

ASSESSMENT OF PRACTICE OF PRIMARY HEALTH CARE PROVIDERS ABOUT ROUTINE CARE OF TYPE 2 DIABETIC PATIENTS IN PRIMARY HEALTH CARE UNITS IN ZAGAZIG DISTRICT, SHARQIA GOVERNORATE

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Abstract

Background: Diabetes is a major and growing health problem in Egypt. This study aimed to assess doctors' practice of routine care of type 2 diabetic patients in family medicine centers & units in Zagazig health district and compare between general practitioners and family physicians regarding to their practice in dealing with diabetic patients. **Methods:** A cross-sectional study was carried out on 102 doctors (family physicians & general practitioners) from family health centers & units in Zagazig Health District, Sharqia Governorate from March 2019 to March 2021. Data was collected through checklist which assesses doctors' practical performance toward diabetic patients. Data was collected and analyzed as follow, if less than median of data (inadequate) and if equal or more than median of data (adequate). Calculated for categories of practice, and totally the relation between practical performance of family physicians and general practitioners as well as the total clinical performance were presented in suitable tables and graphs. **Results:** The majority of doctors are female, aged more than 30 years, married, have family medicine post graduate degree, more than half of them had period of experience more than 4 years, and most of them attended family medicine courses. This study showed that 55% of doctors at family health centers & units in Zagazig district Sharqia governorate had good clinical performance toward type 2 diabetic patients. **Conclusion:** The best points of doctors' practice were in friendly welcoming and closing of consultation, describing how to use the medications, and in emphasizing on blood sugar control.

Keywords: Healthcare provider, practical performance, Type 2 diabetes.

INTRODUCTION

Diabetes mellitus is a common metabolic condition resulting in hyperglycemia and hyperglycemia related chronic complications. Diabetes has a relatively high prevalence worldwide. According to the World Health Organization, 170 million people with diabetes lived in 2000, which is estimated to be doubled by 2030. This disorder results in several acute and chronic micro- and macro-vascular complications that decrease the patients' quality of life and increase their morbidity and mortality. These patients consume a large part of healthcare system's budget. Timely diagnosis and management of diabetes can prevent complications of the disease and improve the patients' quality of life⁽¹⁾.

Diabetes is a growing public health problem in Egypt. This is because of the increased prevalence of central obesity, sedentary lifestyle, change in diet patterns. Smoking among men, health illiteracy, and poor adherence and therefor increase the frequency of diabetes complications. Health authorities, through a limited healthcare budget, are striving to improve diabetes care, but many strategies and guidelines for standard of care are still needed to augment this effort⁽²⁾.

The International Diabetes Federation (IDF) in 2015 estimates that 7.5 million individuals in Egypt have diabetes and another 2.2 million have prediabetes. Furthermore, reports indicate that 43 % of patients with diabetes and most patients with pre-diabetes in Egypt are likely undiagnosed. It is estimated that 42 % of patients with diabetes in Egypt have retinopathy, 5 % are legally blind, and 22 % have peripheral neuropathy. Diabetes is also the leading cause of end-stage renal disease and leg amputation in Egypt. It is

especially alarming that the prevalence of diabetes in Egypt has increased rapidly within a relatively short period of time from approximately 4.4 million in 2007 to 7.5 million in 2013. This number is projected to rise to 13.1 million by 2035. This study aimed to assess doctors' knowledge & practice of routine care of type 2 diabetic patients in family medicine centers & units in Zagazig health district and compare between general practitioners and family physicians regarding to their knowledge and practice in dealing with diabetic patients.

SUBJECTS AND METHODS

This was a cross-sectional study performed in centers & units in Zagazig Health District, Sharqia Governorate According to Zagazig health directorate, primary health care providers in primary health care facilities (units and centers) in Zagazig district are 143 (according to the health directorate records in 2018). Sample was calculated to be 102 physicians using OpenEpi program version 3 with power of test 80% and CI 95%.

Inclusion criteria: Primary health care providers (general practitioner or family physician) who are working in primary health care units in Zagazig district. **Exclusion criteria:** Other specialities in the health units. Any doctors who coming for short period and transferred to another place.

Official permission were obtained from Zagazig Health District, an informed verbal consent was obtained from doctors, they were reassured about the strict confidentiality of any obtained information, and about that the study result would be used only for purpose of search. Approval was obtained from Zagazig University Institution and Review Board (IRB) 4490/22-4-2018.

The data were collected by using american Diabetes Association up to date recommendations for routine care of type 2 DM in 2018, a check list was used to assess doctors' practice.

A structured questionnaire included; personal data e.g. (name, age, gender, courses, scientific degree, experience, no. of nurses working with them). Questions about communication skills of doctors if done or not done e.g. (friendly welcoming, introducing chat, privacy during consultation etc.). Australian diabetes annual cycle of care checklist; this checklist used to assess physicians practice towards type 2 diabetic patients, (National diabetes services scheme, 2016). There is no difference between routine diabetic care items after reviewing American diabetes association updated recommendations with Australian diabetes annual cycle of care checklist, so this checklist was used in the study.

Operational Design

Fieldwork started at the beginning of June 2019, and completed by the end of October 2019 by attending the health facilities 3 days/ week. The visits to each selected center was done at different days in order to ensure complete week coverage. The observation was done after taking permission from doctors without clearing the actual aim of the visit (assess doctors performance) to avoid their trials to improve his/her performance during observation. It wasn't ethically and should not happen but many authors do this for the same reasons provided that took permission from higher authorities⁽⁴⁾.

The researcher start to observe doctors performance then fill the rest of the sheet away from them with putting in consideration that the researcher in the field cannot rely on their memory, so it was essential that observations captured in clear, detailed, and descriptive notes.. Filling the checklist took 10 – 30 minutes for each consultation.

Data analysis:

The collected data were coded, entered, presented, and analyzed by computer using a data base software program, Statistical Package for Social Science (SPSS) version 20. For quantitative variables mean, standard deviation (SD), and median were computed. Qualitative data were represented as frequencies and percents. Independent t-test (t) was used for detection of difference between different quantitative variables. Chi square (X^2) or Fisher's exact tests were used to detect relation between different qualitative variables. Pearson correlation (r) was used to find the association between total score of knowledge and practice.

RESULTS

Table 1; showed that the mean age of primary health care providers was 33.30 ± 5.15 years and the highest percentage of them were female, without courses, general practitioner as a last degree & had > 4 years of experience, 1 nurses/assistants working with them, and communication skills with percent (91.2%, 46.1%, 35.3%, 64.7, 89.2%, 67.6%) respectively.

Table (1): Socio demographic and personal characteristics of primary health care providers (n=102).

Characteristics	Value	
Age (years):		
Mean± SD	33.30±5.15	
Median	33	
	No	%
Sex		
▪ Male	9	8.8
▪ Female	93	91.2
Courses		
▪ None	47	46.1
▪ TOEFL	30	29.4
▪ ICDL	3	2.9
▪ First aid	2	2
▪ IMCI	20	19.6
Scientific degree		
▪ General practitioner	36	35.3
▪ Family medicine specialists(n=66)		
Diploma	24	23.5
Master	32	31.4
Fellowship	7	6.9
Master & Fellowship	3	2.9
Years of experience		
▪ < 2	10	9.8
▪ 2-4	26	25.5
▪ > 4	66	64.7
No. of nurses\assistants working with you		
▪ 1	91	89.2
▪ 2	11	10.8

This study showed that the highest percentage of primary health care providers checked all practice items of routine care about type 2 diabetes mellitus except for waist circumference table 2.

Table (2): Practice of primary health care providers about routine care of type 2 diabetes mellitus (n=102).

Practice	No	%
HbA1c		
▪ Not checked	10	9.8
▪ Checked	92	90.2
Blood pressure		
▪ Not checked	9	8.8
▪ Checked	93	91.2
Foot examination		
▪ Not checked	8	7.8
▪ Checked	94	92.2
Eye examination		
▪ Not checked	11	10.8
▪ Checked	91	89.2
Kidney function test		
▪ Not checked	13	12.7
▪ Checked	89	87.3
Blood lipids		

<ul style="list-style-type: none"> ▪ Not checked ▪ Checked 	16 86	15.7 84.3
Weight (BMI) <ul style="list-style-type: none"> ▪ Not checked ▪ Checked 	10 92	9.8 90.2
Waist circumference <ul style="list-style-type: none"> ▪ Not checked ▪ Checked 	62 40	60.8 39.2
Healthy eating review <ul style="list-style-type: none"> ▪ Not checked ▪ Checked 	8 94	7.8 92.2
Physical activity review <ul style="list-style-type: none"> ▪ Not checked ▪ Checked 	6 96	5.9 94.1
Medication review <ul style="list-style-type: none"> ▪ Not checked ▪ Checked 	3 99	2.9 97.1
Smoking cessation <ul style="list-style-type: none"> ▪ Not checked ▪ Checked 	34 68	33.3 66.7
Diabetes self-management <ul style="list-style-type: none"> ▪ Not checked ▪ Checked 	20 82	19.6 80.4
Emotional health <ul style="list-style-type: none"> ▪ Not checked ▪ Checked 	3 99	2.9 97.1

This pie shows that more than half (54.9%) of primary health care providers had inadequate total practice score about routine care of type 2 diabetes mellitus figure 1.

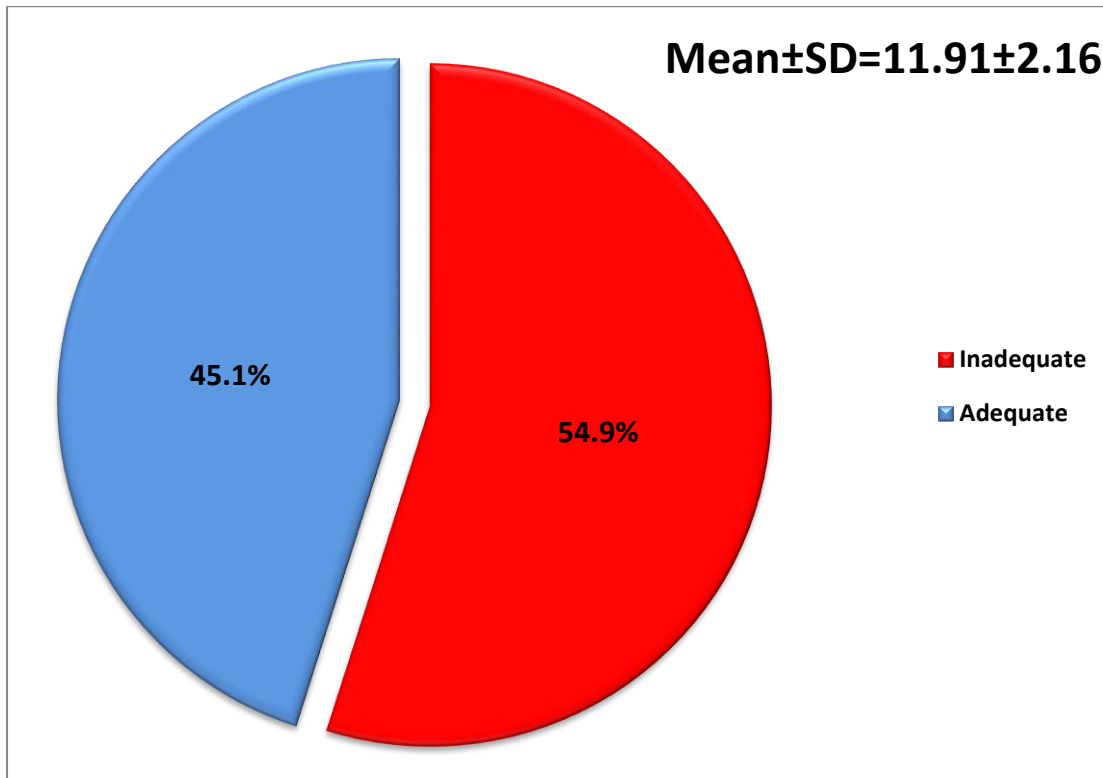


Figure (1): Total score of practice of primary health care providers about routine care of type 2 diabetes mellitus (n=102).

This study showed that there was highly statistical significance difference ($P < 0.001^{**}$) between family physicians and general practitioners regarding checking of smoking cessation and statistically significance difference ($P < 0.05^*$) regarding blood pressure, foot examination, eye examination, kidney function test, waist circumference, medication review, emotional health with no statistically significance difference ($P \geq 0.05$) regarding the remaining items of practice about routine care of type 2 diabetes mellitus table 3.

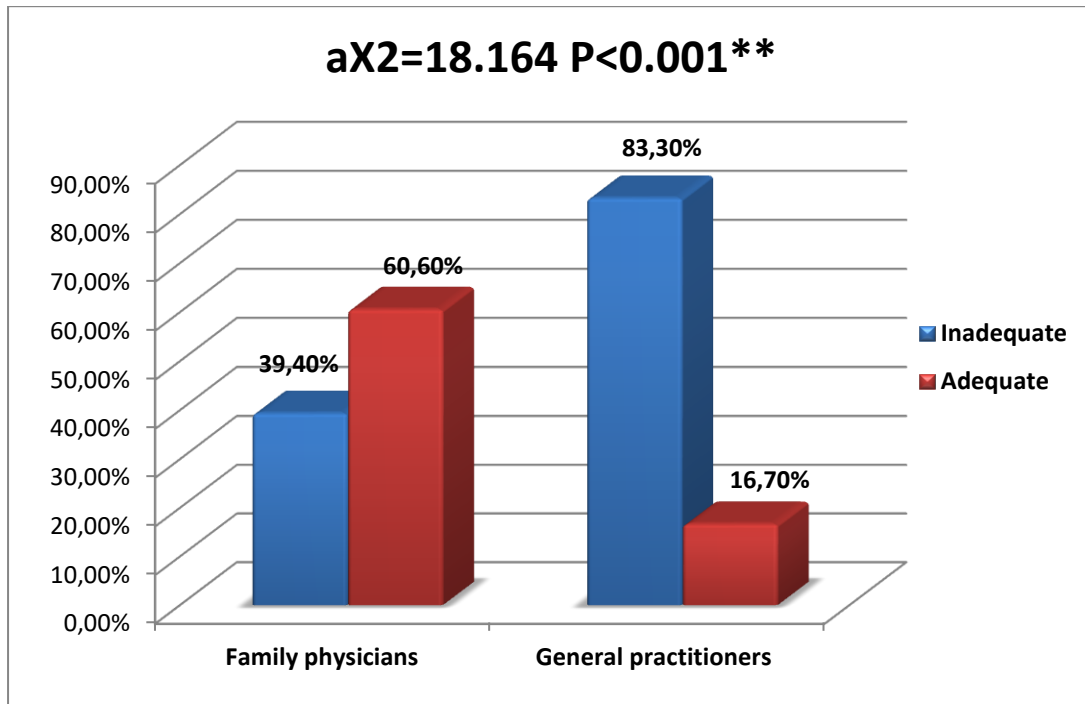
Table (3): Comparison between family physicians and general practitioners regarding practice about routine care of type 2 diabetes mellitus (n=102).

Practice	Family physicians (n=66)		General practitioners (n=36)		Test	P value
	No	%	No	%		
HbA1c						
▪ Not checked (10)	5	50	5	50	^a Fisher	0.306
▪ Checked (92)	61	66	31	34		
Blood pressure						
▪ Not checked (9)	3	33	6	67	^a Fisher	0.039*
▪ Checked (93)	63	67.7	30	32.3		
Foot examination						
▪ Not checked (8)	2	25	6	75	^a Fisher	0.014*
▪ Checked (94)	64	68	30	32		
Eye examination						
▪ Not checked (11)	4	36.4	7	63.6	^a Fisher	0.037*
▪ Checked (91)	62	68	29	32		
Kidney function test					^a Fisher	0.006*

▪ Not checked (13)	4	30.8	9	69.2		
▪ Checked (89)	62	69.7	27	30.3		
Blood lipids						
▪ Not checked (16)	7	43.8	9	56.2	^b 3.649	0.056
▪ Checked (86)	59	68.6	27	31.4		
Weight (BMI)						
▪ Not checked (10)	5	50	5	50	^a Fisher	0.306
▪ Checked (92)	61	66	31	34		
Waist circumference						
▪ Not checked (62)	35	56.5	27	43.5	^b 4.717	0.030*
▪ Checked (40)	31	77.5	9	22.5		
Healthy eating review						
▪ Not checked (8)	3	37.5	5	62.5	^a Fisher	0.093
▪ Checked (94)	63	67	31	33		
Physical activity review						
▪ Not checked (6)	2	33	4	67	^a Fisher	0.097
▪ Checked (96)	64	67	32	33		
Medication review						
▪ Not checked (3)	0.0	00	3	100	^a Fisher	0.017*
▪ Checked (99)	66	66.7	33	33.3		
Smoking cessation						
▪ Not checked (34)	13	38	21	62	^b 15.65	<0.001**
▪ Checked (68)	53	78	15	22		
Diabetes self management						
▪ Not checked (20)	10	50	10	50	^b 2.356	0.125
▪ Checked (82)	56	68.3	26	31.7		
Emotional health						
▪ Not checked (3)	0.0	00	3	100	^a Fisher	0.017*
▪ Checked (99)	66	66.7	33	33.3		

^a Fisher's exact test ^b Chi square test

Figure 2 showed that there was highly statistical significance difference ($P < 0.001^{**}$) between family physicians and general practitioners regarding total practice score about routine care of type 2 diabetes mellitus.



^a Chi square test

Figure (2): Comparison between family physicians and general practitioners regarding total score of practice about routine care of type 2 diabetes mellitus (n=102).

This study showed that there was statistically significance association between all socio demographic & personal characteristics and total score of practice except for sex and number of nurses/assistants there was no statistically significance association where age ≤ median (33 years), didn't have courses, general practitioner as a last degree, <2 years of experience and didn't have communication skills were more associated with inadequate score table 4.

Table (4): Relation between socio demographic & personal characteristics and total score of practice about routine care of type 2 diabetes mellitus among primary health care providers (n=102).

Characteristics	Inadequate (n=56)		Adequate (n=46)		Test	P value
	No	%	No	%		
Age (years)					^a 6.594	0.010*
▪ ≤ median (n=52)	35	67.3	17	32.7		
▪ > median (n=50)	21	42	29	58		
Sex					^b Fisher	0.149
▪ Male(n=9)	7	77.8	2	22.2		
▪ Female(n=93)	49	52.7	44	47.3		
Courses					^a 15.52	0.004*
▪ None(n=47)	33	70.2	14	29.8		
▪ TOEFL(n=30)	8	26.7	22	73.3		
▪ ICDL(n=3)	1	33.3	2	66.7		
▪ First aid(n=2)	1	50	1	50		
▪ IMCI(n=20)	13	65	7	35		

Last degree						
▪ General practitioner(n=36)	30	83.3	6	16.7	^a 29.93	<0.001**
▪ Diploma(n=24)	15	62.5	9	37.5		
▪ Master(n=32)	11	34.4	21	65.6		
▪ Fellowship(n=7)	0.0	00	7	100		
▪ Master & Fellowship(n=3)	0.0	00	3	100		
Years of experience						
▪ < 2(n=10)	8	80	2	20	^a 7.079	0.029*
▪ 2-4(n=26)	18	69.2	8	30.8		
▪ > 4(n=66)	30	45.5	36	54.5		
No. of nurses\assistants						
▪ 1(n=91)	52	57.1	39	42.9	^b Fisher	0.191
▪ 2(n=11)	4	36.4	7	63.6		
Communication skills						
▪ Not done(n=33)	24	72.7	9	27.3	^a 6.260	0.012*
▪ Done(n=69)	32	46.4	37	53.6		

^a Chi square test ^b Fisher's exact test

DISCUSSION

As revealed from the current study, the majority of the studied doctors were females. About two third of them has family medicine postgraduate degree (scientific degree). More than half of them have period of experience more than 4 years, and most of them were attend scientific courses as shown in (table 1).

In the starting of consultations all doctors were welcoming friendly with the patients as shown in (table 1). Which inconsistent with **Mercer et al.**⁽⁵⁾ who found about one half of studied doctors had friendly welcoming.

Regarding consultation privacy, the current study found that about one half of the studied doctors were insured privacy during consultation. That inconsistent with **Dearden et al.**⁽⁶⁾ who found that ninety percentage of doctors insured Privacy, and with **Rethans et al.**⁽⁷⁾ who found that about two thirds of doctors in general practice in the Netherlands insured privacy, and also with **Gadallah et al.**⁽⁸⁾ who found that two thirds of doctors in two health centers in Egypt insured privacy.

Low percent of ensuring privacy in present study during consultations was mainly due to overcrowding of clinics, and lake of adequate places and rooms in health centers where there was more than one doctor in the same clinic and every one of them interact with a patient at the same time.

The current study revealed that about one half of studied doctors were encourage patients to ask questions. Agreed with **Mercer et al.**⁽⁵⁾ who found that about one half of their studied doctors encourage patients to ask questions. Encouraging the patient to ask questions is not only a method of information seeking, but also a mechanism of patient participation (patient-centered care) and verifying understanding. It allows the patient's point of view to guide the conversation which has been shown to be positively associated with health outcomes⁽⁹⁾.

The majority of studied doctors maintain gesture to continue with patients during consultation. This in contrast with **Collins et al.**⁽¹⁰⁾ who found that one third of their studied doctors maintained gestures to continue.

As revealed from the current study about one half of studied doctors emphasized on understanding and follow up. Disagreed with **Mercer et al.**⁽⁵⁾ who found that two thirds of their studied doctors emphasized on understanding and follow up.

Physical examination is a very important part of diabetes care to detect any complication early and to assess the general condition of diabetic patient. In this regards the present study showed that two thirds of studied doctors examine patients as shown in (table 2). Disagreed with **Kevin Krane et al.**⁽¹¹⁾ who found that about three quarters of studied doctors examine the patients physically.

Assessment of doctors' practice revealed that about one half of their consultations were optimal as shown in (table 2). Agreed with **Abdulhadi et al.**⁽¹²⁾ who found that about one half of studied doctors have optimal consultations.

This study found that about one half of studied doctors had optimal practice as regards to lifestyle management which provided to type 2 diabetic patients as shown in (table 2).

Doctors should be careful to take a good medical history including diet compliance, physical activity, medicine use, and drugs adverse effects because these reduce patients' compliance⁽¹³⁾.

Assessment of doctors' practice regarding asking about diet compliance revealed that the majority of them had optimal performance level as shown in (table 5& fig.3). Our results were consistent with results of a study by **Chwalow et al.**⁽¹⁴⁾ which displayed that family physicians and general practitioners had favorable attitude towards monitoring of blood sugar level, foot care, regular follow up of diabetic patients, diet counseling and physical activity. This difference was mainly due to that most of our diabetic patients are obese and we have many bad dietary habits in Egypt and Arabian countries, which make the doctors interest in dietary compliance of their patients.

As regards inquiring about physical activities, the present study showed that about three quarters of studied doctors had optimal practice as shown in (table 2). In agreement with **Foster et al.**⁽¹⁵⁾ reported that less than half of the studied cases inquired about physical activities

The current study found that more than three quarters of studied doctors had optimal practical skills as regards to treatment of diabetic patients during consultations as shown in (table 2). In line with conclusion of **Kishore et al.**⁽¹⁶⁾, subjects needed to be made aware of the asymptomatic phase of DM and its long-term complications while, at the same time, they should be sensitized about the importance of taking regular treatment and management. Good practices can simply lessen the burden of complications like diabetic foot which are end-results of negligence toward primary prevention by patients themselves.

Misbelieves must be removed by patient education as it may lead to noncompliance to treatment in years to come looking at the chronicity of disease, in a country like India where nearly 85–90% type 2 diabetics are noncompliant. Nearly, 40% were unaware about asymptomatic nature and polyphagia was not known to them despite having the disease for on average 9 years. The highest lacunae in knowledge was with regard to insulin and type 2 diabetes, where nearly half were not aware about insulin level in their type of diabetes misinterpreting insulin injection as harmful for the body⁽¹⁷⁾.

The study revealed that all studied doctors had optimal practical skills regarding to emphasizing on blood sugar control as shown in (table 2). In agreement with the study done by **Theban and Bajaba**⁽¹⁸⁾ which conducted on family physicians to assess their attitudes and practices in managing people with type II diabetes mellitus. About 90% of them follow the clinical guidelines for diabetic management and were oriented that estimation of blood glucose was the best parameter for assessing glycemic control. .

The current study found that all studied doctors had optimal practical skills as regards to describing how to use medications as shown in (table 2). This agrees with **Chwalow et al.**⁽¹⁴⁾ who stated that the majority of them were aware about the different medications used in the two types of diabetes either for glycemic control or to decrease the probability of renal impairment and the use of ACE Inhibitors for treating hypertension in diabetics .

The current study found that few number of studied doctors asked about adverse effects of medication. Agreed with **Kahf et al.**⁽¹⁹⁾ who stated that most of the studied doctors asked about adverse effects of medication and were aware about it .

As regards to clinical care providing about one half of studied doctors had optimal practical skills in providing care for diabetic patients.

The majority of studied doctors especially family physicians had optimal practical skills regarding asking about smoking in consultations as shown in (table 3). In agreement with **Krane et al.**⁽¹¹⁾ who reported that the majority of their studied doctors asked about smoking habits.

Egyptian doctors neglected to ask about smoking due to religious reasons for both genders. It could also be related to cultural beliefs about behavior appropriate to each gender, such as alcohol consumption and smoking being regarded as natural for men, but not for women⁽²⁰⁾.

As revealed from current study, doctors' age and scientific degree affect their practice, all family physicians were perfect in their practice toward type 2 diabetic patients more than general practitioner as shown in (table 3) .Disagreed with **Niroomand et al.**⁽³⁾ which investigated the Iranian physicians' KAP on diabetes mellitus and its management. Subjects' age and time since graduation in general medicine and specialty were inversely correlated by practice. So, physicians with older age seems to be in priority for educational programs.

The current study revealed that there was no association between doctor's sex and practice as shown in (table 4), This finding is supported by one large study on diabetes in primary care in USA⁽²¹⁾. However,

in other studies female physicians in primary care generally communicate in a more patient-centered way than male physicians⁽²²⁾.

The present study revealed that there was no association between doctor's age and practice as shown in (table 4). Agreed with **Shuval et al.**⁽²³⁾ who found that no role for doctor's age in doctor-patient relationship. But other researches have shown a preference for older doctors who have more experience in communication⁽²⁴⁾. Or shown a preference for younger doctors⁽²⁵⁾.

The present study revealed that there was no association between doctors' period of experience and their practice as shown in (table 4), and also there is No association between their period of experience and each item of performance. Disagreed with **Kahf et al.**⁽¹⁹⁾ who stated that family physicians with relevant certifications or previously enrolled in relevant training courses had significantly higher knowledge regarding diagnosis of diabetes when compared with their colleges who neither certified nor enrolled in such courses.

The current study revealed that there was no association between doctors' attendance of courses and their practice, and also there was no association between their attendance of courses and each item of practice as shown in (table 4).

A study **Peimani et al.**⁽²⁶⁾ revealed the presence of a correlation between the evidence-based knowledge of primary care physicians and the quality of care they provide.

Another study by **Fogelman et al.**⁽²⁷⁾ showed that board certified family physicians and their residents tended to be younger, and to exhibit greater knowledge of diabetes than did non-BCFPs

Another study in Saudi Arabia by **Aldarbi et al.**⁽²⁸⁾, reported that primary care physicians who attended educational courses or training workshops on DM had significantly better knowledge and practices grades than those who did not

No-association between the studied doctors' socio-demographic characteristics and their practice as shown in (table 4) was mainly due to homogenous sample (most of doctors were female, from Zagazig University, had family medicine post graduate degree, had period of experience more than 4 years, and attended family medicine courses), also may be due to all of them worked in a similar environment of work, and with a similar resources.

The current study found that slightly more than one half of studied doctors had optimal practical skills as regards to communication skills with diabetic patients as shown in (table 4).

The present study has some limitations including time was limited for the doctors to fill out the questionnaire, so some doctors were uncooperative with me. Long distance between health units and centers present in Zagazig and villages around it was a hindrance also.

Conclusion

The best points of doctors' practice were in friendly welcoming and closing of consultation, describing how to use the medications, and in emphasizing on blood sugar control. The worst points of doctors' practice were in measuring waist circumference and knowledge about times to check feet of patients, and in introducing self to patients.

Based on the results of this study, it is recommended that:

The administrative authorities should organize periodic diabetes management training courses for doctors in family health centers to increase the quality of their clinical performance toward diabetes type 2 patients. These courses should include idea about diabetes management, its importance in the disease control, and how to achieve high quality performance. And Training program for health team members to respect type 2 diabetic patient needs, idea, concern and expectations before setting priority.

The Ministry of Health should make periodic assessment of health-care providers performance in family medicine centers. Also continuous evaluation and motivation for health team to improve doctor's practice and quality of health services provided to type 2 diabetic patients.

Primary Health care administrators should periodically revise regulations, policies, guidelines and the needed modifications to improve doctors' practice toward type 2 diabetic patient.

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