How aware Diabetic Retinopathy Patients about Diabetes Mellitus

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ABSTRACT

Objectives: The aim of this survey was to evaluate how aware diabetic patients about some facts of their chronic disease.

Methods: A questionnaire was given to 169 diabetic (Type 2) patients presenting to the retina clinic in King Hussein Medical Center over a period of three months (1st of April 2012 till 1st of July 2012). The questions were read and answered by the patient or read for him by accompanying person or nurse. General information was collected: age, residence, type and duration of treatment. Questions were asked about how they joined the retina clinic, frequency of visits to endocrinologist and ophthalmologist, mode and satisfaction with management and how they check and control their blood sugar level.

Results: This study included 169 patients, 58.6% were females and 41.4% were males, with the mean age of 61.9 years. The mean duration of diabetes was 15.9 years and 75% were using insulin. Mean of follow up period was 3.3 years. Ischemic heart disease was found in 21.3% of the patients, 35% were hypertensive, 13.6% were smokers, 11.2% suffer from diabetic foot and 9.5% had renal impairment. Thirty-nine percent were sent to ophthalmologist by the internist, 28% by a general practitioner, 32% advised by non-medical others, and 37% visited the clinic because of ocular/visual complaint. The main factor blamed for diabetic retinal changes was the duration of diabetes. More than half of the patients believed that no other diseases affect the diabetic retinal changes. Less than a quarter of the patients could mention at least one extraocular organ affected by diabetes mellitus. Eighty percent of the patients were compliant to their clinic appointments. More than half depended on symptoms rather than blood test to judge their diabetes mellitus control. Forty-six percent thought they have a controlled diabetes mellitus, 54% of them were satisfied with the laser treatment they received, while only 31% of the uncontrolled diabetes mellitus group were happy with the laser. Only 29% gave an acceptable range of fasting blood sugar when asked about the normal level, while 55.6% did not know about HbA1c. Eating habits were blamed by 55.6% for disturbed blood sugar level, but 28.3% could not find a reason for it.

Conclusion: A large proportion of patients were not well educated about their disease. This mandates a national campaign to enlighten diabetics as well as non-diabetics about this prevalent disease, since educating diabetic patients about their chronic disease is mandatory to decrease the severity of complications, postpone or even prevent them.

Key words: Awareness, Complications, Diabetes Mellitus, HbA1c, Prevalence

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Introduction

Diabetes Mellitus (DM) considered the third of the non-communicable diseases, which are responsible for two thirds of global deaths.[1] Diabetes Mellitus is becoming very prevalent in Jordan as according to a study released by the Jordanian National Centre for Diabetes states clearly that the prevalence of DM in Jordan had increased by 31.5% since 1994.[2] Diabetes Mellitus is becoming more and more prevalent globally to the extent that some started to use the metaphor epidemic as in a study conducted in Kerala, India considers that Diabetes mellitus is reaching epidemic proportions in many countries, including India.[3] Currently, there are 171 million diabetic patients worldwide.[3] By 2030, this figure is projected to increase to 366 million people.[3] A recent study from China stated that the prevalence of diabetes increased from 2.9% in 2002 to 13.8% in 2010 based on the same glucose criteria.[4] The problem is of concern mainly in developing countries, as they contribute 3⁄4 of the global burden for diabetes.[1] In Jordan, the prevalence is increasing significantly, compared to the 1994 survey; there was a significant increase in the prevalence of diabetes by 31.5%.[2] The significance of DM for ophthalmologists comes from the fact that it is the leading cause of blindness in the ages between 20 and 64 years,[5] who are young and productive members in the community turning them into dependant patients to mention the least. The awareness of the diabetic patients of the complications of their disease, and the way to combat the illness is highly connected to awareness and knowledge of the disease, how to detect and control the disease to decrease its complications. In a study conducted in Jordan by the National Centre of Diabetes found that more than half of the patients with diabetes have unsatisfactory control.[2] Knowing how much the patients are aware of their disease is the first and mandatory step to plan how to fight the disease. This necessitates a well-structured national program to combat the morbid complications of this disease as well as to persuade people to change their lifestyles in trial to decrease the incidence of the disease. This survey was conducted to evaluate how aware diabetic patients are to some facts about their chronic disease.

Methods

A questionnaire which was created by the author in simple Arabic language was distributed to a group of diabetic patients [Attachment 1]; all were non-insulin dependent diabetes mellitus (NIDDM) patients, presenting to the retina clinic in King Hussein Medical Center (KHMC), over a period of three months (1st of April 2012 till 1st of July 2012). The questions were read and answered by the patient, or read by accompanying person or the nurse, in cases when the patient could not read.

General information was collected about the patients: age, residence, type of treatment, and duration of diabetes. Questions were asked about how they joined the retina clinic and how frequently they visit the endocrinology and retina clinics. Patients were asked about what modality of treatment they were exposed to and whether they are satisfied by the medications. Questions about other diseases they suffer from and whether the patients think they are related to diabetes were included. Finally, patients were asked about how controlled their blood sugar is, how frequently they check it, do they visit a dietician and what they know about their cumulative blood glucose level. Certain answers were categorized in tables of numbers and percentages, and means were calculated for others.

The approval of the local ethical committee was obtained as well as the patients' consent.

Results

The total number of patients included was 169 patients, aged between 32 and 80 years (mean of 61.9 years). All were coming from Amman and Amman suburbs. Ninety-nine were females (58.6%), and 70 males (41.4%). The duration of diabetes in the selected group ranged between four and thirty years, with a mean of 15.9 years. Some were first comers others have been seeing ophthalmologists for 20 years (mean of 3.3 years), but the majority were seen between one and five years. Oral hypoglycaemic agents were used by 33.5% of patients, 57% were using insulin, while 9.5% used both simultaneously.

Ischemic heart disease as well as diabetes affected 21.3% of patients, 35% were hypertensive, 13.6% were smokers, 11.2%

Table I: The reasons why the patient first visited the ophthalmology clinic

Referral	Internist/ Endocrinologist	General Practitioner	Media	Family/Friend Advice	Actual Complaints	
Number Of Patients	66	32	6	28	37	**169**
%	39	19	3.5	16.5	22	**100**

Table II: What diabetic patients think is the main cause of the diabetic retinal changes

Causes of retinal diabetic changes	Age	Duration of DM	Control of blood sugar level	Variable physical tendency	Combined factors	Total
Number Of Patients	3	94	36	3	33	**169**
%	1.8	55.6	21.3	1.8	19.5	**100**

Table III: What diabetic patients think affects the diabetic retinal changes beside DM

Other diseases affecting retinal diabetic changes	Hypertension	Renal impairment	Anemia	Yes but unknown to patient	Only DM	Total
Number Of Patients	48	10	3	13	95	**169**
%	28.4	5.9	1.8	7.7	56.2	**100**

suffered from diabetic foot and 9.5% had renal impairment. Table I shows how the patients were first seen in the retina clinics.

Table II describes what the patients think as the main factor leading to retinal diabetic changes.

Table III shows what other illnesses can affect the diabetic retinal changes negatively.

Patients were asked to write down other systemic complications of DM. Only 8.9% mentioned the foot (15 patients), while 9% (16 patients) mentioned kidneys, 4% (7 patients) wrote skeletal system and 2% (3 patients) mentioned anaemia. Table IV illustrates the modality of treatment the patients were exposed to and whether they think they were of benefit or not. Only six patients reported that they come to the retina clinic whenever they feel the need to, but the rest followed the appointments. On the other hand, only three (1.8%) patients visit the internist/endocrinologist when needed, while 80% follow the appointments, and the rest (18.2%) do not follow any specialist, they just go to the medical centre to collect medications. Fifty-two patients (31%) checked their blood sugar level once or more weekly (9.5% measure it daily). A similar number checked it once or twice every month. Thirteen patients (7.7%) checked it once every 3-6 months. Thirty-six patients (21.3%) check their blood sugar level irregularly and only when they feel it is needed. The remainder (9%) do not seek checking their blood sugar levels. Eighty patients (47.9%) reported that their blood sugar level is controlled, while the rest of patients believed it is not controlled. Despite that, only 42 (24.9%) patients visited the dietician at least once. Fifty-five patients (32.5%) depend on the blood test to check how controlled their disease is, while 78 patients (46%) depend on symptoms they relate to high blood sugar which were mainly light headedness and fatigue. The remainder (21.5%) depend on both (blood test and symptoms).

Table V describes what patients know as normal level of blood sugar. Table VI describes what patients know about their cumulative blood sugar level.

Finally, the patients were asked about what they think as the main factor causing disturbance in the control of their blood sugar level: 65 (38.5%) patients blamed their eating habits and diet, while 26 patients (15.4%) thought their disturbed mood status as the main factor, 10 patients (6%) thought the drugs are ineffective, three (1.8%) patients blamed infections and the rest (28.3%) could not spot the causes.

Discussion

Looking at Table I, we notice that the highest percentage of patients were sent to our clinic through the internist/endocrinologists (39%), followed by patients who decided to visit the ophthalmologist due to ocular/visual symptoms (22%). Unfortunately, our patients became aware of eye disturbances late in the course of the disease, to the extent that a large number of them presented only when they get vitreous haemorrhage. In a recent study from Los Angeles, it was found that persons with bilateral

Table IV: Opinion of diabetic patients about the benefits of laser and injections

Laser Treatment	Number of patients	Happy with results (%)	Anti-VEGF intravitreal injections	Happy with results (%)
Once	26	16 (61.5)	20	13 (65)
Twice	13	7 (53.9)	10	7 (70)
3times	16	10 (62.5)	16	10 (62.5)
4 times	16	13 (81.3)	7	7 (100)
5 and more	43	26 (61)	6	6 (100)
never	55	-	110	-

Table V: The normal accepted levels of fasting blood sugar

Accepted level of Fasting Blood Sugar	Equal or above 200mg/dl	≥150-200	100-‹150	No idea	Total
Number of patients	29	42	49	49	**169**
%	17	25	29	29	**100**

Table VI; Knowledge of HbA1c among diabetic retinopathy patients

HbA1c	Never heard of it	≤ 7	>7-8	>8-10	Above 10	Did it but doesn't know the result	Total
Number of patients	94	14	20	16	15	10	**169**
%	55.6	8.3	11.8	9.5	8.9	5.9	**100**

moderate Non Proliferative Diabetic Retinopathy (NPDR) had the most substantial decrease in quality of life compared with those with less severe Diabetic Retinopathy (DR). The prevention of incident DR and, more important, its progression from unilateral to bilateral NPDR is likely to have a positive impact on a person's HRQOL (health-related quality of life) and should be considered an important goal in management of individuals with DM.[6] The least percentage (3.5%) visited the clinic for check up after the media advice (television and newspapers).

When the patients were asked about what they think the main factor leading to the retinal changes, more than half (55.6%) of them blamed the duration of diabetes. Compared to a study from Baltimore where 34% knew that strict control could prevent eye problem,[7] only 21.3% thought the changes are due to uncontrolled blood sugar level. One point eight percent thought they are due to aging; a similar number related the eye disturbances to variation in body tendencies. Nineteen point five percent circled more than one factor (combined effect). The response to the question about whether other illnesses do affect the retinal changes negatively was "No" by more than half of the patients (56.2%). While almost a third blamed hypertension as a cause of deterioration of the diabetic retinal changes, which are slightly more than the percentage of those being hypertensive as well as diabetics. Five point nine percent wrote "renal impairment", 1.8% of the answers were "anaemia", while 7.7% circled "Yes" but could not agree on any disease mentioned.

Patients were asked to write down other systemic complications of DM. Only 6% mentioned the foot (10 patients) compared to a study from India, 57.4% of the patients knew that the feet are affected in diabetes.[8] Nine percent (16 patients) mentioned kidneys, 4% (7 patients) wrote "bones" and 2% (3 patients) mentioned anaemia. These numbers carry some contradiction, as the number of patients who mentioned Diabetic foot as a complication was less than those who actually suffer from diabetic foot (6% v/s 11.2%). The same applies to those with renal impairment (9% v/s 9.5%). One explanation can be that they are not aware of the complications of diabetes even when they have them and blame other reasons for their occurrence. It is noticed that no male patient mentioned impotence, which might be due to the conservative nature of our patients, feeling embarrassed to talk or even write about their complaints.

A study from Karachi, Pakistan found that around 18% of men and 27% of women did not know that diabetes can affect other organs of the body and were unable to name a single complication associated with diabetes.[9] In our

study, 79% did not mention any organ that can be affected by diabetes mellitus, which cannot be explained solely by ignorance of the disease complications, especially that they are coming to ophthalmology clinic knowing that diabetes is the reason behind their retinopathy.

Table III illustrates the modality of treatment the patients were exposed to and whether they think they were of benefit or not. Generally, it shows that the patients receiving injections were more satisfied. It is also noticed that those in the controlled group were more satisfied with laser treatment compared to those uncontrolled (54% v/s 31%).

Only 6 patients reported that they come to the retina clinic whenever they feel the need to, but the rest followed the appointments. On the other hand, only three (1.8%) patients visit the internist/endocrinologist when needed, while 80% follow the appointments, and the rest (18.2%) do not follow any specialist, they just go to the medical centre to collect medications. Despite the obvious fact that the patients are compliant to their ophthalmologist/internist clinic appointments, more than half (52.1%) believe they don't have controlled blood sugar level, and only 81(47.9%) patients reported that their blood sugar level is controlled. On the other hand, only 42 (24.9%) patients visited the dietician at least once, slightly comparable to the percentage (35.3%) of diabetics receiving diet instruction in a study from Nigeria.[10]

When asked about the normal level of blood glucose, 29% didn't know the normal levels and 17% what they thought to be normal was very high. In a study from India, twenty (20.7%) patients did not know their target fasting blood sugar.[8] The other half wrote numbers ranging between 100-150mg/dl Table III.

It was noticed that our patients are more aware of blood sugar level than the "cumulative glucose blood test/ HbA1c" as more than half of the patients were not aware of HbA1c and think they never did it before. Only 13 (7.7%) patients gave an answer of seven and below. The remainder (40.2%) wrote numbers between 7.1 and 13.3; three of the last group answered "YES" but commented that its high and they do not know the number Table IV. A study from Singapore stated that having diabetic retinopathy or knowing diabetes could cause blindness was not associated with greater awareness of HbA1c.[11]

Almost half of our patients depended on physical symptoms to know that their blood sugar is disturbed. Surprisingly, most of them mentioned light headedness and fatigue as the symptoms they feel, while only three mentioned polyuria and hunger. The percentages are different in a study from Saudi Arabia, where 83.5% thought of polyuria as a symptom of DM.[12]

Finally, the patients were asked about what they think as the main factor causing disturbance in the control of their blood sugar level: 65 (38.5%) patients blamed their eating habits and diet, while only 24.9% seek out a dietician help. This might be due to that they know what to eat but are not compliant. Twenty-six patients (15.4%) thought their disturbed emotional status is the main factor, 10 patients (6%) thought the drugs are ineffective, 3(1.8%) patients blamed infections and the rest (28.3%) could not know the causes.

Conclusion

Educating diabetic patients about their chronic disease is mandatory to decrease the severity of complication, postpone or even prevent them, especially when the patients are in the working age group, which has an extremely valuable consequence on their work and family, life and eventually their community. Our patients are not well educated about their disease and this is true for even those who have had the disease for a long period of time. This mandates a national campaign to enlighten diabetics as well as non-diabetics about this prevalent disease.

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Attachment 1: The questionnaire filled in this study

استبانة مرضى السكري في عيادة العيون

الاسم: **العمر:** **الرقم:**
السكن: **الهاتف:**
المدة الزمنية لمرض السكري عندك :
العلاج: حبوب بالفم انسلين ابر
منذ متى تراجع عيادة العيون:

من حولك لعيادة العيون:
طبيب الباطنية أو الغدد طبيب المركز الصحي نصائح التلفزيون/ الصحف نصائح من حولك شكوى من العين

ما سبب التغيرات التي حدثت بالعين:
العمر استعداد جسماني مدة مرض السكري تنظيم السكري
هل لأمراض أخرى علاقة بتغيرات العين الناتجة عن السكري: لا نعم
ان كانت الاجابة السابقة نعم فما هي الأمراض: ضغط الدم أمراض الكلى فقر الدم
هل هناك أعضاء أخرى بالجسم تتأثر سلبيا" بالسكري؟ ما هي ان وجد؟ _____
كل كم شهر تراجع عيادة العيون:
ماذا يحدد مراجعتك لطبيب العيون: عند الحاجة مثل ضعف الابصار وغيرها.....
حسب وضع الشبكية
كم مرة خضعت لليزر: **للابر:**
هل شعرت بتحسن بعد الليزر: لا نعم
بعد الابر: لا نعم
كيف تعرف أن السكري منتظم عندك أو غير منتظم:
علامات سريرية:_____
جهاز : في البيت في العيادة عند المراجعة
كل كم تقوم بالفحص:
كل كم شهر تراجع عيادة المركز/ الباطنية/ الغدد:
هل السكري منتظم عندك: : لا نعم
ما هي النسبة المقبولة لديك: العادي: التراكمي:
ان كان غير منتظم: ما سبب عدم انتظام السكري عندك:_____
هل راجعت أخصائية تغذية: