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A PROSPECTIVE, OBSERVATIONAL STUDY TO UNDERSTAND THE DRUG USAGE COMPOSITION OF ANTI-DIABETIC MEDICATIONS IN A TERTIARY CARE HOSPITAL

Dr.Rajsantan K[1], Dr.Balaji T[2*], Dr.S.Sharmeela[3]

[1]Assistant Professor, Department of Internal Medicine, Tagore Medical College Hospital, Rathinamangalam, Melakottaiyur, Chennai.

[2*]Assistant Professor, Department of General Medicine, Tagore Medical College Hospital, Rathinamangalam, Melakottaiyur, Chennai.

[3]PG resident, Department of Radio Diagnosis, Saveetha Medical College, SIMATS, Thandalam, Chennai.

Corresponding Author: Dr.Balaji T

Assistant Professor, Department of General Medicine, Tagore Medical College Hospital, Rathinamangalam, Melakottaiyur, Chennai.

Abstract

Introduction: 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.

Materials and Methods: This prospective observational study was carried out for a period of 1 year from January 2023 to December 2023 at Department of General Medicine, Tagore Medical College Hospital, Rathinamangalam, Melakottaiyur, Chennai. A total of 1113 patients were screened, from which 138 cases of DM aged between 20 to 80 yrs. Who were under treatment and following life style modification and diet advice were included in the study. Majority of the patients belonged to low and middle socioeconomic groups. Patients not willing for informed consent, those with diabetic complications and serious medical conditions requiring subsequent hospital admissions, prediabetic status, Gestational Diabetes were excluded from the study.

Results: The prevalence was about 6.19% and 68.11% of them were 40-60 years of age. Metformin was the most commonly prescribed drug and 21.74% of patients were on monotherapy. Glimepiride and Metformin (33.33%) was the mostly used oral combination followed by Glibenclamide and Metformin (8.69%). Inj. Human Mix insulin with Metformin was used in 27.53%. 15.94% of patients were on statins. The most common comorbid condition was hypertension (21.73%) followed by dyslipidaemia (8.6%).

Conclusion: With increasing prevalence of the disease, this study provides an insight to create awareness about the drug usage among rural population. OADs are still the predominantly prescribed drugs, but there was a shift towards the use of insulin in the management of Type 2 diabetes mellitus. Intensification of current drug treatment as well as planning multiple drug interventions with lifestyle modification is necessary. Metformin is the most commonly used drug and among the sulfonylureas Glimepiride is the most commonly used.

Key Words: Diabetes mellitus, Glimepiride, Metformin, lifestyle modification.

INTRODUCTION

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.[1]

Various classes of anti-diabetic drugs including insulin and oral hypoglycemic agents (OHA) are currently used in the treatment of diabetes, which acts by different mechanisms to reduce the blood-glucose levels to maintain optimal glycemic control.[2]

Intense blood glucose control helps to significantly reduce microvascular complications and many different classes of ant diabetic drugs are used to attain a good glycemic control.[3]

Though we have a better understanding of the pathophysiology of diabetes and have developed many new drugs, still the overall diabetic control seems inadequate; probably due to clinical inertia of the treating physician, lack of patient compliance, or improper life style modification. In majority of patients the control of diabetes and associated factors like hypertension and lipids seems inadequate resulting in more number of complications.[4]

Urbanization, western diet and sedentary life style has led to an increased incidence of diabetes in rural areas of India. Not many studies have focused on drug usage pattern in rural parts of South India.[5] Hence, we planned this study to evaluate the drug usage pattern among diabetic patients in a rural population in South India.

MATERIALS AND METHODS

This prospective observational study was carried out for a period of 1 year from January 2023 to December 2023 at Department of General Medicine, Tagore Medical College Hospital, Rathinamangalam, Melakottaiyur, Chennai. A total of 1113 patients were screened, from which 138 cases of DM aged between 20 to 80 yrs.

Who were under treatment and following life style modification and diet advice were included in the study. Majority of the patients belonged to low and middle socioeconomic groups. Patients not willing for informed consent, those with diabetic complications and serious medical conditions requiring subsequent hospital admissions, prediabetic status, Gestational Diabetes were excluded from the study. A structured questionnaire was explained in the local language (Malayalam). Demographic data, detailed medical history, medications for diabetes mellitus, medications for co morbid diseases, lifestyle, dietary pattern, exercise routine with laboratory investigations were recorded in the study proforma. Compliance, adverse effects and change in drug therapy were

noted during the subsequent visits done at monthly intervals. These data were compiled for evaluation.

Statistical Analysis: The appropriateness of the collected data was analysed, and interpretation was made. Statistical analysis was done by SPSS software. Statistical methods used were Simple frequencies and percentages.

RESULTS

Of the total 1113 patients screened, 138 type 2 DM patients were selected according to the study protocol. There were 94 (68.11%) males and 44 (31.88%) females in the study.

Most patients belong to the age group of 40-60 years (68.47%) followed by 60-80 (17.39%) years. There was a strong family history of DM in 44.9% (n=62) patients. The socioeconomic status of the patients calculated from the monthly income showed that 106 (76.81%) patients were in low socioeconomic status. In the study group 14 (10.1%) of patients were smokers and 24 (17.3%) were alcoholics.

Age in years	No of patients	Percentage
20-40	20	14.5%
40-60	94	68.11%
60-80	24	17.40%
Total	138	100%

Table 1: Age distribution

Drugs prescribed	Number	Percentage
Metformin	30	21.74%
Glimepiride + Metformin	46	33.33%
Glimepiride + Metformin + Pio	4	2.89%
Glibenclamide + Metformin	12	8.69%
Glibenclamide + Metformin + Pio	02	1.44%
Glipizide+ Metformin	04	2.89%
Human Mix insulin+ Metformin	38	27.53%
Gliptins (Sitagliptin)	2	1.44%
Total	139	100%

Table 2: Anti-Diabetic Drug Usage Pattern

Table 2 showed that 30 (21.74%) of patients were on monotherapy and 108 (78.26%) were on combination therapy.

Drug	Number	Percentage
Telmisartan	12	40%
Enalapril	4	13.33%
Ramipril	2	6.66%
Amlodipine	10	33.33%
Cilnidipine	2	6.66%
Total	30	100%

Table 3: The Antihypertensive Medicines Used

The study documented that Metformin was the most commonly prescribed drug. Among the drug combinations 100 (72.46%) received oral hypoglycaemic drugs while 76 (27.53%) received Insulin preparation (inj. Human Mix Insulin) with Metformin. In oral hypoglycaemic drugs, the most commonly used combination was Glimepiride and Metformin (33.33%) followed by Glibenclamide with Metformin (8.69%). Statins were co-administered in 22 (15.94%) of patients.

DISCUSSION

Hypertension, dyslipidaemia, neuropathy, nephropathy and retinopathy are the usual comorbidities. Around 20-60% of diabetics had hypertension as a comorbidity. In our study too hypertension was the most common comorbid condition seen in 30 (21.73%) followed by dyslipidaemia in 12 (8.6%) participants.[6]

A positive family history was noticed in 42.02% (n=58). Hence screening of first-degree relatives at regular intervals is strongly recommended to diagnose diabetes at the early stage. Metformin was the most commonly prescribed drug for all Type 2 DM in accordance with standard guidelines. Sulfonylureas or Insulin was used as add on therapy in many patients.[7,8]

Poly pharmacy was a common problem in studies from developing countries; however, the average number of drugs per prescription in this study was 2.18 which was similar to some other studies. Adverse effects were reported by 3.26% in the rural population. Both polypharmacy and adverse drug reactions were less in our study probably due to rational prescriptions.[9]

The centre being a teaching institute could have positively influenced the prescribing practices. This showed that rational approach reduced the complications and improved the glycaemic control. The recent guidelines recommend that statin therapy should be added to all diabetic patients regardless of their baseline lipid status along with ACE inhibitors to prevent complications.[10]

CONCLUSION

With increasing prevalence of the disease, this study provides an insight to create awareness about the drug usage among rural population. OADs are still the predominantly prescribed drugs, but there was a shift towards the use of insulin in the management of Type 2 diabetes mellitus. Intensification of current drug treatment as well as planning multiple drug interventions with lifestyle modification is necessary. Metformin is the most commonly used drug and among the

sulfonylureas Glimepiride is the most commonly used. Gliptin usage is very low probably because of the cost. To maintain prescribing standards, every physician should update himself with the latest recommendations and follow the guidelines recommended by various standard international organisations.

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