Original Research Article

An Evaluation of the Various Factors Affecting Medication Adherence in Diabetes Mellitus Patients: Observational Study

Shatrughan Kumar[1], MD. Tarique Anwar[2]

[1]Department of Medicine, Specialist Medical Officer, Sadar Hospital, Motihari, Bihar, India
[2]Department of Medicine, Specialist Medical Officer, Sadar Hospital, Motihari, Bihar, India

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 study was conducted in the Department of Medicine, Sadar Hospital, Motihari, Bihar, India for the period of 5 months. 400 patients were included in the study. Responses were recorded using a detailed questionnaire consisting of 25 questions. Responses were recorded in terms of Yes or No along with the basic demographic details.

Results: Of the 400 patients, majority were T2DM patients 380 (95%) followed by T1DM 10 (2.5%). Only 70 (17.5%) patients had family history of diabetes. Majority of the patients were illiterate 100 (25%) followed by 90 (22.5%) patients who were graduate. Majority of the patients were married 360 (90%), were businessman 110 (27.5%) and had monthly income between 5001 to15000 rupees 90 (22.5%). Majority of the patients were on oral antidiabetic medications 300 (75%) followed by Ayurvedic plus Oral Antidiabetic medication 80 (20%). Only, 20 (5%) patients were on insulins.

Conclusion: For effective diabetes management medication adherence plays a very important role. Authors found a low level of medication adherence among the study population. This finding highlights the importance of improving the physician's approach on the modifiable risk factors on individual basis. However, it is the patients and their family who play a vital role in the diabetes management.

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

Introduction

The incidence and prevalence of diabetes mellitus (DM) have continued to increase globally, despite a great deal of research, with the resulting burden resting more heavily on tropical, developing countries. [1,2] Type 2 DM, which is the more common of two basic types of DM, is increasingly being recognized in relatively young persons, due to the high prevalence of environmental and genetic risk factors. [2]

Medication adherence refers to the extent to which patients take their medication regimen as prescribed by their health care provider. [3] A previous study suggests that about a quarter of patients are

nonadherent, and that rates of adherence are higher among patients with acute conditions than in those with chronic conditions. [4] Even in the resource-intensive setting of clinical trials, the average adherence rates for trial drugs used in chronic diseases are between 43% and 78%. [5-7]

Previous reports have shown that medication non-adherence is common among the type 2 diabetes patients (T2DM). [9] Poor adherence can compromise safety and treatment effectiveness which can lead to increase in diabetes related complications. [10,11] A report from the WHO has highlighted the importance of improving adherence to existing treatment in comparison to developing the new medical treatment. [8] Previous studies have explored the unmodifiable risk factors such as age, sex, ethinicity, income, education and comobidities as the reasons for non-adherence. [12]

It is predicted that prevalence of DM in adults will increase in the next two decades and much of the increase will occur in developing countries where the majority of patients are aged between 45 and 64. [13,14]

With the current trend of transition from communicable to non–communicable diseases, it is projected that the latter will equal or even exceed the former in developing nations, thus culminating in double burden. [15,16] Type 2 DM is the most prevalent form of diabetes mellitus and accounts for about 90% of cases of diabetes. [17]

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 study was conducted in the Department of Medicine, Sadar Hospital, Motihari, Bihar, India for the period of 5 months. 400 patients were included in the study. Responses were recorded using a detailed questionnaire consisting of 25 questions. Responses were recorded in terms of Yes or No along with the basic demographic details.

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.

Methodology

Patients responded yes or no to each of the following questions: do you have financial problem, do you have no one to accompany you for visit, is diabetes medicine available in your area, do you find sufficient time to come for visit, are you busy in family obligation, is your medication lead to side effects, are you aware about the consequences of missing the doses, do you find it good to take long life medications.

All the data analysis was performed using IBM SPSS ver. 20 software. Frequency distribution was used for preparing tables. Quantitative data was expressed as mean±standard deviation whereas categorical data is expressed as percentage.

Results

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

Response (patients who had "Yes")	N	%
Financial problem	230	57.5
No one to accompany for visit	100	25
Non availability of medicines in his area	80	20
Lack of time to come for visit	180	45
Busy in family obligation	90	22.5
Shifted to alternative treatment	190	47.5
Side effects of medication	280	70
Not aware of the consequences of missing the doses	290	72.5
Long life medication period	300	75
Lack of awareness to take medication	270	67.5

Mean age, weight, height and BMI of study cohort was 48.62±10.12 years, 67.93±12.08 kgs, 163.75±8.08cm and 25.35±4.06kg/m2 respectively. Majority of the patients were males 336 (68.4%).

Of the 400 patients, majority were T2DM patients 380 (95%) followed by T1DM 10 (2.5%). Only 70 (17.5%) patients had family history of diabetes. Majority of the patients were illiterate 100 (25%) followed by 90 (22.5%) patients who were graduate. Majority of the patients were married 360 (90%), were businessman 110 (27.5%) and had monthly income between 5001 to15000 rupees 90 (22.5%). Majority of the patients were on oral antidiabetic medications 300 (75%) followed by Ayurvedic plus Oral Antidiabetic medication 80 (20%). Only, 20 (5%) patients were on insulins.

In present study majority of the patients were off the treatment for 1-5 months 300 (75%) followed by 40 (10%) patients who were off the treatment for 6-10 months.

Discussion

During the past three decades, the number of people with diabetes mellitus has continued to increase globally [18], and patients with type 2 diabetes (T2D) account for more than 90% of all patients with diabetes. [19] As a complex and chronic disease, T2D not only brings serious physical and psychological distress to both patients and caregivers [19] but also causes a large economic burden to society. [20] Therefore, the prevention and treatment of T2D is particularly important. Guidelines recommend that most patients with T2D should receive appropriate medical care when lifestyle changes can no longer achieve metabolic control. [21,22] Current evidence shows that intensive antihyperglycemic therapy can effectively reduce the incidence of diabetes complications and death. [23] Therefore, medication adherence is important for achieving the treatment effect. [24]

Medication adherence is the important element of self-management for patients with diabetes mellitus.6 Uncontrolled hyperglycemia can result in micro- and macrovascular complications such as retinopathy, nephropathy, neuropathy and associated cardiovascular diseases. For achieving a good glycemic control in diabetes patients, a right treatment and its strict adherence is very important. [25]

In present study authors observed male preponderance (70%) among diabetes patients which is hand in hand with the study done by Ascher-Svanum et al, where more than half of the enrolled diabetes patients were males (54%). Contrary to present study Awodele et al, reported female preponderance. [26,27]

Mojtabai et al, also reported that 7% of the patients were finding difficulties in purchasing medication due to the cost. [28] Awodele et al, also reported that more than half of the patients found their medication

unaffordable. [27] These findings are in agreement to the present study findings were more than half of the patients responded to have financial problem because of that they were finding difficulty in purchasing diabetic medication. In entred study, financial difficulties were one of the key factor influencing the non-adherence among diabetes patients. [29]

In present study majority of the patients were illiterate. This shows a low level of skills in the study population. Due to that the possibility of getting an employment is less when the qualification is low. The significance of lower income among the study cohort is the reason for not sustaining the cost of diabetes medication. In present study lack of awareness to take medication was another reason for the treatment interruption which may be due to the forgetfulness to take the medicine on time. In agreement to this study done by Lawton et al, who found that non-adherence was more related to patient forgetfulness than to specific concerns about medications or interaction with the physicians. [30]

Risk factors for poor adherence can be distinguished as unmodifiable factors such as age and sex and factors such as education, financial difficulties and presence of professional activity can be hardly modified in contest to medical relationship. [31] There are some modifiable risk factors such as family support, lack of information related to medication, and poor acceptability of medical recommendations on which treating physician could focus more in order to improve the medications adherence and in result could improve the glycaemic control.

Conclusion

For effective diabetes management medication adherence plays a very important role. Authors found a low level of medication adherence among the study population. This finding highlight the importance of improving the physicians approach on the modifiable risk factors on individual basis. However, it is the patients and their family who play a vital role in the diabetes management. It is very important to develop knowledge and appropriate skills by the patients; also behavioral change is very important. 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. We also elucidated the effect of adherence on achievement of satisfactory HbA1c levels at the observation endpoint. Because maintaining medication adherence and achieving HbA1c targets are important in reducing the likelihood of diabetic complications, targeted interventions for different groups–such as those of younger age and taking fewer medications–need to be developed. To conclude it is very important to identify the patients with poor adherence in order to improve the factors responsible.

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