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Original Research Article

Prospective study of factors affecting medication adherence in diabetes mellitus patients

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ABSTRACT

Background: Treatment interruption is an obstacle in therapeutic control of diabetes mellitus. Treatment interruption leads to uncontrolled hyperglycemia which increases the risk of diabetes related complications. Aim of study the factors responsible for the treatment interruptions among the diabetes patients.
Methods: Four hundred and ninety-one diabetes patients were studied at Diabetes, obesity and Thyroid center, Gwalior between September 2018 to December 2018. 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: Male preponderance was reported (68.4%). Majority were off the diabetes treatment for last 1-5 months (78.8%). Most common response for the treatment interruption was long life medication period (73.7%) followed by the fact that majority were not aware of the consequences of missing the doses (68%), 66.6% due to the side effect of the medication and 57.8% had financial problem.
Conclusions: Large number of diabetes patients had poor adherence. There are many modifiable factors which can be improved on individual basis to improve the glycemic outcomes.

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

INTRODUCTION

Medication adherence is the key indicator for the health care quality in diabetes patients. World Health Organization (WHO) defines adherence as the extent to which a person's behavior of taking medication, following a diet, and/or executing lifestyle changes matches with agreed recommendations from the health care provider.[1]

Previous reports have shown that medication non-adherence is common among the type 2 diabetes patients (T2DM).[2] Poor adherence can compromise safety and treatment effectiveness which can lead to increase in diabetes related complications.[3,4] A report from the WHO has highlighted the importance of improving adherence to existing treatmentin comparison to developing the new medical treatment.[1] Previous studies have explored the unmodifiable risk factors such as age, sex, ethinicity, income, education and comobidities as the reasons for non-adherence.[3,5]

However modifiable risk factors of non-adherence also play a vital role. In present study authors tried to find out the modifiable risk factors which are responsible for the non- adherence among the diabetes population.

METHODS

Present prospective cross-sectional study was performed on 491 diabetes patients who have visited Diabetes,

Obesity and Thyroid Center, Gwalior, Madhya Pradesh, India, between (September 2018 to December 2018).

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 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

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 were married 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 Oral Antidiabetic medication 91 (18.5%). Only, 22 (4.5%) patients were on insulins.

In present study majority of the patients were off the treatment since 1-5 months 387 (78.8%) followed by 59 (12%) patients who were off the treatment since 6-10 months.

Table 1: Factors responsible for the treatment interruptions 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 in his 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 of missing the doses	334	68
Long life medication period	362	73.7
Lack of awareness to take medication	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 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 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 their medication unaffordable.[9] 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.[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 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.[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 (Table 1). 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 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 as they 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 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. To conclude 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.

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