ORIGINAL RESEARCH

Assessment of drug utilization among diabetes mellitus patients

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ABSTRACT
Background: Diabetes mellitus (DM) is a group of common metabolic diseases that all cause hyperglycemias and are caused by different pathogenic processes. The present study was conducted to assess drug utilization among diabetes mellitus patients. **Materials &Methods:** 86 type II diabetes mellitus patients of both genders were selected. All were subjected to measurement of fasting, random blood glucose level. Glycated hemoglobin was also estimated.No. of drugs used and treatment adherence among patients was recorded. **Results:** Out of 86 patients, 50 were males and 36 were females. Single drug was used in 45, two drugs in 25 and more than 2 drugs in 16 cases. The difference was significant (P< 0.05). Treatment adherence (%) response was never, sometimes, often and always towards forgetting to take medicine in 65, 32, 1 and 2 respectively. Missing medicine when felt better was seen in 57, 39, 3and 1. Stopping medication due to sick effect seen in 58, 35, 5 and 2. Not taking medicine as stock out at home seen in 70, 23, 2 and 5. Deciding not to take medicine in 67, 23, 6 and 4. Deciding to take less medicine in 71, 20, 4 and 5. Forgetting to take drug during travel in 59, 35, 0 and 6 patients respectively. The difference was significant (P< 0.05). **Conclusion:** Adequate number of participants adhered to their drug regimen.

Keywords: Diabetes mellitus, drug, hyperglycemia

INTRODUCTION

Diabetes mellitus (DM) is a group of common metabolic diseases that all cause hyperglycemias and are caused by different pathogenic processes. Because of its high prevalence in the population, complications, death, high treatment costs, and marked decline in people's quality of life, it is a critical public health issue.[1]

Over the past 20 years, the number of people with diabetes mellitus (DM) has increased significantly, from an estimated 30 million cases in 1985 to 425 million cases in 2019. By 2035, 592 million people will have diabetes, according to the International Diabetes Federation's projections based on current trends.[2] India has the highest number of diabetes patients worldwide, garnering the dubious title of "diabetes capital of the world." Diabetes was found to affect 2.4% of Indian adults living in rural areas and 4.0% to 11.6% of those living in urban areas. According to current estimates, 41 million people in India suffer from this terrible illness, and Indians account for one in five cases worldwide.[3]

Since there is currently no cure for this chronic condition, the only way to achieve ideal glucose control is to strictly follow dietary, lifestyle, and medication guidelines. Additionally, patients frequently discontinue their therapy for a variety of reasons.[4] The marketing, distribution, prescription, and use of medications in a society while taking into account their potential medical, social, and financial repercussions is what the World Health Organization refers to as "drug utilization."[5] Research on the use of anti-diabetic medications is crucial for encouraging responsible drug use and providing useful data for health planning.[6]The present study was conducted to assess drug utilization among diabetes mellitus patients.

MATERIALS & METHODS

The study was carried outon 86 type II diabetes

mellitus patients of both genders.All gave their written consent to participate in the study. Patients with co-morbid conditions (heart diseases, hypercholesterolemia, chronic lung diseases, and diseases of the nervous system like Parkinson's disease or Multiple Sclerosis and hypertension were excluded.

Data such as name, age, gender etc. was recorded. A thorough history was obtained. All were subjected to measurement of fasting, random blood glucose level. Glycated hemoglobin was also estimated.No. of drugs usedand treatment adherence among patients was recorded. Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 86		
Gender	**Male**	**Female**
Number	50	36

Table I shows that out of 86 patients, 50 were males and 36 were females.

Table II No. of drugs used

Number of drugs	Number	P value
Single	45	0.05
Two	25	
>two	16	

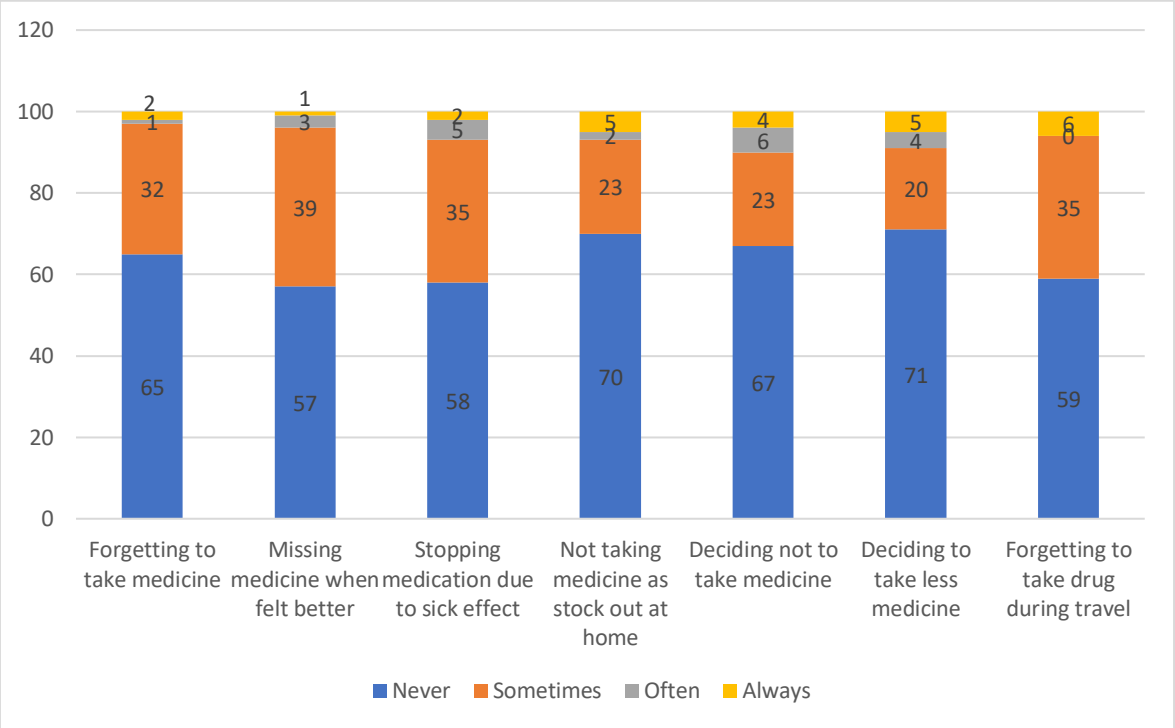
Table II shows that single drug was used in 45, two drugs in 25 and more than 2 drugs in 16 cases. The difference was significant (P< 0.05).

Table III Treatment adherence among patients

Treatment adherence (%)	Never	Sometimes	Often	Always	P value
Forgetting to take medicine	65	32	1	2	0.01
Missing medicine when felt better	57	39	3	1	0.03
Stopping medication due to sick effect	58	35	5	2	0.05
Not taking medicine as stock out at home	70	23	2	5	0.04
Deciding not to take medicine	67	23	6	4	0.05
Deciding to take less medicine	71	20	4	5	0.02
Forgetting to take drug during travel	59	35	0	6	0.01

Table III, graph I shows that treatment adherence (%) response was never, sometimes, often and always towards forgetting to take medicine in 65, 32, 1 and 2 respectively. Missing medicine when felt better was seen in 57, 39, 3and 1. Stopping medication due to sick effect seen in 58, 35, 5 and 2. Not taking medicine as stock out at home seen in 70, 23, 2 and 5. Deciding not to take medicine in 67, 23, 6 and 4. Deciding to take less medicine in 71, 20, 4 and 5. Forgetting to take drug during travel in 59, 35, 0 and 6 patients respectively. The difference was significant (P< 0.05).

Graph I Treatment adherence among patients



DISCUSSION

Diabetes is a metabolic disorder with prevalence among adults being approximately 8% and is expected to rise to 11.4% by the year 2045.[7] The current pharmacotherapy of diabetes mellitus includes treatment with drugs such as insulin and oral antidiabetic agents.[8,9]The present study was conducted to assess drug utilization among diabetes mellitus patients.

We found that out of 86 patients, 50 were males and 36 were females. Devi et al[10] evaluated the drug-utilization pattern among diabetic patients. Females outnumbered males in the ratio of 1.2:1. The mean age of the patients is 55.03 years with a standard deviation (SD) of 8.58 years. The proportion of patients who took the prescribed drugs without any interruption was 66%. 64% of the patients never thought of giving up the medications in any circumstance, even though they started feeling better. 63% of the patients always carried the medications with them when they are away from home

We found that single drug was used in 45, two drugs in 25 and more than 2 drugs in 16 cases. Suthar et al[11]analyzed the collected data by using descriptive statistics and determined drug use indicators, defined daily dose (DDD)/1000 inhabitants/day and utilization pattern of antidiabetic drug. Antidiabetic drugs were classified according to Anatomical Therapeutic Chemical (ATC) classification and their consumption was measured in terms of DDD/1000 inhabitants/day. 625 prescriptions were collected during this study. Type 2 diabetes mellitus (T2DM) constituted the most predominant (95.36 %) group of patients; hence oral antidiabeticdrugs were prescribed to a major extent. The average number of drugs per encounter was 4.18 and the average drug cost per encounter was 269.04 Indian National Rupees (INR). Majority of the patients (77.44 %) were receiving three or more drugs. Monotherapy was observed in 29.6 % of patients with insulin as the most predominant concurrently prescribed drug (13.28 %). Dual therapy was prescribed to 45.44 % patients with metformin and glibenclamide (25.44 %) being the predominant combination. Among the various insulin regimens, typical split-mixed regimen (77.18 %) was the most frequently prescribed regime. Our results suggest that there still remains a scope for improving the prescribing pattern of antidiabetic drugs. The favoured use of metformin is acceptable, but the preference of glibenclamide over other sulfonylureas is unsound.

We found that treatment adherence (%) response was never, sometimes, often and always towards forgetting to take medicine in 65, 32, 1 and 2 respectively. Missing medicine when felt better was seen in 57, 39, 3and 1. Stopping medication due to sick effect seen in 58, 35, 5 and 2. Not taking medicine as stock out at home seen in 70, 23, 2 and 5. Deciding not to take medicine in 67, 23, 6 and 4. Deciding to take less medicine in 71, 20, 4 and 5. Forgetting to take drug during travel in 59, 35, 0 and 6 patients respectively. Singh et al[12]determined pattern of prescription, rationalize drug therapy and ascertain adherence to standard recommendations for treatment of diabetes.The study was conducted in the OPD of department of medicine. 89 patients with diabetes were analysed for their prescription pattern and the data was recorded on a case record form (CRF). Data for drug utilization as per the core prescribing

indicators of WHO for drug utilization studies and data for evaluating drug consumption was calculated in terms of defined daily dose (DDD). Drug utilization pattern of diabetic patients showed an average of 5 drugs per prescription out of which on an average 2.18 drugs were for diabetes. The average daily prescribed dose of antidiabetics was under the define daily dose (DDD) range prescribed by WHO which is indicative of a rational drug prescription pattern. Among the antidiabetic drugs prescribed, metformin 500mg was the most commonly prescribed drug in monotherapy while in combination therapy glimepiride 2mg + metformin 500mg was most commonly prescribed.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that adequate number of participants adhered to their drug regimen.

REFERENCES

1. Jemal A, Abdela J. Adherence to Oral Antidiabetic Medications among Type 2 Diabetic (T2DM) Patients in Chronic Ambulatory Wards of Hiwot Fana Specialized University Hospital, Harar, Eastern Ethiopia: A Cross- Sectional Study. J Diabetes Metab. 2017;08(01):721.
2. Anumol M, Anusree TK, Aparna MA, Archana S, Athira M, Sachina BT. Quality of life among type II diabetes mellitus in south India, a descriptive study. Am Int J Res Humanit, Arts Soc Sci. 2014;7(2):197–200.
3. White JR. Improving adherence in the treatment of Type 2 diabetes. Diabetes. 2010;36(4):11–5.
4. Nunes MI. The relationship between quality of life and adherence to treatment. Curr Hypertens Rep. 2001;3(6):462–5.
5. Pietrzykowska E, Zozulinska D, Wierusz-Wysocka B. Quality of life of patients with diabetes. Pol Merkur Lekarski. 2007;23(136):311–4.
6. Alvin C, Kasper DL. Diabetes Mellitus. In: Harrison's Principles of Internal Medicine. New York: McGraw Hills; 2015. p. 2413–35.
7. Shah A, Afzal M. Prevalence of diabetes and hypertension and association with various risk factors among different Muslim populations of Manipur, India. J Diabetes MetabDisord. 2013;12(1):52.
8. Aguilar CAP, Martínez YV, Bernal YS, Martínez RR, Ulloa RA. Performance of two questionnaires to measure treatment adherence in patients with Type-2 Diabetes. BMC Public Health. 2009;9:38.
9. Ashutosh K, Ipseeta RM, Sandeep R. Assessment of Prescription Pattern of Antidiabetic Drugs in the Outpatient Department of a Tertiary Care Hospital. Int J Clin Endocrinol Metab. 2017;3(1):1–7.
10. Devi KL, Raleng I, Sailo Z, Valte V. Drug utilization among diabetes mellitus patients in a tertiary care hospital in North-East India. Indian J Pharm Pharmacol 2020;7(3):177-180.
11. Suthar SD, Dholaria NK, Chavda DA, Chacko J, Bhansali NB, Gosai TR, et al. Drug utilization study in diabetic patients attending medicine outpatient department of a tertiary care hospital. Int J Diabetes Dev Ctries. 2015;35(1):8–13.
12. Singh D, Sawlani KK, Chaudhary SC, Kumar N, Sachan AK, Nath R, Barua S, Dixit RK. Drug utilization study of drugs used in treatment of diabetes mellitus in medicine OPD of a tertiary care hospital in northern India. IP Int J Compr Adv Pharmacol. 2019;4:120-5.