

The Prevalence and Causes of Visual Impairment in Central Sri Lanka

The Kandy Eye Study

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Objective: To determine the prevalence and causes of uncorrectable visual impairment in the Kandy District of central Sri Lanka.

Design: Population-based, cross-sectional study.

Participants: Inhabitants ≥ 40 years of age from villages in the Kandy District were selected by randomized cluster sampling; 1721 eligible participants were identified and 1375 participated in the study.

Methods: The ophthalmic examination included best-corrected logarithm of the minimum angle of resolution visual acuity (VA), slit-lamp examination of the anterior segment, and dilated stereoscopic fundus examination. The principal cause of visual impairment after best correction was recorded.

Main Outcome Measures: Visual impairment (better eye $< 6/18$) and blindness (better eye $< 3/60$) after best correction.

Results: Comprehensive examinations, including VA, were performed on 1375 subjects (79.9% participation rate). The prevalence of blindness was 1.1% (95% confidence interval [CI], 0.002–0.020; 15 participants). The prevalence of visual impairment was 5.9% (95% CI, 0.043–0.075; 81 subjects). Cataract and age-related macular degeneration were the main causes of visual impairment.

Conclusions: Visual impairment remains a major public health problem in central Sri Lanka. Specific programs directed at reducing the cataract burden need to be implemented.

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In 2002, the World Health Organization (WHO) estimated that there were 161 million people worldwide with visual impairment (corrected acuity $< 6/18$ in the better eye), including 37 million with blindness (corrected acuity $< 3/60$ in the better eye).^{1,2} The burden of blindness is particularly severe in Asia.¹ In accordance with the WHO's *Vision 20/20* objectives, accurate ophthalmic epidemiologic data from Asia are needed to optimize the allocation of limited resources; recently, data from a number of population-based studies in this region has begun to meet this need.^{3–15} However, robust epidemiologic data from many Asian regions, including Sri Lanka, remain scarce. Blind school-based studies in Sri Lanka have investigated the causes of childhood blindness,^{16,17} but current WHO estimates of the burden of visual impairment in Sri Lanka are based on survey data from the early 1980s; the prevalence of blindness is estimated at 3 per 1000.¹

To provide updated data on the prevalence and causes of visual impairment in Sri Lanka, we conducted a large-scale, population-based ophthalmic survey in the Kandy District of the Central Province. Here, we report the prevalence and causes of visual impairment after best spectacle correction in this region.

Methods

Sampling Procedure

The Kandy Eye Study was a population-based, cross-sectional ophthalmic survey of the inhabitants of rural villages in central Sri Lanka. The principal aims of this project were to estimate the prevalence and causes of visual impairment and the prevalence and risk factors of ocular disorders among persons ≥ 40 years of age in this region.

The study was conducted within the Central Province, an area encompassing 5674 km² and divided into 3 Districts, the largest of which is the Kandy District, divided into 20 divisions, 1 of which is the urban area of Kandy (approximate population 110 000), containing the Centre for Sight Eye Hospital, which services the region. Subjects were randomly selected using a cluster sampling process. A sampling frame consisting of the list of all villages in the Kandy District with their populations was obtained from the 2001 Sri Lankan Census. The city of Kandy was excluded and 20 villages were selected from the District. Households were randomly selected from each village and all inhabitants ≥ 40 years of age were invited to participate. Allowing for an estimated design effect of 1.5 and an expected participation rate of 80%, a total sample size of 1330 was calculated to estimate an expected presenting blindness prevalence of 15 per 1000 with a precision of 0.8% at a confidence level of 95%. Health care workers from Kandy Centre for Sight enumerated the selected villages (and