Awareness for need of regular eye exams and retinal involvement in diabetes patients

Sensibilización sobre la necesidad de exámenes oculares periódicos y la afectaciónde la retina en pacientes con diabetes

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Abstract

Recently, it was estimated that visual problems affecting individuals aged above 50 years account for more than 80% of blindness in world. Eye care facilities in general are underutilized as evident by studies reporting that almost half of persons with visual loss did not have eye checks in the preceding 5 years. Diabetes mellitus (DM) is a growing health problem worldwide. This study aims to assess and determine the awareness of patients with DM about need of periodic eye checkups and their awareness of retinal involvement. This is a cross sectional study done in medical outpatient clinic from 01/01/2018 to 31/12/2018. A total of 341 patients with DM were selected randomly and filled a questionnaire about the following variables: gender, age, type of DM, educational level, duration of diabetes, awareness of eye involvement, awareness of need of regular eye exam, current diabetes treatment, method to monitoring diabetes control, last time of eye examination, and also assessed the source of awareness. Statistical analysis done by SPSS 22. A total of 341 patients were included in the study, the mean age was 54 ± 6 years old, mean duration of diabetes was 6.6 ± 4.3 years, mean level of Hb A1c was 7.97 ± 1.3. Female patients were 54.3%, 85% of patients were with type 2 diabetes, and educational level of patients was 35.2% with university and 41.6% secondary school degree. There was significant association between awareness of retinal involvement in diabetes and duration of diabetes, education level and age groups, there was significant association between awareness for need of regular eye exams and duration of diabetes, type of diabetes, education level and age groups. Awareness of diabetics toward regular eye checkup is low despite the high knowledge of the presence of eye complications in DM. In addition, there was a problem of how and when to do examination, which was more in patients with longer duration of DM, and more in type 2 DM, education level is a major determinant of awareness. Most of the patients derive their knowledge from their physicians.

Keywords: Awareness, regular eye exams, retinal involvement, diabetes patients.

Resumen

Recientemente, se estimó que los problemas visuales que afectan a las personas mayores de 50 años representan más del 80% de la ceguera en el mundo. Las instalaciones de atención oftalmológica en general están infrautilizadas, como lo demuestran los estudios que informan que casi la mitad de las personas con pérdida visual no se sometieron a controles oculares en los 5 años anteriores. La diabetes mellitus (DM) es un problema de salud creciente en todo el mundo. Este estudio tiene como objetivo evaluar y determinar la conciencia de los pacientes con DM sobre la necesidad de revisiones oculares periódicas y su conciencia de la afectación retiniana. Se trata de un estudio transversal realizado en consulta externa médica desde el 01/01/2018 al 31/12/2018. Un total de 341 pacientes con DM fueron seleccionados aleatoriamente y llenaron un cuestionario sobre las siguientes variables: sexo, edad, tipo de DM, nivel educativo, duración de la diabetes, conciencia de la afectación ocular, conciencia de la necesidad de un examen ocular regular, tratamiento actual de la diabetes. , método para controlar el control de la diabetes, la última vez que se examinó la vista, y también evaluó la fuente de conciencia. Análisis estadístico realizado por SPSS 22. Un total de 341 pacientes fueron incluidos en el estudio, la edad media fue 54 ± 6 años, la duración media de la diabetes fue 6,6 ± 4,3 años, el nivel medio de Hb A1c fue 7,97 ± 1,3. El 54,3% de los pacientes eran mujeres, el 85% de los pacientes tenían diabetes tipo 2 y el nivel educativo de los pacientes era del 35,2% con estudios universitarios y el 41,6% de estudios secundarios. Hubo una asociación significativa entre la conciencia de la participación de la retina en la diabetes y la duración de la diabetes, el nivel de educación y los grupos de edad, hubo una asociación significativa entre la conciencia de la necesidad de exámenes oculares regulares y la duración de la diabetes, el tipo de diabetes, el nivel de educación y los grupos de edad. El conocimiento de los diabéticos sobre la revisión regular de la vista es bajo a pesar del alto conocimiento de la presencia de complicaciones oculares en la DM. Además, existía el problema de cómo y cuándo realizar el examen, que era más en pacientes con DM de mayor duración, y más en DM tipo 2, el nivel educativo es un

determinante importante de la conciencia. La mayoría de los pacientes obtienen sus conocimientos de sus médicos.

Palabras clave: Conciencia, exámenes oculares regulares, afectación de la retina, pacientes con diabetes.

Introduction

Vision problems were assumed to have cost $3 trillions in 2010 and this number is expected to be more than $3.6 trillions in 2020, this cost has affected persons, health structures and countries' budget both directly and indirectly[1]. Recently, it was estimated that visual problems affecting individuals aged above 50 years account for more than 80% of blindness in world[2]. Eye care facilities in general are underutilized as evident by studies reporting that almost half of persons with visual loss did not have eye checks in the preceding 5 years[3-6].

Diabetes mellitus (DM) is a growing health problem worldwide[7,8]. More than 75% of patients with DM for more than 20 years duration have progressed to diabetic retinopathy (DR) and diabetic macular edema (DME), these are considered the most common reasons of visual loss in patients aged 15-60 years old[9], and in patients with DM correspondingly[10]. It was suggested that high-priced services or lack of insurance are the chief obstructions to eye care usage even in developed countries[11]. Additional culprit for this problem, is the ignorance of need of regular eye checks among patients, in particular the older patients. Therefore, screening of diabetic persons for signs of retinopathy during systematic predetermined eye checkups, is the best possible pathway for tackling this problem and reducing the level of complications[12]. This approach requires active assistance as well as public awareness which is an important component in the success in any screening effort.

This study aims to assess and determine the awareness of patients with DM about need of periodic eye checkups and their awareness of retinal involvement and eventual vision loss in diabetic patients.

Method

This is a cross sectional study done in medical outpatient clinic from 01/01/2018 to 31/12/2018. A total of 341 patients with DM were selected by conventional randomizations and verbal consent taken from them. Patients filled a questionnaire specifically designed for this study and included the following variables: gender, age, type of DM, educational level, duration of diabetes, awareness of eye involvement, awareness of need of regular eye exam, current diabetes treatment, method to monitoring diabetes control, last time of eye examination, and also assessed the source of awareness. Statistical analysis done by SPSS 22 frequency and percentage for categorical data, mean and SD for continuous data. Chi-square used for associations between variables, ROC curve also used to show more specific and sensitive cutoff point. P-value less or equal to 0.05 is consider significant.

Results

In our study the mean age of patients was 54 ± 6 years old with mean duration of diabetes 6.6 ± 4.3 years. Patients have a mean level of Hb A1c 7.97 ± 1.3. More patients were females (54.3%), Most of the patients had type 2 diabetes (85%). Most of the patients had a level of education (93.8%). Most of patients were using oral hypoglycemic treatment (70.7%) and 56.9% of patients state that they were compliant with treatment. Only 26.1% of patients had measured HbA1c level. Most of the patients had a duration of diabetes of less than 10 years (88.9%) and only 18.5% of patients had a formal eye exam in the last 12 months. Detailed variables are shown in table 1.

Table (1): variables distribution.

Variables	Frequency	%
Gender		
Female	185	54.3
Male	156	45.7
Type of diabetes		
Type 1 DM	51	15.0
Type 2 DM	290	85.0
Education level		
None	21	6.2
Primary School	58	17.0
Secondary School	142	41.6
University	120	35.2
What is the current diabetes treatment?		
Diet	10	2.9
Insulin and analogues	90	26.4
Oral hypoglycemic	241	70.7
Are you compliant with medications?		
No	147	43.1
Yes	194	56.9
How do you monitor your diabetes?		
Glucometer at home	193	56.6
HbA1c level	89	26.1
Lab measures of glucose	59	17.3
When was the last time you have your eyes examined?		
During last 12 months	63	18.5
During last 6 months	21	6.2
Never	257	75.4
Duration of diabetes		
less than 5 years	166	48.7
6-10 years	137	40.2
more than 10 years	38	11.1

As shown in table (2) 57% of patients were not aware for need of regular eye exams, even though 95.9% of them were aware of retinal involvement in diabetes.

Table (2): Types of awareness distribution

Variables	Frequency	%
Awareness for Need of regular eye exams		
Aware	148	43.4
Not Aware	193	56.6
Awareness of retinal involvement in diabetes		
Aware	327	95.9
Not Aware	14	4.1

As seen in figure (1) about half of the patients were in the middle age group (40-59 years). In figure (2) we can see that many patients (56.6%) lack awareness about need of regular eye exam. Sources of awareness were from physicians (20.8%), ophthalmologist (9.97%), and web (4.69%). Interestingly, none of the patients in our sample reported obtaining information from the local media.

Fig (1): Age groups distribution

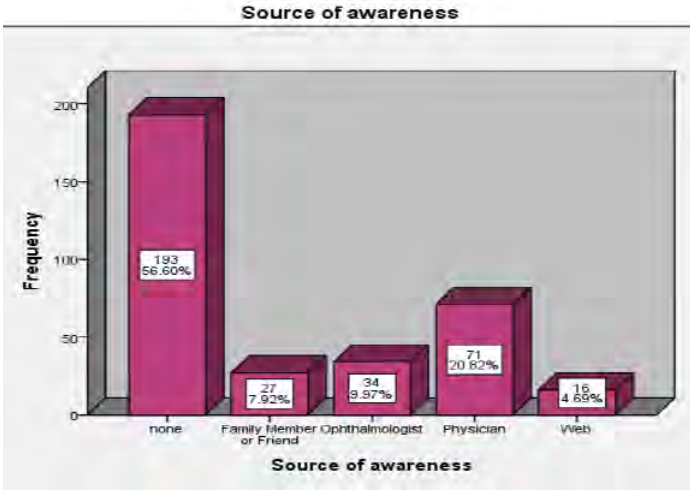
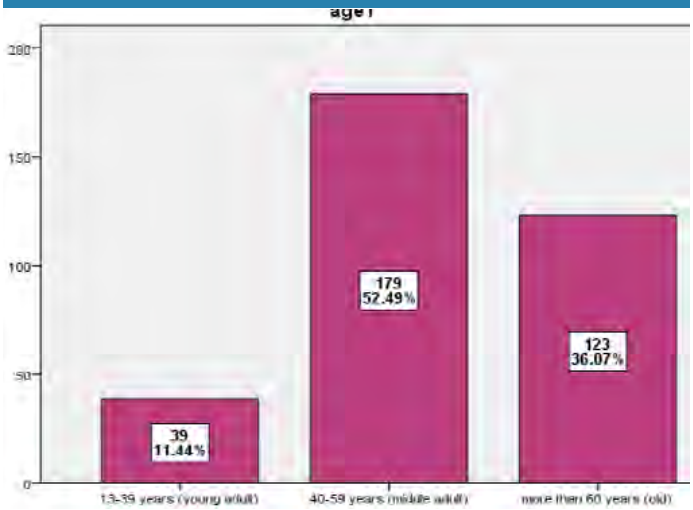


Fig (2): Source of awareness distribution



There was significant association between awareness of retinal involvement in diabetes and shorter duration of diabetes (≤ 5 years), higher education level and middle age groups (40-59 years) as seen in table (3)

Table (3): Association between awareness of retinal involvement in diabetes and variables.

Variables	Awareness of retinal involvement in diabetes		P-value
Duration	***aware***	***Not aware***	
less than 5 years	162 (49.5%)	4 (28.6%)	**0.041**
6-10 years	127 (38.8%)	10 (71.4%)	
more than 10 years	38 (11.6%)	0 (0%)	
Gender			
Male	174 (53.2%)	11 (78.6%)	0.098
Female	153 (46.8%)	3 (21.4%)	
Type of Diabetes			
1	51 (15.6%)	0 (0%)	0.24
2	276 (84.4%)	14 (100%)	
Education Level			
None	7 (2.1%)	14 (100%)	
Primary School	58 (17.7%)	0 (0%)	**0.0001**
Secondary School	142 (43.4%)	0 (0%)	
University	120 (36.7%)	0 (0%)	
Age groups			
13-39 years (young adult)	39 (11.9%)	0 (0%)	
40-59 years (middle adult)	179 (54.7%)	0 (0%)	**0.0001**
more than 60 years (old)	109 (33.3%)	14 (100%)	

P-value less than 0.05 (significant).

There was significant association between awareness for need of regular eye exams and shorter duration of diabetes, type 1 diabetes, higher education level and middle age group (40-59 years).

Table (4): Association between awareness for Need of regular eye exams and variables.

Variables	Awareness for Need of regular eye exams		P-value
Duration	***aware***	***Not aware***	
less than 5 years	69 (46.6%)	97 (50.3%)	**0.032**
6-10 years	55 (37.2%)	82 (42.5%)	
more than 10 years	24 (16.2%)	14(7.3%)	
Gender			
Male	76 (51.4%)	109 (56.5%)	0.38
Female	72 (48.6%)	84 (43.5%)	
Type of Diabetes			
1	43 (29.1%)	8 (4.1%)	**0.0001**
2	105 (70.9%)	185 (95.9%)	
Education Level			
None	0 (0%)	21 (10.9%)	
Primary School	3 (2.0%)	55 (28.5%)	**0.0001**
Secondary School	49 (33.1%)	93 (48.2%)	
University	96 (64.9%)	24 (12.4%)	
Age groups			
13-39 years (young adult)	37 (25.0%)	2 (1.0%)	
40-59 years (middle adult)	101 (68.2%)	78 (40.4%)	**0.0001**
more than 60 years (old)	10 (6.8%)	113 (58.5%)	

P-value less than 0.05 (significant).

Discussion

In this study, most of the patients had been aware that diabetes can affect the eye (94%) and this number is higher than other studies[13-16] and is comparable to those recorded in Japan and Australia[17,18]. This finding may be related to being hospital-based study. Nevertheless, more than half of those patients had no clear idea about the need of regular eye checkups in diabetics, which is clear by never having eye examination in most patients (75.4%). This may be related to the lack of well-planned programs for addressing diabetes management requirement in the public.

Patient awareness was significantly associated with shorter duration of diabetes (≤ 5 years), higher education level and middle age groups (40-59 years), this is similar to the findings of a study done in Malaysia[19]. The reason for that may be related to the change of practice among younger physicians who are exposed to electronic resources in the last decade which was reflected on patient management.

Most of the patients who have awareness derive their knowledge from a health care professional, whether physicians (20.82%) or ophthalmologists (9.97%) which emphasize the role of the doctor treating diabetes to establish a plan of action for each patient that involves regular eye checks. This finding is like that reported by other studies[20-21] who found that physician advice about the need of a regular eye checkups was the strongest predictor for visiting the ophthalmologist. This point is very important and targeting physicians treating diabetic patients is a reasonable approach to tackle the problem of limited awareness of the need of yearly eye exams. One of the peculiar finding in our study is the lack of local media input in addressing the issue of regular exams in diabetics as none of our patients have derived a knowledge on the management of diabetes from media (whether TV, radio, posters…etc.). Although Saikumar et al[22] found media as the main source in Southern India; they separated ophthalmologists and general physicians, which provided 62% with information collectively. Another study also state that family and associates were the chief sources of data (59.6%), followed by media (29.8%). These exciting results highpoints the possible power of media in distribution health letters on a general scale. It may be useful especially for simple and public conversion of health data[22].

This study shows that only 18.5% of patients had a formal eye exam in the last 12 months, which is way behind other populations like 80% in Ireland[20] and 84% in Iran[21]. This issue needs to be addressed by local and national guidelines to encourage patients with diabetes to attend eye checkups more regularly as the lack of awareness for need of yearly eye exams is high among this sample although the knowledge about diabetes eye complications is high.

This study shows that the level of education strongly predicts awareness of eye complications and need of regular eye exams. This has been supported in other studies like in Iran[21] and Oman[16] and refuted in other countries like Ireland[20] and this difference may be related to other factors like sample selection, place of study and other factors.

In current study, we found that awareness is more in patients with less than 5 years duration of diabetes unlike other studies stated that patients with 5 to 10 years duration are more aware and educated on the need of regular eye exams[14,23]. This difference may be explained by the fact that new patients in the era of the internet tend to ask questions and search for their diseases. Additional point is that diabetic retinopathy can develop within 5 years of illness, and it is not just a long standing complication[24]. And during early stages of DM, Huang et al. stated that the most important cause of DR is unawareness to regular examination[25]. It is very important to encourage early checkup and screening of eye in first 10 years of DM[26]. In current study 96% of patients awareness of retinal involvement in diabetes while 56% of patients' awareness for need of regular eye exams, this is similar Iranian study state that accessing care centers and ophthalmologists does not seem to be a problem; eye care is simply not a high health priority among people. However, they do seek care when symptoms reach a critical stage. Muecke et al. found that 43% of participants understood they needed to seek eye care in case of a problem with eyesight[26]. Plain language should be used by health workers or through media while informing diabetic participants about their eye care needs, especially for elder participants and ones with lower literacy.

Conclusion

Awareness of diabetics toward regular eye checkup is low despite the high knowledge of the presence of eye complications in DM. In addition, there problem of how and when to do examination, which more in patients with longer duration of DM, and more in type 2 DM, education level plays a major determinant of awareness. Most of the patients derive their knowledge from their physicians.

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