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SIX-YEAR INCIDENCE AND PROGRESSION OF VISUAL IMPAIRMENT IN A MULTI-ETHNIC ASIAN POPULATION: THE SINGAPORE EPIDEMIOLOGY OF EYE DISEASES (SEED) STUDY
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Aims: To describe the incidence and progression of visual impairment (VI) in a multi-ethnic Asian population in Singapore.

Methods: The Singapore Epidemiology of Eye Diseases Study comprised of 3 major Asian ethnic groups: Malays, Indians, and Chinese. Of the 8,592 eligible participants from baseline examination, 6,762 (response rate 78.7%) were re-examined during the 6-year follow up (year 2011-2017.) All participants underwent standardized systemic and ophthalmic examinations which included the measurements best-corrected visual acuity (BCVA). Any VI was further categorised into low vision (LV) and blindness which were defined as, BCVA <20/40 to >20/200, and BCVA ≤20/200 in the better-seeing eye, respectively. Incidence VI was evaluated among those without VI at baseline. Incidence estimates were age-standardised to the Singapore Population Census 2010. Poisson binomial regression model was used to determine factors associated with incident VI.

Results: After excluding those with VI at baseline, 6,524 individuals (1,800 Malays, 2,143 Indians, 2,581 Chinese) were included in the final analysis. The overall age-standardized incidences of LV and blindness were 3.3% (95% CI, 2.9% to 3.8%), and 0.2% (95% CI, 0.1% to 0.4%), respectively. Malays had significantly higher (P<0.001) incidence rates of LV (5.1%) and blindness (0.4%), compared to Indians (LV: 2.1%; blindness: 0.1%) and Chinese (LV: 2.3%; blindness: 0.1%). Progression to blindness at 6-year follow up occurred in only 1.4% (95% CI, 0.6% to 16.1%) of those with LV at baseline. Progression rate of unilateral LV to bilateral LV or worse, was 13.7% (95% CI, 8.9% to 21.2%). Older age (per decade, relative risk [RR]=2.64; 95% CI, 2.23 to 3.14), chronic kidney disease (CKD; RR=1.48; 95% CI, 1.10 to 2.01), lower socioeconomic status (RR=2.56; 95% CI, 1.83 to 3.59), and systemic co-morbidities (defined as any 2 of diabetes, hypertension, hyperlipidaemia, CKD and cardiovascular disease; RR=1.95, 95% CI 1.16 to 3.30) were significantly associated with best-corrected incident VI.

Conclusion: In this multi-ethnic Asian cohort in Singapore, the 6-year incidences of best-corrected LV and blindness were 3.3% and 0.2%, respectively. Malays have the highest VI incidence rate. These findings will be useful in the planning and designing eye health services for Asia’s rapidly developing urban communities.