

Knowledge, Attitude and Associated Risk Factors regarding Diabetic Retinopathy among Diabetic Patients

Esther Jeba Leena N.¹, Rebecca Sumathy Bai², Jeyalinda Christopher³,

Smitha Jasper⁴, Vishalakshi Jeyaseelan⁵

¹ Junior Lecturer, Nesam College of Health Sciences, Tirunelveli, TN, India

² Professor, College of Nursing, CMC, Vellore, TN, India

³ Professor, College of Nursing, CMC, Vellore, TN, India

⁴ Professor, CMCH, Vellore, TN, India

⁵ Professor, CMCH, Vellore, TN, India

Abstract: Diabetic retinopathy (DR) is a leading cause of visual disability and blindness in people with diabetes. Most of the patients are diagnosed to have diabetic retinopathy even before they are clinically diagnosed with diabetes. The objectives are to assess the knowledge, attitude, to identify the associated risk factors, to determine the relationship between knowledge and attitude, to determine the association between knowledge, attitude and selected demographic and clinical variables regarding diabetic retinopathy. A descriptive design was used. A convenience sampling method was used. The study was done in the outpatient unit in the Medicine department of Christian medical college, Vellore. The tools such as knowledge questionnaire, attitude scales and check list for risk factors prepared by the investigator were used as instruments. Adequate knowledge was found among 5.5% and 62.12% of the participants had adequate attitude regarding diabetic retinopathy. Identified risk factors are HbA1C values more than 7% (58.2%), hypertension (61.5%), those who were on T. Metformin (92.7%), and male gender (58.5%). There is a positive correlation between knowledge and attitude, as the knowledge increases there is an increase in the attitude level also. Significant association found between, occupation, family income, diagnosis of illness, current medications and attitude at $p=0.001$. Majority of the participants had inadequate knowledge regarding diabetic retinopathy. Nurses need to educate these patients and identify those with risk to develop retinopathy for early identification of retinopathy.

Keywords: Knowledge, Attitude, associated risk factors, Diabetic Retinopathy

1. Introduction

Eyes play a vital role in perceiving the beautiful things in life. They are in fact so unique that they need special care. Many of us value vision almost as life itself and would go to any extent to ensure that this wonderful gift of God can be preserved by any means. If they are not cared properly it can lead to problems which can disrupt vision. Unfortunately many a times the eye sight is lost through sheer ignorance or negligence. Many systemic diseases can affect eye. One of the common causes of alteration in vision is diabetic retinopathy which is a complication of Diabetes Mellitus (DM).

Diabetes is a serious, chronic disease that occurs either when the pancreas does not produce enough insulin (a hormone that regulates blood sugar, or glucose), or when the body cannot effectively use the insulin that is produced (WHO Report, 2016).

Diabetes is a condition which, over time, may cause damage to the body's organs, blood vessels and nerves. Complications of diabetes are classified into micro vascular and macro vascular complications. Macro vascular complications include coronary artery disease, cerebrovascular disease and peripheral vascular disease (Hinkle, 2013). Micro vascular complications include retinopathy, nephropathy and neuropathy (Hinkle, 2013).

Diabetic Retinopathy (DR) is the chief cause of visual impairment among people of working age and has social

consequences beyond sight loss. (Porta, 2002). It is caused by the damage to the blood vessels of the retina (Nihal Thomas, 2016). According to WHO (2016) DR occurs as a result of long term accumulated damage to the small blood vessels in the retina.

2. Literature

The review of literature here is based on

- Information on diabetic retinopathy
- Epidemiology of diabetic retinopathy
- Studies related to knowledge and attitude
- Studies related to risk factors associated with diabetic retinopathy

Information on diabetic retinopathy:

Diabetic retinopathy is a vascular condition in which the retinal capillaries tend to degenerate over the years. The condition is characterized by ocular hemorrhages, lipid exudate and the growth of new blood vessels and connective tissue. It is a major cause of blindness in people with diabetes. The incidence of diabetic retinopathy is related primarily to duration and control of diabetes (Watkinson, 2008). Diabetic retinopathy is the most common micro vascular complication among people with diabetes and results in more than 10, 000 new cases of blindness per year. In addition, retinopathy is associated with prolonged hyperglycemia, and there is some evidence that it begins to develop as early as 7 years, even before clinical diagnosis of type 2 diabetes (Deshpande, 2008)

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Epidemiology of diabetic retinopathy:

The meta-analysis of published population studies from 1990 to 2012 for the Global Burden of Disease Study 2010 (GBD) yielded estimated global regional trends in DR among other causes of moderate and severe vision impairment (MSVI). Globally in 2010, out of the total of, 32.4 million blind and 191 million visually impaired people, 0.8 million were blind and 3.7 million were visually impaired because of DR, with an increase of 27% and 64%, respectively, in the two decades from 1990 to 2010 (Leasher, 2016).

A recent systematic review of 35 population-based studies showed that the prevalence of DR, proliferative diabetic retinopathy (PDR), diabetic macular edema (DME), and vision-threatening diabetic retinopathy (VTDR) among individuals with diabetes is 34.6%, 7.0%, 6.8%, and 10.2%, respectively. Estimation from these studies showed that, globally, the number of people with DR will increase from 126.6 million in 2010 to 191.0 million by 2030, and we estimate that the number with VTDR will increase from 37.3 million to 56.3 million, if prompt action is not taken. Despite growing evidence documenting the effectiveness of routine DR screening and early treatment, DR frequently leads to poor visual functioning and the leading cause of blindness in working age populations (Zheng, 2012).

Studies related to knowledge, and attitude of Diabetic Retinopathy:

In a study conducted in Theni, among 200 diabetic patients who attended the OPD, with an objective to assess the awareness and practice related to diabetic retinopathy it was found that 40 (20%) knew that ocular involvement in diabetes was related to duration of diabetes, 42 (21%) felt that lack of blood sugar control was a risk factor for the development of DR. The study also revealed the awareness among them regarding other risk factors that can contribute to DR, which were as follows, obesity (11.5%), hypertension (9.5%), smoking (4.5%), and high cholesterol (5.5%). About 77 (38.5%) patients knew that DR was treatable and 27 (13.5%) knew regarding laser treatment, 9 (4.5%) knew regarding surgery, 18 (9%) knew regarding food control of diabetes, and 23 (11.5%) knew about drugs and injections into the eye. It was noted that in patients who had a history of hypertension, the knowledge of DR was high (26%) (Sharmila, 2016).

A cross sectional study was conducted from January 2013 to April 2013 in Villupuram district of Tamil Nadu, India to assess the awareness related to eye effects. All the 105 participants with diabetes from the service area of two sub centers were included. The results revealed that about 93 participants with diabetes (88.6%) tested their blood sugar at least once in every 3 months. About 80 participants with diabetes (76.2%) were aware of at least one systemic complication of DM. Although 78 (74.3%) participants with diabetes were aware that DM could affect the eyes, majority of this group (68, 87.2%) did not know the specific effects of DM on eyes. In this group, about 28 (35.9%) participants with diabetes were not aware of the reasons for eye defects, while others said that persistent high blood sugar level (n=26, 33.3%), longer duration of DM (n=14, 17.9%) and lifestyle (n=10, 12.8%) were the reasons for the eye effects of DM. Only 31 (29.5%) knew that their eyes must be

regularly examined. Participants with diabetes who had education above 10th standard had significantly higher awareness on examination of eye. The main source of information for eye examination was media (52%), followed by the doctor of the Primary Health Centre (PHC) (39%), relatives (6%) and Village Health Nurse (VHN) (3%). Awareness on examination of eye was significantly less among elderly and those with lesser education level (Balasubramaniyan N, 2016)

Studies related to risk factors associated with diabetic retinopathy:

A prospective study among patients with type 2 diabetes was conducted in a tertiary eye hospital in Melbourne, Australia. Patients underwent a comprehensive eye examination and completed standardized questionnaires. Blood samples were assessed for glycated hemoglobin (HbA1c); fasting blood glucose, and serum lipids. Dilated fundus photographs were obtained and graded for DR and DME. The most important risk factors of DR, found in this study are duration of diabetes, followed by insulin use, HbA1c, age, and gender (Xie J, 2014).

Another prospective study was carried out from August 2010 to August 2014 in the community of Fengyutan, China. A comprehensive examination of each subject was done. Fundus examination was carried out using slit lamp and bio microscope by two ophthalmologists. The highest hazard ratio was duration of diabetes mellitus longer than 10 years, being male with hypertension, uncontrolled diabetes, BMI more than 27.4 kg/m², fasting plasma glucose (FPG) more than 200 mg/dL, total cholesterol more than 200 mg/dL and glycated hemoglobin (HbA1c) more than 7% (mmol/mol) (Lei Liu, 2015).

In a cross sectional study done using patient's clinical data found in Saudi National Diabetes Registry (SNDR), a cohort of 50464 Saudi patients with type 2 diabetes aged ≥ 25 years were selected to assess the prevalence and risk factors for diabetic retinopathy. Neuropathy, significantly increased the risk for retinopathy. Poor glycemic control, presence of hypertension, and male gender showed significant increase risk for retinopathy. Smoking, hyperlipidemia, overweight and obesity all were found to have decreased risk for diabetic retinopathy (Al-Rubeaan, 2015).

3. Methodology

A Descriptive design was used in this study to assess the knowledge, attitude and the associated risk factors regarding diabetic retinopathy among diabetic patients attending Medicine OPD, CMC, Vellore. Sample included all diabetic patients those who attended the Medicine Out Patient Department, Christian Medical College, Vellore and fulfilled the inclusion criteria. Based on the study by Sristi et al, (2015) the knowledge of Diabetic retinopathy was 22%. By taking 4.5% precision level, the required sample size was calculated to be 326. The total number of samples participated in the study was 330.

After extensive Review of Literature, internet search and expert opinion tool for the study was prepared. Knowledge questionnaire consisted of 10 questions; attitude scale

consisted of 10 statements. The risk assessment form which is a checklist developed by the investigator consisted of demographic risk factors, and clinical risk factors. It is obtained from the medical records of the participants.

Data was collected using the questionnaire after obtaining the permission from the subjects to assess the knowledge, attitude and associated risk factors regarding diabetic retinopathy.

4. Results

The study findings revealed that, of the total 330 participants, 67% were above 55 years of age. Majority of them (70%) were from urban areas. About 75.8% of the participants belonged to Hindu religion. Among the participants, 97.9% were married. Majority of them had education up to higher secondary (80.3%). Also, most (63.6%) of them were unemployed. Among the participants 35.8% have their monthly family income below Rs.5000.61.5% of the participants were diagnosed with diabetes and hypertension and 38.5% were only diabetics. The age of onset of diabetes, for majority of the participants, is more than 35 years (93.3%). Majority of them (61.5%) have the duration of diabetes less than or equal to 10 years. About 98.5 % never had any hospitalization. Most (61.5%) of them were on both anti diabetics and anti hypertensives.

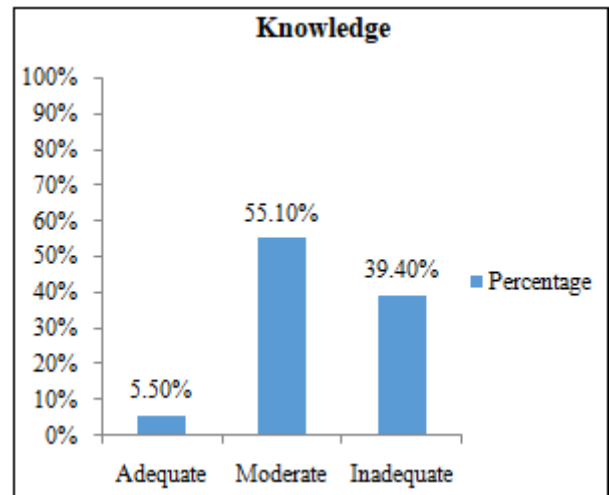


Figure 1: Knowledge regarding diabetic retinopathy

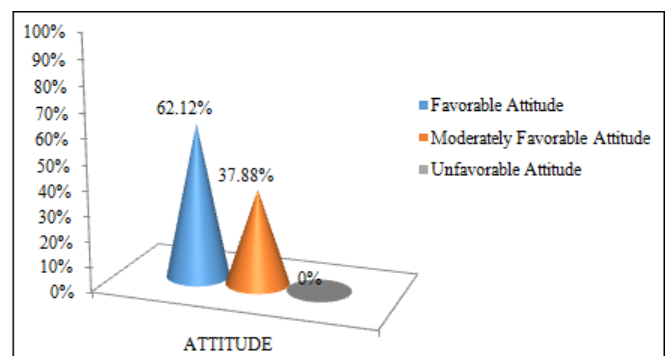


Figure 2: Attitude regarding diabetic retinopathy

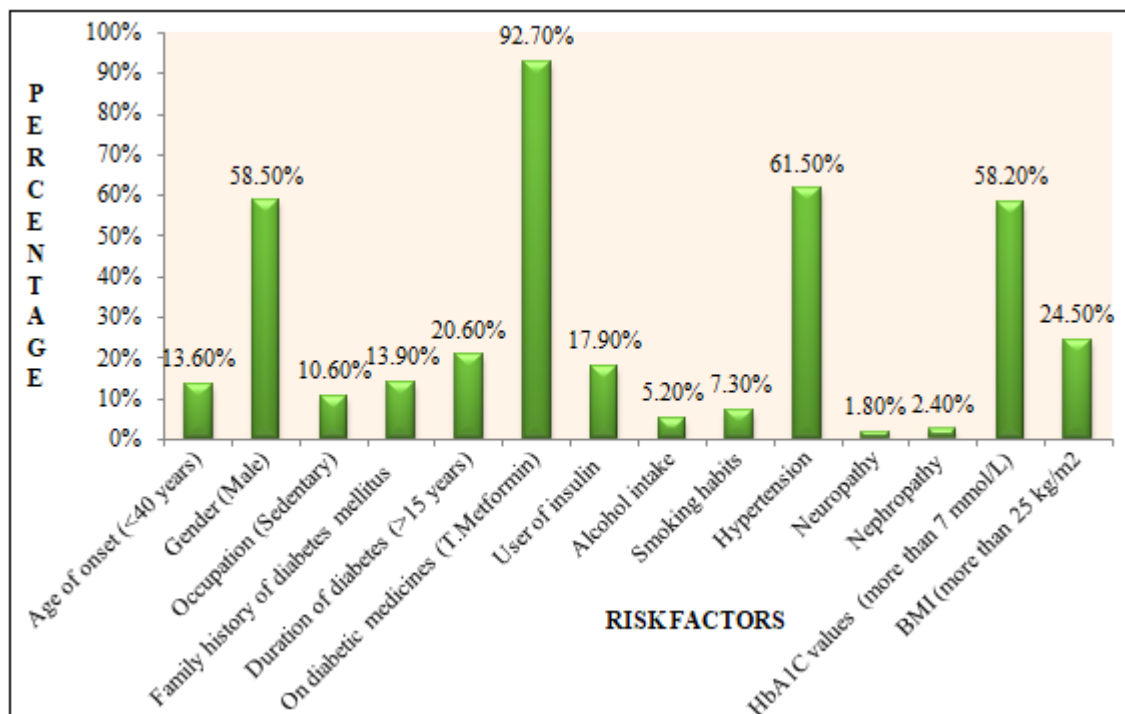


Figure 3: Risk factors regarding diabetic retinopathy

5. Discussion

The current study findings reveal that 55.2% had moderately adequate knowledge, only 5.5% had adequate knowledge and the rest 39.4% had inadequate knowledge regarding the

various aspects of diabetic retinopathy. Favorable attitude was found to be 62.12% among the diabetics regarding diabetic retinopathy and 37.88% were having moderately favorable attitude. None has unfavorable attitude regarding DR.

The current study findings reveal that, among the 14 risk factors, every participant had a minimum of four risk factors towards diabetic retinopathy. Those four risk factors were, HbA1C values more than 7mmol/L (58.2%), hypertension (61.5%), on diabetic medicines-T. Metformin (92.7%), and male gender (58.5%).

The study findings reveal that there was no statistically significant association between knowledge of participants regarding diabetic retinopathy, and demographic, and clinical variables. There is a significant association between Attitude and family income per month (0.038). Clinical variables such as diagnosis, medications were also found to have significant association with attitude ($p=0.001$).

6. Conclusion

Diabetic retinopathy related blindness is increasing in the world. The gap between the knowledge and attitude in the current study reveals that diabetic patients need information regarding diabetic retinopathy in order to identify it at the earliest especially who are at risk. We the health care team members can be helpful in providing or creating awareness among the patients who come to us. Almost all the participants are at risk to develop diabetic retinopathy. The finding of the study indicates sensitization of diabetic patients regarding diabetic retinopathy is very much crucial as it will be useful for early detection of diabetic retinopathy and prevention of vision loss due to diabetic retinopathy.

7. Future Scope

The same study if it is conducted as an experimental study to identify the actual diabetic retinopathy developed in diabetic patients as well as the risks of developing the same among the family members.

References

- [1] Addoor, K. R., Bhandary, S. V., Khanna, R., Rao, L. G., Lingam, K. D., Binu, V. S., . . . & Nandannavar, M. (2011). Assessment of awareness of diabetic retinopathy among the diabetics attending the peripheral diabetic clinics in melaka, malaysia. *Med J Malaysia*, 66 (1), 48-52.
- [2] Balasubramaniyan, N., Kumar, S. G., Babu, K. R., & Subitha, L. (2016). Awareness and practices on eye effects among people with diabetes in rural Tamil Nadu, India. *African health sciences*, 16 (1), 210-217.
- [3] Fact sheet National Diabetes Service Scheme, *Diabetes Australia*, 2016
- [4] Gadkari, S. S., Maskati, Q. B., & Nayak, B. K. (2016). Prevalence of diabetic retinopathy in India: The all India Ophthalmological society diabetic retinopathy eye screening study. *Indian Journal of Ophthalmology*, 64 (1) 38-44.
- [5] Hinkle, J. (2013). *Textbook of Medical Surgical Nursing*. Philadelphia: Wolters Kluwer.
- [6] Memon, M. S., Shaikh, S. A., Shaikh, A. R., Fahim, M. F., Mumtaz, S. N., & Ahmed, N. (2015). An assessment of knowledge, attitude and practice towards diabetes and diabetic retinopathy in a suburban town of

karachi. *Pakistan journal of Medical Sciences*, 31 (1) 183-188.

- [7] Namperumalsamy, P., Nirmalan, P. K., & Ramasamy, K. (2003). Developing a screening program to detect sight-threatening diabetic retinopathy in south india. *Diabetes Care*, 26 (6), 1831-1835.
- [8] Nihal Thomas, N. K. (2016). *A Practical Guide to Diabetes Mellitus*. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd.
- [9] Schaeffer, J. (2012). The ABCs of Diabetic Retinopathy. *Today's dietician*, 26-31.
- [10] World Health Organization. (2016). *Global report on diabetes*. World Health Organization.