RESEARCH ARTICLE

Clinical Pharmacological Consultation in Optimizing Diabetic Patient Care: A Cross-sectional Observational Study

Shambo Samrat Samajdar,[1] Shatavisa Mukherjee,[2] Sougata Sarkar,[3] Sumalya Sen,[4] Santanu K Tripathi,[5] Shashank R Joshi[6]

Received on: 10 April 2023; *Accepted on:* 02 May 2023; *Published on:* 12 May 2023

Abstract

Background: Treatment choice and therapeutic targets in diabetes care are much individualized and are based on not only clinical data but also patient parameters. A multidisciplinary collaboration in care delivery can help achieving the glycemic targets and improving patients' quality of life simultaneously. This study aimed to evaluate the effect of clinical pharmacological (CP) consultation in optimizing diabetes care.

Methods: A cross-sectional observational study included patients from both groups—those receiving CP consultation as an add-on and those not. Each patient was interviewed for awareness on hypoglycemic alert, insulin injection technique, importance of self-monitoring of blood glucose (SMBG) and foot care, dietary advices, exercise prescription, and sensitization regarding adverse drug reactions (ADRs). Treatment adherence and potential drug–drug interactions (DDI) were also noted for each group and results were statistically analyzed.

Results: Significantly higher awareness regarding hypoglycemic alert, insulin injection technique, importance of SMBG, and ADR sensitization was noted in those receiving CP consultation ($p < 0.05$). Adherence was also significantly higher in such patients and (DDI) significantly lower ($p < 0.001$).

Conclusion: Better patient knowledge can have significant influence on self-care behavioral practices. As diabetes care goes a long way and treatment approaches should be primarily patient-centric, a co-professional support can further aid in optimizing better and safer patient outcomes.

Keywords: Adherence, Awareness, Clinical pharmacological consultation, Diabetes care.

Bengal Physician Journal (2023): 10.5005/jp-journals-10070-8006

Introduction

The successful incorporation of patient-centered strategies into a dynamic model of diabetes care delivery, such as shared decision making, motivational interviewing techniques, shared healthcare appointments, and multidisciplinary teamwork, holds the potential to improve patients' quality of life and achieve glycemic targets. Clinical pharmacological (CP) consultation can be a boon in optimizing such care. Principles of clinical pharmacology would help in selection of right drugs, in right patient, and in right conditions. In the era of precision therapeutics applied CP principles considering pharmacokinetic–pharmacodynamics rationale, selection of evidence-based right dosage regimen, addressing polypharmacy, medication-related problems, and non-adherence are extremely important for diabetic patient care. Each prescribed drug should have valid clinical indication and clear therapeutic goals and evidences. Clinical pharmacological consultation could be useful in addressing various medication-related issues. Diverse medication-related problems include no indication for an existing drug, indication for a particular medication (or device or intervention) but not prescribed, incorrect regimen of drugs (or device or intervention) prescribed when a more efficacious option could be chose, too much of the right drug, too little of the right drug, adverse drug reactions (ADRs) including drug allergy, drug–drug, drug–disease, and drug–food adverse interactions, patient not receiving a prescribed drug (non-adherence), routine monitoring (laboratory tests, screening methods, detailed clinical examination) missing and other problems including possibility of detrimental consequences overlapping adverse effects.

[1–4]Department of Clinical and Experimental Pharmacology, School of Tropical Medicine, Kolkata, India

[5]Department of Pharmacology, Netaji Subhash Medical College and Hospital, Patna, Bihar, India

[6]Deapartment of Endocrinology, Joshi Clinic, Bandra, Mumbai, India

Corresponding Author: Shambo Samrat Samajdar, Department of Clinical and Experimental Pharmacology, School of Tropical Medicine, Kolkata, India, Phone: +91 9831892425, e-mail: shambo_sa2001@yahoo.co.in

How to cite this article: Samajdar SS, Mukherjee S, Sarkar S, *et al*. Clinical Pharmacological Consultation in Optimizing Diabetic Patient Care: A Cross-sectional Observational Study. Bengal Physician Journal 2023;10(1):6–8.

Sources of support: Nil

Conflict of interest: None

Successful management of type 2 diabetes mellitus (T2DM) involves aiming to achieve both glycemic and non-glycemic targets to attain maximum reduction in morbidity and mortality. With a wide range of pharmacological agents available for management, each with its own benefits and risks, it is imperative that the treatment choice and therapeutic targets are individualized and are based on not only clinical data but also patient parameters as well.[1] Clinical pharmacological consultation can be useful in ensuring safer outcomes in diabetes care. This study aimed to evaluate the effect of CP consultation in optimizing diabetes care. The study tried to assess the status of patient's awareness in terms of hypoglycemia, self-monitoring of blood glucose (SMBG), foot

care, dietary pattern, insulin injection technique, and exercise in diabetic patients with or without this co-professional consultation. The study also tried to probe potential drug-related harms and their subsequent management in diabetes along with associated drug–drug interactions (DDI) and drug–disease interaction.

Methods

A cross-sectional observational study was carried out among 250 patients with diabetes receiving antidiabetes treatment from a particular facility for at least 6 months. The participants were randomly selected from both groups—those receiving CP consultation as an add-on (group A) and those not receiving CP consultation (group B). Each patient was interviewed based on a prestructured and validated questionnaire comprising items assessing awareness of the patient on parameters like hypoglycemic alert, insulin injection technique, importance of SMBG and foot care, dietary advices, exercise prescription, and sensitization regarding ADRs. The response was compared among each group. Further, adherence to the diabetes treatment was assessed using Morisky Medication Adherence Scale (MMAS)-8[2] scoring. Potential DDI were also noted and assessed using standard DDI checker.

Data were statistically analyzed and represented as frequency, percentage, mean, and standard deviation wherever applicable. Demographic and categorical data were analyzed with parametric or nonparametric tests whichever found applicable. A *p*-value of less than 0.05 was considered statistically significant. All statistical measures were performed using standard statistical software like Statistical Package for the Social Sciences (Windows version 21.0; SPSS Inc, Chicago [IL], USA) and Microsoft Excel.

Results

The study included 250 patients with diabetes randomly selected from either group—those receiving CP consultation as an add-on (group A, $n = 125$) and those not receiving CP consultation (group B, $n = 125$). Mean age of the study population was 52.36 + 7.38 years in group A and 53.39 + 6.92 years in group B, with nearly identical sex ratio in each group (1.36:1 in group A, 1.19:1 in group B).

Awareness was assessed based on parameters like hypoglycemic alert, insulin injection technique, importance of SMBG and foot care, dietary advices, exercise prescription, and sensitization regarding ADRs (Table 1). Significantly higher awareness was noted in group A regarding hypoglycemic alert, insulin injection technique, importance of SMBG, and ADR sensitization ($p < 0.05$).

Treatment adherence was assessed using MMAS-8. Adherence was significantly higher in group A as compared with group B at $p < 0.001$ (Fig. 1). Potential DDI noted and assessed using standard DDI checker. Interactions were significantly higher in group B as compared with group A at $p < 0.001$ (Fig. 2).

Discussion

Management of adverse patient experiences including ADRs is important part in diabetes management. Many times patients with diabetes require care for other comorbidities, it is important to address their concomitant medications. De-prescribing is defined as stopping any drug without known benefit, and discontinuing a drug with actual or potential adverse effect. Early identification and de-prescribing of offended drug could avoid prescribing cascade-related atrocities. "Start low—go slow—but go" is an important principle for CP approach especially in elderly population. Specific interventions are required in special cases like renal and hepatic compromised patients.[3]

Table 1: Awareness measures

	Group A	*Group B*	*Chi-square Value*	*p-value*
Hypoglycemic alert	92 (73.6)	62 (49.6)	14.22	0.0002
Insulin injection technique	101 (80.8)	72 (57.6)	14.71	0.0002
Importance of SMBG	66 (52.8)	48 (38.4)	4.66	0.03
Importance of foot care	87 (69.6)	83 (66.4)	0.17	0.68
Dietary advices	99 (79.2)	95 (76)	0.21	0.64
Exercise prescription	102 (81.6)	100 (80)	0.03	0.86
Sensitization regarding ADRs	60 (48)	37 (29.6)	8.15	0.004

SMBG, self-monitoring of blood glucose

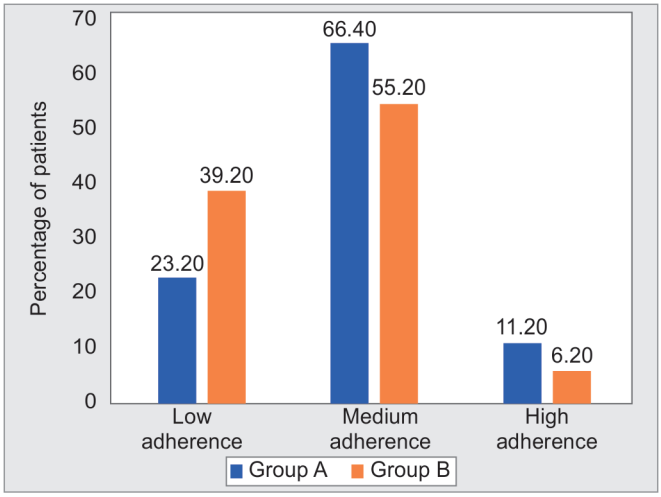

Fig. 1: Medication adherence assessment using Morisky medication adherence scale-8

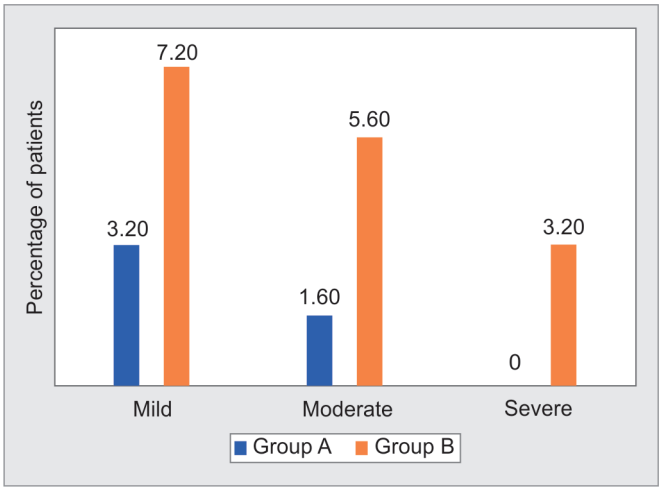

Fig. 2: Potential drug–drug interactions assessed

Awareness about diabetes and its related complications is very poor among patients as depicted in different studies conducted at different parts of the world. A study conducted in Gambia had shown 50% of patients were unaware about diabetes.[4] Similar observations were made by Muninarayana et al.[5] in a study done in Tamaka, Kolar (India) and in Kenya.[6] Knowledge on diabetic complications is not adequate as per different studies conducted in developing and poor socioeconomic countries.[4–7] It is important to optimize knowledge level to have better outcome among patients. Clinical pharmacological consultations were focused to increase awareness on different important aspects of diabetes management including hypoglycemia alert, insulin injection technique, and importance of SMBG in patients with diabetes. Non-pharmacological way including diet and exercise is key step to manage diabetes optimally. Studies conducted in India,[8] Oman,[9] Tanzania,[10] and Gambia[4] had shown that very small percentage of patients know that weight loss (around 0.5%) and exercise (around 5.6%) could improve diabetes control.

In this study, those with CP consultation showed better patient awareness on hypoglycemia alert, insulin injection technique, importance of SMBG in patients with diabetes. Patients were equally informed and aware about dietary intake and exercise in both groups. Patients receiving co-professional support were better sensitized regarding ADRs. Adherence was better in the CP consultation group. Potential DDI were lesser in the CP consultation arm, in comparison to the control arm. Clinical pharmacological reconciliation, review, and feedback could be an effective option to be implemented in diabetes care to optimize ongoing therapeutics.

However, the study may have certain limitations. Patient awareness and treatment adherence are factors highly influenced by the socioeconomic facets including educational status and other allied factors. The present study could not assess such factors in depth and thus fails to associate the findings further. Future studies should try to overcome these limitations.

Conclusion

The study observed the positive impact of co-professional care on patient awareness and adherence on T2DM patients. Better patient knowledge can have significant influence on self-care behavioral practices. As diabetes care goes a long way and treatment approaches should be primarily patient-centric, a co-professional support can further aid in optimizing better and safer patient outcomes.

References

1. Brunetti L, Kalabalik J. Management of type-2 diabetes mellitus in adults: Focus on individualizing non-insulin therapies. P T. 2012;37(12):687–696. PMID: 23319847.
2. Morisky DE, Ang A, Krousel-Wood M, et al. Predictive validity of a medication adherence measure for hypertension control. J Clin Hypertens 2008;10(5):348–354. DOI: 10.1111/j.1751-7176.2008.07572.x.
3. Samajdar SS, Mukherjee S, Tripathi SK, et al. Deprescribing for better patient outcomes in chronic long term care and role of clinical pharmacological review. J Assoc Physicians India 2021;69(11):11–12. PMID: 34781620.
4. Foma MA, Saidu Y, Omoleke SA, et al. Awareness of diabetes mellitus among diabetic patients in the Gambia: A strong case for health education and promotion. BMC Public Health 2013;13:1124. DOI: 10.1186/1471-2458-13-1124.
5. Muninarayana C, Hiremath G, Krishna I, et al. Prevalence and awareness regarding diabetes mellitus in rural Tamaka, Kolar. Int J Diabetes Dev Ctries 2010;30(1): 18–21. DOI: 10.4103/0973-3930.60005.
6. Maina WK, Njenga EW, Muchemi EW. Knowledge, attitude and practices related to diabetes among community members in four provinces in Kenya: A cross-sectional study. Pan Afr Med J 2010;7(2):15–18. ISSN 1937–8688.
7. Unadike BC, Chineye S. Knowledge, awareness, and impact of diabetes among adolescents in Uyo, Nigeria. Afr J Diabet Med 2009;3:12–14.
8. Hashmi NR, Seema D, Iram M. Awareness among individuals attending outpatient department of Ghurki Trust Teaching Hospital. Professional Med J 2008;15(1):96–100. DOI: https://doi.org/10.29309/TPMJ/2008.15.01.2704.
9. Al Shafaee M, Al-Shukaili S, Rizvi S, et al. Knowledge and perceptions of diabetes in a semi-urban Omani population. BMC Public Health 2008;8(1):249. DOI: 10.1186/1471-2458-8-249.
10. Avi B, Colford J. Prevalence and treatment of diabetes in rural Tanzania. Berkeley: University of California at Berkeley Press; 2012.