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Knowledge, Attitude and Practice of physicians in the field of diabetes and its complications; A pilot study

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Abstract

Introduction: Despite the high worldwide prevalence of diabetes, there is not accurate information of knowledge, attitude and practice of physicians in this case in our country. This pilot study was designed to answer this question .
Methods: This study was performed in collaboration with 69 physicians with various specialties. Research instrument was a questionnaire that consist some questions on four discrete areas: demographic information, knowledge, attitude and practice in the field of diabetes and its complications. Statistical method was descriptive analyzing test .
Results: In 29 percent of all physicians, the knowledge of diabetes was enough. A negative linear relationship was found between total score on knowledge and specialized degree or increased years of practice; while relation was significant only for increasing years of practice. A negative linear relationship was also found between attitude and becoming more specialized degree and increasing years of practice, without statistically significant difference. About 36.2 percent of all physicians had a good clinical practice and majority of them (50 percent) were general physicians. A negative significant linear relationship was found between practice scores and specialized professional degree or increasing years of practice. Also, a positive significant linear relationship was observed between knowledge score and attitude ($r = 0.54$), knowledge score and practice ($r = 0.47$), and attitude score and practice ($r = 0.48$.(
Conclusion: The knowledge, attitude, and practice of our physicians were not suitable in the field of treatment and control of diabetes and its complications. Holding continuing education programs with continuous surveillance is essential to improve knowledge, attitude and practice of physicians .

Keywords: Knowledge, Attitude, Practice, Diabetes mellitus, Continuing education

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Introduction

Diabetes is a metabolic disease that its main manifestation is chronic hyperglycemia which leads to further complications and damage to various organs of human body. Primary goal of diabetes treatment is maintain blood glucose levels close to normal range (1). In the past three decades, despite considerable advances in treatment modalities of diabetes, it has been shown considerable gaps between patients' outcome and acceptable treatment in developed and also in developing countries. Different reasons are proposed in failure to achieve therapeutic goals such as poor adherence to treatment regimens by patients or malpractice by physicians (2).

It has been reported that there are more than three million diabetics in Iran among adults ≥ 20 years (3, 4). By considering over 50 percent of them are unaware of their diabetes, age of suffering from diabetes in Iran is about 10 to 15 years lesser than the world standard (5); so, it is expected that the true prevalence of diabetes is more than which previously reported in Iran.

Williford and colleagues in their study concluded that physicians' knowledge was not enough about diabetes care, especially in the field of importance of exercise and physical activity based on individual patient's need, and most physicians were not familiar with clinical guidelines of sports medicine (6).

It has been observed that in addition to physicians' knowledge; their attitude about treatment was important to achieve goals. In other words, physicians' belief was important factor in their success for treatment of diabetes (7). Nakar and colleagues in their study showed that knowledge of physicians was deficient about the criteria for starting insulin therapy (8). Nakar found attitude of physicians was important for preparing patients to accept insulin therapy and also it was main reason for delaying to start insulin therapy and therefore observed further uncontrolled blood sugar (8). On the other hand, the knowledge and practice of diabetic patients to follow therapeutic principles showed a direct relationship with the attitude of physicians to diabetes care. For example, patients who examined their foot and educated about foot care by their physicians, did more efficiently self-foot care than other patients (9-12).

Since preventive programs are important as equal or even more than favorable treatments in controlling of non-communicable diseases' burden such as diabetes (2), and also knowledge plays an important role in attitude and practice of individuals, promotion of knowledge and attitude of health care providers about diabetes seems to be critical. In this way, it seems continuing medical education programs (CME) must be one of the worthy methods to achieve this goal (13, 14). Since no information about knowledge, attitude and practice of physicians in the field of diabetes are available in our country; this study was conducted to assess knowledge, attitude and practice of physicians in the field of diabetes and its complications.

Methods

This study was conducted as a pilot study. Seventy one physicians were randomly invited for cooperation with this study at three professional levels; general physicians, internists and other specialized medical doctors (except endocrinologist) which 69 persons were willing to cooperate. Inclusion criteria were having past clinical experience and exclusion criteria was specialty in endocrinology.

At first, primary questionnaire was prepared and then finalized according to comments of 10 experts for the pilot study. The questionnaire consisted of four sections. The first part included information on demographic characteristics, previous clinical practice and professional level. The second part consisted12 questions for measuring knowledge in the fields of diagnostic criteria for diabetes, risk factors for diabetes, nutrition therapy, follow-up patients, self-monitoring of glycemia, indications for hospitalization, gestational diabetes mellitus, lipid disorders and chronic complications of diabetes. Part three consisted 10 questions for assessment of physicians' attitude in the treatment of diabetes and its complications, with three options (completely agree, I do not know, completely disagree). Section four contained seven questions about practice of physicians in various clinical conditions. For each question one correct answer was considered and for each correct answer, one score was considered; thus, for 29 questions, the maximum expected total score of 29 was considered. After providing enough explanation about the purpose of the

study, informed verbal consent was presented by all the participants. We used descriptive methods for statistical analyses by using software SPSS ver.15. P ≤ 0.05 considered as statistically significant.

Results

All the 69 physicians responded to questions related to measuring knowledge, attitude and practice in the field of control and treatment of diabetes and its complications of whom; 37.7, 15.9 and 46.4 percent were general physician, internist and other specialties, respectively. Mean duration of clinical practice was 13± 10 years.

Physicians' knowledge in the field of diabetes

Table 1 shows the results of physicians' knowledge with or without professional level. Our results revealed that 29 percent of total physicians had good knowledge score in the field of diabetes and its complications.

Table 1- Frequency of correct answers to knowledge questions in 69 physicians in the field of control and treatment of diabetes and its complications

Knowledge question	Correct answer (%)			
	all participants	general physicians	internists	other specialties
Diagnosis of diabetes	43.5	50	36.4	40.6
Risk factors	23.2	34.6	9.1	18.8
nutrition therapy	62.3	65.4	36.4	68.8
Patients follow-up	18.8	15.4	18.2	21.9
Self-monitoring	75.4	80.8	54.5	78.1
Indication of hospitalization	82.6	84.6	54.5	90.6
Gestational diabetes mellitus	43.5	53.8	27.3	40.6
Diagnosis of dyslipidaemia	33.3	30.8	27.3	37.5
Treatment of hypertension	30.4	26.9	27.3	34.4
Diabetic neuropathy	47.8	46.2	54.5	46.9
Diabetic nephropathy	37.7	42.3	45.5	31.3
Impaired glucose tolerance test	39.1	46.2	45.5	31.3

Physicians' attitude about the treatment of diabetes and its complications

Table 2 reveals the frequency of correct answers to attitude questions (i.e. positive attitude). Attitude scores had weak negative linear relationship with becoming more specialized (r= -0.07) and also years of practice (r=-0.17); however the relationships were not statistically significant.

Table 2- Frequency of correct answers to attitude questions in 69 physicians in the field of control and treatment of diabetes and its complications

attitude question	Correct answer (%)			
	all participants	general physicians	internists	other specialties
Oral hypoglycemic agents in type 1 diabetes	63.8	65.4	63.6	62.5
Follow up interval in controlled patients	94.2	96.2	72.7	100
Desirable blood sugar level in gestational diabetes mellitus	68.1	65.4	90.9	62.5
Oral hypoglycemic agents in gestational diabetes mellitus	76.8	73.1	81.8	78.1
First step in treatment hypertension	78.3	92.3	81.8	65.6
Interval between lipid profile assessment	60.9	65.4	54.5	59.4
Oral hypoglycemic agents in renal failure	46.4	53.8	63.6	34.4
Diabetic autonomic neuropathy	50.7	42.3	54.5	56.3
risk of diabetic foot ulcer in male	53.6	42.3	63.6	59.4
Weight-bearing exercise in diabetic neuropathy	49.3	50	63.6	43.8

Physicians' practice in diabetes control and prevention

It was revealed that 36.2 percent of physicians had acceptable function in control and prevention of diabetes complications, regardless of their academic degree (Table 3). Based on academic degree level, 50 percent of general practitioners, 36.4 percent of internists and 25 percent of other specialists had efficient practice. A negative and significant linear relationship observed between the practice score and becoming more specialized (r=-0.32) and with increasing years of practice (r=-0.46) (P= 0.002 and P = 0.008, respectively).

Table 3- Frequency of correct answers to practice question in 69 physicians in the field of control and treatment of diabetes and its complications

Practice question	Correct answer (%)			
	all participants	general physicians	internists	other specialties
Uncontrolled long-term treatment of type 2 diabetes after taking oral drugs	46.4	46.2	63.6	40.6
Diagnosis of diabetes in pregnant woman with family history of diabetes	60.9	69.2	63.6	53.1
Treatment of diabetic nephropathy	65.2	73.1	81.8	53.1
Treatment of hypoglycemia in patients treated with insulin	23.2	42.3	100	15.6
Diabetes diagnosis	18.8	26.9	18.2	12.5
Treatment of dyslipidemia in diabetes	73.9	73.1	90.9	68.8
Treatment of hypertension in diabetes	72.5	84.6	81.8	59.4

Knowledge, attitude and practice scores of physicians in the field of diabetes and its complications

With regard to the expected maximum score of study questionnaire that was 29, the maximum expected score for knowledge questions was 12, for attitude, 10 and for practice, 7. Score range of correct answers to the questions of knowledge was 2-10, attitude 2-10, and practice 0-7 and for the whole questionnaire was 7-25. Mean ± SD scores of knowledge, attitude and practice of physicians in the field of diabetes and its complications in total and in separate academic degrees are shown in Table 4. The only significant difference in post-hoc test (Bonferroni) was observed in part of practice assessment between two groups of general practitioners and other expertise; a significant reduction in good practice of other expertise groups (P=0.03).

A positive and significant linear relationship (P<0.001) in all three groups between knowledge score and attitude (r=0.54), knowledge score and practice (r=0.47), attitude score and practice (r=0.48) was observed by non-parametric spearman test.

Table 4. The mean scores of physicians' knowledge, attitude and practice in the field of prevention and diabetes control and its complications

Charecteristic	all participants	general physicians	internists	other specialties
Knowledge	5/38±1/96	5/77±1.99	4/36±1.86	5/41±1.9
Attitude	6/42±2/11	6/46±2/23	6/91±1/51	6/22±2/21
Practice§	3/61±1/65	4/15±1/59	4/00±1/26	3/03±1/65
Total	15/40±4/59	16/38±4/6	15/27±4/00	14/66±4/76

Statistical test: ANOVA, P ≤ 0.05 was considered significant *
§ Difference was significant (P ≤ 0.05)
£ Data present as Mean±SD

Discussion

Our results showed that despite the increasing prevalence of diabetes, physician's knowledge about diabetes control and its complications were not enough, and with increasing years of practice and becoming more specialized, compared with general practitioners, knowledge decreased.

These findings can be related to limited number of patients referred to specialists based on their specialty and also warns specialists to update their knowledge about other diseases such as diabetes. With regards to patient education as one of the major parts of diabetes management which has many positive results including reduced health care costs (15-17), increasing the quality of patient care and self-efficacy (18-20); physicians education also lead to improve their knowledge level in topics related to diabetes and its complications (2, 14, 21). One of the methods proposed for updating skills and professional abilities of physicians over the time are continuing educational programs (CME) (22).

The results of one study in the US showed that physicians' knowledge in the treatment of diabetes was not enough and knowledge level of different medical groups such as general practitioners, specialists, internal medicine residents and medical students had significant differences with each other (23, 24). In UK was also seen that physicians' knowledge about starting insulin therapy in type 2 diabetes, patients' treatment with diet and insulin treatment during an acute illness was not enough. So, suggested that knowledge deficiency decreases by developing appropriate educational programs for physicians, especially those who graduated years before (25-27).

In our study, for simplifying of application and interpretation of results, we considered 50 percent as a cut-off point, a criterion for desirable level of physician knowledge, attitude, or their practice.

According these, we observed that there was knowledge deficiency in GPs about risk factors, how to follow-up, diagnosis and treatment of dyslipidemia, hypertension, neuropathy, nephropathy and impaired glucose tolerance. Also, in internal specialists group and other expertise group in addition to the above, there was poor knowledge regarding diagnosis and treatment of GDM.

Studies showed that physicians' knowledge wasn't the only factor in their success in diabetes treatment but also, their attitudes and beliefs played an important role in successful treatment (28-30). Given that belief and attitude will change over the time, it seems that continuing education courses can be useful to correct physicians' attitude (7). All educational programs that do both, updating physicians knowledge and correcting their attitude, are more effective than the traditional methods that only emphasize on physicians to follow the standards of care (31-33). Based on the above cut-off, in part of the attitude questions, the most general practitioners weakness was in diabetic neuropathy, and major weakness in other expertise group was about nephropathy and neuropathy. Internal medicine group had desirable attitude towards diabetes and its complications.

In the present study, the majority of physicians had undesirable practice abilities. This finding was in accordance with a study of Pakistan (34) and a study in the US (35). In our study with regard to cut-off point of 50 percent, major weaknesses in the practice of GPs were in the field of diagnosis of diabetes, treatment for uncontrolled diabetes, and treatment of hypoglycemia in patients treated with insulin; also, in other expertise group and internal medicine group was about diabetes diagnosis.

In this study, practice revealed a negative and significant linear relationship with becoming more specialized or with years of practice.

Studies show that poor practice of physicians is associated with extensive health problems in the community such as increasing the incidence of medical errors, patient dissatisfaction, lack of control of many chronic diseases, delay in diagnosis and the illegitimate use of drugs (34-36).

The results of some studies have shown that despite having adequate knowledge and even acceptable attitude about diabetes and its complications, physicians practice was not appropriate. This shows that in addition to changing the educational structure, it must also be noted the management and care of patients (36, 37).

In our study, we encountered some limitations; for example, we did not have any information about whether the physicians had experiences in diabetes clinics, or they participated in

workshops and diabetes training courses as a source of information? On the other hand, sample size was small and heterogeneous and did not represent the entire community; therefore, we recommend a comprehensive study in order to assess the level of physicians knowledge, attitude and practice about diabetes, using a dedicated questionnaire according to the level of speciality (medical degree).

Also, we recommend that in order to promote health care providers' abilities in our country, other educational resources such as virtual diabetes clinic site, diabetes guideline (38) and diabetic foot guideline (39) are considered.

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