Title: Cost-Benefit Analysis for Universal Cataract Coverage in India

Introduction:  
Cataract is the most significant cause of curable blindness. We estimated the scale-up costs for universal cataract coverage, the benefits of averting the economic burden of disease, and the net benefits of universal coverage in India.

Method:  
We conducted a retrospective analysis for 2018. Data came from multiple sources - Global Burden of Disease, National Health Profile, and National Health Accounts. Ten per capita surgery costs were used to calculate the scale-up costs. For total needs, we multiplied cataract prevalence with per capita surgery costs. For the unmet needs, the difference between prevalence and surgeries achieved was used. For the economic benefits of averting the cataract burden, we multiplied disability-adjusted life-years (DALYs) with non-health GDP per capita (i.e., GDP - government health expenditure). DALYs for the unmet need were calculated by multiplying the DALYs with the unmet-to-total needs ratio. For net benefits, we subtracted the scale-up costs for meeting total and unmet needs from economic benefits. Ethics approval was not needed since the research was conducted on publicly available aggregate data.

Results:  
Annual scale-up costs for meeting total and unmet cataract needs were 0.92 - 4.9 and 0.72 - 3.8 billion USD, respectively. The economic benefits of averting the total and unmet cataract disease burden were 12.4 (95%UI: 8.9 - 16.7) and 9.7 (95%UI: 6.93 - 13) billion USD, respectively. Annual net benefits for covering total and unmet needs are 7.53 - 11.5 and 5.9 - 9 billion USD, respectively (Figure 1).

Conclusion:  
Universalizing cataract care through increased government expenditure would be economically beneficial for India.
Cost-Benefit Analysis for Universal Cataract Coverage in India

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Introduction

Despite cataract surgeries being substantially under national and government-funded health insurance (Pradhan Mantri Jan Arogya Yojana (PMJAY)), only 2% of the population in India had undergone cataract surgeries in 2018. With an increasingly aging population, the gap between the untreated burden and the cost of cataract surgeries is expected to increase.

There is an urgent need to scale-up government funding programs and bridge the gap of cataract blindness.

The three main aims:
1. To calculate scale-up costs for meeting total and untreated cataract coverage needs.
2. To calculate the economic benefits of disease burden averted by cataract surgeries.
3. To find the net benefits for universal coverage scale-up.

Cataracts cause most of the world’s blindness, posing a significant healthcare challenge. Unlike many diseases, it can only be treated through surgery. Hence, scaling up cataract surgeries is an essential component of global surgery.

Methods

Study Design: Retrospective analysis for 2028

Data Sources: Cataract prevalence and disability-adjusted life years (DALYs) from World Health Organization (2019). Costs of cataract surgeries from PMJAY Benefit Package (2021), National Sample Survey 2017-18, National Eye Care Model, Gross Domestic Product per Capita (GDP), Total Health Expenditure per Capita (THE), Government Health Expenditure (GHE), and Gross Domestic Product (GDP) from National Health Accounts.

Data Analysis: Three analyses were conducted.

We used the cataract surgical package costs in two cataract unnecessary scenarios.

All cases were adjusted from INR to USD per USD value in 2028.

Scale-up costs for untreated needs = (untreated prevalence x cataract surgical package cost)

Analysis of Economic Benefits of Averted Disease Burden

Economic Benefits (Value of Life-Years or VLY) = [(ICALY - THE) x (1-0.3)]

Conclusion

Universal cataract coverage would be cost-beneficial for India. However, the study assumes that all cataract surgeries would prevent blindness. Moreover, it doesn’t account for all causes of cataract, like corneal opacity and cataract due to metabolic reasons. This study looked at annual net benefits. Future studies should investigate projected benefits over years extending beyond 2028.

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Benefits Analysis

Net benefits for total needs = Mean VLY - scale-up costs for total needs

Net benefits for untreated needs = Mean VLY - scale-up costs for untreated needs