Frontiers in Health Informatics
ISSN-Online: 2676-7104
www.healthinformaticsjournal.com
2024; 13: 03
Open Access

To Investigate Medication Adherence and Associated Factors among Diabetes Patients: A Prospective Study

Dr. Gaurav A. Chaudhary[1], Dr. Tushar Vishnu Tonde[2*], Dr. Harishchandra Chaudhari[3]

[1]Associate professor, Department of General Medicine, Dr. DY Patil Medical College, Hospital and Research Centre, Dr. D.Y. Patil Vidyapeeth, (Deemed to be university), Pimpri, Pune-411018, Maharashtra, India.
[2]Associate professor, Department of General Medicine, Dr. DY Patil Medical College, Hospital and Research Centre, Dr. D.Y. Patil Vidyapeeth, (Deemed to be university), Pimpri, Pune-411018, Maharashtra, India.
[3]Associate professor, Department of Geriatric Medicine, Dr. DY Patil Medical College, Hospital and Research Centre, Dr. D.Y. Patil Vidyapeeth, (Deemed to be university), Pimpri, Pune-411018, Maharashtra, India.
*Corresponding author: Dr. Tushar Vishnu Tonde
Associate professor, Department of General Medicine, Dr. DY Patil Medical College, Hospital and Research Centre, Dr. D.Y. Patil Vidyapeeth, (Deemed to be university), Pimpri, Pune-411018, Maharashtra, India.
tuskeye@gmail.com

Cite this paper as: Gaurav A. Chaudhary,Tushar Vishnu Tonde, Harishchandra Chaudhari (2024) To Investigate Medication Adherence and Associated Factors among Diabetes Patients: A Prospective Study. *Frontiers in Health Informatics, 13* (3), 8976-8980

A B S T R A C T

Aim: *To investigate medication adherence and associated factors among diabetes patients.*
Methodology: *Prospective cross-sectional research was conducted on 300 diabetes patients who attended the department from January 2024 to June 2024. All patients visiting the research facility were given a detailed questionnaire that asked for demographic information and reasons for interrupting therapy.*
Results: *A survey was conducted on 300 patients, and the results showed that 205 (68.3%) of them were male. The average age of the patients was 49.65 ± 10.12 years, and their average BMI was 25.35 ± 4.06 kg/m². The findings indicated that 295 individuals (98.3%) were diagnosed with Type 2 Diabetes Mellitus, and a majority of them (56.0%) reported experiencing financial challenges that hindered their ability to afford prescriptions. In addition, a total of 72 patients, accounting for 24.0% of the sample, were found to be illiterate, suggesting a possible lack of knowledge or understanding of the significance of medicine.*
Conclusion: *Our research findings, as well as prior studies, demonstrate that financial challenges and a lack of understanding are major obstacles to patients' adherence. It is essential to focus on controllable variables, such as family support and access to prescription information, in order to enhance adherence and achieve better glycemic control.*

Keywords: *Diabetes, medication, adherence*

INTRODUCTION

Diabetes Mellitus (DM) is a persistent metabolic condition marked by compromised control of glucose due to either insufficient insulin production or an inability to effectively use insulin. Type 2 Diabetes Mellitus (T2DM) is the most common type of diabetes, mostly impacting adults [1]. India has an estimated 77 million adults aged 18 and above who have Type 2 Diabetes Mellitus (T2DM), and another 25 million persons who are considered pre-diabetic. Over 50% of these patients are ignorant of their disease, which can result in severe health issues if not properly detected and addressed [2]. Poor treatment of diabetes raises the likelihood of complications, thus impacting an individual's overall well-being [3]. Compliance with recommended Oral Hypoglycemic Agents (OHA) aids in the management of Type 2 Diabetes Mellitus (T2DM). Adherence, as defined by the World Health Organization (WHO), refers to the degree to which an individual's actions of taking medicine, adhering to a certain diet, and implementing lifestyle modifications align with the advice provided by their healthcare practitioner [4].

Prior research has shown that a significant number of people with type 2 diabetes (T2DM) do not adhere to their prescribed treatment [5]. Inadequate compliance can endanger both safety and the effectiveness of therapy, potentially resulting in a rise in problems connected to diabetes [6, 7]. The World Health Organization (WHO) has stressed the need of enhancing compliance with current therapies rather than just prioritizing the creation of new drugs [4]. Prior studies have investigated non-modifiable risk variables, such as age, gender, ethnicity, income, education, and co-morbidities, as potential reasons of non-adherence [6, 8]. Modifiable risk factors contribute significantly to non-adherence. The objective of this study was to determine the modifiable risk factors that contribute to non-adherence among individuals with diabetes.

METHODOLOGY

Present prospective cross-sectional study was performed on 300 diabetes patients who have visited Diabetes Center between January 2024 to June 2024.

Inclusion criteria:

All diabetes patients (both Type 1 and type 2) having age more than 18 years and who were on diabetes medication were included.

Exclusion criteria:

Diabetes patients having age <18 years and suffering from serious complication and require hospitalization were excluded from the present study.

Methodology

All patients attending the research facility were given a thorough questionnaire. The questionnaire covered demographic information and asked about the reasons for treatment cessation.

Patients responded affirmatively or negatively to each of the following inquiries:

Are you experiencing any financial difficulties? Do you not have somebody to join you on your visits? Are diabetic medications accessible in your locality? Are you available to attend appointments within your schedule? Are you now engaged in fulfilling family responsibilities? Do the drugs you take result in any adverse effects? Do you understand the repercussions of not taking your medication as prescribed? Do you have a favorable attitude towards taking drugs for an extended period of time?

Statistical analysis

Data analysis was conducted using IBM SPSS version 20 software. Frequency distribution was utilized to create tables, with quantitative data presented as mean ± standard deviation and categorical data expressed as percentages.

RESULTS

The mean age, weight, height, and BMI of the study cohort were 49.65 ± 10.12 years, 67.97 ± 12.08 kg, 163.75 ± 8.08 cm, and 25.35 ± 4.06 kg/m², respectively. The majority of the patients were male, comprising 205 (68.3%).

Response (patients who had "Yes")	N (n=300)	%
Financial problem	173	57.7
No one to accompany for visit	82	27.3
Non availability of medicines in his area	59	19.7
Lack of time to come for visit	130	43.3
Busy in family obligation	65	21.7
Shifted to alternative treatment	111	37.0
Side effects of medication	200	66.7
Not aware of the consequences of missing the doses	204	68.0
Long life medication period	221	73.7
Lack of awareness to take medication	195	65.0

Table 1: Factors responsible for the treatment interruptions among diabetes patients.

Two hundred and ninety-five patients (98.3%) had T2DM, whereas five had T1DM. Only 48 (16.0%) individuals have diabetes in their families. The bulk of patients were illiterate, 72 (24.0%), followed by 64 (21.3%) graduates. Most of the patients were married, 293 (97.7%), with 73 (24.3%) being businesspeople and 66 (22.0%) earning 5001–15000 rupees a month. Oral antidiabetic drugs accounted for 220 (73.3%) of patients, followed by Ayurvedic plus oral at 56 (18.7%). Only 13 (4.3%) were insulin-treated. In this research, 236 (78.7%) patients had been off medication for 1–5 months, followed by 36 (12.0%) for 6–10 months.

DISCUSSION

Ensuring that persons with diabetes mellitus adhere to their medication is a vital component of self-management [9]. Unregulated high blood sugar levels can result in a range of issues affecting small blood vessels and large blood vessels, such as damage to the retina, kidneys, nerves, and related heart and blood vessel illnesses. In order to obtain the best possible management of blood sugar levels in individuals with diabetes, it is crucial to administer the right medication and maintain strict adherence to it [10].

In research done by AlQarni et al. in AlKhobar City, KSA, it was shown that 35.8% of diabetic patients had a good level of adherence to their prescriptions [11]. Conversely, a study conducted in 2022 by Murwanashyaka et al. found that a greater proportion of participants had inadequate adherence behaviors [12]. In addition, a study conducted by Balkhi et al. in KSA found that around 50% of the participants showed satisfactory adherence to their diabetic treatment [13]. The notable disparities in these findings among different authors might be

ascribed to several variables, such as variations in research sites, the methodologies employed to assess medication adherence, and the accessibility and availability of sufficient diabetic care services. Moreover, our findings emphasize the imperative nature of incorporating the suggested interventions put out by the World Health Organization and the International Diabetes Federation [14, 15].

Prior research has established that the cost of medication is a key determinant of patients not adhering to their recommended therapies. Mojtabai et al. found that 7% of patients encountered challenges in acquiring drugs as a result of their high cost [16]. In a similar vein, Awodele et al. discovered that over 50% of the patients saw their prescriptions as being too expensive [17]. The findings of the present study are consistent with the results, since more than 50% of the patients reported financial difficulties that impeded their ability to buy diabetic drugs. Financial challenges were identified as a significant factor contributing to non-compliance among individuals with diabetes in the present research [18].

Furthermore, a lack of consciousness of the significance of medicine was recognized as another cause for treatment disruptions, maybe originating from forgetfulness in adhering to drug schedules. This discovery corroborates the conclusions of Lawton et al., who observed that non-adherence was more strongly linked to patient forgetfulness rather than particular concerns regarding prescriptions or contacts with healthcare personnel [19].

Poor adherence to treatment can be attributed to two types of risk variables: unmodifiable characteristics, such as age and sex, and those that are difficult to adjust within the patient-physician interaction, such as education, financial challenges, and work position. Nevertheless, there are several risk factors that may be altered, including inadequate family support, insufficient knowledge about drugs, and a reluctance to follow medical advice. Healthcare practitioners can increase medication adherence by addressing these characteristics that can be modified, which can then result in better glycemic control.

CONCLUSION

Ultimately, adhering to medication is crucial for the successful treatment of diabetes, since inadequate adherence can result in significant problems. The presence of financial challenges and limited knowledge provide substantial obstacles to patient adherence, as shown by our research findings and other investigations. It is essential to focus on controllable variables such as family support and access to medication information in order to enhance adherence and glycemic control. Healthcare professionals can improve patient outcomes by prioritizing these areas and adopting guidelines from the World Health Organization (WHO) and the International Diabetes Federation.

REFERENCES

1. Diabetes. Available from: https://www.who.int/health-topics/diabetes#tab=- tab_1 [Last assessed on 20 April 2023]
2. Diabetes in India. Available from: https://www.who.int/india/health-topics/ mobile-technology-for-preventing-ncds [last assessed on 20 April 2023]
3. Ahmed NO, Abugalambo S, Almethen GH. Adherence to oral hypoglycaemic medication among participants with diabetes in Saudi Arabia. Int J Health Sci (Qassim) 2017;11(3):45–9.
4. World Health Organization. Adherence to long term therapies, time for action. Geneva: World Health Organization 2003: 221. Available at:

https://apps.who.int/iris/bitstream/handle/10665/42682/9241545992.pdf;jsessionid=71115FB1185B3776921EDD7E4774742A?sequence=1. Accessed 16 April 2020.

5. Cramer JA. A systematic review of adherence with medications for diabetes. Diabetes Care 2004;27(5):1218-24.
6. Sokol MC, Mc Guigan KA, Verbrugge RR, Epstein RS. Impact of medication adherence on hospitalization risk and healthcare cost. Med Care. 2005;43:521-30.
7. Lee WC, Balu S, Cobden D, Joshi AV, Pashos CL. Prevalence and economic consequences of medication adherence in diabetes: a systematic literature review. Manag Care Interface. 2006;19(7):31-41.
8. Di Matteo MR. Variations in patients' adherence to medical recommendations: a quantitative review of 50 years of research. Med Care. 2004;42:200-9.
9. Van Bruggen R, Gorter K, Stolk RP, Zuithoff P, Klungel OH et al. Refill adherence and polypharmacy among patients with type 2 diabetes in general practice. Pharmacoepidemiol Drug Saf. 2009;18(11):983-91.
10. Pollack MF, Purayidathil FW, Bolge SC, Williams SA. Patient-reported tolerability issues with oral antidiabetic agents: Associations with adherence; treatment satisfaction and health-related quality of life. Diabetes Res Clin Pract. 2010;87(2):204-10.
11. AlQarni K., AlQarni E.A., Naqvi A.A., AlShayban D.M., Ghori S.A., Haseeb A., Raafat M., Jamshed S. Assessment of Medication Adherence in Saudi Patients With Type II Diabetes Mellitus in Khobar City, Saudi Arabia. *Front. Pharm.* 2019;10:1306.
12. Murwanashyaka J.d.D., Ndagijimana A., Biracyaza E., Sunday F.X., Umugwaneza M. Non-adherence to medication and associated factors among type 2 diabetes patients at Clinique Medicale Fraternite, Rwanda: A cross-sectional study. *BMC Endocr. Disord.* 2022;22:219.
13. Balkhi B., Alwhaibi M., Alqahtani N., Alhawassi T., Alshammari T.M., Mahmoud M., Almetwazi M., Ata S., Kamal K.M. Oral antidiabetic medication adherence and glycaemic control among patients with type 2 diabetes mellitus: A cross-sectional retrospective study in a tertiary hospital in Saudi Arabia. *BMJ Open.* 2019;9:e029280.
14. IDF Theme—World Diabetes Day. [(accessed on 15 October 2022)]. Available online: https://worlddiabetesday.org/about/theme/
15. WHO World Diabetes Day. 2022. [(accessed on 17 December 2022)]. Available online: https://www.who.int/campaigns/world-diabetes-day/2022
16. Mojtabai R, Olfson M. Medication Costs, Adherence and Health Outcomes Among Medicare Beneficiaries. Health Aff. 2003;22(4):220-9.
17. Awodele O, Osuolale JA. Medication adherence in type 2 diabetes patients: study of patients in Alimosho General Hospital, Igando, Lagos, Nigeria. African Health Sciences. 2015;15(2):513-22.
18. Tiv M, Viel J-F, Mauny F, Eschwe`ge E, Weill A, et al. Medication Adherence in Type 2 Diabetes: The ENTRED Study 2007, a French Population- Based Study. PLoS One. 2012:7(3):e32412