

## FREQUENCY OF DIABETIC RETINOPATHY IN DIABETES MELLITUS PATIENTS

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## ABSTRACT

**Background:** Diabetes mellitus is the most common endocrine disorder in the world and the incidence of diabetes mellitus is increasing day a day. Among its several vascular complication, retinopathy is devastating microvascular complication and leading cause of preventable acquired blindness. **Objective:** Aim of this study was to determine the frequency of diabetic retinopathy among newly diagnosed type II diabetic patients presents at Jinnah Hospital Lahore. **Material and Method:** Total 200 patient with recently diagnosed type II diabetes mellitus with age range from 35-65 years were enrolled in the study. Study was conducted at Diabetic OPD, Jinnah Hospital Lahore in 6 months duration from August 2017 January 2018. Participants were also interviewed and examined in order to determine demographic characteristics and medical history. Patients with type I diabetes, hypertension and h/o previous eye surgery were excluded from the study. Fundoscopic examination was performed by consultant ophthalmologist after taking informed consent on all the patients and presence or absence of retinopathy. **Results:** There were total 200 patients in this study with age ranges age ranges from 35-65 years. The mean age was  $46.41 \pm 8.20$  years. In our study we found that majority of the patients i.e. 88 (44%) were between 46 to 55 years of age. Out of 200 cases, 125 (62.5%) were male and 75 (37.5%) were females with male to female ratio of 1.6:1. After investigating we found that 138 (69%) patients were having diabetes for more than 4 months duration. 101 (50.5%) diagnosed diabetic patients were having monthly income more than twenty thousand. All the selected patients were then undergone fundoscopic examination performed by consultant ophthalmologist for diagnosis of diabetic retinopathy and we concluded that diabetic retinopathy was present in 41 (21.5%). **Conclusion:** This study concluded that the frequency of diabetic retinopathy in recently diagnosed type II diabetes mellitus was 21.5% which is relatively high and emphasizes the detailed ophthalmic examination of each patient at the time of diagnosis of diabetes.

**KEYWORDS:** Diabetes mellitus type 2, recently diagnosed, retinopathy.

## INTRODUCTION

Type II Diabetes Mellitus is a chronic progressive disease which is marked by hyperglycemia and several complication.<sup>[1]</sup> Currently 285 million people are affected with DM II globally and this figure will reach 439 million by the year 2030 as per estimation.<sup>[2]</sup> Currently Pakistan is at seventh number and will be at fifth position by the year 2025.<sup>[3]</sup> Previous surveys conducted in Pakistan showed that more than 10% of adult population had type 2 diabetes.<sup>[4]</sup> Long standing DM is associated with macro- and micro-vascular problems, pathological changes of neurons, skin and lens which ultimately lead to Long-term complications i.e. heart disease, strokes, peripheral neuropathy, diabetic retinopathy where eyesight is affected, kidney failure which may require dialysis, and poor circulation in the limbs leading to amputations. The degree of hyperglycemia and duration of diabetes are often linked

with the development of these complications.<sup>[5]</sup> Diabetic retinopathy is the most common and devastating micro-vascular complication of diabetes, which is producing severe visual loss, and worldwide data also favors this assumption that in the future the diabetic retinopathy will be the leading cause of blindness. According to a literature Diabetes is leading cause of visual impairment in Western and Asian countries.<sup>[6]</sup> The exact mechanism by which diabetes causes retinopathy remains still unclear, but several ideas have been proposed to explain the typical course and history of the disease.<sup>[7]</sup> One of them is hyperglycemia affects blood vessel formation in the retina of the eye, can lead to visual symptoms, reduced vision, and potentially blindness.<sup>[8]</sup> It is observed that the loss of vision due to DR can be delayed with timely detection and appropriate therapy.<sup>[10]</sup> As there was controversy in previous results and also the type II diabetes mellitus goes on increasing in our population

with majority of them are uneducated, belong to poor socioeconomic status and remain unaware of their diabetes due to unavailability of easily approachable health care facilities which result in their late presentation with its long term micro vascular complications, so the purpose of this study was to determine frequency of diabetic retinopathy in newly diagnosed type II diabetes patients in local population. This study would not only provide the data on the magnitude of problem in our local population but also would help us to screen these high risk patients. Also public awareness and intensive periodic educational programme on national and regional levels could be arranged for all newly diagnosed type 2 diabetic patients to spread awareness and education of disease, its complications, detailed ophthalmic examination at the time of diagnosis of diabetes and periodic screening to detect retinopathy early so that early therapeutic measures could be taken to prevent its further complications.

## METHODOLOGY

Total 200 patient with recently diagnosed type II diabetes mellitus with age range from 35-65 years were enrolled in the study. Study was conducted at Diabetic OPD, Jinnah Hospital Lahore in 6 months duration from August 2017 January 2018. Participants were also interviewed and examined in order to determine demographic characteristics and medical history. Patients with type I diabetes, hypertension and h/o previous eye

surgery were excluded from the study. Fundoscopic examination was performed by consultant ophthalmologist after taking informed consent on all the patients and presence or absence of retinopathy. Statistical analysis was performed with the help of SPSS version 19.0. Results were presented as mean and standard deviation for quantitative variables i.e. age and duration of disease. Frequency and percentage were calculated for qualitative variables like gender, educational status, family monthly income and diabetic retinopathy (present/absent).

## RESULTS

There were total 200 patients in this study with age ranges age ranges from 35-65 years. The mean age was  $46.41 \pm 8.20$  years. In our study we found that majority of the patients i.e. 88 (44%) were between 46 to 55 years of age. Out of 200 cases, 125 (62.5%) were male and 75 (37.5%) were females with male to female ratio of 1.6:1. After investigating we found that 138 (69%) patients were having diabetes for more than 4 months duration. 101 (50.5%) diagnosed diabetic patients were having monthly income more than twenty thousand. All the selected patients were then undergone fundoscopic examination performed by consultant ophthalmologist for diagnosis of diabetic retinopathy and we concluded that diabetic retinopathy was present in 41 (21.5%). Frequency of diabetic retinopathy with respect to gender, age and duration of disease have been shown in Table 6, 7 and 8 respectively.

**Table 1: % Age of participants according to Age distribution (n=200).**

Age (in years)	No. of Patients	%age
35-45	52	26
46-55	88	44
56-65	60	30
<b>Total</b>	<b>200</b>	<b>100</b>

**Table 2: % Age of participants according to duration of diabetes mellitus (n=200).**

Duration of diabetes (months)	No. of Patients	%age
≤4	62	31
>4	138	69

**Table 3: % Age of participants according to gender (n=200).**

Gender	No. of Patients	%age
Male	125	62.5
Female	75	37.5
<b>Total</b>	<b>200</b>	<b>100</b>

**Table 4: % Age of participants according to family monthly income (n=200).**

Family monthly income	No. of Patients	%age
≤10000	40	20
10000-20000	59	29.5
>20000	101	50.5

**Table 5: % Age of patients according to presence or absence of diabetic retinopathy (200).**

Status of diabetic retinopathy	No. of Patients	%age
<b>Present</b>	41	21.5
<b>Absent</b>	159	79.5
<b>Total</b>	<b>200</b>	<b>100</b>

**Table 6: Frequency of diabetic retinopathy among patients with respect to gender (n=200).**

Gender	Frequency	Diabetic Retinopathy	
		present	absent
<b>Male</b>	125	26	99
<b>Female</b>	75	15	60

**Table 7: Frequency of diabetic retinopathy among patients with respect to age (n=200).**

Age	Frequency	Diabetic Retinopathy	
		Present	Absent
<b>35-45 years</b>	52	8	44
<b>46-55 years</b>	88	16	72
<b>56-65 years</b>	60	17	43

**Table 8: Frequency of diabetic retinopathy among patients with respect to duration of disease.**

Duration of disease	Frequency	Diabetic Retinopathy	
		Present	Absent
<b>≤4 months</b>	62	12	50
<b>&gt;4 months</b>	138	29	109

## DISCUSSION

Age range in our study was 35 to 65 years with mean age of  $46.5 \pm 8.20$  years. Most of the patients i.e. 88 (44%) were between 46 to 55 years of age. This was very much comparable to studies of Iqbal T et,<sup>[9]</sup> and Kwanzaa MA et<sup>[10]</sup> who had a mean age of 47 and 45 years respectively. In this study, out of these 200 patients, 75 (37.5%) were female and 125 (62.5%) were male with male to female ratio of 1.6:1. Many previous studies have also found higher percentage of type II diabetes in male than female patients.<sup>[11]</sup> In this current study, all the selected patients were then undergone fundoscopic examination performed by specialist ophthalmologist for presence or absence of diabetic retinopathy and results have shown retinopathy present in 41 (21.5%) while 159 (79.5%) patients have shown no diabetic retinopathy. Hussain F et al,<sup>[12]</sup> has found that diabetic retinopathy was present in 12% newly diagnosed diabetic patients. In another study, Wahid et al,<sup>[13]</sup> has shown the frequency of diabetic retinopathy was 15%. In a study performed by Khanzada MA et al,<sup>[14]</sup> this prevalence of diabetic retinopathy was found very high i.e. 40.64%. This high prevalence of diabetic retinopathy was also found in the study from Egypt, that reported its frequency 42.0% and a study from Oman that reported 42.4%.<sup>[15,16]</sup> In a local study in Pakistan by Shera AS et al.<sup>[17]</sup> has shown the prevalence of diabetic retinopathy was 43.0% which is very much high as compared to our study. Maher PS et al.<sup>[18]</sup> reported 25.43% of retinopathy in the type 2 diabetes cases almost similar with our study's result. Similarly a study performed somewhere in India showed this figure to be 10.2%.<sup>[9]</sup> In another study, total 100

patients were included, with mean age  $45.1 \pm 3.2$  years, 60% of them were females. Overall, 17% of type 2 diabetic patients had retinopathy within one month of diagnosis. Background retinopathy was predominant (12%) followed by pre-proliferative (4%) and proliferative (1%) lesions.<sup>[18]</sup> This study would not only provide the data on the magnitude of problem in our local population but also would help us to screen these high risk patients. Also public awareness and intensive periodic educational programme on national and regional levels could be arranged for all newly diagnosed type 2 diabetic patients to spread awareness and education of disease, its complications, detailed ophthalmic examination at the time of diagnosis of diabetes and periodic screening to detect retinopathy early so that early therapeutic measures could be taken to prevent its further complications.

## CONCLUSION

This study concluded that the frequency of diabetic retinopathy in recently diagnosed type II diabetes mellitus was 21.5% which is relatively high and emphasizes the detailed ophthalmic examination of each patient at the time of diagnosis of diabetes. This study would not only provide the data on the magnitude of problem in our local population but also would help us to screen these high risk patients.

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