

Abstracts of Asian research published in the international literature

Glaucoma in China: How Big Is the Problem?

This study was performed to derive preliminary estimates for the number of adults in China suffering from glaucoma, and project the burden of visual morbidity attributable to primary and secondary glaucoma. Age- and sex-specific data from 2 population surveys were applied to USA Census Bureau population estimates for urban and rural China. It was assumed that data from Singapore were representative of urban China, and those from Mongolia were representative of rural China.

It was estimated that 9.4 million people aged ≥ 40 years in China have glaucomatous optic neuropathy. Of this number, 5.2 million (55%) are blind in at least 1 eye and 1.7 million (18.1%) are blind in both eyes. Primary angle closure glaucoma (PACG) is responsible for the vast majority (91%) of bilateral glaucoma blindness in China. The number of people with the anatomical trait predisposing to PACG (an 'occludable' drainage angle) is in the region of 28.2 million, and of these 9.1 million have significant angle closure, indicated by peripheral anterior synechiae or raised intraocular pressure.

This extrapolation of data from 2 East Asian countries gives an approximate number of people in China suffering from glaucoma. It is unlikely that this crude statistical model is entirely accurate. However, the authors believe that the visual morbidity from glaucoma in China is considerable. PACG is probably the leading cause of glaucoma blindness in both eyes, and warrants detailed investigation of strategies for prevention.

Foster PJ, Johnson GJ. Glaucoma in China: how big is the problem? *Br J Ophthalmol* 2001;**85**:1277-1282.

Visual Acuity and Quality of Life After Cataract Surgery in Hong Kong

Visual acuity, visual functioning, and vision-related quality of life outcomes after cataract surgery were assessed in a population based study in a suburban area of Hong Kong. A cluster sampling design was used to select apartment buildings within housing estates for enumeration. All enumerated residents aged ≥ 60 years were invited for an eye examination and visual acuity measurement at a site within each estate. Visual functioning and vision related quality of life questionnaires were administered to subjects who had undergone cataract surgery, to unoperated people with presenting visual acuity less than 6/60 in either eye, and to a sample of people with normal visual acuity.

36.6% of the 310 cataract operated individuals had presenting visual acuity 6/18 or better in both eyes, and 40.0% when measured by pinhole. 4.5% were blind, with presenting visual acuity of less than 6/60 in both eyes. Of the operated eyes, 59.6% presented with visual acuity 6/18 or better. 11.2% of the operated eyes were blind with vision less than 6/60. Visual acuity outcomes of 6/18 or better were marginally associated with surgery in private versus public hospitals. Lens status (pseudophakic versus aphakic) and surgical period (within 3 years versus earlier) were not significantly related to vision outcomes. Mean visual functioning and quality of life scores decreased consistently with decreasing vision status. Spearman correlation with vision status was 0.420 for visual functioning scores and 0.313 for quality of life scores. Among visual functioning/quality of life subscales, correlation was strongest for visual perception ($r = 0.447$) among visual

functioning subscales and weakest for self care ($r = 0.171$) among quality of life subscales. Regression adjusted visual functioning and quality of life total scores for cataract operated individuals were slightly lower than for those of visually comparable unoperated individuals ($p < 0.05$).

Cataract operations in Hong Kong did not consistently produce good presenting visual acuity outcomes, suggesting that postoperative monitoring would be useful to minimise visual impairment in this population. Although vision outcomes were consistently correlated with all visual functioning/quality of life subscale scores, there was a differential impact with visual functioning subscales usually being affected more by reduced acuity than the more general quality of life subscales.

Lau J, Michon JJ, Chan WS, Ellwein LB. Visual acuity and quality of life outcomes in cataract surgery patients in Hong Kong. *Br J Ophthalmol* 2002;**86**:12-17.

Enucleation in a Tertiary Eye Care Centre in India

Enucleation is a standard surgical treatment modality for many end-stage eye diseases. Indications for enucleation vary with changing trends in disease management. Few studies have addressed the issue of the frequency and indications of enucleation of eyes in India. This study aimed to determine the frequency and the current clinical indications for enucleation in patients at a tertiary eye care centre in India, and attempted a clinicopathological correlation.

Medical records of patients undergoing enucleation at a tertiary eye care centre from January 1995 to July 1998 were reviewed to obtain patients' demographic data and socio-economic status. The clinical indications and predisposing factors were assessed. The formalin-fixed, paraffin-embedded sections of all enucleated eyes were re-evaluated and histopathological findings were correlated with the clinical diagnosis. The prevalence of enucleation was calculated, and age



Table 1. Clinical indications for enucleation.

Indication	No. of cases (%)
Tumours	74 (49%)
Staphyloma	38 (25%)
Acute injury	20 (13%)
Absolute glaucoma	9 (6%)
Painful blind eye	5 (3%)
Phthisis bulbi	1 (1%)
Others	4 (3%)

adjustments were made using the Indian population data from the 1998 mid-year statistics.

Enucleation of the eye was performed in 150 patients (151 eyes) of 88,991 new ophthalmic cases, constituting 0.17% of the cases seen in hospital, and amounting to a prevalence of 0.33% (95% CI, 0.27-0.40). Males outnumbered females in a ratio of 1.85:1 (98 males, 53 females). The median age was 8 years (mean 16.8 ± 18.3 years). Children younger than 15 years old constituted 85.2% (95% CI, 81.2-89.21%) of patients undergoing enucleation. Clinical indications for enucleation are shown in Table 1.

Of the 74 patients with a clinical diagnosis of tumour, histopathology revealed retinoblastoma in 55 patients (74%), melanoma in 6 (8%), and ocular surface tumours in 4 (6%). Clinicopathological correlation was 100% in cases with a definite clinical diagnosis of retinoblastoma and melanoma. Nine blind eyes (6%) in which an intra-ocular tumour was one of the differential diagnoses were negative for a tumour on histopathology. Staphyloma was more prevalent in the low socio-economic group ($p = 0.0004$), with a history of childhood trauma in 34% cases.

The prevalence of enucleation in the population reporting to this tertiary eye care centre was 33 per 10,000 population during the study period of 3.5 years. Major indications for enucleation were tumours, staphyloma, and trauma (88% of all cases). Increased frequency in the young was due to the high proportion of retinoblastoma and staphyloma. Childhood trauma, inflammation,

and malnutrition may together play a role in the pathogenesis of staphyloma. Awareness at the level of primary health care providers, paediatricians and general practitioners should be promoted to identify the disease process at an early stage and facilitate early intervention measures that could result in eye and vision salvage.

Vemuganti GK, Jalali S, Honavar SG, Shekar GC. Enucleation in a tertiary eye care centre in India: prevalence, current indications and clinicopathological correlation. *Eye* 2001;15 (Pt 6):760-765.

Ocular Biometry in Subtypes of Primary Angle Closure Glaucoma in Malaysia

Thirty seven consecutive patients (41 eyes) diagnosed with primary angle closure glaucoma (PACG) attending the Glaucoma Clinic in University Malaya Medical Centre, over a period of 6 months were categorised as having acute, subacute, and chronic PACG from the clinical presentation. Each patient underwent automated refraction, A-scan biometry for anterior chamber depth, axial length and lens thickness, keratometry, and corneal diameter measurement. Calculations for the relative lens position and the lens thickness:axial length index were performed. The data collected was analysed by the non-parametric test (Kruskal-Wallis), one-way analysis of variance (ANOVA), chi-square test, Spearman's non-parametric correlations, and regression analysis. For the controls, 15 eyes from 15 healthy subjects matched for age, sex, refractive error, and race were chosen and underwent the same examinations.

Chronic PACG was the predominant glaucoma subtype (53.6% of patients and 58.5% of eyes). The ocular biometric measurements of acute PACG eyes deviated most from controls in having the shallowest anterior chamber depth, shortest axial length,

smallest corneal diameter, steepest corneal radius, thickest and most anteriorly situated lens, and the greatest lens thickness: axial length index. The subacute subtype was closest to normal and the chronic PACG subtype fell in between in most of the biometric characteristics. These findings were not statistically significant. All PACG eyes as a group however showed statistically significant shallower anterior chamber depth ($p < 0.05$), and a more anterior relative lens position ($p < 0.05$) compared with controls.

Mimiwati Z, Fathilah J. Ocular biometry in the subtypes of primary angle closure glaucoma in University Malaya Medical Centre. *Med J Malaysia* 2001;56:341-349.

Estimation of Blindness in India from 2000 to 2020: Implications for Blindness Control

Appropriate national planning based on current and reliable data is necessary to eliminate avoidable blindness in India. A national survey performed from 1986 to 1989 reported that 1.5% of the Indian population (12 million people) was blind with a presenting visual acuity of <6/60 in the better eye. The original goal of the National Programme for Control of Blindness was to reduce this prevalence to 0.3% by 2000. The prevalence of blindness in the population of Andhra Pradesh has recently been reported to be 1.66% with a presenting visual acuity of <6/60 in the better eye as the sole criterion and 1.84% with a presenting visual acuity of <6/60 or central visual field <20° in the better eye. These population-based data were used to estimate blindness in India in 2000 and the possible scenarios of blindness through to 2020 were projected with a different emphasis of the blindness control policy in India.

Recent population-based data on the age-, sex-, and cause-specific blindness rates from the Andhra Pradesh Eye



Table 2. Projected blindness in India to 2020.

Year	Number of blind persons (95% confidence interval)
2000	18.7 million (15.2-22.3)
2010	24.1 million (19.7-28.4)
2020	31.6 million (26.4-36.9)

Disease Study were applied to the population distribution of India to estimate the number of blind persons in 2000. The age-, sex-, and cause-specific rates of blindness were then applied to the estimated age, sex, and urban-rural population distribution of India in 2010 and 2020 to project the number of persons blind (from various causes) and the blind person-years that would be suffered under varying degrees of emphasis in the policy to control blindness due to particular diseases. For these projections, blindness was defined as a presenting distance visual acuity of $<6/60$ or central visual field <200 in the better eye.

The number of blind persons in India in 2000 was estimated to be 18.7 million, of whom 9.5 million had cataract-related and 3 million had refractive error-related blindness (Table 2). If there is no change in the current trend of blindness, the number of blind persons in India would increase to 24.1 million in 2010, and to 31.6 million in 2020 (Table 2). If effective strategies are put in place to eliminate 95% of blindness due to cataract by 2020, blindness in 15.6 million persons would be prevented who would otherwise be blind in 2020 if the current trend continues, and 78 million blind person-years would be prevented. Similarly, if effective strategies are also implemented to eliminate 95% of the refractive error blindness by 2020, another 4.2 million

persons would be prevented from being blind in 2020, and 82 million blind person-years would be prevented. In addition, if strategies to prevent 90% of the preventable blindness due to corneal disease and glaucoma are successful by 2020, blindness in an additional 3.6 million persons and 29 million blind person-years would be prevented.

The planning of blindness control in India should take into account recent population-based data for the entire age range, which suggest that the number of blind persons in India is currently more than 18 million. This estimate is 50% more than the figure of 12 million from a decade ago that is still widely quoted in the blindness control policy documents. If avoidable blindness is to be substantially reduced in India by 2020, effective strategies against blindness due to cataract and refractive error are urgently needed since both these conditions are relatively easy to treat. Also, strategies against preventable corneal and glaucoma blindness need to be strengthened for them to show an impact over the next 2 decades.

Dandona L, Dandona R, John RK. Estimation of blindness in India from 2000 through 2020: implications for the blindness control policy. *Natl Med J India* 2001;**14**:327-334.

Visual Impairment, Blindness, and Cataract Surgery Among Elderly People in Hong Kong

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The prevalence of vision impairment, unilateral/bilateral blindness, and cataract surgery were estimated in a population-based survey among the elderly in a

suburban area of Hong Kong. Fifteen public, private, and home ownership scheme housing estates in the Sha Tin area of Hong Kong were subjected to cluster sampling to randomly select a cross section of people aged ≥ 60 years.

Visual acuity measurements and ocular examinations were conducted at a community site within each estate. The principal cause of reduced vision was identified for eyes with presenting visual acuity worse than 6/18.

3441 subjects from an enumerated population of 4487 (76.7%) underwent an eye examination. The prevalence of presenting visual acuity less than 6/18 in at least 1 eye was 41.3%; and 73.1% in those aged ≥ 80 years. Unilateral blindness (acuity $<6/60$) was found in 7.9% of subjects and bilateral blindness in 1.8%.

Refractive error and cataract were the main causes of vision impairment and blindness, respectively. Visual impairment with either eye $<6/18$ increased with advancing age and was more prevalent in males, the less educated, and those living in public housing estates. The prevalence of cataract surgery was 9.1% and was associated with advancing age and lower educational standard.

Blindness and visual disability were common in this socioeconomically advanced population, with most of it being easily remedied. Because of a rapidly ageing population, healthcare planners in Hong Kong must prepare for an increasing burden of visual disability and blindness.

Michon JJ, Lau J, Chan WS, et al. Prevalence of visual impairment, blindness, and cataract surgery in the Hong Kong elderly. *Br J Ophthalmol* 2002;**86**:133-139.

