Cataract in rural Myanmar: prevalence and risk factors from the Meiktila Eye Study

P A Athanasiov,[1] R J Casson,[1] T Sullivan,[2] H S Newland,[1] W K Shein,[3] J S Muecke,[1] D Selva,[1] T Aung[4]

[1] Department of Ophthalmology & Visual Sciences, University of Adelaide and South Australian Institute of Ophthalmology, Adelaide, South Australia; [2] Discipline of Public Health, University of Adelaide, Adelaide, Australia; [3] Meiktila Eye Hospital and Trachoma Control and Prevention of Blindness Program, Myanmar; [4] Yangon Eye Hospital, Yangon, Myanmar

Correspondence to:
Dr P A Athanasiov, South Australian Institute of Ophthalmology, Royal Adelaide Hospital, North Terrace, Adelaide, SA, 5000; athanasiov@yahoo.com

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ABSTRACT

Aims: To determine the prevalence of and risk factors for cataracts in a rural region of central Myanmar.

Methods: A cross-sectional, population-based survey of inhabitants ≥40 years of age from villages of central Myanmar; 2076 participated, and 2044 (82.3%) had an examinable lens in at least one eye. Data recording included smoking history, occupation, education level, betel-nut chewing, height and weight, and dilated lens assessment using Lens Opacities Classification System III grading: nuclear (≥4), cortical (≥2) and posterior subcapsular (≥2) cataracts. Aphakic and pseudophakic eyes were included as operated cataracts for statistical analysis.

Results: The prevalence of any cataract including operated eyes was 40.39% (95% CI 37.30 to 43.48%): 27.35% nuclear, 20.91% cortical and 11.34% posterior subcapsular cataracts. No significant association was found between cataract and betel-nut use, gender, smoking or outdoor occupation. The likelihood of all cataract types increased with age (multivariate analysis including operated eyes: OR 1.154, CI 1.13 to 1.18, p<0.001). Low level of education and low body mass index were associated with nuclear cataracts. Large village size was associated with increased risk for nuclear cataract (OR 3.23, CI 1.989 to 5.250, p<0.001) and decreased risk for cortical cataract (OR 0.20, CI 0.08 to 0.47, p<0.001).

Conclusions: The prevalence of cataract in rural Myanmar is similar to that in other developing Asian regions. Cataracts are strongly associated with increasing age, and are more common in those with lower education and lower body mass index.

In 2002, it was estimated that 161 million people worldwide were visually impaired and that 37 million were blind.[1] Cataract accounts for approximately half of this burden, with the majority of those afflicted residing in Asia.[1] Identifying modifiable risk factors for cataract in Asian regions, particularly where access to surgical treatment is difficult, has important public health implications. Recent population-based data from India[2] and Chinese Singaporeans[3] suggest that certain risk factors (particularly smoking) are universal; however, region-specific genetic and environmental influences may be involved.

Over the preceding decade, the Ophthalmology Department at the Royal Adelaide Hospital has established an ophthalmic educational programme with the Ministry of Health (MOH) in Myanmar (formerly Burma). With this background and the generous support of the MOH in Myanmar, we were able to conduct a population-based ophthal-

mic survey (the Meiktila Eye Study) in the central, rural region of Myanmar. The prevalence estimate of presenting visual impairment in this region was 40.4% (95% CI 36.1 to 44.7), and of presenting blindness 8.1% (95% CI 6.5 to 9.9).[4]

Cataract was the major cause of visual impairment, accounting for 64% of the blindness in at least one eye and 53% of bilateral blindness.[4] Here, we present the prevalence of and risk factors for cataract in this region.

METHODS

Comprehensive descriptions of the sampling procedure and data collection for the MES have been published.[4] A brief summary with additions that are specific to this study is provided below.

Sampling procedure

The MES was a population-based cross-sectional ophthalmic survey of the inhabitants of 10 rural villages in central Myanmar (population approx 251 000). Multistage stratified cluster random sampling was used to select villages for inclusion. All inhabitants over 40 years of age within each village were invited to participate. Allowing for an estimated design effect of 2.0 and an expected participation rate of 85%, a total sample size of 2300 was calculated to estimate an expected blindness prevalence of 4% with a precision of 2% and a confidence level of 95%.

Data collection

Qualified healthcare workers obtained a medical and ophthalmic history from each patient in their own language. The participants were asked about their highest level of education, and responses were divided into four categories: no education; primary education; intermediate; and secondary/higher levels. They were also asked whether they currently smoked tobacco or used betel nut regularly. The current or past use of either substance was not quantified. Participants were also asked about their usual occupation. As farmers were the only group that could be reliably expected to spend the majority of their time outside, the population was classified as farmers or non-farmers for analysis of the effect of outdoor occupation on cataract prevalence.

Height and weight were measured, from which body mass index (BMI) was calculated (kg/m^2), and the results were grouped into quartiles.

Each participant received a comprehensive ophthalmic examination that included dilated slit-lamp lens assessment using Lens Opacities