

Retrospective Assessment of Modifiable Risk Factors Which Are Responsible For the Non- Adherence among the Diabetes Population

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Abstract

Aim: The aim of the present study was to find out the modifiable risk factors which are responsible for the non-adherence among the diabetes population.

Methods: The Present retrospective study was performed on 500 diabetes patients who have visited Department of Medicine, Katihar Medical College and Hospital, Katihar, Bihar India for the period of 1 year.

Results: Average study cohort age, weight, height, and BMI were 48.62±10.12 years, 64.96±12.08 kgs, 164.76±8.08 cm, and 25.35±4.06kg/m². Most patients were men 350 (70%). Most of the 500 patients (485/97%) had T2DM, followed by 15 (3%). Only 75 (15%) individuals have diabetes in their families. After 200 (40%) illiterate patients, 140 (28%) graduates were present. Most patients (490) were married (98%). oral antidiabetic medicines 475 (75%) and Ayurvedic plus oral 100 (20%) were used by most patients. Only 25 (5%) were insulin-treated. In this trial, 400 (80%) patients were off therapy for 1-5 months, followed by 60 (12%) for 6-10 months. The most prevalent reason for treatment cessation was long-term medicine (75%), followed by not knowing the repercussions of skipping doses (68%), drug side effects (65%), and financial issues (58%).

Conclusion: Identifying patients with low adherence is crucial to improving the causes. Individually reducing risk variables for poor adherence may improve glycemic control in diabetic patients.

Keywords: Diabetes complications, Diabetes mellitus, Modifiable risk factors, Side effects

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Introduction

Over the last several years, there has been a significant increase in the prevalence of diabetes and its related complications, which has placed an unprecedented strain on healthcare systems worldwide. The International Diabetes Federation (IDF) reports that there are now 463 million individuals worldwide who have been diagnosed with diabetes. This condition affects around 9.3% of the population between the ages of 20 and 79. [1] The health care system in low- and middle-income nations, which serves 79% of individuals with diabetes, has been overwhelmed. India is among the top three nations with the highest number of people affected by diabetes and is projected to maintain this position until 2030.1. [2]

Adherence to medicine, as defined by the World Health Organization (WHO), refers to the degree to which a patient's actions of taking medication align with the recommendations of their physician. [3] The lack of adherence to drugs has always been a difficult part of managing Non-Communicable Diseases (NCDs). The drug's therapeutic efficacy is

diminished, leading to frequent hospital visits since the patient's health does not improve. This places a strain on the healthcare system and resulting in significant healthcare expenses for the patient. [4] The physician may mistakenly perceive the decline in therapeutic impact or lack of reaction to the therapy as therapeutic ineffectiveness, rather than non-adherence to medicine. This might lead the physician to raise the dosage or modify the treatment plan, which could harm the patient. [5] Significant progress has been achieved in the treatment and monitoring of diabetes development. Nevertheless, securing patient compliance with treatment is a significant obstacle for physicians. Strict adherence to anti-diabetes drugs leads to a reduction in hospital admissions caused by diabetes-related complications. [6] Insufficient compliance makes it impossible to prevent the medical implications of the condition. However, these effects may be postponed, if not completely avoided, by effectively managing blood sugar levels. Inadequate adherence is often linked to adverse consequences such as

unregulated glycemic levels and issues connected to diabetes. [7] As a consequence, the patient is required to allocate substantial financial resources towards hospitalization and the management of chronic illnesses. [8]

The objective of this research was to identify the modifiable risk factors that contribute to non-adherence among individuals with diabetes.

Materials and Methods

The Present retrospective study was performed on 500 diabetes patients who have visited Department of Medicine, Katihar Medical College and Hospital, Katihar, Bihar India for the period of 1 year.

Inclusion Criteria

- All diabetic patients, including those with Type 1 and Type 2 diabetes, who were above the age of 18 and taking medication for their condition, were included in the study.

Exclusion Criteria

- The current research excluded diabetes patients under the age of 18 who were experiencing severe complications and needed to be hospitalized.

All patients attending the research facility were given a comprehensive questionnaire of 25 questions. The questionnaire included demographic information and asked about the reasons for treatment cessation.

Patients were asked to indicate whether they had financial difficulties, lacked a companion for their visits, had access to diabetes medication in their area, had enough time to come for visits, were occupied with family obligations, experienced side effects from their medication, were aware of the consequences of missing doses, and found it beneficial to take long-term medication.

The data analysis was conducted exclusively using IBM SPSS version 20 software. Tables were prepared using frequency distribution. The quantitative data was represented as the mean value plus or minus the standard deviation, whereas the categorical data was represented as a percentage.

Results

Table 1: Patient characteristics

Parameters	Mean \pm SD, N (%)
Mean age	48.62 \pm 10.12 years
Mean weight	64.96 \pm 12.08 kgs
Mean weight	164.76 \pm 8.08 cm
Mean BMI	25.35 \pm 4.06 kg/m ²
Gender	
Male	350 (70)
Female	150 (30)
Diabetes Mellitus	
T1DM	485 (97)
T2DM	15 (3)
Family history of diabetes	
Yes	75 (15)
No	425 (85)
Education level	
No formal education	200 (40)
Primary	110 (22)
Graduation	140 (28)
Post-graduation	50 (10)
Marital status	
Married	490 (98)
Unmarried	10 (2)

Average study cohort age, weight, height, and BMI were 48.62 \pm 10.12 years, 64.96 \pm 12.08 kgs, 164.76 \pm 8.08 cm, and 25.35 \pm 4.06kg/m². Most patients were men 350 (70%). Most of the 500 patients (485/97%) had T2DM, followed by 15

(3%). Only 75 (15%) individuals have diabetes in their families. After 200 (40%) illiterate patients, 140 (28%) graduates were present. Most patients (490) were married (98%).

Table 2: Medications and treatment duration

Anti-diabetic drugs	N%
Oral antidiabetic medications	475 (75)
Ayurvedic plus Oral Antidiabetic medication	100 (20)
Insulins	25 (5)
Treatment duration	
1-5 months	400 (80)
6-10 months	60 (12)
>10 months	40 (8)

Oral antidiabetic medicines 475 (75%) and Ayurvedic plus oral 100 (20%) were used by most patients. Only 25 (5%) were insulin-treated. In this trial, 400 (80%) patients were off therapy for 1-5 months, followed by 60 (12%) for 6-10 months.

Table 3: Factors responsible for the treatment interruptions among diabetes patients

Response (patients who had "Yes")	N (n=500)	%
Financial problem	290	58
No one to accompany for visit	135	27
Non availability of medicines in his area	100	20
Lack of time to come for visit	415	43
Busy in family obligation	110	22
Shifted to alternative treatment	185	37
Side effects of medication	325	65
Not aware of the consequences of missing the doses	340	68
Long life medication period	375	75
Lack of awareness to take medication	325	65

The most prevalent reason for treatment cessation was long-term medicine (75%), followed by not knowing the repercussions of skipping doses (68%), drug side effects (65%), and financial issues (58%)

Discussion

The key factor that determines the quality of healthcare in individuals with diabetes is their adherence to medication. Adherence, as per the World Health Organization (WHO) definition, pertains to the extent to which an individual's behavior of consuming medication, following a specific diet, and implementing lifestyle changes aligns with the recommended guidance given by their healthcare provider. [9] Prior research has demonstrated that a substantial proportion of individuals diagnosed with type 2 diabetes (T2DM) fail to adhere to their prescribed treatment plan.¹⁰ Insufficient adherence to guidelines may endanger safety and the effectiveness of treatment, leading to an increase in diabetes-related complications. [11] The World Health Organization (WHO) report has underscored the importance of improving adherence to existing treatment protocols rather than prioritizing the creation of new medical interventions. [12] Previous studies have examined fixed risk factors, such as age, gender, ethnicity,

income, education, and comorbidities, as potential reasons for non-adherence. [13,14]

The mean age, weight, height, and BMI of the study cohort were 48.62±10.12 years, 64.96±12.08 kg, 164.76±8.08 centimeters, and 25.35±4.06 kilograms per square meter, respectively. The findings align with the results reported by Ascher-Svanum et al [14], who conducted a study on a population of 74,399 individuals. They discovered that the mean age of the patients was 51.0 years with a standard deviation of 9.0. Out of the total number of patients, specifically 350 individuals (70%), were identified as male. This discovery is consistent with a study conducted by Ascher-Svanum et al [14], which revealed that more than half of the diabetic patients included in their research were male, specifically 54%. In contrast to the present research, Awodele et al. [15] reported a larger percentage of females. Out of the 500 patients, the majority comprised of persons with T2DM, comprising 485 (97%), while T1DM patients accounted for 15 (3%) of the total. Out of the total number of patients, only 75 people, which amounts for 15% of the sample, reported having a family history of diabetes. The bulk of the patients, 200 (40%), were illiterate, followed by 140 (28%) patients who were graduates. Nevertheless, the current research failed to uncover any

statistically significant differential among key demographic factors, such as education, job, and socioeconomic level, in connection to adherence to medication. Several research, including the one done by Rwegrere GM et al [16], confirm the conclusions of the present study, as they revealed that the educational quality of patients is not connected with their adherence behavior. Research undertaken by Sefah IA et al [17] offered supportive data by obtaining similar results concerning occupation. On the other hand, Aravindakshan R et al [18] discovered a statistically significant link between socioeconomic class. Furthermore, recent research conducted out in Ethiopia demonstrated a substantial association between poor adherence and negative financial status. The differences in the study circumstances and sample population could account for all these discrepancies.

The great majority of patients, exactly 490 people (98% of the total), were married. The bulk of patients, namely 475 (75%), were receiving oral antidiabetic medications. This was followed by 100 individuals (20%) who were utilizing a combination of Ayurvedic and oral antidiabetic drugs. Out of the entire number of patients, only 25, which amounts for 5% of the population, were utilizing insulin. The majority of individuals in the present investigation had ceased medication for a duration of 1-5 months. Out of the whole sample, 400 patients (80%) were monitored, while 60 patients (12%) who had stopped treatment for 6-10 months were also included in the study. The main factor leading to treatment cessation was the prolonged duration of medication (75%), followed by a lack of understanding about the consequences of missing doses (68%). Furthermore, 65% of participants mentioned pharmacological adverse effects as a cause for stopping, whilst 58% indicated financial challenges. The research done by Lawton et al. [19] found that non-adherence was mostly linked to patient forgetfulness rather than specific concerns about medication or interaction with healthcare providers. Family support is crucial for efficiently controlling diabetes. Family members function as advisors, advocating for and encouraging the adoption of nutritious diet and exercise practices. Family members play a vital role in fostering medication adherence and providing comprehensive support for individuals to effectively manage diabetes. [20]

Hence, it is important to provide patients with comprehensive knowledge on their medical condition and recommended drugs. It is essential to educate the person accompanying the patients on the specific information about missed doses. Nevertheless, several previous studies have shown no association between education and the enhancement of self-management skills and psychosocial competencies in individuals with diabetes. [21,22] Risk factors for poor adherence

may be classified as nonmodifiable variables, such as age and sex, and characteristics that are challenging to alter, such as education, financial concerns, and the involvement of professional activities within the medical relationship. Treating doctors might focus on modifiable risk factors, such as lack of family support, limited understanding about medicine, and reluctance to following medical advice, in order to improve medication adherence and better glyceemic control.

Conclusion

Medication adherence is essential for diabetes management. Participants had poor medication adherence, according to the study. These results highlight the necessity for individualized doctors' approach to modifiable risk factors. However, patients and their families are vital to diabetes care. Patients need information, skills, and behavioral change. Finally, to improve poor adherence, patients must be identified. Improved adherence to risk variables linked with poor outcomes may improve glyceemic control in diabetic patients.

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