



Medication Adherence to Antidiabetic Therapy In Patients With Type 2 Diabetes Mellitus

Elahe Elhami^{1*}, Susheela Rani S¹, Githa kishore¹

1. Visveswarapura Institute of Pharmaceutical Sciences, Bangalore

ABSTRACT

Diabetes mellitus is a chronic, life long, metabolic disease associated with an array of dysfunctions characterized by hyperglycemia. To evaluate self reported medication adherence and to identify factors linked with poor adherence in patients with type 2 diabetes mellitus: A prospective, cross sectional, observational study was conducted for 6 months in 300 diabetic patients admitted in the KIMS hospital, Bangalore. Adherence to treatment was assessed during a personal interview with each patient using Morisky medication adherence scale. Patient counselling was done to provide education on disease and appropriate drug use. Out of 300 type 2 diabetic patients, 67.78% men were more adherent to medication as compared to women (22.62%), Patients in the age group of 45-64 years were 40.72% adherent to medication and patients above the age of 75 years were only 7.5 % adherent to medication. In our study patients new to therapy were only 7.69% likely to be adherent to their diabetes medication. Diabetic patients with a co morbid condition of hypertension disease were 31.67% adherent to medication and patients with thyroid disease were 2.26% adherent to medication. Patient information leaflets regarding diabetes mellitus type 2 were distributed to all patients. Patient counselling should be used widely for better patient care and outcomes. Efforts are needed to increase the medication adherence of elder patients and to patients who are new to therapy so they can realize the full benefits of prescribed therapies.

Keyword: Adherence, Patient counselling, Anti-diabetic medication

*Corresponding Author Email: elahe.elhami@ymail.com

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INTRODUCTION

Diabetes mellitus is a chronic, life long, metabolic disease associated with an array of dysfunctions characterized by hyperglycemia, resulting from the combination of resistance to insulin action, inadequate insulin secretion and excessive or inappropriate glucagon secretion¹. It is an important public health problem in developing countries associated with significant morbidity, mortality and cost to the society^{2,3,4}. The majority of patients with type 2 diabetes fail to control glycemia with diet and exercise and require pharmacotherapy—in general, initially monotherapy with an oral hypoglycemic agent (OHA); however, owing to the progressive nature of the disease, most of the patients will eventually require combination therapy and ultimately injectable treatments as monotherapy or part of polytherapy. Glycemic control in type 2 diabetes is essential to prevent long-term micro- and macrovascular complications⁵. Drugs and lifestyle changes to control type 2 diabetes and associated conditions can only be effective through adherence to the overall prescribed regimen. The World Health Organization (WHO) has shown that adherence to long-term therapy for chronic illnesses in developed countries averages only around 50%⁶.

Adherence rates are usually reduced for patients with chronic conditions than those with acute conditions; this is associated with the long-term nature of chronic diseases because the decline in adherence is most rapid after the first 6 months of therapy⁷. Such reduced adherence not only results in poor health outcomes but it also has a significant impact on healthcare costs⁶. Thus, the overall management of type 2 diabetes should address adherence as well as appropriate medications⁸.

People with DM who wish to live normal lives need to know a lot about their illness.⁹ Thus, awareness on DM and its complication has become an integral and essential part of DM care for both health professionals and the patients themselves. Consequently, educational efforts to improve self-management are central components of any effective treatment plan. There is increasing amount of evidence that patient education is the most effective way to lessen the complications of diabetes and its management.¹⁰ Patient counselling is a process that improves patients' ability to cope with their disease and make informed decisions regarding management and medication. It helps motivate patients to change any harmful dietary and lifestyle habits.¹¹ Pharmacists are in a unique position to play a vital role in helping patients to cope with their disease.

The objective of this study was to evaluate self reported medication adherence and to identify

factors linked with poor adherence in patients with type 2 diabetes mellitus, to assess patient compliance to antidiabetic medications and to develop and use patient health information materials regarding type-2 diabetes mellitus.

MATERIALS AND METHOD

The study was a prospective, cross sectional, observational study conducted on both inpatients and outpatients who were diagnosed with type 2 diabetes mellitus of KIMS hospital and research Centre Bangalore. The study was approved by the institutional ethics committee. Verbal consent was obtained from each patient before the interview. The studies was conducted in all individuals of either sex, aged above 18 years, diagnosed with type 2 diabetes mellitus, were included in the study. And patients with type 1 DM and gestational diabetes mellitus were excluded from the study. Data were extracted from the patient's case sheets, patients'/ attendants' interviews and were collected by using data collection forms. Information was collected and recorded regarding socio-demographic details of the patients, pertaining to age, gender, family history, education status, smoking and alcohol consumption and BMI. Medication adherence to diabetes was determined using a combination modified morisky scale version of 6 items and simplified adherence questionnaire where both knowledge and motivation was assessed. Each item was in yes/no format with a maximum scoring of 3 in both motivation and knowledge indicating high motivation or high knowledge respectively and "0" indicating poor adherence. Patient counselling was done to provide education on disease and appropriate drug use, on life style modifications required by the patients. Patient health information leaflets were widely used to illustrate the information and to remind people of the information received previously.

RESULTS AND DISCUSSION

Out of 300 patients enrolled in our study 183 (61%) were males and 117(48.02%) were females. The mean age of patients with type 2 diabetes in our study population was 55.67 ± 12.8 years. In our study population the highest numbers of diabetic patients were in the age group of 50-59 years 88(29.3%). Among our study population, 30 cases (10%) had their father alone suffering from diabetes and 72 cases (24%) had their mother alone suffering from diabetes and 23 cases (7.66%) had both their mother and father suffering from diabetes and 175 cases (58.35%) had no family member suffering from diabetes. On assessing the social habits of the 300 patients, it was found that 54(18%) patients were using alcohol daily and 34 patients (20%) were using alcohol rarely and 60 patients (11.3%) were using alcohol occasionally and 152 patients (50.66%) never

used alcohol and 54 patients (18%) had both the habits of smoking and consuming alcohol and 99 patients (33%) had none of the habits. Out of 300 patients enrolled in the study, most of the patients followed a mixed diet (220, 73.33%). Among the study population 126 (42%) patients had a good diet, 92 (30.66%) had a moderate diet and 82 (27.33%) had a bad diet. Out of the total population, only 85(28.30%) patients had a normal BMI, 79 (26.30%) patients were overweight, 78 (26%) patients were moderate obese, 51 (17%) patients were severe obese and 7(2.33%) patients were very severe obese. The duration of diabetes plays an important role in the management of diabetes. Among 300 patients in our study, 38 (12.60%) were newly detected. Most of the patients had a diabetic history of 6-10 years (72, 24%) (figure1).

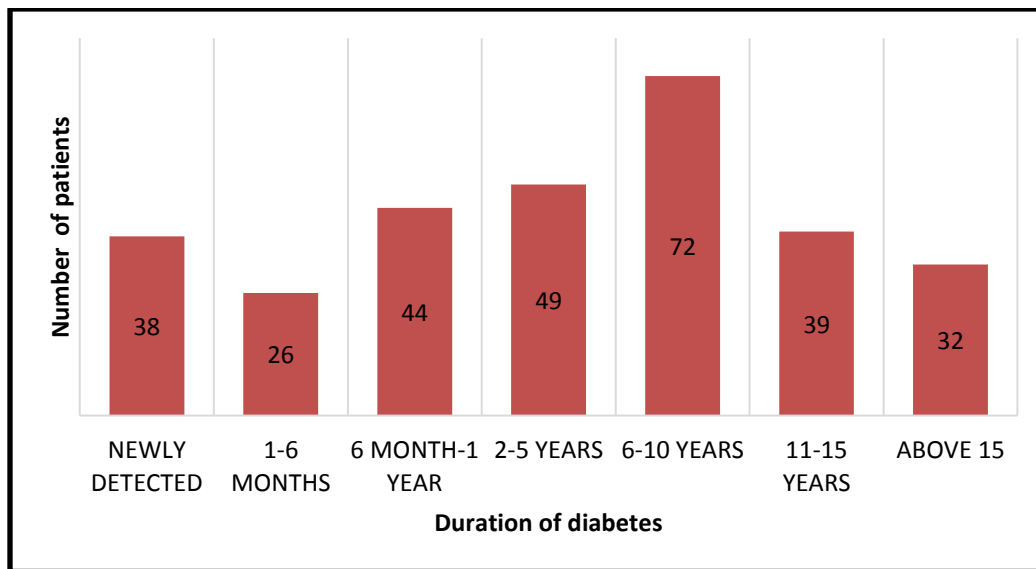


Figure 1: Duration of diabetes in the patients

Among the 300 patients studied, out of 295 co-existing illnesses the highest co-existing illness was hypertension 89 (27%) followed by Renal failure 46(15%) and cardiac disease 33 (11%). (table1)

Table 1: Comorbidity condition

Comorbidity condition	Number of patients	Percentage (%)
Hypertension	89	27%
Renal failure	46	15%
Cardiac disease	33	11%
Foot ulcer	10	3%
Cellulitis	17	6%
Neurological disorders	13	4%
Respiratory disorders	27	9%
Dyslipidemia	13	4%
Thyroid disorders	5	2%
Hepatic diseases	26	9%
Anemia	16	5%

In our study patients new to therapy were only 7.69% likely to be adherent to their diabetes medication. There was also a clear age effect. In our study, patients in the age group of 45-64 years were 40.72% adherent to medication and patients above the age of 75 years were only 7.5% adherent to medication. In our study also, 67.78% men were more adherent to medication compared to women (22.62%). Education level also influenced adherence. The higher the estimated academic achievement, the more likely the patient was to be adherent. Patients with hypertension disease were 31.67% adherent to medication and patients with thyroid disease were 2.26% adherent to medication. (Table 2)

Table 2: Assessment of Medication Adherence in Type 2 Diabetes Patients

Column 1	Column 2 adherent	Column 3 non adherent	Column 4 Total
Patient factors			
total patient	221 (73.66%)	79 (26.33%)	300(100%)
Patient exposure to diabetes therapy, n (%)			
New to therapy	17(7.69%)	21(26.58%)	34(11.33%)
Continuing therapy	200 (76.33%)	62(23.66%)	262(87.33)
Patient age-group (years), n (%)			
20–44	60 (27.14%)	32(40.50%)	92(30.66)
45–64	128(57.91%)	19(24.05%)	147(49%)
65–74	30(13.57%)	10(12.68%)	40(13.33%)
75+	18(8.144%)	3(3.79%)	21(7%)
Patient sex, n (%)			
Male	150(67.78%)	33(41.77%)	183(61%)
Female	50(22.62%)	67(84.81%)	117(39%)
Patient education, n (%)			
under graduated	50(22.62%)	59(74.68%)	109(36.33%)
up to school	150(67.87%)	15(18.98%)	165(55%)
Graduated	25(11.31%)	4(5.06%)	29(9.66%)
post graduated	0	0	0
Treated chronic disease conditions, n (%)			
Hypertension	70(31.67%)	19(24.05%)	89(29.66%)
renal disorder	30(13.57%)	16(20.25%)	46(15.33%)
cardiac disorder	30(13.5%)	3(3.79%)	33(11%)
foot ulcer	7(3.167%)	3(3.79%)	10(3.33%)
Cellulitis	10(4.52%)	7(8.86%)	17(5.66%)
neuron disorder	10(4.52%)	3(3.79%)	13(4.33%)
respiratory disorder	20(9.04%)	7(8.86%)	27((9%)
high cholesterol	10(4.52%)	3(3.79%)	13(4.33%)
thyroid disorder	5(2.26%)	0	5(1.66%)
hepatic disorder	20(9.04%)	6(7.59%)	26(8.66%)
Anaemia	10(4.52%)	6(7.59%)	16(5.33%)

Medication adherence is associated with improved outcomes, reduced health care costs, hospitalization and mortality. Several demographic and clinical factors are associated with adherence to antidiabetic medications¹². Previous exposure to diabetes therapy had a significant impact on adherence. Patients new to therapy were only 7.69% likely to be adherent to their diabetes medication. (Table no 2). There was also a clear age effect. In our study, patients in the age group of 45-64 years were 40.72% adherent to medication and patients above the age of 75 years were only 7.5% adherent to medication. In a similar study conducted by Kirkman and Associates in Chicago, men were significantly more likely to be adherent than women¹². In our study also, 67.78% men were more adherent to medication compared to women (22.62%). Education level also influenced adherence. The higher the estimated academic achievement, the more likely the patient was to be adherent. Patients completing graduate school were more likely to be adherent when compared with patients with a school equivalent education¹³. Patients in our study also filled prescriptions for a number of co morbid conditions (Table 1). Patients with hypertension disease were 31.67% adherent to medication and patients with thyroid disease were 2.26% adherent to medication. We found that several patient demographics and clinical factors were associated with higher adherence to anti diabetic medications: older age, male, higher education level, and presence of co morbid chronic conditions. Being new to diabetes therapy was associated with lower adherence.

Patient information leaflets regarding diabetes mellitus type 2 were prepared and distributed to all the 300 patients in our study population. Patient counselling was done to provide education on disease and appropriate drug use and on life style modifications required by the patients. Patient health information leaflets was widely used to illustrate information and to remind people of information received previously.

CONCLUSION

Efforts are needed to increase the medication adherence of elder patients and to patients who are new to therapy so they can realize the full benefits of prescribed therapies.

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