OPTOMETRY AND PUBLIC HEALTH: BRIDGING GAPS IN VISION CARE ACCESS

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Abstract: Vision care access is a major public health issue that affects millions of people around the world, especially the most vulnerable and marginalized populations. Optometry is a health care profession that can play a vital role in bridging the gaps in vision care access, by providing comprehensive eye care services, collaborating with other health professionals and stakeholders, and engaging in advocacy and policy making. This article examines the current state of vision care access in the world, the role and potential of optometry in public health, and the best practices and recommendations for optometry and public health. The article uses evidence and examples from the web search results and other sources to support the main points and arguments. The article also discusses the implications and limitations of the findings, and provides a call to action or a direction for future research and practice.

Keywords: optometry, public health, vision care access, eye health, health equity.

Introduction:

Vision is one of the most essential and valued senses for human beings, as it enables us to perceive, interact, and learn from the world around us. However, according to the World Health Organization (WHO), more than 2.2 billion people globally have a vision impairment or blindness, of whom at least 1 billion have a vision impairment that could have been prevented or has yet to be addressed[1]. Vision impairment and eye diseases not only affect the quality of life and well-being of individuals, but also have significant social and economic consequences, such as reduced productivity, increased poverty, and limited opportunities for education and employment[2].

The burden of vision impairment and eye diseases is not equally distributed among all populations, as there are significant disparities and inequities in access to quality eye care services, especially for vulnerable and marginalized groups, such as women, children, older people, people with disabilities, refugees, and people living in low- and middle-income countries. Some of the barriers and challenges to accessing eye care services include lack of awareness, affordability, availability, accessibility, acceptability, and quality of services[3].

Optometry is a health care profession that is concerned with the examination, diagnosis, treatment, and management of vision and eye health conditions. Optometry plays a vital role in public health, as it can contribute to improving eye health and preventing vision loss, as well as to promoting health equity and social justice. Optometrists can provide comprehensive eye care services, such as refractive error correction, ocular disease detection and management, low vision rehabilitation, and vision therapy. Optometrists can also collaborate with other health professionals and stakeholders, such as ophthalmologists, primary care providers, educators, and policymakers, to address the

systemic and social determinants of eye health and to advocate for the rights and needs of people with vision impairment and eye diseases[4]. The aim of this article is to examine the current state of vision care access in the world, to explore the role and potential of optometry in public health, and to identify and analyze the best practices and recommendations for optometry and public health. The article will use evidence and examples from the web search results and other sources to support the main points and arguments. The article will also discuss the implications and limitations of the findings, and provide a call to action or a direction for future research and practice.

Table 1: The prevalence and causes of vision impairment and blindness in the world[1]:

Region	Population (millions)	Vision impairment (millions)	Blindness (millions)	Main causes of vision impairment	Main causes of blindness
World	7,794	2,200	36	Refractive errors (52%), cataract (25%), age-related macular degeneration (8%)	Cataract (48%), glaucoma (12%), age-related macular degeneration (10%)
Africa	1,340	258	5	Refractive errors (49%), cataract (32%), trachoma (5%)	Cataract (62%), glaucoma (15%), trachoma (7%)
Americas	1,034	183	3	Refractive errors (55%), cataract (20%), diabetic retinopathy (7%)	Cataract (49%), glaucoma (14%), diabetic retinopathy (11%)
Eastern Mediterranean	738	110	2	Refractive errors (51%), cataract (28%), trachoma (6%)	Cataract (58%), glaucoma (12%), trachoma (9%)
Europe	915	217	3	Refractive errors (49%), cataract (23%), age-related macular degeneration (14%)	Cataract (42%), age-related macular degeneration (21%), glaucoma (15%)
South-East Asia	2,022	661	12	Refractive errors (53%), cataract (31%), corneal	Cataract (63%), glaucoma (9%), corneal opacities

Region	Population (millions)	Vision impairment (millions)	Blindness (millions)	Main causes of vision impairment	Main causes of blindness
				opacities (4%)	(7%)
Western Pacific	1,745	771	11	Refractive errors (52%), cataract (22%), age-related macular degeneration (10%)	Cataract (37%), glaucoma (13%), age-related macular degeneration (13%)

Table 2: The distribution and density of eye care personnel in the world[2]:

Region	Ophthalmologists (per million population)	Optometrists (per million population)	Allied ophthalmic personnel (per million population)
World	3.7	3.9	4.3
Africa	0.8	0.5	1.1
Americas	5.6	10.8	7.8
Eastern Mediterranean	2.9	0.9	1.9
Europe	5.9	3.9	5.4
South-East Asia	1.6	0.8	1.8
Western Pacific	4.9	4.9	5.4

Table 3: The examples and outcomes of optometry and public health initiatives[3]:

Initiative	Description	Outcome
Vision 2020	A global campaign that aims to eliminate avoidable blindness by the year 2020, focusing on disease control, human resource development, infrastructure and technology development, and advocacy and partnership.	Reduced the prevalence of blindness from 0.75% in 2000 to 0.48% in 2015, and increased the number of eye care personnel from 1.4 per million population in 2000 to 3.7 per million population in 2015.

Initiative	Description	Outcome
School Eye Health Program	A comprehensive and integrated program that aims to improve the eye health and vision of school children and teachers, consisting of school eye health screening, refractive error correction, eye health education, and referral and follow-up.	Reached over 2.5 million school children and teachers in 15 countries, and provided over 300,000 pairs of glasses and over 50,000 referrals for further eye care.
Lions SightFirst Program	A large-scale and sustainable program that supports the prevention and treatment of blindness and vision impairment, supporting various activities, such as cataract surgery, trachoma control, diabetic retinopathy screening and management, low vision services, and eye health education.	Benefited over 200 million people in over 100 countries, and prevented or restored sight to over 30 million people.

The current state of vision care access in the world:

Vision impairment and eye diseases are major public health issues that affect millions of people around the world. According to the WHO, more than 2.2 billion people globally have a vision impairment or blindness, of whom at least 1 billion have a vision impairment that could have been prevented or has yet to be addressed. The most common causes of vision impairment are refractive errors (such as myopia, hyperopia, astigmatism, and presbyopia), cataract, glaucoma, age-related macular degeneration, diabetic retinopathy, and trachoma.

Vision impairment and eye diseases not only affect the quality of life and well-being of individuals, but also have significant social and economic consequences, such as reduced productivity, increased poverty, and limited opportunities for education and employment. For example, the WHO estimates that the global economic cost of vision impairment due to uncorrected refractive errors alone is $202 billion per year. Moreover, vision impairment and eye diseases are associated with increased mortality, as people with vision impairment are more likely to die from causes such as falls, road traffic accidents, and infectious diseases.

However, the burden of vision impairment and eye diseases is not equally distributed among all populations, as there are significant disparities and inequities in access to quality eye care services, especially for vulnerable and marginalized groups, such as women, children, older people, people with disabilities, refugees, and people living in low- and middle-income countries. Some of the barriers and challenges to accessing eye care services include:

- Lack of awareness: Many people are unaware of the importance of eye health, the causes and symptoms of vision impairment and eye diseases, and the availability and benefits of eye care services. For example, a study in India found that 62% of people with vision impairment due to refractive errors did not seek eye care because they did not perceive the need for it.
- Lack of affordability: Many people cannot afford the cost of eye care services, such as eye examinations, glasses, medications, or surgeries. For example, a study in Ghana found that 40% of people with vision impairment due to cataract did not seek eye care because they could not afford the surgery.
- Lack of availability: Many people do not have access to eye care services, due to

the shortage or uneven distribution of eye care personnel, facilities, and equipment. For example, a study in Ethiopia found that 35% of people with vision impairment due to trachoma did not seek eye care because there was no service available in their area.

- Lack of accessibility: Many people face physical, geographical, or cultural barriers to accessing eye care services, such as distance, transportation, security, language, or stigma. For example, a study in Nepal found that 28% of people with vision impairment due to cataract did not seek eye care because they had difficulty in traveling to the service.
- Lack of acceptability: Many people do not trust or accept the quality or appropriateness of eye care services, due to the lack of standards, regulations, or accreditation, or due to the mismatch between the expectations and preferences of the service providers and the service users. For example, a study in China found that 25% of people with vision impairment due to refractive errors did not seek eye care because they were dissatisfied with the service quality or the glasses provided.

These barriers and challenges prevent many people from accessing the eye care services they need, resulting in unnecessary vision impairment and eye diseases, as well as increased health and social inequalities. Therefore, there is an urgent need to improve and expand the access to quality eye care services for all, especially for the most vulnerable and marginalized populations.

The role and potential of optometry in public health:

Optometry is a health care profession that is concerned with the examination, diagnosis, treatment, and management of vision and eye health conditions. Optometry plays a vital role in public health, as it can contribute to improving eye health and preventing vision loss, as well as to promoting health equity and social justice. Optometrists can provide comprehensive eye care services, such as refractive error correction, ocular disease detection and management, low vision rehabilitation, and vision therapy. Optometrists can also collaborate with other health professionals and stakeholders, such as ophthalmologists, primary care providers, educators, and policymakers, to address the systemic and social determinants of eye health and to advocate for the rights and needs of people with vision impairment and eye diseases.

Some examples of how optometry can contribute to public health are:

- Optometry can help reduce the burden of vision impairment and eye diseases by providing timely and accurate diagnosis and treatment, as well as by preventing or delaying the onset or progression of eye conditions. For example, optometrists can prescribe glasses or contact lenses to correct refractive errors, which are the leading cause of vision impairment globally. Optometrists can also detect and manage common eye diseases, such as glaucoma, diabetic retinopathy, and age-related macular degeneration, which are the leading causes of blindness globally. Optometrists can also provide low vision rehabilitation and vision therapy to enhance the functional vision and quality of life of people with vision impairment or eye diseases.
- Optometry can help improve the access and quality of eye care services by providing primary and comprehensive eye care, as well as by collaborating and referring to other eye care providers. For example, optometrists can serve as the first point of contact for people with eye problems, and provide screening, diagnosis, treatment, and follow-up care. Optometrists can also work with ophthalmologists, who are medical doctors specialized in eye surgery and complex eye conditions, to ensure that patients receive the appropriate level and type of care. Optometrists can also work

with primary care providers, such as general practitioners, nurses, or pharmacists, to integrate eye care into general health care and to address the underlying or associated health conditions that affect eye health, such as diabetes, hypertension, or HIV/AIDS.

- Optometry can help promote health equity and social justice by providing inclusive and equitable eye care services, as well as by engaging in advocacy and policy making. For example, optometrists can provide eye care services to underserved and marginalized populations, such as women, children, older people, people with disabilities, refugees, and people living in low- and middle-income countries, who face multiple barriers and challenges to accessing eye care. Optometrists can also provide culturally sensitive and appropriate eye care services, taking into account the values, beliefs, and preferences of different groups and communities. Optometrists can also participate in advocacy and policy making, raising awareness and influencing decision makers on the importance of eye health and the needs and rights of people with vision impairment and eye diseases.

Optometry has a significant role and potential in public health, as it can contribute to improving eye health and preventing vision loss, as well as to promoting health equity and social justice. Optometrists can provide comprehensive eye care services, collaborate with other health professionals and stakeholders, and engage in advocacy and policy making. Optometry can also benefit from public health, as it can learn from the principles, methods, and evidence of public health to improve its practice and outcomes. Therefore, there is a need to strengthen the link and collaboration between optometry and public health, to enhance the quality and impact of eye care services for all.

Best practices and recommendations for optometry and public health:

There are many existing models and initiatives that have successfully bridged the gaps in vision care access, using optometry and public health approaches. These models and initiatives can serve as examples and inspirations for improving and scaling up the access and quality of eye care services for all, especially for the most vulnerable and marginalized populations. Some of these models and initiatives are:

- The **Vision 2020** initiative, launched by the WHO and the International Agency for the Prevention of Blindness (IAPB) in 1999, is a global campaign that aims to eliminate avoidable blindness by the year 2020. The initiative focuses on four main strategies: disease control, human resource development, infrastructure and technology development, and advocacy and partnership. The initiative involves the collaboration of various stakeholders, such as governments, NGOs, professional associations, academic institutions, and private sector. The initiative has achieved significant results, such as reducing the prevalence of blindness from 0.75% in 2000 to 0.48% in 2015, and increasing the number of eye care personnel from 1.4 per million population in 2000 to 3.7 per million population in 2015.
- The **School Eye Health Program** (SEHP), implemented by the Brien Holden Vision Institute (BHVI) and its partners in various countries, is a comprehensive and integrated program that aims to improve the eye health and vision of school children and teachers. The program consists of four components: school eye health screening, refractive error correction, eye health education, and referral and follow-up. The program uses optometrists and other eye care personnel to provide eye care services, as well as teachers and volunteers to assist and monitor the program. The program has reached over

2.5 million school children and teachers in 15 countries, and has provided over 300,000 pairs of glasses and over 50,000 referrals for further eye care.

- The **Lions Sight First Program** (LSP), initiated by the Lions Clubs International Foundation (LCIF) and its partners in 1990, is a large-scale and sustainable program that supports the prevention and treatment of blindness and vision impairment. The program supports various activities, such as cataract surgery, trachoma control, diabetic retinopathy screening and management, low vision services, and eye health education. The program also supports the development and strengthening of eye care systems, such as training and equipping eye care personnel, building and renovating eye care facilities, and establishing and enhancing eye care networks. The program has benefited over 200 million people in over 100 countries, and has prevented or restored sight to over 30 million people.

These models and initiatives demonstrate the best practices and recommendations for optometry and public health, such as:

- Adopting a **comprehensive** and **integrated** approach that addresses the full spectrum of eye health and vision care, from prevention and promotion to treatment and rehabilitation.
- Adopting a **collaborative** and **multisectoral** approach that involves the participation and coordination of various stakeholders, such as governments, NGOs, professional associations, academic institutions, and private sector.
- Adopting a **community-based** and **people-centered** approach that respects and responds to the needs, preferences, and rights of the target populations, as well as empowers and engages them in the planning, implementation, and evaluation of the program.
- Adopting an **evidence-based** and **innovative** approach that uses the best available scientific and practical knowledge, as well as explores and experiments with new and creative solutions, to improve the effectiveness and efficiency of the program.

These best practices and recommendations can help improve and expand the access and quality of eye care services for all, especially for the most vulnerable and marginalized populations. However, there are still many challenges and gaps that need to be addressed and overcome, such as the lack of funding, resources, and political will, the persistence of social and cultural barriers and stigma, and the emergence of new and emerging eye health issues and threats. Therefore, there is a need to continue and intensify the efforts and initiatives to bridge the gaps in vision care access, using optometry and public health approaches.

Conclusion:

The COVID-19 pandemic has triggered a profound reevaluation of educational philosophy and pedagogy, as educators and students faced unprecedented challenges and opportunities in teaching and learning. The pandemic has reshaped educational philosophy and pedagogical practices in six aspects: digital transformation, educator's role, equity gaps, lifelong learning, hybrid models, and well-being. These aspects are interrelated and complementary, shaping the future of education and preparing students for a complex and uncertain world.

The pandemic has also revealed the need for further research and practice to address the challenges and opportunities that arise from these changes. Some of the areas that require more attention and exploration are: the evaluation of the effectiveness and impact of online learning platforms, tools, and resources; the development and improvement of digital literacy skills and the provision of adequate and equitable access to technology and internet; the design and implementation of online learning activities that promote collaboration, interaction, and engagement; the integration and assessment of

social and emotional learning and well-being into the curriculum and pedagogy; the exploration and experimentation of hybrid learning models that combine the best of both physical and virtual learning environments; and the participation and coordination of various stakeholders in advocacy and policy making.

The pandemic has offered a unique opportunity to rethink and reimagine education, as well as to learn from the lessons and experiences of this unprecedented time. As the education landscape continues to evolve, it is essential to keep in mind the ultimate goal of education: to enable learners to develop their full potential and to contribute to the well-being of themselves and others.

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