Summary

Bhaktapur Retina Study (BRS) is a population-based study conducted to assess the prevalence and risk factors of major retinal diseases among an elderly population of age 60 years and above in Bhaktapur district of Nepal.

A total of 1860 subjects participated in the study. The age ranged from 60 to 95 years with a mean age of 70 years. There were more females, 1039 (55.9%), that had participated in the study than men. The overall prevalence of any retinal diseases in one or both eyes was 52.5%. The prevalence of unilateral retinal disease was 18.8% and that of bilateral disease was 33.8%. The most common cause among the retinal diseases was age related macular degeneration (AMD), followed by diabetic retinopathy (DR) and retinal vein occlusion (RVO).

The prevalence of AMD was 35.4% and of advanced AMD was 1.7%. AMD was strongly associated with the number of cigarettes consumed. Female gender, illiteracy, hypertension, alcohol consumption, and refractive error were speculated as other risk factors of AMD. The prevalence of DR among patients with diabetes was 23.6% in this elderly population. We found a considerable number of newly diagnosed diabetic patients who already had DR (7%). The duration of diabetes, hypertension and alcohol consumption were associated with an increase in risk for developing DR. The prevalence of RVO was 2.9%, branch retinal vein occlusion 2.7% and of central retinal vein occlusion 0.2%. The main risk factors of RVO were increasing age and hypertension.

The prevalence of low vision at presentation and after best correction was 52.9%, and 22.9% respectively, that of blindness at presentation and after best correction 1.9%, and 1.6% respectively. Uncorrected refractive errors still remain to be the most important cause of visual impairment. After best correction, cataract and retinal disorders were the major causes of low vision and blindness. Among the retinal diseases, AMD was the most common retinal cause of blindness followed by DR and RVO.

The awareness of vision threatening eye conditions and preventive measures is low in Bhaktapur district. The awareness of DR among those with diabetes in the population was 40% and that of DR in study population11.5%. Only 7.6 % of study subjects were aware of AMD. Older subjects, females, illiterates, farmers and those with poor visual acuity were less aware of blinding retinal
conditions. These findings highlight the need of comprehensive awareness campaigns that will help in early detection of disease and reduction in visual impairment and blindness.

Screening for vision threatening eye conditions such as DR, are necessary to prevent blindness. However, given the low number of ophthalmologists in Nepal and the difficult geographic conditions, tele-medicine and fundus photo screenings are promising methods for overcoming such barriers. We investigated the reliability of fundus photo screening by mid-level ophthalmic personnel (MLOPs). In this study, the overall agreement between MLOPs when compared to ophthalmologists for analyzing fundus photographs with retinal diseases, were almost comparable. Therefore, the utilization of MLOPs to screen retinal diseases at the primary eye care level could help in early detection and referral of vision-threatening retinal diseases.

A major strength of the study is the large sample size of an elderly population. One limitation of the study is that the findings from this study may not be representative of the entire population of Nepal. The findings of the BRS could form a guideline for future blindness intervention programs in Bhaktapur district for alleviating retinal blindness.