



Original Article

Student study

PRESCRIBING PATTERNS OF ANTI-DIABETICS IN TEACHING HOSPITALS OF LAHORE

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ABSTRACT

Background:Diabetes mellitus accounts for a significant proportion of morbidity and mortality in all age groups and therefore emerging as an important global public health problem. In Pakistan its prevalence is high ranging from 7.6% to 11%.The currently used anti diabetic drugs are very effective, however because of lack of patient compliance and lack of exercise leads to unsatisfactory control of hyperglycemia. **Methods:**A retrospective and observational study was conducted for 2 months (July 2016-August 2016) to evaluate the prescribing patterns of anti-diabetics in patients with Diabetes Mellitus-2 in various teaching hospitals of Lahore.Population of 100 diabetic patients was randomly selected during this period and study was performed by filling data collection forms from patients. Collected data was analyzed and results were presented in the form of graphs and tables. **Results:** Of the total patients, results showed that diagnosis of Diabetes Mellitus at the age between 41-45 years were 82%.Almost 94% patients checked their sugar level. 68% patients were taking 4th line therapy for management of type-2 Diabetes Mellitus. 80% of patients had co-morbid diseases. Out of which, majority had hypertension. Brand wise prescribing trend was observed. All of the patients were given clinical guidelines on management of Diabetes Mellitus-2. **Conclusion:** Prevalence of Diabetes is increasing day by day. The need of hour is to ensure rational drug therapy and cost effectiveness to improve patient quality of life.

Keywords: Diabetes-Mellitus-2, Prescribing patterns, Patient compliance, Clinical guidelines.

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INTRODUCTION

Diabetes Mellitus accounts for a significant proportion of morbidity and mortality in all age groups and therefore emerging as an important global public health problem. The clinical definition of diabetes is a metabolic disease mainly characterized by chronic hyperglycemia resulting from

defects in insulin secretion, insulin action or both and affects metabolism of carbohydrates, proteins and fats. The result of insufficient action of insulin is an increase in blood glucose concentration (hyperglycemia).^{[1][7][16]}

In Pakistan its prevalence is high ranging from 7.6% to 11%. Type 1 diabetes or juvenile-onset diabetes is categorized by an absolute deficiency of insulin due to autoimmune-mediated destruction of the pancreatic beta cells that are responsible for the production of insulin. Type 2 diabetes or maturity-onset diabetes is the most prevalent type of diabetes (approx. 90%) and is associated with high morbidity and mortality and is characterized by fluctuating degrees of resistance to the action of insulin with comparative insulin deficiency. Type 3 and type 4 diabetes are less common.^{[2][8]}

The currently used antidiabetic drugs are very effective, however because of lack of patient compliance, clinical inertia, insulin resistance, stress, lack of exercise and lack of dietary control leads to unsatisfactory control of hyperglycemia. More than 50% of people with diabetes have poor glycemic control, uncontrolled hypertension and dyslipidemia, and a large percentage have diabetic vascular complications.^{[3][10][17]}

American Diabetes Association recommends a premeal blood glucose target of 80-130mg/dl, rather than 70-130mg/dl. Diabetes self-management education and ongoing diabetes support should be integral components of the management plan.^{[5][9]}

Management of Diabetes Mellitus includes both

pharmacological treatment and non-pharmacological treatment. Concerning diabetes mellitus treatment, it is important to emphasize that non-pharmacological treatment is essential. Non-pharmacological treatment includes dietary management, physical activity and stress management. However, if non-pharmacological treatment does not lead to acceptable glycemic control, patients should receive oral antidiabetic drugs, or insulin, or both.^{[2][4]} Diabetic patients should be encouraged to engage in physical activity at 60min.^{[5][11]}

Recommended therapy for type 1 diabetes consists of the use MDI injections (3-4 inj/day of basal and prandial insulin) CSII therapy. Match prandial insulin to carbohydrate intake, premeal blood glucose and anticipated physical activity. For most patients especially those at high risk of hypoglycemia, use insulin analogs. For patients with frequent nocturnal hypoglycemia and/or hypoglycemia unawareness, a sensor-augmented low glucose threshold suspend pump may be considered. Combinational therapy of insulin with other agents like pramlintide or metformin can also be considered.^{[12][13][18]}

Type 2 diabetes is first treated with weight reduction, a diabetic diet, and exercise when these measures fail to control the elevated blood sugars, oral medications are used. Pharmacological agents, such as metformin, alpha-glucosidase inhibitors, orlistat and thiazolidinediones, have each been shown to decrease incident diabetes to various degrees. Metformin has the strongest evidence base and demonstrated long-

RESULT

TABLE 1

Characteristics/parameters	Results
Age factor (41-50yrs)	82%
Patients checked sugar level	94%
Range of fasting BSL (151-200mg/dl)	63%
Patients with Co-morbid disease(s)	80%
Patients do exercise daily	93%
Prescribing Trends:	
Preferred route for Insulin	S/C
Frequency	BD
Generic prescribing	0%
Brand prescribing	100%
Average cost per prescription	PKR860.07

Prescribing Trends

FIGURE 1

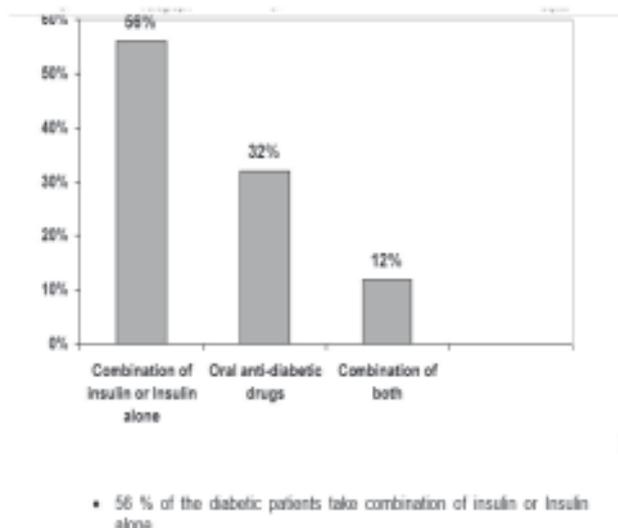


FIGURE 3

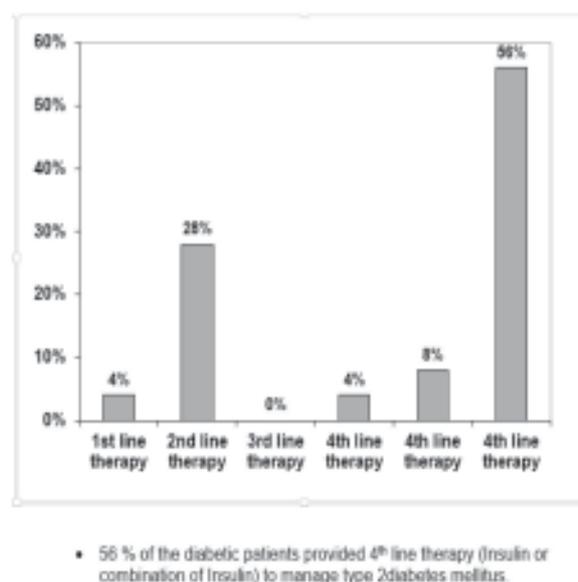
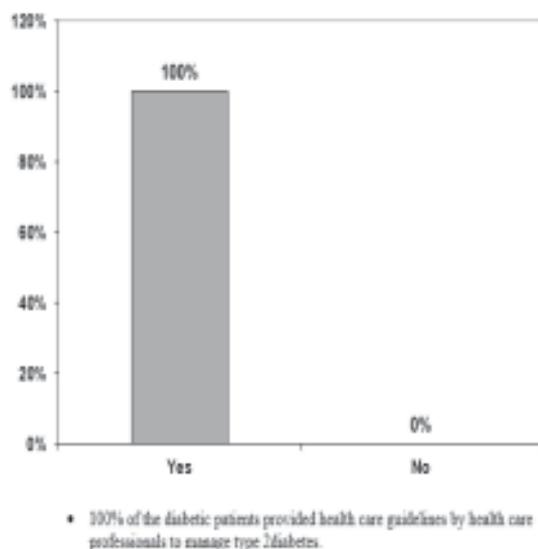


FIGURE 2



General objective:-

- To observe the prescribing patterns of anti-diabetic medications in teaching hospitals of Lahore.

Specific objectives:-

- To observe frequency, dose and route of anti-diabetic drugs.
- To observe number of prescribing anti-diabetic medications.
- To determine the type of therapy commonly prescribed i.e., mono therapy or combinational therapy.

MATERIALS AND METHODS

A retrospective and observational study was conducted at various teaching hospitals of Lahore. The duration of study was 2 months (July 2016- August 2016) and 100 patients with diabetes were randomly included as subjects for this study.

A data collection form was designed to collect the information from the diabetic patients. Data collection form covered the different aspects regarding patient’s demo-graphic information, past medical history, family history, medication history, prescribing trends in management of diabetes. Verbal informed consent was taken and confidentiality was maintained. Collected data was recorded in data collection form. The results were calculated and were expressed in tables and figures.

term safety as pharmacological therapy for diabetes prevention. Pharmacists are uniquely positioned to educate patients on the importance of medication adherence. They can draw on their drug expertise and knowledge of the medication regimen followed and prescription refills requested by the individual patient. Ideally, a personal relationship of trust between patient and pharmacist can be harnessed to improve diabetes care and outcomes.^{[6][14][15]}

DISCUSSION

Observational data of 100 patients having type 2 diabetes mellitus was collected from teaching hospitals of Lahore. The data collection form was based on clinical guidelines given by ADA (American Diabetes Association).

According to ADA, type-2 diabetes can be managed by both non-pharmacologically and pharmacologically. The data collection form consisted of questions related to both pharmacological and non-pharmacological treatment.

According to ADA, patients having age almost 45 years are at higher risk for diabetes mellitus and data showed that patients of diabetes mellitus having age between 41-45 years were 82%. [5]

Almost 94% patients checked their sugar level in which 63% patients had fasting blood sugar level in between 151-200mg/dl. It was much higher fasting blood sugar level and indicates poor control on diabetes.

Observational data showed that 56% patients were taking insulin or combinations of insulin. 32% patients were taking anti-diabetic drugs and only 12% patients were taking insulin with oral anti-diabetic drugs.

68% patients were taking 4th line therapy for management of diabetes mellitus-2. 4% patients were taking combinations of metformin, pioglitazone and insulin. 8% patients were taking combination of metformin and insulin. Short-acting insulin was used to control sugar level and oral anti-diabetic drug is used to maintain its level in the blood. 56% patients were taking either insulin alone or combination of insulin. These combinational therapies were included in 4th line therapy. Insulin was given to the patients because of patient compliance and having reduced risk for lactic acidosis and renal problems. Insulin are of three type's short-acting, intermediate and long-acting insulin. In majority of patients, two combinations were used, either combination of short-acting insulin and long-acting insulin was used or combination of short-acting insulin and metformin was used. Short-acting insulin had good control over blood sugar level and this type of insulin was mostly using in hospitals because of irregularities in blood sugar level of patients. Dose was adjusted according to blood sugar level. Route of administration was subcutaneous and frequency was either BD (twice daily) or TDS (thrice a day).

28% patients were taking 2nd line therapy i.e. combination of metformin and glimepiride. 4% patients were taking 1st line therapy i.e. metformin alone. Metformin is in a class of drugs called biguanides and

glimepiride is a sulfonylurea. Both of these considered best drugs to control diabetes mellitus-2.

80% of patients had co-morbid diseases. Out of which, 25% patients had hypertension.

59% patients were doing exercise, out of which 93% patients were doing exercise daily. They were doing exercise for about 30min, which was according to ADA, should be 60min. All the patients were provided clinical guidelines for management of diabetes mellitus-2 and these guidelines were provided by health care professionals.

CONCLUSION

Pakistan is among the countries with high incidence rate of diabetes. Most of the patients have higher fasting blood sugar level which indicates poor control on Diabetes Mellitus. That's why majority of the patients are prescribed with 4th line therapy. Generic prescribing should be encouraged to ensure cost effective drug therapy. Patients are given clinical guidelines on management of Diabetes Mellitus-2 to improve Pt. compliance.

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Authors contribution:

* Concept, design and acquisition of data ** Analysis and interpretation of data *** Drafting of paper****

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