## Compliance to anti-diabetic drugs among patients with type 2 diabetes attending Al-faihaa Specialized Diabetes Endocrine Metabolism Center

#### Shahad Salah Mohammed<sup>1</sup>, Narjis Abdul Hassan Ajeel<sup>2</sup>

- 1. MBChB, Ministry of Health, Basrah Health Directorate
- 2. MB.ChB, MSc, PhD community medicine.

#### Received:18.8.2024

Accepted:3.12.2024

### Abstract

**Background:** Diabetes is a chronic metabolic disease of serious concern associated with a major burden on the well-being of people worldwide. Non-compliance to medications is the most challenging hurdle in managing non-communicable diseases such as diabetes.

Aim of the study: to evaluate the compliance level to anti-diabetic drugs for patients with type 2 diabetes mellitus attending al-Faihaa specialized diabetes endocrine metabolism center in Basrah, Iraq.

**Method:** this was a cross-sectional descriptive study carried out in Al-Faihaa Specialized Diabetes Endocrine Metabolism Center during the period from the 1st of January to the 31st of December,2021. The data were collected through direct interviews of the eligible patients using a special questionnaire form. Morisky Medication Adherence Scale (MMAS) was used to measure adherence.

**Results:** About two-thirds (61.9%) of the patients had a low level of compliance to anti-diabetic drugs and only 12.1% of the patients showed a high level of compliance. A significant association was found between patients' age, patients' education, duration of diabetes and their level of compliance. On the other hand, a significant independent association between the type of anti-diabetic drugs, the intake of medications for other co-morbidities and compliance level was found. Intake of other medications showed a significant inverse association with compliance level.

**Conclusion:** The compliance rate for anti-diabetic drugs among diabetic patients with T2DM was unsatisfactory. Patients' adherence to other elements of diabetic care (diet, exercise, self-monitoring of blood glucose), was also unsatisfactory.

Keywords: Compliance, anti-diabetic drugs, type 2 diabetes, Endocrine

Corresponding author: Shahad Salah Mohammed

MBChB, Ministry of Health, Basrah Health Directorate

E-mail: Shahdyakout1@gmail.com

### Introduction

iabetes is a chronic metabolic disease of serious concern associated with a major burden on the well-being of people worldwide. With an estimated 4 million deaths worldwide in 2017. Diabetes falls within the top ten causes of death in adults. [1]

The prevalence of diabetes has shown an increasing trend in the last 30 years worldwide, especially in

low and middle-income countries.[2] According to the data of the International Diabetes Federation (IDF), as of 2017, the prevalence of diabetes in the adult population worldwide was estimated to be 8.8% (425 million people). The Middle East and North Africa (MENA) region (which includes 21 countries and territories including Iraq) ranks second in the rate of diabetes with a prevalence of 9.2%. The prevalence of diabetes is estimated to increase by 110% between 2017-2045 in the MENA countries and to reach 629 million worldwide in 2045.[1] Contrary to the developed countries diabetes is affecting people below the age of 60 years more in the Middle Eastern countries. This is a matter of serious concern as it affects the productive age of the people resulting in serious chronic consequences. [3] Page |234 Concerning Type 2 diabetes mellitus (T2DM), the estimated global prevalence in the adult population was 8.8% in 2015 and is projected to increase to 10.4% by 2040. [4] In addition, several potential modernizations in lifestyle habits have been associated with the early onset of T2DM in children.[5]

In Iraq, about 1.4 million people have diabetes.[2] The prevalence of T2DM in Iraq has been reported to be between 8.5% to 13.9%. [3] A 19.7% age-adjusted prevalence of diabetes was reported in a study including more than 5400 people aged between 19 to 94 years in the city of Basrah (Southern Iraq), in 2012. [6]

The elements of self-care such as adherence to diet and drugs, blood glucose monitoring, foot care, exercise, and recognition of the symptoms are essential for secondary prevention. [7,8] Poor access to drugs, high costs of drugs, unequal distribution of health providers between the urban and rural areas and cultural barriers may be the reasons for reduced self-care activities in developing countries. [9]

Non-compliance with medications is the most challenging hurdle in managing non-communicable diseases such as diabetes. Non-compliance to drugs affects the therapeutic effects of the drug, subsequently leading to uncontrolled blood sugar levels, frequent hospital visits, overstraining the healthcare systems, and high healthcare-associated costs for the patient. [10]

The most important negative impact of the noncompliance-related non-responsiveness to the therapy is that the physician may be prompted to doubt the drug dosing or the treatment regimen and this may result in an unnecessary increase in the dose or change in the drug regimen which may be harmful to the patient. [11]

It is challenging to monitor drug adherence in diabetic patients. Good adherence to anti-diabetic drugs has been reported to be associated with fewer hospitalizations due to diabetes-related complications. [12] Several factors such as forgetfulness, high cost of the medications, and lack of knowledge of the therapeutic effects of the drugs have been associated with non-compliance to medications. [11,12]

### Materials and methods:

This is a cross-sectional descriptive study. The study was carried out in Al-Faihaa Specialized Diabetes Endocrine Metabolism Center during the period from the 1st of January to the 31st of December,2021. The study included all eligible patients attending the diabetic clinics in Al-Faihaa Specialized Diabetes Endocrine Metabolism Center in Basrah for three months extending between the 1st of March -the 31st of May,2021. All the patients of both sexes fulfilling the criteria of inclusion were included. The data were collected through direct interviews of the eligible patients using a special questionnaire form prepared for the study. The questionnaire consisted of 4 sections:

1. Patient's socio-demographic information; name, age, gender, marital status, education, occupation and smoking status.

2. Diabetes history and its management: duration of diabetes, type and frequency of anti-diabetic drugs, dietary modification, physical exercise, self-monitoring of blood glucose, and HBA1c level.

3. Medical history: history of other chronic diseases unrelated to diabetes (like sickle cell anemia, cancer, hypertension, etc..), complications of diabetes (retinopathy, nephropathy, peripheral neuropathy, CVD), history and frequency of hospitalization related to diabetes, and drug history (other than antidiabetic drugs ).

4. Compliance with anti-diabetic drugs: this included 8 questions: [13]

- 1- Do you sometimes forget to take anti-DM drugs?
- 2- Sometimes patients don't take their antidiabetic pills for reasons Other than forgetting do you think over the past two weeks were there any day you did not take your anti-diabetic drug?

- 3- Have you ever stopped taking your medication without telling the doctor because you feel worse if you took it?
- 4- When you travel or leave home, do you sometimes forget to bring along anti-diabetics drugs?
- 5- Did you take your anti-diabetic drug yesterday?
- 6- Do you sometimes stop taking anti-diabetic drugs when feeling your diabetes is under control?
- 7- Do you ever feel disturbed about the treatment plan?
- 8- How often do you have difficulty remembering to take all your anti-diabetic drugs? (The answer is either once in a while, rarely or never, or sometimes or usually or all the time.

Morisky Medication Adherence Scale (MMAS) was used to measure adherence. Eight-item model was used, and eight questions were asked to determine how they adhered to anti-diabetic drugs. Patients were required to answer by "yes" or "no", positive answers (indicates non-adherence) scored one, and negative answers (indicates adherence) scored zero, in question number eight the answers were either( never, rarely, once upon a time, sometimes, usually, all the time) so we considered the answers ( never, rarely, once upon a time ) as "no", negative answers and we considered the answers (sometimes, usually, all the time) as "yes positive answers. From these questions and answers, the scores were calculated:

- A score of more than two was considered low medication adherence.

- A score of one or two was considered medium medication adherence.

- A score of zero was considered high medication adherence.

Statistical analysis was performed by SPSS version 21. Descriptive statistics were performed to find out the frequencies and % of different variables. The Chi-square test was employed to assess the significance of the association between categorical variables. Binary logistic regression analysis was performed to predict independent associations of different studied parameters with non-compliance. P values less than 0.05 were significant. [14]

### **Results:**

After applying the inclusion and exclusion criteria, 231 participants were enrolled in the study. There were 81(35.1%) males and 150 (64.9%) females among the study participants. The mean age of the study participants was  $52.67\pm13.70$  years. The highest percentage (37.2%) of the participants belonged to the 50-59-year age group. Most of the participants were married (86.1%). A significant proportion (60.2%) of the participants were housewives. The majority (70.6%) of the participants were literate (primary and above).

About half (49.4%) of the participants had a history of chronic diseases other than diabetes and 143 (61.9%)of them had diabetes-associated complications. While 85(36.8%) of participants reported at least one hospital admission. The majority 172 (74.5%) of the participants had diabetes for more than 5 years, 66 (28.6%) of them had diabetes for  $\geq 15$  years. The highest percentage of 141 (61 %) of the participants were only on oral antidiabetic drugs, only 55(23.8%) were on insulin only, and the remaining 35 (15.2%) were on both oral antidiabetics and insulin. Among the patients on oral anti-diabetic drugs, 107 (60.8%) of the participants were taking 1 dose/day, 64(36.4%) were taking 2 doses/day, and only 5(2.8%) of them were taking 3 doses/day. Among the participants who were on insulin, more than half 52(57.8%) were taking 2 doses/day, followed by 20 (22.2%) of participants taking 3 doses/day, 13(14.4%) taking 1 dose/day, and only 5(5.6%) of participants were taking 4 doses/day. Distribution of all diabetic patients according to the total number of daily doses of antidiabetic drugs. While 92 (398%) were taking only 1 dose/day followed by 85(36.8%) were taking a total of 2 doses/day, 36(15.6%) were taking 3 doses/day,15(6.5%) were taking 4 doses/day and 3(1.3%) were taking 5 doses/day.

Table 1. Patient's	s response	to	anti-diabetic	drug
adherence (comp	liance) que	esti	ons	

Compliance		Yes		No		Total	
	questions	No.	%	No.	%		
1	Sometimes forget to take the anti- diabetic drug	128	55.4	103	44.6	231	
2	Stopped taking medication without telling the doctor	53	22.9	178	77.1	231	
3	Did you take an anti-DM drug on the previous day	210	90.9	21	9.1	231	
4	Sometimes patients don't take their anti-diabetic pills for reasons Other than forgetting do you think over the past two weeks were there any day you did not take your anti- diabetic drug Sometimes forget to bring along diabetic medication	88	38.1	83	61.9	231	
	when travelling or leaving home						
6	Sometimes stop taking diabetic medication when feel diabetes is under control	96	41.6	135	58.4	231	
7	Felt disturbed about the treatment plan	139	60.2	92	39.8	231	
8	Often have difficulty remembering to take all the medications	118	51.1	113	48.9	231	

Table 1 represents the responses of the participants to the questions related to compliance with anti-

diabetic drugs. More than half of the participants 128(55.4%) reported that they sometimes forget to take the anti-diabetic drugs. Fifty-three (22.9%) reported that they sometimes stopped taking medications without the doctor's advice. The main reasons given by the participants who stopped antidiabetic drugs included: having side effects (25 participants), there is no need for medication (13 participants), not liking to take medication (8 participants). taking herbal medication (5 participants) and because of depression (2participants).

Although, 210(90.9%) of the participants said they took their anti-diabetic drugs on the previous day, 88 (38.1%) agreed that they did not take their antidiabetic drug at least one day during the two weeks preceding the time of the interview for reasons other than forgetting. Nearly two-thirds 148 (64.1%) sometimes forget to bring along anti-diabetic drugs when they travel. Furthermore, 96 (41.6%) of the participants said they sometimes stopped taking the anti-diabetic drugs when they felt diabetes was under control, 139(60.2%) felt disturbed about the treatment plan and 118(51.1%) had difficulty remembering to take all the medications.

Overall, about two-thirds (61.9%) of the patients showed a low level of adherence to anti-diabetic drugs. Only 28(12.1%) of the patients showed a high level of medication adherence (Table 2).

Table 2. Patients' level of compliance to anti-diabetic medication	Table 2. Patie	ents' level of com	pliance to anti-	liabetic medication
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Level of Compliance	No.	%
High	28	12.1
Medium	60	26.0
Low	143	61.9
Total	231	100.0

# Table 3. Compliance of participants to selectedelements of diabetic care

V	ariable	Number	%	
Dietary	Yes	114	51.1	
Compliance	No	113	48.9	
Exercise	Yes	29	12.6	
Exercise	No	202	87.4	
		•	-	
San alain a	Current smoker	32	13.9	
Smoking	Ex-smoker	15	6.5	
status	Nonsmoker	184	79.6	
Blood	Yes	96	41.6	
glucose Self- monitoring	No	135	58.4	
Adhere to	Yes	183	79.2	
clinic	No	48	20.8	
appointment				
HBA1C	<7	37	16.0	
level	7-8.9	97	42.0	
	≥9	97	42.0	
	Total	231	100	

Table 3 shows compliance of participants to selected elements of diabetic care. About half 118 (51.1%) of the participants reported adherence to diet and only 29(12.6%) reported doing physical exercise. The majority 184(79.7%) were non-smokers and 6.5% stopped smoking. Self-monitoring of blood glucose was reported by less than half of the participants 96 (41.6%). Only 48(20.8%) reported non-adherence to their clinic appointments. Busy schedule, forgetfulness, doctor phobia and long distance were the reasons given for non-adherence to clinic appointments.

Age was significantly inversely associated with compliance to anti-diabetic drugs, (p<0.05). The level of compliance consistently decreased with the increase in age. Education was positively associated with the participant's level of compliance with medication (p<0.05). On the other hand, no significant association was found between

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participants' gender or marital status and level of compliance (Table 4).

# Table 4. The association between demographiccharacteristics of diabetic patients and theircompliance with anti-diabetic drug

	Level of compliance						
Variable	Low Compliance		Medium and high Compliance		Total		
	No.	%	No.	%	No.	%	
Gender					1		
Male	44	54.3	37	45.7	81	100	
Female	99	66.0	51	34.0	150	100	
X <sup>2</sup> =3.042				df=1			
	P=	0.081					
Age (years)		-	-	-		-	
<40	15	42.9	20	57.1	35	100	
40-49	23	60.5	15	39.5	38	100	
50-59	53	61.6	٣٣	38.4	86	100	
≥60	52	72.2	20	27.8	72	100	
X <sup>2</sup> =8.668				df=3			
	P=	0. 034					
Respondents'							
education(years)					1		
≤6	96	68.1	45	31.9	141	100	
>6	47	52.2	43	47.8	90	100	
X <sup>2</sup> =5.862				df=1			
	P=	0. 015					
Marital status							
Married	126	63.3	73	36.7	199	20.7	
Others	17	53.1	15	46.9	32	30.9	
X <sup>2</sup> =1.214	214 df=1						
	P=	0.271					
Total	143	61.9	88	38.1	231	100	

Duration of diabetes showed a significant inverse association with participant's level of compliance with anti-diabetic drugs (p<0.05). The increase in the duration of the disease was associated with a low level of compliance. The majority 48(72.7%) of participants who had diabetes for  $\geq 15$  years had low compliance levels. (Table 5).

Participants who were taking both oral anti-diabetic drugs and insulin showed a lower level of

compliance compared to those who were taking either oral anti-diabetic drugs or insulin (Table 5). The association between type of treatment and level of compliance, however, did not reach statistical level of significance (P>0.05). Furthermore, several daily doses showed no significant association with the level of compliance (p>0.05). (Table 5).

# Table 5. The association between selected diabetes&health related factors and patients' complianceto anti-diabetic drug

	Level of compliance						
Variable	Low Compliance		Medium- high Compliance		Total		
	No.	%	No.	%	No.	%	
Duration of							
diabetes(years)							
<5	27	45.8	32	54.2	59	100	
5-9	35	63.6	20	36.4	55	100	
10-14	33	64.7	18	35.3	51	100	
≥15	48	72.7	18	27.3	66	100	
X <sup>2</sup> =10.036				df=	3		
	P	=0. 018					
Type of treatment							
Oral anti-diabetic	<u>ہ</u> م	50.0	50	41.0	1.4.1	100	
only	82	38.2	39	41.8	141	100	
Insulin only	36	65.5	19	34.5	55	100	
Both	25	71.4	10	28.6	35	100	
X <sup>2</sup> =2.480				df=	2		
	P	=0.289					
Total number of							
doses/days							
1	53	57.6	39	42.4	92	100	
2	50	58.8	35	41.2	85	100	
≥3	40	74.1	14	25.9	54	100	
X <sup>2</sup> =4.453				df=	2		
	P	=0.108					
Intake of other							
medications		-					
Yes	69	72.6	26	27.4	95	100	
No	74	54.4	62	45.6	136	100	
X <sup>2</sup> =7.873	=7.873 df=1						
P=0.005							
Total	143	61.9	88	38.1	231	100	

The intake of other medications showed a significant inverse association with the participant's level of compliance with anti-diabetic drugs. The 10.33762/mjbu.2024.152896.1255 participants who were taking other medications showed a lower level of compliance compared to those who were not taking any other medications. (p<0.01). (Table 5).

Logistic regression analysis was performed to investigate the independent factors associated with the level of compliance. Accordingly, only the type of treatment (CI=0.192-0.408, p<0.05), and intake of other medications (CI=1.027-1.906, p<0.05), showed significant independent association with the level of compliance to anti-diabetic drugs (Table 6).

### Table 6. The logistic regression analysis

Independent variables	Adjusted OR(95%CI)	P Value			
Independent variables with significant association					
Type of treatment	0.192-0.408	0.020			
Intake of other medications	1.027-1.906	0.041			
Independent variables with no significant association					
Age	0.980-1.004	0.761			
Gender	0.626-1.132	0.682			
Marital status	0.510-1.213	0.663			
Education	0.806-1.479	0.206			
Duration of diabetes	0.933-1.192	0.159			
Number of anti-diabetic doses	0.636-0.868	0.372			

The association between selected indicators of diabetes control and the level of compliance to antidiabetic drugs is shown in Table (7). Diabetesrelated complications were significantly associated with low levels of compliance (P<0.001). Threequarters 110 (76.9%) of the patients with low levels of compliance to anti-diabetic drugs had diabetesrelated complications compared to 33(37.5%) of those with medium or high levels of compliance. Similarly, diabetes control as indicated by the most recent hba1c level was significantly associated with compliance level(p<0.0001). Only 4 patients (2.8%) of those with a low level of compliance had hba1c levels less than 7% compared to 33(37.5%) with medium-high compliance levels. Hospitalization was also significantly higher among patients with low levels of compliance (p<0.0001). More than half 73(51%) of patients with low levels of compliance reported at least one hospital admission compared to 12(13.6%) of those with medium-high compliance levels (table 7).

# Table 7. The association between selectedindicators of diabetes control and level ofcompliance to anti-diabetic drugs

	Level of compliance					
Variable	Ι	LOW	Mediur	n-high	Тс	otal
	com	pliance	Comp	liance		
	No.	%	No.	%	No.	%
Complication	IS			1		
Yes	110	76.9	33	37.5	143	61.9
No	33	23.1	55	62.5	88	38.1
X <sup>2</sup> =35.90	2		1		df=1	
		P<0.00	)1			
HbA1c level (9	%)					
<7	4	2.8	33	37.5	37	16.0
7-8.9	56	39.2	41	46.6	97	42.0
≥9	83	58.0	14	15.9	97	42.0
X <sup>2</sup> =64.70	5		•	•	df=2	
		P<0.0	01			
Frequency o Hospitalizatio	f on		1			
No hospitalization	70	49.0	76	86.4	146	63.2
One	34	23.8	4	4.5	38	16.5
Two and more	39	27.2	8	9.1	47	20.3
X <sup>2</sup> =33.162 df=2 P<0.001						
Total	143	61.9	88	38.1	231	100

### **Discussion:**

The present study was carried out owing to the scarcity of studies on adherence to diabetes **10.33762/mjbu.2024.152896.1255** 

medication in T2DM patients in Iraq. It has been suggested that definitions and evaluations of adherence depend on the method used to measure or diagnose adherence. A recent systematic review highlighted the inconsistencies in the calculation of adherence to the same drugs in different studies.[6] Therefore, these differences and inconsistencies in adherence measurement methods and definitions make it difficult to compare between studies.

There are several methods to evaluate the adherence levels among T2DM patients, however, selfreporting measures remain the most common method used.[15] The most widely used method is the Questionnaire-based method. In the questionnairebased method, the patients are classified based on specific scores depending on their responses to a set of pretested questions. Accordingly, the 8-item Morisky Medication Adherence Scale (MMAS-8) questionnaire was used to evaluate adherence among participants in the present study.[13]

The Morisky Scale has several advantages over other self-reporting instruments. The advantages include the scale being short, the ease and quickness to administer, the ease of scoring, identification of barriers to non-adherence, it can be used in different diseases and is most suitable across different populations. Furthermore, it has been validated in a range of diseases, even in patients with low education levels, therefore, it is widely used as a scale in research.[16] The sensitivity and specificity of the Morisky Scale is over 70%. [17].

Poor lifestyle habits such as sedentary lifestyle, poor dietary habits, smoking, alcohol consumption, and family history are the major risk factors for the development of T2DM. [18] Being a lifestyle disease, T2DM can be managed by both lifestyle modifications and pharmacological agents (drugs and/or insulin).[18]

In the present study, only (12.1%) of the participants showed high adherence levels and another (26%) showed medium adherence levels to anti-diabetic drugs. While (61.9%) of the participants showed low adherence to anti-diabetic drugs based on the Morisky scale. Adherence rates for oral anti-diabetic drugs and insulin in the present study were (41.8%) and (34.5%), respectively.

A study in Saudi Arabia [19] reported (35.7%) high adherence, (42.9%) intermediate adherence and (21.4%) low adherence in T2DM patients. Similarly, a study conducted in Egypt using the Morisky-Green-Levine scale reported that (26.1%) of the participants presented good adherence, (47.9%) presented decent adherence, and only (26%) presented poor adherence.[20]

These adherence rates for anti-diabetic drugs are much better than those found in the present study. However, several other studies also reported unsatisfactory adherence levels in countries like Switzerland (40%) [21], and Egypt (38.9%) [22]

These variations in the reported adherence levels in DM patients may be due to the use of different definitions and methods to measure medication adherence. This suggests that in the absence of a gold standard method to measure the adherence rates in diabetic patients, different studies are expected to report different adherence rates.[16]

There is a strong indication for the benefits of exercise in T2DM, however, in the USA, adherence to long-term exercise programs still varies between (10%) and (80%).[23] In the present study, (51.1%) and (12.6%) of the patients were adherent to diet and physical exercise, respectively.

Forgetfulness has been reported to be a very common cause of non-adherence to medications in T2DM patients. More than half (55.4%) of the patients in the present study agreed that they sometimes forget to take their anti-diabetic drugs. A study showed that (67.2%) of non-adherent patients stated that they forget to take their medications.[23]

Drug side effects are another important reason for non-adherence to medications in T2DM patients. In the present study (22.9%) reported that they sometimes stopped taking medications without the doctor's advice. The main reason for stopping their medication was having side effects. A proportion of patients (29.2%) reported drug side effects as the reason for non-adherence in another study.[20] In the present study, age was significantly inversely associated with compliance with anti-diabetic drugs. Another Study has shown age and gender to be risk factors for poor medication compliance in T2DM patients. [24] It has been suggested that the possible reasons why old age is related to non-adherence to anti-diabetic drugs are difficulty in understanding drug efficacy and its side effects [25]

The current medication regimen was found to be associated with the level of adherence to antidiabetic drugs in T2DM patients. In the present study type of treatment was significantly and independently associated with anti-diabetic drug adherence. Adherence was significantly higher for patients on oral anti-diabetic drugs (41.8%) than for insulin alone (34.5%) and for both oral anti-diabetic drugs and insulin (28.6%).

Cramer conducted a systematic review and reported that in the United States, (36%) to (93%) of the patients on oral anti-diabetics remained on their treatment for 6-24 months, and for insulin, the observed adherence was (62%) (long-term) and (64%) (short-term) respectively. [26]

In addition, it has been suggested that patients with associated co-morbidities tend to be on a greater number of medications and at higher risk of nonadherence to medications.[27] In the present study, the intake of medications for other co-morbidities showed a significant independent inverse association with participants' compliance with anti-diabetic drugs. Participants who were taking other medications showed low compliance rates as compared to other participants. Studies have shown a statistically significant association of the absence of co-morbidities with high adherence. [19,28]

The present study showed that poor compliance with anti-diabetic drugs is significantly associated with diabetes-related complications and hospitalization. Furthermore, adherence has a negative association with healthcare-associated costs. A (10%) increase in adherence among diabetes patients was reported to be associated with an (8.6%-28.9%) decrease in total annual healthcare costs.[29]

Self-reporting methods to evaluate adherence to antidiabetic drugs among T2DM patients may lead to Page | 241 overestimation of adherence. The dependence of the adherence data on participants' recall can introduce bias and there can be differences in the actual and the observed prevalence of adherence among patients in the present study. Patients might tend to forget and would not be able to remember their habits and patterns of taking medications. Therefore, in the present study patients were asked about their medication-taking behavior within the previous 2week period. There could be a selection bias as the details were obtained from the patients attending diabetes care clinics, supposed to be more careful about their health and hence more adherent to medications.

### **Conclusions:**

Based on the results of this study, The compliance rate for anti-diabetic drugs among diabetic patients with T2DM was unsatisfactory, Patients' adherence to other elements of diabetic care), was also unsatisfactory, a statistically significant association was found between patients' age, patients' education, duration of diabetes and their level of compliance, a significant independent association between the type of anti-diabetic regimen, the intake of medications for other co-morbidities and compliance level was found Diabetes-related complications, high hba1c and hospitalization were significantly level. associated with low level of compliance to anti-DM drugs. Forgetfulness and drug side effects have been reported to be among the causes of non-compliance to drugs in the studied T2DM patients.

So, we recommend that it is important to educate patients about the disease in detail, the patients should write information about dosage, and timing of taking medicines and they can use for example medication calendars, pill cards, schedules or charts to specify when and how to take medications. It is important to talk to the patients about the side effects and explain how to prevent these adverse effects or how to reduce them to a minimum. Communication with patients is very important. Understanding patients' behavior. The complexity of the drug regimen should be reduced (reduce the number of drugs or number of doses to the minimum.

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الالتزام بأدوية السكري بين مرضى السكري من النوع الثاني الذين يراجعون مركز الفيحاء التخصصي لأمراض السكري والغدد الصماء

**الخلفية**:السكري هو مرض أيضي مزمن يثير قلقًا كبيرًا، ويرتبط بعبء كبير على صحة الأفراد في جميع أنحاء العالم. يُعد عدم الالتزام بالأدوية من أكبر التحديات في إدارة الأمراض غير السارية مثل السكري.

**هدف الدراسة:**تقييم مستوى الالتزام بأدوية السكري بين مرضى السكري من النوع الثاني الذين يراجعون مركز الفيحاء التخصصي لأمراض السكري والغدد الصماء في البصرة، العراق.

**الطريقة:**أجريت هذه الدراسة الوصفية المقطعية في مركز الفيحاء التخصصي لأمراض السكري والغدد الصماء خلال الفترة من ١ يناير إلى ٣١ ديسمبر ٢٠٢١. تم جمع البيانات من خلال مقابلات مباشرة مع المرضى المؤهلين باستخدام استمارة استبيان خاصة. تم استخدام مقياس موريسكي للالتزام بالأدوية (MMAS) لقياس مستوى الالتزام.

النتائج:حوالي ثلثي المرضى (٦١,٩٪) أظهروا مستوى منخفضًا من الالتزام بأدوية السكري، في حين أن ١٢,١٪ فقط أظهروا مستوى عاليًا من الالتزام. وجد ارتباط معنوي بين عمر المرضى، ومستوى تعليمهم، ومدة الإصابة بالسكري، ومستوى الالتزام لديهم. من جهة أخرى، كان هناك ارتباط مستقل معنوي بين نوع أدوية السكري، وتناول الأدوية لحالات مرضية أخرى، ومستوى الالتزام. أظهر تناول الأدوية الأخرى ارتباطًا عكسيًا ومعنويًا مع مستوى الالتزام.

**الخلاصة:**معدل الالتزام بأدوية السكري بين مرضى السكري من النوع الثاني كان غير مرض. كما كان التزام المرضى بالجوانب الأخرى من رعاية السكري (النظام الغذائي، التمارين الرياضية، مراقبة نسبة السكر في الدم ذاتيًا) غير مرضٍ أيضًا.

**الكلمات المفتاحية:** الالتزام، أدوية السكري، السكري من النوع الثاني، الغدد الصماء.