



Prescription Pattern of Anti Diabetics In Diabetic Patients

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ABSTRACT

Diabetes is a chronic disease associated with significant morbidity and mortality. The present study objective is to assess the prescription pattern of anti diabetics in diabetic patients. A prospective observational study was carried out for a period of one month in the department of medicine of BMCH&RC teaching hospital. The study result shows that among 56 patient's 26 (46.4%) males and 30 (51.78%) females were enrolled. Among these 17 (30.35%) were in the age group of 61-70 years. Among the various anti diabetics, sulfonylureas were accounted for 8.77%. Among the study Population, 40 (70.17%) patients were treated with insulin Inj and 10 (17.54%) of the total drugs were fixed dose combination. our study concluded that insulin and sulfonylurea's were the most commonly prescribed and more patients were treated with poly-pharmacy. The average numbers of drugs per prescription were 6. Study was conducted for a short period of time hence the no. of patients were less.

Keywords: Diabetes, Poly pharmacy, Prescription patterns, Sulphonylureas, Biguanides.

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INTRODUCTION

Diabetes mellitus (Madhumeha) has been known for ages and the sweetness of diabetic urine was mentioned by Sushruta in Ayurveda¹. The word Diabetes was coined by the Greek physician Aeretæus in the 1st century AD which means “to pass through” and refers to the cycle of heavy thirst and frequent urination and can make the body seen like a water pump or siphon, the full name of diabetes is “Diabetes Mellitus”. Mellitus is a Latin word for “Sweetened with honey” and refers to presence of sugar in the urine, a method that ancient physicians often used to diagnose the disease by taste. It is a group of metabolic disorders characterized by hyperglycaemia resulting from defects in insulin secretion, insulin action or both. Diabetes affects 2-3% of the total world population. According to a WHO survey, India will soon be the world’s diabetic capital and the statistics are frightening. By 2025, the figure will reach a staggering 6 crores figure in the country².

Diabetes mellitus is a pandemic disease that has struck each and every corner of the world. According to the Indian Council of Medical Research-Indian Diabetes 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. The prevalence of diabetes among adults has reached approximately 20% in urban and approximately 10% in rural populations in India.³

Diabetes is mainly classified in to three types. Type 1 diabetes (insulin dependent), type 2 diabetes (non-insulin dependent) and gestational diabetes (during pregnancy due to hormonal imbalance)⁴

Diabetes Mellitus, a progressive disease known to affect at least 3% of the population, is often accompanied by long-term complicated co-morbidities, particularly cardiovascular disease, hypertension and hyperlipidaemia. In order to manage this disease combination, long-term multiple medicines are commonly prescribed using repeat prescriptions. Repeat prescriptions represent about 80% of the cost and two-thirds of all items prescribed in general practice.⁵⁶

Diabetes mellitus (DM) is the chronic disorder emerging as major health problem which increases the rate of morbidity and mortality. Poor management of this disorder leads to several complications⁷.

The complications include mainly Micro vascular and Macro vascular where micro vascular complications include retinopathy, nephropathy and neuropathy and macro vascular complications include angina pectoris, myocardial infarction, transient ischemic attacks, stroke and peripheral arterial disease. In India, treatment of Diabetes is often started by a general

practitioner (GP). Changing lifestyle and dietary measures are usually the first step. The second step is pharmacotherapy^{5 6}.

Drug utilization studies are powerful exploratory tools to ascertain the role of drugs in society. A drug utilization review is the evaluation of drug use in given healthcare against predetermined criteria and standards to assess the appropriateness of drug therapy.⁸

The study of prescribing pattern is a component of medical audit that does monitoring and evaluation of the prescribing practice of the prescribers as well as recommends necessary modifications to achieve rational and cost-effective medical care and it help to evaluate and suggest modifications in prescribing practices of medical practitioners so as to make medical care rational⁹.

Objectives:

1. Analysis of prescribing pattern of Anti diabetics in diabetic patients with or without coexisting diseases.
2. The present study was conducted with the objective of providing an insight into the current Use of anti-diabetic medications in diabetics.
3. To analyze the Patterns of utilization of Major Pharmacological Drug classes.

MATERIALS AND METHOD

Study site:

The study was conducted in the Inpatient Department of General Medicine attached to Bashaveshwera Medical college Hospital and Research Centre, Chitradurga, Karnataka.

Study period:

The study was carried out for about a period of 1month, December-2012 to January-2013.

Study design:

A Prospective Observational study was conducted in an Inpatient Department of General Medicine at Bashaveshwera Medical College Hospital and Research Centre, Chitradurga. Data was collected for a period of 1 month (December2012 to January 2013). Study was carried out after obtaining the permission from institutional ethical committee. Permission was also obtained from Head of Department General Medicine to access records. Prescriptions of the patients were collected and relevant information was entered in the patient profile forms and analyzed.

Study sample:

During the period of 1 month (December2012-January 2013) a total of 56 prescriptions of patients diagnosed to have diabetes mellitus with or without coexisting diseases were collected.

Study materials:

Patient profile form, patient medication charts.

Study criteria:**Inclusion criteria:**

Patients suffering from the Diabetes Mellitus with or without co-morbid conditions who were admitted to the Medicine ward. Diabetic Patients of both sexes.

Exclusion criteria:

Patients not suffering from the Diabetes Mellitus and the ambulatory patients.

Patients suffering from gestational diabetes.

Study procedure:

During the study 56 inpatients of the medicine ward were screened. For the conduction of the study a data collection form was prepared which included the IP number, Age, Sex, Date of Admission, Date of Discharge, Patient Medical History, Provisional Diagnosis, Treatment given and the Discharge medication and Relevant laboratory investigations.

Then the data was classified as:

- Age as a factor
- Frequency and % gender distribution of study patients
- Frequency and % distribution of insulin treatment among the diabetes patients
- Incidence of poly-pharmacy
- Prescription details in diabetes patients
- Distribution of drugs in essential drugs list
- Distribution of drugs in single and fixed dose combinations

RESULTS AND DISCUSSION**Age as a factor:**

During the study a total of 56 patients of the Department of Medicine were screened. In those 56 patients 26 were males (46.4%) and remaining 30 were females (53.57%) Figure 1. From the analysis of age as factor in diabetics we found that the usual onset of age in diabetics is around 41-50 (16.07%), 51-60 (28.57%), 61-70 (30.35%) years. Table 1

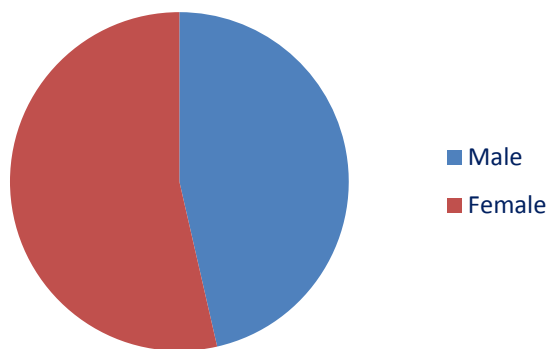


Figure 1: Gender distribution

Table 1: Age as a factor

Age	Males		Females		Total(group wise)	
	No	%	No	%	No	%
21-30	0		1	1.78	1	1.78
31-40	1	1.78	1	1.78	2	3.56
41-50	3	5.34	6	10.71	9	16.07
51-60	11	19.64	5	8.92	16	28.57
61-70	8	14.28	9	16.07	17	30.35
>70	4	7.14	7	12.5	11	19.64
Total (sex wise)	27	48.21	29	51.78	56	100

Insulin treatment in Diabetic Patients:

From the medication profile of total 56 patients it was found that 27 (48.2%) patients were treated with insulin and remaining 29 (51.78%) were treated with oral hypoglycaemic agents. Table 2.

Table 2: Frequency and % distribution of insulin treatment in diabetic patients

Treatment	Frequency	%(Percentage)
Treatment with insulin	27	48.2%
No insulin treatment	29	51.78%
Total	56	100%

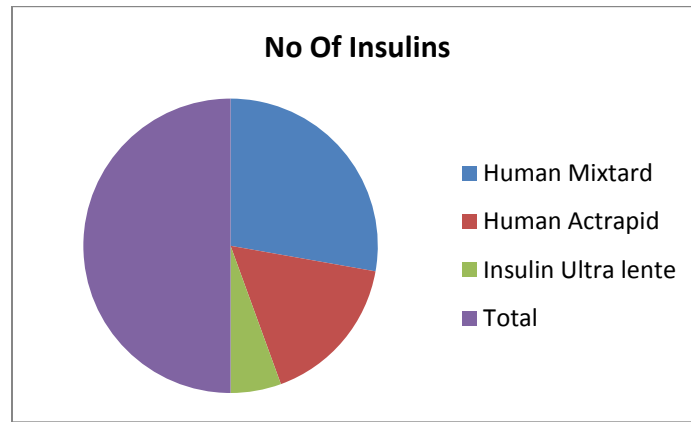


Figure: 2 Type of Insulin.

Out of the total number of insulins (27) used the most common type of insulin used was human Mixtard (55.55%) 15 and Human Actrapid (33.33%) 9 and in severe cases in which for long term control of RBS Ultra lente (11.11%) 3 was used. Figure 2

Poly-pharmacy:

From the study it was found that the incidence of poly-pharmacy was high which involves 6 drugs (9) (16.07%), 7 drugs (10) (17.86%) > 8 were 17 (28.56%) etc Figure 3. The reason for higher incidence of poly-pharmacy was may be due to multiple co-morbidities and age of onset at which the DM has occurred. The average no of drugs prescribed per prescription was 6.01.

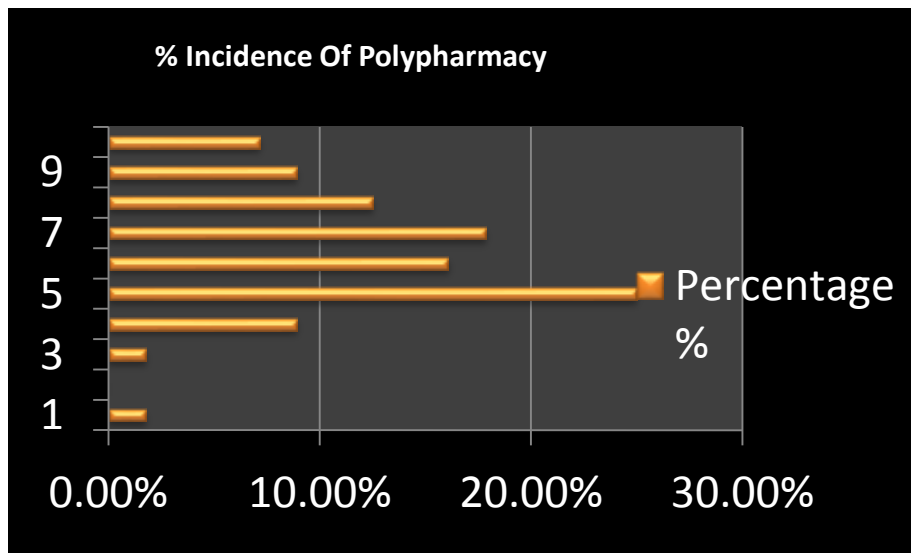


Figure 3: Incidence of poly-pharmacy

Prescription details in diabetes patients:

Details of Prescription	No
1. Total number of prescription analyzed.	56
2. Total number of drugs prescribed.	337
3. Average number of drugs per prescription.	6.01%
4. Number of drugs from WHO essential drug list out of total number of drugs prescribed.	160

5. Number of drugs prescribed by generic name out of total number of drugs prescribed.	6
6. Number of fixed dose combinations out of total number of drugs prescribed.	52
7. Number of injections out of total number of drugs prescribed	186
8. Total number of antidiabetics out of total number of drugs prescribed	57
9. Mean age of patients in years.	60.46

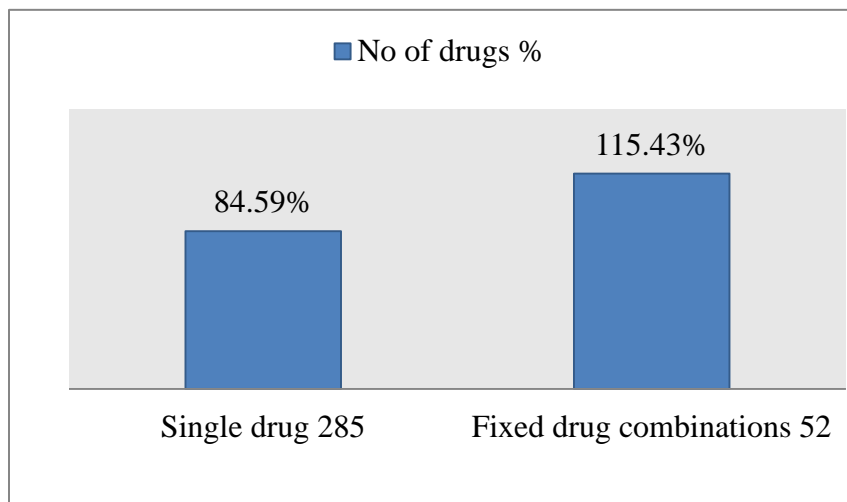


Figure 4: Distribution of single and fixed dose combinations

From the prescription pattern analysis 285 (84.59%) drugs were prescribed as single drugs and fixed dose combinations were 52 (115.43%) **Fig4**

Table 4: Distribution of drugs according to WHO Essential drug list

Drugs	Total no of drugs in prescription	Percentage
Drugs from essential drug list	160	47.47%
Drugs out of essential drug list	177	52.53%

Out of the 337 drugs in 56 patients, 160 (47.47%) drugs were prescribed from the essential drug list and remaining 177 (52.23%) were out of the essential drug list. Table 4

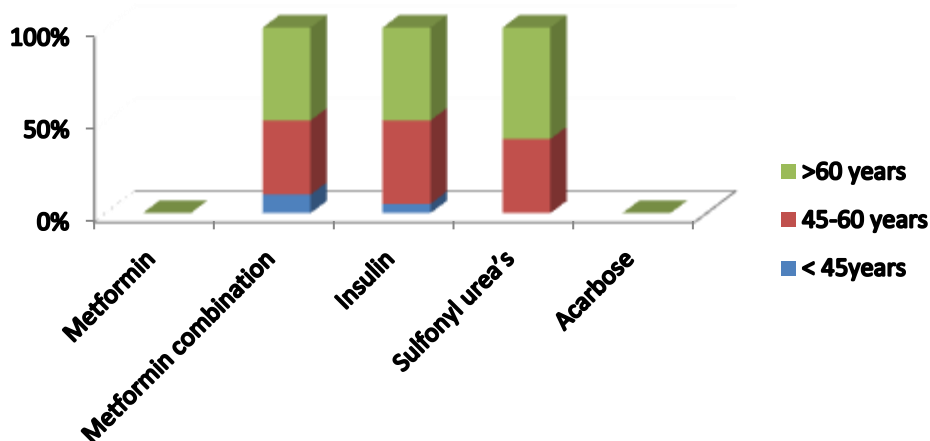


Figure 5: Age group distribution of drugs among patients with type 2 DM

Among the 56 patients diagnosed with Diabetes Mellitus, Metformin alone was not at all prescribed in any age group, and its combination was prescribed in 10 patients (17.54%), when coming to insulin a total of 40 (70.17%) patients were treated with it and remaining 5 (8.77%) patients were treated with Sulfonylureas. Figure 5

DISCUSSION:

The most common form of diabetes is type 2 diabetes. About 90 to 95 percent of people with diabetes have type 2. This form of diabetes is associated with older age about (40-60 years). The main reason would be the obesity and sedentary life style. In this study this age group people were affected more compare to other age group² (Mohammed Abid et al 2010) but in this study we found that (50-70 years) age people were more prone to get these type 2 diabetes.

Total of 56 patients were selected for the study that satisfies the inclusion and exclusion criteria in which 26 (46.4%) patients are male and the remaining are females (51.78%). From this data it can be assumed that female patients are more suffered by diabetes mellitus than that of males. (Harikrishnan KV et al) from his study found that males (36) are more prone to get diabetes when compared to females (14)³. From our study we found that 27 patients were treated with insulin but in his study it was around 43 patients who were treated with insulin and many other Antidiabetic drugs such as Metformin, Glibenclamide, Glipizide etc, are given to the type 2 diabetic patients⁵.

Out of the various combinations of Antidiabetic drugs which were prescribed, the following combinations were the most frequently prescribed: Metformin combinations were prescribed in 10 (17.54%) patients and insulin alone was prescribed in 40 (70.17%), 5 (8.77%) patients were treated with Sulfonylureas alone.

A similar study was conducted by (Dhwani K, Punam S 2010) found that out of the various combinations of antidiabetic drugs which were prescribed the following combinations were the most frequently prescribed: Insulin + Metformin (12.8% patients), Metformin + Glimepiride (8.7%), Metformin + Gliclazide + Pioglitazone (7.9%), Insulin + Gliclazide (5.9%) and Gliclazide + Metformin (5.5%)⁵.

In this study we found the general prescription trend in diabetes mellitus patients; physicians prefer the well established compounds. The low percentage of generic drug reveals the hospital norm, is prescribing by brand name. The major co morbidity with diabetes mellitus was found to have systemic hypertension and the cardiovascular drug was the most prescribed class after Antidiabetes medications. Average number of drugs per prescription (6.01) indicates the

incidence of poly pharmacy, and in most cases it was unavoidable. A similar study (Ashok M et al 2011) got the same results like average number of drugs per prescription (6.58) indicates the incidence of polypharmacy, and in most cases it was unavoidable. Potential drug-drug interactions were found in type 2 diabetes prescriptions which are often involved with medications to treat co morbid illness. This is of vital importance given that Poly-pharmacy requires justification because of the increased risk of drug interactions and errors of prescribing⁹.

A similar study (Upadhyay Dk et al) concluded that Insulin and biguanides were the most commonly prescribed antidiabetics and incidence of poly pharmacy is high in diabetic patients¹⁰.

A similar study (bela patel et al 2013) concluded that Metformin (biguanide) was the most utilized (87.7%) antidiabetic drug for type-2 diabetes. This study revealed that the pattern of antidiabetic prescription was rational and largely compliant with NICE (National Institute for Health and Clinical Excellence) guidelines⁷.

CONCLUSION

Our study concluded that insulin and sulfonylureas were the most commonly prescribed antidiabetic agents. Among those the most common drug used in fixed dose combination was Metformin because of ability to control sugar levels adequately, and more no patients were treated with Poly-pharmacy. It was also found that females are more prone to get DM when compared to males. The Prescription of fixed dose combinations were more when compared to single drugs as most of them were suffering with co morbidities and were in the age group of 40-70. Our study was conducted for a short period of time so the no of patients were less.

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