

WORLD VIEW

Models for improving cataract surgical rates in southern China

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Series editors:
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19 February 2002**Background/aims:** Unoperated cataract is the main challenge to blindness reduction in China. This demonstration project in Guangdong Province was designed to test various strategies to improve the cataract surgical rate.**Methods:** Two strategies (reduction of the cataract surgical fee and training of country doctors in the detection of cataract blindness) were implemented in each of two counties. Both interventions were introduced in a third county.**Results:** The cataract surgery rate (CSR) per million was 366 in the county where training took place, 588 where the fee was lowered, and 1140 where both interventions took place. The improvement in CSR was highly significant ($p < 0.001$).**Conclusions:** In southern China, CSR can be increased with community based measures. Sustainability for such measures will be the major future challenge.

Senile cataract remains a leading cause of blindness in China.^{1,2} With 2.5 million people already cataract blind and awaiting surgery and only about 350 000 cataract operations being performed each year for the 400 000 newly cataract blind, the number of people who are blind because of cataract will grow each year. There must be an improvement in the number of operations being performed if the backlog is to be reduced. Zhongshan Ophthalmic Center (ZOC) in Guangdong Province utilised two models in three combinations to test their effectiveness at improving surgical volume.

MATERIALS AND METHODS

Three counties were chosen for the study site. Selection was based on socioeconomic similarity and absence of a strong existing cataract surgical programme. They are typical for the province and have very similar socioeconomic status, with per capita annual income of \$US278 (plus or minus \$38). They are all about a 3 hour drive from the provincial capital of Guangzhou, which is the location of ZOC. Each county had received minimal cataract surgical interventions in the past. Each is served by a county hospital with a small ophthalmology department, providing extracapsular cataract extraction (ECCE) with intraocular lens (IOL) surgery. Each hospital was performing fewer than 50 cases per annum before the study. The ophthalmic staff of all three hospitals had received surgical training as part of an earlier programme supported by Helen Keller International.

Two intervention strategies were developed. The first involved the training of primary healthcare workers in the recognition and referral of cataract patients. These workers received a 3 day programme that emphasised screening for visual acuity, recognition of cataract, steps to assure referral for care, and instruction in postoperative care. The instruction was provided by the staff of ZOC. Throughout the course lectures were provided and the final day involved a field visit and role playing.

The second intervention was a reduction in the fee charged for the surgery so that the fee for intraocular lens use was comparable to the fee for intracapsular surgery, approximately 70% of the price of the intraocular lens implantation. This fee was the total charge for surgical and postoperative care at the county hospital. Each of the two strategies was studied in a single county and both in a third county.

Once identified by the primary health worker, the patient was referred to the provincial hospital for surgery. In the county where only the price reduction took place, the information regarding the lower price was announced by radio and television. Both media are widely followed in this area of Guangdong. The announcements were scripted by the staff of ZOC with input from the media outlets. Previous outreach projects in this area of China had successfully recruited patients in this way. All patients who either were identified by the primary health worker or who came forward to the provincial hospital in response to the media campaign were

Table 1

County	Huidong	Renhua	Qujiang
Intervention	Training	Price reduction	Both
Population	560 000	160 000	350 000
Population older than 50 years	112 000	32 000	70 000
Estimated cataract blind	1904	544	1190
Number who came forward for surgery	225	94	443
Number who had surgery	173	78	392
% acceptance of surgery	76.9	83.0	89.2
CDR (%)	225/1904(11.8)	94/544(17.3)	443/1190(37.2)
CSR*	309	487	1120
CSR before study	89	63	114

* χ^2 48.8 $p < 0.0001$

enumerated and followed to see if they eventually had surgery. All patients had ECCE with IOL. The lenses were of local manufacture.

The number of cataract operations performed in a 6 month period was measured and two rates were derived. The first was the cataract surgical rate (CSR): the number of cataract surgeries performed in 6 months in a population of one million people.³ The second was the cataract delivery rate (CDR): the number of cataract surgeries performed in a given period divided by the number of cataract blind people over age 50 expected to be found in the population. The population over 50 is 20% of the total population. A recent population based survey in Guangdong Province had demonstrated a cataract blindness rate of 1.7% in the population over 50. The CSR and CDR were calculated for each county and then compared.

RESULTS

The training of the health workers took place in Huidong and Qujiang counties. A total of 339 doctors and nurses were trained in the 3 day course in Huidong and 199 in Qujiang. This represented about 70% of the primary health workers in each county. Table 1 summarises many of the pertinent findings.

DISCUSSION

There is a pressing need for improved cataract surgical delivery in China. Unoperated cataract cases remain the largest group of blind people in the country. The logistics of mobilising the cadres needed to identify, refer, and operate on thousands of individuals are formidable. Measures that can increase the cataract surgical rate are essential to facilitate this undertaking. In Guangdong Province, two interventions demonstrated an increase in the CSR. Training of the primary health workers in the identification and mobilisation of the cataract blind resulted in a tripling of the CSR from pre-intervention levels. Lowering of the cost of cataract surgery with IOL to the cost of cataract surgery without IOL raised the CSR nearly fivefold. When both interventions were conducted, the result was a 10-fold increase in the CSR.

As the healthcare system in China changes and the previous commitment to universal access is replaced by a fee for service plan, fewer patients receive treatment.⁴ Eye care services suffer disproportionately, since the elderly are the least able to afford care and bear the majority of the cataract blindness.^{5,6} Interventions that will address this problem have to be cost effective. The training of the primary health workers over a 3 day period cost approximately \$4 per worker. The total cost of radio and television announcements was in the order of \$150. The reduction of the surgical fee was as significant as the training course in improving the CSR. In this study the donor subsidised the fee. In a more realistic model, improving economies of scale and adopting outpatient surgical procedures can lower the fee. This will be the major element of a follow on programme to take place in Guangdong Province.

ACKNOWLEDGEMENT

Supported by a grant from the Starr Foundation and Miserior.

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Br J Ophthalmol 2002 86: 723-724

doi: 10.1136/bjo.86.7.723

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