

Awareness of diabetic retinopathy among diabetic patients

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Abstract

Objectives: To assess the awareness of diabetic patients about diabetic retinopathy.

Method: The cross-sectional study was conducted at the Ophthalmology Department, Fauji Foundation Hospital, Rawalpindi, Pakistan, from April 2018 to April 2019, and comprised diabetic patients of either gender aged 21-80 years. A pre-tested semi-structured questionnaire was used to collect data on socio-demographic, diabetes and diabetic retinopathy characteristics. Fundoscopic examination was done, and the presence and stage of diabetic retinopathy were documented. Data was analysed using SPSS 20.

Results: Of the 132 subjects, 9(6.8%) were male and 123(93.2%) were females. The majority 64(48.5%) was aged 61-80 years. Overall, 74(56.1%) patients were aware that diabetes could affect their eyes, 57(43.2%) were never diagnosed with diabetic retinopathy, 76(57.6%) had gained information about diabetic retinopathy from ophthalmologists, 61(46.2%) and 29(22%) respondents reported that eyes should be examined 'only when vision is affected' and 'every 6 months' respectively, 98(74.2%) said the biggest barrier in getting eyes examined earlier was 'lack of knowledge', 23(17.4%) believed surgery was done for diabetic retinopathy treatment and 33(25%) believed that surgery, laser and injections all can be used. Significant relationship of diabetic retinopathy was found with duration of diabetes and the general health status ($p < 0.05$).

Conclusion: Though more than half the patients were aware that diabetes could affect the eyes, awareness of diabetic retinopathy and its consequences was low.

Keywords: Awareness, Diabetes mellitus, Diabetic retinopathy, Fundus examination. (JPMA 71: 651; 2021)

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Introduction

The prevalence of diabetes mellitus (DM) is increasing globally in both developed and developing countries, and it is predicted that the number of diabetic patients will be doubled by 2025,¹ rendering it a major public health problem.

According to the diabetes national survey in 2010, DM prevalence was 12% in Pakistan.² Pakistan is currently placed 5th in terms of DM cases.³ A large proportion of Pakistanis remain undiagnosed until manifestation of complications, like renal disorders and eye diseases.³

More than two-thirds (70%) of diabetics live in lower and middle-income countries (LMICs).⁴ Pakistan is a resource-restrained country that is ranked as an LMIC by the World Bank.⁵

Socio-demographic determinants, like poor health knowledge, are the reason for the epidemiological shift of DM in LMICs.¹ Evidence from knowledge, attitude and practice (KAP) studies indicates there is an urgent need to enhance DM awareness, early diagnosis and disease

management.⁶

DM is a leading cause of blindness globally due to its ocular complications.⁷

The most common microvascular complication of DM is diabetic retinopathy (DR) which is the foremost cause of blindness in people of working age and patients aged 55 years or above.⁸

Key risk factors leading to the development and progression of DR are long-term DM, inadequate glycaemic control, hypertension (HTN), dyslipidaemia, nephropathy and gender. Control of the modifiable risk factors through periodic eye examinations and appropriate interventions has been shown to impede the advancement of DR.⁹

Prevalence of DR among diabetics is different worldwide. Several studies have stated DR prevalence in the United States 28.5%,¹⁰ the United Kingdom 30.3%,¹¹ Australia 32.2%,¹² Japan 39.6%,¹³ Malaysia 39.3%¹⁴ and Jordan 46.1%.¹⁵

Knowledge of DR in diabetics has been variously reported as low as 37% in Australia.¹⁶

A study in Brazil stated that 81% diabetics had some knowledge about diabetic ocular changes, but they did

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not have specific information.¹⁷ In Kathmandu, 50% diabetics were not aware of DR,¹⁸ and among diabetics in rural India, 37.1% were aware of DR.¹⁹

Less work has been done in Pakistan to assess the awareness of DR in diabetics. The current study was planned to assess the awareness of diabetics about DR.

Subjects and Methods

The cross-sectional study was conducted at the Ophthalmology Department, Fauji Foundation Hospital (FFH), Rawalpindi, Pakistan, from April 2018 to April 2019. After approval from the institutional ethics review committee, the sample size was calculated using the single proportion equation in the Raosoft calculator²⁰ with confidence interval 95%, margin of error 8.5% and population size visiting FFH Ophthalmology Department as 10,000. The sample was raised using convenience sampling technique from among the diabetics of either gender aged 21-80 years presenting in the out-patient department (OPD).

After taking written informed consent from the patients, they were interviewed with the help of a pre-tested semi-structured questionnaire. Fundoscopic examination was done.

Data was analysed using SPSS 20. Descriptive statistics were calculated and chi-square test of significance was applied. $P < 0.05$ was taken as significant.

Results

Of the 132 subjects, 9(6.8%) were male and 123(93.2%) were females. The majority 64(48.5%) was aged 61-80

years followed by 62(47%) in the 41-60 years age group, and 2(1.5%) aged 21-40 years. Overall, 84(64%) patients had an income of less than Pak Rupee (PKR)20,000, and only 6(4.5%) reported a monthly income >PKR50,000 per month. Further, 55(41.7%) participants classified their general health state as 'poor' and 47(35.6%) as 'fair', with only 9(7%) describing it as being 'very good' or 'excellent'. Overall, only 7(5.3%) subjects had university-level education and 105(79.5%) had not gone beyond the primary level. The duration of DM was >10 years in 65(49.2%) cases, 53(40.2%) were aware of fasting blood glucose (FBG) levels and 55(41.7%) were aware of random blood glucose (RBG) levels. Vision acuity had dropped in 105(79.5%) cases which led to a visit to the eye specialist (Table-1).

Overall, 74(56.1%) patients were aware that DM could affect their eyes, 76(57.6%) had gained information about DR from ophthalmologists, 61(46.2%) and 29(22%) respondents reported that eyes should be examined 'only when vision is affected' and 'every 6 months' respectively, 98(74.2%) said the biggest barrier in getting eyes examined earlier was 'lack of knowledge' (Table-2), 23(17.4%) believed surgery was done for DR treatment and 33(25%) believed that surgery, laser and injections all can be used.

About 46 of the total, 53(40.2%) reported to be aware about all and 39(29.5%) about none of the systemic complications.

Overall, DR was never diagnosed in 57(43.2%) patients (Table-3). Significant relationship of DR was found with duration of diabetes and the general health status ($p < 0.05$).

Table-1: Diabetes mellitus-related characteristics.

		n	%
Duration of Diabetes	Less than 5 Years	28	21.2
	5-10 Years	39	29.5
	More than 10 Years	65	49.2
Control of diabetes	Oral Medicine	50	37.9
	Insulin Injection	54	40.9
	Both Oral Medicine & Insulin	20	15.2
	Exercise	7	5.3
	Dietary Restriction	1	.8
Check blood glucose levels	Weekly	66	50.0
	Twice a month	41	31.1
	Monthly	25	18.9
Awareness of fasting blood glucose levels		53	40.2
Awareness of random blood glucose levels?		55	41.7
Awareness of funduscopy after diagnosis of diabetes.	Doctor advised to see eye specialist for funduscopy	14	10.6
	Relative/friend advised to see eye specialist for funduscopy	2	1.5
	Self-awareness to see eye specialist for funduscopy	11	8.3
	Vision acuity dropped leading to visit eye specialist	105	79.5

Table-2: Patient awareness of diabetes-related complications and how to deal with them.

		n	%
Aware of Systemic Complications caused by Diabetes like	Diabetic Retinopathy	13	9.8
	Diabetic Nephropathy	5	3.8
	Diabetic Foot	22	16.7
	All of these	53	40.2
	None	39	29.5
Aware of ocular complaints caused by diabetes?	Yes	74	56.1
Persons with diabetes go for regular fundoscopy?	Yes	93	70.5
Who informed you about Diabetic Retinopathy?	General physician	32	24.2
	Nurse	3	2.3
	Ophthalmologist	76	57.6
	None of the above	21	15.9
Frequency of eye examination	Only when vision is affected	61	46.2
	Every 6 months	29	22.0
	Yearly	18	13.6
	Don't know	24	18.2
What, in your opinion, was the biggest barrier in getting eye screening done earlier?	Lack of knowledge	98	74.2
	Lack of access to eye care	13	9.8
	Timing constraints/job	16	12.1
	Fear of learning bad news	3	2.3
	Not applicable	2	1.5

Table-3: Diabetic retinopathy in patients.

Is Diabetic Retinopathy present?	Present	75	56.8
	Not present	57	43.2
Stage of Diabetic Retinopathy	Not present	57	43.2
	Mild NPDR	23	17.4
	Moderate NPDR	14	10.6
	Severe NPDR	12	9.1
	PDR	26	19.7
Is maculopathy present?	Yes	54	40.9
	No	78	59.1

PDR: Proliferative diabetic retinopathy; NPDR: Non-proliferative diabetic retinopathy.

Discussion

The primary goal of the study was to ascertain and quantify awareness levels of DM and related complications and to determine if people practise any precautions in this regard.

It is important to note that the study comprised patients reporting to an eye department. Awareness levels of such patients, particularly from the point of view of ocular complications, should reasonably be expected to be higher than those in the general population.

In the current study, 65.2% patients had awareness of systemic complications caused by DM. However, awareness about ocular complications was lower at 56.1%. Knowledge of specific complications was far lower, with only 50% patients showing DR awareness.

Likewise, only 44% knew about diabetic nephropathy. Awareness levels about diabetic foot were higher at 56.9%. In total, 40.2% patients reported knowledge of all three of these complications. Alarming, as much as 29.5% had no knowledge of these systemic complications. These findings are consistent with a study in which 45.3% patients knew about ocular complications caused by DM.²¹

In the current study, most patients had awareness of DR on the basis of guidance from an ophthalmologist (57.6%), while 24.2% had got the information from a general practitioner (GP) and only 2.3% had it from a nurse. This is in contrast with earlier findings that the main source of referral to the ophthalmologist was GPs (47.3%).²² This portrays need for professional counselling by the GPs. Additionally, fundoscopy should be done in all patients diagnosed with type 2 diabetes on their initial visit to an ophthalmologist, as an alarming 79.5% patients in the current study had reported to the ophthalmologist when their vision had already dropped.

The current study explored the biggest barrier against effective eye screening that may lead to improved ocular function. The majority (74.2%) of patients blamed lack of knowledge, 9.8% blamed lack of access to appropriate eye care and 12.1% to time constraints/jobs in this regard. For 2.3% patients, the fear of bad news also contributed which should be handled with appropriate counselling by GPs and ophthalmologists.

Another finding of the current study is an overwhelming lack of awareness about the frequency of ocular examination that is recommended for diabetic patients, with 46.2% insisting that such examination was needed in case of reduced visual acuity. Another 18% had no idea about the frequency of ocular examinations needed. These numbers are to be compared with 56.8% of the subjects who actually had DR with 19.7% having proliferative DR (PDR) which shows negligence at the levels of GPs and ophthalmologists. This is consistent with earlier findings showing 70% subjects with understanding that eye screening was not required if diabetes was under control and ocular examination was needed only in cases where visual acuity might be reduced.²³

The level of ignorance regarding diabetes was far more than what was assumed before conducting the study, with almost 50% patients having diabetes >10 years, but around 60% of these patients were not aware of normal FBG and RBG ranges. A study conjectured that the reason for these levels of ignorance about diabetes is rooted in the care-giver's focus on treatment rather than diabetes education. As suggested, this needs proper statistical examination, but it certainly is a plausible hypothesis.⁸

In Pakistan, there is a lack of an established standard healthcare programme and referral guidelines for DM. A major reason for this ignorance in our population is possibly lack of education. There is evidence that almost 80% patients were not formally educated beyond the primary level. Unsurprisingly, a study also highlighted the lack of formal education as a major concern.²⁴

The findings of the current study clearly suggest that there is an immediate necessity for health education to increase the awareness and knowledge about DR. Such an increased awareness should lead to regular ophthalmic examinations that should result in early diagnosis and treatment of DR.

Conclusion

There was a lack of proper information among people as almost half the sample was unaware of the fact that DM causes ocular problems like DR. Majority of the patients had only primary level education which was also a significant barrier contributing to the lack of awareness.

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