International Journal of Community Medicine and Public Health
*Sahu AB et al. Int J Community Med Public Health. 2024 May;11(5):1942-1948*
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20241192

**Original Research Article**

# Bridging vision gaps: a comprehensive study of the RAAHI programme for improving truckers' eye health in India

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**Received:** 08 March 2024
**Revised:** 15 April 2024
**Accepted:** 16 April 2024

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## ABSTRACT

**Background:** Visual impairment presents a significant public health concern globally, with a notable impact on individuals' quality of life. Despite efforts to address this issue, unmet eye health needs persist, particularly in vulnerable populations such as truck drivers in low and middle-income countries like India. The RAAHI (National truckers eye health programme) initiative aims to fill this gap by providing essential eye care services in India.
**Methods:** This research manuscript delves into the journey of the RAAHI programme from 2017 to 2022, assessing its achievements, challenges, and lessons learned. A mixed-methods approach involving a secondary review of literature, programme records, and stakeholder interactions was employed. Quantitative analysis of beneficiary demographics and service utilization trends was complemented by qualitative insights from beneficiary feedback and stakeholder interviews.
**Results:** RAAHI demonstrated a significant presence across 54 locations, screening over 540,000 beneficiaries between 2018 and June 2022. The programme primarily targeted truck drivers, addressing their unmet eye health needs and raising awareness about prevalent health conditions. Beneficiary feedback highlighted overall satisfaction with RAAHI services, emphasizing the programme's structured approach and immediate access to quality spectacles. Furthermore, qualitative analysis suggests RAAHI's success enriching the programme's effectiveness and client-centric approach.
**Conclusions:** These findings offer valuable insights into addressing visual impairment among vulnerable populations and advocating for the integration of eye care into public health initiatives. Additionally, the study highlights the importance of sustained efforts and collaborative partnerships in ensuring the success and scalability of programmes like RAAHI.

**Keywords:** Eye health, Visual impairment, RAAHI, Truck drivers

## INTRODUCTION

Visual impairment is a significant public health problem that compromises the quality of life of afflicted individuals.[1,2] According to the world health organisation (WHO), about 2.2 billion people live with some or the other form of visual impairment globally and in about half of these, the problem still needs to be addressed. Eye care has been highlighted as an integral part of universal health coverage (UHC) in the world report on vision published by WHO in 2021. The report calls for implementing integrated people-centred eye care (IPCEC) in health systems across the spectrum of promotive, preventive, curative and rehabilitative services. Ensuring IPCEC would contribute to achieving sustainable development goals (SDGs) especially SDG 3 (‘ensure healthy lives and promote well-being for all at all ages’).[3] Additionally, improved vision would improve

their functional abilities and economic productivity, and, thus, contribute towards attaining SDG 1 ('end poverty in all its forms everywhere'), SDG 2 ('end hunger, achieve food security and improved nutrition and promote sustainable agriculture') and SDG 8 ('promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all'). Furthering the pitch for 'vision for everyone', the WHO has recommended countries world-wide to universalize or at least increase the effective coverage of refractive error correctional services by 40 percentage points by 2030 with equal increase in that for near and distant errors in all relevant population subgroups, independent of baseline estimates. The target is even more important for low- and middle-income countries (LMICs).[4] Unaddressed visual impairment is about four times more prevalent in LMICs as compared to the high-income countries (HICs). For example, as per 2016 reports, of all visually impaired individuals globally, about 21.9% resides in India and of which 4.6% have low vision and 0.6% is blind.[5]

Ironically, in India, vision ailments are common even in sectors that require good eyesight. Studies have shown refractive errors to affect 17-48% of truck drivers, with this percentage varying by state and showing an increasing trend over time.[6-8] Given India's heavy reliance on the trucking industry for freight movement, with an estimated 9.3 million trucks registered, accounting for about 65% of freight transport, truck drivers play a pivotal role in the logistics and supply chain sector.[9] However, the dynamic road environment coupled with impaired visual ability poses significant challenges to safe driving, escalating the risk of traffic accidents. Consequently, truckers emerge as a vulnerable occupational group in urgent need of attention.[10-15] Correction of even low refractive errors in truckers can help minimize adverse events.[16] Yet, there exists a notable lack of awareness among drivers regarding the importance of eye care screening and rehabilitative services.[17-19] Addressing the unmet eye health needs of truck drivers entails navigating a complex and systemic landscape, necessitating the mobilization of multiple stakeholder constituencies. However, structured approaches to tackle this issue comprehensively have been largely absent within the Indian context.

### *RAAHI-national truckers eye health programme*

One of the most extensive eye health programme RAAHI focuses on ensuring road safety by providing eye care services to the truckers' community. The programme is spread over 54 locations across the golden quadrilateral and North South East and West network. An evaluation of eye health of truckers done in 2017 by Sightsavers India across 10 locations revealed that there was a significant unmet need for eye care services among the truckers.[20] The evaluation also noted that there was almost total absence of essential or standard good practices such as compulsory, periodic eye checkups and/or provision of assistance or referral services around eye care. Additionally, at the ground level, there was little or no eye care intervention that was easily accessible to this community. Consequently, Sightsavers India, in an effort to address the need-gap, launched and scaled up the national trucker's eye health programme (RAAHI) across states in India along the golden quadrilateral highways

### *Objectives*

This manuscript attempts to capture the journey of the RAAHI programme between 2017 and 2022 by reflecting on the programme achievement vis-à-vis the gaps, challenges, and learnings.

## METHODS

A secondary review of pertinent peer-reviewed and grey literature, Government of India documents, reports from previous programmes conducted by Sightsavers India and neighbouring countries, along with RAAHI programme records, was carried out. Subsequently, data from the RAAHI Programme spanning from 2018 to June 2022 was analyzed, incorporating qualitative insights from interactions with RAAHI stakeholders. This included examining generic, socio-economic, general health, eye health, and eye screening information of truck drivers who utilized RAAHI's static centers or camps.

For qualitative interactions, we conducted interviews with 30 truck drivers from different regions of India over the phone. The inclusion criteria for the truck drivers were those who had received eye health services in our RAAHI Programme within the last 6 months and had agreed to participate in the study. Verbal consent was obtained from the respondents who agreed to participate, while those who refused or did not provide verbal consent were excluded from the study.

The sample of respondents comprised 10 who had received ready-to-clip spectacles, 10 who deferred picking up the spectacles, and 10 who did not collect them at all. Additionally, interviews were conducted with Programme managers, leadership from Sightsavers India (n=8), and extramural stakeholders (n=5), including funders, implementation partners, and spectacle providers, selected purposively.

Data collection employed various methods, including face-to-face meetings, virtual and telephonic interactions, utilizing structured checklists and guides with prior consent.

### *Data analysis*

Quantitative data were managed in MS excel and analysed using R Software and STATA 14, employing appropriate statistical techniques. Qualitative data collection methods included site visits, key informant interviews, group discussions, and non-formal

interactions, summarized and supported by verbatim quotes from truckers (translated to English).

## RESULTS

RAAHI had a presence in 54 locations along the largest national highway corridors in India, including the golden quadrilateral, which connected four major metropolitan cities: Delhi, Mumbai, Kolkata, and Chennai, as well as the North-South corridor and the East-West corridor. The programme operated 19 static vision centers and 39 camp locations across 16 states in India, providing essential healthcare services to communities along these transportation routes.


**Figure 1: Distribution of RAAHI vision centers and camp locations across India.**

Between 2018 and June 2022, RAAHI screened 5,40,166 beneficiaries, with the highest numbers in Karnataka (15.1%), followed by Rajasthan (8.4%), West Bengal (8.4%), and Madhya Pradesh (8.3%). The mean age was 39.3±10.3 years, with 35.6% having up to upper primary education, 4.3% being illiterate, and 18.3% having secondary or higher education. Approximately 48% had a monthly income exceeding Rs 10,000, and on average, reported 11 months of employment per year. Within the screened population, 83.6% were from the trucking industry, with 83.9% being truck drivers, 12% cleaners, 3% mechanics, and 1.1% falling into other categories. Notably, 3.5% of truck drivers were illiterate, while 38.9% had formal education up to upper-primary level. Furthermore, 12.7% of screened truck drivers had health insurance policies.

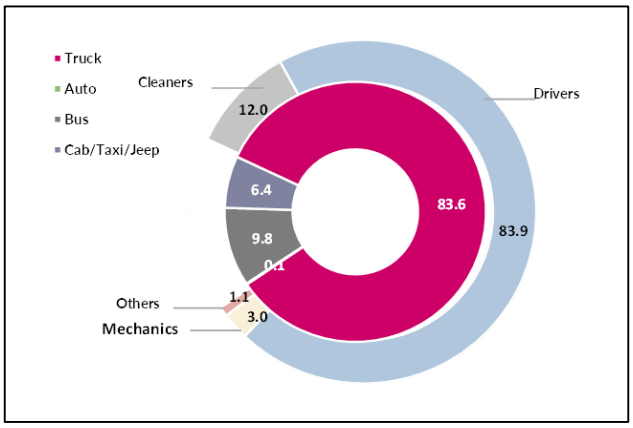


**Figure 2: Distribution of beneficiaries according to occupation profile.**

***Trends in service utilization***

There was an increasing trend observed over the years in the number of beneficiaries despite drop in the number of beneficiaries in 2020 due to COVID-19. Seasonal trends were evident in the footfall at the VCs and camp locations; summer months saw a dip.

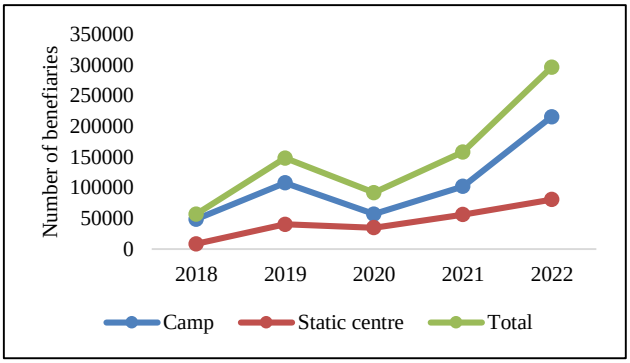


**Figure 3: Trends in the number of beneficiaries served in RAAHI camps and static centres across the programme years.**

At RAAHI vision static centers and camp locations, over 70% (n=3,77,964) of beneficiaries underwent their first-ever eye check-up. Additionally, tests for blood sugar and blood pressure were conducted at these facilities. Remarkably, only 35.5% of beneficiaries had received a medical check-up within the year preceding the screening. Furthermore, a mere 2.9% were aware of their diabetes diagnosis, and only 3.8% knew they had hypertension. These findings underscore the critical role of RAAHI in providing essential health screenings and raising awareness about prevalent health conditions among beneficiaries.

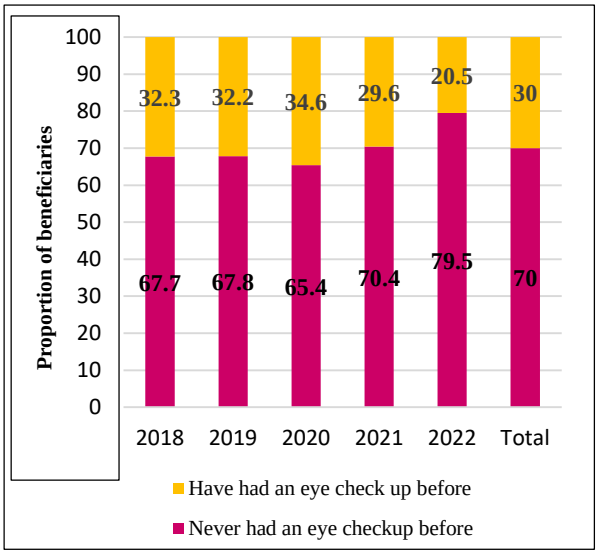


**Figure 4: Distribution of the beneficiaries across the years based on if they had ever got their eyes checked before the RAAHI programme.**

Out of total screened, 2,21,633 (41%) beneficiaries detected with refractive errors. Of these, 78.5% had near vision error while the remaining 21.5% had errors of distant vision. Of the 2,21,633 beneficiaries detected with refractive errors, eyeglasses were prescribed for 2,12,169 (95.7%). Of the total number of spectacles prescribed, 79.4% were reading eyeglasses (for near vision), 19.7% were made-to-order distant vision eyeglasses and 0.9% were R2C distant vision eyeglasses.

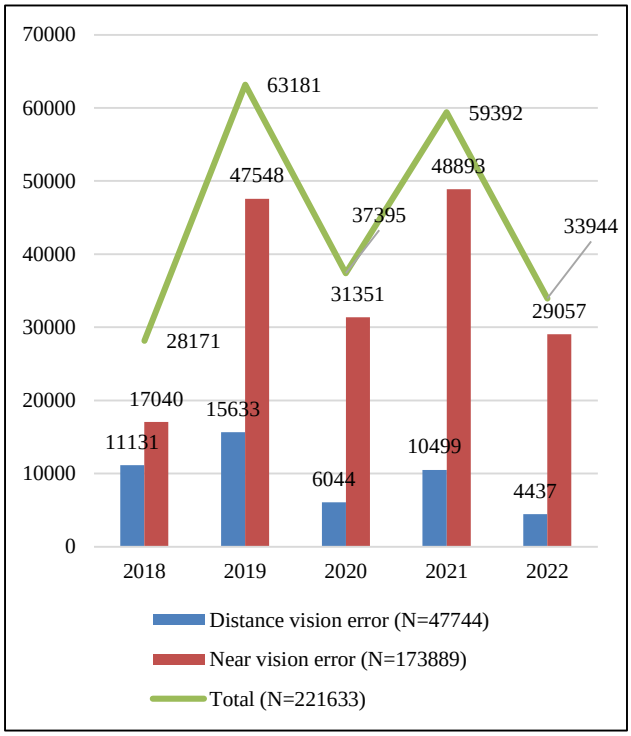


**Figure 5: Refractive errors diagnosed among the RAAHI beneficiaries across the years till June 2022.**

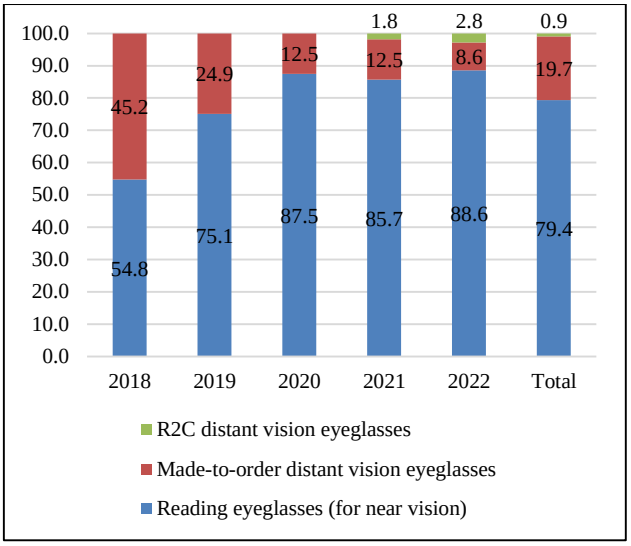


**Figure 6: Percentage distribution of the type of spectacles prescribed to the beneficiaries across the years.**

***Beneficiary feedback; a qualitative aspect***

*Beneficiary satisfaction with RAAHI services*

Interactions with beneficiaries revealed overall satisfaction with the services provided at RAAHI centers and camp locations. They found the registration, eye screening, survey completion, and spectacle distribution processes to be quick and easy, typically taking 30-45 minutes. The structured and organized approach conveyed RAAHI's dedication to serving its clients. One respondent expressed-

*"They are doing a very good job; they have a proper system for identity verification. It feels nice that this centre is helping poor people like us and thinking of our welfare*". (Truck driver, 47 years; screened at Bangalore)

*Immediate access to quality of spectacles*

Beneficiaries highlighted the convenience and reassurance of receiving prescribed spectacles immediately at the center. They praised the good quality of the spectacles, finding them useful and using them regularly.

*"It's a very nice experience for me; the spectacles are of good quality".* (Truck driver, 39 years; screened at Kolkata)

*Referrals amplify RAAHI outreach*

Interactions showed that the majority of the drivers got to learn about the RAAHI services from the on-ground staff (camp co-ordinator, community health worker), camp organisers, fellow drivers and friends, followed by transportation office staff and fleet owners. Many also

reported that they also helped in disseminating their experience to other fellow drivers, while motivating them to pay a visit to the RAAHI centre/ camp locations.

*"I had a good experience at the centre. So, I convinced and accompanied other driver friends of the RAAHI static centre thereafter." (Truck driver, 43 years; screened at Ballabhgarh)*

*Beneficiaries recommended sustaining and scaling-up of RAAHI*

The beneficiaries remarked that there was a need to conduct more RAAHI camps and similar interventions targeted for the trucking community. Some of the beneficiaries suggested that camps and vision centres should be set-up along the highways or near their native villages for improved accessibility. They also suggested that there should be avenues for remote consultation with the RAAHI programme team for the same or different eye related issue.

*"This Programme should continue to be in place as it is helping a lot of drivers".* (Truck driver, 51 years; screened at Indore).

A stakeholder Analysis Matrix was utilized, scored on a 3-point Likert scale for 'influence' and 'interest' based on insights gleaned from programme documents and qualitative interactions with varied stakeholders the providers (these included the intramural Sightsavers India programme management team, the extramural implementation partners and the funders), the facilitators (these included the spectacle provider, the technology partner, and other catalysts), and the beneficiaries (i.e. the truck drivers). While the providers and the beneficiaries played critical role in the programme effectiveness, the facilitators role was pivotal. The collaborations enriched the programme's multi and trans-disciplinarity and made it further client-centric. The role of the implementing partners has been quite vital. While these partners have adapted to the evolving needs of the programme it is conspicuous that the programme is driven by a shared vision and philanthropic interest.

## DISCUSSION

The RAAHI programme represents a significant effort to address the unmet eye health needs of truck drivers in India, a population particularly vulnerable to visual impairments due to the nature of their occupation and the lack of access to eye care services. The programme's extensive reach, spanning 54 locations along major transportation routes, underscores its commitment to providing essential healthcare services to this community. The evaluation conducted in 2017 highlighted the glaring gap in eye care services among truckers, emphasizing the urgent need for interventions such as RAAHI.

Over the years, RAAHI has made substantial progress in screening beneficiaries and providing necessary eye care services. The programme has successfully screened over 540,000 beneficiaries, with a notable emphasis on reaching out to truck drivers, the primary beneficiaries. The data revealed demographic insights into the screened population, shedding light on their education levels, income, and health insurance coverage. Notably, a significant proportion of truck drivers had not undergone a medical check-up within the preceding year, indicating a broader need for healthcare services among this population beyond eye care.

Out of the total screened, 41% of beneficiaries were detected with refractive errors. Earlier, Sightsavers India, as part of their truckers' initiative "eye ok please!" which screened 17,546 truckers in various eye camps, revealed that about 46.7% were detected with uncorrected refractive errors.[20] A recent assessment by the Government of India's national highway authority screened over 700 truck drivers at a toll plaza in the National Capital Region, revealing that about 70% of screened truck drivers had uncorrected refractive errors.[21] Similar higher prevalence of refractive error was also reported among truck drivers from other parts of the world. The prevalence of any refractive errors in the worst eye was 45.8% (95% CI 42.1%-49.6%).[22] Owing to their mobile lifestyles and the unavailability of healthcare facilities on the peripheries of cities and towns (where bulk of truck parking lots are designated), truckers are unable to utilize existing healthcare systems.[22] Intensive and targeted efforts to reach out to this population at truck parking lots, transportation hubs, and Dhabas (roadside hotels where truckers stop for food and rest) through mobile eye screening clinics/vans seem to be a viable approach to reach out to this group, although a scientific investigation into such an approach is warranted.

The qualitative feedback from beneficiaries underscores the success of RAAHI in delivering quality services and meeting the needs of truck drivers. Beneficiaries expressed satisfaction with the programme's efficiency, particularly in terms of registration, screening, and spectacle distribution. Immediate access to high-quality spectacles was particularly valued, highlighting the programme's impact on improving vision and ensuring road safety. Moreover, beneficiaries' recommendations for sustaining and scaling up RAAHI underscore the programme's significance and the demand for continued support.

While our study provides valuable insights into the experiences of truck drivers regarding the services they receive, it's important to acknowledge certain limitations. Firstly, the sample size of interviewed truck drivers may not fully capture the diversity of truck drivers across India. Given the highly mobile nature of truckers, we conducted interviews over the phone, which could introduce selection bias. However, despite these

limitations, our study offers valuable insights into the challenges and needs of this population.

## CONCLUSION

In conclusion, the RAAHI programme has played a crucial role in addressing the unmet eye health needs of truck drivers in India, contributing to road safety and enhancing the well-being of this vulnerable occupational group. Through its extensive outreach and effective service delivery, RAAHI has made significant strides in screening beneficiaries, providing essential eye care services, and raising awareness about the importance of eye health among truck drivers. The programme's success is evident in the positive feedback from beneficiaries and the recommendations for its continuation and expansion. Moving forward, sustained efforts and collaborations among stakeholders will be essential to ensure the long-term impact and sustainability of RAAHI in improving the eye health of truck drivers and promoting road safety across India's transportation networks.

## ACKNOWLEDGEMENTS

Authors would like to thank to RAAHI implementing partners, as well as all the funders of the RAAHI programme. Also, to Cholamandalam investment and finance company limited, Ray-Ban sun optics India private limited, CHEP India private limited, Piaggio vehicles private limited, Uber India research and development private limited, RPG foundation, and JSPL.

*Funding: Funding sources by Sightsavers India*
*Conflict of interest: None declared*
*Ethical approval: Not required*

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**Cite this article as:** Sahu AB, Tiwari J, Prasannakumar PN, Mohanty RN. Bridging vision gaps: a comprehensive study of the RAAHI programme for improving truckers' eye health in India. Int J Community Med Public Health 2024;11:1942-8.