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Original Research Article

Assessment of the Factors Influence the Adherence to Treatment in People with Diabetes Mellitus: A Retrospective Study

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Abstract

Aim: Investigate the variables that influence the adherence to treatment in people with diabetes mellitus.

Material and Methods: A retrospective study was done in the Department of general medicine, Netaji subhas medical college and hospital, Bihta, Patna, Bihar, India, for one year, on 491 diabetes patients. All 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 hospitalizationwere 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 noone to accompany you for visit, is diabetes medicine available in your area, do you find sufficient time to comefor 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 totake long life medications.

Results: Mean age, weight, height and BMI of study cohort was 49.65±10.12 years, 67.97±12.08kgs, 163.75±8.08cm and 25.35±4.06kg/m2 respectively. Majority of the patients were males 336 (68.4%). Of the 491 patients, majority were T2DM patients 483 (98.4%) followed by T1DM 8 (1.6%). Only 78 (15.9%) patients had family history of diabetes. Majority of the patients were illiterate 110 (24%) followed by 104 (21.2%)patients who were graduate. Majority of the patients weremarried 479 (97.6%), were businessman 121 (24.6%) andhad monthly income between 5001 to15000 rupees 108 (22%). Majority of the patients were on oral antidiabeticmedications 361 (73.5%) followed by Ayurvedic plus OralAntidiabetic medication 91 (18.5%). Only, 22 (4.5%) patients were on insulins. In present study majority of the patients were off thetreatment since 1-5 months 387 (78.8%) followed by 59 (12%) patients who were off the treatment since 6-10 months.

Conclusion: To conclude it is very important to identify thepatients 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: Variables, Adherence, Diabetes mellitus

Introduction

Medication adherence refers to the extent to which a patient properly takes and follows their medication, as prescribed by their doctor. For a patient to be considered as an adherent to prescribed medication, several factors must be met: the doctor's prescriptions must be filled, the patient must remember to take their medication at the right time and with the right dose, and the patient must follow and understand the prescription's directions. [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 glycaemic control, which reduces diabetes complications and the likelihood of risk and death. To achieve this glycaemic 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 glycaemic 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

A retrospective study was done in the Department of general medicine, Netaji subhas medical college and hospital, Bihta, Patna, Bihar, India, for one year, on 491 diabetes patients. All 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 thepatients visiting to study center. Patients responded yes or no to each of the following questions: do you have financial problem, do you have noone to accompany you for visit, is diabetes medicine available in your area, do you find sufficient time to comefor 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 totake long life medications. All the data analysis was performed using IBM SPSS ver. 20 software. Frequency distribution was used for preparingtables. Quantitative data was expressed as mean± standard deviation whereas categorical data is expressed as percentage.

Results

Mean age, weight, height and BMI of study cohort was 49.65±10.12 years, 67.97±12.08kgs, 163.75±8.08cm and 25.35±4.06kg/m2 respectively. Majority of the patients were males 336 (68.4%). Of the 491 patients, majority were T2DM patients 483 (98.4%) followed by T1DM 8 (1.6%). Only 78 (15.9%) patients had family history of diabetes. Majority of the patients were illiterate 110 (24%) followed by 104 (21.2%)patients who were graduate. Majority of the patients weremarried 479 (97.6%), were businessman 121 (24.6%) and had monthly income between 5001 to15000 rupees 108 (22%). Majority of the patients were on oral antidiabetic medications 361 (73.5%) followed by Ayurvedic plus OralAntidiabetic medication 91 (18.5%). Only, 22 (4.5%) patients were on insulins. In present study majority of the patients were off thetreatment since 1-5 months 387 (78.8%) followed by 59 (12%) patients who were off the treatment since 6-10 months.

Table 1: Demographic and Anthropometric Characteristics of the Study Cohort

Characteristic	Mean ± SD
Age (years)	49.65 ± 10.12
Weight (kgs)	67.97 ± 12.08
Height (cm)	163.75 ± 8.08
BMI (kg/m²)	25.35 ± 4.06

Table 2: Clinical and Socioeconomic Profile of the Study Cohort

Clinical Profile	Frequency (%)
T2DM	483 (98.4%)
T1DM	8 (1.6%)
Family history of diabetes	78 (15.9%)

Table 3: Medication and Treatment Profile of the Study Cohort

Medication Type	Frequency (%)
Oral Antidiabetic Medication	361 (73.5%)
Ayurvedic + Oral Antidiabetic Medication	91 (18.5%)
Insulins	22 (4.5%)
Other	17 (3.5%)

Table 4: Factors responsible for the treatmentinterruptions among diabetes patients.

Response (patients who had"Yes")	N (n=491)	%
Financial problem	284	57.8
No one to accompany for visit	134	27.3
Non availability of medicines inhis area	96	19.6
Lack of time to come for visit	212	43.2
Busy in family obligation	107	21.8
Shifted to alternative treatment	182	37.1
Side effects of medication	327	66.6
Not aware of the consequences ofmissing the doses	334	68
Long life medication period	362	73.7
Lack of awareness to takemedication	318	64.8

Discussion

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 cardiovasculardiseases. For achieving a good glycemic control in diabetes patients, a right treatment and its strict adherenceis very important. [7] Present study has shown that mean age of study cohort was 49.65±10.12 years 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 (68.4%) 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 entered study, financial difficulties were one of 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 (Table 1). Therefore, the possibility of treatment interruption is high due to the cost of medication because of financial problem. In present study majority of thepatients 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 wasanother 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 forgetfulness 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 altogetherhelping 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 reported that taking medicine alone was the one of the risk factor for the poor adherence among the diabetes patients. [9] Majority of the patients in present study were not aware of the consequences of missing the doses this may be due to the higher illiteracy rates among the study population (Table 1). Education is the key component for the management of diabetes. Previous studies have also highlighted the importance of need of information related to consequences of missing the dose.[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 ofprofessional activity can be hardly modified in contest to medical relationship. There are some modifiable risk factors such as family support, lack of information relatedto 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 glycemic control. [16] Present study had few limitations; one was the use of self-reported data on the risk factors of treatment interruptionsor 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

For effective diabetes management medication adherence plays a very important role. Authors found a low level of medication adherence among the study population. This findings highlight the importance of improving the physicians approach on the modifiable risk factors on individual basis. However, it is the patients and theirfamily 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. To conclude it is very important to identify thepatients 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.

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