prescription pattern analysis of antidiabetic drugs is essential for evaluating rational drug use and improving patient outcomes. Metformin remains the cornerstone of therapy, while combination therapy is increasingly used in clinical practice. Although most prescriptions adhere to standard guidelines, there is still scope for improvement in generic prescribing and cost-effective therapy. Regular prescription audits and adherence to ICMR and WHO guidelines can significantly enhance diabetes management.

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