

Sight Beyond Barriers

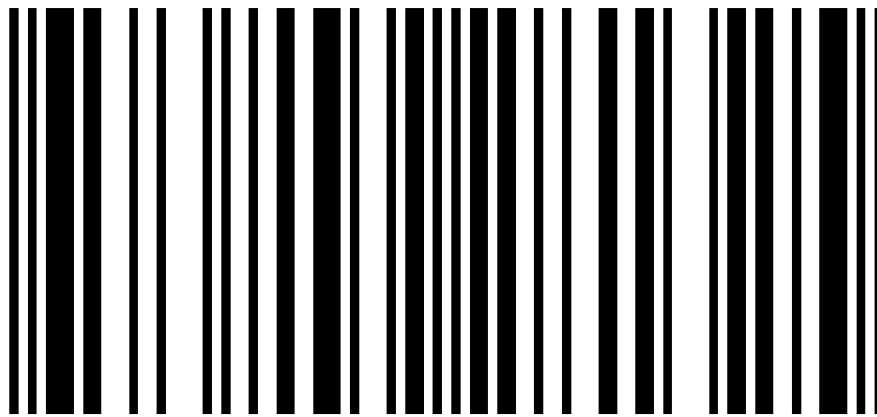
A Journey to
Eliminate Cataract
Blindness in
Northern Sri Lanka

BY:

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SIGHT BEYOND BARRIERS: A Journey to Eliminate Cataract Blindness in Northern Sri Lanka



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EXECUTIVE SUMMARY

Sight Beyond Barriers documents how Northern Province, Sri Lanka — a region still recovering from three decades of conflict — transformed one of the country's highest cataract burdens into a model for global eye health delivery. The book opens by mapping the determinants that allowed a treatable condition to become a leading cause of avoidable blindness: delayed health-seeking behaviour, geographic isolation across rural and island communities, fragile post-conflict infrastructure, and a health system operating at under half of WHO-recommended capacity from a single referral centre, Teaching Hospital Jaffna.

Against this backdrop, the book traces the design and execution of a backlog elimination model built on Public-Private Partnership: government institutions, private eye hospitals, Tri forces personnel, donors, and community networks aligned into one coordinated system. The results are substantial and measurable annual cataract surgical volume grew more than sevenfold, from 2,792 procedures in 2013 to a peak of 19,801 in 2024, with 90.6% of patients achieving good visual outcomes, and the hospital-registered backlog reduced to an estimated 500 cases by the end of 2025, sustained even through the disruptions of COVID-19 and the national economic crisis.

Beyond the clinical achievement, the book positions the programme within a wider frame of relevance: its contribution to seven Sustainable Development Goals, its distinction as the only centre in Sri Lanka pledged to EyeSustain environmental principles, and its economic rationale, grounded in evidence that every dollar invested in eye health returns many multiples in restored productivity, education, and household stability.

Finally, the book looks outward and forward, arguing that the Northern Province model is replicable across similar low-resource, high-burden settings worldwide, from South Asia to Sub-Saharan Africa, while cautioning that sustained impact depends on rigorous, data-driven evaluation rather than scale alone. It closes not as a finished success story, but as a transferable blueprint for Universal Eye Health Coverage.

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MESSAGE FROM THE SECRETARY, MINISTRY OF HEALTH, SRI LANKA

It is a privilege to extend my warm congratulations on the publication of *Sight Beyond Barriers: The Journey to Eliminate Cataract Blindness in Northern Sri Lanka*. This book chronicles an exceptional achievement in Sri Lanka's public health system. It illustrates how strategic leadership, innovation, and collective commitment can transform healthcare delivery, even in the face of significant resource limitations.

The successful elimination of the cataract waiting list across the Northern Province, under the leadership of Dr. M. Malaravan, Consultant Ophthalmologist at the Teaching Hospital, Jaffna, is a remarkable example of health system transformation. Rather than waiting for additional infrastructure or human resources, the programme focused on optimizing existing capacity through service reorganization, the establishment of high-volume cataract surgical services, effective public-private partnerships, and strong collaboration among government institutions, development partners, professional bodies, civil society, and local communities.

This achievement reflects the principles that guide the Ministry of Health: equity, efficiency, innovation, and accountability in delivering quality healthcare to every citizen. It demonstrates that sustainable solutions to complex healthcare challenges can be achieved through visionary leadership, evidence-informed planning, and meaningful stakeholder engagement.

The experiences documented in this book provide valuable insights for policymakers, health administrators, clinicians, and development partners, both within Sri Lanka and internationally. I am confident that the lessons from this journey will inform future health system reforms and inspire similar initiatives across other clinical disciplines.

I sincerely congratulate Dr. M. Malaravan and all those whose dedication, partnership, and perseverance made this remarkable accomplishment possible. May this publication continue to inspire innovation and strengthen our shared commitment to achieving universal access to high-quality eye care and advancing the health and well-being of all Sri Lankans.



Dr. Anil Jasinghe
Secretary/ Ministry of Health and
Mass Media, Sri Lanka

MESSAGE FROM THE DIRECTOR GENERAL OF HEALTH SERVICES, SRI LANKA

It gives me immense pleasure to extend my heartfelt congratulations on the publication of *Sight Beyond Barriers: The Journey to Eliminate Cataract Blindness in Northern Sri Lanka*. This book captures an extraordinary public health achievement that demonstrates how visionary leadership, innovation, and collaboration can overcome even the most challenging resource constraints.

Under the exceptional leadership of Dr. M. Malaravan, Consultant Ophthalmologist, Teaching Hospital Jaffna, the Northern Province has shown that eliminating cataract waiting lists is possible without relying solely on additional infrastructure or workforce expansion. Instead, the initiative successfully transformed existing eye care services through strategic planning, efficient utilization of available resources, service redesign, and strong clinical leadership.

The transformation of high-volume cataract surgical units with strengthened public-private partnerships and meaningful engagement of multiple stakeholders, including healthcare professionals, government institutions, non-governmental organizations, development partners, and the community, created a sustainable model of service delivery that ultimately reduced the cataract waiting list to zero across the Northern Province. This accomplishment stands as a testament to what can be achieved when innovation is combined with commitment and collective action.

This remarkable journey offers valuable lessons not only for Sri Lanka but also for health systems worldwide facing similar constraints. I hope this publication will inspire policymakers, healthcare leaders, clinicians, and researchers to adopt context-appropriate, patient-centered strategies that strengthen eye care services and accelerate progress toward universal eye health.

I congratulate Dr. M. Malaravan and every individual and organization that contributed to this outstanding achievement. May this work continue to inspire future generations in their pursuit of equitable, accessible, and high-quality eye care for all.



Dr. Asela Gunawardena
Director General of Health Services
Ministry of Health
Sri Lanka

MESSAGE FROM THE CHIEF EXECUTIVE OFFICER, IAPB

Sight Beyond Barriers is a powerful reminder that eliminating avoidable blindness is not an aspiration; it is entirely achievable.

Northern Sri Lanka has demonstrated what is possible when committed leadership, strong partnerships, and communities come together around a shared purpose. Cataract is one of the few conditions where the return on investment is visible almost immediately. The impact of cataract surgery extends far beyond restoring vision. It enables people to return to work, children and families to thrive, older people to live independently, and communities to participate more fully in society.

It is a powerful reminder that investing in eye health delivers dividends far beyond the health sector. In Sri Lanka alone, an investment of US\$26.5 million in eye health between 2026 and 2030 could generate US\$271 million in economic benefits while improving learning outcomes, reducing road traffic injuries and preventing thousands of cases of depression.

I extend my warm congratulations to everyone whose dedication, expertise and collaboration have made the publication of this important resource possible. May this remarkable journey inspire stakeholders around the world to accelerate progress towards eliminating avoidable blindness for future generations.



Peter Holland
Chief Executive Officer
International Agency for the Prevention of
Blindness (IAPB)

MESSAGE FROM AN INTERNATIONAL EXPERT IN CATARACT SURGERY

This book tells the inspiring story of how local and international partners came together to address the backlog of cataract blindness in Northern Sri Lanka. Volunteers, NGOs, and government leaders collaborated to build a sustainable system grounded in compassion, excellence, and high-quality eye care. Their achievement demonstrates the power of teamwork, shared purpose, and long-term commitment—and offers lessons that can inspire similar efforts around the world.



Dr. David F. Chang, MD
Clinical Professor of Ophthalmology
University of California, San Francisco (UCSF)

MESSAGE FROM REGIONAL OFFICER, SOUTH ASIA, IAPB

Sight Beyond Barriers is a powerful reminder that eliminating cataract blindness is about waiting for the person to come to the hospital, but about redesigning cataract service delivery and taking services closer to people in need. The journey of Northern Sri Lanka shows how strong leadership, effective partnerships, and community engagement can transform a difficult challenge into a remarkable public health achievement. By making better use of existing resources and filling health system gaps through collaboration, the programme successfully addressed the cataract surgery backlog while maintaining high-quality outcomes. It also shows that even a modest eye unit can be transformed into a high-volume cataract centre with vision, innovation, and commitment. The lessons in this book can go beyond Sri Lanka and provide valuable guidance for countries working towards equitable and people-centred eye care. I congratulate Dr. M. Malaravan and his team for restoring sights of people work and documenting this inspiring journey.



Dr. Indra P. Sharma PhD
Regional Officer (South East Asia)
International Agency for the Prevention of
Blindness (IAPB)

MESSAGE FROM THE CHAIRMAN OF ARAVIND EYE HOSPITAL,MADURAI

It is a matter of great pleasure to learn that Dr. Malaravan and his dedicated team are publishing a book titled Sight Beyond Barriers: The Journey to Eliminate Cataract Blindness, documenting their remarkable efforts to address cataract blindness in Northern Sri Lanka. This book is not only a record of an inspiring journey but also a valuable guide for others striving to eliminate avoidable blindness.

It is particularly heartening to note that the team achieved a Cataract Surgical Rate (CSR) of 15,000 per million population in Northern Sri Lanka within a relatively short period. This is an extraordinary accomplishment that reflects meticulous planning, unwavering commitment, and effective collaboration with local communities, governmental agencies, non-governmental organizations, and other partners. Such coordinated efforts are essential to identify people with cataract, overcome barriers to accessing care, and ensure that sight-restoring surgery reaches those who need it most.

Blindness is far more than the loss of vision. It is associated with a substantially increased risk of mortality and is often accompanied by a higher burden of systemic illnesses, including diabetes, hypertension, depression, and other mental health disorders. The consequences of blindness extend well beyond the individual, affecting families, caregivers, communities, and ultimately the economic productivity of a nation. Cataract, therefore, should be viewed not merely as an ophthalmic condition but as a major public health and socio-economic challenge. Fortunately, it is one of the few causes of blindness that is highly treatable. Restoring sight not only transforms the life of an individual by restoring independence, dignity, and productivity, but also contributes significantly to the social and economic well-being of the community.

The comprehensive approach adopted by Dr. Malaravan and his clinical team deserves special recognition. With the support of non-governmental organizations and community partners, they established an effective system to screen vulnerable populations, identify those requiring surgery, facilitate transportation to the hospital, and provide high-quality cataract surgery using modern techniques. Their work exemplifies how a patient-centred, community-oriented model can successfully overcome barriers to eye care.

The experience documented in this book offers valuable lessons for eye care providers, policymakers, public health professionals, and development partners. If replicated and scaled sustainably in other underserved regions, this model has the potential to substantially reduce the burden of cataract blindness and contribute to the socio-economic transformation of communities and nations alike.

I extend my heartfelt congratulations to Dr. Malaravan and his entire team for this outstanding achievement and for documenting their experiences so thoughtfully. I wish them continued success in their mission to restore sight, empower disadvantaged communities, and bring hope and independence to countless individuals and their families.



Dr. R.D. Ravindran
Chairman
Aravind Eye Hospital
Madurai

MESSAGE FROM SENIOR CONSULTANT OPHTHALMOLOGIST

Having been associated with the eye unit in Jaffna DGH long before it became the Jaffna Teaching Hospital, I have followed very closely the contributions it has been making under very trying conditions to provide ophthalmic care to the people of the North. It gives me great pleasure in writing this message which I do with an immense sense of gratitude to the eye unit, for not just providing good quality care over the years but for developing the services with such foresight, despite many barriers and restrictions.

"Sight Beyond Barriers: The Journey to Eliminate Cataract Blindness" is an appropriate title when one considers the backlog of unoperated cataracts contributing to the heavy burden preventable blindness. The neglect suffered in many fronts by the North over the years, inequalities in funding imposed and the disruption to services due to the years of civil disturbances can be considered as main reasons for this crisis. Urgent concerted was needed to resolve this major public health issue. This book takes the readers through how this has been achieved in the North and a template created for other regions to emulate and address this public health issue.

According to the WHO, cataracts account for 51% of global blindness cases, posing a major public health challenge. This is amplified by ageing populations and limited surgical access especially in low- income and middle- income countries (LMICs) where healthcare infrastructures are inadequate and underutilised. Apart from visual loss, cataracts lead to socioeconomic consequences, increasing risks of falls, depression, reduced productivity and added healthcare costs to the state. This has been clearly demonstrated in Sri Lanka especially in the North and East of the country particularly since the cessation of internal conflict. This enabled good screening and data collection to be carried out systematically while still maintaining necessary services under trying conditions. These data impressed me and made me feel that the Jaffna eye unit is making a serious effort and needed every possible support

Despite cataract surgery being the only definitive, well established treatment and is a very cost effective intervention, accessibility to good centres and availability of good quality services remained a challenge in the North just as it is globally.

To meet this challenge and ease the burden the society had been carrying for long in the North of Sri Lanka a well thought out action plan to clear the considerable backlog of undiagnosed, untreated cataracts prevalent in the province became imperative. With good understanding of the epidemiological status of the burden of blindness due to cataract in the Northern region, under the leadership of Dr.M.Malaravan, the lead clinician an action plan was formulated in consultation all the staff, health administrators, voluntary organisation. The enormity of the task demanded additional ongoing funding and inevitably a public private partnership was needed. Many voluntary funding organisations like AssisRR, Alaka Foundation, IMHO stepped in readily, knowing very well that the aims of the programme had been well thought out with noble intentions.

A low CSR has also been identified as a significant cause and an important limiting factor in not reducing the cataract-related burden of blindness globally, including high-income countries like Denmark and the UK. So the main thrust was correctly identified as significantly increasing the cataract surgical rate of the unit.

Statistics available show the annual cataract surgeries carried out at the TH Jaffna has been low for years . In 2013 it was recorded as 2792 with very small increases over the following years but since 2023, year on year an exponential increase has been recorded reaching 12954 in 2024 with signs of this trend being maintained. A well-researched analysis of the activities of the Jaffna TH eye unit with particular reference to a high Cataract Surgical Rate (CSR of 10 /1000) and the beneficial impact of mass cataract surgery program as an effective approach in addressing the burden of blindness due to cataract in the North of Sri Lanka was published in 2024 by authors from the TH Jaffna which included the clinical lead of the eye unit. It outlined how this has been achieved and sustained by proper planning and good resource management .This book will go into interesting details of the methodology and the impact it has had at the highest level of Healthcare providers of the country ,prompting this to be an effective strategy adoptable by other ophthalmic units as well.

Many Global blindness burden studies consistently show that despite advancements and targeted interventions like vision 2020 initiative by WHO ,cataract remains the leading cause of preventable global blindness, mainly due to very low CSR even when resources are made available. This shows that the strategy formulated by the Jaffna TH Eye unit and effective resource management involving all stake holders is effective in reducing the burden of blindness due to cataract

Many Global blindness burden studies consistently show that despite advancements and targeted interventions like vision 2020 initiative by WHO ,cataract remains the leading cause of preventable global blindness, mainly due to very low CSR even when resources are made available. This shows that the strategy formulated by the Jaffna TH Eye unit and effective resource management involving all stake holders is effective in reducing the burden of blindness due to cataract

I have no doubt that this book will be valuable resource, a useful teaching and training tool both within Sri Lanka and outside to those interested in managing the burden of Global Blindness.

I wish the authors of this book every success in their endeavours.



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PREFACE

This book is about possibility. It is about what happens when healthcare professionals refuse to accept that preventable blindness is inevitable. It is about the belief that geography, poverty, conflict, limited resources, and systemic barriers should never determine whether a person can see.

For decades, cataract has remained the leading cause of blindness globally. The tragedy was not that the cataract existed. The tragedy was that a condition curable in less than twenty minutes continued to rob millions of people of their independence, dignity, productivity, and quality of life.

Northern Sri Lanka was no exception. Thousands of men and women lived with avoidable blindness. Some had waited years for surgery. Others had never sought care because they believed blindness was a natural consequence of ageing. Many faced barriers that extended beyond medicine—distance, poverty, fear, lack of awareness, and limited access to surgical services.



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Associate Member of Prevention of Blindness – Asia
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Council Member – University of Vavuniya

The challenge before us was enormous. The conventional model of eye care was not sufficient to overcome the growing backlog. Incremental improvements would not solve a problem that had accumulated over decades. What was required was a fundamental redesign of how cataract services were delivered.

The journey that followed was neither simple nor linear. It involved partnerships across sectors, community mobilisation, innovation in service delivery, high-volume surgical camps, data-driven decision-making, and an unwavering commitment from healthcare workers, volunteers, policymakers, donors, and communities.

“

THE ELIMINATION OF CATARACT BLINDNESS IS NOT A SURGICAL ACHIEVEMENT ALONE. IT IS A HEALTH SYSTEMS ACHIEVEMENT - REQUIRING THAT THE RIGHT PATIENT REACH THE RIGHT SURGEON AT THE RIGHT TIME, WITHIN A SYSTEM THAT IS EQUITABLE, EFFICIENT, AND SUSTAINED.

Most importantly, it involved patients. Every statistic in this book represents a person whose life was transformed through restored vision. Every surgical number represents a grandmother who could once again see her grandchildren, a farmer who returned to work, a mother who regained independence, or an elder who recovered the dignity that blindness had taken away.

This is not merely a book about cataract surgery. It is a book about leadership, collaboration, implementation science, and health-system transformation. It is the story of how a region confronted a seemingly impossible challenge and proved that backlog elimination is achievable.

The lessons extend far beyond Northern Sri Lanka. In a world striving toward Universal Health Coverage and equitable access to healthcare, the principles described in these pages may help guide programmes seeking to eliminate avoidable blindness elsewhere. The restoration of sight begins with a surgical procedure. The elimination of blindness begins with a system.

CHAPTER 1

THE EPIDEMIOLOGICAL IMPERATIVE OF CATARACT

“

Cataract, the clouding of the eye's lens that causes blurred vision and can lead to blindness. Cataract surgery, a simple 15-minute procedure, is one of the most cost-effective medical procedures, providing immediate and lasting restoration of sight.

”



EPIDEMIOLOGY OF CATARACT BLINDNESS IN NORTHERN SRI LANKA

Cataract remains the leading cause of blindness, and according to the World Health Organization, cataracts account for 51% of global blindness cases, posing a major public health challenge (1). It contributes substantially to visual impairment, particularly in low-and middle-income countries (2). Although cataract surgery is among the most successful and cost-effective healthcare interventions, significant disparities in access continue to exist (3). These disparities are often more pronounced in geographically remote, socioeconomically disadvantaged, and post-conflict regions.

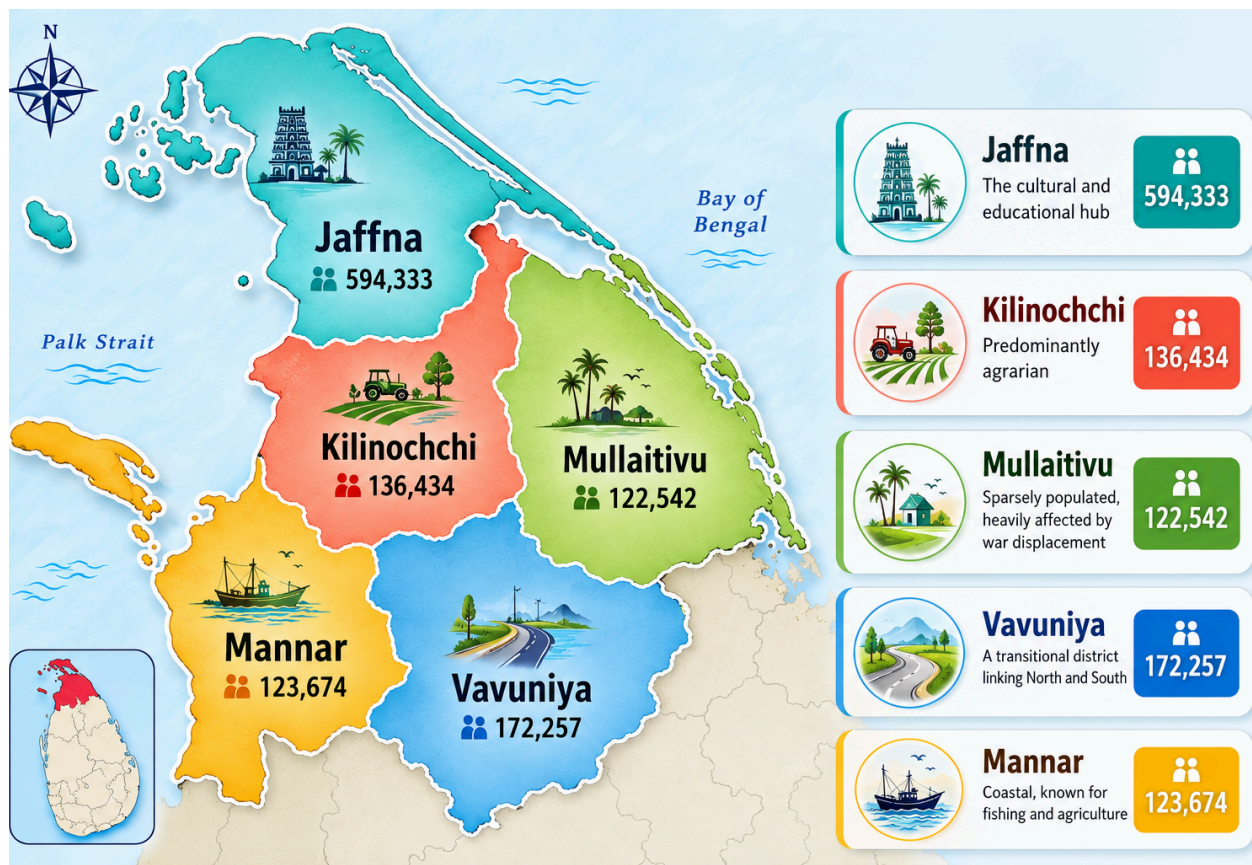


Figure 01: District-wise Population and Characteristics of the Northern Province, Sri Lanka

Northern Sri Lanka presents a unique context for understanding cataract-related blindness. Following decades of civil conflict, healthcare systems experienced substantial disruption, affecting infrastructure, workforce availability, service accessibility, and population health outcomes. Consequently, avoidable blindness emerged as an important public health challenge. Northern Sri Lanka is also reported to have the highest prevalence of blindness and visual impairment, with cataract as the major cause (4).

NORTHERN SRI LANKA: AN OVERVIEW

The Northern province of Sri Lanka encompasses five administrative districts, namely Jaffna, Kilinochchi, Mullaitivu, Vavuniya, and Mannar, with a population of approximately 1.1 million persons at the 2024 census. It is a population that has endured decades of hardship yet demonstrated remarkable resilience. The region's demographic profile is largely rural, with pockets of poverty scattered across its districts. Each district contributes uniquely to the cultural and socioeconomic fabric of the province.

The province survived three decades of civil war, which devastated infrastructure, displaced communities, and created severe shortages in human resources, particularly in healthcare. Ophthalmic services were minimal, with only a handful of specialists serving vast populations. Poverty, limited access to care, and inadequate facilities compounded the burden of preventable blindness.

Despite these challenges, Northern Sri Lanka has emerged as a region of resilience. Following the COVID-19 pandemic and the economic recession, the province achieved a milestone: the elimination of the cataract surgery backlog, reaching a zero waiting list while maintaining high-quality surgical outcomes. This achievement stands as a testament to innovation, collaboration, and community engagement in a resource-constrained setting.

CONSEQUENCES OF UNTREATED CATARACT

The consequences of untreated cataract extended well beyond the individual's loss of visual function. Population-based evidence from comparable South Asian settings consistently demonstrates that cataract blindness is associated with increased dependency among older adults, reduced mobility and an elevated risk of falls and fractures, loss of productive employment and associated household income decline, increased caregiver burden on working-age family members, social withdrawal and accelerated cognitive decline, and significantly diminished quality of life across multiple domains. In Northern Sri Lanka, these consequences compounded the socioeconomic fragility of communities already depleted by displacement and economic disruption.

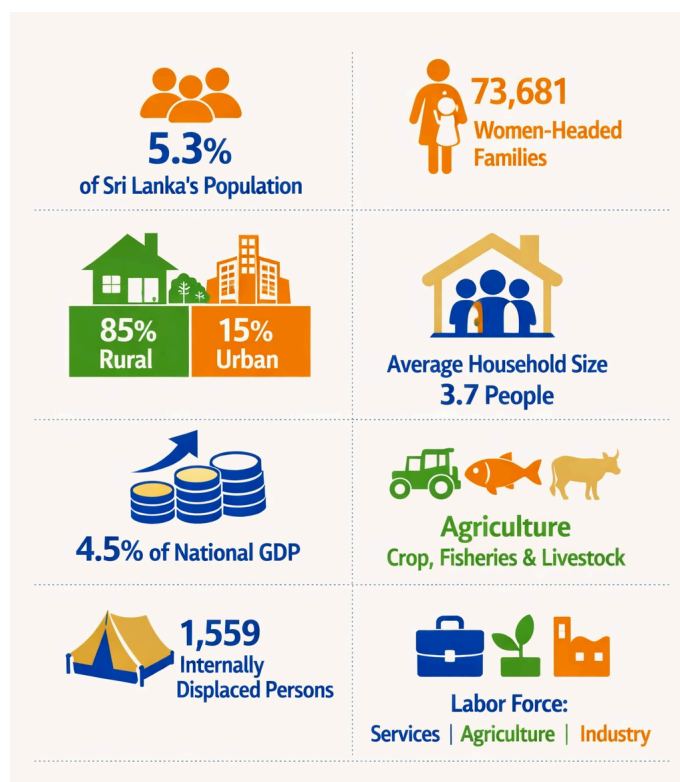


Figure 02: Demographic and Economic Profile of Northern Sri Lanka

RISK FACTORS FOR CATARACT IN NORTHERN SRI LANKA

For the Northern Province of Sri Lanka, the risk factors for cataract largely mirror those identified nationally but are amplified by the region's demographic, occupational, and socioeconomic characteristics. The ageing population is the strongest determinant of cataract development, while prolonged exposure to ultraviolet (UV) radiation is common among individuals engaged in outdoor occupations such as farming, fishing, and manual labour. The increasing burden of non-communicable diseases, particularly diabetes mellitus and hypertension, further contributes to cataract formation and progression. In addition, tobacco use, lower educational attainment, and limited awareness of eye health may delay the uptake of preventive eye care and timely treatment. These factors are particularly relevant in the Northern Province, where many communities are rural, livelihoods are predominantly agriculture- and fisheries-based, and access to health information has historically been constrained, collectively increasing the risk and burden of age-related cataract.

KEY BENEFITS OF CATARACT SURGERY

Cataract surgery offers significant improvements in vision, often restoring functional sight and reducing dependency on glasses. It can also enhance overall quality of life by allowing individuals to engage in daily activities with greater ease and independence. Cataract surgery provides numerous advantages that significantly enhance vision and overall quality of life.



IMPROVED VISION CLARITY

- **Restoration of Clear Vision:** The surgery removes the cloudy lens and replaces it with a clear artificial lens, leading to sharper and clearer vision.
- **Reduced Glare and Halos:** Many patients experience a decrease in sensitivity to glare and halos around lights, improving night-time driving and overall visual comfort.

ENHANCED QUALITY OF LIFE

- **Increased Independence:** With improved vision, individuals can perform daily activities such as reading, cooking, and driving more easily and safely.
- **Greater Confidence:** Enhanced vision allows for smoother navigation in familiar and new environments, reducing hesitation in mobility.





HEALTH-RELATED ADVANTAGES

- **Lower Risk of Falls:** Better vision reduces the likelihood of accidents and falls, which are common among older adults.
- **Cognitive Benefits:** Studies suggest that cataract surgery may lower the risk of developing dementia by promoting better visual engagement with the environment.

Figure 03: Primary Benefits of Cataract Surgery

Many patients may be able to ditch or diminish their reliance on glasses for reading, computer work, watching television and driving. Many patients find that they can resume their favourite hobbies. Often, cataract surgery can allow patients to do things they haven't enjoyed in years, such as sewing and reading religious books, etc, because they couldn't see well enough. Sometimes it creates abilities that people didn't have before.

DETERMINANTS OF CATARACT SURGICAL ACCESS IN THE NORTHERN PROVINCE

The burden of cataract blindness in the Northern Province cannot be understood solely through epidemiological measures of prevalence and surgical backlog. Equally important are the determinants that influence whether an individual with a visually significant cataract ultimately receives surgery. Evidence from low- and middle-income countries consistently demonstrates that cataract surgical uptake is shaped by a complex interaction of patient-related, socioeconomic, geographic, and health-system factors (5). In the Northern Province, these determinants were further influenced by the legacy of prolonged conflict, population displacement, and unequal distribution of healthcare resources.



Figure 04: Determinants of Cataract surgical access in Northern Province

CHAPTER 02

QUANTIFYING THE BACKLOG: MEASUREMENT AS THE BASIS FOR ACTION



FROM CLINICAL VOLUME TO POPULATION NEED

A fundamental conceptual shift underpinned the Northern Province programme from its inception: the recognition that cataract surgical output is not equivalent to progress toward backlog elimination. A health system may perform a large absolute number of surgeries each year, yet does not reduce accumulated unmet need if that output consistently falls below the combined sum of prevalent untreated cases and annually incident new cases. This distinction between surgical productivity and backlog impact had not historically been operationalised in Northern Province planning, and its incorporation transformed both the framing of the problem and the design of the solution.

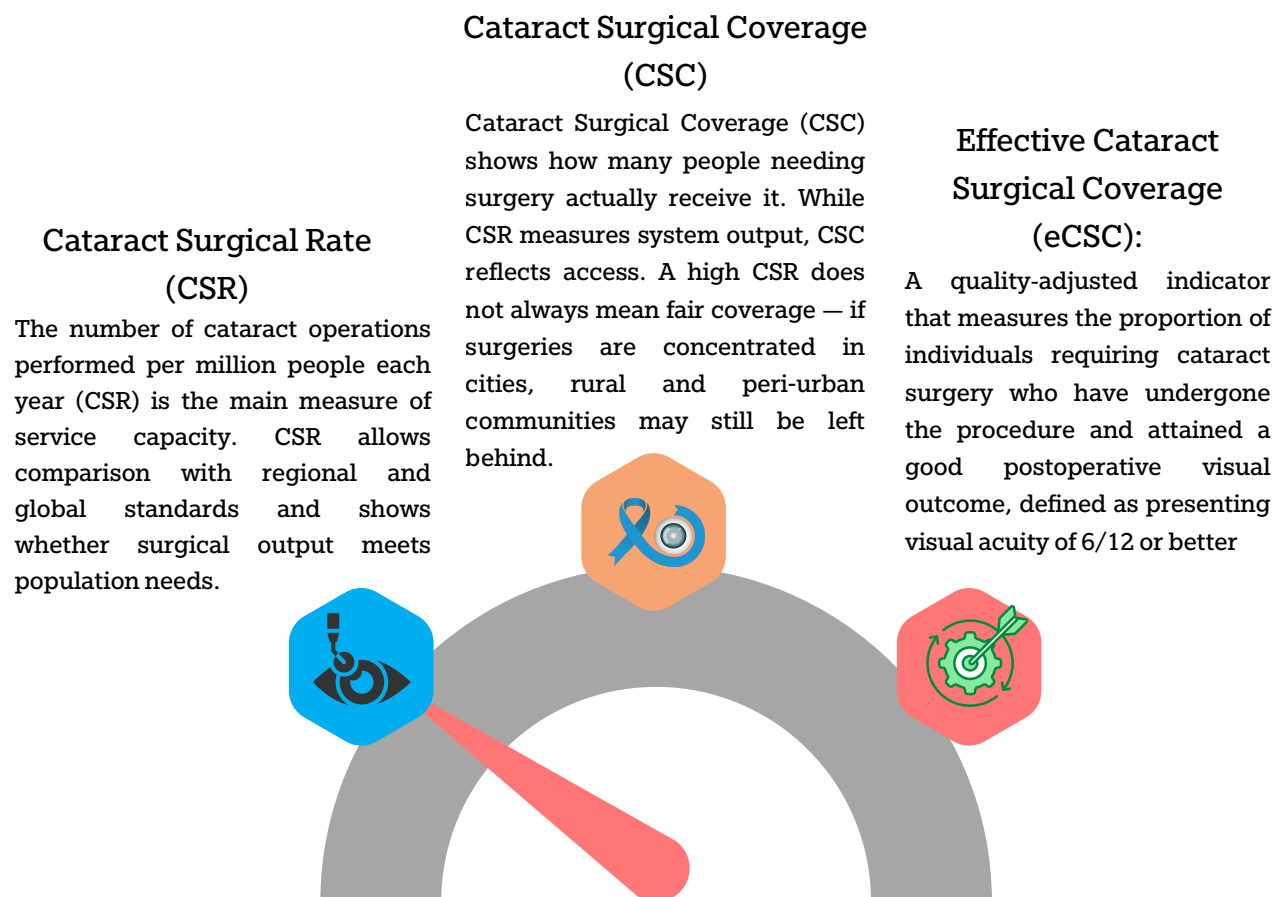


Figure 05: Key Measurement indicators of Cataract services

DEFINING AND DECOMPOSING THE BACKLOG

The cataract surgical backlog refers to the total number of individuals needing surgery who have not yet received treatment. This total has been broken down into four parts: untreated cases (those already living with significant cataracts), new cases arising each year (individuals developing operable cataracts annually), delayed cases (patients who have been clinically identified but not yet operated), and patients who are lost to follow-up from previous referral processes.

Backlog is therefore not static; it grows when annual surgical output falls below the sum of existing backlog and annual incidence and shrinks only when output consistently exceeds incidence. Such that the system "catches up" with accumulated prevalence while preventing re-accumulation.

Quantifying the cataract backlog shows the scale of unmet need, but it does not explain why the gap persists despite effective surgery. Eliminating backlog requires looking beyond numbers to the health system itself. Factors such as service capacity, workforce distribution, patient access, referral pathways, and resource allocation all shape surgical uptake and efficiency.

Backlog Reduction = Annual Surgical Output – Annual Incident Cases.
Elimination requires that this differential be sustained over time.

HEALTH SYSTEM CHALLENGES IN BACKLOG ELIMINATION

Cataract backlog is often interpreted as a consequence of inadequate surgical capacity. In reality, it reflects a mismatch between population need and health system delivery capacity. In Northern Sri Lanka, cataract services had existed for decades, yet a substantial backlog persisted. This highlighted that the challenge extended beyond surgical numbers—it was systemic.

SERVICE DELIVERY CONSTRAINTS

- Teaching Hospital Jaffna is the sole referral centre for ophthalmic surgery.
- Functions at under 50% of WHO-recommended resources, in a temporary building with no barrier-free access.
- Consumables and IOLs, were not always reliably available.

INFRASTRUCTURE & RESOURCE LIMITATIONS

- Teaching Hospital Jaffna is the sole referral centre for ophthalmic surgery.
- Functions at under 50% of WHO-recommended resources, in a temporary building with no barrier-free access.
- Consumables and IOLs, were not always reliably available.

IMPACT OF COVID-19

- Elective surgeries suspended, theatre utilisation dropped.
- Outreach screening halted; waiting lists grew.
- Fear of infection reduced healthcare-seeking behaviour.

HUMAN RESOURCE CHALLENGES

- Ophthalmologists balanced outpatients, emergencies, surgery, training, and admin.
- Nurses, optometrists, and allied staff were limited, reducing efficiency.
- Workforce distribution was uneven, concentrated in urban centres.

GEOGRAPHIC & DEMOGRAPHIC BARRIERS

- Long travel distances to surgical centres
- Transport costs and dependency on caregivers
- An ageing population steadily increasing demand

IMPACT OF THE ECONOMIC CRISIS

- Fuel shortages restricted patient mobility
- Inflation raised indirect costs—transport, meals, caregiver expenses
- Procurement challenges disrupted supply chains

CHAPTER 03

FROM MEASUREMENT TO ACTION: CATARACT PREVENTION AND CONTROL STRATEGIES



CATARACT PREVENTION STRATEGIES

Quantifying the cataract backlog provides the evidence required to move from recognising the magnitude of the problem to designing effective responses. Measurement identifies the scale of unmet need, reveals geographical and socioeconomic inequalities, and guides the allocation of resources required for cataract control. However, data alone does not reduce blindness; it must be translated into targeted strategies that prevent avoidable visual disability and ensure timely access to effective treatment.

Cataract control strategies are traditionally described across the continuum of prevention: primary, secondary, and tertiary prevention. While this framework is widely used in public health, the applicability of each level differs for cataract because most age-related cataracts represent an inevitable consequence of biological ageing rather than a completely preventable disease.

Primary Prevention : Reducing the Future Cataract Burden

Primary prevention aims to prevent cataract formation or delay its development by reducing known risk factors. Unlike infectious diseases or some non-communicable diseases, there is currently no proven population-level intervention that can completely prevent age-related cataract.

Tertiary Prevention: Cataract Surgery as the Definitive Strategy for Blindness Control

Tertiary prevention aims to reduce disability and restore function among individuals affected by cataract. For cataract, this is achieved primarily through timely, high-quality cataract surgery.

Cataract surgery remains one of the most successful and cost-effective interventions in healthcare, restoring vision, improving independence, enhancing quality of life, and enabling individuals to participate more actively in social and economic activities.

Secondary Prevention: Early Detection and Timely Access to Care

Primary prevention aims to prevent cataract formation or delay its development by reducing known risk factors. Unlike infectious diseases or some non-communicable diseases, there is currently no proven population-level intervention that can completely prevent age-related cataract.

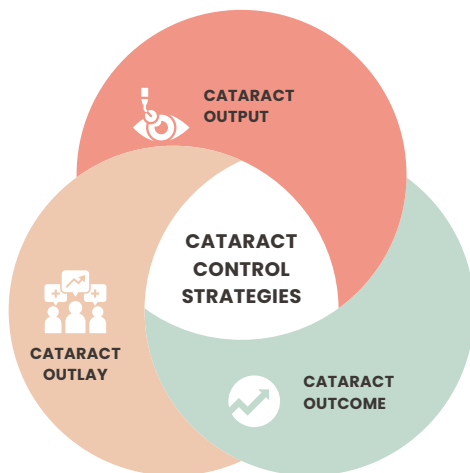
FROM PREVENTION TO ACTION

Cataract prevention and control require a pragmatic understanding of where the greatest opportunities for impact exist. While primary prevention has a limited role in preventing age-related cataract formation, secondary and tertiary prevention strategies provide the most immediate pathway to reducing avoidable vision loss. Early identification of individuals with cataract, timely referral, and access to safe, high-quality cataract surgery remain the cornerstone of effective cataract control programmes. Therefore, the focus must shift from preventing cataract occurrence alone to preventing cataract-related blindness by ensuring that every person in need can access appropriate surgical care at the right time.



CATARACT CONTROL STRATEGIES

Successful cataract control requires more than increasing the number of surgeries performed. A comprehensive cataract programme must ensure that surgical services are accessible, that sufficient numbers of individuals receive surgery, and that these interventions result in meaningful improvements in vision and quality of life. Therefore, cataract control strategies can be understood through three interconnected domains: cataract output, cataract outcome, and cataract outlay.



Cataract output refers to the capacity of the health system to deliver cataract surgical services and is primarily reflected by the volume and efficiency of surgical activity. Increasing cataract output is essential in regions with a significant backlog, where the demand for surgery exceeds existing service capacity.

Cataract outcome focuses on the results achieved after surgery and determines whether increased surgical activity translates into improved vision and better lives.

A successful cataract programme must prioritise not only the quantity of procedures performed but also the quality and effectiveness of care delivered.

Figure 06: Cataract Control Strategies

Cataract outlay represents the resources and investments required to establish and sustain an effective cataract programme. Although cataract surgery is highly cost-effective, achieving population-level impact requires strategic investment in infrastructure, human resources, service delivery, and patient access.



Figure 07 : Economic impact of cataract surgery: Restoring vision, improving independence, enhancing productivity, and generating social and economic returns for individuals, families, and communities

CHAPTER 04

DESIGNING THE RESPONSE

“Patients were no longer passive recipients of care; they were actively mobilised, supported, and educated. Communities became partners, volunteers became the workforce, and private hospitals became resource hubs.”



FOUNDATIONAL PILLARS OF THE NORTHERN SRI LANKA CATARACT BACKLOG ERADICATION MODEL

The proposed model for eliminating the cataract backlog in Northern Sri Lanka was built upon three major pillars. The first pillar was the establishment of a strong public-private partnership, which mobilized the financial, logistical, and technical resources necessary to expand service delivery. The second pillar focused on transforming the Eye Unit into a high-volume cataract surgery center capable of significantly increasing surgical output without compromising the quality, safety, or outcomes of patient care. The third pillar emphasized active multi-stakeholder involvement and engagement, bringing together healthcare professionals, government institutions, non-governmental organizations, community leaders, volunteers, and patients to ensure coordinated implementation and sustainable impact.

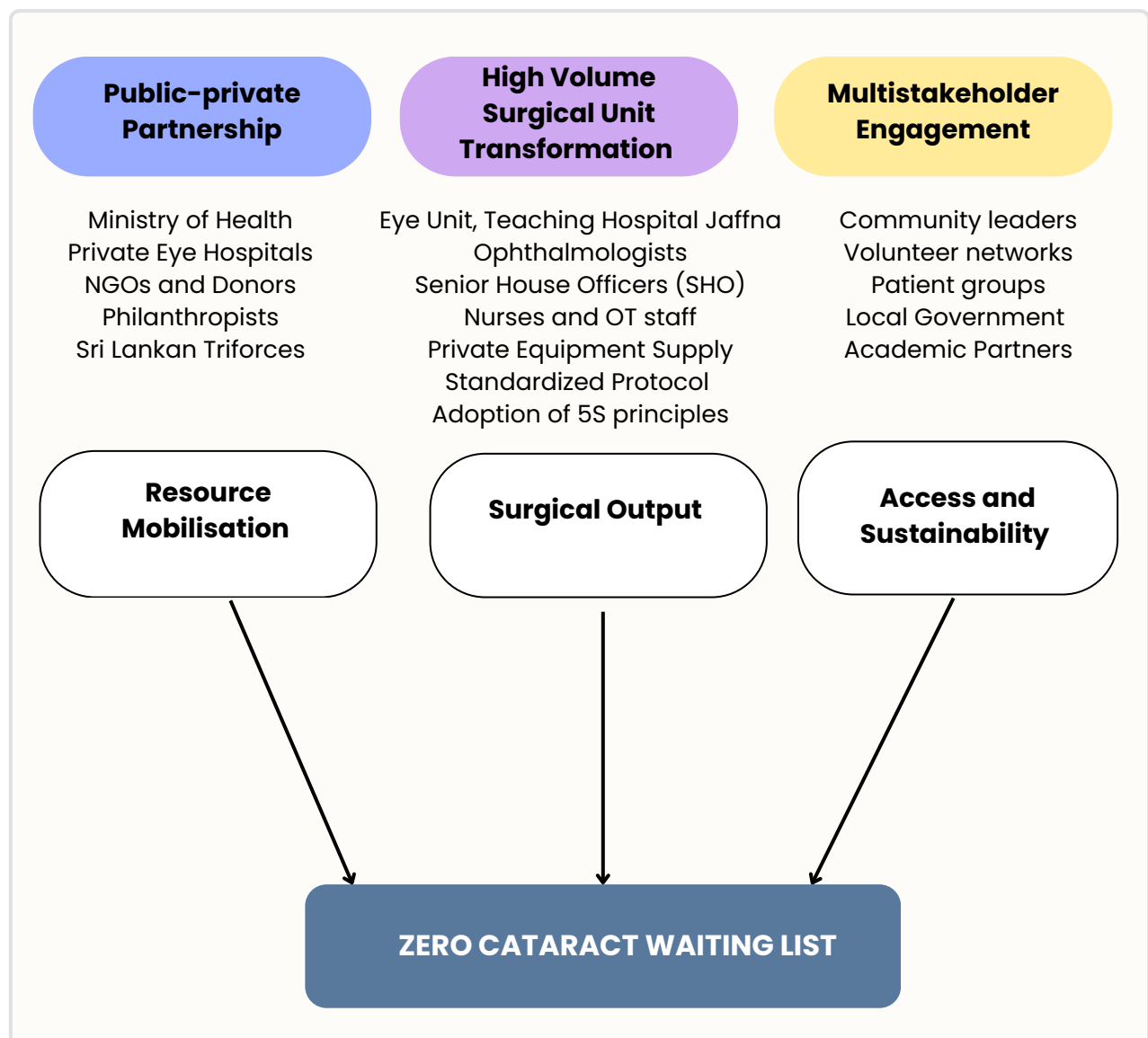


Figure 08 : Three-Pillar Model Structure

• PUBLIC-PRIVATE PARTNERSHIP IN CATARACT BACKLOG ELIMINATION: KEY STRATEGY

The turning point in Northern Sri Lanka's fight against cataract blindness came with the adoption of a Public-Private Partnership (PPP) model, which formed the backbone of a three-pillar implementation strategy. While barriers had been identified and unmet needs quantified, the key challenge remained translating evidence into action in a resource-constrained, post-conflict setting. The PPP model became the enabling mechanism through which financial, logistical, and human resource constraints were systematically addressed, allowing the programme to move from planning to large-scale execution.

The first pillar, Public-Private Partnership, facilitated the mobilisation of essential resources and expertise. Rather than relying solely on new public funding, the programme leveraged existing capacity across sectors. Private eye hospitals contributed equipment, consumables, and surgical support, while non-governmental organisations and philanthropists sponsored intraocular lenses, medications, patient meals, and transportation. Volunteer engagement, particularly from the Sri Lankan triformes, provided critical support in remote screening, patient mobilisation, and bridging workforce gaps. In this way, PPP functioned as the central mechanism for closing systemic resource gaps.

• TRANSFORMATION TO HIGH SURGICAL UNIT

The second pillar focused on transforming the Eye Unit of Teaching Hospital Jaffna into a high-volume cataract surgery centre. Operating theatres were reorganised, surgical workflows standardised, and clinical protocols streamlined to maximise efficiency without compromising safety or quality outcomes.

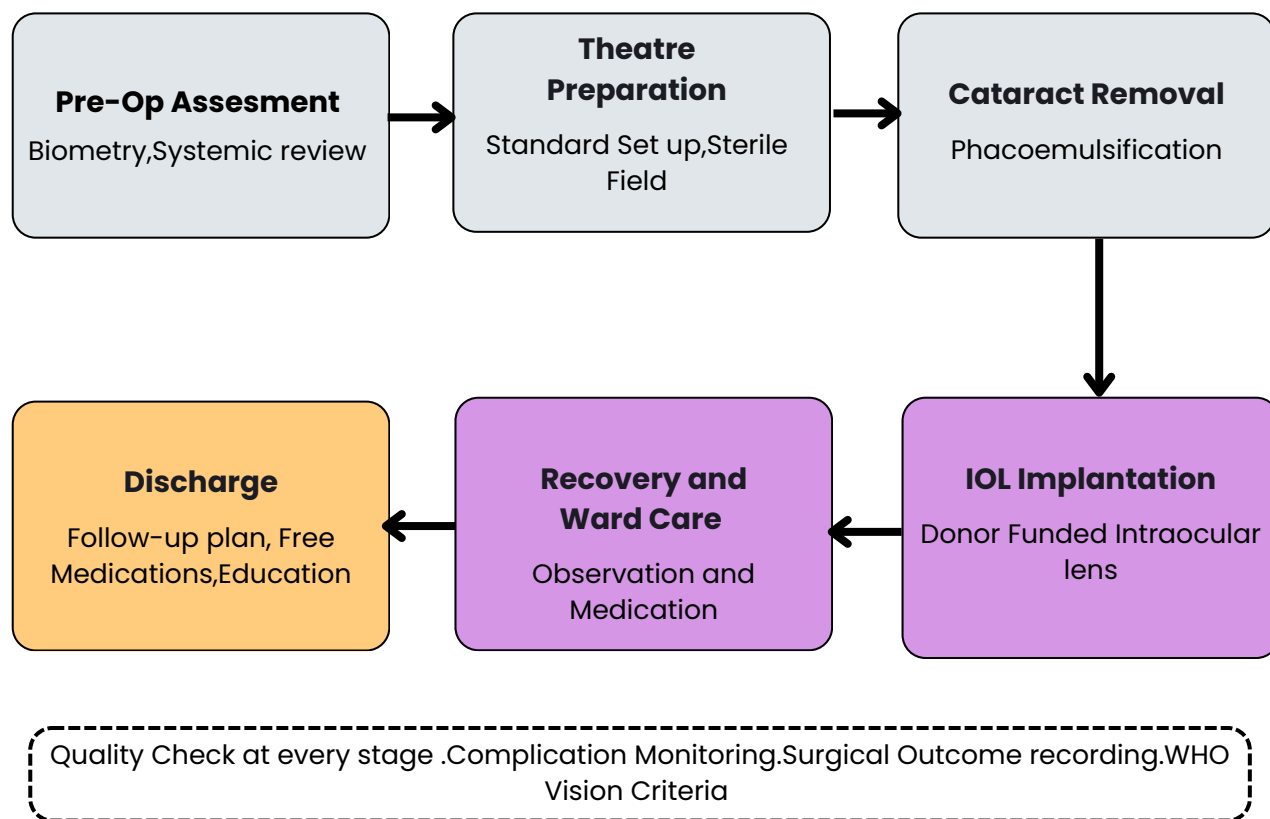


Figure 09: High Volume Surgical Workflow

• MULTI-STAKEHOLDER INVOLVEMENT AND ENGAGEMENT

The third pillar emphasised multi-stakeholder involvement and engagement, ensuring system-wide coordination and sustainability. Government health services, private sector partners, NGOs, donors, volunteers, and community representatives were integrated into a unified delivery network. This collaborative framework strengthened accountability, improved outreach coverage, and ensured continuity across the care pathway—from identification to rehabilitation.

The Northern Province model stands as a blueprint for backlog elimination in low- and middle-income countries. It demonstrated that when partnerships are harnessed strategically, barriers can be dismantled, resources optimised, and outcomes achieved at scale. This model not only eliminated the cataract backlog but also redefined what is possible in resource-constrained healthcare systems.

	Community Identification	Pre-Surgical	Surgical	Post-Surgical
Government Ministry of Health	Policy,Budget	Facility Provision	Public Surgical unit	Regional Clinical Support
Private Sector Eye Hosipitals	-	Equipments	-	-
NGOs Donors,Funds	Awarness Camping	Transport, Meals funding	IOL Sponsorship	Medication Funding
Sri Lankan Triforces Volunteers	Remote Screening	Patient Mobilisation	Logistic Support	-
Academics University Partners	Epidemiological Data	Planning, Target Setting	Quality Monitoring	Outcome Evaluation
Community	Self Referral, Peer Referral	Consent, Attendance	-	Adherence, Education

Figure 10 : Stakeholder responsibility map-roles across the four programme phases

Moving from planning to action, it is essential to translate the proposed strategy into a structured implementation process. While the public-private partnership model provides the framework for collaboration, its effectiveness depends on how it is operationalized on the ground. Clear roles, coordinated workflows, and efficient use of resources are critical to ensure smooth service delivery and achieve backlog reduction targets. The following section therefore describes the implementation of the model for eliminating the cataract backlog.

CHAPTER 05

IMPLEMENTATION



OVERVIEW

The implementation of the cataract backlog elimination programme in Northern Sri Lanka represented far more than the sum of its surgical procedures. It was a coordinated, phased public health intervention that required simultaneous action across community mobilisation, clinical operations, logistics, data management, and quality assurance. This chapter describes how the three-pillar model was operationalised on the ground, from the first point of patient contact in remote villages to the final follow-up visit in a local clinic.

• GOVERNANCE AND COORDINATION

Effective implementation required a clearly defined governance structure. A multi-sectoral steering committee, comprising representatives from the Eye Unit of Teaching Hospital Jaffna, partnering private eye hospitals, NGOs, academic institutions, and the Sri Lanka triformes, provided strategic oversight. This body met regularly to review progress, resolve logistical challenges, and adapt plans in response to emerging gaps.

Mutual agreements were established between the Eye Unit and private partners, clearly delineating responsibilities for equipment provision, consumable supply, staffing support, and patient transport. These agreements ensured accountability and prevented the duplication of effort that often undermines multi-partner programmes. Crucially, the Eye Unit remained the clinical lead-maintaining quality standards and clinical authority-while partners contributed resources and outreach capacity within agreed boundaries.

Academic partners from the Center for Digital Epidemiology, Faculty of Medicine, University of Jaffna contributed programme monitoring, data analysis, and evidence generation, creating a feedback loop between implementation and learning.

• COMMUNITY MOBILISATION AND OUTREACH

The cataract backlog could not be addressed from within hospital walls alone. A substantial proportion of those awaiting surgery were elderly, lived in geographically isolated villages, had limited access to transport, or were unaware that their visual impairment was treatable. Community mobilisation was therefore designed as a proactive, multi-channel strategy rather than a passive referral system.

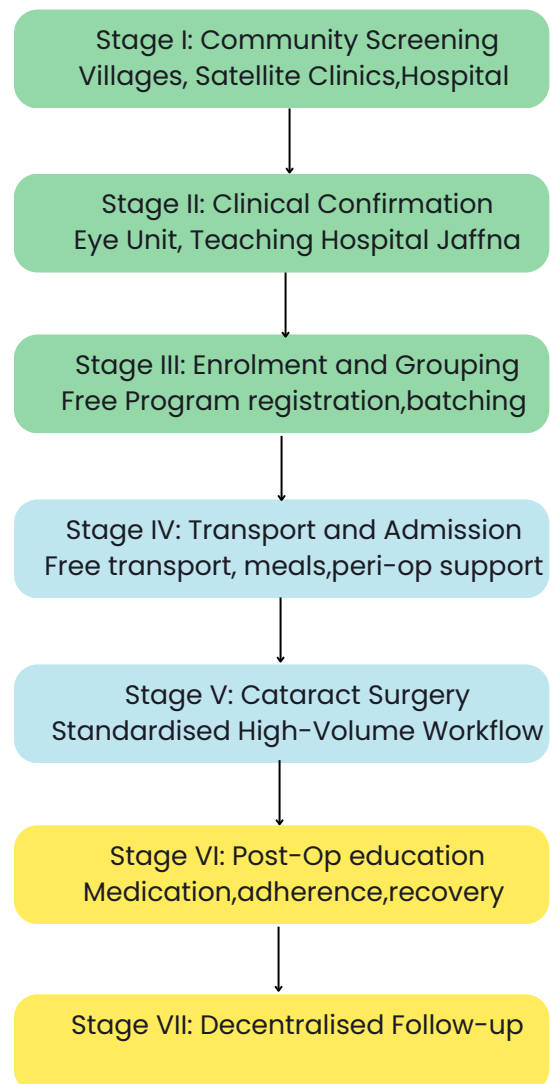


Figure 11 : Patient Care pathway from community screening to decentralised follow-up

Donor funding was channelled through transparent mechanisms, with NGO partners managing procurement of intraocular lenses, medications, and patient support materials.

Sri Lanka Triforces, familiar with the terrain, played a central role in reaching remote populations. Coordinated screening camps were established in community settings across the Northern Province. These camps were scheduled with advance notice to maximise attendance.

Information, education, and communication campaigns addressed the most common barriers to care-seeking: fear of surgery, belief that blindness was an inevitable part of ageing, concerns about cost, and uncertainty about post-operative outcomes. Translated materials in Tamil were distributed across communities, and recovered patients served as community ambassadors, sharing their own experiences of restored sight with neighbours and family members. This peer-led advocacy proved one of the most effective mobilisation tools, generating trust where institutional messaging alone could not.

The outreach network was not static. Based on screening data and geographic equity analyses, high-burden areas that had been under-served were prioritised in subsequent rounds of outreach. Satellite clinics in district hospitals and medical officer of health offices provided intermediate assessment points, reducing unnecessary travel to the central unit for patients who could be evaluated closer to home before being confirmed for surgery.



• PATIENT IDENTIFICATION AND ENROLMENT

Patient identification followed a structured multi-tier cascade. During community screening camps, trained screeners, including ophthalmic nurses, Triforce health personnel, and volunteers, conducted visual acuity testing and preliminary ocular examination. Individuals identified as having visually significant cataract were issued referral documentation and invited to attend confirmation clinics at the Eye Unit.

At the Eye Unit, a consultant ophthalmologist conducted the definitive clinical assessment. Those confirmed as requiring cataract surgery were formally enrolled in the free surgical programme. Enrolment included registration of personal details, residential area, preferred contact person, and any systemic co-morbidities relevant to surgical risk. Patients were grouped by geographic proximity to enable efficient transport coordination and batched scheduling, minimising waiting time between enrolment and surgery.

A deliberate equity focus was embedded in the enrolment process. Those identified as most disadvantaged including individuals living alone, those without family caregivers, and patients from the most remote areas were prioritised for early placement in surgical batches and provided with additional logistical support.

• PRE-OPERATIVE PATHWAY

Prior to surgery, each patient underwent a standardised pre-operative assessment. Biometry was performed to calculate the appropriate intraocular lens power. A systemic medical review was conducted to identify co-morbidities such as diabetes mellitus, hypertension that required optimisation before surgery. Blood glucose and blood pressure were measured and, where necessary, patients were referred back to their primary care provider for stabilisation before being scheduled.



Transport to the Eye Unit was provided free of charge to all patients. Vehicles were coordinated through Assist RR, with collection points established in each district to aggregate patients from nearby villages. On arrival, patients were received by a team of volunteers responsible for registration and provision of meals. Accompanying caregivers were accommodated wherever possible, recognising that the presence of a trusted family member significantly reduced patient anxiety and improved pre-operative compliance.

Patient education was delivered before surgery as well as after by Allergan. An electronic education system explained the importance of eye care, set realistic expectations for recovery, and provided clear instructions on medication use, activity restrictions, and the importance of attending follow-up appointments. This investment in pre-operative communication paid dividends in post-operative adherence.

• SURGICAL DELIVERY

The transformation of the Eye Unit into a high-volume surgical centre was both physical and organisational. Operating theatres were reconfigured to support sequential patient turnover: while one patient was being prepared on the table, the next was ready in the anaesthetic room and a third was completing pre-operative preparation. This parallel workflow, dramatically increased throughput without adding staff or theatre sessions.

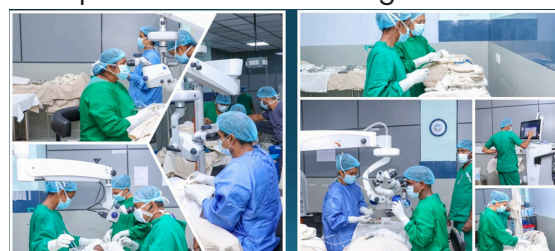
Strict infection control protocols governed every aspect of theatre practice. Instrument sterilisation cycles, draping procedures, and antiseptic preparation were standardised and audited.



Phacoemulsification with implantation of hydrophobic mono intraocular lens was the only surgical technique used throughout the program, offering faster visual recovery and lower complication rates. All surgeries were performed under local or topical anaesthesia with sedation where required, reducing the need for general anaesthetic resources and enabling same-day admission and discharge in most cases.

Intraocular lenses were procured through the PPP supply chain, with donors and NGOs funding foldable hydrophobic lenses for phacoemulsification.

Staff rostering was redesigned to maximise surgical session productivity. Scrub nurses and theatre assistants were cross trained to support multiple roles, reducing idle time between cases. Visiting surgeons from partner institutions periodically supplemented the resident ophthalmology team during high-volume camps, enabling the unit to sustain surgical rates above its baseline capacity for defined periods without burning out core staff.



• POST-OPERATIVE CARE AND FOLLOW-UP

Post-operative care was structured to be both rigorous and accessible. Following surgery, patients remained under observation in the ward for a minimum of two hours. Nursing staff conducted regular observations, administered prescribed eye drops, and assessed for early complications including intraocular pressure elevation, corneal oedema, or signs of infection. Discharge criteria were standardised: patients were released only when stable, comfortable, and accompanied by a responsible caregiver.

A full four-week course of topical antibiotic and anti-inflammatory eye drops was dispensed free of charge at discharge. Written instructions in Tamil explained the drop instillation schedule, activity restrictions, warning signs requiring urgent review, and the date and location of the follow-up appointment. Patients unable to read were counselled verbally and their caregiver instructed directly.

Follow-up care was deliberately decentralised to reduce the burden on patients and improve attendance. Rather than requiring all patients to return to Teaching Hospital Jaffna, a network of district-level review clinics was established at divisional hospitals and medical officer of health offices across the Northern Province.

Visual outcomes were assessed at each follow-up using a standardised protocol: presenting visual acuity, best-corrected visual acuity, and slit-lamp examination. Results were recorded against WHO visual outcome categories and fed back to the central programme database. Patients requiring spectacle correction were referred to vision centres where affordable glasses could be dispensed, completing the visual rehabilitation pathway.



• DATA SYSTEMS, TARGETS, AND PROGRAMME MANAGEMENT

A defining feature of this programme was its commitment to data-driven management. From the outset, the collaboration between the Eye Unit's clinical team and academic partners from the Center for Digital Epidemiology, Faculty of Medicine of University of Jaffna established a prospective data collection system. This data system provided performance monitoring, allowing the programme team to track surgical output against targets in near real time. It underpinned quality improvement, surfacing bottlenecks, flagging adverse outcomes, and enabling rapid corrective action.

Annual surgical volume targets were set based on backlog estimates derived from the cataract surgical rate and coverage calculations. These targets were disaggregated by district, age group, and gender to ensure that progress towards elimination was equitable rather than simply additive. Outreach frequency targets, screening coverage benchmarks, and geographic equity measures were reviewed at programme management meetings attended by all partner stakeholders.

When performance fell short of targets, whether due to staffing gaps, supply disruptions, or reduced outreach attendance, the programme's adaptive management approach enabled rapid response. Additional surgical sessions were scheduled, outreach camps redirected to under-performing areas, and partner organisations mobilised to address specific gaps. This agility was possible precisely because the data system provided early warning rather than retrospective reporting

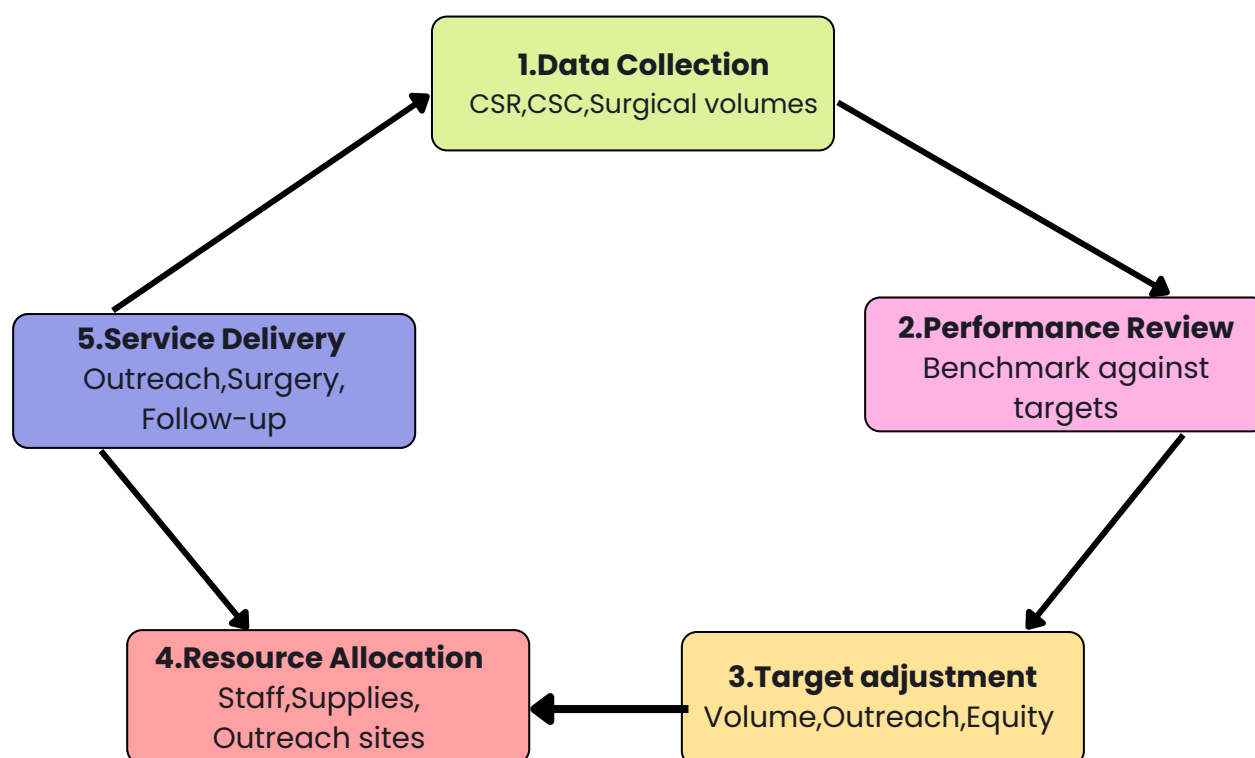


Figure 12 : Data to Action Planning Cycle-Continuous improvement loop

• QUALITY ASSURANCE AND OUTCOME MONITORING

Achieving high surgical volume was never treated as an end in itself. The programme maintained a firm commitment to quality assurance at every stage of the care pathway, recognising that poor surgical outcomes would undermine community trust, reduce future uptake, and ultimately defeat the purpose of backlog elimination. Quality assurance was therefore embedded structurally, not bolted on as an afterthought.

Surgical complication rates, including posterior capsule rupture, vitreous loss, and post-operative endophthalmitis were tracked prospectively and benchmarked against World Health Organisation(WHO) standards and published international data from comparable programmes. Any complication rate exceeding the acceptable threshold triggered a structured case review, with findings shared among the surgical team and corrective measures documented.

Visual outcomes were classified using the WHO criteria: good outcome (presenting visual acuity 6/18 or better), borderline outcome (presenting visual acuity less than 6/18 to 6/60), and poor outcome (presenting visual acuity less than 6/60). Achieving a good outcome rate of 80 per cent or above the WHO minimum standard for high-quality cataract surgical programmes was set as a non-negotiable programme benchmark.

• RESILIENCE: SUSTAINING DELIVERY THROUGH ADVERSITY

No multi-year public health programme operates in a vacuum, and the Northern Sri Lanka cataract elimination effort was no exception. The programme was tested during Ditwa cyclone, which disrupted elective surgical services in the end of 2025, and market fluctuation due to gulf war which increased prices and caused acute shortages of pharmaceutical supplies, surgical consumables, and fuel.

Despite of it,surgical throughput was reduced but not halted; priority was given to patients with the most advanced visual impairment, ensuring that those at greatest risk of permanent disability continued to receive care.

The programme's ability to weather these crises without permanent service collapse reflected the depth of the partnerships established during the preceding years. When institutional mechanisms were strained, personal relationships between key stakeholders sustained coordination. This human dimension of resilience -the trust, commitment, and shared purpose built over years of collaboration- may be the hardest element to replicate, but it is also the most important.

The implementation of the Northern Sri Lanka model demonstrates that cataract backlog elimination in a resource-constrained, post-conflict setting is achievable not through any single innovation, but through the disciplined coordination of many components acting in concert. Community mobilisation, clinical excellence, data-driven management, rigorous quality assurance, and the resilience to sustain effort through adversity each was necessary; none was sufficient alone. The following part examines what this implementation achieved in measurable terms.



CHAPTER 06

RESULTS, EVIDENCE, AND LESSONS



FROM BACKLOG TO ELIMINATION

The most significant achievement of the program was the progressive reduction and eventual elimination of the cataract surgical backlog in the Northern Province. At the start of the initiative, thousands of patients were awaiting surgery, reflecting an accumulated unmet need that had persisted for many years. Over the course of the program, the number of cataract surgeries performed increased substantially, enabling the surgical output to surpass the annual demand generated by new cataract cases.

As a result, the waiting list showed a continuous downward trend throughout the implementation period. Patients who had remained untreated for prolonged periods gained access to sight-restoring surgery, while newly identified cases were managed without contributing to further backlog accumulation. By the end of the program, the accumulated backlog had been cleared, and cataract services had transitioned from managing historical unmet need to meeting ongoing service demand.

The elimination of the backlog represented a major milestone for eye care services in the Northern Province, demonstrating that a long-standing burden of avoidable blindness can be effectively addressed when surgical capacity exceeds incident case generation. This achievement established a sustainable platform for maintaining timely access to cataract surgery and preventing the re-emergence of backlog in the future.

• SURGICAL OUTPUT AND EFFICIENCY

Cataract surgical output in Northern Province grew nearly sevenfold over the past decade, from 2,792 procedures in 2013 to a peak of 19,801 in 2024. Growth was gradual and uneven through the 2010s; volumes moved in the 3,000–4,500 range from 2013 to 2018 with a dip in 2017, before accelerating sharply from 2019 onward. The steepest rise came in 2022–2024, when annual surgeries more than doubled in two years, coinciding with the scale-up of the backlog elimination model and its outreach, workforce, and infrastructure interventions described earlier in this chapter.



High-volume cataract surgery programmes became the hallmark of the initiative. Streamlined protocols allowed surgeries to be performed safely in 15 minutes per patient, with outcomes comparable to international standards.



The region achieved a groundbreaking reduction in cataract surgery waiting times from 2 to 4 years to under two months in 2023, and currently waiting times have gone down to less than two weeks.

Notably, output continued to climb through both the COVID-19 pandemic (2020) and the national economic crisis (2022), years that might otherwise be expected to disrupt service delivery, evidence that the adaptive measures put in place (phased resumption protocols, resource prioritisation, partnership-based supply chains) were effective in sustaining, not just protecting, surgical throughput. 2025 saw a modest pull-back to 17,778, still the second-highest year on record, and the partial 2026 figure (8,012 by June) is already on pace to approach recent full-year totals. Taken together, the trend indicates the backlog is being actively drawn down rather than merely kept at bay by rising demand.

19,801

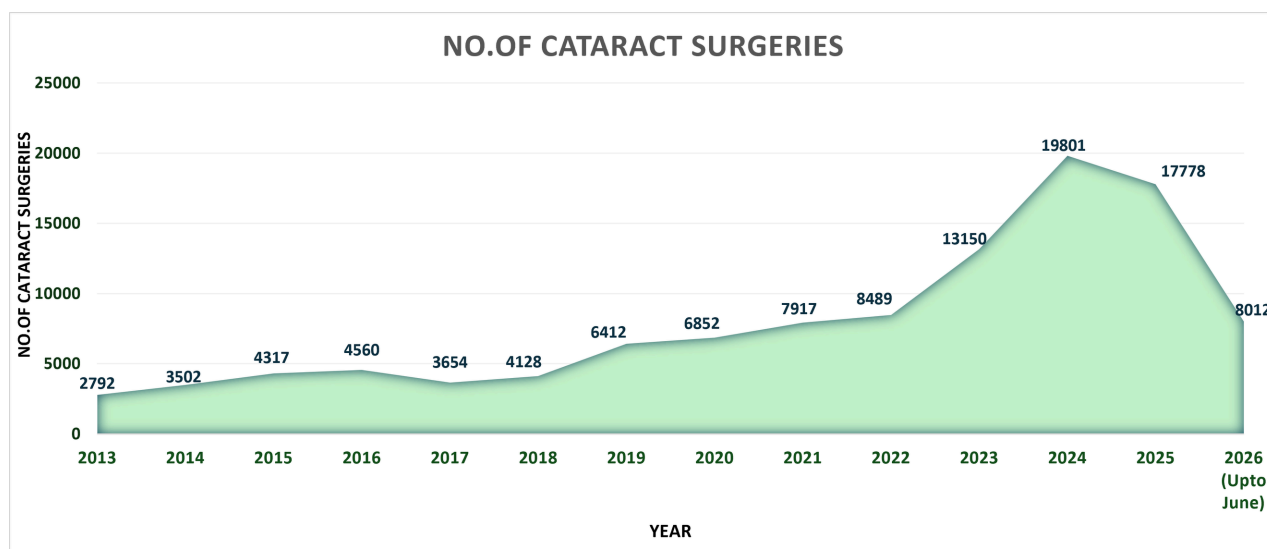
Highest Annual rate
total-2024

7.1X

Growth from 2013 (2792)
to 2024

8,012

Already performed,
Jan-Jun 2026



*2026 Figure

January-June only
(06 months).Already
exceeds the full year
totals for every year
from 2013-2018

2023-2024 Surge

Volume more than
doubled in two
years,coinciding with
the scale up of active
outreach and the
backlog elimination
model described.

Resilience

Growth continued
through both the
COVID-19 pandemic
(2020) and the nation
economic crisis(2022)-
output never fell below
the prior year across
the entire years
shown,apart from a dip
in 2025 (Ditwa
cyclone)relative to the
2024 peak

Figure 13: The Rising Curve: Cataract Surgeries Performed, 2013-2026

Northern Province performed roughly 15,469 cataract surgeries per million population in 2025. Hence, the region has met high World Health Organisation benchmarks, reaching a Cataract Surgical Rate (CSR) of 15/1000 population, allowing districts like Jaffna, Kilinochchi, Mannar, Mullaithevu and Vavuniya to eliminate their surgical waiting lists.

• QUALITY OUTCOMES

Elimination was not achieved at the expense of quality. Postoperative follow-ups were scheduled in patients' own regions, supported by free medications and education. Visual acuity outcomes matched global benchmarks. A study on "Visual Outcomes of Cataract Surgery at a Tertiary Care Hospital in Northern Sri Lanka" reported that 90.6% of participants achieved good postoperative visual outcomes of 6/12 or better using phacoemulsification with intraocular lens implantation.

Approximately 85–90% of all cataract surgeries in the Northern Province were performed in the government sector. The Eye Unit of Teaching Hospital Jaffna performed the majority of these surgeries (65–70%), followed by the District General Hospital, Vavuniya (12–15%) and the District Hospital, Kilinochchi (5–8%). The remaining 10–15% of cataract surgeries were performed in the private sector.

• SYSTEM RESILIENCE

The achievement of zero waiting lists was particularly remarkable given the external shocks of the COVID-19 pandemic and the economic crisis. These events disrupted services nationwide, yet Northern Sri Lanka sustained progress through PPP resilience planning, donor-backed supply chains, and flexible outreach models. This resilience ensured that backlog elimination was not temporary but sustainable.

• SYMBOL OF TRANSFORMATION

The elimination of the cataract surgical backlog represented far more than the achievement of a numerical target. It marked a fundamental transformation in the delivery of eye care services across the Northern Province. What had once been a persistent public health challenge became a demonstration of what could be achieved through a shared commitment to improving population eye health.

The achievement reflected the emergence of a resilient and responsive health system capable of delivering high-quality cataract services at a scale sufficient to meet population needs. It signified a shift from prolonged waiting times and unmet surgical demand to timely access to sight-restoring care. The successful clearance of the backlog also demonstrated the capacity of the region to overcome longstanding barriers and achieve measurable improvements in service delivery despite resource constraints.

As the program expanded and gained recognition for its efficiency and quality outcomes, it attracted patients not only from the Northern Province but also from other parts of Sri Lanka. Access to surgery was provided irrespective of regional boundaries, ensuring that all eligible patients benefited from the initiative. Consequently, the program evolved from a regional backlog reduction effort into a broader national contribution toward reducing avoidable blindness.

Most importantly, the impact was felt in the lives of thousands of individuals who regained vision and the ability to participate fully in family, social, and economic activities. Restoration of sight translated into improved independence, enhanced quality of life, and renewed dignity for patients and their families.

At a broader level, the Northern Province experience provided compelling evidence that avoidable blindness caused by cataract can be effectively addressed even in post-conflict and resource-constrained settings. The achievement stands as a model for other regions seeking to eliminate cataract backlog and ensure equitable access to eye care services.

BARRIER-SOLUTION-OUTCOME FRAMEWORK



Figure 14 : Barrier-Solution-Outcomes of the PPP model

The Barrier-Solution-Outcomes of PPP shows how PPP became the backbone of backlog elimination. It was not simply a funding mechanism but a health-system redesign strategy. By streamlining existing resources and filling gaps through partnerships, the programme achieved zero waiting lists while maintaining international-quality outcomes

CHAPTER 07

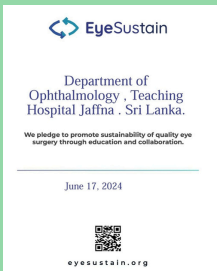
SUSTAINABILITY, SCALE, AND SYSTEMIC IMPACT



A TRANSFORMATIVE MODEL FOR SUSTAINABLE AND SCALABLE CATARACT CARE

This model shows that eye health can advance both human well-being and planetary health—proving that cataract care can be scaled to meet urgent need without compromising the sustainability of the systems that deliver it.

• SUSTAINABLE DEVELOPMENT GOALS AND ENVIRONMENTAL STEWARDSHIP



The Northern Province cataract elimination programme distinguished itself by embedding sustainability into its design, making it **the only centre in Sri Lanka** to pledge allegiance to EyeSustain principles. This commitment ensured that backlog elimination was not only a medical triumph but also a contribution to global environmental responsibility.

The programme aligned directly with the Sustainable Development Goals (SDGs), demonstrating that eye health can advance both human well-being and planetary health.

1 NO POVERTY  Restored productivity, employability, and household economic stability by eliminating the long-term financial burden of avoidable blindness.	2 ZERO HUNGER  Improved functional independence enabled better participation in food access, preparation, and household nutrition.	3 GOOD HEALTH AND WELL-BEING  Restored sight and functional ability for thousands through timely and, high-quality cataract surgical services.	8 DECENT WORK AND ECONOMIC GROWTH  Restored vision returned working-age patients and their caregivers to employment and daily productivity.
10 REDUCED INEQUALITIES  Mobile surgical units and satellite screening closed the gap for rural, island, and formerly conflict-affected communities.	13 CLIMATE ACTION  Coordinated outreach camps and high-volume scheduling reduced unnecessary patient travel and the program's carbon footprint.	16 PEACE, JUSTICE AND STRONG INSTITUTIONS  Equitable, non-discriminatory access across geography and socioeconomic groups strengthened public trust in institutional capacity.	17 PARTNERSHIPS FOR THE GOALS  Public-private partnership in financing, logistics, and delivery enabled sustainable scale-up and system-wide impact.

• ENVIRONMENTAL IMPACT AND DECARBONISATION OUTCOMES OF THE HIGH-VOLUME CATARACT SURGERY MODEL

The implemented high-volume cataract surgery model demonstrated clear sustainability gains across environmental, operational, and system dimensions. By consolidating surgical services into structured high-throughput workflows, the programme achieved a substantial reduction in per-patient consumption of energy, consumables, and pharmaceuticals, without compromising clinical outcomes. This efficiency translated into lower resource intensity per case and improved overall system productivity.

“

The unit adopted and contextually modified the “Aravind Eye Hospital global model for sustainable ophthalmic care”, aligning with EyeSustain principles.

”

From an environmental perspective, the model reduced the indirect carbon burden associated with service delivery. Group-based patient transport systems and decentralised case identification pathways contributed to fewer individual travel episodes, thereby lowering fuel use and associated emissions. Within the facility, optimised theatre utilisation further reduced idle energy consumption per surgical case.

Resource sustainability was reinforced through a measurable decrease in reliance on single-use consumables, supported by validated reuse pathways and rationalised procurement practices. This contributed to reduced biomedical waste generation and improved material efficiency across the surgical care continuum.

At a systems level, the model demonstrated enhanced resilience in sustaining high surgical volumes within fixed resource constraints. Stable output levels of approximately 200 cataract surgeries per working day were maintained alongside consistent postoperative outcomes, indicating that efficiency gains did not compromise quality or safety. Importantly, the model’s ability to maintain performance under resource pressure highlights its scalability and adaptability in similar low-resource health systems.



Figure 15 : The Virtuous Cycle of Sustainable Cataract Care

Collectively, these outcomes indicate that high-volume cataract surgery, when operationally optimised, can function as a sustainable service delivery model that simultaneously improves efficiency, reduces environmental impact, and maintains high-quality clinical outcomes.

• POLICY TRANSLATION AND NATIONAL INTEGRATION

The success of the Northern Province's public-private partnership model for integrated eye care provided compelling evidence that multisectoral collaboration can effectively expand access to high-quality, affordable, and sustainable eye care services. The demonstrated impact of this model informed national policy development and was subsequently reflected in the National Strategic Plan on Integrated Eye Care in Sri Lanka. **Under Strategic Area 3: Coordination of Eye Care Services Within and Across Centres, the strategy explicitly recognizes the importance of strengthening public-private partnerships and collaborations with non-governmental organizations to explore opportunities for delivering affordable and accessible eye care services.** The incorporation of this strategic direction into the national policy framework represents the translation of a successful regional implementation model into national health policy, underscoring its scalability, sustainability, and potential for replication across Sri Lanka.

The elimination of cataract backlog in Northern Sri Lanka was not only a regional triumph but a national turning point. What began as a provincial initiative soon evolved into a model for the entire country. The Ministry of Health recognised the achievement as proof that backlog elimination was possible even in resource-constrained settings, and the strategies used, Public-Private Partnerships, streamlined resource utilisation, and multistakeholder engagement, were formally documented and presented to policymakers. This evidence reshaped national eye health planning, embedding backlog elimination as a measurable goal rather than an aspirational target.

This translation of regional success into national policy is expected to demonstrate that cataract elimination can be institutionalised, sustained, and replicated at scale, positioning Sri Lanka as a potential global exemplar for low- and middle-income countries striving toward Universal Eye Health Coverage.

• POLICY IMPLICATIONS

Quantifying the cataract backlog provided key system-level insights. It reinforced that cataract-related blindness constitutes a population health burden rather than an isolated clinical condition, and that routine service delivery alone is insufficient to address accumulated unmet need. It also highlighted the necessity of data-driven planning for appropriate resource allocation and, demonstrated that sustained increases in surgical output must be coupled with improved access and equity-focused delivery strategies. Collectively, these lessons informed the development of a structured backlog reduction framework that underpinned programme success in Northern Sri Lanka.

Policy integration of these findings ensures alignment with national eye care strategies and health system planning. More importantly, the model generates transferable lessons for adaptation in other settings with comparable constraints, creating a foundation for wider application and contextual adaptation.

Postoperative education was provided through bilingual (Tamil and Sinhala) QR code-based/verbal/leaflet instructions at the Eye Unit of Teaching Hospital Jaffna. Patients with an uncomplicated recovery did not need to return to the Teaching Hospital Jaffna for follow-up. Instead, their follow-up care was arranged at the nearest local eye care facility, making care more convenient and accessible.

GLOBAL REPLICABILITY AND FUTURE DIRECTIONS

The Northern Province cataract elimination model stands as a global exemplar, proving that backlog elimination is achievable even in resource-constrained, post-conflict settings. Its success was not accidental, but the result of a carefully designed framework built on Public–Private Partnerships, streamlined resource use, multistakeholder engagement, and resilience planning. These principles are universally applicable, making the model replicable across low- and middle-income countries where cataract remains the leading cause of avoidable blindness.

Globally, regions in South Asia, Sub-Saharan Africa, and Latin America face similar challenges: high cataract burden, limited surgical capacity, geographic isolation, and fragile health systems vulnerable to crises. The Northern Province model demonstrates that these barriers can be overcome by aligning government institutions, private hospitals, NGOs, donors, and community networks into a single coordinated system. By embedding PPP structures into national health planning, countries can mobilise resources, expand outreach, and sustain high-volume surgical programmes without overburdening public budgets.

Future directions include strengthening data-driven monitoring to track backlog reduction, expanding community-based screening to ensure equitable access, and building resilient supply chains capable of withstanding economic or political instability. Capacity building for ophthalmologists and allied staff will be critical to sustain progress, alongside patient-centred approaches that emphasise dignity, independence, and education.

Strengthen Data driven Monitoring

Enhance real time data collection and analysis to track surgical performance, monitor backlog reduction, and guide timely, evidence based decisions.

Expand Community based Screening

Scale up outreach and community screening to identify cases early and ensure equitable access to quality cataract services for all.

Build Resilient supply chains

Strengthen procurement systems and diversify suppliers to ensure uninterrupted availability of essential medicines, IOLs, and equipment, even during economic or political instability.

Capacity Building

Invest in training and continuous professional development for ophthalmologists, optometrists, RHOs, nurses, and allied staff to expand skills, retain talent, and sustain quality services.

Patient-Centered Approaches

Place patient at the centre of care, promoting dignity, respect, independence, and informed choices through education, communication, and holistic support.

Figure 16 : Future directions for a sustainable, equitable and resilient cataract care

The Northern Province experience offers a blueprint for global eye health, showing that backlog elimination is not only possible but scalable. The region has demonstrated that sight restoration can be transformed into a health-system redesign strategy, advancing the global movement toward Universal Eye Health Coverage and the elimination of avoidable blindness.

DATA-DRIVEN EVALUATION AND CONTINUOUS IMPROVEMENT

Following the successful implementation of this model, the initiative did not stop at service delivery. Recognising that backlog elimination must be paired with evidence-based evaluation, the programme undertook systematic research to assess the visual outcomes of operated patients. The findings were outstanding: 90.6% of participants achieved good visual outcomes, meeting international benchmarks and validating the efficiency of high-volume phacoemulsification in a resource-constrained setting (6).

Building on this success, subsequent studies were designed to evaluate patient-reported outcomes of cataract surgery and the refractive outcomes of cataract surgery. These investigations reflected a deliberate data-driven approach, ensuring that service delivery was continuously refined based on patient experience, functional vision, and refractive accuracy. By integrating outcome measurement into routine practice, the programme moved beyond backlog elimination toward quality enhancement and patient-centred care.

Visual Outcomes of Cataract Surgery at a Tertiary Hospital in Northern Sri Lanka⁽⁶⁾

Background

- Cataract is the leading cause of blindness and visual impairment. Cataract surgery is the most common procedure for restoring vision.
- The study aimed to evaluate visual outcomes of cataract surgery among patients attending the Eye Unit of Teaching Hospital Jaffna, Northern Sri Lanka, at the fourth week follow-up postoperatively.

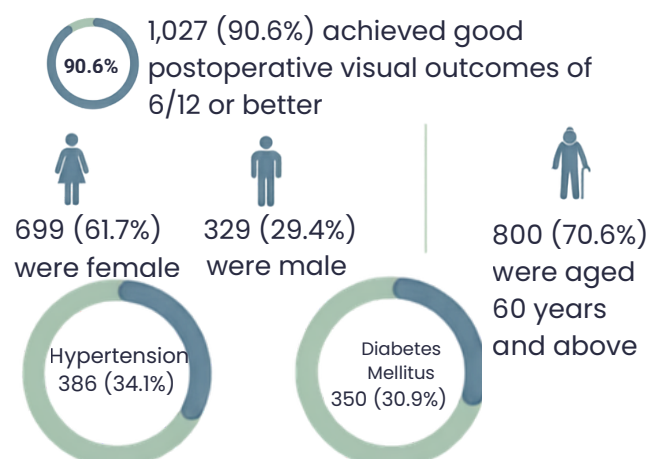
Methodology

- Institution-based retrospective analytical study;
- Total of 1133 patients included in the study
- phacomulsification with monofocal intraocular lens implantation was carried out;
- Systematic random sampling was used ;
- Data from structured extraction form based on medical resources and interviewer-admitted questionnaire;
- Analysed using SPSS Version 25.

Conclusion

Visual outcome following cataract surgery exceeds WHO recommendations; age and diabetes mellitus were associated with postoperative visual improvement.

Results



- Pre-existing ocular comorbidities 24 (2.1%).
- Age 60 years and above showed significantly less improvement than < 60 years ($p < 0.001$)
- Diabetes mellitus independently associated with reduced postoperative visual improvement ($p = 0.014$)
- Sex and pre-existing ocular comorbidities were not associated.

FROM BACKLOG TO ELIMINATION: EVALUATING THE NORTHERN PROVINCE CATARACT CARE MODEL USING THE RE-AIM FRAMEWORK

The success of the Northern Province cataract elimination programme extends beyond the number of surgeries performed or improvements in visual outcomes. As a complex health systems intervention, its impact is reflected in its ability to reach underserved populations, deliver consistently high-quality care, achieve widespread adoption across the health system, maintain implementation fidelity, and sustain outcomes over time. To comprehensively evaluate these dimensions, the RE-AIM (Reach, Effectiveness, Adoption, Implementation, and Maintenance) Framework provides a structured implementation science approach for assessing both programme impact and long-term sustainability. By examining the model through each RE-AIM domain, the framework demonstrates not only why the intervention was successful in eliminating the cataract backlog in the Northern Province, but also how it can serve as a scalable and transferable model for strengthening cataract care in other regions and countries.

RE-AIM DIMENSION	FOCUS	KEY OUTCOMES ACHIEVED
REACH	Expanded access to cataract services across the Northern Province +adjacent districts.	17,778 cataract surgeries performed; services reached all districts, including rural and underserved communities.
EFFECTIVENESS	Improved quality and outcomes of cataract care.	CSR of 15/1000; 90.6% achieved good postoperative VA ($\geq 6/12$); estimated CSC 97.3% and eCSC 88.1%.
ADOPTION	Uptake of the model within the health system	Province-wide implementation and incorporation of key strategies into the National Strategic Plan on Integrated Eye Care
IMPLEMENTATION	Efficient delivery of high-volume cataract services.	Increased surgical productivity, reduced waiting times <2 weeks standardized care pathways, and efficient resource utilization.
MAINTENANCE	Long-term sustainability and scalability.	backlog reduced to zero; sustained high surgical output and a model suitable for replication in other regions

Figure 17 : RE-AIM Implementation framework

SIGHT BEYOND BARRIERS : IN A NUTSHELL

The story of cataract backlog elimination in Northern Sri Lanka is more than a regional achievement; it is a testament to what can be accomplished when determination, innovation, and partnerships converge. Sight Beyond Barriers has shown that backlog elimination is not simply about surgical numbers but about system redesign, where every barrier is systematically addressed through Public–Private Partnerships, multistakeholder engagement, resilience planning, and data-driven evaluation. The programme’s success was validated not only by achieving zero waiting lists but also by demonstrating outstanding outcomes, with over 90% of patients regaining functional vision and subsequent research confirming patient-reported improvements in independence and quality of life.

This initiative also aligns with the Sustainable Development Goals (SDGs), embedding environmental stewardship into ophthalmic care and making it the only centre in Sri Lanka to pledge to the EyeSustain principles. By integrating sustainability into service delivery, the programme proved that advancing health equity and protecting the planet can go hand in hand.

The lessons from Northern Sri Lanka extend far beyond its borders. They offer a blueprint for low- and middle-income countries, showing that backlog elimination is achievable when health systems embrace partnerships, community mobilisation, and responsible resource use. Globally, this model demonstrates that sight restoration can be scaled into a health-system transformation, advancing the movement toward Universal Eye Health Coverage while contributing to climate-conscious healthcare.

Ultimately, Sight Beyond Barriers underscores that restoring vision is not only about seeing clearly—it is about creating a clearer future. It is about dignity, independence, productivity, and sustainability. By breaking through barriers of poverty, geography, and fragility, Northern Sri Lanka has shown the world that avoidable blindness can be eliminated, and that every restored sight is a step toward a more equitable and sustainable tomorrow.



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CHAPTER 08

OPERATIONAL EXCELLENCE THROUGH PARTNERSHIP: THE ASSIST RR STORY



HOW THE CATARACT SURGERIES WAITING TIMES IN THE NORTHERN PROVINCE WERE BROUGHT DOWN TO A MATTER OF DAYS? – FREE CATARACT SURGERIES FUNDED BY ASSIST RESETTLEMENT AND RENAISSANCE (ASSIST RR) IN SRI LANKA

Assist RR, UK, is an independent charity registered with the Charity Commission for England and Wales (Reg. No. 1151025), and Assist RR, Sri Lanka (SL), is a registered national NGO with the NGO Secretariat of Sri Lanka (Reg. No. L-161014). Assist RR was initially set up in 2012 to relieve the poverty of people affected by the war in Sri Lanka and has since extended its remit to helping Sri Lanka's poorest people, regardless of race, gender, age or creed. Assist RR has an established and proven track record of enhancing the health, education and livelihoods of Sri Lanka's poorest people. Assist RR raises funds in the UK and around the globe from friends, families and like-minded organisations to carry out these life changing projects.

INTRODUCTION

Since the creation of our charity in November 2012 in the UK and making our first fact-finding mission to Vanni in March 2013, we have completed livelihood, educational and health related projects worth more than LKR 1.061 billion (LKR 106 crores, £3.6 million) using funds raised by Assist RR in the UK and around the world. These projects have been implemented with the assistance of Assist RR (SL). The trustees of Assist RR (UK & SL) have provided their services pro bono throughout, and it has no paid employees. All overheads and expenses, including travel to Sri Lanka and within Sri Lanka and the UK are covered in full by trustees and volunteers. 100% of funds raised are used on assisting the needy.



Photos 1 & 2: Mu/Puthukudiyiruppu RC Vidyalayam building, which was badly damaged by shelling during the war and was unsafe to use, was rebuilt by Assist RR in 2014 – Present Governor, Hon Mr N Vethanayagan inspecting the damages, in 2014, caused by shelling

Since the creation of our charity in November 2012 in the UK and making our first fact-finding mission to Vanni in March 2013, we have completed livelihood, educational and health related projects worth more than LKR 1.061 billion (LKR 106 crores, £3.6 million) using funds raised by Assist RR in the UK and around the world. These projects have been implemented with the assistance of Assist RR (SL). The trustees of Assist RR (UK & SL) have provided their services pro bono throughout, and it has no paid employees. All overheads and expenses, including travel to Sri Lanka and within Sri Lanka and the UK are covered in full by trustees and volunteers. 100% of funds raised are used on assisting the needy.



Photos 3 & 4: Puthukudiyiruppu Base Hospital wards rebuilt by Assist RR in 2015 (before and after)

Assist RR has implemented many livelihood support projects in Sri Lanka including more than 500 shelters and toilets, constructed or renovated buildings to 17 schools in the north and east of Sri Lanka (Photos 1 & 2), provided furniture to schools, bicycles to school children, and solar powered lanterns to children from remote villages. Assist RR has also provided 49 boats, engines and nets to provide livelihood to 245 families across the north and east. We also conducted eye clinics, provided reading glasses, funded free cataract operations, cardiology clinics, and medical equipment. Assist RR also rebuilt Puthukudiyiruppu Base Hospital by providing 3 medical wards, a corridor, and the mortuary (Photos 3 & 4).

CATARACT SURGERIES – ASSIST RR’S CONTRIBUTION

Cataract is the world’s leading cause of blindness in adults over 55, with around 18 million people blind as a result. If left untreated, they can interfere with simple tasks such as reading. Although there is no way to prevent cataracts, it is possible to reduce the risk of losing sight from this condition. Someone experiencing the symptoms of cataracts or other vision problems, should see an eye doctor for a complete examination. If a cataract is caught in the early stages when vision loss begins to interfere with everyday activities, it can be removed quickly, and good vision can be restored.

One of our (Assist RR) trustees, Dr Ratnagopal Jeyapooranabala, who is an Eye Surgeon in the UK, visited a number of areas in northern Sri Lanka in December 2012 to conduct eye clinics. He visited Killinochchi, Jaffna and Vaddukkoddai and distributed spectacles to people with eye vision deficiencies. With the help of the funds raised by the members of Assist RR, he distributed 400 spectacles during the clinic conducted at Killinochchi hospital. He also conducted small eye clinics and gave spectacles at Sai Baba Centre in Nallur and Vaddukkoddai in the Jaffna Peninsula.

During my first fact-finding mission to Sri Lanka in March 2013, my fellow trustee, Dr Jeyapooranabala, also joined me. We organised another set of eye clinics in Kaithady, Puthukudiyiruppu and Mannar (Murungan & Pesalai), during this visit (Photos 5 & 6). Assist RR also provided patients, who attended these clinics, with nearly 300 reading glasses and eye drops for dry eyes. All patients had check up for Glaucoma, cataract, diabetic retinopathy and other eye problems. These clinics helped us to understand the extent of eye issues – specifically cataracts – in the Northern Province.

Founded in the UK in 2012, Assist RR has delivered over LKR 1.06 billion (£3.6 million) in livelihood, education, and healthcare projects across Sri Lanka. Operated entirely by volunteer trustees with no paid staff, the organization directs 100% of donated funds to beneficiary programmes.

FUNDING CATARACT SURGERIES BETWEEN 2013 & 2021

During our visit to Sri Lanka in March 2013, Dr Jeyapooranabala introduced me to the Head of Vision 2020 Secretariat, Dr Asela Abeydeera, at the Ministry of Health in Colombo. During this meeting Dr Abeydeera informed us that there were around nearly 2 million patients in the country needing cataract surgeries and the numbers increase by 20% every year. However, they were able to carry out only around 200,000 surgeries a year at government hospitals. He explained the issues faced by cataract patients in Sri Lanka due to lack of funding and resources and made a request to Assist RR to consider funding cataract surgeries. He promised that Vision 2020 would organise the logistics and arrange surgeons and requested us to provide Intra Ocular Lenses (IOLs) and consumables needed for the surgeries. Vision 2020 were happy to organise camps at district hospitals where there were no surgeons.

As we had by then, already experienced difficulties faced by people with cataracts during our eye clinics in northern Sri Lanka, we readily agreed to work with Vision 2020 and to fund cataract surgeries wherever it was required. As a result, our first collaborative cataract surgery camp was conducted on 2nd June 2013 in the western coastal town of Mannar, which was organised by Vision 2020 Secretariat and was sponsored by Assist RR and Gods Own Children Foundation, Australia (Photos 7 & 8). Nearly 90 patients were operated by Eye Surgeon, Dr Jeyasiri Dias, who was attached to Teaching Hospital Batticaloa in the east coast. Assist RR admired Dr Dias's dedication and commitment to his profession. The patients in Mannar were very pleased that Assist RR sponsored the camp and that Dr Dias carried out the surgeries.

In 2016, Assist RR, in collaboration with Vision 2020 Secretariat, conducted a mass cataract camp at Vavuniya DGH between 31/05 & 04/06 2016 (Photos 9 & 10). This camp was funded by like-minded organisations (3 from the UK & one from Australia) through Assist RR (see Photo 9). Two surgeons from India (Dr Shivaprasad Sahoo & Dr Raghuraj Hegde) and one surgeon from Singapore (Associate Professor Rupesh Agrawal) restored eyesight, at least in one eye, to 486 patients. There were many patients who arrived blind and returned home being able to see the world after a long time. Many of them come from very poor backgrounds and have been waiting for either months or years to restore their eye sights. Since our first cataract camp in Mannar in 2013, our charity, with the support of Vision 2020 Secretariat, fully funded more than 4,000 cataract surgeries between 2013 and end of 2016 in Mannar, Mullaithivu, Kilinochchi, Vavuniya, Batticaloa, Ratnapura and Matara district hospitals.



Photos 5 & 6: Dr Jeyapooranabala screening a patient in Mannar in 2013 and a Patient with cataract.

Vision 2020 Secretariat, which was functioning under the MOH, carried out nearly 50,000 free cataract surgeries between its inception in 2009 and the end of 2016. The situation had changed following the handing over of Vision 2020 Secretariat to College of Ophthalmology in Dec 2016 by the then Health Minister. Since the beginning of 2017, Vision 2020 became inactive and our charity couldn't continue its funding through Vision 2020. Assist RR however continued its cataract project by taking patients from the north to Kadawatha Lions Hospital and Swanetha Eye hospital in Colombo by buses (Photos 11 & 12). Assist RR had managed to fund nearly 2000 surgeries between January 2017 and December 2021.

FUNDING CATARACT SURGERIES FROM 2022 TO DATE

In June 2022, I was introduced to Dr M Malaravan, Consultant Eye Surgeon at the Teaching Hospital (TH) Jaffna, by the Vice Chancellor of University of Vavuniya, Prof Manhaleswaran. This introduction was the starting point for a strong Public Private Partnership (PPP) between Assist RR and the eye unit of TH Jaffna. This PPP was later expanded island-wide and covered 41 government hospitals.

Assist RR funded its first cataract project at the TH Jaffna on 04 July 2022 (Photos 13 & 14) in collaboration with the eye unit of TH Jaffna headed by Dr Malaravan. Between July and December 2022, in total, Assist RR fully funded 827 cataract surgeries, which were funded by Team Solihull (Solihull School Community in the West Midlands, UK) through Assist RR at the TH Jaffna (Photos 15 & 16). In 2022, Assist RR funded 2199 surgeries in 7 governmental hospitals Island wide including TH Jaffna using £50k (LKR 20.5 million) raised and donated by Team Solihull through Assist RR.

Inspired by Assist RR's successful implementation of this free cataract project in 2022, a philanthropist (from the Alaka Foundation, Malaysia) came forward to extend the provision of these free cataract surgeries across Sri Lanka through Assist RR (SL) from January 2023. To kick start the continuation of the project the Alaka Foundation provided an initial USD 50k, at the beginning of 2023, to Assist RR (SL) to fund free surgeries. With this funds, Assist RR funded 2045 free surgeries in 10 districts in Sri Lanka.



Photos 7 & 8: Cataract Surgery Camp in Mannar on 02 June 2013

Following the programme's successful scale-up, the Alaka Foundation provided an additional USD 100,000, enabling Assist RR to fund 5,054 free cataract surgeries across 18 districts in Sri Lanka. The programme's impact subsequently attracted support from the Ananda Foundation (Malaysia), further expanding nationwide access to sight-restoring surgery for underserved populations.. Based on individuals' circumstances, Dr Malaravan, at times, carried out surgeries to both eyes at the same time (Photos 17 & 18). These ladies, who were blind in both eyes, are now doing very well.

Since January 2023, Alaka Foundation donated USD 800k and Ananda Foundation contributed another USD 500k through Assist RR (SL). Using this USD 1.3 million (LKR 40.5 Crores) financial support, received from both Foundations, Assist RR have funded 53,125 free fully funded surgeries island wide from January 2023 till November 2024 (a hospital wise breakdown is attached – Table 1). At the Eye unit of TH Jaffna alone, 19,852 free cataract surgeries were conducted in 2023 and 2024 costing LKR 192.5 million (19.25 Crores). These surgeries were funded through what has proved to be a hugely successful PPP model; private philanthropy reducing vast post-covid waiting lists, responding to needs at a local level in government hospitals all over Sri Lanka, using government salaried staff in 40 district hospitals including Sri Lanka National Eye Hospital, Colombo (Photos 19 & 20). Assist RR implemented this project in collaboration with the relevant hospital Eye Units.



Photos 9 & 10: Mass cataract camp (486 surgeries) in Vavuniya in June 2016 funded by like-minded organisations through Assist RR – Associate Prof Rupesh Agarwal is in Photo 10

Eye units of TH Jaffna and Vavuniya DGH organised 3 mass surgery camps (4369 surgeries) in 2023 & 2024 in collaboration with Assist RR, who fully funded these surgeries and provided all logistical support including patients' care. Assist RR and eye unit of TH Jaffna organised and conducted a mass surgery camp at the TH Jaffna between 30 Oct & 03 Nov 2023, celebrating the World Sight Day and the friendship between THs Jaffna and Ratnapura (Photos 21 & 22). Surgeons, who took part in this camp, were: Dr M Malaravan (TH Jaffna), Dr W T Ayasmantha Peris (TH Ratnapura), Dr S Prem Anand (University Hospital, KDU) and Dr P Kiritharan (Vavuniya DGH). The camp was fully funded by Alaka and Ananda foundations, Malaysia, through Assist RR (SL).

Another mass cataract program was conducted at TH Jaffna between 14 & 25 Oct 2024 over a ten-day period (Photos 23 & 24). 2053 patients from the Northern Province and Anurathapura district benefitted from this camp. This was also a collaborative project between the eye unit of TH Jaffna and Assist RR (UK & SL) using funds from Alaka and Ananda Foundations. Dr Malaravan took the lead and declared that the backlog was cleared in Jaffna District, at the end of this mass camp. Surgeons, who took part in this camp, were: from TH Jaffna – Dr M Malaravan, Dr Gnanaruban, and Dr T Thileepan; from Vavuniya DGH – Dr P Kiritharan; from Kilinochchi DGH – Dr Aarani Mathan. Dr P Kiritharan from Vavuniya DGH brought his support staff from his hospital to conduct the camp smoothly.

Assist RR (SL) organised another mass cataract surgery camp at Vavuniya DGH in collaboration with the Consulate General of India, Jaffna, the Ministry of Health (Sri Lanka), and Vavuniya DGH between 11 & 22 Dec 2023. The number of patients who benefited from this free cataract surgery camp was 1253. Some of these patients were brought from other districts by buses (see below). This program was fully sponsored by Alaka and Ananda Foundations from Malaysia, through Assist RR (SL). Assist RR funded the whole project, including IOLs, consumables, post-operative drugs, cost of transport (patients and staff), and welfare of staff. Three Sri Lankan eye surgeons (Dr P Kiritharan, Dr Kasun Kunawardena & Dr Nizma Rasik) and three eye surgeons from Chennai, India (Dr M Nishanth, Dr Ragupathy V A, & Dr Udhay Kumar Thyagasundaram) performed these surgeries over 10 days. Mr R Thulasiraj (Aravind Eye Care) and Mr Sri Ram (MD, Aurolab) from Madurai joined us at our invitation and graced the occasion (Photos 25 & 26).



Photos 11 & 12: Cataract surgeries carried out at Kadawatha Lions Hospital and Swanetha Eye Hospital, Gothatuwa, New Town (near Colombo), organised by Assist RR for patients from Northern Province

In addition to cataract surgeries, Vitreo Retinal surgeries (VR) were also funded at the TH Jaffna at a cost of Rs 70,000 per surgery using financial contribution from Alaka Foundation. Total funding for VR surgeries was USD 23.5k. Biometric equipment were also donated to TH Jaffna, Chilaw DGH, and TH Ratnapura costing USD 29.3k, as these hospitals were lacking ophthalmic investigative equipment such as A-Scan, Rebound Tonometer, Keratometer, and more. The only alternative would have meant the patients treated were forced to consider private clinics for investigations and surgeries they could never have afforded.

As a result of the PPP between Assist RR and the eye unit of TH Jaffna, the waiting times at the TH Jaffna were brought down to zero in November 2024. When Assist RR got involved in 2022, the waiting times at the TH Jaffna were almost 4-5 years. The task of bringing the waiting times to zero was made possible by the generous funding of Alaka and Anada foundations through Assist RR; the dedication, determination and leadership of Dr M Malaravan (Consultant Eye Surgeon, TH Jaffna), and uninterrupted supplies of IOLs and consumables by Assist RR to TH Jaffna Eye Unit since July 2022. Assist RR also transported patients from other districts to Jaffna and provided meals to the patients.

Most importantly, the significant financial contribution from Alaka and Ananda foundations that enabled reducing the waiting times to zero at TH Jaffna. As mentioned before, nearly 20,000 cataract surgeries were fully funded in 2023 & 2024 using Alaka and Ananda foundations through Assist RR at the TH Jaffna. To show our appreciation to Alaka Foundation's unwavering support to our cataract project, I invited Mr Brahma Vasudevan and Ms Shanthy Kandiah to visit Jaffna and join us at a surgery camp and to meet beneficiaries. They kindly agreed and joined us in Sept 2024.



Photos 13 & 14: First PPP in action at the eye unit of TH Jaffna on 04 July 2022 fully funded by Team Solihull, UK, through Assist RR

They visited a couple of villages in Vanni accompanied by Dr Malaravan and I (Photos 27 & 28). We met a lady in Paalinagar, near Mallawi, who was blind in both eyes when we discovered her during a village eye screening project in collaboration with Major General S Kasthurimuthali, GOC of 56 Infantry Division, Vanni. She was later taken to TH Jaffna and underwent surgeries to both eyes within a week. When we went to meet her, her children started crying telling us that the old lady had become independent and helping the family with many tasks. Mr Vasudevan and Ms Kandiah were so pleased that they were able to make a difference.

However, there were patients in other four districts of Northern Province (Kilinochchi, Mannar, Mullaithivu and Vavuniya), who were still waiting for these much-needed cataract surgeries, as there were no eye surgeons most of the times in these district hospitals. Assist RR and Dr Malaravan have decided to collaborate and carry out surgeries to patients from these 4 districts by bringing them to TH Jaffna by buses. In the meantime, Ministry of Health, Sri Lanka, started providing IOLs and consumables (partially) to TH Jaffna to continue the eye care services. However, eye unit of TH Jaffna still needed certain powers of IOLs and certain consumables. Assist RR funded items that were required by the eye unit of TH Jaffna. In total 13,972 cataract surgeries were part funded by Assist RR in 2025 in 11 island wide district hospitals covering 15 districts, including TH Jaffna, in 2025, where 10,665 cataract surgeries were part funded.



Photos 15 & 16: 827 surgeries were funded by Team Solihull, UK, through Assist RR between July and December 2022 at the TH Jaffna. Solihull Preparatory School Headmaster, Mr Mark Penney, and Mrs Donna Penney from Team Solihull, UK, attended a cataract camp at the TH Jaffna

By the end of Dec 2025, Assist RR and eye unit of TH Jaffna headed by Dr Malaravan have managed to bring the waiting lists to zero in three other districts of Northern Province (Kilinochchi, Mannar, Mullaithivu) (Photos 29 & 30). Because of the location of Vavuniya (surrounded by many districts from other provinces), we are struggling to reduce the waiting times at the Vavuniya DGH. However, we are still endeavouring to reduce these waiting times by taking a few hundred patients from Vavuniya to TH Jaffna every month. We are hoping we will achieve zero waiting list in Vavuniya soon.

Having mentioned about zero waiting lists, we should remember that cataracts are a result of the ageing process. This meant that we will have more and more new cases of cataracts every day. In addition, because of our collaborative work in the Northern Province, awareness of cataracts has increased significantly in the villages and people with cataracts have been visiting TH Jaffna for cataract surgeries. Assist RR have therefore continued funding cataract surgeries in 2026 too and funded 6029 cataract surgeries, including 4157 surgeries at TH Jaffna, in 7 district hospitals, covering 11 districts up to the end of April 2026. Most of these patients to TH Jaffna were brought from Kilinochchi, Mannar, Mullaithivu and Vavuniya by hired buses.



Photos 17 & 18: These two ladies were blind in both eyes and received surgeries to both eyes at the same time.

They visited a couple of villages in Vanni accompanied by Dr Malaravan and I (Photos 27 & 28). We met a lady in Paalinagar, near Mallawi, who was blind in both eyes when we discovered her during a village eye screening project in collaboration with Major General S Kasthurimuthali, GOC of 56 Infacntry Division, Vanni. She was later taken to TH Jaffna and underwent surgeries to both eyes within a week. When we went to meet her, her children started crying telling us that the old lady had become independent and helping the family with many tasks. Mr Vasudevan and Ms Kandiah were so pleased that they were able to make a difference.



Photos 19 & 20: Assist RR organised cataract surgeries Island wide using funds from Alaka and Ananda Foundations – 8389 IOLs were donated to Sri Lanka NEH, Colombo, between 2023 & 2025. Second photo was taken at a cataract camp funded by Assist RR at Gampaha DGH. Current Northern Province, Provincial Director, Dr Saman Pathirana, is in the second photo

CHALLENGES

Resource is a serious challenge facing eye patients including cataract patients in Sri Lanka. Sri Lanka faces a critical shortage of ophthalmologists, with the country operating at a ratio of just 1 eye surgeon per roughly 193,000 citizens, falling far behind the coverage seen in developed nations. While exact targets vary, health data indicates Sri Lanka has a deficit of more than 1,100 specialist doctors across all medical fields, necessitating hundreds more eye surgeons to clear a backlog of over 2 million cataract cases, with 20% new cases added yearly. The current surgical workforce is mathematically unable to clear this backlog within a standard timeframe.



Photos 21 & 22: A mass cataract surgery camp (1053 surgeries completed) at TH Jaffna between 30 Oct & 03 Nov 2023, celebrating the World Sight Day and the friendship between THs Jaffna and Ratnapura

At institutions like the National Eye Hospital of Sri Lanka in Colombo, waiting times for state-funded cataract surgeries can stretch between 2 to 3 years for poor and elderly patients. While central regions like the Western Province house the majority of specialists, rural and peripheral districts continue to suffer from acute shortages of specialists. There are many hospitals in Sri Lanka, where there are no qualified Consultant Eye Surgeons. For example, although there are five districts in the northern province with 4 district general hospitals (DGH) and one teaching hospital (TH), there are only two qualified eye surgeons serving the people of northern province at TH Jaffna.

At a Steering Committee meeting of Vision 2020 programme in June 2016, Dr P Mahipala, then DGH, promoted providing a diploma course to eye medicals officers to learn and perform cataract surgeries. As there was opposition from certain quarters for this proposal, this proposal never materialised. The country is still facing shortages of eye surgeons and hundreds of thousands of people are still waiting for cataract surgeries. The state sector faces significant retention issues, with approximately 50 doctors recently (Feb 2026) requesting mass transfers away from the National Eye Hospital due to working conditions. In addition, some ophthalmologists, who undertake foreign training in countries like UK and Australia, never return to Sri Lanka. Although there are many initiatives such as SPECS 2030 and Vision 2030, they are not implemented in earnest.



Photos 23 & 24: A mass cataract surgery camp (2053 surgeries completed) at TH Jaffna between 14 & 25 Oct 2024, celebrating World Sight Day 2024

I personally got involved with funding cataract surgeries in 2013, when Vision 2020 Secretariat was functioning as an independent body under the Ministry of Health. Dr Asela Abeydeera was the national coordinator of Vision 2020, reporting directly to the then Director General of Health (DGH), Dr Palitha G Mahipala. During this period, Vision 2020 Secretariat organised several cataract camps Island wide and funded nearly 50,000 free cataract surgeries, with ease, as it had the support of DGH, with the financial support of many donor organisations from Sri Lanka and abroad.

There is also a lack of sub speciality eye surgeons in the areas of Glaucoma, diabetic retinopathy, Corneal, Vitreo Retinal, paediatric ophthalmology, etc. People with these conditions in the rural and peripheral districts including northern province are referred to either Kandy or Colombo National eye hospitals. Many of these patients do not visit these hospitals and are forced to become blind unnecessarily, as they can't go there due to economic and cultural reasons. Sri Lanka MOH should produce more eye specialists including sub specialities to ensure people won't go blind and that they receive the necessary treatments in their own districts without the need to travel to Kandy or Colombo.

Some of these surgeons are very efficient and capable of high-volume surgeries. I know of a highly skilled surgeon, who has been idling for almost 2 years without carrying out any cataract surgeries because he hasn't been provided with a Phaco machine to perform cataract surgeries. But there are some hospitals where these machines are available, but surgeons are not present at these hospitals. The MOH should develop a data base with information on availability of surgeons and equipment at every hospital. This will help the MOH to redistribute equipment to hospitals where they are needed.

However, it became not possible to fund cataract surgeries by private donors at government hospitals since January 2017, although thousands of people were still waiting for these surgeries. The main reason for this is that we didn't have a national programme for the eye care. If the Vision 2020 Secretariat was still under the MOH as an independent body, free cataract surgeries using funding from many donors would have continued. This would have helped to reduce the cataract backlog. Sadly, we still do not have a cabinet approved national eye programme. I would say the lack of a national eye programme is another major challenge to clearing the cataract backlog and preventing avoidable blindness in Sri Lanka.

Lack of equipment needed to carry out various surgeries also increases the backlog for eye surgeries and treatments. There are hospitals where eye surgeons are available but necessary equipment such as Phaco machine (Phacoemulsification system), LASIK laser machines, etc, are not available.



Photos 25 & 26: Consulate General of India, Jaffna, and Assist RR (UK & SL) conducted 1253 Free Cataract Surgeries at the Eye Unit of Vavuniya DGH between 11/12 & 22/12 2023



Photos 27 & 28: Mr Brahmal Vasudevan and Ms Shanthi Kandiah (from Alaka Foundation) visiting Jaffna in Sept 2024 to see first-hand our cataract project – Meeting with the Paalinagar grandmother.



Photos 29 & 30: Cataract surgeries funded by Assist RR at the eye unit if TH Jaffna in 2025 for patients from Vanni districts



Photos 31 & 32: A lady in Paalinagar, near Mallawi, blind in both eyes (Army were helping her to light the lamp in the first photo), underwent surgeries to both eyes and became independent after the surgeries.



Photos 33 & 34: Surgeons at TH Jaffna, Dr M Malaravan, Dr T Thileepan & Dr S Sujeevan (from left to right) who provided selfless services to thousands of vulnerable people in the north

CONCLUSION

Post pandemic, there are huge numbers of very poor people across the country, who are waiting for cataract surgeries, some of whom are in real danger of becoming irreversibly blind if their cataracts are not removed in time. Among those awaiting surgeries are, for example, farmers, fishermen, labourers, drivers, and childminders. Losing or deteriorating sight would mean they won't be able to provide for their families or contribute to the country's economy. They are destined to become a burden, not a help. They will also lose their dignity and independence.

There are many patients treated, who had been waiting for up to 5 years and there are many who were blind in both eyes. They are all benefitting and have regained their eye sights as a result of the benevolence of Assist RR's friends, families and like-minded organisations, e.g. Team Solihull, the Alaka and Ananda Foundations. We would like to express our sincere gratitude to all those who contributed for providing these life changing surgeries free of charge. We also would like to thank and appreciate the selfless services of all the Consultant Eye Surgeons, who worked with us with dedication and determination to reduce the waiting lists using funds raised by Assist RR.

The task of bringing the waiting times to zero in the northern province was made possible by the funding from many generous donors, including Team Solihull, Alaka and Ananda foundations through Assist RR, the dedication, determination and leadership of Dr M Malaravan, and uninterrupted supplies of IOLs and consumables by Assist RR to TH Jaffna Eye Unit since July 2022. I can't remember a day when surgeries were postponed due to a lack of consumables. Importantly, high-volume surgeries and mass cataract camps at TH Jaffna helped to clear the backlog and reduce the waiting times.

Many more people are still waiting for their chance to get this surgery done at government hospitals island wide. However, due to Sri Lanka's economic conditions, these hospitals are lacking vital investigative equipment, surgery equipment, lenses and sundry eye surgery consumables. We are therefore continuously seeking funds to continue this project and save the sight of Sri Lanka's poorest people. We have the systems, infrastructure, and blueprints in place, to expand the success of this model to many more hospitals who serve those in need all over Sri Lanka at a very cost-effective manner.

I would also like to urge the MOH, Sri Lanka, to develop a National Eye Health Programme under the MOH, and implement it at the earliest. This should include producing and providing eye specialists to all district general hospitals, providing necessary investigative and surgical equipment to these hospitals, setting surgical targets and monitoring, etc. This will certainly help to reduce the backlog Island wide.

Since June 2013, Assist RR has now funded 81,326 cataract surgeries island-wide. 61,325 of these surgeries were fully funded by Assist RR using funds raised in the UK and around the globe.



Photos 35 & 36: I would like to express my sincere gratitude to everyone who has been involved in this noble cause, including eye surgeons at TH Jaffna.

By :

**Dr Velautham Sarveswaran, BEng, PhD
(University of Bristol, UK) Chairman, Assist
RR (UK) & Secretary, Assist RR, Sri Lanka**



CORE HEALTH PROJECTS

The Center of Ophthalmic Research in Eye Health (CORE Health Projects), established in 2023, is dedicated to advancing eye health services through rigorous research and innovative, evidence-based approaches. Under the leadership of Dr. M. Malaravan, CORE Health Projects integrates research activities with routine clinical service delivery, recognizing that evidence-driven solutions are essential for improving healthcare quality and addressing critical public health priorities in Northern Sri Lanka. Its mission is to generate actionable knowledge and implement sustainable interventions that enhance eye care delivery and promote better vision health for all communities in the region.

Research initiatives encompass a broad range of priority areas, including visual and refractive outcomes following cataract surgery, patterns and determinants of refractive errors among school-aged children, glaucoma detection and management, opportunistic screening for hypertension and diabetes within eye care services, patient-reported outcome measures, and population-based studies of visual impairment and blindness. It also supports health systems and implementation research aimed at strengthening service delivery, improving equitable access to eye care, and informing policy and clinical practice.

By generating high-quality evidence and translating research into practice, the CORE Health Research Programme contributes to improving patient outcomes, strengthening eye health services, and supporting the broader goal of eliminating avoidable blindness in Sri Lanka and beyond.

Research in Action: Shaping the Future of Eye Care Through Innovation and Evidence.



Poster presentation at IAPB Nepal Action Café 2025

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COMMITTED TO RESEARCH, UNITED BY PURPOSE

ABOUT THE EDITORIAL TEAM

The preparation of this publication was supported by a dedicated editorial team committed to presenting the author Dr.Malaravan's work in a clear, engaging, and professionally designed format. As Lead Editor, Ms. Thurga Jeyaratnam was responsible for the overall editorial development of the book. She managed the drafting and refinement of the manuscript, coordinated the editorial process, edited and organised the content, designed the layout, developed the visual presentation, and oversaw the publication process to ensure a cohesive and high-quality final publication.

Ms. Jathusha contributed to the publication by supporting the collation and organisation of programme data and documentation, helping to ensure the accuracy and consistency of the information presented. Ms. Powsiga provided support during the preparation of this publication as part of the collaborative effort behind its completion.

The editorial team is honoured to have contributed to bringing the author Dr.Malaravan's vision to life and extends sincere appreciation to all individuals and organisations whose support made this publication possible.



Not every story is written in words,
Some are written in the smiles of those
Those who see their loved ones once again.
Not every victory echoes through applause,
Some begin quietly-
With the door open,
A handheld,
A life changed by the return of light.
This book tells more than a story of surgery.
It tells of compassion meeting commitment,
Of evidence guiding action,
Of partnerships turning vision into reality.
Every number is a face.
Every statistic is a family.
Every operation is a promise fulfilled,
That blindness need not be accepted
When hope can be restored.
From measuring the unseen burden,
To design solutions with purpose,
From reaching distant communities,
To restore sight one eye at a time,
This journey reminds us that lasting change
Is built through dedication, collaboration,
And the courage to serve.
For every patient who sees again,
A new chapter begins.
For every community reached,
A brighter future unfolds.
May these pages stand as a tribute
To every surgeon, nurse, researcher, volunteer, partner,
And every individual whose unwavering commitment
Turned challenges into opportunities
And darkness into light.
For in the end,
The greatest achievement is not the number of surgeries performed,
But the countless lives transformed.



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