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COST-BENEFIT ANALYSIS OF INVESTING IN CHILD EYE HEALTH

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CONTENTS

CEO's MESSAGE

Derek Hodkey
President and CEO
Orbis International

Globally, 1.1 billion people live with vision loss, of which 90 million are children and adolescents. In addition, billions of more people live with eye health conditions that require ongoing access to eye care services to optimize their vision and ability to function in society. Eye conditions and vision impairment are widespread, and far too often they still go untreated. A dismal, yet in a way, promising fact is that 90% of vision loss is avoidable.

So, what does visual impairment seem like for a child? Visual impairment, particularly for a child from marginalized community may set him/ her on the vicious cycle of poverty. Poor eye health and visual impairment can make it harder for children to pursue education, engage in community, and later makes it challenging to find a job and lead a prosperous life. Vision impairment reduces mobility, affects mental wellbeing, increases the need for social care, and increases likelihood of falls and even road traffic crashes. By contrast, vision enables better educational outcomes, and increases work productivity, reducing inequality.

The impact of visual impairment though is not just limited to an individual, but is far reaching. A recent study estimated that vision impairment resulted in USD 410 billion loss of economic productivity in 2020, globally. As you go through this report, you will find that in 2020, Cumulative Gross National Income (GNI) loss for India due to blindness over lifespan of blind is USD 137 billion for the loss of 10 working years in adults and USD 118 billion for the loss of 35 working years in children.

Orbis Cost-Benefit Analysis Report is an important advocacy and policy engagement tool to measure and project the burden of blindness in simple economic terms for seeking continued support and budgetary allocation. A similar exercise 20 years ago, helped us realize the dire need to invest in pediatric eye heath in India. Since then, Orbis has been working extensively to transform pediatric ophthalmology in the country. We work with our network of partners in the country to build pediatric ophthalmology teams, improve child friendly infrastructure and equip the pediatric teams with right skillsets to ensure quality of care. Today, Orbis in India has created the largest network of Children's Eye Care Centers of its kind in any one country, reaching out to 17.5 million children in India.

We hope that this version of report will help all stakeholders, including policy makers, corporates and civil society to seek as well as set priorities on Child Eye Health in India.

FOREWORD

Dr. Rishi Raj Borah
Country Director - India
Orbis

Charting Progress, Beyond 2020

India is the second-most populous country in the world and home to over 20 per cent of the world's blind population. Unfortunately, India is also home to the largest number of blind children in any one country. There are 9.3 million visually impaired and 270,000 blind children in India. However, over 75 per cent of all visual impairment can be prevented or treated.

Blindness has profound human, social and economic consequences. Access to eye care can open up a world of opportunities for individuals in need – education, gainful employment, independence, and reduced inequality, thereby, breaking the cycle of poverty. Childhood blindness not just affects the individuals, but also has the ripple effect on socio-economic levels in a community and country at large.

The Cost Benefit Analysis of Investing in Child Eye Health extensively talks of the imperativeness of Child eye health in India by evaluating and establishing the impact of childhood blindness on India's economy. The study will not just help Orbis and civil society to advocate for an enabling policy ecosystem, but also help Orbis India chart its plans in pediatric ophthalmology in the country.

When a similar exercise of analysing children eye health outcomes was undertaken in 1998 and 2004, Orbis was able to draft its long-range strategic plan in India. We identified the gaps in eye healthcare services and charted our plan to establish pediatric ophthalmology in the country. When Orbis began its journey in 2000 by establishing a county office in India, there were only four comprehensive tertiary pediatric eye-care centers in India. At that time, with a population of one billion, India needed 100 Children's Eye Centers (CECs), one center per 10 million population, as per WHO Guidelines. To improve access to eyecare services, Orbis started its India Childhood Blindness Initiative with an aim to establish Children's Eye Centers (CECs). Today, there are 33 CECs that have been developed with Orbis support across 17 states in India, making it the largest network of CECs in the world. Orbis also works extensively in developing Quality Resource Centers, Pediatric Ophthalmology Learning and Training Centers (POLTCs), addressing refractive error among children, among several initiatives.

The current version of the Cost Benefit Analysis Report has been launched at an opportune time for Orbis and eyecare ecosystem, as we envision the eye health agenda beyond 2022. The report will greatly help us measure effectiveness of the programs and help identify quality of life and vision indicators. I would especially like to thank Dr. B.R. Shamanna for bringing out the findings of the report to the eyecare professionals in India.

FOREWORD

Dr. (Prof.) B.R. Shamanna
School of Medical Sciences,
University of Hyderabad

Investing in Childhood Visual Impairment – a needed priority!

In the milieu of addressing blindness and visual impairment globally or nationally, Childhood Blindness or visual impairment does not figure highly on the list of priorities for investing in initiatives merely due to its miniscule numbers as compared to its counterparts.

As part of a doctoral research, this body of work demonstrates the utility with reasons of why programs and supporting organizations should consider investing in alleviating and correcting childhood visual impairment and blindness.

While the numbers with blindness in children and visually impairing conditions may be relatively low, the impact of these numbers both economically and socially are far reaching and huge. The stress it places on the child with respect to opportunities for academic and scholastic pursuits as well as social inclusion is phenomenally high. It is also a fact that capacity to recognize and manage the visually impaired children needs more expertise, facilities and is expensive. The adage of prevention does not always apply to blindness in children or visual impairment but it is an important facet of the whole comprehensive nature of services that is required and sustained as is rehabilitation and low vision. Infrastructure, technology, services including a strong component of community participation is key if we need to make investment decisions for childhood visual impairment.

As part of the phased doctoral research, this report presents an update of the economic burden of childhood blindness and visual impairment in the Indian context.

It also provides some pointers of the efforts over the last 20 years and what outcomes have been achieved and why there is a need to further support the investment.

The extension of this research is also to customize outcome measures for conditions that affect children's vision and derive utility measures that can be further used to personalize care and services even at the population program level. This would, additionally, inform policy making and programmatic interventions amongst all stakeholders in a large country like India.

I thank Orbis for their profuse and benevolent support towards this research and also bringing out this report that may be useful to all concerned stakeholders.

ABBREVIATIONS

AGR	Annual Growth Rate
CHB	Childhood Blindness
DALY	Disability Adjusted Life Years
GDP	Gross Domestic Product
GNI	Gross National Income
HR QoL	Health Related Quality of Life
IAPB	International Agency for Prevention of Blindness
NGO	Non-Governmental Organization
NICE	National Institute for Health and Care Excellence
PPP	Purchasing Power Parity
QALY	Quality Adjusted Life Years
RoP	Retinopathy of Prematurity

INTRODUCTION AND SCOPE OF WORK

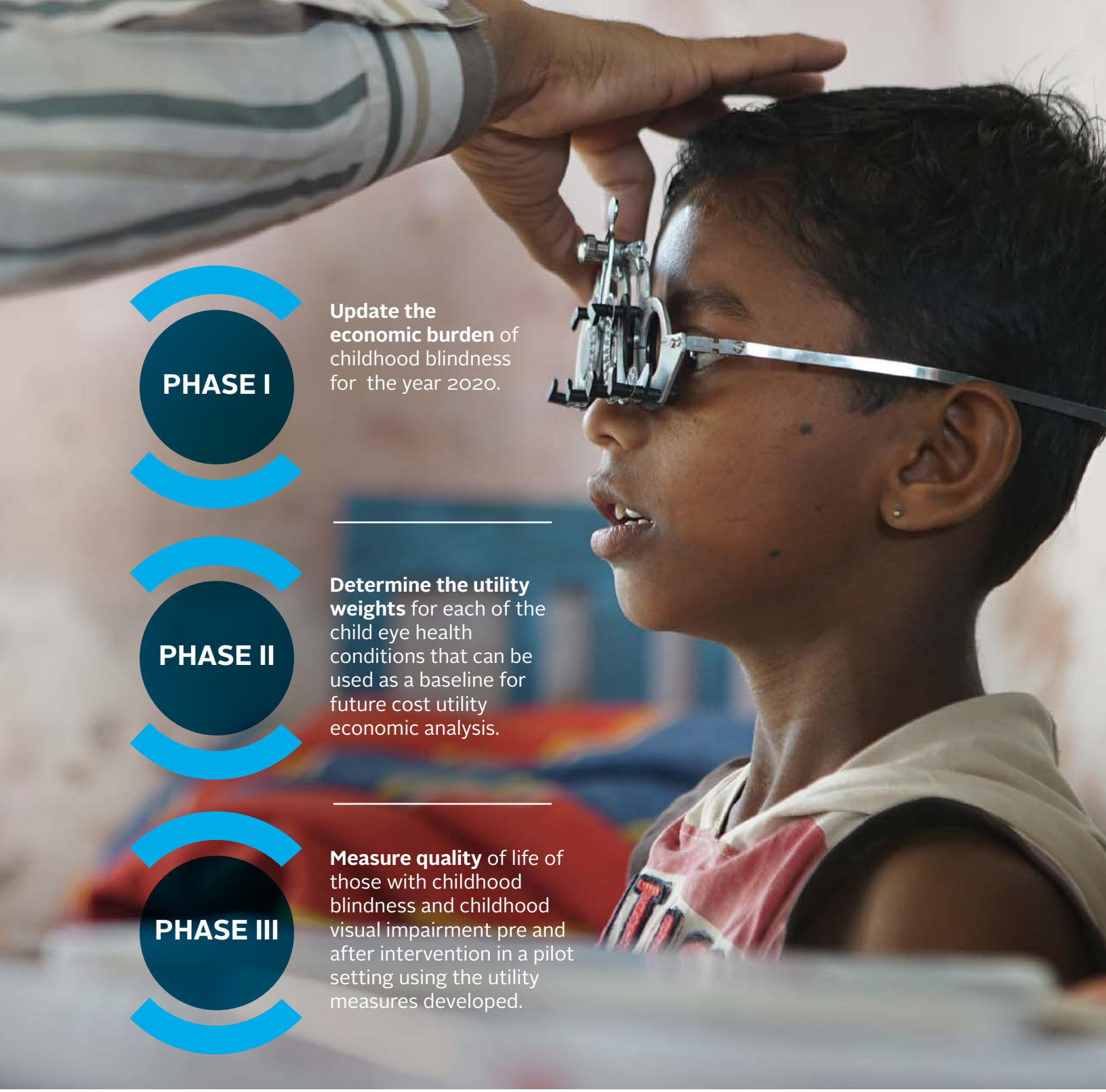
Childhood blindness (CHB) is a public health concern across the world. Global estimates on childhood blindness show that there are around 1.42 million and 17.52 million children suffering from blindness and moderate to severe visual impairment, respectively.

The current prevalence of blindness in children is known to be around 0.8/1000. There are various challenges associated with reducing Childhood Blindness in India like diverse cultural practices and beliefs due to socio-economic barriers. Besides this, one of the major challenges is the inequitable distribution of healthcare services, with most of the advanced eye care centers located in the urban areas, ignoring the remote rural geographies.

Estimates on the economic burden of childhood blindness like these help in planning interventions in India and judiciously allocate resources, tailored to the needs of the community. This report will help drive initiatives in eye care by policy-makers, public health professionals, community-based organizations, educators, and academicians, among others. There have been significant developments in the field of childhood blindness prevention, management and control since the Vision 2020, The Right to Sight- India initiative has been implemented over the last two decades. The time is opportune to study impact of the programs and child eye health outcomes in terms of both their costs and consequences. However, the impact of such programs need to be studied, especially the social impact in terms of the quality of vision and life indicators. One such indicator is the Quality Adjusted Life Years (QALY) indicator. QALYs are used to calculate Local Currency (INR here) per QALY for any disease and are used in evaluation and recommendations for any health care intervention program by the Government as seen with The National Institute for Health and Care Excellence.

The International Agency for Prevention of Blindness (IAPB) has highlighted that there is a need for vision targeted Health Related Quality of Life (HR QoL) and QALY measures for visual impairment in order to assess effectiveness of programs targeted for the visually impaired. There is no published measurement of QALY for uncorrected refractive error for short and long sightedness as well as childhood visual outcomes.

This phased research is to update the economic burden of childhood blindness and visual impairment and then undertake economic evaluation of eye care programs implemented by governmental and non-governmental organizations aimed towards elimination of avoidable blindness and visual impairment. The approach is to calculate the QALYs gained for each eye health condition treated and, in this case, specifically child eye health outcomes. In order to define QALYs, there is a need to develop specific utility measures for child eye health outcomes so that there is a more realistic and accurate assessment of the outcomes for health economic and policy prescriptions.



PHASE I

Update the economic burden of childhood blindness for the year 2020.

PHASE II

Determine the utility weights for each of the child eye health conditions that can be used as a baseline for future cost utility economic analysis.

PHASE III

Measure quality of life of those with childhood blindness and childhood visual impairment pre and after intervention in a pilot setting using the utility measures developed.

Estimates on the economic burden of childhood blindness like these help in planning interventions in India and judiciously allocate resources, tailored to the needs of the community.


SOLO TAM

PREVALENCE OF CHILDHOOD OCULAR MORBIDITIES

There are around 1.42 million blind and 17.52 million moderate to severe visually impaired children in the world as per global estimates. As per an estimate in 2002, there are about 0.6 to 1.5 blind for every 1,000 children in low and middle income countries compared to 0.3 blind per 1,000 children in high income countries. Higher prevalence at 12-15 blind per 10,000 children is observed, where the under-five mortality rate was also higher at over 250 per 1,000 live births, highlighting the fact that these two indicators are associated with each other. Causes of blindness and visual impairment among children are different from that among adults. Anatomically, cornea and whole globe anomalies account to more than 50% of blindness in children. Figure 1 summarizes the causes of blindness in children as per the anatomical site.

1.42 Million Blind

17.52 Million Moderate To Severe Visually Impaired

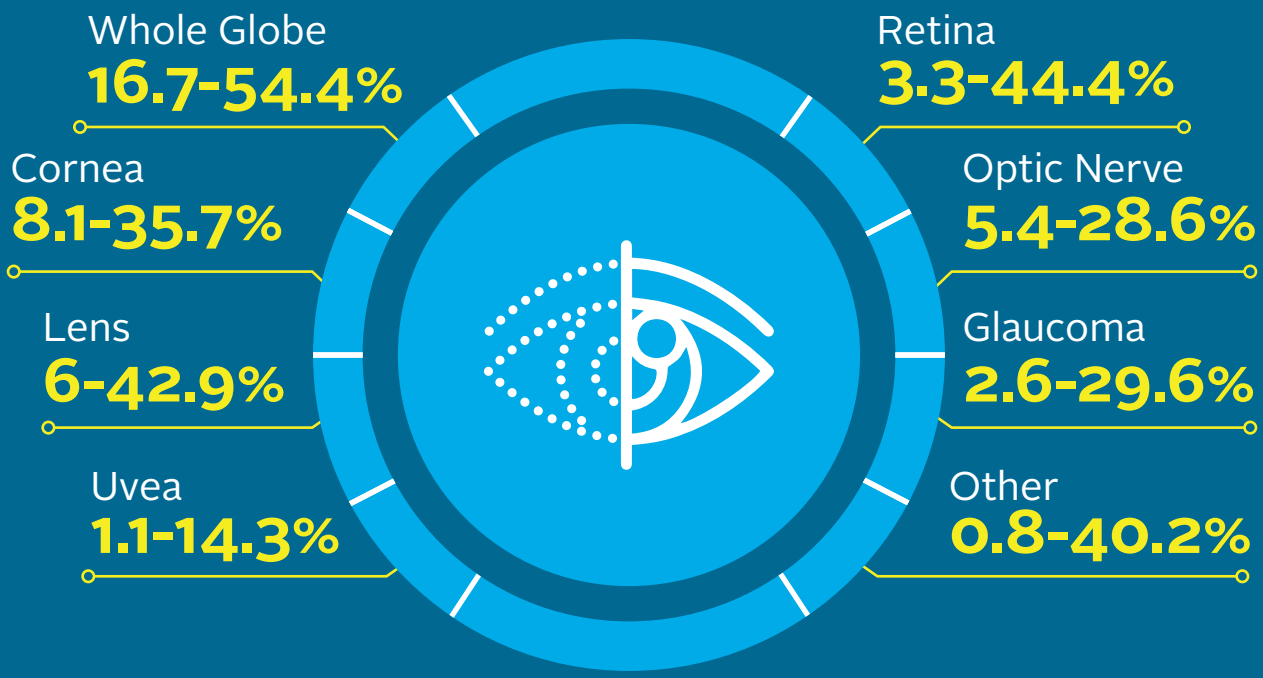
Children in the world

Anatomically, cornea and whole globe anomalies account to more than 50% of blindness in children.

0.6 to 1.5 Blind for every 1,000 Children

in low and middle income countries

FIGURE 1: PERCENTAGE OF BLINDNESS AS PER ANATOMICAL SITE - DATA FROM SYSTEMATIC REVIEW



The high variation is due to the definition of blindness considered in the studies as some have presented visual acuity at less than 6/60 in better eye or best corrected visual acuity at less than 6/60 in better eye. In high income countries, blindness in children is predominantly due to cerebral visual impairment and optic nerve anomalies. Avoidable causes include retinopathy of prematurity (RoP), cataract, glaucoma and non-accidental injury. In India, there are 2,00,000 to 3,00,000 children with severe visual impairment or blindness. Latest studies show that the prevalence of childhood blindness is between 0.6 to 1.06 per 1,000 children in India, and the prevalence of visual impairment is between 2.05 to 13.6 per 1,000 children.

The major causes of childhood blindness in population based studies are cornea related, refractive errors and amblyopia. As per the studies done amongst blind schools, whole globe anomalies and uveal coloboma were key unavoidable causes of blindness. Retinopathy of prematurity (RoP) may contribute more to childhood blindness in the future. 10% of children across the globe, with blindness and visual impairment caused due to RoP, are in India.

Severe Visual Impairment or Blindness

2,00,000 - 3,00,000 Children

Prevalence of Childhood Blindness

0.6 - 1.06 per 1,000 Children

Prevalence of Visual Impairment

2.05 - 13.6 per 1,000 Children

HEALTHCARE UTILIZATION

Rate of hospitalizations for eye ailments in India is 3.6 per 1,000 people per year in rural areas and 3.5 per 1,000 people per year in urban areas. The average expenditure on eye ailments per stay is INR 2605, INR 18,767 and INR 10,912 in public hospitals, private hospitals and others, including NGO hospitals respectively. This indicates that people spend more than six times at a private hospital for care, compared to a Government enabled facility. India spent about 1.33 percent of GDP in health sector in 2017-18, compared to 1.19 percent in 2015-16. Inequities in healthcare still exist in India in terms of wealth, education, geography (rural and urban), caste and gender and the inverse square law, "those who need health care often experience grave challenges in accessing it" holds true to Indian context. While we are bridging the gaps slowly and steadily, the journey to ensure equity for all is still a long way to go. Human resource, access to eye care, screening, quality, costs, behavioral and cultural factors influence equity in healthcare. Moreover, blind children are more likely to be from lower socio-economic strata and are likely to be under-represented in any study. There is a dearth of data on childhood eye care to drive policy advocacy.

The number of hospitalizations per year for eye ailments

3.6 per 1,000 people
in rural areas

3.5 per 1,000 people
in urban areas

India spent in Health sector in 2017-2018

1.33% of GDP

The average expenditure on eye ailments per stay

INR 2,605
Public Hospitals

INR 18,767
Private Hospitals

INR 10,912
Others

ECONOMIC BURDEN OF CHILDHOOD BLINDNESS IN 2020

Global economic burden of disease is estimated as death or disability adjusted life years (DALYs), prevalence, incidence and life expectancy related to the disease. Tangible costs are measured as direct and indirect costs. Intangible costs can also be measured using metrics such as QALYs and qualitatively substituted. Direct medical costs include costs due to hospitalization, use of medicines and use of medical care such as diagnostic services. These are estimated to be USD Purchasing Power Parity (PPP) 14,882–24,180 for blindness. Direct non-medical costs include devices and aids and indirect non-medical costs include the loss of productivity of the index person, care giver's loss of productivity and cost of taking care of the blind or visually impaired person. The current estimation updates the information to the year 2020 using available information so that it gives an indicator of how the country and programs have performed and what directions need to be taken in future.

The data and assumptions used to calculate the economic burden of blindness in adults and children in India are:

Total population of India

1.38 Billion

399 Million Children

(29% of the population)

A person with best corrected visual acuity less than

3/60

in better eye considered blind

Estimated prevalence of blindness is 0.36% of the population

4.95 Million

The lowest estimate of prevalence of blindness among Children taken for this calculation is 0.06%

0.24 Million

Per capita Gross National Income (GNI)

INR 139,867

USD 1,825

51.5%
of the population contribute to the labor force

The estimated average number of working years considered lost due to blindness in

Adults
5, 8 and 10 years & in

Children
35 and 40 years,

due to the increase in life expectancy

Productive time lost by care giver

20% Children
10% Adults

20%
of the blind are productive at

25%
of the actual productive workforce

Blindness in Children due to preventable causes is between

30% to 40%

We have assumed 35% of the blindness in Children is preventable

The value of 1 USD in 1997 is 1.6 USD in 2020 after adjusting to inflation

1 USD is equal to 76.63 INR


नेत्र परीक्षण
orbis
HONDA

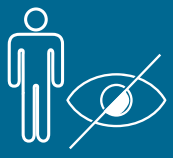
Based on the assumptions, here are the findings on the burden of blindness in economic terms and its impact on loss of productivity.

Economic burden of blindness in India in 2020

INR 845 Billion
USD 11 Billion

Direct loss of GNI due to blindness (Children & Adult)

INR 768 Billion
USD 10 Billion



Indirect loss of GNI for Adult blindness

INR 128 Billion
USD 1.7 Billion

Indirect loss of GNI for Childhood blindness

INR 13 Billion
USD 170 Million

The estimated cumulative GNI loss due to blindness over the lifespan of the blind adults is INR 7,944 billion (USD 104 billion) and INR 10,464 billion (USD 137 billion) for the loss of eight and ten working years among adults, respectively. In comparison, the inflation adjusted cumulative GNI loss among adults in 1997 for ten years was INR 6,764 billion (USD 88 billion). The cumulative GNI loss for children for the loss of 35 working years is INR 9,048 billion (USD 118 billion) and for the loss of 40 working years is INR 12,101 billion (USD 158 billion) compared to INR 2,727 billion (USD 35.6 billion) GNI loss for 33 working years in 1997 after adjusting for inflation. Cumulative loss due to preventable causes amongst children is INR 3,167 billion (USD 41 billion) for 35 working years loss and INR 4,235 billion (USD 55 billion) for 40 working years loss. The cumulative loss due to preventable or treatable causes amongst children in 1997 was INR 1,363 billion (USD 17.8 billion) for the loss of 33 working years.

Cumulative loss of GNI due to preventable causes among Children

INR 3,167 Billion
USD 41 Billion

Cumulative GNI loss due to blindness over lifespan of the blind due to preventable and treatable causes in

Adults
INR 8,611 Billion

for Children
INR 4,235 Billion

for 10 and 40 lost working years

Cumulative GNI loss due to blindness

Adults
INR 10,464 Billion

Children
INR 12,101 Billion

for 10 and 40 lost working years

The economic productivity of blind persons in 2020

INR 64 Billion
USD 835 Million

Increase of 35% from 1997 estimates after adjusting to inflation

TABLE 1: RESULTS OF ECONOMIC BURDEN OF BLINDNESS IN INDIA – 2020
(1 USD = 76.63 INR)

Number of blind persons (millions) (i)	GNI lost due to blindness in 2020 (INR: billions) (ii)		Economic productivity of the blind (INR: billions) (iii)	Net GNI lost in 2020 (INR: billions)	Average number of working years lost due to blindness (v)	Cumulative GNI loss due to blindness over lifespan of the blind (GR=5%) (INR: billion) (vi)	Cumulative GNI loss due to preventable or curable blindness (GR=5%) (INR: billions) (vii)
	Direct	Indirect					
Adults: 4.7	768	128	64	832	5	4,597	3,783
					8	7,944	6,538
					10	10,464	8,612
Children: 0.24	-	13	-	13	35	9,048	3,167
					40	12,101	4,235.5
Total: 4.9	-	141	64	844.9	10 & 40	22,565.3*	12,847.3

**Cumulative loss is the sum of cumulative loss of GNI due to blindness in adults and children for 10 years and 40 years respectively.*

Per capita Gross National Income (GNI) in 2020 was INR 139,867 (USD 1,825)

i. Total population of India is estimated at 1.38 billion. Prevalence of blindness in India is estimated at 0.36% (0.36%×1.38 billion=4.9 million people. Children account to 29% (29%×1.38 billion=398.9 million) of the population. Prevalence of blindness amongst children is estimated at 0.06% (0.06%×398.9 million=0.24 million). Total adult blindness = Total blindness – total childhood blindness, which is 4.7 million.

ii. Labour force of India is 51.5%. The per capita GNI produced by the labor force is = INR (1,39,867/0.515) = INR 2,71,587. Direct GNI lost due to blindness in 2020 assuming 60% of blind adults are in labor force is = adult blind persons (4.6 million) × 0.6 × INR 2,71,587.

Assuming each family member spends 10% of the time in taking care of each blind adult and 20% for blind child, indirect cost is calculated as blind persons × 0.1 or 0.2 × per capita GNI by labor force

iii. Assuming 20% of blind adults are economically productive at 25% of the productivity. The economic productivity is calculated as 0.2 × 0.25 × INR 2,71,587

iv. Net loss of GNI is = direct cost + indirect cost – economic productivity.

v. Calculated GNI loss for 5,8 and 10 years for adults and 35 and 40 years for children as

the survival rate and lifespan have improved over the years.

vi. Cumulative loss of GNI due to blindness over the life span is the sum of GNI loss for 5,8 and 10 years respectively for adults and 35 and 40 years respectively for children as the survival rate and lifespan have improved over the years. We have considered 5% annual growth rate (AGR). We have assumed that extra effort is needed to take care of children, hence we have assumed 20% of the time of care giver. Children become productive after 7 years and all of them contribute directly to the economy, hence we have included direct GNI loss and economic productivity of blind children in cumulative loss calculations.

vii. 82.3% of blindness in adults and 35% of blindness in children is preventable and treatable. Cumulative GNI loss due to preventable and treatable blindness for lifetime of adults is = 82.3% × cumulative GNI loss over lifespan of blind persons. And for children is = 35% × cumulative GNI loss over lifespan of blind children.

TABLE 2: COMPARISON OF THE ECONOMIC BURDEN OF BLINDNESS IN BETWEEN 2020 AND 1997-98

Indicator	Parameter estimated	1997-98	2020	% Change	Remarks
Blind persons	Population	9.61 million (1%)	4.95 million (0.36%)	-94%	Reduction in the prevalence of blindness (May also be due to the change in definition)
Blind adults	Population	9.36 million	4.7 million	-99%	Although there is a population growth especially amongst the adults, the prevalence has reduced. Perhaps due to the change in definition of blindness
	Population	0.25 million	0.24 million	-4%	No. of blind children have not reduced much
	Direct GNI loss due to blindness (INR: billions)	496.4#	767.9	35%	Specially due to increase in per capita GNI and more people in labor force
	Indirect GNI loss due to blindness (INR: billions)	82.5#	127.9	35%	Cost of care giver
	Economic productivity of the blind (INR: billions)	41.3#	64	35%	20% of the blind are productive at 25%
	Net GNI lost in 2020 (INR: billions)	536.5#	831.9	35%	-
	Cumulative GNI loss due to blindness over lifespan of the blind (AGR=5%) (INR: billions)	6,748.2#	10,463.9	35%	Cumulative loss for 10 working years
	Cumulative GNI loss due to preventable and curable blindness over lifespan of the blind (AGR=5%) (INR: billions)	5,061.1#	8,611.8	41%	82.3% blindness is preventable or treatable

Blind children	Population	2,50,000	2,39,346	-8.0%	Prevalence is almost same. Decrease in numbers is due to the overall decrease to 29% of the population from 40% in 1997
	Indirect GNI loss due to blindness (INR: billions)	4.4#	13	66%	Cost of care giver is calculated at 20%
	Net GNI lost in 2020 (INR: billions)	25.4#	74.7	66%	-
	Cumulative GNI loss due to blindness over lifespan of the blind (AGR=5%) (INR: billions)	2,720.2#	9,048	70%	Cumulative loss for 33 & 35 working years respectively
	Cumulative GNI loss due to preventable and curable blindness over lifespan of the blind (AGR=5%) (INR: billions)	1,360.1#	3,166.8	57%	35% of blindness is preventable

#Inflation adjusted to February 2020.

DISCUSSION

Though the prevalence of blindness decreased considerably from 1% in 1997 to 0.36% in 2020, the direct GNI loss due to blindness increased from INR 495.2 billion to INR 768 billion (inflation adjusted). Although the number of blind children has slightly decreased in our estimates as we have considered lowest prevalence of 0.06% and due to the decrease in the overall number of children; the cumulative GNI loss over lifespan of children has more than tripled from 1997 estimates after adjusting to inflation. The indirect cost of blindness in children has increased three times. This is a significant development, as the economic productivity and per capita income rise, the economic impact of childhood blindness on the economy is more severe. We have considered that care giver loses 10% and 20% of productivity taking care of blind adult and child respectively leading to a total indirect cost of INR 141 billion (USD 1.8 billion); this is a very conservative estimate as it may be assumed that care givers spend 50% time taking care of children, which leads to a total indirect cost of INR 167 billion (USD 2.2 billion). This makes addressing childhood blindness at an early stage very important in reducing the economic impact. Early screening and intervention in children with blindness and visual impairment is very important in preventing blindness and loss of productivity and in decreasing the burden of blindness in children of India. Our data shows that if avoidable causes of blindness are addressed, the cumulative loss of GNI for adults decreases significantly to INR 814 billion from INR 4,597 billion for five average working years loss; this loss increases to INR 1,852 billion if the avoidable causes are addressed after ten years which means that longer an individual lives and suffers with blindness, greater will be the loss of GNI. India spent around 3.8% of GDP on health care (which is INR 4,381 (~USD 57) per capita). Government expenditure is 1.33% in 2017-18 which is an increase from 1.19% in 2015-16. The total expenditure that can be attributed to preventive care is 6.8% (INR 36,481 crores or ~USD 4.7 billion) of the total expenditure. The cost of blindness in children due to preventable causes is INR 3,166 billion.

Further research is needed to calculate the intangible costs by doing a cost-effectiveness study with mixed methods approach. This will give the social and cultural aspect of children with childhood blindness and visual impairment. Many authors agree that a targeted intervention toward childhood ocular morbidities is needed. Further nationwide studies are needed to give us prevalence related data as currently these are estimates based on few studies and under five mortality rates.

The National Program for Control of Blindness & Visual Impairment (NPCBVI) and international organizations such as Orbis and recently Rashtriya Bal Swasthya Karyakram have developed initiatives and invested resources to prioritize prevention and treatment of blindness in children. This has also been an integral part of the programs of Vision 2020: The Right to Sight initiative since its inception. As part of strategic initiatives, Orbis launched the 'India Childhood Blindness Initiative (ICBI)' in 2002, to ensure access to quality eye care for children across the country. Currently, Orbis has developed a network of 33 Children's Eye Centers (CEC) across 17 states in India representing the largest national network of CECs in the world. These centers along with Orbis-supported POLTCs have screened 17.5 million children, treated 1.7 million children and trained over 180,000 healthcare personnel to identify & deliver quality eye care till April 2019.

Prevalence data combined with cost-effectiveness analyses will provide further information and help us in appropriate resource allocations towards childhood ocular morbidities.

Direct GNI loss due to blindness has increased to

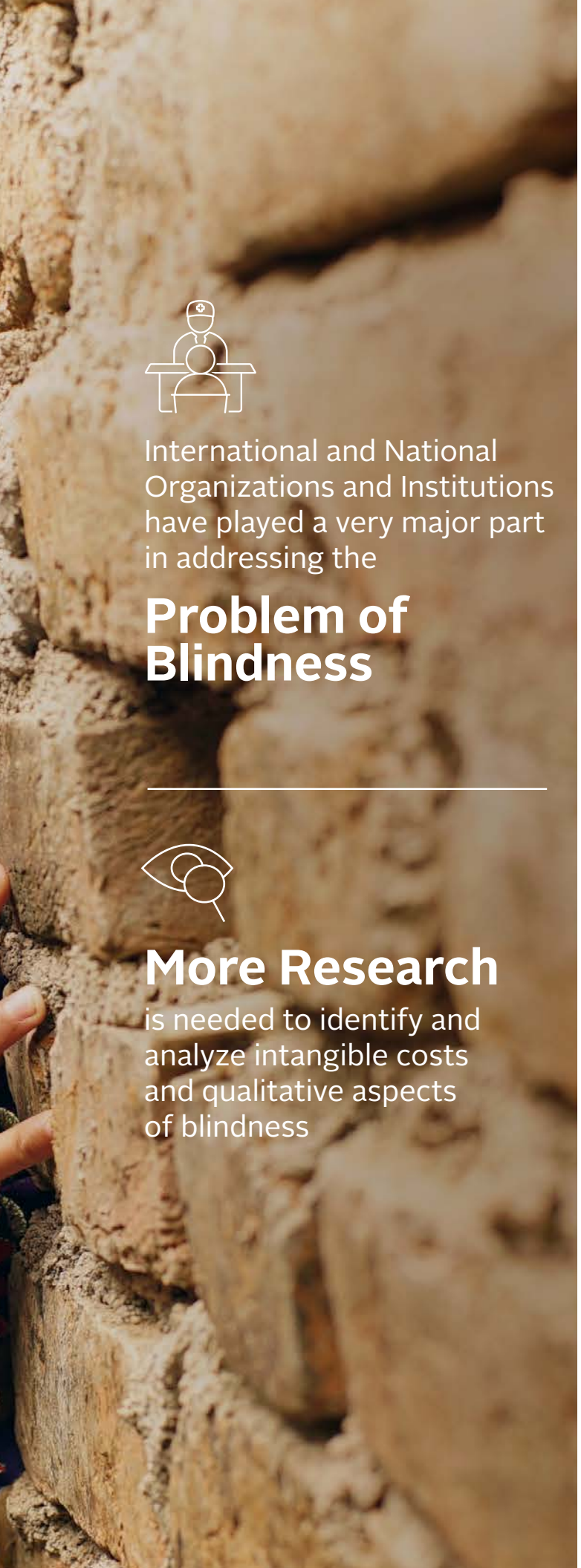
INR 768 Billion in 2020 from 496 Billion in 1997

The longer an individual lives with blindness, the more will be the

Loss of GNI

We have considered that care giver loses 10% and 20% of productivity taking care of blind adult and child respectively leading to a total indirect cost of INR 141 billion; this is a very conservative estimate as it may be assumed that care givers spend 50% time taking care of children.

SUMMARY



International and National Organizations and Institutions have played a very major part in addressing the

Problem of Blindness

More Research

is needed to identify and analyze intangible costs and qualitative aspects of blindness

- Cumulative GNI loss is very high even when compared to inflation adjusted figures of 1997; although the prevalence of blindness has decreased considerably in the estimates. This is because of increase in per capita income, economic productivity and increase in lifespan of the population and more people contributing to labour force.
- As the prevalence of blindness decreased considerably in 2020, emphasis has to be made towards early detection of ocular morbidities both in adults and children.
- Treatment of avoidable causes of blindness at an early stage is very important to decrease the economic burden of blindness in India.
- More research is needed to identify and analyze intangible costs and qualitative aspects of blindness.
- Need more concrete disaggregated surveys to get the prevalence of childhood blindness.
- Economic burden could be different in different parts of the country. But it could not be ascertained due to the lack of region-specific prevalence and economic data for adults and children.
- The contribution of eye care programs, both public, voluntary and private, on blindness control programs in the country is very impactful.
- It can be construed to imply that International and National Organizations and Institutions have played a very major part in addressing the problem of blindness and visual impairment in the country.

Treatment of avoidable causes of blindness at an early stage is very important to decrease the economic burden of blindness in India.

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