



Prevalence of Diabetic Retinopathy among Diabetics: A Hospital Based Study at Ashraff Memorial Hospital, Kalmunai

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Abstract

Diabetic Retinopathy and diabetics are two highly associated severe diseases in human. This study assesses the risk of getting Diabetic Retinopathy among the Diabetic patients in the Kalmunai region. In this hospital based cross sectional study, all the diabetic patients who were attending to the diabetic clinic of the Ashraff memorial hospital from January 2014 to December 2014 were screened for Diabetic Retinopathy and their demographic details were recorded. Obtained information was analyzed for estimating the risk for Diabetic Retinopathy among the diabetic patients and it was estimated as 13.16%. No difference in risk of getting Diabetic Retinopathy was observed among different age group, educated level and gender. Risk of getting Diabetic Retinopathy increases with the increase of the duration suffered by the diabetic. The relative risk of getting Diabetic Retinopathy for patients with diabetic for more 12 years is 3.55 times greater compared to the fresh diabetic patients.

Keywords

Clinically Significant Macular Oedema, Diabetes Mellitus, Diabetic Retinopathy, Relative Risk

Subject Areas: Public Health

1. Introduction

Diabetic Retinopathy (DR) is strongly associated with both microvascular and macrovascular complications,

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including retinopathy, nephropathy, and neuropathy and ischemic heart disease, peripheral vascular disease, and cerebrovascular disease, resulting in organ and tissue damage [1]. DR affects the peripheral retina, the macula, or both and is a leading cause of visual disability and blindness in people with diabetes [2]. The severity of DR ranges from nonproliferative and preproliferative to more severely proliferative DR, in which the abnormal growth of new vessels occurs [3]. Total or partial vision loss can occur through a vitreous hemorrhage or retinal detachment, and central vision loss can occur through retinal vessel leakage and subsequent macular edema [4]. The prevalence of DR increases with prolonged duration of diabetes [5]. It was found that at least some sort of DR will be detected in more than 75% of diabetic population who had DM for more than 20 years duration [6]. A detail survey in the western countries confirmed that the DR is a leading cause of blindness in the western world and the impact of this much higher among the young people who are less than 40 years of age [7]. Further, DR is found to be a leading cause of new onset of blindness in many industrialized countries and more frequent cause of blindness elsewhere. The WHO estimation for global blindness depicts that DR is responsible for 4.8% of 37 million cases of blindness throughout [8].

The seriousness of DR was not felt among the developing countries as a cause for the blindness because it was thought that retinal disease was an uncommon cause of blindness in the developing countries [9]. As a result, DR screening programmes were not included in the national programmes for prevention of blindness in the developing world. The risk for DR among the DM patients was estimated by different authors for different countries and those are listed in **Table 1**.

It can be observed that the South Asian countries have the higher risk for DR among the DM patients. In Sri Lanka, the risk is reported to be 31.3% but this figure must vary among the regions based on the socio economic conditions. Therefore this study was carried out to assess the risk for DR among the DM patients and to find out the associated factors relative to this risk.

2. Methodology

For this study, 772 diabetic patients who were attending to the diabetic clinic of the Ashraff Memorial Hospital, Kalmunai during the months from January 2014 to December

2014 were screened for DR. For screening, subjects were sent for vision test and pupil dilatation. Demographic data and clinical history of each patient was recorded in the structured manual. Both fundi were examined by the researchers at the slit lamp using the +78 D lens and looked for the findings of DR and Clinically Significant Macular Oedema (CSMO). The DR and CSMO were graded according to the standard classification of international clinical DR and macular oedema disease severity scales. When any one of the two eyes was having DR or CSMO, the subject was considered as having DR or CSMO. When both eyes are having two different grades of DR and CSMO, the worst grade of them was considered as the present condition in that subject. Then, actions were taken according to the findings. When the fundi were not visualized due to any other ocular pathology the subject was considered neither absent nor present of DR and CSMO. The collected data were analyzed to estimate the relative risk for demographic different factors by fitting logistic regression models using SAS software.

3. Results and Discussion

The risk for DR was estimated as 13.16% (95% CI, 9.36% and 16.96%) among the DM patients in Kalmunai.

Table 1. Risk for DR among the DM patients in different regions.

Country	Risk for DR (%)	Age Groups Studied
Australia	22.2	≥40 years
USA	33.2	45 - 85 years
Finland	21.0	≥70 year
Oman	14.4	All age groups
India	34.0	All age groups
Pakistan	33.3	All age groups
Sri Lanka	31.3	All age groups

Sources: [3] [10]-[19].

The prevalence of CSMO was 7.9%. Among the DR patients, there were mild DR (79.93%), moderate DR (10.03%), sever DR (2.5%) and extreme DR (7.52%) categories. A Past Sri Lankan study reported the risk for DR was 31.3% [19] in the diabetic clinics, which is too greater than the results obtained in this study. This variation may be due to the socio economic conditions and age variations of the patients. However this results is closer to the risk reported in a hospital based study of Oman which is 14.39% [3].

The mean age of this studied sample was 52.6 years which is closely tally with United Kingdom study's [13] mean age of 54 years. But the risk for DR in United Kingdom study was 52.91% for all ages which is greater compare to this study. But the variation of the age groups has to be considered before making such comparison.

Figure 1 shows the prevalence percentage DR among the DM patients for different age levels.

The risk for DR for different age groups was compared basically with ≤ 40 years age group. The odd ratios for 40 - 60 and ≥ 60 age groups were 1.49 (95% CI, 0.33, 6.82) and 2.56 (95% CI, 0.55, 11.96) respectively. Even though there was an increase in risk with age, the logistic regression shows there is no significant difference in risk for DR between different age groups ($P = 0.238$).

The relative risk for DR was not significantly differs for gender ($P = 0.144$) and 18.3% of the male and 11.8% of the female DM patients had DR. In this study the response rate of females was higher than males and the same results were obtained in this kind of studies of Pakistan and Paraguay [13] [17] but the prevalence of DR was 33.3% and 48.53% respectively for male and female.

Among the Diabetic patients, 97.69% of patients had Type-II and the rest, had Type-I diabetic. There was no significant relationship noted between the prevalence of DR and type of DM ($P = 0.82$). This association was not established because most of the patients had Type-2 diabetic. A slight increasing risk for DR is visible with increasing education level and it is shown in **Figure 2**. However this increasing risk is not statistically significant ($P = 0.25$).

Risk of getting DR is increasing with the duration of DM a patient had ($P = 0.004$). The relative risk of getting DR for patients with diabetic for more than 12 years is 3.55 times greater compare to the patients with diabetic for less than 12 years (95% CI, 1.56, 8.11). **Figure 3** shows the relationship between the risk for DR and the duration suffered with DM.

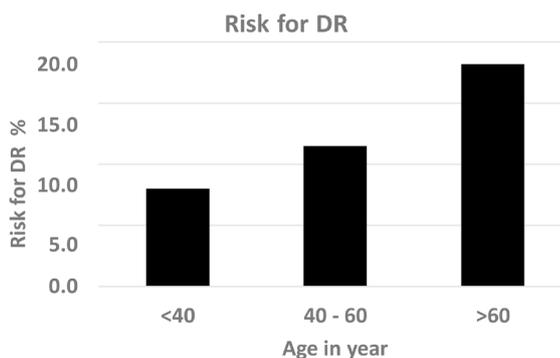


Figure 1. Risk for DR for different age groups.

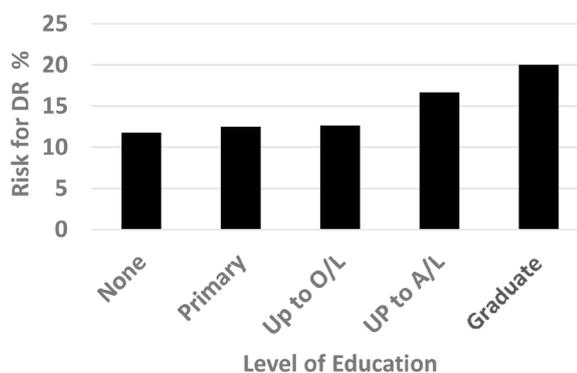


Figure 2. Risk for DR for educational levels.

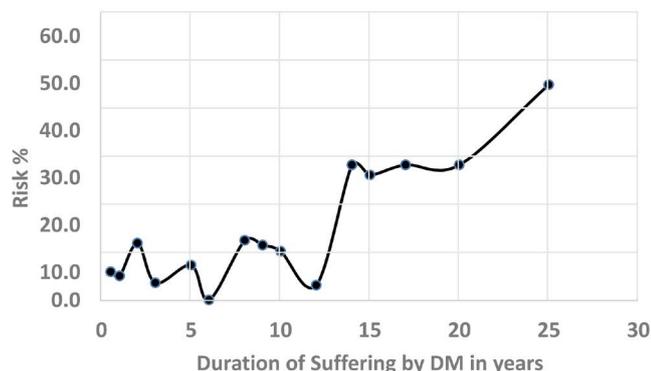


Figure 3. Risk for DR and duration suffering with DM.

4. Conclusion

The risk for DR among the DM patients in the studied region is less compared to other regions. But it is believed that the prevalence DM higher in the studied region and therefore considering the severity of the DR and its' consequences, educating people on DR is essential. A sudden high risk of DR for the patients with more than 12 years DM is a significant finding, and a special mechanism has to be setup for this group for preventing blindness. Currently there are two methods available for preventing blindness from DR in patients with DM. Those are better control of blood sugar level and regular screening to detect early for treatment to prevent complications. The diabetics control and complications trials have proved that better control of blood sugar levels slows the onset and progression of DR. Better control also reduces the need for sight-saving laser surgery.

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