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RESEARCH ARTICLE
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PREVALENCE OF DIABETIC RETINOPATHY IN TYPE 2 DIABETIC PATIENTS

Faroz Khan[1], Abdul Wahid[2*], Zafar Abdul Nabi[3], Abdul Bari Baloch[4], Sassi Manzoor Hassan[5]

[1]Assistant Professor of Medicine Mekran Medical College Turbat
[2*]Senior Registrar Jhalawan Medical College Khuzdar
[3]Assistant Professor of Medicine, Head of the Department of Medicine Mekran Medical College Turbat
[4]Assistant professor medicine Jhalawan Medical College Khuzdar
[5]Assistant Professor of Medicine Mekran Medical College Turbat

***Corresponding Author:** Abdul Wahid
*Senior Registrar Jhalawan Medical College Khuzdar, Email: 2060358az@gmail.com

Abstract

Background: One of the major complication of the eye in diabetes is Retinopathy.Without early detection and treatment it progresses from its mild abnormalities to its advanced and ultimately leads to a significant visual loss.

Objective: The aim of the study was to find out the Prevalence of diabetic retinopathy in type 2 diabetic patients.

Methodology: This cross-sectional study was carried out at the Department of Medicine Mekran Medical College Turbat from December 2022 to May 2023 after taking permission from ethical board of the institute. A total of 5370 individuals diagnosed with type II diabetic individuals were included. Diabetic retinopathy's prevalence was calculated. They were categorized into four groups according to the international classification of diabetic retinopathy: proliferative diabetic retinopathy (PDR), mild non-proliferative diabetic retinopathy (NPDR), moderate non-proliferative diabetic retinopathy, and no diabetic retinopathy. Every patient got care and was counseled to follow the criteria set out by the International Council of Ophthalmology. Data was analyzed by SPSS VERSION 24.0 and presented in tables and figures

Results: Overall 5370 individuals were enrolled in this study out of which male were 3232(60.1%) were male and female were 2138(39.8%). Diabetic retinopathy was noted in 1616(30.0%) of the total individuals. The It was most prevalent in males 1124(34.4%) compared to females 534 (24.9%) as shown Of the male patients with diabetic retinopathy, 5.42% had PDR, 9.85% had moderate NPDR, 3.44% had severe NPDR, and 16.08 percent had mild NPDR. Of the female diabetic retinopathy individuals, 13.72% had moderate NPDR, 5.62% had mod. NPDR, 1.92% had severe NPDR, and 3.61% had PDR (P value <0.001). The age group of 45 to 60 years old constituted the largest percent of people, at around 47.73%. The disease was most prevalent in participant of age over 75 years (37%) followed by age group 30 to 45 years (20%).

Conclusion: From the current study we concluded that retinopathy is strong association with type 2 Diabetes mellitus our study reveals a greater prevalence of diabetic retinopathy (30.0%). Screening should to be an important aspect of diabetic care management.

Key words: Prevalence; Diabetic retinopathy; Type 2 diabetic patients

Introduction

Diabetes mellitus (DM) is a set of progressive metabolic disorders that are all constituted by increased blood glucose levels brought on by the inability of the body to make insulin, resistance to insulin action, or both.[1] There are around 451 million diabetes individuals with the world.[2] The percentage of people with it is predicted to grow in the upcoming years as a result of significant sociodemographic and economic changes.[3] Diabetes Retinopathy is a long-term micro vascular complication of diabetes on the eye. Without early detection and treatment, DR progresses from its mild abnormalities to its advanced stages. Fractional retinal detachment and neovascular glaucoma are problems of diabetic retinopathy, which leads to visual loss. Persistently high blood glucose levels cause generalized vascular damage, which results in various macro and micro vascular complications.[4] Diabetic retinopathy is a prevalent microvascular condition that affects two-thirds of people with type 2 diabetes. It is believed that a greater burden of diabetic retinopathy will result from the fact that Indians acquire diabetes ten years sooner than Caucasians. The international classification of diabetic retinopathy and diabetic macular edema is used to grade these conditions. The development of micro-aneurysms (MA), the first indication of DR, is a characteristic of mild NPDR. Along with MA in mild NPDR, dot and blot hemorrhages, hard exudates, and cotton wool patches are seen. Intra-retinal micro vascular abnormalities (IRMA), venous beading, and venous dilatation are characteristics of severe NPDR. Proliferative diabetic retinopathy (PDR) is characterized by the development of new blood vessels on the disc, retina, and anterior segment. If treatment for anterior segment neovascularization in PDR is not received, neovascular glaucoma may develop, which might eventually result in a painful blind eye.[5] However, the incidence of diabetic retinopathy in type 2 diabetic individuals **in** Pakistan are not well studied. Thus, the purpose of the current study was to investigate the frequency of diabetic retinopathy in individuals with type 2 diabetes.

Methodology

This cross-sectional study was carried out at the Department of Medicine Mekran Medical College Turbat from December 2022 to May 2023 after taking permission from ethical board of the institute. In all, 5370 participants with type II diabetes over 30 years old visited our institute's outpatient department were enrolled while participants with type 1 diabetes and those under 30 years old were excluded. The demographic features of the study population is presented in **table 1**. Diabetic retinopathy's prevalence was calculated. Ophthalmological diagnosis included best-corrected visual acuity (BCVA), intraocular pressure (IOP), and dilated fundoscopy with slit lamp bio microscopy were carried out for the study group. Each of these individuals received a thorough ophthalmological evaluation that included best-corrected visual acuity (BCVA), intraocular pressure (IOP), and dilated fundoscopy with slit lamp bio microscopy. They were categorized into four groups according to the international classification of diabetic retinopathy: proliferative diabetic retinopathy (PDR), mild non-proliferative diabetic retinopathy (NPDR), moderate non-proliferative diabetic retinopathy, and no diabetic retinopathy. Every patient got care and was counseled to follow the criteria set out by the International Council of Ophthalmology. The frequency of hypertension and diabetes was determined using a physician's diagnostic process. Data was analyzed by SPSS VERSION 24.0 and presented in tables and figures.

Results

Overall 5370 individuals were enrolled out of which male were 3232(60.1%) were male and female were 2138(39.8%). 8.41 years was the mean duration of diabetes. Main features of the study population is presented in table 1. Diabetic retinopathy was noted in 1616(30.0%) of the total individuals. The most prevalent retinopathy was non proliferative 16.0% individuals had mild, , 9.10 % had moderate and 3.93% had severe NPDR.while 4.69 had proliferative diabetic retinopathy**(figure 1).** Compared to females 534 (24.9%) the frequency of the disease was greater in males 1124(34.4%) as shown **Table 2.** Of the male patients, 5.42% had PDR, 9.85% had moderate NPDR, 3.44% had severe NPDR, and 16.08 percent had mild NPDR. Of the female diabetic retinopathy individuals, 13.72% had moderate NPDR, 5.62% had mod. NPDR, 1.92% had severe

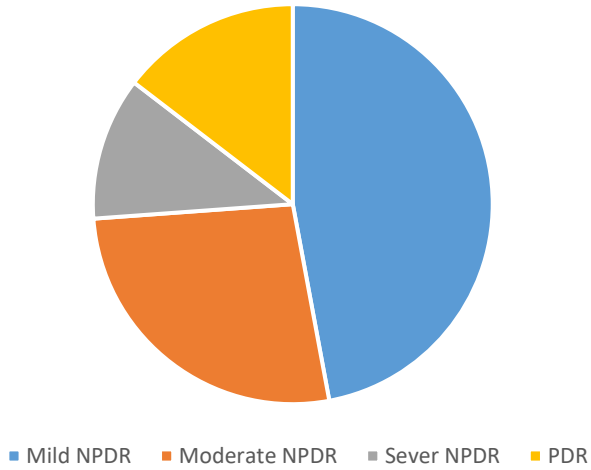
NPDR, and 3.61% had PDR (P value <0.001). The age group of 45 to 60 years old constituted the largest percent of people, at around 47.73%. The age group over 75 years old had the least individuals, making up around 2.40% of the total. In the 30- to 45-year-old age group, 80% of the participants had no diabetic retinopathy, but only 67% of people in the 45- to 60-year-old age group had no diabetic retinopathy. People older than 75 year had diabetic retinopathy 20% while it was 37% in the age group 30 to 45 years (**table 1).**

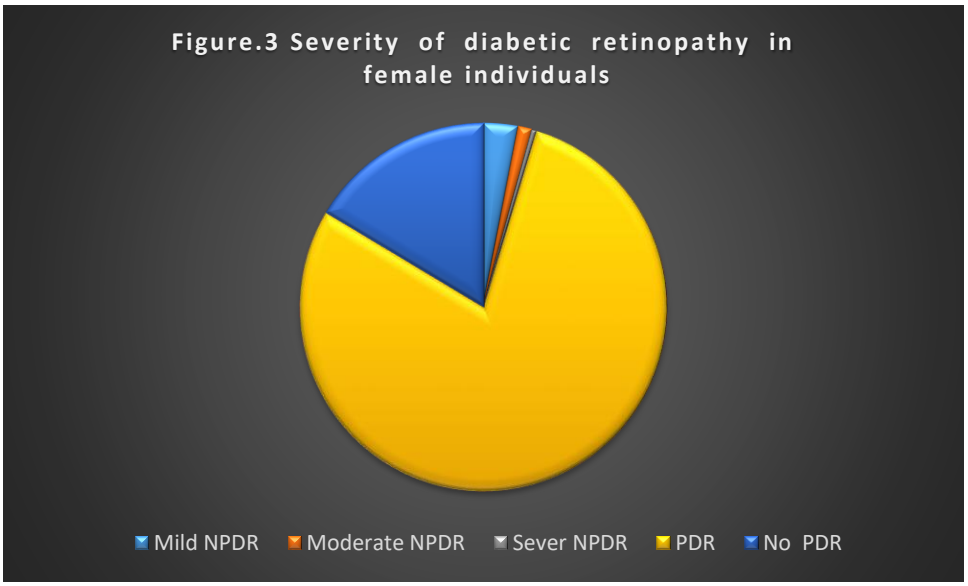
Table 1.Demographic features of the study population	
Gender	N(%)
Male	3232(60.1)
Female	2138(39.8)
Age in years	
30-45	1284(23.91)
45-60	2560(47.6)
60-75	1394(25.95)
Above 75	130(2.4)
Duration of Diabetes	
Less than 6 months	769(14.3)
6 m0nths and five years	1910(35.5)
5-10 years	1382(25.7)
Above 10 years	1309(24.37)

Table.2 Frequency of retinopathy among male and female participants 0f the study population

	No of cases	Diabetic retinopathy	Prevalence	95% C.I
Female	2138	534	24.9%	24.18 – 26.92
Male	3232	1124	34.4%	32.17 – 36.48

figure1.Retinopaty prevalence in the sudy population





Discussion

Pakistan has been placed seventh on the list of countries with the largest number of diabetic individuals, per the International Diabetic Federation's (IDF) database on the disease. According to estimates, 6.9 million people in Pakistan had diabetes in 2007, and by 2025, that number is expected to rise to 11.5 million, placing Pakistan fifth on the IDF list. [6] According to many studies conducted by the Diabetic Association of Pakistan, a ten percent of people in the general population who are 30 years of age or older have type II diabetes.[7] Untreated diabetes and related retinopathy are prevalent in the general public as well are linked to the community's weak visual status, particularly in developing countries like Pakistan where funding for healthcare is insufficient and resources are scarce. This is because primary eye care centers are essentially nonexistent. Only a few number of studies have been conducted to assess the prevalence of diabetes-related blindness (DRB) in the local community. Therefore the current study was conducted to explore the prevalence of diabetic retinopathy in type 2 diabetic patients. In this study Diabetic retinopathy was evaluated in (30.0%). The results of our research are similar to the study conducted by Negalur, and Nikhil where the prevalence was 30.84 %.[8] But these findings are not similar to the study conducted by Mahar et al, they reported 27.43% prevalence.[9] In the present research, the prevalence of diabetic retinopathy was greater than the predicted global incidence of 22.27%.[10]It is higher than the frequency of 24% found in previous research conducted in southern India by Rema et al.[11] In our research findings we evaluated higher incidence because our hospital has an endocrinology center for that purpose many people with diabetic complications like retinopathy are referred for complete diabetic care management. In the young people the frequency of diabetes is rising, our study also included diabetic individuals over 30. According to the findings of the study by Bhavesh Patel et al., the prevalence of diabetes increases upward as people become older.[12] As compared to female in male the incidence of diabetic retinopathy was higher (34.4%) In this study which are not similar with findings of Mahar et a,l[9] they reported 28% prevalence in male individuals. Previous studies' findings on the gender-specific frequency of diabetic retinopathy have been inconsistent. According to some research, women are more likely than men to develop DR.[13] The most prevalent retinopathy was non proliferative 16.0% individuals had mild, 9.10 % had moderate and 3.93% had severe NPDR.while 4.69 had proliferative diabetic retinopathy. These results are consistent with those of previous research conducted in Asia.[14]

Conclusion

From the current study we concluded that retinopathy is strong association with type 2 Diabetes mellitus our study reveals a greater prevalence of diabetic retinopathy (30.0%). Screening should to be an important aspect of diabetic care management.

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