

Prevalence of Refractive Errors in a Brazilian Population: The Botucatu Eye Study

Silvana Artioli Schellini,¹ Shane R. Durkin,^{2,3} Erika Hoyama,¹ Flavio Hirai,¹ Ricardo Cordeiro,¹ Robert J. Casson,^{2,3} Dinesh Selva,^{2,3} and Carlos Roberto Padovani¹

¹Faculdade de Medicina de Botucatu, Universidade Estadual Paulista, – São Paulo State, Sao Paulo, Brazil

²South Australian Institute of Ophthalmology, Adelaide, Australia

³Department of Medicine, The University of Adelaide, Adelaide, South Australia, Australia

ABSTRACT

Purpose: To determine the prevalence and demographic associations of refractive error in Botucatu, Brazil. **Methods:** A population-based, cross-sectional prevalence study was conducted, which involved random, household cluster sampling of an urban Brazilian population in Botucatu. There were 3000 individuals aged 1 to 91 years (mean 38.3) who were eligible to participate in the study. Refractive error measurements were obtained by objective refraction. **Results:** Objective refractive error examinations were performed on 2454 residents within this sample (81.8% of eligible participants). The mean age was 38 years (standard deviation (SD) 20.8 years, Range 1 to 91) and females comprised 57.5% of the study population. Myopia (spherical equivalent (SE) < -0.5 dropters (D)) was most prevalent among those aged 30–39 years (29.7%; 95% confidence interval (CI) 24.8–35.1) and least prevalent among children under 10 years (3.8%; 95% confidence interval (CI) 1.6–7.3). Conversely hypermetropia (SE > 0.5D) was most prevalent among participants under 10 years (86.9%; 95% CI 81.6–91.1) and least prevalent in the fourth decade (32.5%; 95% CI 28.2–37.0). Participants aged 70 years or older bore the largest burden of astigmatism (cylinder at least -0.5D) and anisometropia (difference in SE of > 0.5D) with a prevalence of 71.7% (95% CI 64.8–78.0) 55.0% (95% CI 47.6–62.2) respectively. Myopia and hypermetropia were significantly associated with age in a bimodal manner (P < 0.001), whereas anisometropia and astigmatism increased in line with age (P < 0.001). Multivariate modeling confirmed age-related risk factors for refractive error and revealed several gender, occupation and ethnic-related risk factors. **Conclusions:** These results represent previously unreported data on refractive error within this Brazilian population. They signal a need to continue to screen for refractive error within this population and to ensure that people have adequate access to optical correction.

INTRODUCTION

The World Health Organization (WHO) has estimated that more than 161 million people worldwide have visual impairment, including 37 million with blindness.^{1,2} If this definition is expanded to include uncorrected refractive error then it is estimated that 259 million people are visually impaired.³ The burden of blindness is particularly severe in South-East Asia

and India; however, in countries such as Brazil, the prevalence of blindness is estimated to be 1.3% of those over the age of 50 years.² This represents not only a significant burden to those who are affected, but it also represents a large social and economic cost to the state.⁴

There are a paucity of data relating to the level of visual impairment and its causes within Brazil making it imperative that accurate ophthalmic epidemiological data from this region are collected in order to optimize the allocation of limited resources. Retrospective data suggest that the leading causes of visual impairment in Brazil are uncorrected refractive error (47.5%) and cataract (23.6%), closely followed by age-related macular degeneration and glaucoma.⁵

More recent population-based data demonstrate retinal disorders and cataract to be the leading causes of blindness, with cataract and refractive error to be the principle causes of visual impairment.⁶ A focus on these conditions may better equip the region to eliminate preventable blindness by the year 2020.

Received 26 November 2008; accepted 3 December 2008.

Keywords: anisometropia, Astigmatism, Brazil, hypermetropia, myopia, prevalence, refractive error, risk factors

Correspondence to:

Dr. Shane R. Durkin,

South Australian Institute of Ophthalmology

Royal Adelaide Hospital

North Terrace

Adelaide SA Australia 5006

email: shane_durkin@adelaide.edu.au

Copyright Informa Healthcare 2009
Not for Sale or Commercial Distribution
Unauthorized users prohibited
display, view and print a single
copy for personal use.