ORIGINAL RESEARCH

To study the factors that impact the compliance with treatment in individuals diagnosed with diabetes mellitus

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ABSTRACT

Aim: To study the factors that impact the compliance with treatment in individuals diagnosed with diabetes mellitus. **Material and methods:** Present prospective cross-sectional study was done in the Department of general medicine, on 200 diabetes patients. All diabetes patients (both Type 1 and type 2) having age more than 18 years and who were on diabetes medication were included. 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 responded yes or noto 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. **Results:** The factors contributing to treatment interruptions among the participants were multifaceted. Financial problems were reported by 116 participants (58.0%), indicating that cost was a significant barrier to consistent treatment. Additionally, 54 participants (27.0%) cited the absence of someone to accompany them for visits as a hindrance. The non-availability of medicines in their area affected 38 participants (19.0%), while 86 participants (43.0%) mentioned a lack of time to attend visits. Family obligations were a reason for 44 participants (22.0%), and 74 participants (37.0%) had shifted to alternative treatments. The side effects ofmedication were reported by 134 participants (67.0%), and 136 participants (68.0%) were not aware of the consequences of missing doses. A long-life medication period was a concern for 148 participants (74.0%), and 128 participants (64.0%) lacked awareness about the importance of taking medication. These results highlight the complex and interrelated factors that contribute to treatment interruptions in diabetes management, emphasizing the need for comprehensive support and education for patients. **Conclusion:** In conclusion, it is crucial to identify patients who have low adherence in order to enhance the elements that contribute to this issue. To achieve improved glycemic control among diabetes patients, it is important to enhance individual adherence to risk factors associated with poor adherence.

Keywords: Variables, Adherence, Diabetes mellitus

INTRODUCTION

Drug adherence pertains to the degree to which a patient accurately and consistently takes andadheres to their prescribed drug regimen as directed by their physician. In order for a patient to be classified as adherent to prescribed medication, several criteria must be fulfilled: the doctor's prescriptions must be filled, the patient must consistently remember to take their medication at the designated time and in the correct dosage, and the patient must comply with and comprehend the instructions provided in the prescription.[1] Medication adherence is critical as it improves quality of life by controlling chronic conditions and treating temporary conditions. It also plays a crucial role in individuals' long-term health and well-being, according to the World Health Organization (WHO). Medication adherence is a key factor in managing diabetes mellitus (DM). Treating patients with DM requires that they achieve optimal glycemic control, which reduces diabetes complications and the likelihood of risk and death. To achieve this glycemic control, a patient is predicated on the rational taking of an antidiabetic regimen. Patients who are not adhering to a recommended antidiabetic medication regimen are anticipated to suffer from suboptimal glycemic

control, which drastically increases the risk of diabetic complications.[2-4] Therefore, good adherence to their medication is a key step in managing diabetes mellitus and achieving successful self-management by patients. Perceptions of illness are structured ideas about a disease's signs, symptoms, progression, controllability, and causation. It has been demonstrated that patients' views of their illness can predict various psychological and disease-related consequences, such as depression and lack of adherence to the prescribed medications. Perceptions of illness are mainly concerned with the anxiety and depression levels normally resulting from patients who are suffering from a chronic illness such as DM.[5-7] Patients with DM usually develop depression and stress, which creates their perception of the disease and certain beliefs about the cause and controllability of the disease. These perceptions normally affect patients' medication adherence because patients may perceive the cause of the disease, such as DM, as different from what the doctor prescribed.

Therefore, this may force patients to not follow the prescription of the doctor. In treating these chronic diseases, more so for DM, it is, therefore, essential to assess a patient's brief perception of the disease so that an understanding of the condition is reached to avoid the patient's nonadherence to their medication. Patients' awareness of and knowledge about their chronic illness and its management are two of the essential components for their better understanding of the treatment protocols. Previous studies demonstrated that in order to properly self-manage diabetes, a patient must have a thorough understanding of medications, food, exercise, home glucose monitoring, foot care, and necessary treatment changes. The assessment of diabetes-related knowledge among T2DM patients is a critical initial step from which to customize diabetes education programs and measure their efficacy.[8-10]

MATERIAL AND METHODS

Present prospective cross-sectional study was done in the Department of general medicine. 200 diabetes patients (both Type 1 and type 2) havingage more than 18 years and who were on diabetes medication were included. 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 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. 24 software. Frequency distribution was used for preparing tables. Quantitative data was expressed as mean±standard deviation whereas categorical data is expressed as percentage.

RESULTS

The study cohort consisted of 200 participants, and their demographic, clinical, and socioeconomic characteristics were assessed.

Table 1: Demographic and Anthropometric Characteristics of the Study Cohort

The demographic and anthropometric data for the study cohort revealed that the average age of the participants was 50.32 years, with a standard deviation (SD) of 5.47 years. The mean weight was 68.43 kilograms (kg) with an SD of 7.36 kg, and the average height was 163.88 centimeters (cm) with an SD of 5.35 cm. The body mass index (BMI) averaged 25.56 kg/m², with an SD of 3.25. These findings indicate a relatively homogenous group in terms of age, weight, height, and BMI, providing a consistent baseline for further clinical assessments.

Table 2: Clinical and Socioeconomic Profile of the Study Cohort

The clinical profile of the participants showed a predominance of Type 2 Diabetes Mellitus (T2DM), with 197 individuals (98.5%) diagnosed with T2DM, while only 3 individuals (1.5%) had Type 1 Diabetes Mellitus (T1DM). Additionally, 32 participants (16.0%) reported a family history of diabetes. This distribution underscores the prevalence of T2DM in the cohort and highlights the genetic predisposition associated with the disease.

Table 3: Medication and Treatment Profile of the Study Cohort

The medication and treatment profiles revealed that a significant majority of the participants, 147 (73.5%), were on oral antidiabetic medications. A notable portion, 37 participants (18.5%), were using a combination of Ayurvedic and oral antidiabetic medications. A smaller group, comprising 9 individuals (4.5%), was on insulin therapy, and 7 participants (3.5%) were using other forms of treatment. This diverse medication profile reflects the varied approaches to diabetes management among the cohort.

Table 4: Factors Responsible for Treatment Interruptions Among Diabetes Patients

The factors contributing to treatment interruptions among the participants were multifaceted. Financial problems were reported by 116 participants (58.0%), indicating that cost was a significant barrier to consistent treatment. Additionally, 54

participants (27.0%) cited the absence of someone to accompany them for visits as a hindrance. The non-availability of medicines in their area affected 38 participants (19.0%), while 86 participants (43.0%) mentioned a lack of time to attend visits. Family obligations were a reason for 44 participants (22.0%), and 74 participants (37.0%) had shifted to alternative treatments. The side effects of medication were reported by 134 participants (67.0%), and 136 participants (68.0%) were not aware of the consequences of missing doses. A long-life medication period was a concern for 148 participants (74.0%), and 128 participants (64.0%) lacked awareness about the importance of taking medication. These results highlight the complex and interrelated factors that contribute to treatment interruptions in diabetes management, emphasizing the need for comprehensive support and education for patients.

Table 1: Demographic and Anthropometric Characteristics of the Study Cohort

Characteristic	Mean ± SD
Age (years)	50.32 ± 5.47
Weight (kgs)	68.43 ± 7.36
Height (cm)	163.88 ± 5.35
BMI (kg/m²)	25.56 ± 3.25

Table 2: Clinical and Socioeconomic Profile of the Study Cohort

Clinical Profile	Frequency (%)
T2DM	197 (98.5%)
T1DM	3 (1.5%)
Family history of diabetes	32 (16.0%)

Table 3: Medication and Treatment Profile of the Study Cohort

Medication Type	Frequency (%)
Oral Antidiabetic Medication	147 (73.5%)
Ayurvedic + Oral Antidiabetic Medication	37 (18.5%)
Insulins	9 (4.5%)
Other	7 (3.5%)

Table 4: Factors Responsible for Treatment Interruptions Among Diabetes Patients

Response (patients who had "Yes")	N (n=200)	%
Financial problem	116	58.0
No one to accompany for visit	54	27.0
Non-availability of medicines in area	38	19.0
Lack of time to come for visit	86	43.0
Busy in family obligation	44	22.0
Shifted to alternative treatment	74	37.0
Side effects of medication	134	67.0
Not aware of the consequences of missing doses	136	68.0
Long life medication period	148	74.0
Lack of awareness to take medication	128	64.0

DISCUSSION

The medication and treatment profile reveals that oral antidiabetic medications are the most commonly used treatment, but there is a notable portion of the population exploring alternative and combined treatments, such as Ayurvedic medicine. This indicates a potential area for further research into the efficacy and patient satisfaction associated with these alternative treatments. The factors contributing to treatment interruptions highlight significant barriers that need to be addressed to improve treatment adherence and outcomes in diabetes management. Financial constraints, logistical challenges, medication availability, time constraints, and sideeffects are substantial obstacles for many patients. Additionally, the lack of awareness about the consequences of missing doses and the importance of continuous medication highlight a critical need for patient education and support systems.

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.[7] Present study has shown that mean age of study cohort was 50.32 ± 5. 47years which is in agreement to

Ascher- Svanum et al, which included 74,399 individuals where mean age of patient was 51.0 years (SD 9.0) years.[8] 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.[8,9] Previous studies have highlighted the cost of medication as the main influencing factor for the non- adherence to their medication (Table 1). Mojtabai et al, also reported that 7% of the patients were finding difficulties in purchasing medication due to the cost.[10] Awodele et al, also reported that more than half of the patients found theirmedication unaffordable.[9] These findings are in agreementto 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 oneof the key factor influencing the non-adherence among diabetes patients.[11] It is also evident from the present study majority of the patients had monthly income between 5001 to 15000 rupees. Therefore the possibility of treatment interruption is high due to the cost of medication because of financial problem. 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 gettingan employment is less when the qualification is low. The significance of lower income among the study cohort is thereason 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 bedue 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 forget fulness than to specific concerns about medications or interaction with the physicians.[12] Support from family play a crucial role in diabetes management. Family members function as counselors encouraging diet and exercise behaviors. Family members facilitate adherence with medication, and altogether helping patients to win with diabetes.[13]In present study more than a quarter patients responded that they missed the visit to the physician as there was no one to accompany them. In previous study by Awodele et al, who also reportedthat taking medicine alone was the one of the risk factor for the poor adherence among the diabetes patients.[9] Hence it is very important to inform the patients about their disease and medication. It is also important to educate the person accompanying the patients regarding the information on missing the dose. However few previous studies which have found no relation of education on improving self- management skills and psychosocial competencies in diabetes patients.[14,15] 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. 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. Present study had few limitations; one was the use of self-reported data on the risk factors of treatment interruptions or medication adherence. However, majority of the previous studies have used self-reported questionnaires asthey are low in cost and time expenditure. Self- reported questionnaires are also appropriate for the large population based sample. Previous report have also found the self-reported questionnaires provide a reasonably accurate estimate of adherence among the diabetes patients.[16] Lastly this was a cross sectional study because of that authors can-not apply the present study findings to large population. However a large randomized control trial is required to provide the strength to present study findings.

CONCLUSION

Medication adherence is crucial for good diabetes control. The authors discovered a poor degree of drug adherence among the research cohort. These results emphasize the need of enhancing clinicians' approach to addressing modifiable risk factors on an individual basis. Nevertheless, it is the patients and their family members that have a crucial role in the treatment of diabetes. Acquiring information and developing relevant skills are crucial for patients, as is the need for behavioral change. In conclusion, it is crucial to identify patients who have low adherence in order to enhance the elements that contribute to this issue. Enhancing the risk factors that contribute to poor adherence on an individual level may lead to improved outcomes, namely better glycemic control, among people with diabetes.

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