Compliance of Diabetic Patient to Anti Diabetic Treatment

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Original Article

Abstract

Background: *Compliance in health can be defined as the process of patient's behavior corresponding to the medical advice. It is a complicated and multifaceted phenomena that can gradually change the outcomes of therapy. It is usually used interchangeably with the term of adherence.*

Objectives: *To find out the compliance rate of diabetic patients to anti-diabetic drugs in AL Hassan specialist center in Karbala governorate in 2018 and the reasons related to non-compliance.*

Methods: *A cross sectional study, A convenient sample of 368 diabetic patients was approached (who attended AL Hassan specialist center in Karbala governorate). Data collection was perfomed through direct interview using a questionnaire adapted from similar researches. Statistical Package for the Social Sciences (SPSS) program version 23 was used for data analysis and P value of a level < 0.05 considered significant.*

Results: *The compliance rate to anti diabetic medication was high (71.74%). The most commonly reported reason for non-compliance was the feeling that the medication is not effective, followed by the occurrence of side effects (about 70% of study participants reported that they know about the side effects of diabetes).*

Conclusions: *The compliance with medication was high (71.74%). Whilst the accurate evaluation of compliance may not be exactly described, as this is a small cross-sectional study.*

Keywords: Diabetes Mellitus, Compliance, Anti-Diabetic Drugs, Adherence

1. INTRODUCTION

Diabetes mellitus (DM) is referred to group of diseases characterized by increased levels of blood glucose due to deficiency in insulin production, insulin action or both(1).

Although a several studies had described the very huge epidemiology of diabetes within the last 20 years, numerous governments and public health planners still stay generally ignorant of the current greatness, or, more critically, the future potential for the increment of DM and its serious complications in their own countries (2).

Early diagnosis, proper treatment and effective follow-up are crucial in any health care system to stop complications of DM and improve patients' quality of life (3).

Compliance in health (sometimes called as adherence) can be referred as the process of patient's behavior corresponding to the medical advice (4, 5).

Patients with DM who educate self-management skills and make lifestyle changes can more efficiently treat their disease and prevent complications related to DM(6).

Non-compliance rates are often high across disease states, treatment regimens, and age groups; the decline in compliance rate is distinguished to be most dramatic after the first six months of treatment among patients with chronic diseases like DM (7).

Factors that can affect compliance to diabetic patient that take multiple drugs can be classified according to patients personal behaviors, social and economic- factors, drug factors and health provider and health system-related factors(8).

2. PATIENTS and METHODS

A cross sectional study was carried out in AL Hassan specialist center in Imam Hussein Medical City in Karbala governorate.

A convenient sample of 368 diabetic patients was approached

Data was collected through a direct interview with the patient.

Inclusion criteria

Patients with type 2 DM of both genders and agreed to participate in the study.

Exclusion criteria:

Patients was excluded if he or she had type I DM , severe comorbidities or mental disorders, pregant women with gestational DM were also excluded

Questionnaire form:

There are different methods for assessing the compliance to antidiabetic treatment, direct and indirect methods; the direct one involves directly observed therapy, testing the level of drug or metabolite in blood and measurement of the biological marker in blood (11). Patient self-report, pill counts, and pharmacy refills were the frequently used indirect methods for assessing the compliance to anti-diabetic treatment (11). A specially designed questionnaire has been prepared; it was partially adapted from previous studies that assess the compliance of patient to anti diabetic treatment with some modifications (4, 12, 13, 9, 14-18). The questionnaire consisted of:

- Socio-demographic data
- The features of the disease: duration, age of onset, family history of DM, family history of hypertension, family history of heart problems and presence of complications.
- Self-reporting knowledge about DM.
- Patient compliance to life style changes (exercise, smoking eating).

Compliance with diabetic medication:

The degree of compliance and the causes related to noncompliance all were assessed.

In addition to other related knowledge and information about diabetes and its medication)

Assessment of compliance

 Question (Do you adhere to take the anti-diabetic drugs as advised by your doctor) was used to calculate the compliance and noncompliance groups by self-reporting answer :

Compliance group: those whose answer were : Yes

Noncompliance groups: those whose answer were: No

Then the causes for non-compliance had been calculated:

Lack of finance Feeling drug is not effective, Interfere with my meal plan, Taking them since many years, Forgetfulness, Side effect, Feeling the dose given is high and Complexity of drug regimen.

Statistical Analysis: SPSS (version 23.0) was used to perform statistical analysis.

Comparisons of study groups were performed using chi-square test for categorical data, and using Student's t-test or F-test for continuous data and correlation analysis. p value of < 0.05 was considered statistically significant.

3. RESULTS

The age of participants ranged from (33 -90) years with a mean of (60.2 ± 11.6) years and a median of (60) years. Female patients were (238), contributted for (64.67%) of the study population, while the remaining (130) males formed (35.33%) of the study population. The majority of patients (72.8%) lived in urban areas while the remaining (28.2%) lived in rural areas. The mean duration of diabetes mellitus among the study participants was (8.4 ± 6.11) years, with a range extending up to (35) years (**Figure 1**). Age of onset of the disease ranged from (28) years to (88) years with a median of (52) years. The study participants were classified into compliance group and non-compliance. Non-compliance group comprised 104 patients among the total of 368 patients, with a proportion of (28.26%). Comparison between compliance and the type of medication was performed using Chi-square test. No statistically significant difference was observed between the two groups. Chi-square = 1.245, P-value = 0.537, as detailed in (**Table 1**).

Compliance was also compared with the mean the age of the patient, duration of disease, and age at onset of the disease; using Student's t-test. No statistically significant relationship was observed between compliance and any of the three characteristics, p-value > 0.05. Comparison of compliance with certain demographic characteristics (**Table 2**) did not show any significant relationship regarding residence, house ownership, or income; but have shown a significant relationship with employment. The most commonly reported reason for non-compliance was the feeling that the medication is not effective, followed by the occurrence of side effects. About (70%) of study participants reported that they know about the side effects of diabetes, while the remaining (30%) reported that they did not have sufficient knowledge about the side effects of antidiabetic medication.

Table 1. Type of treatment by compliance group among the participants.

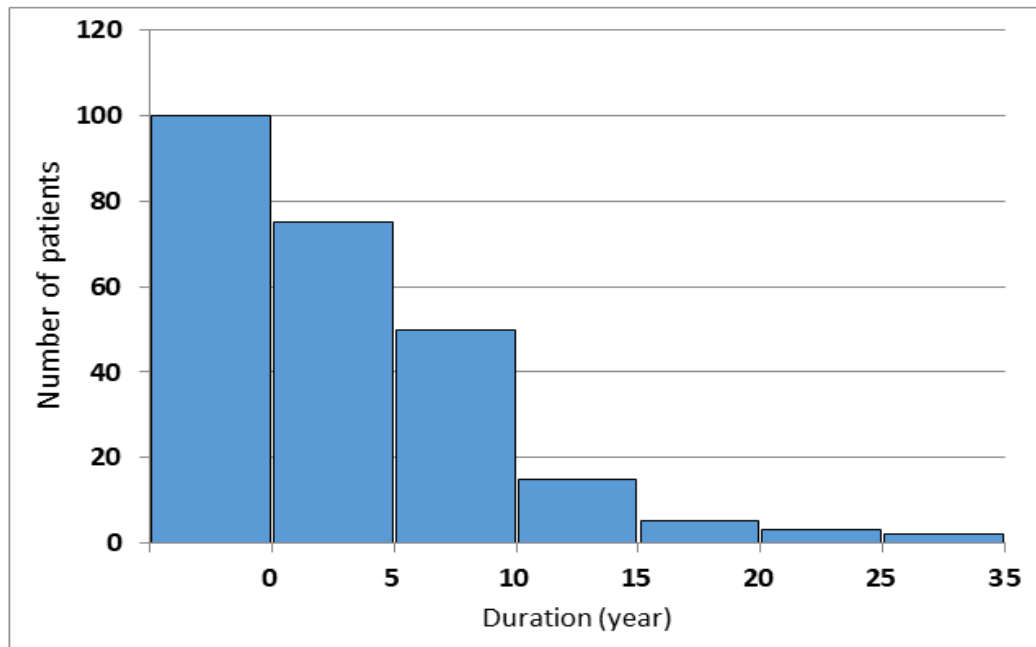| Type of Treatment	Compliance Group		Total
	Compliance	Non-Compliance	
Insulin	48 (77.42%)	14 (22.58%)	62
Tablet	173 (70.90%)	71 (29.10%)	244
Mixed	43 (69.35%)	19 (30.65%)	62
Chi-square = 1.245, P-value = 0.537			

Figure 1. The distribution of the duration of diabetes among the participants.

Table 2. Comparison of compliance with certain demographic characteristics among the participants.

Characteristics		Group		Chi-square	P. value
		Non-Compliance	Compliance		
Residence	Urban	70 (26.72%)	192 (73.28%)	1.24	0.266
	Rural	32 (32.65%)	66 (67.35%)		
Employment	Employee / worker	70 (33.65%)	138 (66.35%)	8.27	0.004
	Non-employee / housewife	30 (19.87%)	121 (80.13%)		
Income	Good	2 (20.00%)	8 (80.00%)	0.87	0.646
	Moderate	52 (29.21%)	126 (70.79%)		
	Poor	44 (32.35%)	92 (67.65%)		
House ownership	Owned	77 (29.84%)	181 (70.16%)	1.31	0.519
	Rented	15 (30.00%)	35 (70.00%)		
Smoking	Current Smoker	15 (34.88%)	28 (65.12%)	1.05	0.304
	Non-smoker	89 (27.38%)	236 (72.62%)		

Table 2…. Cont.

Characteristics		Group		Chi-square	P. value
		Non-Compliance	Compliance		
Level of Education	Primary or less	81 (28.83%)	200 (71.17%)	0.26	0.609
	Intermediate or higher	21 (25.93%)	60 (74.07%)		
Gender	Females	72 (30.2%)	166 (69.8%)	0.29	0.66
	Males	44 (33.8%)	86 (66.2%)		
Family History of DM	Positive	60 (28.30%)	152 (71.70%)	0.01	0.984
	Negative	44 (28.21%)	112 (71.79%)		
Family history of hypertension	Positive	34 (23.45%)	111 (76.55%)	2.73	0.098
	Negative	70 (31.39%)	153 (68.61%)		
Family history of IHD	Positive	22 (27.50%)	58 (72.50%)	0.03	0.864
	Negative	82 (28.47%)	206 (71.53%)		

IHD: Ischemic Heart Disease

4. DISCUSSION

The patient non-compliance is a serious healthcare issue that poses a great challenge to the successful delivery of healthcare and it remains an ongoing problem (4).

The current study showed that the compliance with medication was high (71.74%). Almost similar rate reported by a previous study done in Iraq in 2009 in Baghdad; which showed that patient's compliance with drugs was good (60.3%) (9). Another study done in Ethiopia in 2014 showed that the adherent rate (self-reported) of patients to anti-diabetic drugs was 72.2% (7).

A Systematic Review for assessing patient's compliance to anti-diabetic treatment revealed that the compliance rate has a wide spectrum and ranged from 36% to 93% (10). This variation could be related to difference in the measures used in assessing compliance method. Although there was a several methods for assessing patient's compliance, a lack of reliable methodologies results in difficulty in assessing patient's compliance with treatment in a

standard method (19). In this study, it had been shown that there was no statistical significance difference between the type of medication and compliance to treatment. This was in contrast to Mukherjee and his colleagues study which showed that a combination of insulin and oral hypoglycemic drugs had a low compliance rate than other insulin alone or oral hypoglycemic drugs alone (13). In addition, the age of the patient and the age at onset of the disease had no affection on compliance state in the present sample. Similar finding was observed in a study done in Iraq 2015 (20).

The mean duration of DM among study participants had no affection on compliance state, While a data from other studies revealed that drug therapy of T2DM becomes more complicated as the disease progress in duration (21). There was no statistically significant relationship between compliance and level of education. While, a study done in Pakistan in 2016 showed that noncompliance state was associated with illiteracy (22). Those who are employees or free workers were more likely had noncompliance state than those who were not working. This result was consistent with Kang and Hur study results, inconsistent with Raheem study (16, 17). Employees may have no enough time to take care of their health as compared to unemployed people and may be more susceptible to forget their treatment. There was no association regarding residence, house ownership, or income with the compliance state. While in Khan and his colleagues study, the noncompliance rate among urban patients was significantly higher than in the rural people (4).

The most commonly reported reason for non-compliance in this study was the feeling that the medication is not effective, followed by the occurrence of side effects. A noteworthy point was that three quarters of the sample reported knowledge about medications side effects (about 70% of study participants reported that they know about the side effects of antidiabetics medications. While forgetfulness and decision to omit due to other reasons (like: side effects, poor patient health service-provider relationship or other reasons) was the most commonly reported reason in Jemal and his colleagues study in Ethiopia, 2017 (23).

5. CONCLUSIONS

The compliance with medication was high . Whilst the accurate evaluation of compliance may not be exactly described, as this is a small cross-sectional study. The only contributory factor for compliance rate was employment state (those who are employees or free workers were more likely had noncompliance state than those who were not working).

Ethical Clearance:

Ethical issues were taken from the research ethics committee in Karbala University /Collage of medicine. Written agreement was obtained from Karbala Health Directorate Informed consent was obtained from each participant. Data collection was in accordance with the World Medical Association (WMA) declaration of Helsinki for the Ethical Principles for Medical Research Involving Human Subjects, 2013 and all information and privacy of participants were kept confidentially.

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