

# Urban Changes and Rural Struggles for Ophthalmology in China

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Shanghai skyline

**C**hina is by far the most populated country in the world, with over 1.3 billion inhabitants. It is also the country with the highest number of blind and visually impaired people. As a developing country, half of China's population lives in the countryside and even though eye care in China has evolved dramatically over the past decades, disparities remain between cities and rural areas. Indeed, China is estimated to have about 6.7 million blind people, with approximately 80% of them living in generally underserved rural areas [1].

China's recent dramatic economic growth is also contrasted by its very multifaceted health care system. The recent attempt to reshape it worked only partially, as in any reform, it takes time to change what has been established and used for years.

The Chinese government has been trying for the past decade to eradicate blindness and encourage eye care to reach the World Health Organization (WHO) Vision 2020: The Right to Sight goal [2]. The government has also committed itself to establish a universal basic health care system by 2020 including 'safe, effective, convenient and low-cost health care'. However, the provision of social services such as quality health care throughout China is still based on the geographical repartition of the population and the inequalities remain too high between the classes. There is still a long way to go for a universal type of coverage, as we know it in the UK, to be in place.

Consultant Ophthalmic Surgeon Prof

Christopher Liu was born in Hong Kong and was educated and attended medical school in the UK. Travelling and working in China as well as the UK has allowed him to gain a unique perspective into health care and ophthalmology in China. "While China has made undoubtedly progress in the application of the latest technologies, providing these benefits to all given the population and size of the country will take many years."

## Urban vs. rural areas

Even though most of the hospitals are clustered in the cities, China has among the best eye hospitals in the world with high-end equipment and top-notch surgeons that rival the UK and America's finest institutions. A good example of such remarkable services is Guangzhou's Zhongshan Ophthalmic Centre. They offer orthoptic vision therapy for amblyopia (lazy eye), strabismus and binocular vision anomalies. Other modern ophthalmic techniques now largely used in China also include intraocular lens

**"It is the country with the highest number of blind and visually impaired people."**

(IOL) implantation autoperimetry, fundus fluorescein angiography, indocyanine angiography, ocular ultrasonography and multifocal electroretinograms. Many private hospitals such as Aier Ophthalmology (based in Shenyang) and Bright Eye Hospital (based in Heyuan) are also expanding their eye care procedures and services locally and nationally. Compared to the other Chinese hospital specialities, ophthalmic hospitals have been seeing a higher level of technology and profits. In 2011, the ophthalmic market segment's gross profit reached RMB 892.4 million (GBP 91.4 million). However, as in any private institution, the costs of the services are high. One surgical operation generally represents months or years of savings for the average Chinese citizen.

Similar to any other country, private hospital patients are often better off than their public hospital counterparts, where sometimes people have to start lining up at the door of the hospital many hours in advance, to have a chance to see one of the few thousand specialists available around the country [3]. Indeed, the country is facing a shortage of ophthalmologists, there are currently over 23,000 ophthalmologists in China. Even though this number is low for a country with over a billion people, it is a definite step forward compared to the only 100 ophthalmologists practising in the 1950s [4].

However, people living in rural areas are often deprived of the high-end technology and academic excellence the big cities are benefitting from. On a per capita basis, health care services remain unevenly distributed. Moreover,



Herbal pharmacy at the Xi Yuan Hospital

the doctors practising Western medicine are also concentrated in urban areas, and constitute only about one fourth of the total medical personnel.

Beside the fact that one half of the population lives in rural areas, most of them were not able to freely move around China until recently because of the unremitting Hukou system of household registration. To simplify, the Hukou system is a social management system that ties benefits such as health care, education and pensions to a person's family place of birth. Established by the government over 2,000 years ago, the Hukou system was strongly enforced during the second half of the 20th century by the Communist Party, not only to keep track of who was in the family but to restrict movements from the countryside to the cities. Today, the Hukou system is becoming more flexible

because of the economic boom China is undergoing, people can now more easily move to the city if they find a job. However, in big cities such as Shanghai about 40% of the population are not natives to the city. Consequently they are considered unofficial as they do not have the city's Hukou, thus do not acquire the same social benefits than the Shanghaiese. In the whole of China, migrant workers represent a mass of 250 million [5].

"Over the past 20 years, the Hukou system has become more and more flexible," says Wu Jiang, Shanghai's former deputy director of city planning. "Twenty years ago, farmers still had a hard time moving to cities. Even 10 years ago, local governments might still be thinking, 'how do we move these people out?' Now, anyone can live here in Shanghai, as long as they can find a job. So now, the problem is, how can you let this population share the public services as much as the local people?" [6] In terms of health care and ophthalmology this is a big concern. Over 66% of China's hospital beds are in the cities, yet most people can't access them. It also means that people in isolated areas, who are deprived of medical care, cannot better their living and medical situation by moving to a city. Besides, even though anyone can access private hospitals, this option is too expensive for most Chinese, leaving the rural population with poorly equipped facilities, high prices and inadequate health care.

In order to compensate for the concentration of medical professionals in the cities, the government did engage in a new health care reform for the rural areas in order to provide health care for everyone.

Prof Christopher Liu observes: "Anyone



Acupuncture

who has travelled in China over the last ten years will have seen the evidence of the dramatic progress the country has made from the new skyscrapers, high speed rail and airports. However, it takes longer to provide educated health care professionals than it does to purchase new technology. It also takes time to gain expertise in terms of working practices and then to ensure that those highly skilled ophthalmologists are practising across what is a very large country with a population in excess of a billion. China has long prioritised education and the quality of education and medical education is continuing to improve. It is difficult to estimate an exact time scale but with the growth in high quality medical education in China we will see real improvements in the quality of health care countrywide."

In 2005, the Chinese government initiated the New Rural Cooperative Medical Care System with approximately GBP 78.4 billion funding for three years. This system aims to provide basic health insurance coverage to everyone, no matter where they live, for RMB 50 (about GBP 5) annually. It is supposed to provide affordable health care for the rural poor. Of that, RMB 20 is paid in by the central government, RMB 20 by the provincial government and RMB 10 is paid by the patient. The system is tiered and depends on the location and type of services supplied. If the patient goes to a small hospital or clinic in their local town, the scheme will cover 70-80% of their bill. If they go to a county one, the percentage of the cost being covered decreases to about 60%. And if they need a specialist – most of which are in modern city hospitals – the scheme will cover about one third of the bill.

According to the Chinese government, now 95% of the population has some form of health care coverage, however, the services provided are still highly different from one town to another.

### Eye care and hiccups

Cataracts and degenerative myopia are the most common causes of visual impairment in China. Even though myopia and glaucoma are significant causes of visual disabilities, there is a lower incidence of retinal disease in China than in western countries [7].

In 2011, there were 288 ophthalmic hospitals and the industry revenue reached over RMB 6 billion (GBP 614.2 million), while only half of China's ophthalmologists perform surgery and most rural eye doctors have little or no training in cataract surgery [8].

Thus, the backlog of cataract blindness



Barefoot Doctor Guilin

in China is estimated to be between six and seven million people, and there are approximately 1.3 million new cases of cataract blindness every year due to China's ageing population. The number of persons over the age of 80 years is even expected to increase to 50 million in the next 40 years. However, due to the lack of prevention and expensive cost of care, only 300-400 per million people receive surgery every year.

Patients who do receive cataract surgery all too often are left with poor results, attributable in part to the 'use of intracapsular cataract extraction without provision of aphakic spectacles, or significant posterior capsular opacification after conventional extracapsular cataract extraction with polymethylmethacrylate (PMMA) intraocular lens implanted at the sulcus. Studies showed that 40% to 55% of patients were still blind in the operated eye after surgery' [8].

The combined result of poor outcomes and poor accessibility to cataract services got Prof Dennis Lam thinking. In 2004, he initiated a program called Project Vision to bring low cost cataract surgery to the poorest areas of China, a sort of Mao Zedong's 'barefoot doctor' adapted to the population's ophthalmology needs.

"The premise of the project is simple: to train local surgeons in advanced techniques that have uniformly excellent results and can be performed for a modest fee. Training involves hundreds of carefully supervised cases using a sutureless, large-incision, manual cataract extraction (SLIMCE) technique. The fee is RMB 700 [9] (about GBP 55, or three to four months' salary in China [10]).

The SLIMCE technique was invented

by Prof Lam and his colleague Dr Srinivas Rao, and has been found to be well suited to use in rural China. There are no sutures, thus reducing the cost of surgery and the risk for later infection; a temporal scleral wound produces little astigmatism, and manual extraction of the lens saves money by eliminating the phaco machine and preserves corneas that might otherwise absorb the high energy levels associated with emulsification of extremely dense cataracts. A recent study of 176 postoperative patients bears out the theory behind the SLIMCE technique and its application by rural surgeons in Project Vision: 96% of patients had good vision (6/18 or better) after surgery [unpublished data]. Of the patients operated for cataract, 86% of them had been blind before their operation."

This initiative has been highly supported by Hong Kong, where the numbers of people developing blindness due to cataract approaches zero.

Other initiatives include World Sight Day, which promotes eye health and avoidable blindness prevention.

### Organ transplants and black clinic

Even though the government banned organ transplant from live donors six years ago, the country remains overburdened with more eye impairment than there are affordable ophthalmologists. Black clinics and illegal eye cornea trafficking have increased [11]. According to government figures, the Beijing government has shut down about 1,000 black clinics a year since 2010. They offer services from primary care to organ transplant. They are quite popular with migrant workers as they are cheaper than state run hospitals and there is no delay in having an appointment.

Although the shortage of ophthalmologists, the high cost of medical care, the existence of black clinics and the general lack of public awareness of eye health will hinder China's ability to accomplishing the goal of VISION 2020, the pace of change in China, together with the increase in government resources and local initiatives such as Prof Lam's Project Vision, may yet deliver real progress.

As Prof Christopher Liu observes: "While there is still a lot of work to be done to ensure China has eye care services close to those of neighbouring Hong Kong – the country has made tremendous progress and, as in so many other areas of life in China, there is a will to succeed. I am sure that we will see some world class research and practice coming out of China, as well the continued expansion of good quality eye care to the general population."

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**TAKE HOME MESSAGE**

- China is estimated to have about 6.7 million blind people.
- Cataracts and degenerative myopia are the most common cause of visual impairments.
- Black clinics and illegal eye cornea trafficking have become flourishing markets.
- The ophthalmic hospital revenue reached GBP 614.2 million in 2011.
- Only half of China's ophthalmologists perform surgery.

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Mr Liu will be leading an Ophthalmology Study Tour to China. Details are available at [www.jonbainestours.co.uk/ophthal](http://www.jonbainestours.co.uk/ophthal)

