

Optometry and SDGs: Enhancing Quality of Life Through Specialized Optometry

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Author Details		
Keywords: Eye Care, Well-Being, Health Policy, Sustainable Development Goals, Vision for All		
Received on 25 Jan 2026		
Accepted on 28 Feb 2026		
Published on 10 Mar 2026		
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Abstract

By 2030, UN member states aim to accomplish the Sustainable Development Goals (SDGs). On July 23, 2021, the UN General Assembly adopted the "Vision for Everyone Accelerating Action to Achieve the Sustainable Development Goals (SDGs)," the first-ever resolution on vision. As a major field of medicine, optometry contributes significantly to the advancement of world health and the accomplishment of the Sustainable Development Goals (SDGs). This research explores the relationship between optometry and the Sustainable Development Goals (SDGs), emphasizing how particular vision measurement techniques enhance people's quality of life globally. Better health and wellbeing (SDG 3), improved education (SDG 4), industry, innovation, and infrastructure (SDG 9), decreased inequality (SDG 10), responsible consumption and production (SDG 12), and the global partnership for sustainable development (SDG 17). Furthermore, via one of the direct consequences, eye health services probably have indirect effects on a number of SDGs. Lastly, there

are also other conceivable connections to other SDGs. This is a call to action for campaigners, scientists, legislators, and healthcare professionals to guarantee that everyone has access to good health and vision.

Evolving Landscape of Optometry in a Changing World:

The majority of nations worldwide pledged to support the sustainable development objectives in 2015 during the United Nations (UN) Sustainable Development Summit (SDGs). UN member states strive to meet 169 of the 17 SDGs' 232 indicators and 169 targets by 2030. ⁽¹⁾ UN member states are required to use the SDGs as a framework to direct the development of national and international policy. The SDGs expand upon the Millennium Development Goals. With a goal for global transformation that includes the progress of economic, health, education, equality, social, and environmental challenges, the SDGs are comprehensive and far-reaching. The SDGs are all related to one another; for instance, enhancing health is correlated with eradicating poverty, lowering inequality, and boosting the economy. ⁽²⁾ They created a model to conceptualize how better eye health contributes to the achievement of certain SDGs, which served as the basis for our review. ⁽³⁾ Since improved eye health falls under the purview of "SDG 3 Health and Wellbeing," we have represented SDG 3 as such in the model. The SDGs pertaining to peace, cooperation, and the environment were taken into consideration as overarching topics.

This acknowledge that there may be reciprocal linkages in some cases between eye health and the SDGs. For instance, SDG 2's reduction of hunger lowers the risk of malnutrition-related eye disease, which enhances eye health; on the other hand, enhanced eye health lowers the risk of poverty, which in turn reduces hunger (SDG 2). For the sake of this assessment, however, we are concentrating on how better eye health might support other SDGs. According to the most recent estimates, 43 million individuals worldwide are blind and another 596 million people have distance visual impairment as of 2020. The majority of this visual impairment is treatable or could have been avoided. Untreated near vision impairment affects an additional 510 million individuals. ⁽⁴⁾ Low- and middle-income nations account for about 83% of cases of vision impairment. It is frequently concentrated in underprivileged populations within nations. ⁽⁵⁾ Poor eye health impacts individuals at every stage of life, poses a significant threat to public health, and significantly impedes sustainable development. The global

prevalence of blindness (age-standardized) decreased from 0.60 percent in 1990 to 0.47 percent in 2010, per the 2010 Global Burden of Disease (GBD) research.

The Sustainable Development Goals are a reflection of the multifaceted perspective of poverty (SDGs). These thoroughly cover the economic, social, and environmental aspects of sustainable development and were adopted by the UN General Assembly in September 2015. The commitment to "leave no one behind" and addressing the fundamental problem of inequality are prominent themes. The three main tenets of the World Health Organization's Universal Eye Health: A Global Action Plan 2014–2019⁽⁶⁾ are human rights, universal access and equity, and the empowerment of those who are visually impaired. Building robust infrastructure, advancing inclusive and sustainable industrialization, and stimulating innovation have been the goals of Sustainable Development Goals (SDG 9): Industry, Innovation, and Infrastructure.⁽⁷⁾

Understanding Diverse Populations and Future Trends:

According to the most recent estimates, 43 million individuals worldwide are blind and another 596 million people have distance visual impairment as of 2020. The majority of this visual impairment is treatable or could have been avoided. Untreated near vision impairment affects an additional 510 million individuals.⁽⁴⁾ Low- and middle-income nations account for about 83% of cases of vision impairment. It is frequently concentrated in underprivileged populations within nations.⁽⁵⁾ The European Association for Research on Myopia has been founded. It incorporates a working network that attempts to pool the knowledge and experience of several dozen specialists from seven European nations in order to create laws and guidelines that may be utilized to stop children's myopia from growing more and more.⁽⁸⁾ Children should be screened for refractive error and visual impairment, according to the American Association for Pediatric Ophthalmology and Strabismus (AAPOS). They propose pediatric ophthalmology specialists to handle pediatric eye problems and urge trained volunteers and optometrists to conduct checks. A workshop on working tirelessly to mandate childhood vision and refractive error tests in every state was held during the 2005 AAPOS Annual Meeting.⁽⁹⁾

This review's objective is to provide an overview of the type and volume of published research that shows the connection between the SDGs' advancement and better eye health. We view enhanced eye health as including all available measures for treatment, prevention, promotion, and rehabilitation.⁽²⁾ Enhancing vision is just one aspect of bettering eye health; other goals include lowering morbidity (such as pain), increasing wellbeing, and minimizing impairment. We wanted to identify and map the available evidence, which we expect to be heterogeneous, therefore we decided to do a scoping review instead of using an alternate evidence synthesis approach.⁽¹⁰⁾ Two categories of assistive technology exist for people with visual impairments: those that employ touch or sound in addition to other senses, and those that improve residual imagination and vision. This state-of-the-art study sought to assess the attention, utilization, and barriers to using assistive technology among younger visually impaired individuals visiting a low vision rehabilitation facility in a tertiary eye care center in New Delhi. For younger people with visual impairments, the examination will contribute to the improvement of low vision and visible rehabilitation programs.

	SDG 3: Better health & wellbein g	SDG 4: Quality educatio n	SDG 9: Industry, innovation & infrastructu re	SDG 10: Reduced inequalit y	SDG 12: Responsibl e consumpti on & production	SDG 17: Global partnershi p
Cataract surgery	Yes		Yes			
Free	Yes	Yes	Yes	Yes	Yes	

spectacles						
Specialized schools	Yes	Yes				Yes
Low-cost eye services	Yes	Yes	Yes	Yes	Yes	
Regular eye check-ups	Yes	Yes	Yes			

Table 1: SDGs Contributing in Eye Health

Beyond Spectacles: Innovative Tools for Rehabilitation and Enhancement:

AI is quickly becoming a vital tool in ophthalmology as it may be used in medical practice to help with high-decision photo functions, hence lowering the frequency of diagnostic errors. This technology can be used to advance the installation of telemedicine detection programs and advance medical and inventive knowledge due to its capacity to realize distinct illness styles. ⁽¹¹⁾ These days, artificial intelligence (AI) is defined as human intellect acquired through a laptop or computer using a certain technique. It is generated by robotics, reasoning, artificial intelligence, professional systems, automated mastery, scheduling, deep learning, robotics, laptop vision, and ordinary machine learning. ⁽¹²⁾

The application of artificial intelligence to the prognosis of keratoconus and corneal ectasia is still a young and understudied area. Thanks to advancements in laptop structures, the range of studies increased significantly in 2018. AI will improve ophthalmological care in hospitals and first-rate care facilities, as well as the prognosis and treatment of eye diseases. ⁽¹³⁾ Optometrists express optimism over the application of AI in eye care, and their desire to include AI into medical practice has increased since the COVID-19 pandemic began. ⁽¹⁴⁾

According to the most recent estimates, 43 million individuals worldwide are blind and another 596 million people have distance visual impairment as of 2020. The majority of this visual impairment is treatable or could have been avoided. Untreated near vision impairment affects an additional 510 million individuals. ⁽⁴⁾ Low- and middle-income nations account for about 83% of cases of vision impairment. It is frequently concentrated in underprivileged populations within nations. ⁽⁵⁾ Patients in underserved rural areas in need of cutting-edge specialty care have been directed to tele-ophthalmology; however, other programs, such as telementoring, have also been employed. Price control is a significant challenge for some populations, and telemedicine offers a way around it. Tele-ophthalmology can be carried out using hybrid approaches, save-and-forward mode, or real-time methods. A slit light, retinal digicam, direct or indirect ophthalmoscope, or any other peripheral can be used for tele-ophthalmology with the necessary modifications. Applications for teleophthalmology include low imaginative and prescient consultation, glaucoma screening, anterior segment imaging, telementoring, and the detection, screening, and diagnosis of diabetic retinopathy. ⁽¹⁵⁾

With the SDGs emphasizing the inclusion of the world's population, it is imperative that AT be implemented to keep some populations particularly the elderly and those with disabilities from being marginalized and experiencing low health and quality of life. In addition, when AT is not available for those who need it, there is a higher chance of functional decline and the terrible effects of illnesses and impairments on people, their families, and society as a whole. ⁽¹⁶⁾ The advantages of assistive technology (AT) for those with disabilities have been amply demonstrated, and its effects have been examined in a variety of age groups and functional ability levels. It has been demonstrated that assistive technology (AT) can enhance a variety of skills,

including literacy, mobility, self-care, functional independence, leisure activities, and everyday life tasks.⁽¹⁷⁾

Rehabilitation Strategies for Future-Proofing Vision:

This postulated that the provision of eye health services can contribute to the development of certain SDGs by improving vision and functional capacity. All interventions aimed at enhancing eye health are included in our definition of eye health services, which includes promotion, prevention, treatment, and rehabilitation. There may be a reciprocal relationship between the SDGs and eye health; however, in this case, our main focus is on the potential effects of enhanced eye health services on the SDGs, rather than the potential effects of advancements in SDG-related fields on eye health. This highlight the primary channels via which services enhancing eye health contribute to the achievement of particular SDGs and provide a summary of the type and volume of published evidence supporting this claim.⁽¹⁸⁾

Screening is essential and crucial since refractive error is a significant visual issue in youngsters. Routine screening programs for refractive errors and visual acuity have been implemented in many industrialized nations, both as part of the government health service system and as a stand-alone business. Vision screening is required in Sweden for preschoolers and is repeated at the ages of seven and ten. There is now a European Association for Myopia Research. It incorporates a working network that attempts to pool the knowledge and experience of several dozen specialists from seven European nations in order to create laws and guidelines that may be utilized to stop children's myopia from growing more and more.⁽⁸⁾

Partnerships are more important than ever in our job today and provide many benefits. Devoted individuals from various groups and professions join forces to help those in need all across the world regain their vision. They are pursuing our mission to address the worldwide vision crisis with all hands on deck thanks to our unmatched network of over 2,500 NGOs and governments, corporate and foundation contributors that provide financial assistance, and top optical companies that help ensure we have high-quality glasses.

Shaping the Future of Optometry: A Sustainable and Equitable Vision:

The majority of the visual damage is treatable or might have been avoided. A serious public health concern, impaired eye health affects people at all stages of life and significantly impedes sustainable development.⁽¹⁹⁾ Because the SDGs emphasize and advocate for the allocation of government resources and foster international cooperation for development, eye health is closely related to the SDGs framework. The SDGs' greater influence on eye health will come from their reduction of inequality and poverty.⁽²⁰⁾ In order to ensure that no one is left behind in the achievement of the SDGs, it is imperative to prevent inequality that is the result of interventions. One strategy to lessen inequality is to provide services to those who stand to benefit the most. Proportionate universalism, which combines universal and targeted approaches and aims to improve health for everyone while targeting underserved groups so that the degree of health improvement is proportionate to the level of disadvantage, is another promising strategy to promote equity in the pursuit of the SDGs. Future research and policy priorities might focus on issues like uneven regional economic growth, the rural environment, diabetes, UV light exposure, poor quality eye care services, or gender disparities in access to diagnostic and therapeutic medical care.⁽²¹⁾

To "strengthen the means of implementation and revitalize the global partnership for sustainable development," according to UN Sustainable Development Goal 17. The UN also declares that cooperation is necessary if the global goals are to be achieved. To guarantee creative technical growth, equitable trade, and market access particularly for poor nations international investments and assistance are required. They must be cooperative above all else, supportive, sympathetic, creative, and passionate in order to create a better society. In our job, partnerships are more important than ever and provide several benefits. "Respect each country's policy space and leadership to

formulate and implement policies for poverty eradication and sustainable development" is one of the goals for reaching SDG 17. This is made possible by the work that Restoring Vision does in collaboration with governments to create long-term distribution networks for eyewear and vision services. ⁽²²⁾

Expand the impact of blindness prevention work in the region through COECSA activities. Strengthen the global partnership for sustainable development, supplemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology, and financial resources to support the achievement of the SDG in all countries, particularly developing countries. To lower poverty and visual impairment, all governments, communities, and stakeholders must put up great effort in achieving the SDGs. ⁽²⁰⁾ Unsustainable procurement practices, inadequate waste management, and 4.4% of global emissions are attributable to the healthcare sector. Inadequate climate policies lead to healthcare-acquired illnesses and have significant negative effects on the environment and society. The environmental impact of eye health services is projected to rise in the absence of significant modifications to current practices. ⁽²²⁾ Some ophthalmologists think that "global environmental issues are mainly irrelevant at that acute point in time" when deciding on a patient's course of therapy. ⁽²³⁾

Conclusion: A Vision for the Future of Optometry:

The Sustainable Development Goals of the United Nations set forth objectives to be fulfilled by 2030 in a number of development sectors. To solve these issues, many strategies may be employed, such as government-funded public services, initiatives sponsored by philanthropic and donor-funded groups, or private sector solutions. This study have demonstrated a number of business concepts in this that have been applied to a number of UN SDGs. One of the benefits of using entrepreneurial solutions is that they don't depend on grants or public money. They are frequently developed more effectively than public services, and their financial viability must be taken into account from the beginning when designing the business plan. In order to meet their overall business goals, entrepreneurs must also take growth and scaling into account. By 2030, the UN SDGs are expected to be accomplished. Even though some of the goals have seen tremendous development to date, much more work has to be done to meet the targets. When properly funded and scaled, entrepreneurial strategies have the capacity to accomplish these objectives. It is crucial that the entrepreneurs striving to achieve these objectives have the assistance required for their significant businesses to be successful. The necessity for varied stakeholders to collaborate in order to guarantee that everyone's interests and voices especially those of marginalized communities are taken into consideration and met. It highlights how crucial open governance frameworks, common standards, and reciprocal accountability are to fostering long-term performance and fostering confidence. It is a call to action for advocates, researchers, policy makers, and medical practitioners to ensure that everyone has access to healthy eyesight and overall wellbeing.

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