To Identify the Modifiable Risk Factors Which Are Responsible For the Non- Adherence among the Diabetics

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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 research was a retrospective study that was conducted on two hundred diabetic patients who had attended the Department of Medicine, JLNMCH, Bhagalpur, Bihar, India, for a period of 12 months.

Results: Average 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. The patients were 140 (70% male). Of 200 patients, 196 (98%) had T2DM, whereas 4 (2% had T1DM). Only 30 (15%) individuals have diabetes in their families. Eighty (40%) were illiterate, whereas 56 (28%) were graduates. 196 patients (98% married) were married. Patients were mostly on oral antidiabetic medicines 150 (75%) and Ayurvedic plus oral 40 (20%). Only 10 (5%) patients used insulin. In this research, 160 (80%) patients were off therapy for 1-5 months, followed by 24 (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: It is very important to identify the patients with poor adherence in order to improve the factors responsible. By improving the risk factors for the poor adherence on individual basis better outcome can be obtained in terms of better glycemic control among the diabetes patients.

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

Introduction

Diabetes mellitus (DM) is a serious and rapidly growing public issue, which affects millions of people. Its prevalence is growing every year, reaching epidemic proportions. [1,2] According to the International Diabetes Federation, 415 million people had diabetes in 2015, with a projection of 642 million by 2040 [3] and an estimated 8.5% of the world's population will have been affected by T2D by 2040. [4,5] Globally, T2D is the most prevalent form [6] and accounts for 90% of all diabetes. [7] The overall rates of diabetes-related morbidity and mortality are higher in most low- and middle-income countries than in high-income countries. [6]

The burden of T2D is increasing because of suboptimal glycemic control resulting in vascular complications. [8] Achieving glycemic control and preventing early complications are the ultimate targets of diabetes management which depends on patients' adherence to regimens. [9] Medication adherence (MA) is the extent to which an individual takes medication as directed by a healthcare professional. [10]

Assessment of medication adherence can be conducted in an array of ways, which include direct methods and indirect methods. Direct methods include, measuring the level of drug or its metabolite in body fluids. These are one of the most precise methods of measuring adherence, but they are costly. Each technique of indirect methods including self-report questionnaire, pill counts and rate of prescription refills has its own advantages and disadvantages. Hence, no method is considered to be the gold standard. However, patients' self-report questionnaire is the most convenient method of assessing adherence. [11,12] As evidenced through various studies conducted previously, non-adherence towards OHAs can be attributed to poor knowledge and perception of the patients towards their disease and medication. However, implementing appropriate measures to enhance adherence among them would contribute optimal glycaemic control. [13] Educating patients about the importance of taking medications and their benefits, continual reassessment by the physician, simplified medication regimen, and counselling patients and

their caretakers about the important aspects of adherence may contribute towards improvement in medication adherence. Since medication adherence is an important variable of effectiveness of treatment in diabetic population, it is essential to adopt an improved individualised strategy for its improvement. [14]

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.

Materials and Methods

The present research was a retrospective study that was conducted on two hundred diabetic patients who had attended the Department of Medicine, JLNMCH, Bhagalpur, Bihar, India, for a period of 12 months.

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.

A detailed questionnaire consisting of 25 questions which included demographic details and the questions on the reasons for the treatment interruption were given to all the patients visiting to study center.

Patients were asked a series of questions to which they responded with either a yes or no. The questions included: do you experience financial difficulties, do you lack someone to accompany you for visits, is diabetes medication readily available in your area, do you have enough time to come for visits, are you preoccupied with family obligations, does your medication cause side effects, are you aware of the consequences of missing doses, and do you believe it is beneficial to take long-term medications. All the data analysis was performed using IBM SPSS ver. 20 software.

Results

Table 1: Patient characteristics

Parameters	Mean ± SD, N (%)
Mean age	48.62±10.12 years
Mean weight	64.96±12.08 kgs
Mean weight	164.76±8.08 cm
Mean BMI	25.35±4.06 kg/m^2
Gender	
Male	140 (70)
Female	60 (30)
Diabetes Mellitus	
T1DM	196 (98)
T2DM	4 (2)
Family history of diabetes	
Yes	30 (15)
No	170 (85)
Education level	
No formal education	80 (40)
Primary	44 (22)
Graduation	56 (28)
Post-graduation	20 (10)
Marital status	
Married	196 (98)
Unmarried	4 (2)

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. The patients were 140 (70% male). Of 200 patients, 196

(98%) had T2DM, whereas 4 (2% had T1DM). Only 30 (15%) individuals have diabetes in their families. Eighty (40%) were illiterate, whereas 56 (28%) were graduates. 196 patients (98% married) were married.

Table 2: Medications and treatment duration

Anti-diabetic drugs	N%
Oral antidiabetic medications	150 (75)
Ayurvedic plus Oral Antidiabetic medication	40 (20)
Insulins	10 (5)
Treatment duration	
1-5 months	160 (80)
6-10 months	24 (12)
>10 months	16 (8)

Patients were mostly on oral antidiabetic medicines 150 (75%) and Ayurvedic plus oral 40 (20%). Only 10 (5%) patients used insulin. In this research, 160 (80%) patients were off therapy for 1-5 months, followed by 24 (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	116	58
No one to accompany for visit	54	27
Non availability of medicines inhis area	80	20
Lack of time to come for visit	86	43
Busy in family obligation	44	22
Shifted to alternative treatment	74	37
Side effects of medication	130	65
Not aware of the consequences ofmissing the doses	136	68
Long life medication period	150	75
Lack of awareness to takemedication	130	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

Medication adherence is the cornerstone to diabetes care quality. According to the WHO, adherence is the amount to which a person's medication, food, and lifestyle modifications meet health care professional recommendations. [15] Studies have showed that type 2 diabetes patients often don't take their medications. [16] Poor adherence may jeopardize medication safety and efficacy, increasing diabetic complications. [17] WHO study emphasizes increasing treatment adherence over creating new medical treatments. [15] Previous research have examined non-adherence due to unmodifiable risk variables such age, sex, ethnicity, income, education, and comorbidities. [18] The research cohort had a mean age of 48.62±10.12 years, weight of 64.96±12.08 kgs, height of 164.76±8.08 cm, and BMI of 25.35±4.06kg/m2, which aligns with Ascher-Svanum et al [16], who included 74,399 people with a mean age of 51.0 years More over half of the diabetic patients in Ascher-Svanum et al. [19] were male (54%), as were 140 (70%) individuals. Unlike this research, Awodele et al [20] found female predominance. Of 200 patients, 196 (98%) had T2DM, whereas 4 (2% had T1DM). Only 30 (15%) patients had a family history of diabetes. Eighty (40%) were illiterate, followed by 56 (28%) graduates. The research found no significant correlation between education, employment, and socioeconomic class and medication adherence. Several studies, like Rwegrere GM et al [21], showed no correlation between patient education and adherence behavior. Sefah IA et al [22] found comparable occupation outcomes. On the other hand, Aravindakshan et al. [23] found a significant correlation with socioeconomic status. Research in Ethiopia found a significant correlation between low adherence and low financial level. Various research settings and sample populations may explain these disparities.

196 patients (98% married) were married. Patients were mostly on oral antidiabetic medicines 150 (75%) and Ayurvedic plus oral 40 (20%). Only 10 (5%) patients used insulin. Most patients in this trial were off therapy for 1-5 months. 160 (80%) followed by 24 (12%) patients off therapy 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%). Lawton et al. observed that patient forgetfulness was more likely than medicine or physician concerns to cause non-adherence. [24] Family support is essential for diabetes control. Family members advice on nutrition and exercise.

Family members reinforce medication adherence and help diabetics succeed. [25]

Therefore, patients must be informed about their ailment and medicines. The patient's companion should also be informed about missed doses. Limited research has indicated that education does not improve self-management and psychosocial competence in diabetics. [26,27] Age and sex are unchangeable risk factors for poor adherence, but education, finances, and professional activities are difficult to change in a medical relationship. Family support, lack of medication knowledge, and poor medical recommendation acceptance are modifiable risk factors that treating physicians should work on to promote medication adherence and glycaemic management.

Conclusion

Medication adherence is crucial for diabetes control. Medication adherence was poor in the study population. These results emphasize the need for individualized medical approach to modifiable risk variables. However, individuals and families are crucial to diabetes care. Patients need information, skills, and behavioral change. To summarize, 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.

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