

Fighting diabetic blindness: An urgent global issue concerning patients, physicians and public policy

It was Elliott Joslin, the world renowned diabetologist from Harvard University who once remarked, "The era of coma as the central problem of diabetes has given way to the era of complications."^[1] With the discovery of insulin as the diabetes started to live longer, the diabetic coma cases declined, but more and more patients with complications in target end-organs were seen. Despite optimal control of blood glucose, blood pressure and lipids, and the use of antivasular growth factor (VEGF) agents, the prevalence of diabetic retinopathy (DR) still remains high in people with diabetes, and is the leading cause of vision loss and blindness in mid-aged adults. The increasing global epidemic implies an increase in the rates of its microvascular complication, DR. The current issue of IJO emphasizes this devastating disease and its impact in a timely compilation of several studies conducted by the leading experts at premier centers in India to focus on the epidemiology, early screening, and mass education about DR. Under the Diabetic Retinopathy Initiative, much of the work presented in this supplement has been supported by the Queen Elizabeth Diamond Jubilee Trust, the mission of which is to prevent avoidable blindness. No doubt it seems reasonable to conclude that systemic control has its beneficial effects on ocular sequelae, as shown by many landmark clinical trials, and much of the diabetes-related blindness is "avoidable."

The SPEED (Spectrum of Eye Disease in Diabetes) Study collected data prospectively from a large cohort of type 2 DM patients (11,182) at 14 eye care centers from all over India. The importance of this study is enormous as it estimates the magnitude and severity of DR across the country. The SPEED Study has reached major conclusions about the risk factors of DR and other retinal vascular diseases. In Report 1, Das *et al.* reconfirms the high rate of DR in this population.^[2] It is alarming to know from Rajalakshmi *et al.* that a high proportion of these patients, almost one-fifth had sight-threatening DR (STDR) that results in loss of productivity and higher health cost expenditure.^[3] Previously, a pooled analysis of the data from eight population-based surveys in USA showed that the crude prevalence of STDR was found to be only 8%.^[4] The higher prevalence of STDR in the Indian population could be possibly due to delayed diagnosis and intervention of DR complications.

In this cohort of patients, as reported by Bhattacharya *et al.*,^[5] retinal vascular occlusions (RVO) have a much higher prevalence rate than that reported in other large population-based studies. Interestingly, the duration of diabetes did not influence the occurrence of RVO, rather stroke and hypertension carried a high risk for developing RVOs. Blood pressure control may be important for reducing the incidence of RVOs as we ophthalmologists often recommend it, but its role in progression of DR is still controversial, especially after the publication of the recent ACCORD Study results, which showed no benefit in blood pressure control in cardiovascular or diabetic retinopathy outcome.^[6] In Report 4,

Behera *et al.*^[7] describe that the prevalence of glaucoma in these diabetics was not higher than that of the general population, and again diabetes control had no significant association with it.

Despite all advances in the innovation of novel pharmacotherapies and their impact on visual outcomes, one thing is still undisputable that we cannot achieve these goals unless we can detect the sight-threatening DR lesions by early screening of DR and intervene in a timely manner. Although traditional fundus photography and telemedicine are widely accepted approaches of DR detection for a large population of diabetics, the new smartphone-based nonmydriatic camera, as described by Prathiba *et al.*^[8] might be a more practical and convenient tool for DR screening, especially in rural areas. Its fairly high sensitivity and specificity demands further development of this technology. The four other studies in this issue report on improving health education about raising awareness about diabetes. Rohini *et al.*^[9] show the effectiveness of educational video in DR screening compared to pamphlets. One of the important findings from this study was that almost three-quarters of these patients had never any HbA1C test done. The study at the grassroot level by Singh *et al.*^[10] in rural Maharashtra points out that trained village-level workers at primary health centers (PHC) can make a big difference in health education about diabetes. In another model in South Gujarat, where access is poor, the screening rate was higher in the ASHAs (Accredited Social Health Activists) Incentive group who referred diabetics from the villages for DR screening (Chariwala *et al.*^[11]). Finally, Raj *et al.*^[12] report that health education and digital retinal imaging at two AYUSH hospitals in Hyderabad could help in more effective screening for DR. All these programs repeatedly stress the importance of health education in battling the global epidemic of diabetes.

Optimal glycemic control is a challenging problem that needs intensive personal involvement and education with strict adherence to diet and medications with a lifestyle change and frequent physician visits. Given the importance of glycated hemoglobin in management of diabetes, blood glucose monitoring, and tight control of blood glucose has met with limited success in spite of many recommendations from the DCCT, UKPDS, and other landmark studies. In a recent survey at a premier academic center in USA, almost half of diabetic patients did not know their HbA1C level, or understood the association of HbA1C level to their blood glucose, or the recommended level to slow down the progression of DR.^[13] Over the years, we have learned about the benefits of intensive glycemic control from many trials. We have targeted the key molecules that play a role in causing this disease. Still we need an integrative approach of early screening and mass education with public and private policy efforts to win this battle that is of great public health importance.

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