# Why an advanced tertiary care centre?

In this month's note, I would like to reflect on a fundamental question: ***What is the true value of dedicated tertiary or advanced tertiary care facilities in eye care?*** Is it simply about providing sophisticated cutting-edge treatment, or is there a larger role they play beyond this narrow perspective?

The facts surrounding vision loss are well-known: over one billion people worldwide have little or no access to eye care. Vision loss increases rapidly with age, and with the growing elderly population, this burden will continue to rise, from one in 11 people today, to one in 6 by 2050. Importantly, vision or sight are directly or indirectly linked to achieving several sustainable development goals (SDGs), influencing everything from education to employment and overall quality of life.

We have solutions for many forms of vision loss, including newer causes such as diabetic retinopathy, which can be screened and managed to control progression. The question remains: *What is stopping us from doing more?*

The challenge is far from simple. Addressing vision loss requires tackling a complex set of interconnected issues. Take the example of cataract, the leading cause of vision loss worldwide. Today, cataract surgery is often regarded a relatively simple procedure, but this was not always the case. While we now have the technology, delivery models, financing, awareness, and skilled personnel (at least in countries like India), this was not true just 30 years ago. In the past, mass surgery camps were common but did not lead to positive long-term outcomes. Patients who underwent cataract surgery often had to rely on thick glasses to see. Up until the 1990s, intraocular lenses were prohibitively expensive, and many ophthalmologists were not trained in surgical techniques for implantation.

The large eye care hospitals, in collaboration with the World Health Organization (WHO) and other international NGOs, came together to address cataract in all its complexity. These institutions drove the cost of equipment down, developed training programs for doctors and allied health personnel, and established sustainable screening programs to identify individuals in need of care. Through advocacy with governments and policy makers, they also helped shape supportive policies.

All in all, these tertiary and advanced tertiary eye care centres managed to overcome many of the bottlenecks that once led to a large reservoir of untreated cataract in the country. Today, India's cataract surgical rate is one of the highest in the world, and our outcomes are exceptional too.

There are other significant contributors to vision loss in India—*what can we do to address them?* We need the concentrated effort of a large hospital system to pool resources - talent, technology, and funding – to replicate India's success with cataract.

## A cornea project

In most low and middle-income countries corneal opacities are the second major cause of blindness after cataract. In India, corneal blindness is the leading cause of vision loss among those under 49 years old. It is estimated that approximately 10% of all blindness in India is attributable to corneal opacities. This makes it a critical next challenge for us to address.

The persistence of corneal blindness is the result of a complex set of factors. The causes are diverse and often interrelated, including infections, trauma (particularly workplace accidents), allergies, ocular surface diseases, and more. One key issue is the lack of primary eye care. What may begin as a simple corneal abrasion can progress to a potentially sight-threatening corneal ulcer without timely intervention. Additionally, not using protective eye gear in workplaces with a risk of eye injury or exposure to harmful chemicals can lead to serious, life-changing accidents. The situation is exacerbated by the limited availability of corneal tissue and inadequate post-transplant care, which hampers recovery and outcomes.

At LVPEI, we are uniquely positioned to tackle these challenges. We have one of the best corneal teams in the world, supported by one of the largest eye banks in Asia that supplies transplant-grade corneal tissue with no wait-time (a topic I have written about in the past). Last year, we celebrated a major milestone: over 50,000 corneal transplants performed since inception. We have ongoing investments in technology and innovation, including in AI models to screen and identify patients who need our intervention earlier and more efficiently.

This month, in collaboration with a key partner, we soft-launched a pilot program that brings together all these resources and expertise to tackle the complex set of causes resulting in corneal blindness. Over the next 18 months, this cornea project aims to create a blueprint for tackling cornea blindness through early detection, treat affected patients, and work toward eliminating waitlists for corneal transplants.

## Myopia

A few years ago, we launched our myopia program, recognizing the rapid rise of near-sightedness, particularly in urban centres, and its impact on school-going children. Myopia, if left unchecked, can lead to high myopia in children, increasing their vulnerability to debilitating conditions later in life. With projections suggesting that myopia will affect up to five billion people globally by 2050, our program focuses on understanding the relationship between exposure to sun light, near-work activities, and the growth of the eyeball, which is central to preventing myopia onset. Moreover, we are working to influence education policy to ensure that myopia is not only prevented but also managed effectively in children, to safeguard their vision for the future. Without a population-scale plan, we run the risk of a rising tide of myopia in our populations.

## A neonatal program

Our team is also working to build yet another program around vision loss and blindness in newborns including those born prematurely. Vision plays a crucial role in a child’s overall development, particularly in the early stages when sensory input is essential for brain growth. Poor vision in newborns hinders cognitive, emotional, and social development, severely impacting their quality of life. Blindness in newborns is therefore a significant public health concern. Conditions such as retinopathy of prematurity (ROP), congenital cataracts, infections and other developmental anomalies can cause irreversible vision loss, contributing to long-term physical and mental challenges. Addressing the causes of neonatal blindness is vital to reducing morbidity and improving outcomes for children worldwide.

This brings me back to my original question: Why do we need large tertiary and advanced tertiary, eye care facilities? We need them for their concentrating power: to identify unresolved and emerging problems of public health importance, explore and test innovative solutions, build partnership with other like-minded organisations, both governments and NGOs, advocate for policy, and ultimately create lasting impact. This will be the guiding principle for me and LVPEI - to remain a responsible and responsive organisation dedicated to addressing the evolving challenges in eye care and improving the lives of those we serve.

-Prashant Garg