



# Commentary on ten-year incidence of cataract surgery in urban southern China: the Liwan Eye Study

Ellen H. Koo, Zubair Ansari

Bascom Palmer Eye Institute, Department of Ophthalmology, Miller School of Medicine at the University of Miami, Miami, FL, USA

Correspondence to: Ellen Koo, MD. Bascom Palmer Eye Institute, 900 NW 17th St., Miami, FL 33136, USA. Email: [exk126@med.miami.edu](mailto:exk126@med.miami.edu).

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## Background

Among the global population, cataract blindness continues to account for a major proportion of visual impairment in adults aged 50 years and older (1,2). In developing nations, there are still significant barriers that lead to inequities in the reversal of cataracts, and these include lack of government funding, issues surrounding costs, and insufficient number of ophthalmologists (3). In China, cataract blindness continues to be a leading public-health issue due to its ageing population (4). It has been previously suggested that China has one of the lowest cataract surgery rates with Asia, with 1,067 cases performed per million population in 2014 (5).

In recent years, rural China has made substantial progress addressing cataract blindness by significant increasing in cataract surgical coverage (6). The paper “Commentary on Ten-Year Incidence of Cataract Surgery in Urban Southern China: The Liwan Eye Study”, is a timely one, as it serves to investigate the incidence of cataract surgery of Liwan district—and old town of Guangzhou City—as well as the accessibility of the very crucial healthcare intervention of cataract surgery. Given the worldwide trends of increasing cataract blindness, the study highlights an endemic problem that needs to continue to be addressed.

## Design and results

This is a population-based study which recruited 1,405 eligible participants in 2003. At the 10-year follow-up

examination, 778 were included for analysis. The study defined having incident cataract surgery as participants documented to have baseline crystalline lens, and then later underwent cataract surgery in either eye at any point during the 10-year follow-up period. At the baseline examination, a detailed questionnaire was used to collect information pertaining to level of income, education, as well as medical history of hypertension and diabetes. The study found that the overall 10-year incidence of cataract surgery 9.4% with an annual incidence of 0.9%. Increase in income and education levels were found to be significantly associated with an increase in incidence of cataract surgery.

## Commentary

Cataract still accounts for a significant portion of blindness worldwide (1,2) and there remains a disparity in the accessibility and delivery of cataract surgical services in low-income areas of the world (7,8). This study is an important and timely one, as it specifically investigates the incidence of cataract surgery in an old-town area of Guangzhou City in China. China has enjoyed rapid economic growth and is considered to have one of the fastest-growing economies in the world—this progress has allowed China to raise approximately 800 million people out of poverty (9,10). Along with this rapid growth, the country also saw an improvement in health insurance coverage rate (11), with wider accessibility of cataract surgery for the urban population in China (5,6).

While this improvement of cataract surgery accessibility appears promising, the study nonetheless showed that 16.1% of their sample had visual impairment [best-corrected visual acuity (BCVA) <20/60] at 10-year follow-up examination, with cataracts making up the leading cause (44.4% of those aged  $\geq 75$  years). Despite this finding, the overall 10-year incidence of cataract surgery was low at 9.4% [95% confidence interval (CI): 7.4–11.7%]. In univariate logistic regression analysis, the study found that participants with higher income [odds ratio (OR) =0.3, P=0.031] and higher level of education (OR =0.4, P=0.006) were more likely to have received cataract surgery. The study found no association with age or gender when considering cataract surgery incidence. In multivariate logistic regression model, higher income (OR =0.2, P=0.023), higher level of education (OR =0.1, P<0.001) and the presence of diabetes (OR =3.9, P=0.038) were again found to be significant associated with incident cataract surgery.

The low overall rate of cataract surgery of 9.4% confirms that there are still challenges leading to inequities in cataract surgery availability in urban China. The significant association of cataract surgery incidence with level of educational and income further shows the need to address the accessibility of cataract surgery. The accessibility of cataract surgery in the population of lower-socioeconomic backgrounds is largely due to cost issues surrounding the procedure. A study conducted in Guangzhou city by Lin *et al.* showed that financial problems was most commonly cited as the primary reason for patients to participate in the free cataract surgery program, which was at that time designed as a poverty relief project (12).

Another consideration is that in patients with lower health literacy is there may be a lack of understanding of cataracts amongst this population. A study in India, using data from rural areas, reported that many persons with cataracts were unaware of their diagnosis (13). Furthermore, in many developing countries in Asia, there may be a cultural tendency for the head of household to determine whether a member of the household should undergo cataract surgery (14). Related to this traditional household dynamics, is the consideration of gender inequality and decision-making powers. This is especially true in countries like China where Confucian teachings remain deeply embedded in the culture. In fact, when lower-priced cataract surgery was made more easily accessible in rural China, there was an increase in the women-to-men ratio amongst patients (15).

It is important to note that disparities in access to high

quality cataract surgery is not a problem unique to Liwan or South East Asia. Numerous published studies have shown discrepancies in the prevalence of cataract blindness in areas of low income, gender inequalities, or poor health literacy in a variety of regions of the world (16,17). Furthermore, though cataract surgical rates have increased worldwide, the distribution of cases has not been equitable in areas of lower socioeconomic status (18). The Liwan Eye Study highlights a broader problem in the context of global eye care delivery in that vulnerable populations encounter significant barriers in access of care, and therefore higher burdens of preventable vision loss as a result of cataracts.

A limitation, however, in applying the Liwan Eye Study to other health contexts is that not all health delivery models are made equal. It has been well documented that China is uniquely positioned to mobilize and treat vast rural and urban populations at an efficient scale (19). This model unfortunately is not applicable all areas of the world in which developing economies fail to prioritize eye health as a part of national health programs. Recognizing these limitations, large advocacy groups and international health organizations (such as the World Health Organization) must parse epidemiological and demographical data as presented by the Liwan Eye Study to provide relevant information to government ministries around the world. Though these incipient countries may lack the health infrastructure as China, a clear understanding of the gaps that exist in accessibility of eye care may allow public health officials to construct well devised, eye health programs to mitigate these disparities.

## Conclusions

As the worldwide population is expected to age, access to care and dissemination of accurate eye health and screenings becomes imperative to stave off preventable blindness. The World Health Organization in association with the International Agency for the Prevention of Blindness (IAPB) in 2014 outlined an action plan to eliminate global blindness by the year 2020 (20). Though clearly that desired benchmark has not been reached, strides have been made in recent years to elucidate the patient limiting factors to access of quality ophthalmologic care. One of the crucial components of this action plan was to “address the need for generating evidence of the magnitude of visual impairment and blindness worldwide”. As global health systems become stretched from a resource standpoint because of the COVID-19 pandemic, greater caution needs to be placed

on the further burgeoning of increasing cataract blindness. Studies such as the Liwan Eye Study accomplishes that, and further data and grants need to allocate to this area more than ever to enact change at a broader level in all health systems.

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## Footnote

*Conflicts of Interest:* Both authors have completed the ICMJE uniform disclosure form (available at <http://dx.doi.org/10.21037/aes-2020-01>). The authors have no conflicts of interest to declare.

*Ethical Statement:* The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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