



Research Article

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## ***Knowledge, Attitude, and Practice of Type 2 Diabetes Mellitus Saudi Patients Regarding Diabetic Retinopathy: A Multi-Center Cross Sectional Survey***

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### **ABSTRACT**

*Objective: This study is aimed at investigating the knowledge, practice and attitude of the patients with type-2 diabetes mellitus regarding diabetic retinopathy in Saudi Arabia. Introduction: Diabetes self-management is defined as a crucial factor in patients' care. Many studies show that the lack of sufficient knowledge, good practice, and positive attitude among the patients concerning their disease and its complications is due to illiteracy. Therefore, presenting knowledge, practices, and attitudes towards the management of diabetes should be done before considering any possible intervention. The materials and methods section explains the data collection and analysis along with their limitations. In the results part, the data collected from each section are explained and summarized in tables. In the discussion section, the results are explained and then related to the previous studies. Then the conclusion sums up all the results found and subsequently recommends the best way for the future researchers to improve the results of the research.*

**Key words:** Type 2 diabetes mellitus, knowledge, attitude, practice.

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### **INTRODUCTION**

In the current world, Diabetes Mellitus is considered as a public health problem. The threats of this disease are seen to have a positive trend as time goes on and its number is predicted to double when it reaches the year 2025. The decreased life quality of diabetic patients and world economy burden are the practical examples of Diabetes Mellitus. Previous researchers have found out that half of the type-2 diabetic patients have microvascular problems at the moment of diagnosis as well [1]. The death rate of patients with type-2 diabetes is noted to be double when compared to the non-diabetic population after adjusting for age. It is observed that majority of people

in the age group of (19-73 years) become blind in developed nations as a result of diabetic retinopathy. Diabetic retinopathy is predicted to cause more problems in developed nations because the number of diabetic patients is expected to increase. The range of DR in the world is deemed to be between 6.8 to 44.4% for patients with diabetes mellitus [2]. This implies that over 4 million people are blind as a result of DR in the world. It is predicted that the number of people with DR will increase from 127 million in 2010 to 192 million by 2030, and 38 million to 57 million for the number with vision-threatening diabetic retinopathy (VTDR).

The patients' knowledge and attitude towards diabetic is essential in controlling the disease and its long-lasting complications. Therefore, it will play a very crucial role in reducing the number of disability factors. Patients are supposed to be educated about the treatment, and the risk factors of diabetes are considered as the therapeutic tool for the patients who agree to change their lifestyle and drug therapy. The patients with better knowledge and understanding of the medication and disease have less complications and good glycemic control on the one hand. On the other hand, those patients with poor knowledge of the disease are more exposed to morbidity and hospitalization. To put it briefly, glycaemic control can be achieved by increasing the patients' attitude towards the disease. Also, self-management and good health practices are important for the control of diabetes. Contrary, the patients with poor practices and awareness ignite the progression of the complications of diabetes. Various studies have concluded that better self-management is important when preventing long-term complications and control of diabetes.

According to the study done by KAP of the primary physicians' health care in this area, a deficit in physicians practicing the primary health care for diabetes mellitus was detected [3]. Assessment of patients' attitudes and health care practices for diabetic retinopathy and diabetes mellitus is crucial to help health care providers and educators determine the factors affecting the control of glycaemic and come up with a management plan to help the patients delay and prevent organ damage.

## MATERIALS AND METHODS

The study was performed in six cities and six different districts of Saudi Arabia. The involved cities in the research include Jeddah, Riyadh, Dammam, Najran, Sir, and Jizan. The population of the study includes all the patients with Type-2 diabetes in Saudi Arabia at the age of 18 years and above. The study was done on all the diabetic patients who attended the clinics of all the six districts. The data was collected using a self-developed questionnaire that contained four parts. Part I contained the respondents' socio-demographic information, part two contained knowledge questions related to diabetics retinopathy, part 3 contained attitude question of the respondents towards diabetic retinopathy, and part 4 contained practice questions related to diabetic retinopathy. The clinic was selected randomly from each district, and every type-2 diabetes patient who attended the clinic was noted down after taking his/her consent.

Due to the avoidance of language ambiguity, the questionnaire was translated to Arabic which is the common language understood by every person in Saudi Arabia. The questionnaire comprised of knowledge questions which were assessing the knowledge of the patients about the complications of diabetes, exercise management, retinopathy and diet, and right management decisions. The attitude questions were prepared following Michigan University's Training Centre and Diabetic research. These questions were aimed at the attitude of the patients towards autonomy and compliance. Also, practice questions were aimed at the evaluating the patients' diet adherence, treatment compliance, regular follow-up and exercise. The questionnaires were applied in the form of face-to-face interviews with nurses who were trained specifically for the study purpose for elaborating and removing the complexity of the questionnaire to the patients if required.

The answers given to each question were given a score. Ten marks were awarded to the correct answers, and zero to neutral choice. This was done to allow easy calculation in percentage. In the attitude section, the answers that showed the positive attitude were awarded ten marks, and the negative attitude was awarded a score of zero. The total score for each patient was calculated in each section.

## RESULTS

The mean of the age of the study population was found to be 46.62 years with a standard deviation of 4.86. The range for the population age was 18 to 92 years. Also, the mean duration of diabetes was determined to be 9.52 years with a standard deviation of 2.41. The range for the duration was 1 to 15 years. Sixty percent (N = 371)

were male and forty percent (N = 252) were female. The details of demographic information are as shown in Table 1 below.

**Table 1:** The socio-demographic information of respondents (n = 623)

Characteristics	Number (N)	Percentage (%)
Gender		
Male	371	60
Female	252	40
Age	Mean age = 46.62 years	SD = 4.86
Duration of diabetes	Mean duration = 9.52 years	SD = 2.41

### Response to the Knowledge Questions Related To Diabetic Retinopathy

More than 39% of the respondents (249) reported having damage in retina at the back of an eye due to diabetes, at least 40% reported having damage at this part, and 19% of the respondents reported uncertainty in having damage in their retina at the back of the eye. Of the respondents, 21% reported uncertainty with regard to having an eye infection, 39% reported having infection due to diabetes, and 39% reported not having an eye infection due to diabetes. 6% of the respondents reported defective vision, 72% reported the absence of defective vision, and 21% certainty in having defective vision. Also, the participants were asked about experiencing poor control of diabetes. 19% reported uncertainty in this regard, 77% reported the absence of poor control of diabetes, and 35% reported having poor control of diabetes.

About hypertension, 35% (N = 219) reported having hypertension, 45% (N = 282) reported the absence of hypertension, and 20% (N = 122) were uncertain in this regard. Also for Nephropathy, 41% (N = 256) of the respondents reported no nephropathy, 39% (N = 241) reported nephropathy, and 20% (N = 126) were uncertain. The diabetes patients who participated in this research were also asked if they had Anemia. 41% (N = 257) reported having Anemia, 40% (N = 248) reported their negative answer in this case, and 19% (N = 118) were uncertain. The summary of the responses given by the participants about the knowledge questions related to diabetic retinopathy is as shown in Table 2.

**Table 2:** The responses that relates to knowledge questions related to diabetic retinopathy

Description	Yes	No	Do not know
Damage to the retina at the back of the eye due to diabetes	249	255	119
Infection in the eye	246	244	133
Poor control of diabetes	26	478	119
Hypertension	219	282	122
Nephropathy	241	256	126
Anemia	257	248	118
Can a person with diabetic retinopathy have normal vision?	235	281	107
Can a diabetic patient have eye problems at the same time of diabetes diagnosis?	240	250	133
Should patients with diabetes have a periodic/regular dilated eye checkup to look for diabetic retinopathy?	227	257	139
Do you think retinopathy is a treatable condition?	258	243	122
Spectacles	265	248	110
Laser	258	233	132
Surgery	244	250	129
Injection in the eye	255	249	119

### The responses for the attitude question

The respondents were asked about their attitude towards diabetes. The first statement they were asked to give their views on was: "Even though eye doctors say that diabetic patients should have regular eye checkup, if my diabetes is under good control, there is no need for this." 132 respondents strongly agreed with the statement, 113 out of 624 agreed, 136 respondents were neutral, 126 disagreed, and 116 strongly disagreed. The second statement asked was: "I should go for regular eye checkup as the eye doctor tells me even if I don't have any problem in my eyes." 137 respondents strongly agreed with the statement, 129 agreed, 118 were neutral about the statement, 110 disagreed, and 129 respondents strongly disagreed with the statement.

Table 3 below summarizes the responses of the respondents.

**Table 3:** The responses for attitude question of the respondents towards diabetic retinopathy

Question	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Even though eye doctors say that diabetic patients should have regular eye checkup, if my diabetic is under good control, there is no real need for this.	132	113	136	126	116
I should go for regular eye checkup as the eye doctor tells me even if I do not have any problem in my eyes.	137	129	118	110	129
Eye doctors say that good control of diabetes prevents problems due to diabetic retinopathy, but it is not possible to keep sugars under perfect control as they say.	132	119	117	128	127
No matter what I do, my vision may become poor/may not improve. So, what is the use of doing all this treatment/follow up for diabetic retinopathy?	132	105	117	138	131

### The responses for practice questions relating to diabetic retinopathy

The respondents were asked to state if they had a periodic or regular eye checkup. 41% reported not having regular eye checkup and 59% reported having periodic eye checkup. The respondents were also asked to state how frequent a person with diabetes should undergo an eye checkup. 18% were comfortable with every six months, 43% said that eye checkup should be done only when vision is affected, and 38% said that it should be done yearly or every two years. The respondents were also asked to whom they went for periodic/regular eye checkup. 40% said an ophthalmologist at a local hospital, 18% an optometrist at a local dispensary and 42% a physician at a local hospital. They were also asked the time they will screen their eyes when they realize they have diabetes for the first time. 18% said that they would screen after five years from diabetes' diagnosis, 43% said that they would have it at the time of diabetes diagnosis, and 38% said they would do it only when they have an eye problem.

### KAP Score

The mean of the overall KAP score was found to be 240.45. The knowledge score was found to be 230, attitude score was 133.25, practice score was 216, mean of males was found to be 371, and the mean of female was found to be 252.

### DISCUSSION

In many countries, attitude, knowledge, and practice (KAP) surveys are applied to collect information for planning public health programs. It is believed that a KAP survey is useful in case of collecting information about the treatment and prevention of the practices, or sociological variables such as education, social status, income, and occupation. This research has provided crucial information for future public health program planning for diabetic retinopathy and diabetes [4]. On the contrary to many studies that reported poor diabetes knowledge in patients, this research indicates all the levels of KAP score with the mean of 240.45.

In the study, the majority of respondents were certain that it is not possible to control the sugar perfectly. According to previous studies, sugar is found to be the main cause of diabetes. From the practical experience of physicians who are specialized in diabetes and endocrinology, blood sugar irregularity in Saudi Arabia is caused by high diabetic intake in a single day [5]. The huge number of diabetic in our research is a result of the lack of knowledge in terms of sugar levels which is supposed to be given by experts such as nutritionists.

Many participants in the research had adequate knowledge of diabetic retinopathy and complications involved with diabetes. More than 77% agreed with the statement that vision diabetic is not the reason for examination of the eye annually. There are some beliefs that people with diabetes do not require the examinations of the retina or treatment because their vision is good. Therefore, this acts as one of the reasons for non-compliance for the examination of the retina.

Multidisciplinary medicinal services furnished by multidisciplinary social insurance groups with aptitudes, mastery and with individualized consideration are of great importance if we are in need of powerful control of diabetes and its entanglements. The greater part of the diabetic patients in our study concurred the significance of self-care in controlling diabetes. Significance of diabetic self-care and the boundary to self-administration have been investigated in numerous comparative studies [3].

## CONCLUSION

This investigation revealed valuable data with respect to the information, demeanor and routine with regards to the patients with diabetes. As mentioned in the results section, it can be noted that knowledge is the most crucial thing when it comes to diabetes control. As noted, the majority of respondents were certain that it is not possible to control sugar perfectly. According to this research, sugar is found to be the main cause of diabetes. From the practical experience of physicians who are specialized in diabetes and endocrinology, blood sugar irregularity in Saudi Arabia is caused by high diabetic intake in a single day. The huge number of diabetic cases in our research is the result of the lack of knowledge in terms of sugar levels which is supposed to be given by the experts such as nutritionists.

Many participants in the research had a good knowledge about diabetic retinopathy and complications involved with diabetes. More than 77% agreed with the statement that vision diabetic is not the reason for examination of the eye annually. There are some beliefs that diabetes patients do not require the examinations of the retina or treatment because their vision is good. Therefore, this acts as one of the reasons for non-compliance for examination of retina.

For the coming studies, it is recommended to use quantitative analysis as the method of data analysis. This will help to be able to perform multiple regression analysis to determine the trend line which will be used to predict the future outcomes in diabetes. It will also increase the accuracy of the results since it will use the numerical values collected from the hospitals to derive a mathematical model.

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