
Reference

1. World Health Organization. *Fact Sheet No. 282*. Available at: <http://www.who.int/mediacentre/factsheets/fs282/en/index.html>. Accessed March 21, 2010.
2. Thylefors B. A simplified methodology for the assessment of blindness and its main causes. *World Health Stat Q.* 1987; 40: 129-141.
3. Fletcher AE, Donoghue M, Devaram J, et al. Low uptake of eye services in rural India: a challenge for programmes of blindness prevention. *Arch Ophthalmol.* 1999; 117: 1393-1399.
4. Thulasiraj RD, Nirmalan PK, Ramakrishnan R, et al. Blindness and vision impairment in a rural south Indian population. The Aravind Comprehensive Eye Survey. *Ophthalmology.* 2003; 110: 1491-1498.

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Prevalence of Visual Impairment and Blindness & Survey of Barriers to Eye Care in a South Indian Population

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Prevalence of Visual Impairment and Blindness and Survey of Barriers to Eye Care in a South Indian Population

Purpose

To determine the prevalence of blindness and visual impairment, and identify barriers to eye care in Chennai, India.

Background

About 314 million people worldwide live with visual impairment, of whom 45 million are blind and 87% live in developing countries.¹ About 85% of visual impairment is treatable or preventable.¹ Visual loss is a serious public health problem in India. About 1/3 of the world's blindness caused by cataract occurs in India.² Each year about 3.8 million in India are blinded by cataract.³ In India there has been a lack of updated population-based data on visual status and barriers to eye care, which are necessary for designing effective treatment and prevention programs and assessing progress in reducing visual impairment.⁴

Methods

A cross-sectional study of vision status of 2558 subjects aged 5 years and older was conducted in May and June 2009 using a single-stage cluster random sampling; all participants of every eye

camp in 19 randomly selected rural villages and urban slum areas underwent a vision acuity screening with a Snellen E chart and a near vision chart and a basic eye examination. Visual impairment was defined as BCVA or best-corrected visual acuity $<6/18$ but $\geq 3/60$; blindness was defined by the WHO (BCVA $<3/60$), Indian (BCVA $<6/60$), and US (BCVA $\leq 6/60$) standards. A two-stage cluster random sample of 424 subjects aged 15 years and older was obtained by taking a simple random sample of participants proportional to camp size at all 19 camps. The sampled subjects responded to a quantitative survey on demographic background, awareness of visual status, acceptance of and prior access to eye care services. Translation consistency was maintained by having an interpreter read verbatim a standard interview script written in Tamil. Statistical analyses were performed using MINITAB 15.



Results

The prevalence of blindness was 0.72% [95% CI 0.43-1.13%] by the WHO, 2.63% [2.04-3.33%] by the Indian, and 7.92% [6.90-9.05%] by the US definitions; the prevalence of visual impairment was 12.38% [11.12-13.73%]. Blindness and visual impairment occurred more frequently in

females and ages over 50 years. Cataract (12.12% [10.88-13.45%]) was the leading cause of blindness, in 94.44%, 89.39%, and 79.90% of blindness by the WHO, Indian, and US standards, and visual impairment (87.50%). Only 15.1% [11.8-18.7%] of the surveyed could afford private eye care; 52.6% [47.7-57.4%] had never received previous eye examinations. Acceptance rates for medicine, glasses, surgeries, and all three were 53.7% [48.9-58.6%], 87.5% [84.0-90.5%], 61.1% [56.3-65.8%], and 35.4% [30.8-40.1%] respectively, while 4.0% [2.4-6.3%] would reject all three if having eye diseases. The ranking order of acceptance rates was consistent irrespective of gender, age, employment, education, prior access to eye care, visual and financial status. The acceptance rates were not significantly associated with most of the surveyed factors. Glass acceptance was associated with age, education, and past access to care; surgery acceptance was associated with visual burden.

Discussions & Conclusion

Cataract and refractive errors remained the leading causes of blindness and visual impairment. Resources should be allocated to address the high prevalence of treatable blindness. Perceptual barriers to eye care were consistent across most demographic groups, notably including education, employment, and financial status. Concerns for quality of local eye care services, financial barriers, and a widespread lack of eye care knowledge present major challenges for eye care providers.