Anti-diabetics and glycemic control among type 2 Diabetic patients in out-patients clinics

Samira Abdulla Mahmood[1], Atyaf Tareq [2], Yaseen Haithem[2], Ahmed Alsadi, [2] Ahmed Hamood, [2] Mohammed Thabet[2], Mohammed Saleh[2], Mohammed Qasem[2], Ramzy Saeed[2] and Salem Bamuhill[2]

[1]Department of Pharmacology& Toxicology, Faculty of Pharmacy, Aden University,
samabdulla@yahoo.com

[2] Pharmacy Section, University of Science and Technology, Aden branch

Abstract

The present study evaluates the anti-diabetics and glycemic control of type 2 diabetic patients attending the out-patients clinics Aden. It is a cross-sectional study carried out in Aden Diabetic Center at Al-Gamhouria General Modern Hospital, Aden. Thirty two type-2-patients attended the center during the period from 15 January to 15 February 2018, using anti-diabetic drugs for more than one year, were included. Data were collected through direct interviews using a structured questionnaire, including patients characteristics as well as medical and medications characteristics. Blood samples were drawn to measure glycated hemoglobin HbA1c. Data were analyzed by using SPSS. (Version 22). Thirty seven and a half percent were females and 62.5% males. The mean age of the participants was *55 ±8.23* years. 56.2% of the patients showed good adherence to the exercise with the preponderance to the males, p=0.043. The mean BMI of the participants was 26.62 ± 3.89 Kg/m^2 , with half of them considered overweight (25-29.9 Kg/m^2) , while almost one fifth of the samples were obese. Half of the patients had hypertension and high cholesterol as comorbid conditions. The most frequent antidiabetic classes utilized by the patients were sulfonylureas, 62.5% and biguanides 62.5%. There was a limited use of DPP-4 inhibitors, sitagliptin and alogliptin (6.2%). 53.1% of the studied patients utilized monotherapy, followed by a combination of oral antidiabetics 37.55%, and a combination of oral antidiabetics and insulin(9.3%). The mean value of HbA1c of the samples studied was 9.65 ±2.33%. Only 12.5% of the patients had good glycemic control and 87.5% of the participants had HbA1c of **≥ 7** %. Almost forty percent of the patients with HbA1c ≥7% had cardiovascular diseases such as hypertension and higher cholesterol(p=0.019). In conclusion, the most frequent antidiabetic classes utilized by type-2-patients who attended outpatients clinics were sulfonylureas and biguanides with a tendency to use combination regimens. The majority of patients had poor glycemic control associated with cardiovascular morbidity. Attention should be given on the treatment regimens and dosage.

Key words: Type 2 diabetes, Morbidity, Anti-diabetic drugs, Glycemic control

Introduction

Type-2-diabetes mellitus (type 2DM) is known as non-insulin dependent diabetes mellitus that is primarily associated with insulin secretory defects and /or insulin actions. [5]

Treatment of type-2-diabetes has witnessed a change due to deep understanding of its pathophysiology and introduction of new drugs. Many classes of antidiabetic agents have been emerged that expand the spectrum for medication selection. The indicator for the optimal treatment and proper blood glucose level is the glycosylated hemoglobin, called hemoglobin A1C (HbA1c), because it provides the most objective and reliable information about long-term glucose control (the level of the previous three months) in diabetic patients. [21, 28]

The American Diabetes Association (ADA) considered glycemic control as one of the important strategies for the management of DM, and determined HbA1c as the best measure of glycemic control to prevent the complications and to reduce mortality. HbA1c level less than 7% was taken as a goal of optimal blood glucose control. [6]

Treatment of type 2DM, based on assessment of HbA1c, is essential to reduce micro- and macro-complications and to improve the quality of life. Challenges have been done in many clinics and centers, including our local clinics, to bring about the diabetic patient to optimal glycemic status. A growing body of evidence has shown the benefit of intensive diabetes management in reducing diabetic complications, nevertheless, a high rate of patients remain poorly controlled. [4, 15, 16, 18, 22]

Studies have addressed the determinants to achieve good glycemic control such as adherence to controlled diet, exercise, medications, weight reduction, self-blood glucose monitoring and regular follow-up with health care providers. [2, 7]

The present study aims at describing the medications (antidiabetic agents and drugs for comorbidities) and the present status of glycemic control including factors affecting its achievement among type2 diabetic patients attended outpatients clinics in Aden.

Treatment of type 2 diabetes represents a challenge for the endocrinologists, including local doctors. Development of new anti-diabetic drugs extends the field of medication selection. Therefore, analyzing of the medications used and the evaluation of glycemic control may help understanding how effective are the drugs prescribed and how good is their practice and patients adherence. This study is done to get a social benefit too. The data of this study might be helpful in diabetic field.

Patients and methods

This is a cross-sectional study carried out in Aden Diabetic center at Al-Gamhouria General Modern Hospital, Aden, in the period from 15 January to 15 February 2018. The study was approved by the Medical Ethics Committee, University of Aden. Inclusion criteria for participation: 1-Known type 2 diabetic patients 2- aged more than 20 years and 3- using anti-diabetic drugs for more than one year and 4- accepted to participate in the study were included in the study. Exclusion criteria: Pregnant and lactating mothers, type 2 diabetic patients that could not perform the interview or who are treated for less than one year were excluded from the study.

32 male and female diabetic patients met the inclusion criteria who gave informed verbal consents were enrolled in the study. Venous blood was immediately drawn in non-fasting state and measured. All blood samples were measured by Cobas CIII- Roch diagnostic (a full automatic machine) at the center. The blood glucose level was measured with the glycosylated hemoglobin assay. Then patients were interviewed using a structured questionnaire including patients, medical and medications characteristics.

Analysis of data was performed by using SPSS. (Version 22). Mean and standard deviation, percentages and Chi-squire for nominal variables were applied. P-value ≤ 0.05 was taken as significant. Ethical consideration: The interview with participants was conducted only after obtaining the verbal informed consent from each participant. For ethical purposes, every participant in the study was   given sufficient information about the study objectives, the content of the questionnaire as well as the confidentiality of the information and was informed that their data will be used for research purpose only.

Results
1. Patients characteristics:

In the present study, the total diabetic patients were thirty two. 37.5% were females and 62.5% males. The mean age of the participants was **55 ±8.23** years and the majority of them were in the age group 40-60 years, educated (62.5%) ,married (93.8%), nonsmokers (87.5%), and adhered to diet (50%), medication (87.5%)and exercise (56%), Table 1. The mean BMI of the participants was 26.62± 3.89 Kg/m2 with half of them considered overweight (25-29.9 Kg/m2) , while almost one fifth of the samples were obese.

Table 1: Characteristics of type 2 diabetic patients

	Frequency	%	n=32
Gender			
Male	20	62.5	
Female	12	**37.5**	
Mean age Mean ± SD (yrs.)	**55 ±8.23**		
Age groups (yrs.)			
40-50	11	**34.4**	
51-60	13	**40.6**	
61-70	08	25.0	
Education status:			
Educated	20	**62.5**	
Uneducated	12	37.5	
Marital status			
Married	30	**93.8**	
Widow	02	06.3	
Duration of diabetes (y) Mean ± SD	**9.83±6.56**		
Interval of diabetic duration (yrs.)			
1-8	16	**50.0**	
9-17	11	34.4	
18-26	05	15.6	

Table 2 shows the level of adherence of type 2 patients to the exercise. 56.2% of the patients showed good adherence to the exercise with the preponderance to the males. The difference is statistically significant.

Table 2: Adherence of   participants to exercise

		Gender		Total	P value
		Male	Female		
Yes		14	4	18	
	% of Total	**43.8%**	12.5%	**56.2%**	**0.043**
No		6	8	14	
	% of Total	18.8%	25.0%	43.8%	
		20	12	32	
	% of Total	62.5%	37.5%	100.0%	

Chi-Square Test

2. Medical characteristics:
Figure 1 illustrates that 90.6% of the participants reported the classic signs and symptoms of type 2 diabetes, while 9.4% did not experience them.
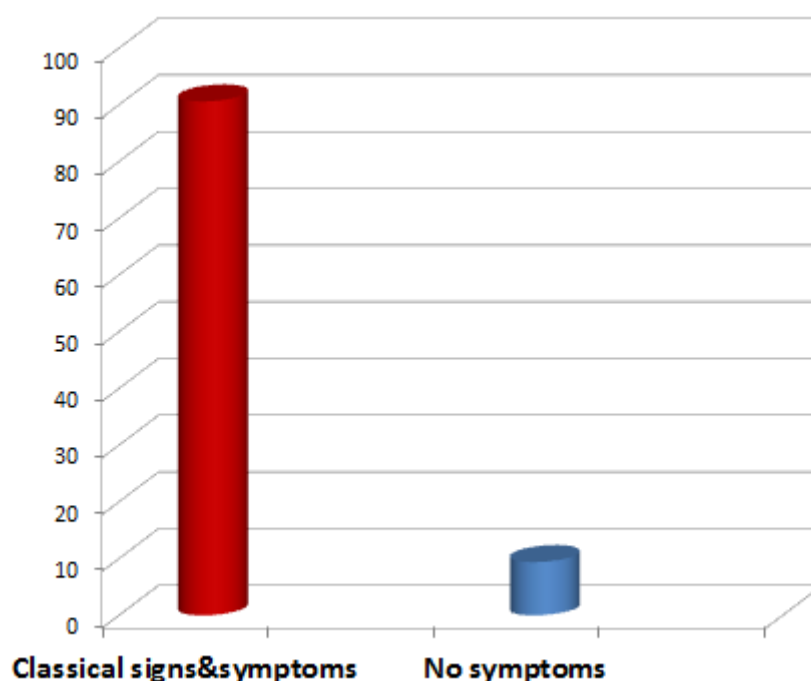
Figure 1: Classical signs and symptoms of diabetic patients

Figure 2 shows comorbid conditions accompanying diabetes patients. Half of the patients have hypertension and high cholesterol (50%) as comorbid conditions, while 37.5% of the patients without accompanying diseases. The rest showed anemia, heart failure and kidney diseases (12.5%), Figure 2.
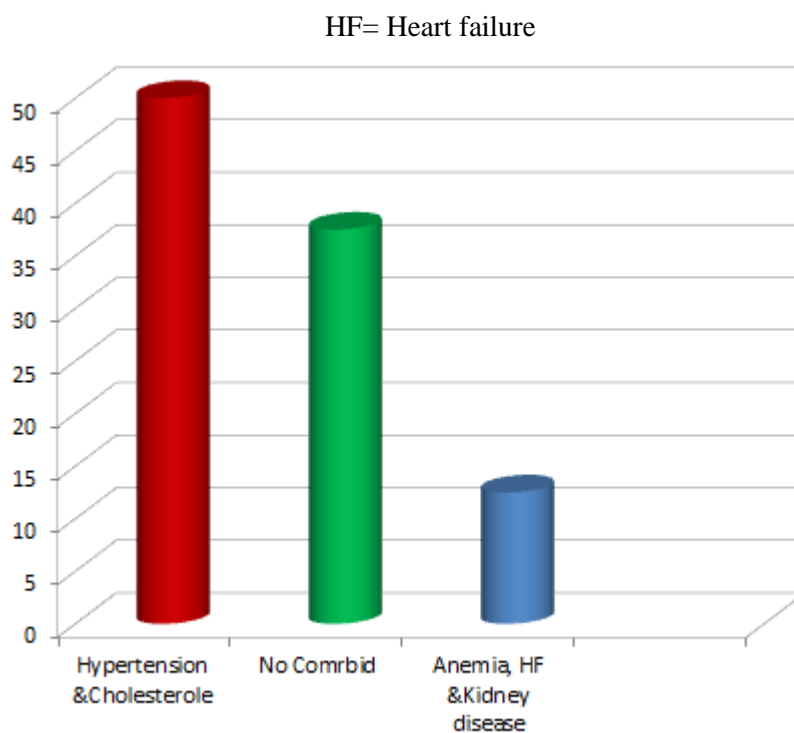
HF= Heart failure

Figure 2: Comorbid conditions accompanying diabetes patients

Table 3: Distribution of anti-diabetic classes utilized by the patients related to gender

N=32		Gender		Total
		Male	**Female**	**Total**
Sulfonylureas		5	3	8
	% of Total	15.6%	9.4%	25.0%
Biguanides		4	1	5
	% of Total	12.5%	3.1%	15.6%
FDC-metformin +DPP-4 inhibitors		1	0	1
	% of Total	3.1%	0.0%	3.1%
FDC-sufonylureas + biguanides		4	4	8
	% of Total	12.5%	12.5%	25.0%
Insulin		2	2	4
	% of Total	6.3%	6.3%	12.5%
Biguanides and sulfonylureas		1	2	3
	% of Total	3.1%	6.3%	9.4%
Insulin and FDC-sufonylureas +biguanides		1	0	1
	% of Total	3.1%	0.0%	3.1%
Insulin and FDC-Metformin+Alogliptin		1	0	1
	% of Total	3.1%	0.0%	3.1%
Insulin and biguanides		1	0	1
	% of Total	3.1%	0.0%	3.1%
Total		20	12	32
	% of Total	62.5%	37.5%	100.0%

Chi square test P= 0.667

3. Medications characteristics:

Table 3 shows the distribution of anti-diabetic classes utilized by the patients related to gender. The most frequent antidiabetic classes, utilized by the patients, were sulfonylureas (either alone or in combinations), 62.5%, and biguanides 62.5%, followed by insulin 21.8% Table 3. There is a limited use of DPP-4 inhibitors, Sitagliptin and Alogliptin (6.2%). 53.1% of the studied patients utilized monotherapy, followed by a combination of oral antidiabetics (37.55%) and a combination of oral antidiabetics and insulin (9.3%) . Metformin is prescribed for 62.5% of the studied patients.

Figure 3 displays the percentage of oral hypoglycemic agents and insulin utilized by the type 2 diabetic patients. The participants utilized 38 anti-diabetic preparations with an average of 1.2 anti-diabetics per patient. Out of 38 anti-diabetic preparations utilized, 18.4 % were insulin and 81.6 % were oral hypoglycemic preparations.
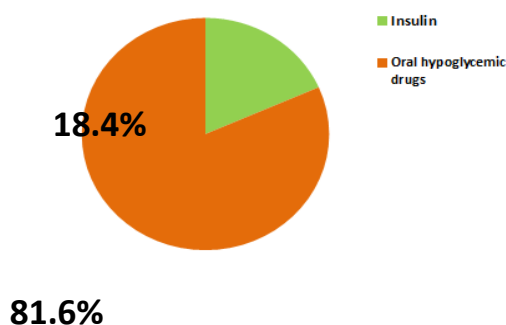

Figure 3: Percentage of oral hypoglycemic and insulin utilized by diabetic patients

Table 4 displays the total drugs utilized by the participants. In the present study, the total number of antidiabetics and drugs for comorbidity was 85. Out of them, **44.7**% were antidiabetic drugs and **55.3** % were drugs for comorbid conditions. The most frequent drugs utilized for comorbidity were antihypertensives and hypolipoproteinemic drugs. (Table 4).

Table 4: Total drugs utilized by the participants

n=85	Frequency	No of drugs	Percentage*
Antidiabetics **n= 38 (44.7%)**			
Sulfonylureas	**08**		**21.1**
Glibenclimide		2	
Gliclazide		2	
Glimberide		4	
Biguanides	**05**		**13.2**
Metformin		5	
Fixed dose combinations	**09**		**23.7**
Metformin+Glibenclimide		7	
Metformin+Gliclazide		1	
Metformin+Sitagliptin		1	
Two drugs combinations	**12**		**31.6**
Metformin &Glimibride		4	
Metformin & Dliclazide		2	
Insulin & Metformin		2	
Insulin& FDC- Metformin+Alogliptin		2	
Insulin& FDC-Metformin+Glibenclimide		2	
Insulin	**04**		**10.5**
Drugs for comorbidity n= 47 (55.3%)			
Cardiovascular drugs	**33**		**70.21**
Lisinopril		**5**	
Ramipril		**1**	
Enalipril		**1**	
Candesartan		**1**	
Amlodepine		**3**	
Bisoprolol		**4**	
Isosorbide dinitrate		**2**	
Furosemide+spironolactone		**1**	
Atorvastatine		**9**	
Rosuvstatine		**1**	
Aspirin		**5**	
Others	**14**		**29.79**
Folic acid		**3**	
Neuropion		**5**	
Methylcoalamine+alpha-lipoic acid		**4**	
B-complex vitamin		**1**	
Herbal remedy		**1**	

*= percentage of the group

4. Outcomes of the therapy:

Table 5 illustrates the levels of HbA1c by gender. The mean value of HbA1c of the samples studied was **9.65 ±2.33%**. Twelve and half percent of the patients had good glycemic control and **87.5%** of the participants showed HbA1c levels of ≥ 7 %. Two thirds of patients (75%) showed HbA1c values more than 8% with the preponderance to the males (Table 5).

Table 5: Groups HbA1c by gender

			Gender		
			male	Female	Total
Groups HbA1c	**less than 7%**	Count	3	1	**4**
		% of Total	9.4%	3.1%	**12.5%**
	7.-7.4%	Count	2	0	2
		% of Total	6.3%	0.0%	6.3%
	7.5-8%	Count	2	0	2
		% of Total	6.3%	0.0%	6.3%
	more than 8%	Count	13	11	**24**
		% of Total	40.6%	34.4%	**75.0%**
Total		Count	20	12	32
		% of Total	62.5%	37.5%	100.0%

Chi –square test P=0.337

Table 6: Factors associated with levels of HbA1c

n=32	< 7% Frequency	%	≥7% Frequency	%	p
Family history of DM					
Yes	1	3.1	18	**56.3**	0.171
No	3	9.4	10	31.3	
Adherence to medication					
Yes	4	12.5	24	**75.0**	0.569
No	0	00	04	12.5	
Adherence to diet					
Yes	3	9.4	13	40.6	0.300
No	1	3.1	15	**46.9**	
Adherence to exercise					
Yes	3	9.4	15	**46.9**	0.403
No	1	3.1	13	40.6	
Body mass index					
18.5-24.9	1	3.1	10	31.3	0.627
25-29.9	3	9.4	12	**37.5**	
30-34.9	0	0.0	05	**15.6**	
≥35	0	0.0	01	3.1	
Smoking					
Yes	0	0.0	4	**12.5**	0.569
No	4	12.5	24	**75.0**	
Diabetic duration intervals					
1- 8 y	3	9.4	13	**40.6**	0.301
9-17	0	0.0	11	34.4	
18-26	1	3.1	04	12.5	

Comorbidities	3	9.4	13	**40.6**	0.019
Cardiovascular diseases	1	3.1	02	06.3	
Kidney disease	0	0.0	01	03.1	
Anemia	0	0.0	12	37.5	
No comorbidity					
Reported improvement	4	12.5	19	59.4	0.246
Yes	0	0.0	09	**28.1**	
No					

Chi –square test

Table 6 shows the factors associated with levels of HbA1c. Half of the patients with higher HbA1c had family history of DM, adhered to exercise and were overweight /obese, while two thirds were adhered to medications and one quarter were smokers (Table 6). 40.6% of the patients with HbA1c ≥7% had cardiovascular diseases such as hypertension and dyslipidemia which is statistically significant , p=0.019.

Discussion

The present study is designed to evaluate the utilization of antidiabetic medications for th treatment of patients with type 2 DM and the glycemic control. The results revealed that the most frequent antidiabetic classes, utilized by type 2 patients, were Sulfonylureas and Biguanides (either alone or in combination),followed by Insulin. This finding is dissimilar to the study of Moradi and Mousavi in which Metformin is the most prescribed antidiabetic agent, followed by Sulfonylurea[20], and Oestgren et al in which the higher utilization of antidiabetics was Metformin (58.5%), followed by Sulfonylurea (31.3%). [23]   In our study, there is a limited utilization of DPP-4 inhibitors(6%) which is higher than that found by Oestgren et al (0.1%). This might be due to a small sample size.

Combinations of Metformin and Insulin secretagogues can reduce HbA1c between 1.5% to 2.2% in patients sub-optimally controlled by life style modification. [9] Moreover, the combination of Metformin and DPP-4 inhibitors can achieve adequate glycemic control [25] because, first DPP-4 inhibitors prolong the duration of endogenous active glucagon-like peptide 1 (GLP-1) by inhibiting DPP-4 peptidase leading to enhancement of insulin secretion as a physiological response to feedingand second Metformin also increases GLP-1 levels leading to reduction of food intake and weight loss.[19] In this study, combination regimens of Metformin and Sulfonylureas, or DPP-4 inhibitors (Sitagliptin and Alogliptin), were utilized by almost half of the studied patients. This tendency towards using combination patterns has been also reported by Moradi and Mousavi. [20] Studies on the combinations of Metformin and Sitagliptin [11] or Metformin and Alogliptin [32] revealed improvement in glycemic control but there is not statistically significant differences in rates of major cardiovascular events between treatment and placebo groups. Furthermore, the U.S. Food and Drug Administration (FDA) warned that Saxagliptin and Alogliptin may increase the risk for heart failure, especially in patients with preexisting heart failure or renal impairment. [31]

Glycated hemoglobin which is known as hemoglobin A1c, HbA1c, or A1C is an accurate and objective measure to assess glycemic control and to diagnose new cases of diabetes. [29] Increment in its values is indicative of uncontrolled blood glucose levels and of excessive formation of glycation products that result in diabetic complications. [1, 10, 12] Measuring of HbA1c is not a routine regimen in our local clinics; but, nowadays, a tendency to use it is noted. The mean value of HbA1c of the samples studied was **9.65% ±2.33%**. This is more than that found by Ahmed et al who reported the mean of HbA1c about 8.04%. [2] In addition, 23.0% of their study samples showed good glycemic control, and this is almost double than that found in the present study (12.5%). Moreover, our finding is almost similar to Fikree et al, 2006 from Bahrain in which 11.2% of the participants had good glycemic control. [8]

In the present study, the majority of the studied diabetic patients showed poor glycemic control with HbA1c more than 7%. This outcome was comparable to those obtained in the study of Samara et al   [26] and Kassahun et al   [14] in which two thirds of the participants showed poor blood glucose control. Our finding is also consistent with the studies of Noureddine et al [22] and Radwan et al [24] in which four fifths of the participants had poor glycemic control with a mean HbA1c of 8.97±2.02 %. On the other hand, this finding is different from that reported by Islam from Bangladesh in which only 16.7% of the samples had poor glycemic control. [13]

In this study, the factors associated with higher HbA1c values were family history of diabetes , higher BMI (overweight and obesity), comorbidity like hypertension and high cholesterol (p=0.019), and non-adherence to diet. Concerning age and duration of diabetes, there is no characteristic relation with higher HbA1c values. Conflicting results on factors associated with poor glycemic control have been reported in different studies. This may be explained by the differences in study designs, characteristics of the study populations such as race and ethnicity, dosage for oral medications or insulin, compliance with regimens and the types of treatment facilities. [3]

It is surprising to find that the majority of the patients who adhere to medications and who do not smoke had uncontrolled blood glucose levels. In addition, the patients showed good adherence to the exercises with the preponderance to males. Although these patients reported improvement in signs and symptoms after the treatment, their measured blood levels showed HbA1c values higher than 7%. In spite of the expansion of antidiabetic agents and well-defined treatment for type 2 diabetes, the majority of the patients are poorly controlled. In this study, inappropriate treatment (may include not reaching to maximum tolerated daily dose or higher cost of the indicative drug) and comorbid conditions might also stand behind this higher figure of poorly controlled patients.

In a meta-analysis, it has been shown that elderly patients(> 60 years), being males or patients having normal BMI had better control on diabetes, while younger diabetics did not care about the disease control. [27] In contrast to this, in this study, elderly people and being male patients were frequent with uncontrolled diabetes.

Limitation: The total number of the diabetic patients was lower because of the higher cost of glycated hemoglobin measuring and therefore, the sample size was small.

In conclusion, the most frequent antidiabetic classes utilized by type 2 patients attending outpatient's clinics were Sulfonylurea and Biguanides, with a tendency to use combination regimens. The majority of patients had poor glycemic control that is associated with cardiovascular morbidity. Attention should be given on the treatment regimens and dosage.

References

1. Abbreviated Report of a WHO (2011) Consultation Use of Glycated Haemoglobin (HbA1c) in the Diagnosis of Diabetes Mellitus:. World Health Organization. Geneva: World Health Organization; 2011. WHO Guidelines Approved by the Guidelines Review Committee At: https://www.ncbi.nlm.nih.gov/pubmed/26158184

2. Ahmad NS, Islahudin F, Paraidathathu T. (2014) Factors associated with good glycemic control among patients with type 2 diabetes mellitus. Diabetes Invest 5 (5): 563-569.

3. Al-Akour NA, Khade YS, Alaoui AM. (2011) Glycemic control and its determinants among patients with type 2 Diabetes Mellitus attending a Teaching Hospital.   Diabetes Metab 2:4. http://dx.doi.org/10.4172/2155-6156.1000129

4. Al-Rasheedi AA. (2014) The role of educational level in glycemic control among patients with Type II Diabetes Mellitus. International Journal of Health Sciences, Qassim University, 8(2):177-187.

5. American Diabetes Association (2018) Standards of Medical Care in Diabetesd2018. Diabetes Care. 41(Suppl. 1):S3 | https://doi.org/10.2337/dc18-SPPC01.

6. American Diabetes Association. (2014) Standards of Medical Care in Diabetes. Diabetes care. volume 36, supplement 1.

7. Delahanty LM, Grant RW, Wittenberg E, Bosch JL, Wexler DJ, Cagliero E. (2007) Association of diabetes-related emotional distress with diabetes treatment in primary care patients with Type 2 diabetes. Diabet Med 24:48-54.

8. Fikree M, Hanafi B, Hussain ZA, Masuadi EM. (2006) Glycemic Control of Type 2 Diabetes Mellitus Bahrain Medical Bulletin 28(3):23-33.

9. Gerich J, Raskin P, Jean-Louis L. (2005) Preseve-beta: two-year efficacy and safety of initial combination therapy with nateglinide or glyburide plus metformin. Diabetes Care 28:2093–2099.

10. Gillery P, Monboisse JC, Maquart FX, (1988) Glyation of proteins as a source of superoxide. Diab metab 14: 25-30.

11. Green JB, Bethel MA, Armstrong PW, Buse JB, Engel SS, Garg J. (2015) TECOS Study Group. Effect of sitagliptin on cardiovascular outcomes in type 2 diabetes. N Engl J Med 373:232-42.

12. Haque KMHS , Siddiqui MR . (2013) Clinical Significance of Glycated Hemoglobin (HbA1c). AKMMC J 4(1): 3-5.

13. Islam SMS, Niessen LW, Seissle J, Ferrari U, Biswas T, Islam A, Lechner A. (2015) Diabetes knowledge and glycemic control among patients with type 2 diabetes in Bangladesh. Springer Plus 4:284 . DOI 10.1186/s40064-015-1103-7.

14. Kassahun T, EshetieT, GesesewH. (2016) Factors associated with glycemic control among adult patients with type 2 diabetes mellitus. a cross-sectional survey in Ethiopia.BMC Res Notes , 9:78 . DOI 10.1186/s13104-016-1896-7.

15. Khan AR, Al-Abdul Lateef ZN, Al Aithan MA, Bu- Khamseen MA, Al Ibrahim I, Khan SA. (2012) Factors contributing to non-compliance among diabetics attending primary health centers in the Al Hasa district of Saudi Arabia. J Family Community Med 19(1): 26– 32.

16. Kirk JK, Davis SW, Hildebrandt CA, Strachan EN, Peechara ML, Lord R. (2011) Characteristics Associated With Glycemic Control Among Family Medicine Patients With Type 2 Diabetes. NCMJ 72,(5):at: ncmedicaljournal.com.

17. Louis S. (2001).Nutritional therapy. The Washington Manual of Medical Therapeutics. 3oᵗʰ ed.

18. Mahmood AS. (2009) Short Term Glycemic Control and its Determinants in Type 2 Diabetics .Yemeni Journal of Medical and Health Research 1(1):23-36.

19. Mannucci E, Ognibene A, Cremasco F. (2001) Effect of metformin on glucagon-like peptide 1 (GLP-1) and leptin levels in obese nondiabetic subjects. Diabetes Care 24:489–494.

20. Morad, M, Mousavi S. (2016) Drug use evaluation of diabetes mellitus in non-hospitalized patients. Intal J Pharm Pharm Sci 8(8): 337-341.

21. Nathan DM, Singer DE, Hurxthal K, Goodson JD. (1984) The clinical information value of the glycosylated hemoglobin assay. N Engl J Med 310:341–346.

22. Noureddine H, Nakhoul N, Galal A, Soubra L, Saleh M. (2014) Level of A1C control and its predictors among Lebanese type 2 diabetic patients. Therapeutic Advances in Endocrinology and Metabolism 5(3):43-52 .

23. Oestgren CJ, Sundstr€om J, Svennblad B, Lohm L, Nilsson PM, Johansson G. (2013) Associations of HbA1c and educational level with risk of cardiovascular events in 32 871 drug-treated patients with Type 2 diabetes: a cohort study in primary care. Diabet Med 30: e170–e177.

24. Radwan M, Elsous A, Al-Sharif, Al-Sharif, H, Abu Mustafa A. (2018) Glycemic control among primary care patients with type 2 diabetes mellitus in the Gaza Strip, Palestine. Ther Adv Endocrinol Metab 9(1): 3–14.

25. Richter B, Bandeira-Echtler E, Bergerhoff K, Lerch CL. (2008) Dipeptidyl peptidase -4 (DPP-4) inhibitors for type 2 diabetes mellitus. Cochrane Database Syst Rev (2):CD006739.

26. Samara M, Horoub A, Ibaidi N, Sweileh W. (2017) Prevalence of Glycemic Control and Factors Associated With Increasing Levels of Hba1c Among A Sample of Palestinian Patients With Type 2 Diabetes Mellitus.Palestinian Medical and Pharmaceutical Journal (PMPJ), 2(2): 82-92.

27. Sanal TS, Nair NS, Adhikari P. (2011) Factors associated with poor control of type 2 diabetes mellitus: A systematic review and Meta-analysis. Journal of Diabetology 3:1.

28. Singer DE, Coley CM, Samet JH, Nathan DM. (1989) Tests of glycemia in diabetes mellitus: their use in establishing a diagnosis and treatment. Ann Intern Med 110 : 125 – 137.

29. Sultanpur CM, Deepa K, Kumar SV. (2010) Comprehensive review on HbA1c in diagnosis of diabetes mellitus. International Journal of Pharmaceutical Sciences Review and Research 3(2): 119-22.

30. Toobert DJ, Hampson SE, Glasgow RE. (2000) The summary of diabetes self-care. Diabetes Care J 23:943-50.

31. U.S. Food and Drug Administration. (2016) Diabetes medications containing saxagliptin and alogliptin: drug safety communication—risk of heart failure. 5 April. Accessed at www.fda.gov/Safety /MedWatch/SafetyInformation/ Products/ucm494252.htm on 24 January 2017.

32. White WB, Cannon CP, Heller SR, Nissen SE, Bergenstal RM, Bakris GL. (2003) Examine investigators. Alogliptin after acute coronary syndrome in patients with type 2 diabetes. N Engl J Med 369:1327-35.

عقاقير لعلاج مرض السكري و ضبط السكر في الدم لمرضى السكري من النوع الثاني في عيادات خارجيه للمرضى

سميرة عبدالله محمود[1]، أطياف طارق[2]، ياسين هيثم[2]، أحمد السعدي[2]، أحمد حمود[1]، محمد ثابت[2]، محمد صالح[2]، محمد قاسم[2]، رمزي سعيد[2]، وسالم بامهيل[2]

[1]قسم الصيدلة والسموم- كلية الصيدلة – جامعة عدن
[2]قسم الصيدلة – جامعة العلوم والتكنولوجيا – فرع عدن

الملخص

تهدف الدراسة إلى تقييم أدوية علاج السكري ومستوى ضبط السكر في الدم لمرضى السكري النوع الثاني الذين يترددون على عيادات المرضى الخارجيين. هذه دراسة مقطعية أجريت في عيادات المرضى الخارجيين ومركز (السكري عدن) في هيئة مستشفى الجمهورية العام، عدن، خلال الفترة من 15 كانون الثاني/يناير إلى 15 فبراير 2018. تم جمع البيانات من خلال المقابلات المباشرة لعدد 32 من المرضى باستخدام استبيان منظم يتضمن خصائص المرض والادوية. وقد أخذت عينات الدم لقياس نسبة السكر التراكمي في الدم HbA1c . تم تحليل البيانات باستخدام SPSS (إصدار 22). وأظهرت النتائج أن 53.5 % في المائة كانوا من الإناث و 62.5 في المائة من الذكور. وكان متوسط عمر المشاركين 8.23 ± 55 سنة. 56.2 في المائة من المرضى الذين أظهروا التمسك بممارسة جيدة للرياضة مع الرجحان للذكور، (0.043 = p). كان متوسط BMI للمشاركين 26.62±3.89 كجم/م 2 وأظهر نصفهم زيادة في الوزن، في حين أن قرابة خُمس العينة كانوا يعانون من السمنة المفرطة (BMI يساوي أو أكثر من 30 كجم/م 2). نصف المرضى يعانون من ارتفاع ضغط الدم وارتفاع نسبة الكولسترول في الدم (16/32، 50%). الأدوية الأكثر شيوعاً التي يستخدمها المرضى كانت السلفونيل يوريا 62.5 ٪ والبيجوانايدز 62.5 %. هناك استخدام محدود لمثبطات DPP-4 ، سيتاجليبتين والوجليبتين، 6.2 ٪. 53.1 % من المرضى استخدموا العلاجات الأحادية، متبوعاً بأدوية ممزوجة من مضادات السكري عن طريق الفم 37.55، ويليها الأدوية الممزوجة عن طريق الفم مع الأنسولين 9.3 في المائة. وكان متوسط قيمة HbA1c في عينة الدراسة 9.65±2.33%. 12.5 في المائة فقط من المرضى الذين أظهروا تحكماً جيداً في نسبة السكر في الدم. 87.5 من المرضى لديهم HbA1c يساوي أو اكثر من 7%. تقريبا 40.6 في المائة من المرضى ذوي (HbA1c ≥7%) لديهم أمراض القلب والأوعية الدموية مثل ارتفاع ضغط الدم وارتفاع نسبة الكولسترول في الدم (p = 0,019). تستنتج الدراسة ان مضادات السكري سولفونيل يوريا و البيجوانايدز هي الأكثر شيوعاً واستخداما لمرضى السكري من النوع الثاني في عيادات المرضى الخارجيين مع ميل إلى استخدام العلاجات المركبة. الغالبية العظمى من المرضى لديهم عدم انضباط في نسبة مستوى السكر في الدم ومرتبطين بأمراض القلب والأوعية الدموية. ينبغي ايلاء الاهتمام بالأنظمة العلاجية والجرعات.

الكلمات المفتاحية: مرض السكري نوع 2، الاعتلال، أدوية السكري، مراقبة نسبة السكر في الدم.