The Pharma Innovation Journal 2019; 8(7): 331-333

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.03
TPI 2019; 8(7): 331-333

www.thepharmajournal.com
Received: 25-05-2019
Accepted: 27-06-2019

S Sowmiya
Department of Pharmacy, Annamalai University, Chidambaram, Tamil Nadu, India

Uwase Ines Marie Aimee
Department of pharmacy, Annamalai University, Chidambaram, Tamil Nadu, India

M Senthilvelan
Department of Medicine, Rajah Muthiah Medical College Hospital, Chidambaram, Tamil Nadu, India

K Baburaj
Department of Medicine, Rajah Muthiah Medical College Hospital, Chidambaram, Tamil Nadu, India

A Elaiyaraja
Department of Medicine, Rajah Muthiah Medical College Hospital, Chidambaram, Tamil Nadu, India

Correspondence
S Sowmiya
Department of Pharmacy, Annamalai University, Chidambaram, Tamil Nadu, India

A study on drug utilization pattern of anti-diabetic drugs in tertiary care hospital

S Sowmiya, Uwase Ines Marie Aimee, M Senthilvelan, K Baburaj and A Elaiyaraja

Abstract
Background: Diabetes mellitus is one of the major public health problem in developing countries. Drug utilisation study of anti-diabetic drugs is important to promote rational drug use in patients with diabetes and to provide valuable information to the health-care team.
Aim & objective: To determine the drug utilisation pattern of anti-diabetic drugs in both outpatients and inpatients in tertiary care hospital.
Materials and methods: A retrospective observational study was carried out in 66 prescriptions of outpatient and 87 cases of inpatients containing anti diabetic drugs were randomly evaluated for prescribing pattern in type 2 diabetes mellitus using WHO indicators like drug class, dosage form, fixed dose combinations, generic and branded drugs and dugs from NLEM (National List Of Essential Medicines) 2018-2019
Results: Out of 66 out patients most of them were male (n=48) out of 87 inpatients most of them were male (n=77) Plasma acetone value positive for 8 patients which indicates ketoacidosis out of 66 out patients 11 patients are prescribed with insulin as a monotherapy, in double therapy metformin + glimepiride (n=22) were the most commonly prescribed one In triple therapy metformin+ glimepiride + insulin (n=12) were the most commonly prescribed one totally 11 ADRs are reported in inpatients. About 58% of patients are un adherence to the prescription.
Conclusion: In this study Biguanides and in sulins are prescribed mostly in outpatients and inpatients. DPP-4 inhibitor is the only newer drug prescribed in our hospital. Out of 153 patients 8 patients having diabetic ketoacidosis. According to Narenjo scale Out of 87 inpatients 11 ADRs are reported in both metformin and glimepiride. According to Morisky's instrument patient adherence is calculated based on questionnaires , about 58% patients are non adherent with anti-diabetic drugs in both in and out patients, this can be improved by patient counselling. Core indicators are recommended by WHO in type 2 diabetes mellitus patients shows that prescriptions are prescribed in generic than in proprietary names.

Keywords: Drug utilization pattern, anti-diabetic drugs, tertiary care hospital

Introduction
Diabetes is the most common endocrine disorder and usually occurs when there is deficiency or absence of insulin or rarely, impairment of insulin activity (insulin resistance). Varying degrees of disruption of carbohydrate and fat metabolism occur. The incidence of type 1 and especially, type 2 diabetes is increasing worldwide. In India there was about 60% of people were having diabetes mainly type 2, known as non-insulin dependent diabetes mellitus (NIDDM).
Insulin secretion may be below or above normal. Deficiency of glucose inside body cells occurs despite hyperglycaemia and a high insulin level. This may due to insulin resistance, i.e. changes in cell membranes that blocks the insulin line-assisted movement of glucose into cells. The incidence of diabetes is rising. Globally, it is estimated that 366 million people had diabetes in 2011 (approximately 8.3% of the world population, or 3 new cases every 10 seconds) it will surely reach 552 million by 2030. This global pandemic principally involves type 2 diabetes, the prevalence of which varies consider around the world, being associated with differences in genetic as well as environmental factors such as greater longevity, obesity, unsatisfactory diet, sedentary lifestyle, increasing urbanisation and economic development. Type 2 diabetes is now being absorbed in children and adolescents particularly in some ethnic groups such as Hispanics and Afro-Americans.

Materials and Methods
This retrospective observational study analyzed the anti diabetic drugs of type 2 diabetes

mellitus in both outpatient and inpatient of Rajah Muthiah medical hospital. During a period of 4 months from January 2019 – April 2019, a total of 66 prescriptions of outpatient and 87 cases of inpatients containing anti diabetic drugs were randomly evaluated for prescribing pattern in type 2 diabetes mellitus using WHO indicators like drug class, dosage form, fixed dose combinations, generic and branded drugs and dugs from NLEM 2018-2019.

Results:

Table 1: Demographic data

S.NO	Characteristic	No of patients	
		outpatient	Inpatient
1	Male	48 (73%)	77(88%)
2	Female	18 (27%)	10(12%)
	Total	66	87

Our demographic data was analysed out of 66 out patients most of them were male (n=48) than female (n=18) and out of 87 inpatients most of them were male (n=77) than female (n-10).

Table 2: Age Distribution

S. No	Age (years)	No of patients
1	40-50	64 (42%)
2	50_60	71(46%)
3	60-70	18 (12%)

Age distribution was analysed in both outpatient and inpatient. Out of 153 patients maximum number of patients with Type 2 diabetes mellitus come under 50-60 years

Table 3: Clinical Features

Clinical Features	No of patients	Percentage
HbA1c >9%	11	7.1%
Fasting blood sugar (mg/dl)		
100-200	62	40%
>200	91	59%
Post prandial blood sugar (mg/dl)		
140-200	68	44%
>200	85	55%
Plasma acetone positive	8	5.2%
Family history of DM	89	58%

Out of 153 patients HbA1C >9 is seen in 11 patients, there are about 62patients come under FBS (100-200mg/dl) and 91 patients under FBS (>200). Similarly 68 patients under PPBS (140-200mg/dl) and 85 patients under PPBS (>200mg/dl). Plasma acetone value positive for 8 patients which indicates ketoacidosis and 89 patients having family history of diabetes mellitus

Table 4: Prescription pattern of anti diabetic drugs in out patients

Therapeutic Management		
Monotherapy	**No of patients**	**Percentage**
Insulin	11	16.5%
Double therapy		
Metformin +glimepiride	22	33.5%
Metformin + gliclazide	5	7.5%
Metformin + glibenclamide	6	9%
Triple therapy		
Metformin + glimepiride + sitagliptin	8	12%
Metformin + glimepiride + teneligliptin	2	3%
Metformin+ glimepiride + Voglibose	0	0
Metformin+ glimepiride + insulin	12	18.5%

This data shows out of 66 out patients 11 patients are prescribed with insulin as a monotherapy, in double therapy metformin + glimepiride (n=22) were the most commonly prescribed one followed by Metformin + gliclazide (n=5) and metformin+ glibenclamide (n=6). In triple therapy Metformin+ glimepiride + insulin (n=12) were the most commonly prescribed one followed by Metformin+ glimepiride + Sitagliptin (n=8), Metformin+ glimepiride + Teniligliptin (n=2)

Table 5: Narenjo scale: Adverse drug reaction

Name of drugs	No of patients given	No of patient reported ADR	Nature of ADR
Metformin	55	2	Dyspepsia
Glimepiride	44	9	Hypoglycemic symptoms

During period of January 2019 – April 2019 totally 11 ADRs are reported in the therapeutic management of diabetes mellitus. Most occurring ADR is mainly hypoglycaemic symptoms by glimepiride

Table 6: Morisky's instrument: assessment of adherence among non-responders to anti-diabetic medications

Questionnaire	No of patients who said "NO"	Percentage
1. Did you ever fogot to take your medication	54	35%
2. Were you careless at times about taking your medications	38	25%
3. when you felt better, did you sometimes stop taking your medications	28	18.5%
4. Sometimes if you feel worse while taking your medication will you stop taking it	33	21.5%
The number of patients who said "NO" to all the four questions were considered adherent to the prescribed anti-diabetic drugs	89	58%

According to the Morisky's instrument out of 153 patients from both inpatient and outpatient 89 patients are adherences to the anti-diabetic management

Table 7: Core Indicators

Core Indications	
Total no of drugs prescribed	**7**
No of prescriptions with other comorbid medication	115
No of drugs prescribed from EDL	8
No of drugs prescribed by generic name	106
No of drugs prescribed by proprietary names	47
Percentage of fixed dose combinations	80%

From the report of core indication number of drugs prescribed by generic name (n=106) than number of drugs prescribed by proprietary names (n=47)

Discussion

Patients won't come to know diabetes until they get any symptoms or any clinical features. The Long term increased with the severity and duration of hyperglycemia represents the significant causes of morbidity and mortality in people with both type 1 and type 2 such as cardiovascular disturbance, diabetic Microangiopathy, infections, nephropathy and retinopathy. Treatment for the diabetes mellitus should be appropriate and should compliance with standard treatment guidelines. There are many oral hypoglycaemic agents and insulins are available to manage diabetes. The therapeutic management for diabetes mellitus may be mono, double or triple therapy based on the clinical data from the patients. Each data will be different for each patient based on their insulin sensitivity, peripheral resistance, obesity, sedentary lifestyle, and increasing age: affecting middle-aged and older people and genetic factors.

In this study anti-diabetic drugs are prescribed more to men than the females in both inpatient and outpatient, shows that men are more prone to diabetes. There are about 8 patients were known to have plasma acetone positive, history of these patients shows long term duration of diabetes without any adherence in taking medications. The prescribing pattern in out-patients is mostly Biguanides, Sulphonylurea and insulins. There are only fewer introduction of newer antidiabetic drug such as DPP-4 inhibitors. GLP 1 analogue and SGLT2 are not used.

In the inpatient study the patients are admitted along with co-morbid conditions such as cardiovascular disease, renal impairment and retinopathy. Thus inpatients are prescribed with insulins according to the sliding scale. Sometimes Biguanides and Sulphonylureas as Add on therapy. From the use of add on therapy 11 common ADRs are reported based on Narenjo scale. According to the Morisky's instrument questionnaires are asked to the patients for adherence. Only 58% of people were adhere to anti-diabetic drugs.

Conclusion

In this study Biguanides and insulins are prescribed mostly in outpatients and inpatients. DPP-4 inhibitor is the only newer drug prescribed in our hospital. Out of 153 patients 8 patients having diabetic ketoacidosis. According to Narenjo scale Out of 87 inpatients 11 ADRs are reported in both metformin and glimepiride. According to Morisky's instrument patient adherence is calculated based on questionnaires , about 58% patients are non adherent with anti-diabetic drugs in both in and out patients, this can be improved by patient counselling. Core indicators are recommended by WHO in type 2 diabetes mellitus patients shows that prescriptions are prescribed in generic than in proprietary names.

Reference

1. Gupta N, Sharma D, Garg SK, Bhargava VK. Auditing of pesciptions to study utilisation of antimicrobials in tetia hospital. Indian J Pharmacol. 1997;29:411-5
2. Krentz AJ, Bailey CJ. Oral antiiabetic agents: Current role in type 2 diabetes mellitus. Drugs 2005;65:385-411
3. Kannan, Arshad, Kumar S. A Study on drug utilization of oral hypoglycemia agents in type-2 diabetic patients. Asian J Pharm Clin Res. 2011; 4:60-4.
4. Kumar MA, Nizar A, Shailaja K, Jayasutha J, Ramasamy C. A study on pescibing pattern and potential drug-dug interactions in type 2 diabetes mellitus in a tertiary care teaching hospital. Der Pharmacia Lettre. 2011; 3:13-9.
5. Kapoor B, Raina RK S. Drug prescribing pattern in a teaching hospital. Ind. J Pharmacol 1985;17:168
6. Hogerzeil HV. Promoting rational prescribing: An International perspective. Br Jclinc Pharmac 1995;39:1-6
7. Houwerzeil EJ, Snoek WJ *et al*., Severe lactic acidosis after use of metformin in patients with contraindications to metformin. Ned Tijdschr Geneeskd. 2000; 144:1923-6
8. Hogerzeil HV. Promoting rational prescribing: An international perspective. Br J Clin Pharmacy. 1995; 39:1-6.
9. Barar FS. Insulin and oal hypoglycaemic agents. In: Essentials of Pharmacotherapeutics. Chand and company (Ltd.); New Delhi: Rajendra Ravindra printers. 2004, 344-45.
10. Pradhan SC, Shewade DG, Shashindan CH, Bapna JS. Drug utilization studies. National Med J India. 1988; 17:168.
11. John D Piette, Wong, Edwin S, Liu, Chuan-Fen. Measures of adherence to oral hypoglycaemic agents at primary care clinic level: The role of risk adjustment. 2012; 50:591-598.
12. Sharma M, Irwin N, Petersen I. Trends in incidence, prevalence and prescription in type 2 diabetes mellitus between 2000 and 2013 in primary care: A retrospective cohort study. BMJ. 2016; 6:1-9.
13. Hassan Y, Amuthaganesh M, Ahmed A. Trend in the use of oral hypoglycaemic agents in an out-patient pharmacy department of tertiary care hospital in Malaysia. Asian J Pham Clin Res. 2009; 2:40-46.