

Prevention of corneal blindness: better for patients, better for the government

A SIGHTLIFE POLICY BRIEF CALLING UPON THE GOVERNMENT TO ADOPT, IMPLEMENT AND SCALE-UP PREVENTION EFFORTS TO ELIMINATE CORNEAL BLINDNESS IN INDIA

Executive Summary

SightLife's pilot prevention programmes in Nepal and Uttar Pradesh, India, have shown that corneal blindness prevention programmes can reduce up to 50% of future corneal blindness caused by eye trauma, are 95% more cost-effective than corneal transplants; with a 98% treatment success rate.

We call upon The National Programme on Control of Blindness and Visual Impairment (NPCB & VI) and State Governments to realign their programmatic priorities on corneal blindness by investing in prevention programmes to achieve the goal of eliminating corneal blindness in India.

1. Introduction

It is estimated that there are 8 million blind people living in India¹ of whom 0.9% are corneally blind.² Older studies estimate that there are 191,000 bilaterally blind and 596,000 are unilaterally blind in India but are considered conservative based on other indirect estimates.³ The incidence of corneal blindness is around 20,000 every year.⁴ The standard treatment for corneal blindness is a cornea transplant. On an average India does around 25,000 corneal transplants a year, which is far short of the required of what is required to clear the backlog. Though the number of transplants performed each year has been increasing, the surgery is still inaccessible to many patients. Lower socio-economic and rural populations of India are especially underserved and most at risk for corneal infection due to lack of healthcare access, lack of information about treatment and inability to pay.

In India, as in many other developing countries, 5% of all blinding conditions are directly related to ocular trauma and infection⁵ which is entirely preventable with timely and cost-effective intervention. SightLife's pilot prevention initiatives in Nepal and Uttar Pradesh have demonstrated a successful alternative to scaling up corneal transplants. Early screening and preventative treatment for corneal scarring and abrasions by community healthcare workers can prevent upto 50% of future corneal blindness caused by eye trauma, reduce the cost otherwise spent on a transplant by 95% and resolve abrasions at a rate of 98%

2. Treatment versus prevention of corneal blindness: the pragmatic approach?

It is estimated that only 50-60% of patients with corneal blindness are eligible for transplants. Further, corneal graft survival rates average around 10 years which means patients are likely to require re-transplantations during their lifetime. These transplants also require 6-12 months of follow-up care. While corneal surgery is free in the public sector, most surgeries take place in the private sector where patients end up paying Rs.5000 to Rs.1,00,000. Add to that the cost of travelling for surgery, loss of wages as a result, the costs of follow-up care and medications- the financial burden on patients and their families is huge.

Prevention offers a cost effective and successful solution to reducing the incidence of corneal blindness.

¹ Pascolini D & Mariotti SP. Global estimates of visual impairment: 2010. *Br J Ophthalmol*. 2012;96:614–8. The earlier figure of 12 million blind in India was revised down to 8 million in 2017 by the NPCB & VI based on WHO standards. See <http://pib.nic.in/newsite/PrintRelease.aspx?relid=168519>

² <http://pbhealth.gov.in/pdf/Blindness.pdf>.

³ Saini et al, Perspectives in eye banking. *Indian J Ophthalmol* 1996;44:47-55

⁴ *Ibid* Saini et al

⁵ Whitcher et al, Corneal blindness: a global perspective, Bulletin of the World Health Organisation, 2001, 79 (3), 214-221.

3. NPCB & VI's and States' response to corneal blindness

NPCB & VI has traditionally focused policy and resources in cataract and refractive error given their higher prevalence in the population. Programmes dealing with other areas of blindness have consequently been deprioritized. National policies and programmes on corneal blindness have focused almost entirely on sustaining infrastructure for eye banking by providing grants for setting up of eye banks and eye donation centres, reimbursing processing fees for cornea collection and keratoplasty surgeries done free of cost with little to no investment in prevention programmes.

From being a 100% centrally sponsored scheme, there has been a shift in budget allocation to 60:40 (NPCB: States) except in the North East States where it is 90:10. Despite the change in funding pattern States continue to reserve maximum funds for cataract surgery and refractive error. For example, in the State of Uttar Pradesh which has the highest prevalence of blindness in the country, nearly 60% of the State NPCB budget for 2018-2019 has been carved out for cataract surgery.⁶ Similar trends are noticed in most other States, leaving the epidemic of preventable corneal blindness unaddressed.

4. Evidence-based impact: SightLife's corneal blindness prevention programmes in Nepal and Uttar Pradesh

Preventive care for corneal blindness is 95% more cost effective than a corneal transplant with a 98% treatment success rate making it a strong case for government investment. It reduces the future burden of blindness from eye trauma by 50% while preventing future medical and socio-economic costs associated with disability and rehabilitation for the corneally blind.

WHO recommends reporting to a tertiary eye care within 3-7 days of infection but one study has shown that 70% of patients report after day 8, rendering them three times more likely to require a transplant and nearly four times more likely to be unilaterally blind at discharge.⁷ Early diagnosis and preventative treatment is, therefore, key to avoiding corneal blindness. It leads to better eye health outcomes while averting adverse impact on patients and their families and reducing costs to the government.

SightLife managed initiatives in Chitwan and Nawal Parasi Districts, Nepal and Sitapur District, Uttar Pradesh have demonstrated a successful model of diagnosis and preventative treatment in thousands of patients, averting future corneal blindness in them. SightLife provides training, supplies and incentives to Female Community Health Volunteers (FCHVs) in Nepal and ASHAs in India.

On an average, 117 FCHVs and 278 ASHAs together see 400 patients each month. 50% of patients seen are treated for corneal abrasions and 98% of people have abrasions resolved after 4 days of treatment.

The cost of diagnosis and preventive treatment per patient is as low as 1 USD (i.e. Rs. 70) which includes Fluorescein strips (to test for abrasion), applicaps (antibiotic to treat abrasion).

Add to that the one time cost per ASHA worker which is around Rs. 2,100. This covers the cost of the kit containing loupes (to magnify patients eye for exam), torch (to illuminate corneal abrasion after fluorescein strip is applied), training materials and reimbursements for meeting attendance for the first year.

Under these prevention programmes around 3,500 patients have been seen by community health workers, of which around 1600 were successfully treated for corneal abrasions since mid-2017.

Scaling up of prevention programmes can lead to further reduction in cost of treatment per patient.

⁶ NPCB abstract, NHM Budget Sheet 2018-2019, Uttar Pradesh after NPCC, <http://nhm.gov.in/nrhm-in-state/state-program-implementation-plans-pips/uttar-pradesh.html>

⁷ SCEH study on infectious keratitis, 2016.

5. Interventions for at-risk groups: prevention of eye trauma

Rural populations particularly those from lower socio-economic sections who tend to be engaged as agricultural labour are at a higher risk of infectious keratitis, often caused by eye trauma and injury from their occupations.⁸ Latest census data reveals that in the last 10 years, 37 million people have moved to farm labour in India, i.e. 54.6 percent of the total workforce.⁹ This is a large population who is at risk for eye injury and trauma without any known eye safety and protective equipment.

The International Labour Organisation (ILO)'s 2011 guidelines for 'Safety and Health in Agriculture' recommends the use of personal protective equipment free of cost to workers, like eye protectors, goggles and face shields.¹⁰ In the absence of safety gear like eye-glasses to prevent eye injury and trauma incidences of infectious keratitis caused by corneal abrasions are unlikely to come down. It is critical that organisations like the ILO along with the WHO work in tandem with the government to adopt and implement protective standards for workforce at high risk of eye trauma and injury.

6. Recommendations to the NPCB & VI and State Governments

NPCB & VI

- a. Realign national policy response to shift focus solely from eye banking and corneal transplants to cost-effective, quality screening prevention programmes that prevent future corneal blindness.
- b. Integrate and scale-up prevention efforts as a component of comprehensive eye healthcare at all levels to ensure scalability and sustainability.
- c. Institute surveillance data on the various causes of blindness and visual impairment affecting the Indian population including corneal blindness.
- d. Work with the ILO and WHO adopt and implement internationally accepted protective standards for the Indian workforce at high risk of eye trauma and injury.

State Governments

- a. Allocate adequate human and financial resources for corneal blindness prevention programmes in the State Programmatic Implementation Plan (PIP) budgets to National Health Mission (NHM)
- b. Enlist the support of state health machinery including ASHAs and ophthalmic assistants at Primary Healthcare Centres (PHCs) to screen and treat for corneal injury and trauma.
- c. Integrate corneal blindness prevention efforts with ongoing interventions by eye health organisations, particularly in rural and hard to reach areas.
- d. Create a referral network with local eye hospitals for patients diagnosed with corneal abrasions who require further treatment and care.
- e. Partner with national and international organisations to scale up prevention efforts.

At SightLife, we look forward to working with the NPCB & VI and State Governments to scale up cost-effective prevention interventions to eliminate corneal blindness in India.

⁸ Noopur Gupta et al, Burden of Corneal Blindness in India, *Indian Journal of Community Medicine*,

⁹ Farmers have decreased, farm labourers increased: census report, Jyotika Sood, *DownToEarth*, 17 September 2015 <https://www.downtoearth.org.in/news/farmers-have-decreased-farm-labourers-increased-census-report--40940>

¹⁰ ILO's 2011 Guidelines on Safety and Health in Agriculture https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/normativeinstrument/wcms_161135.pdf