



CODEN [USA]: IAJ PBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.2552642>Available online at: <http://www.iajps.com>

Research Article

**AWARENESS OF OCULAR DISORDER AMONG DIABETIC
PATIENTS IN SAUDI ARABIA**Mona Abdulaziz M Alanazi^{1*}¹ Northern Border University, Arar, Saudi Arabia**Abstract:**

Background: Raising the awareness about diabetes eye complications were shown to be vital for the early detection and management. In this study, we thought to assess the state of knowledge of diabetic patients about ocular diabetes complications.

Aims: The aim of our study is to determine the prevalence of Diabetes and to assess the presence of ocular diabetic conditions among the Saudi population.

Methods and Material: A cross-sectional descriptive study was conducted among 169 diabetic patients attending the diabetes centers in Saudi Arabia during the period from January to October 2018. Participants signed a written informed consent, then interviewed using a structured questionnaire including Demographic data, the disease duration, the place of diagnosis, the source of knowledge of the ocular complications, the reason for the visual check-up, can diabetes affect the eye? Can well-controlled diabetic patients develop ocular complications? Methods of treatment, the frequency of visual check-up, and the types of ocular complications.

Results: Out of 169 subjects 53.8% were males, their ages ranged from 20-70 years, 46.8% had ocular complications, 66.9% were aware that diabetes can affect the eye, 50.3% knew that well-controlled diabetic patients can develop ocular complications, 27.8% thought that annual visits are necessary for diabetic patients, 25% were aware of the types of ocular complications, and 53.3% were mindful of the fact that good diabetes control is important to prevent ocular complications.

Conclusions: There is a significant gap of knowledge regarding ocular diabetes complications among diabetic patients in Saudi Arabia; measures to raise the awareness are highly needed.

Keywords: Diabetic Patient, Ocular Diseases, Awareness.

Corresponding author:

Mona Abdulaziz M Alanazi,

Northern Border University, Arar, Saudi Arabia.

E-mail; lmooah14@gmail.com

QR code



Please cite this article in press Mona Abdulaziz M Alanazi., *Awareness of Ocular Disorder Among Diabetic Patients In Saudi Arabia.*, Indo Am. J. P. Sci, 2019; 06(01).

INTRODUCTION:

Diabetes mellitus is a chronic disabling disease with a lot of mortality and morbidity; it affects the macro vascular circulation leading to myocardial infarction, stroke, and peripheral arterial disease and micro vascular circulation leading to retinopathy, nephropathy, and neuropathy. Well controlled diabetic patient is current blood glucose level is within established rang of more than 50 mg per dl, less than 200 mg per dl, HbA1c less than 7%. Worldwide the prevalence was 2.8% in the year 2000 and is projected to be 4.4% in 2030 [1]. The growing obesity prevalence, bad eating habits, and sedentary lifestyle are important factors in the upsurge of this serious disease [2]. The Kingdom of Saudi Arabia is among the countries with the highest prevalence of diabetes mellitus (23.7%). There were 32.4 million blind and 191 million vision impaired in the year 2010 [4]. The prevalence of blindness was estimated to be 13.9% of a primary health care attendant in Aljouf Saudi Arabia [5] with diabetes retinopathy accounting for 20.9%, and cataract amounting to 29.1% of cases. Researchers from Madinah concluded that 36.1% of patients attending a diabetic clinic had retinopathy [6].

Ocular complications of diabetes mellitus include diabetes retinopathy, cataract, closed and open angle glaucoma, decreased corneal sensitivity and healing, and cranial nerve palsies; diabetes retinopathy is the most common ocular complication and the leading cause of blindness in the Western World. The macular which is very vascular area can be affected by diabetes through the disruption of the retinal-blood barrier leading to macular edema with deleterious effects on vision [7,8]. If detected early diabetic retinopathy is preventable, in type 2 diabetes mellitus up 25% of patients have diabetes retinopathy and 60-80% of patients develop retinopathy fifteen years after the diagnosis of vision-threatening retinopathy observed in patients with delayed referral to ophthalmology for treatment [9,10]. The best way of controlling a chronic disease and preventing its complications is the provision of the essential knowledge through health education. Raising the awareness of diabetes retinopathy is vital to aid early diagnosis and management of this potentially blinding diabetes complication [11,12].

In spite of the fact that diabetes mellitus is a major health problem, and the ocular complications are a leading cause of blindness data about the knowledge and attitude of the patients about ocular diabetes complications are scarce. Thus, we conducted this research to study the level of awareness of diabetic patient regarding ocular complications in Saudi Arabia.

SUBJECTIVE AND METHODS:

This cross-sectional Hospital-based study was conducted among patients with type 2 diabetes mellitus at the diabetes centers in Saudi Arabia during the period from January to October 2018. One hundred and fifty patients with the diagnosis of diabetes mellitus based on the American Diabetes Association [13] were invited to sign a written informed consent, then a face to face interview was carried out by the researcher using a five-point structured questionnaire on knowledge and attitude of diabetic patients, a detailed literature search was conducted on similar topics to prepare the questionnaire [14,15]. Information collected include: Socio-demographic data, duration of diabetes mellitus, type and length of the eye complications, and the patients awareness if diabetes mellitus can lead to ocular complications, if patients with controlled diabetes get eye complications, types of diabetes eye complications, the source of knowledge of the patients about diabetes ocular complications, the frequency of routine ophthalmology referral of diabetic patients, the treatment of ocular complications, and the reason for the visual check-up (if the patient was referred for check-up by a Doctor, or only after he feels difficulties with his vision. The questions were in yes or no and didn't know, and others with four or five options for the patients to choose from them. The total score of each patient was obtained then multiplied by twenty to make the score out of 100. The Statistical Package for Social Sciences was used for data analysis; the chi-square test was used to compare males and females, and different age groups regarding the state of knowledge and attitude of the ocular diabetes complications. The data were presented as percentages and mean standard deviation unless otherwise specified, a P-value of < 0.05 was considered significant.

RESULTS:

They were 169 patients with the diagnosis of diabetes mellitus, their ages ranged from 20-75 years with a mean of 48 ± 9.8 years, 53.8% were males, the duration of diabetes mellitus was < 5 years in 52.1%, 5-10 years in 34.3%, and > 10 years in 13.6% of patients, ocular complications was evident in 46.8% of them. (Table 1)

In the present data, ocular complications were diagnosed in the hospital during follow-up in 60.4% of patients, while 39.6% of patients experienced visual difficulties before the diagnosis was made. In the current study, 33.1% of patients were not aware that diabetes mellitus can affect vision, 27.2% of patients were not mindful of the fact that right controlled diabetic patients can get eye problems. Regarding diabetes complications 48.5% were aware

of cataract, 25.5% were aware of glaucoma and retinopathy, while 6.5% of patients were aware of macular degeneration. The source of knowledge was doctors in 77.7%, 7.7% in family members and friends, and the Television in 6.5%. In the present study regarding the routine check-up for diabetic retinopathy, the answer was six months in 23.3% of patients, yearly in 27.8%, two yearly in 29.6%, after vision defect in 13.6%, and 7.7% cannot guess the answer. Regarding the knowledge regarding ocular complications treatment the answers were surgery in 20.1%, good diabetes control in 53.3%, laser therapy in 13%, and 13% thought that they don't know the answer. The current data showed that the reason for eye checkup was routine Doctors referral in 36.1% while 66.9% felt visual difficulties before diagnosis.

(Table 2)

In the present study, 65.9% of men vs. 67.9% of women were aware that diabetes mellitus can affect the eye with no significant statistical difference, 73.6% of males and 71.7% of females knew that well-controlled diabetic patients can get eye problems with no significant statistical difference. It is interesting to show that more than two-thirds of males (69.2%) with ocular complications were discovered during the routine check-up at the Hospitals while 50% of females had difficulties at home before they went to the Hospital. Table 3 illustrated other gender differences regarding ocular diabetes complications. Table 4 illustrated number of type 1 and type 2 diabetes, difference in ocular complication between type 1 and type 2 diabetes.

Table No 1: The basic clinical characteristics of 169 diabetic patients

Character	No%
Gender	
Males	91 (53.8%)
Females	78 (46.2%)
Age	
21-40	77 (45.5%)
41-60	53 (31.3%)
>60	39 (23.1%)
Duration of diabetes	
<5 years	88 (52.1%)
5-10 years	58 (34.3%)
>10 years	23 (13.6%)
Ocular complications	
Present	79 (46.8%)
Not present	90 (53.2%)

Table 2: Knowledge of ocular complications among diabetic patients

Character	No%
Identification of ocular condition	
Hospital	67 (60.4%)
Experiencing difficulty at home	102 (39.6%)
Aware that DM can affect the eye	
Yes	113 (66.9%)
No	56 (33.1%)
People controlled DM get eye problems	
Yes	85 (50.3%)
No	84 (49.7%)
Ocular complications	
Cataract	82 (48.5%)
Glaucoma	38 (22.5%)
Retinopathy	38 (22.5%)
Macular degeneration	11 (6.5%)
Know about DM eye complication	
Doctor	73 (43.2%)
Ophthalmologist	59 (34.5%)
Friends	13 (7.7%)

Television	11(6.5%)
Family members	13 (7.7%)
Checkups frequency	
After six months	36 (21.3%)
Yearly	47 (27.8%)
Two years	50 (29.6%)
After vision defects	23 (13.6%)
I do not know	13 (7.7%)
Ocular disease treatment	
Eye surgery	34 (20.1%)
Good control of DM	90 (53.3%)
Laser therapy	22 (13%)
I do not know	22 (13%)
Reason you went for an eye checkup?	
I was referred by a doctor	61 (36.1%)
I visited because eye problem	108 (66.9%)

Table 3: comparison between genders regarding knowledge of ocular diabetes complications

Character	Males = 91	Females = 78	P-value
Identification of ocular disease			0.011
Hospital	63 (69.2%)	39 (50%)	
Experiencing difficulty at home	28 (30.8%)	39 (50%)	
Aware that DM can affect the eye	60 (65.9%)	53 (67.9%)	0.781
People with controlled DM get eye problems	67 (73.6%)	56 (71.7%)	0.790
Ocular complications			0.940
Cataract	46 (50.5%)	36 (46.1%)	
Glaucoma	20 (21.9%)	19 (24.3%)	
Retinopathy	21(23%)	17 (21.7%)	
Macular degeneration	4 (4.3%)	6 (7.6%)	
Checkup frequency			0.940
Every six months	20 (21.9%)	15 (19.2%)	
Yearly	25 (27.4%)	22 (28.2%)	
Two years	27 (29.6%)	24 (30.7%)	
After vision defect	11(12%)	12 (15.6%)	
I don't know	8 (8.7%)	5 (6.4%)	0.940
Ocular disease treatment			
Eye surgery	18 (19.7%)	16 (20.5%)	
Good diabetes control	52 (57.1%)	38 (48.7%)	
Laser therapy	14 (15.3%)	8 (10.2%)	
I do not know	7 (7.6%)	15 (19.2%)	

Table 4: number of type 1 and type 2 diabetes, difference in ocular complication between type 1 and type 2 diabetes.

Type of diabetes mellitus	No ocular complication	Less than 5 years ago	More than 5 years ago	Total
Type 1	35	18	2	55
Type 2	54	40	20	114
Total	89	58	22	169

DISCUSSION:

The kingdom of Saudi Arabia is facing a Tsunami of diabetes mellitus and is ranked among countries with the highest prevalence of this morbid disease [3]; the number is expected to increase due to obesogenic diet and lack of physical exercise. The potentially blinding ocular diabetes complications are not uncommon [5,6]. In the present study only 66.9% of diabetic patients were aware that diabetes mellitus can affect the eye and is similar to a study conducted in the United States of America [16] (65%) lower rates than this study was found in India [17] and Australia [18], a higher rate of awareness was observed in a study conducted in Turkey [19] and concluded that 88.1% of patients with diabetes mellitus were aware that diabetes mellitus is a cause of eye problems. The present data showed that 50.3% of patients thought that patients with well-controlled diabetes mellitus might suffer from visual problems in accordance with the previous study in which 39.8% of diabetic patients knew that patients with well-controlled diabetes mellitus might get eye complications. In the current study only 27.8% stated that annual eye check-up is needed for diabetic patients, 7.7% choose do not know answer, 29.6% thought that the proper check-up for diabetes complications is two-yearly, another 13.6% felt that they should have check-up only when they have eye problems, while 21.3% thought that they should visit the ophthalmologist for visual check-up every six months, similarly previous studies [21] observed poor knowledge among diabetic patient regarding the frequency of regular visual check-up, the rate of knowledge is lower than a survey conducted in India [14] and concluded that 90% of patients with diabetes mellitus were aware of the regular visual check-up. In the present study no significant statistical differences were observed between gender regarding the knowledge of ocular diabetes complications, similar researchers from Ghana [20] observed any differences between women and men regarding the knowledge of diabetic patients regarding ocular complications.

In the present study 77.7% of patient who were aware of diabetes eye complications got the information from the general practitioner and ophthalmologist which is higher than a survey carried out in Malaya [21] (52.6%), the current data showed that only 7.7% of diabetic patients have heard about diabetes eye complications from the Radio, Television, and other mass media. Further, 7.7% obtain their information from family members these figures were lower than that reported by the previous study. The above result reflects the effectiveness of the health care in the Kingdom of Saudi Arabia regarding diabetes complications and the need to enforce health

education through mass media.

This study presented a sample of Saudi diabetic patients with worrisome results relating to the knowledge of ocular complications, raising the awareness of the public about diabetes mellitus especially these potentially blindly complications is highly needed, using posters at health centers, health education sessions, and incorporating educational programs in the social network to integrate health and social pathways could prevent and delay these serious diabetes eye complications.

The present study had many limitations: The small size of the survey sample, the reliance on a self-reported questionnaire which is more prone to subjectivity, so generalization cannot be insured, further larger multi-centers studies are needed to investigate the factors behind the lack of knowledge about diabetes ocular complications.

REFERENCES:

1. Al-Ghadyan AA. Diabetic retinopathy: An update. *Saudi J Ophthalmol.* 2011;25: 99-111.
2. Staden DV, Deutshmann LP, Ganas S, Manickam M, Manillal A, Ndlovu NS, Nkosi GN, Oduntan OA. Knowledge of diabetes mellitus and its ocular complications amongst diabetic patients attending private and public hospitals in eThekweni Municipality, KwaZulu-Natal province, South Africa. *African Vision and Eye Health,* 2015; 74, (1) 6.
3. Khuwaja AK1, Lalani S, Dhanani R, Azam IS, Rafique G, White F. Anxiety and depression among outpatients with type 2 diabetes: A multi-centre study of prevalence and associated factors. *DiabetolMetabSyndr.* 2010; 20: 2-72.
4. Khairallah M, Kahloun R, Bourne R, Limburg H, Flaxman SR, Jonas JB, Keeffe J, Leasher J, Naidoo K, Pesudovs K, Price H, White RA, Wong TY, Resnikoff S, Taylor HR; Vision Loss Expert Group of the Global Burden of Disease Study. Number of People Blind or Visually Impaired by Cataract Worldwide and in World Regions, 1990 to 2010. *Invest Ophthalmol Vis Sci.* 2015;56(11):6762-9.
5. Al-Shaaln FF, Bakrman MA, Ibrahim AM, Aljoudi AS. Prevalence and causes of visual impairment among Saudi adults attending primary health care centers in northern Saudi Arabia. *Ann Saudi Med.* 2011;31(5):473-80.
6. El-Bab MF, Shawky N, Al-Sisi A, Akhtar M. Retinopathy and risk factors in diabetic patients from Al-Madinah Al- Munawarah in the Kingdom of Saudi Arabia. *ClinOphthalmol.*

- 2012;6:269-76.
7. Al-Ghadyan AA. Diabetic retinopathy: An update. *Saudi J Ophthalmol.* 2011;25: 99-111.
 8. Chew R. The optometrist's role in diabetes. 2010 Available at: <http://www.optometricmanagement.com/articleviewer.aspx?articleid=100510>
 9. Xiong X. Gestational diabetes mellitus: Prevalence, risk factors, maternal and infant outcomes. *Intern J Gynaecol Obstetr.* 2003;75:221-228.
 10. The U.S. Department of Health and Human Services. Guiding principles for diabetes care: For health education professionals. 2009. Available from: <http://www.slideshare.net/UtaiSukviwatsirikul/guidprin-hc-eng>.
 11. Deniz C, Aliskan, Oya Ozdemir, Esin Ocaktan, Aysun Idil. Evaluation of awareness of diabetes mellitus and associated factors in four health center areas. *Pat Edu Counsel.* 2006;62:142-147.
 12. Cetin EN, Zencir M, Fenkci S, Akin F, Yildirim C. Assessment of awareness of diabetic retinopathy and utilization of eye care services among Turkish diabetic patients. *Prim Care Diab.* 2013;7:297-302.
 13. Katon W: Depression and diabetes: unhealthy bedfellows. *DepressionAnxiety.* 2010; 27: 323-326.
 14. Rani PK, Raman R, Subramani S, Perumal G, Kumaramanickavel G, Sharma T. Knowledge of diabetes and diabetic retinopathy among rural populations in India, and the influence of knowledge of diabetic retinopathy on attitude and practice Rural and Remote Health 2008.
 15. Munoz B, O'Leary M, Fonseca-Becker F, et al. et al. Knowledge of diabetic eye disease and vision care guidelines among Hispanic individuals in Baltimore with and without diabetes. *Arch Ophthalmol.*2008;126(7):968-974.
 16. Merz CN, Buse JB, Tuncer D, Twillman GB. Physician attitudes and practices and patient awareness of the cardiovascular complications of diabetes. *J Am Coll Cardiol.* 2002;40(10):1877-1881.
 17. Dandona R, Dandona L, John RK, McCarty CA, Rao GN. Awareness of eye diseases in an urban population in southern India. *Bulletin of the World Health Organisation.* 2001;79(2):96-102
 18. Livingston PM, Wood CA, McCarty CA, Harper CA, Keefe JE, Taylor HR. Awareness of diabetic retinopathy among people who attended a diabetic retinopathy screening program. *Med J Aust.*1998;169(2):117.
 19. Cetin EN, Zencir M, Fenkçi S, Akın F, Yıldırım C. Assessment of awareness of diabetic retinopathy and utilization of eye care services among Turkish diabetic patients. *Prim Care Diabetes.* 2013; 7(4):297-302.
 20. Godwin O. Oveneri-Ogbomo, Samuel Abokyi, G. A. Koffuor Eric Abokyi. Knowledge of diabetes and its associated ocular manifestations by diabetic patients: A study at Korle-Bu Teaching Hospital, Ghana. *Niger Med J.* 2013 Jul-Aug; 54(4): 217-223.
 21. I Tajunisah, PS Wong, LT Tan, P Rokiah, and SC Reddy. Awareness of eye complications and prevalence of retinopathy in the first visit to eye clinic among type 2 diabetic patients. *Int J Ophthalmol.* 2011; 4(5): 519-524.