A Study on the Prevalence of Retinopathy among Diabetic Patients in Tertiary Level Hospital of Bangladesh

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Abstract

Diabetes mellitus (DM) is one of the world's fastest growing chronic diseases and a leading cause of acquired vision loss. According to the World Health Organization, it is estimated that the total number of people with diabetes will double from 171 million in 2000 to 366 million by 2030. The prevalence of Diabetes Mellitus in Bangladesh has increased. People with diabetes are at risk for diabetic retinopathy. Diabetes Retinopathy (DR) is a leading cause of vision loss in middle-aged and elderly people globally. Early detection and prompt treatment allow prevention of diabetes-related visual impairment. Diabetes mellitus (DM) is a major cause of avoidable blindness worldwide. People with Diabetic Retinopathy are 25 times more likely to become blind than non-diabetics. It has been estimated that One in four patients with Diadetes in Bangladesh could lose their eye –sight due to Diabetic retinopathy, The present study was carried out to assess the prevalence of diabetic retinopathy (DR) in a Institution-based nationally-representative sample of adults with self-reported diabetes mellitus from Bangladesh. A cross-sectional Institution-based national study among 1002 adults was conducted at National Institute of Ophthalmology and Hospital, Agargaon, Dhaka, Bangladesh. Data was collected from one specialized tertiary level Hospital. The current study recruited 1002 patients those were referred from various hospitals, diabetes clinics and referral clinics to study current scenario of diabetic retinopathy, using purposive random sampling technique. This study included both type 1 and type 2 diabetic patients. A self-administered questionnaire was used to collect data. Eligible patients were explained the study purpose and invited to attend in interview. A diagnosis of diabetic retinopathy was made only where a participant had a minimum of one microaneurysm in any field, as well as exhibiting hemorrhages (dot, blot, or flame shaped), and maculopathy (with or without clinically significant oedema). Crude prevalence of diabetes retinopathy was 47.00% (total number of respondents were n = 1002, out of which retinopathy found in 471 respondents), of which all were patients with 'known' diabetes. It seems that good screening and prompt referral of diabetic patients for full-dilated ocular examinations, appropriate treatment and regular follow up examinations may significantly reduce blindness due to diabetic retinopathy.

Keywords: *Diabetic retinopathy- Diabetes mellitus – Prevalence- Adults –Bangladesh*

Introduction

Background:Diabetic Retinopathy is a condition occurring in persons with diabetes, which causes progressive damage to the retina, the light sensitive lining at the back of the eye. It is a very serious sight- threatening complication of diabetes. Symptoms include blurred vision, difficulty seeing colors, floaters, and even total loss of vision. There are two types of DR:Non-proliferative diabetic retinopathy (NPDR): This is the milder form of diabetic retinopathy and is usually symptomless.Proliferative diabetic retinopathy (PDR): PDR is the most advanced stage of diabetic retinopathy and refers to the formation of new, abnormal blood vessels in the retina.Diabetic retinopathy typically presents no symptoms during the early stages.The condition is often at an advanced stage when symptoms become noticeable. On occasion, the only detectable symptom is a sudden and complete loss of vision.DR usually affects both eyes. It is important to make sure that the risk of vision loss is minimized. The only way people with diabetes can prevent DR is to attend every eye examination scheduled by their doctor.

Rationale of the Study

Diabetic retinopathy is the result of damage to the tiny blood vessels that nourish the retina. They leak blood and other fluids that cause swelling of retinal tissue and clouding of vision. If left untreated, diabetic retinopathy can cause blindness.Diabetes mellitus (DM) is one of the world's fastest growing chronic diseases and a leading cause of acquired vision loss.[1]Diabetes mellitus (DM) is becoming a pandemic worldwide. WHO listed 10 countries to have the highest numbers of people with diabetes in 2000 and 2030 According to the World Health Organization, it is estimated that the total number of people with diabetes will double from 171 million in 2000 to 366 million by 2030.[2] According to the report, Bangladesh has 3.2 million of diabetic subjects, and the number is expected to increase to a staggering 11.1 million by 2030. There is widespread knowledge that screening, early detection and prompt treatment of VTDR allow prevention of diabetes-related visual impairment.[6] Randomized controlled trials have shown that early treatment can reduce an individual's risk of severe visual loss by 57%.

One thousands and two patients (551 men, 451 women) type 2 **diabetic** outpatients were studied. The overall DPN **prevalence** was 47.01% %; male (20.9%), female (18.7 %).

Objectives of the study

The objectives of the study are as follows:

1. To estimate the prevalence of diabetic retinopathy among self-reported diabetic patient.
2. To assess the grading of retinopathy.
3. To asses all diabetic subjects Fundos-scopically.

Method and Materials

- **Study Instrument / Tools:** A structured questionnaire was used for the study.
- **Methods of data collection:**Direct interactive interview.
- **Data processing:** By statistical and mathematical analysis (SPSS, MS. Excel software program).
- **Presentation of Findings:** Findings was presented as a thesis.

Results and Findings:

Respondents Characteristics - Age. The major characteristics of the respondent were age, which is mentioned in the table 1. Finding: The result shows that major group was 41-60 years.

Table 1: Distribution of the Respondents by age

Age in years	Frequency	Percentage (%)
≤20 – 30	9	0.9
31 – 40	122	12.2
41 – 50	339	33.8
51 – 60	320	31.9
61 – 70	167	16.7
≥ 70	45	4.5
Total	**1002**	**100.0**

The study was conducted in different age groups. The highest percentage of age group was 41 – 50 years and percentage was 33.8 % and lowest age group was ≤20 – 30 years and percentage was 0.9 % within 100%.

Respondents Characteristics - Occupation

Table 2: Distribution of the respondents by Occupation

Occupation	Frequency	Percentage (%)
Service	462	46.1
Business	196	19.6
Home maker	201	20.1
Others	143	14.3
Total	**1002**	**100.0**

Table shows that respondent of the study 462 (46.1%) were service, 196 (19.6%) were business, 201(20.1%) were home maker and143(14.3%) were others categories.

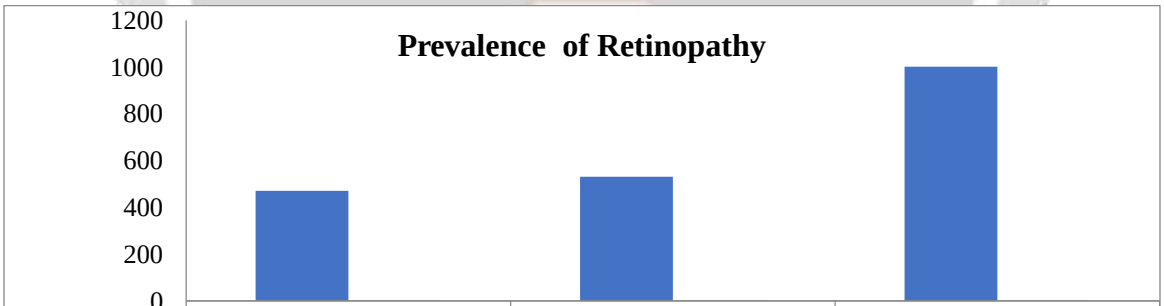
Respondents Characteristics - Duration of Diabetics

Table 3: Distribution of the respondents by Duration of diabetes

Duration of Diabetics	Frequency	Percentage (%)
≤ 1 – 5	423	42.2
6 – 10	270	26.9
11 – 15	152	15.2
16 – 20	76	7.6
≥ 20	81	8.1
Total	**1002**	**100.0**

Data shows that out of 1002 respondents, highest suffering duration of diabetics was ≥ 20 years duration and percentage was 81(8.1%). And lowest suffering duration of diabetics was ≤ 1 – 5 years and percentage was 423 (42.2%).

Table 4: Prevalence of Retinopathy



	Retinopathy-present	Retinopathy-absent	Total
Frequency	471	531	1002
percentage	47.01%	52.99%	100%

The graph shows that retinopathy present was 471(47.01%) and retinopathy absent was 531 (52.99%) out of 1002 of respondents.

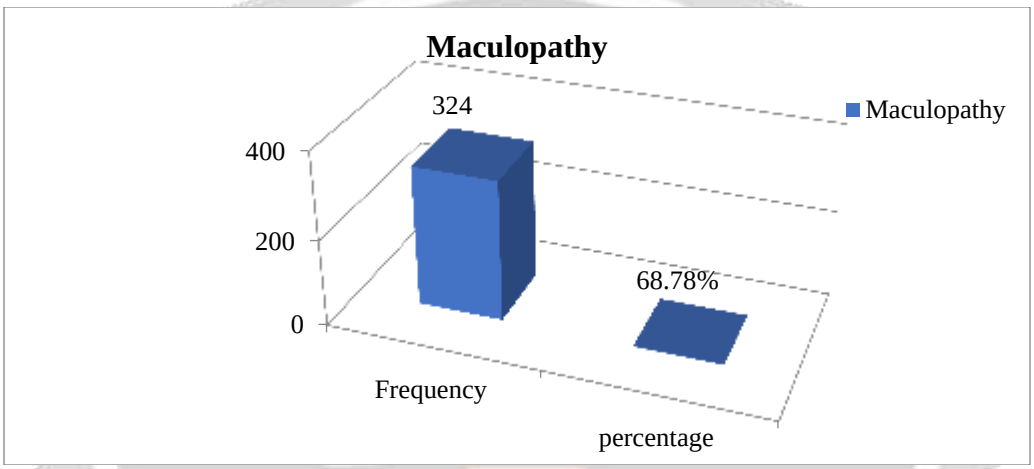
Respondents Characteristics - Retinopathy grading.

Table 5: Percentage of Retinopathy grading

Categories	Frequency	Percentage (%)
R1	278	59.2%
R2	61	12.95%
R3	77	16.34%
Un-gradeable	55	11.67%
Total	**471**	**100**

The figure shows that retinopathy grading percentage Grade R1 was 30%, Grade R2 was 6%, percentage Grade R3 was 6%, and Grade- ungradeable was 6 %, where total respondents were 50%.

Respondents Characteristics – Maculopathy



The graph shows that maculopathy present was 324(68.78%) out of 1002 of respondents.

Discussion

The present study addressed the prevalence and its associated risk factors of diabetes and retinopathy in a rural population in Bangladesh. The prevalence of diabetes was found 47.1%. The prevalence of diabetes documented in this study was comparatively higher than the prevalence found in rural China (5.6%), rural India (6.3%) and that of rural population in Turkey. It may be due to institution base study , all the respondent were referral case and diverse characteristics of the population.

Conclusion

A high prevalence of Retinopathy was observed in Bangladeshi population. Our results demonstrate that 47.1 % of Bangladeshi adults with self-reported diabetes are having retinopathy. High prevalence may be due to specialized Hospital based study. Diabetic retinopathy was associated with duration of diabetes, cigarette smoking and peripheral neuropathy. However, further prospective follow up studies among South Asian adults are required to establish causality for the risk factors identified.

Recommendation

These results suggest that urgent action is necessary to stop diabetes development through improving detection, awareness, prevention, and treatment of diabetes. It seems that good screening and prompt referral of diabetic patients for full-dilated ocular examinations, appropriate treatment and regular follow up examinations may significantly reduce blindness due to diabetic retinopathy.

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