VISUAL DISABILITY IN INDIA: A LITERATURE REVIEW OF CHALLENGES, INTERVENTIONS, AND INCLUSIVE STRATEGIES

Dr. Kawal Gill [1] ✉

[1] Associate Professor, Sri Guru Gobind Singh College of Commerce, University of Delhi, India

Corresponding Author
Dr. Kawal Gill, drkawalgill@sggscc.ac.in

ABSTRACT

Visual disability remains a significant public health and social concern in India, impacting millions of individuals across age groups, particularly in rural and underserved regions. This literature review critically examines the evolution of challenges and interventions related to visual impairment in India between 1990 and 2020. Drawing upon 29 data sources—including peer-reviewed academic studies, reports from government bodies and non-governmental organizations (NGOs)—the paper synthesizes key findings across five thematic domains: public health and prevalence, education and inclusion, assistive technology, community-based rehabilitation, and policy frameworks. Despite measurable progress in reducing preventable blindness through initiatives the National Programme for Control of Blindness and the implementation of the Rights of Persons with Disabilities Act (2016), significant barriers persist. These include lack of access to assistive technology, limited inclusive education, socio-economic stigma, and rural-urban disparities in service delivery. However, innovative interventions led by NGOs, emerging digital solutions, and participatory community models have shown promise in promoting inclusion. The review identifies persistent gaps in longitudinal data, regional research, and gender-disaggregated analysis. It concludes with actionable recommendations for policymakers, educators, technologists, and civil society stakeholders to foster an equitable and rights-based approach to visual disability in India.

Keywords: Visual Disability, Assistive Technology, Inclusive Education, Disability Policy, India, Rehabilitation

1. INTRODUCTION

Visual disability defined as the significant loss of visual acuity or field of vision that cannot be corrected through standard lenses or surgery, is one of the most pervasive forms of sensory impairment worldwide. Visual disability remains a significant public health and social concern in India. According to the World Health Organization (WHO), over 2.2 billion individuals globally live with some form of visual impairment, with at least 1 billion cases preventable or treatable (WHO, 2019).

In India, visual disability constitutes a major share of the overall disability profile. While the 2011 Census of India reports that approximately 5.03 million people live with visual impairments, accounting for nearly 19% of the total disabled population, several independent assessments e.g., those by the National Programme for Control of Blindness (NPCB) and the Rapid Assessment of Avoidable Blindness (RAAB)—suggest that the actual numbers may be much higher, particularly when considering unreported, unassessed, and underserved populations in rural and low-income regions.

The Indian context is uniquely complex. Visual disability here intersects with multiple axes of marginalization including poverty, gender, caste, and rural-urban disparity. For instance, older adults, women, and people from

scheduled castes or scheduled tribes often encounter higher risks of vision loss and lower access to eye care and rehabilitation services. In many communities, visual impairment is still perceived as a burden or moral failing, limiting opportunities for education, employment, and social inclusion.

Hence, visual disability in India must be understood not just as a biomedical condition, but as a socio-political construct shaped by unequal access to resources and deeply ingrained cultural attitudes. From the early 1990s onwards, India's policy and programmatic landscape around visual disability began to undergo gradual transformation. This period coincided with global advocacy movements the World Bank-supported VISION 2020 initiative (launched in 1999), which prioritized the elimination of avoidable blindness. Domestically, the National Programme for Control of Blindness (launched in 1976) was expanded in scope and funding, emphasizing cataract surgeries, distribution of spectacles, and establishment of district blindness control societies.

The prevalence of cataract-related blindness began to decline due to increased surgical interventions, but challenges remained in addressing refractive errors, childhood blindness, and diabetic retinopathy, especially in underserved areas. The legislative framework also evol ved. The enactment of the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act in 1995 marked India's first legal attempt to mainstream disability rights. However, it was the Rights of Persons with Disabilities Act, 2016—aligned with the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD)—that expanded the definition of disability and provided detailed mandates for inclusion in education, employment, public infrastructure, and political participation.

Visual disability was no longer treated in isolation but as part of a comprehensive rights-based agenda. Education and inclusion became critical areas of focus, especially with the expansion of inclusive education policies the Sarva Shiksha Abhiyan (SSA) and later the Samagra Shiksha Abhiyan. Despite this, many children with visual disabilities continued to be excluded from mainstream classrooms due to inadequate teacher training, lack of accessible learning materials, and infrastructural inaccessibility. Only a small percentage of blind or low-vision students accessed higher education, and even fewer were equipped with assistive technologies like screen readers or Braille devices.

Technological advancements during this period offered both opportunities and challenges. The introduction of screen reading software, smartphone accessibility features, GPS-enabled mobility tools, and AI-powered recognition apps like Seeing AI and Be My Eyes helped redefine independence for many visually impaired individuals. Indian innovations Shravan OS (a gesture-based operating system for blind users), Manovue (a wearable reading and navigation system), and BrailleBand (a haptic wearable for Braille communication) reflect the potential of inclusive tech. Yet, affordability, limited digital literacy, and infrastructural barriers have constrained the reach and effectiveness of these tools, particularly in low-resource settings.

Civil society organizations and NGOs also played a transformative role during this period. Organizations Sightsavers India, National Association for the Blind, Mitra Jyothi, Samarthanam Trust, and Jyothirgamaya Foundation pioneered initiatives in mobility training, computer literacy, vocational skills, and community-based rehabilitation. These initiatives were particularly vital in bridging service gaps left by state interventions. In several instances, such NGOs not only provided services but also influenced national policy by serving on advisory boards and conducting evidence-based advocacy.

In India, population-based studies such as the Andhra Pradesh Eye Disease Study (Dandona & Dandona, 2001; Dandona et al., 1997) have revealed high prevalence rates of visual impairment, especially in rural and underserved regions (Krishnaiah et al., 2005; Murthy et al., 2001).

Given this multi-layered context, this literature review seeks to critically examine how visual disability has been addressed in India over three decades—from 1990 to 2020. It draws upon 39 data sources, comprising 29 peer-reviewed academic studies and 10 reports from government bodies and NGOs. The review is structured around five interrelated themes: (1) prevalence and public health challenges; (2) educational access and inclusive pedagogy; (3) assistive technology and digital inclusion; (4) NGO and community-led rehabilitation; and (5) policy frameworks and implementation.

By weaving together empirical data, policy analysis, and field-level insights, the review aims to answer the following research questions:

- What are the major systemic barriers encountered by visually impaired persons in India?
- What interventions, state-led, NGO-driven, or technological—have proven effective over time?

- Where do current strategies fall short in addressing the needs of persons with visual disabilities?
- How can future policies and practices promote inclusive, equitable, and sustainable outcomes?

The overall objective of the paper is to inform researchers, practitioners, and policymakers of the evolving landscape of visual disability in India and to identify critical pathways for ensuring a more inclusive and just society.

2. METHODOLOGY

This literature review adopts a qualitative, thematic approach to examine the evolution of challenges, interventions, and inclusive strategies related to visual disability in India between 1990 and 2020. The objective was to capture the breadth of research and practice across public health, education, technology, policy, and community-based initiatives, with a specific focus on Indian contexts. A combination of peer-reviewed journal articles, government publications, and NGO reports were reviewed to ensure a comprehensive and multi-sectoral understanding of the issue. Only those studies published between 1990 and 2020, focused on India or case studies within Indian contexts, related to visual impairment, blindness, or low vision, in English language, both qualitative and quantitative studies, along with policy reviews and program evaluations were included. This literature review is based on a total of 29 sources. Primary databases consulted include PubMed, ERIC, PLOS ONE, and organizational websites such as WHO and UNESCO (WHO, 2001; UNESCO, 2009). The selected literature was analyzed thematically and categorized into five core domains (Refer Table1).

- Prevalence and Public Health: Focused on national surveys, epidemiological data, and regional disparities in visual impairment.
- Education and Inclusive Pedagogy: Examined access to schooling, barriers to learning, availability of assistive materials, and teacher training.
- Assistive Technology and Digital Inclusion: Analyzed the availability, usability, and affordability of technological solutions, and their role in independent living and education.
- NGO and Community-Based Rehabilitation Models: Assessed the role of civil society in service delivery, skill-building, and advocacy.
- Policy Frameworks and Legal Implementation: Reviewed disability legislation, government programs, and the evolution of rights-based frameworks in India.

Table 1 Data Sources by Thematic Area

Theme	No. of Sources	Source
Policy & Legal Frameworks	5	WHO (2001, 2019), UNESCO (2009), Accessible India (2015), Rao et al. (2012)
Healthcare & Epidemiology	8	Dandona et al. (1997, 2001), Neena et al. (2008), Krishnaiah et al. (2005), Murthy et al.(2001)
Education & Pedagogy	6	Das et al. (2013), Thomas & Bhatia (2015), Kumar & Anwar (2004), Pandey (2018), Raj (2015)
Assistive Technology	5	Chakshumathi (2020), NIEPVD (2020), Mitra Jyothi (2020), BPA (2021), Jyothirgamaya (2020)
NGOs & Community Practices	5	Singh (2013), Apte & Samant (2005), Rao & Vijayalakshmi (2002), Gulbarga Study (2012), Nayak & Reddy (2021)

Each source was reviewed for its methodological strength, relevance to Indian contexts, population focus, geographic scope, and policy/practice implications. Insights were coded and synthesized under these themes to construct a holistic picture of the visual disability landscape in India over the three-decade period under study.

3. CHALLENGES FACED BY VISUALLY IMPAIRED PERSONS IN INDIA

The experience of visual disability in India is shaped by a confluence of structural, institutional, and socio-cultural challenges. While significant policy advancements were made, multiple barriers continue to hinder the full participation of visually impaired individuals in education, employment, healthcare, and public life. This section critically examines these barriers across four domains: public health, education, technology, and social stigma.

3.1. PUBLIC HEALTH AND PREVALENCE CHALLENGES

One of the most pressing challenges in India's visual disability landscape is the high prevalence of avoidable blindness. The 2015 National Blindness and Visual Impairment Survey conducted by the National Programme for Control of Blindness (NPCB) estimated that over 62 million Indians live with some form of visual impairment, of which 8 million are classified as blind. The leading causes include cataract, uncorrected refractive errors, glaucoma, and diabetic retinopathy (NPCB, 2015). Although cataract surgeries have increased —with over 6 million surgeries conducted annually—the quality and follow-up of surgical procedures remain uneven, particularly in rural districts. Geographic disparities are significant. Studies conducted in Andhra Pradesh (Dandona & Dandona, 2001) and Haryana (Neena et al., 2008) found a higher prevalence of blindness among elderly populations in rural areas, often exacerbated by poor access to eye care facilities, lack of trained ophthalmic personnel, and low awareness about preventive measures. childhood blindness is also a major concern.

According to Orbis India (2020), approximately 200,000 children are blind, with nearly 42% of this blindness being preventable or treatable if detected early. Moreover, visual disability is often compounded by co-morbid conditions malnutrition, diabetes, and hypertension. The absence of an integrated primary eye care model in many states results in delayed diagnoses and limited follow-up, increasing the risk of permanent vision loss.

3.2. EDUCATIONAL BARRIERS AND EXCLUSION

Access to education for visually impaired individuals remains highly unequal despite policy commitments to inclusive education. While schemes Sarva Shiksha Abhiyan (SSA) and later the Samagra Shiksha Abhiyan aimed to mainstream children with disabilities, implementation on the ground has been inconsistent. Many government schools lack trained special educators, Braille materials, tactile maps, or screen reader-equipped computer labs (Das et al., 2013). A study by Jangira and Ahuja (1993) found that only a fraction of teachers working with blind students had formal training in inclusive pedagogy.

Additionally, visually impaired children often face physical barriers inaccessible classroom infrastructure, lack of transportation, and absence of accessible toilets, which discourage regular attendance. This has led to high dropout rates, especially among girls and children from rural or marginalized communities. In higher education, access is even more limited. A phenomenological study conducted across public universities in 2014 found that most blind students faced systemic discrimination in admissions, curriculum design, and assessment methods. Few institutions had assistive devices, trained staff, or accessible reading materials (Palan, R., 2020). Digital learning platforms and online assessments, which gained prominence post-2010, also remained largely inaccessible due to poor compliance with Web Content Accessibility Guidelines (WCAG).

3.3. TECHNOLOGICAL GAPS AND DIGITAL DIVIDE

Despite the global potential of assistive technology (AT) to transform the lives of persons with visual impairments, its penetration in India remains limited. A 2020 survey of blind schools in Delhi found that out of 52 essential AT tools identified by experts, only 11 were available in more than 60% of the institutions surveyed (NIEPVD, 2020). Many schools lacked even basic tools like braille embossers, tactile globes, or screen-reading software. Even when devices are available, training and maintenance remain a challenge. Students and teachers often lack the technical skills required to effectively use AT, while procurement delays and budget constraints restrict the scale of implementation. Several innovations e.g., Shravan OS, Braille Band, and Seeing AI—have demonstrated potential but remain confined to urban users or pilot studies due to cost barriers and lack of dissemination strategies.

The digital divide is particularly pronounced in rural India, where internet access is sparse and electricity supply unreliable. As more public services, education portals, and employment applications shift online, visually impaired individuals face compounded exclusion due to poor web accessibility and the absence of screen-reader compatible content. These limitations are especially critical in the post-2015 era, where digital India initiatives have not adequately considered universal design principles.

3.4. SOCIAL STIGMA AND ECONOMIC EXCLUSION

Beyond institutional shortcomings, socio-cultural stigma continues to be a significant barrier. Visual impairment is often associated with dependency, helplessness, or divine punishment in many Indian communities, particularly in conservative or rural areas. This stigmatization affects all stages of life—from early schooling to marriage, employment, and social participation (Ghai, 2001). Visually impaired individuals often experience internalized stigma, which impacts their self-esteem, mental health, and willingness to seek opportunities. Depression, anxiety, and isolation are common among young adults with visual disabilities, especially those who face family rejection or bullying in schools (Nyman et al., 2012).

For women, the intersection of gender and disability is even more acute, with studies noting that blind women are at higher risk of social exclusion, domestic confinement, and denial of reproductive rights (Lang, 2007). Economically, visually impaired individuals are underrepresented in the formal labor market. The employment rate among the blind in India is lower than the national average. Barriers include inaccessible workplaces, limited vocational training, and employer prejudice. While NGOs like Mitra Jyothi, Samarthanam Trust, and Enable India have made strides in placing visually impaired individuals in IT and BPO sectors, these models have yet to be adopted on a national scale.

To sum up, the challenges faced by visually impaired persons in India between 1990 and 2020 are multifaceted and deeply interlinked. Public health systems have improved but remain fragmented. Educational policies exist but are poorly implemented. Technology is promising but underutilized. And social attitudes, often invisible in policy documents—continue to limit the full realization of rights and capabilities. Understanding these intersecting challenges is crucial for designing effective, inclusive, and sustainable interventions. Healthcare studies highlight the widespread burden of refractive errors and cataract, especially in older adults (Neena et al., 2008). Educational inclusion studies (Das et al., 2013; Thomas & Bhatia, 2015) underscore persistent challenges in infrastructure, curriculum adaptation, and teacher training. Assistive technology adoption remains uneven (NIEPVD, 2020; Mitra Jyothi, 2020), although mobile initiatives show promise (Jyothirgamaya, 2020). Policy frameworks like the Accessible India Campaign (2015) and WHO's ICF model (WHO, 2001) guide inclusive practices.

4. INTERVENTIONS AND INNOVATIONS

Despite the enduring challenges faced by persons with visual impairments in India, the three-decade period from 1990 to 2020 witnessed a substantial evolution in terms of policy, technological development, and community-level responses. These interventions reflect a gradual shift from charity-based assistance to a rights-based approach that emphasizes empowerment, accessibility, and inclusion. This section categorizes the key innovations and interventions under three primary domains: (1) government policies and legal frameworks, (2) NGO and community-based models, and (3) assistive technology and digital inclusion.

4.1. GOVERNMENT POLICIES AND LEGAL FRAMEWORKS

The Indian government's approach to visual disability underwent a transformation during this period, influenced by international obligations and domestic advocacy. The Persons with Disabilities Act, 1995, was the first legislation to outline equal opportunities and affirmative action for persons with disabilities, including those with visual impairments. However, its provisions were often vague and weakly enforced. A more comprehensive and enforceable framework emerged with the enactment of the Rights of Persons with Disabilities (RPwD) Act, 2016, which aligned Indian law with the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD). This legislation expanded the recognized categories of disability from 7 to 21, specifically listing visual impairment and low vision. It mandated inclusive education, 5% reservation in higher education and public employment, and required accessibility in public buildings, transport, and ICT (Information and Communication Technology).

At the programmatic level, the National Programme for Control of Blindness (NPCB)—launched in 1976—was scaled up and rebranded as NPCB & VI (Visual Impairment) in the 12th Five-Year Plan. It focused on cataract surgeries, vision centers, distribution of spectacles, and public awareness. The 2015 NPCB Rapid Assessment Survey documented

progress, showing a significant decline in blindness prevalence, but also pointed out regional disparities and unmet needs in rural areas.

Child-specific initiatives, integration of visual screening under the Rashtriya Bal Swasthya Karyakram (RBSK), aimed to detect visual impairments early. Moreover, the Accessible India Campaign (Sugamya Bharat Abhiyan) launched in 2015, committed to making public infrastructure, websites, and transport systems accessible to persons with disabilities, although its execution has varied greatly across states. Despite these policy advancements, implementation remains inconsistent due to lack of accountability mechanisms, inadequate funding, and poor interdepartmental coordination.

4.2. NGO AND COMMUNITY-BASED REHABILITATION MODELS

While government interventions set the legislative framework, much of the innovation in direct service delivery and grassroots empowerment has come from non-governmental organizations (NGOs). These organizations have played a crucial role in providing education, mobility training, vocational support, and technological literacy to visually impaired persons, particularly in rural and underserved areas.

Mitra Jyothi, based in Bangalore since 1990, pioneered programs the production of DAISY-format talking books, computer literacy training, and independent living skills. Similarly, the National Association for the Blind (NAB) has worked across multiple Indian states providing residential education, job placement, and legal aid for blind persons. In a landmark initiative, NAB Delhi partnered with breast cancer screening programs to train visually impaired women as Medical Tactile Examiners (MTEs), achieving over 75% accuracy in clinical detection—a model that has gained international recognition. Another innovative effort is the Jyothirgamaya Foundation, a mobile blind school operating in Kerala since 2012. It brings Braille literacy, English language training, and digital skills directly to the homes of blind children and adults using a mobile van.

In the domain of STEM education, Chakshumathi has led the "Eyes Free Science" initiative to enable blind students to pursue science and mathematics through tactile kits and voice-guided labs. Sports and culture have also emerged as vehicles for inclusion. The Samarthanam Trust for the Disabled, also based in Bangalore, supports blind cricket, chess tournaments, and performing arts, along with employment training in IT and BPO sectors. These organizations not only provide services but often influence national policy by demonstrating scalable, context-sensitive models.

4.3. ASSISTIVE TECHNOLOGY AND DIGITAL INCLUSION

Technological innovation has emerged as a transformative force in the lives of visually impaired individuals. The adoption of assistive technologies (AT)—ranging from Braille embossers to smartphone-based applications—has expanded the possibilities for communication, education, and independent mobility. However, cost and language limitations have slowed their adoption in rural or low-income settings.

Despite these advancements, a 2020 accessibility audit of blind schools in Delhi found that only 11 out of 52 critical AT tools were available in more than 60% of the surveyed institutions (NIEPVD, 2020). Furthermore, many digital platforms, including government websites and exam portals, remain non-compliant with Web Content Accessibility Guidelines (WCAG 2.1). Training remains another bottleneck.

Students often receive devices without adequate orientation, rendering the technology underutilized. NGOs Enable India have addressed this by integrating AT with skill development, offering courses on screen readers, smartphones, and employment software in accessible formats.

To summarize, the three decades under review illustrate a dynamic but uneven trajectory of interventions aimed at addressing visual disability in India. Legislative reforms, while ambitious, have struggled in terms of implementation and enforcement. NGO-driven innovations have often filled systemic gaps but remain localized in their impact. Technological tools offer significant promise, yet remain inaccessible to many due to cost, training, and infrastructural barriers. The convergence of policy, technology, and community action offers a pathway forward, but sustained political will, inclusive design, and grassroots participation are essential to realizing the vision of equitable inclusion.

5. TRENDS, GAPS, AND CRITICAL OBSERVATIONS

The analysis of literature and policy over the three-decade period reveals both progress and persistent shortcomings in the field of visual disability in India. While there have been notable strides in legal frameworks, eye care infrastructure, community initiatives, and assistive technology, these developments have not uniformly translated into systemic or widespread inclusion. This section synthesizes key trends, highlights major gaps in implementation and scholarship, and offers critical reflections on the broader disability landscape in India.

1) The evolution of India's disability framework reflects a gradual shift from a medical and charity-based view to a rights-based and empowerment-oriented model. The RPwD Act, 2016 symbolized a major departure from earlier welfare-driven policies by mandating legal entitlements, anti-discrimination provisions, and accessibility standards across sectors. This alignment with the UN Convention on the Rights of Persons with Disabilities (UNCRPD) marked India's formal adoption of global disability norms.

2) Through the National Programme for Control of Blindness (NPCB), India scaled up cataract surgeries, established vision centers in rural districts, and incorporated eye screening into child and school health programs. The RAAB survey (2015) reported a reduction in avoidable blindness, especially in urban areas. NGOs like Sightsavers and Orbis complemented these efforts by deploying mobile eye units and child-specific screening initiatives.

3) Several NGOs have introduced community-based rehabilitation (CBR) and mobile education programs (e.g., Jyothirgamaya Foundation), helping visually impaired individuals in remote areas access Braille, mobility training, and digital literacy. Inclusion in mainstream education, although inconsistent, gained momentum through government schemes Sarva Shiksha Abhiyan and Samagra Shiksha Abhiyan.

4) The last decade saw the emergence of Indian-developed, low-cost assistive technologies like Shravan OS, BrailleBand, and Manovue, designed for Indian users and languages. Smartphones with built-in accessibility features (VoiceOver, TalkBack) also enhanced independence for urban blind users. However, training, affordability, and rural access remained limited.

5) Implementation Lags and fragmentation exists despite a strong legislative foundation, the enforcement of the RPwD Act has been inconsistent. Accessibility mandates for public buildings, transport, and digital platforms remain unmet in many states. Coordination between departments— health, education, and IT—is weak, resulting in fragmented service delivery.

6) Most policy benefits and technological interventions have been concentrated in metropolitan or Tier 1 cities. Rural populations continue to lack access to quality eye care, inclusive education, or even basic assistive devices. Studies show a higher prevalence of blindness and untreated visual impairment in rural districts of Haryana, Andhra Pradesh, and North-East India (Dandona & Dandona, 2001; Neena et al., 2008).

7) While innovative AT exists, uptake is low due to lack of awareness, affordability, and inadequate training. A 2020 audit of blind schools in Delhi found that the majority lacked access to more than half of the critical devices identified by experts. Government websites, education portals, and recruitment platforms often ignore WCAG 2.1 accessibility standards.

8) Inclusive education remains more aspirational than actualized. Many teachers lack training in inclusive pedagogy; classrooms are not adapted for low vision learners; and higher education institutions rarely offer accessible reading materials, support services, or inclusive examination systems.

6. CONCLUSION AND RECOMMENDATIONS

The review of literature and interventions between 1990 and 2020 reveals that India has made measurable progress in addressing visual disability—but the journey toward full inclusion remains incomplete. This three-decade span has seen the evolution of visual disability policy from a welfare-oriented framework to a rights-based and legally codified commitment to accessibility and equality. Yet, systemic barriers in education, healthcare, technology access, and social integration continue to marginalize millions of visually impaired individuals, particularly in rural and economically disadvantaged communities. On one hand, the legal landscape has matured.

The Rights of Persons with Disabilities Act (2016) marked a watershed moment in aligning Indian disability law with international norms the UNCRPD. The expansion of government programs like the National Programme for Control

of Blindness (NPCB), Sarva Shiksha Abhiyan, and the Accessible India Campaign underscores the state's growing recognition of visual disability as a developmental and human rights issue. On the other hand, implementation of these policies remains uneven. Rural and semi-urban areas still lack sufficient infrastructure, trained professionals, and awareness. While cataract surgeries have increased and avoidable blindness has declined in some regions, newer threats diabetic retinopathy, childhood blindness, and digital exclusion demand updated strategies.

Educational inclusion policies remain underfunded and inconsistently applied, leaving visually impaired students without the tools, teachers, or accessible materials they require. Assistive technologies have emerged as powerful enablers but remain underutilized due to cost, lack of training, and digital divides. Importantly, civil society and grassroots organizations have been instrumental in filling the gaps left by the state. NGOs Mitra Jyothi, Samarthanam Trust, Chakshumathi, and Jyothirgamaya Foundation have shown that localized, culturally embedded, and community-driven approaches can be highly effective. These models highlight the potential for scalable innovations when legal mandates are complemented by field-level partnerships and inclusive design.

Overall, India's efforts toward inclusive visual disability support have made progress in health and policy sectors. However, community-based interventions (Singh, 2013; Apte & Samant, 2005) and special education frameworks require further strengthening. More integrated efforts among government, NGOs, and educational institutions are needed for holistic inclusion.

To bridge the gap between rights and realities, the following policy and practice recommendations are proposed:

Monitoring and strengthening the implementation of the RPwD Act (2016)by enforcing accessibility norms in public buildings, digital platforms, and transport, expand the number of vision centers, train community ophthalmic assistants, and integrate eye care services into primary health systems, particularly in tribal and backward districts, visual disability concerns must be embedded across ministries—including education, digital governance, labor, and housing—to ensure cross-sectoral alignment and budgetary support.

1) **Education and Training Recommendations:** Inclusive Education in Pre- and In-service Teacher Training education curricula must include universal design for learning (UDL), tactile pedagogy, and ICT accessibility training, upgrading school and university Infrastructure by equipping schools with accessible reading materials (Braille, DAISY), screen readers, tactile models, and trained support staff, ensuring inclusive examination and evaluation systems, promoting scholarships, disability resource centers, and skill development programs linked with industry partners to ensure employment-readiness.

2) **Recommendations to subsidize and scale up assistive technologies:** Government and private sector collaboration is essential to make AT devices affordable and widely available. Localized and Open-Source innovation should be supported for the development of AT in regional languages and partner with grassroots organizations to co-create user-centric solutions.

3) **Research and Knowledge:** National surveys must include data by gender, caste, region, and economic status to better understand intersectional challenges, promote participatory and longitudinal research, encourage studies where visually impaired persons are included as co-researchers or consultants.

7. FINAL REFLECTION

The journey toward an inclusive India for persons with visual disabilities is far from over. While laws have improved and innovation is growing, inclusion must be realized in the lived experience of the blind and visually impaired—not merely in policy documents. This demands not only structural reform, but a transformation in societal attitudes, institutional cultures, and everyday practices. Vision impairment should no longer be seen as a limitation, but as a dimension of human diversity that must be fully embraced and supported by society. The next phase must be guided by collaborative governance, inclusive innovation, and the leadership of persons with visual disabilities themselves. Only then can we move toward a truly equitable and just society that leaves no one behind.

CONFLICT OF INTERESTS

None.

ACKNOWLEDGMENTS

REFERENCES

Accessible India Campaign Task Force. (2015). Report on Sugamya Bharat Abhiyan implementation. Government of India.

Apte, S., & Samant, S. (2005). Special schools for children with visual impairment in India: Evolution and trends. Indian Journal of Disability Studies, 20(1), 15–24.

Blind People's Association. (2021). Annual report on education & rehabilitation services. Pune, India.

Chakshumathi. (2020). DAISY text/Assistive technology annual report. Thiruvananthapuram, India.

Dandona, L., & Dandona, R. (2001). Review of findings of the Andhra Pradesh Eye Disease Study: Policy implications for eye-care services. Indian Journal of Ophthalmology, 49(4), 215–234.

Dandona, L., Dandona, R., Naduvilath, T. J., McCarty, C. A., & Nanda, A. (1997). Design of a population-based study of visual impairment in India: The Andhra Pradesh Eye Disease Study. Indian Journal of Ophthalmology, 45(4), 251–257.

Dandona, L., et al. (2001). Blindness in the Indian state of Andhra Pradesh. Investigative Ophthalmology & Visual Science, 42(5), 908–916.

Das, A., Kuyini, A. B., & Desai, I. (2013). Inclusive education in India: Are the teachers prepared? International Journal of Special Education, 28(1), 27–36.

Gulbarga inclusive education study (2012). Inclusion of children with visual impairment in Karnataka: A qualitative approach. European Journal of Special Needs Education, 27(3), 287–299.

Gundlach, K., et al. (2013). Childhood visual impairment and its causes in school-based population: A survey in Karnataka. Indian Journal of Ophthalmology, 61(1), 69–71.

Jyothirgamaya Foundation. (2020). Annual report: Mobile education for the visually impaired. Trivandrum, India.

Krishnaiah, S., Srinivas, M., Khanna, R. C., Rao, G. N., & Shamanna, B. R. (2005). Population-based assessment of refractive error in India: The Andhra Pradesh Eye Disease Study. Clinical & Experimental Ophthalmology, 33(6), 493–499.

Kumar, S., & Anwar, M. (2004). Challenges in teaching visually impaired students in Indian classrooms. Indian Educational Review, 40(1), 36–49.

Milinga, M., & Possi, M. (2015). Social support for students with visual impairments in inclusive schools. British Journal of Visual Impairment, 33(2), 142–154.

Mitra Jyothi. (2020). Annual Report on Training and Independent Living Skills. Bangalore, India.

Mulrow, C. D., et al. (2000). Monitoring visual outcome of cataract surgery in India. Bulletin of the World Health Organization, 78(4), 455–460.

Murthy, G. V. S., et al. (2001). Population-based eye survey of older adults in rural Rajasthan. II. Outcomes of cataract surgery. Ophthalmology, 108(4), 686–692.

National Institute for the Empowerment of Persons with Visual Disabilities (NIEPVD). (2020). Assistive technology audit in blind schools. Dehradun, India.

Nayak, P., & Reddy, S. (2021). Educational inequalities and visual impairment among older adults in India. International Journal of Geriatric Psychiatry, 36(2), 271–279.

Neena, J., Rachel, J., Praveen, V., Murthy, G. V. S., & Shamanna, B. R. (2008). Rapid assessment of avoidable blindness in India: A population-based survey. PLOS ONE, 3(8), e2867.

Pandey, A. (2018). Comparative study of adjustment of visually impaired students in integrated and special schools. Universal Journal of Educational Research, 6(11), 2562–2571.

Raj, A. (2015). Inclusive classroom practices: Comparative study in Delhi schools. Journal of Inclusive Education, 9(1), 20–32.

Rao, G. N., Khanna, R. C., Athota, S. M., Rajshekar, V., & Rani, P. K. (2012). Integrated model of primary and secondary eye care for underserved areas: The LV Prasad Institute experience. Indian Journal of Ophthalmology, 60(5), 396–400.

Rao, N. R., & Vijayalakshmi, P. (2002). The evolving role of special schools in the context of inclusive education. Asia Pacific Journal of Education, 22(2), 123–134.

Singh, R. (2013). Empowerment through employment: Visual disability and vocational training programs in Uttar Pradesh. Journal of Vocational Rehabilitation, 38(2), 107–116.

Thomas, A., & Bhatia, A. (2015). "I seriously wanted to opt for science…" Visual impairment and higher education in India. International Journal of Inclusive Education, 19(12), 1261–1276.

UNESCO (2009). Policy guidelines on inclusion in education. Paris: UNESCO.

WHO (2019). World report on vision. Geneva: World Health Organization.

World Health Organization. (2001). International Classification of Functioning, Disability and Health (ICF). Geneva: WHO.