Reaching the last mile in eye care

Primary care provides a place to which people can bring a wide range of health problems – it is not acceptable that in low-income countries primary care would only deal with a few priority diseases. *World Health Report 2008*.

On the eve of 2019 World Sight Day (WSD), the World Health Organization (WHO) released the World Report on Vision (WRV).[1] This report is based on three earlier WHO resolutions – primary eye care, universal health coverage, and sustainable development goals (SDG).[2-4] Primary care, often the first contact for patients, provides appropriate, accessible, and affordable care that meets patients' eye care needs in a comprehensive and competent manner.[5,6] Universal health coverage (UHC) includes equity, quality, and protection from financial risk.[7] The SDG 3 is exclusively focused on healthy lives and promotion of wellbeing for all at all ages.[8] The concept of primary health is at least four decades old when the WHO convened the first meeting on primary health in 1978 and nudged the member states to work with an ambitious goal of *Health for All by 2000*.[9] With this, medicine adopted a more "social" approach and the health was redefined as "a state of complete physical, mental, and social well being and not merely the absence of diseases or infirmity."

The Vision Loss Expert Group (VLEG) estimated that there were 253 million people either blind (36 million) or moderate to severe visually impaired (MSVI 217 million) in 2015.[10] Efforts in the last four decades and additional advocacy in the last two decades with formation of the International Agency for Prevention of Blindness (IAPB) and VISION 2020: Right to Sight, the magnitude of blindness and visual impairment has reduced but not the number of people blind or visually impaired. The VLEG reported a decrease in global blindness from 0.75% in 1990 to 0.48% in 2015 and the global MSVI decreased from 3.83% to 2.90% though, the absolute number of blind people increased from 30.6 million in 1990 to 36.0 million in 2015 (17.6% increase) and the number of people with MSVI increased from 159.9 million in 1990 to 216.6 million in 2015 (35.5% increase).[10] This increase was mostly attributed to ageing population.[11] The VLEG also reported an unequal distribution of blind and visually impaired people in the world. South Asia consisting of eight countries (Afghanistan, Bangladesh, Bhutan, Maldives, Nepal, India, Pakistan, Sri Lanka) had the highest magnitude and number of people blind or with MSVI (magnitude: global 3.38%, South Asia 5.74%; blind: 11.76 million people, 32.6% of world; MSVI: 61.19 million people, 38.3% of world).[12] The problem is compounded due to inadequate eye health workforce and their unequal distribution between the urban and rural population. It is further increased because of difficult accessibility and affordability problems.[13] One of the solutions lies in the delivery of care through the eye health pyramid – primary, secondary, tertiary, and advanced tertiary – appropriate for the location.[14] This division of care is both population and function based that ensures accessibility, affordability, and promotes equity. The proposed four levels in the WRV include eye care delivery at the community (delivered at homes, schools and other community settings), at the primary health centre (integrated and coordinated in primary care), at the secondary health centre (integrated and coordinated in hospital in- and out-patient settings), and at the tertiary health centre (specialized care).

The World Report on Vision recognizes that one of the solutions lies in integrated, people-centred eye care (IPCEC).[1] There are two important words- *integrated* and *people-centred*. "Integrated" is when two or more things are combined to become more effective.[15] "People-centred" approach is the one that improves self-reliance, social justice, and participatory decision-making.[1] The framework of this approach is derived from the WHO global strategy on "integrated people-centred health services" (IPCHS) 2016–2026 (World Health Assembly resolution, WHA 69.24)[16] The stated vision of IPCHS is "a future in which all people have access to health services that are provided in a way that responds to their life course needs and preferences, are coordinated across the continuum of care and are safe, effective, timely, efficient and of acceptable quality."[14] The WRV adopted four of the five suggested strategies of IPCHS; these are: (1) empowering and engaging people and communities; (2) reorienting the model of care; (3) coordinating services within and across sectors; and (4) creating an enabling environment. *Empowering and engaging* fundamentally is improving the health seeking behavior of people and active participation in decision-making. *Reorienting model of care* is essentially prioritizing primary and community care that is holistic and comprehensive, and also includes health promotion and prevention. *Coordinating services* are coordinating care around the needs and preferences of people at every level of care. An *enabling environment* is created when different stakeholders are brought together to make transformational changes that shift the focus of health from *cure* to *wellness* and the delivery of care from *provider* to *receiver*.

The Government of India has demonstrated an intention to delivering universal health coverage and primary care though Health and Wellness Center (HWC).[17] The Government announced the establishment of 150,000 HWCs by transforming the existing Sub Health and Primary Health Centres that covers 3000 to 5000 people. The HWC has all the components of IPCEC including the referral system and continuum of care. The ophthalmic care at the community level includes screening for blindness and refractive errors in adults, counseling, and support for care for neonates and infants through mobile health team. The ophthalmic care at the primary health centre includes screening for blindness and refractive error, identification, and treatment of common eye disorders (conjunctivitis, xeropthalmia, trachoma, etc.) and screening for cataract. The ophthalmic care in the referral centre includes medical and surgical management all disorders such as cataract, glaucoma, corneal ulcers, and diabetic retinopathy.

This is a novel concept and should help Indian health delivery system to be both people centric and universal. In order to effectively provide primary health care to the entire 1.34 billion population[18] and linking it to the essential referral system, India would require 268,000 HWCs (each serving 5000 people), and 26,800 Vision Centers (each serving 50,000 people) linking to 2680 Secondary centers (each serving 500,000 people).[19] This translates to at least 366 HWCs, 36 Vision Centers and 3–4 Secondary Eye Centers in each district (In 2019 there are 732 districts in India)[20] These centers would offer care for

refractive error, cataract surgery, in addition to primary care for common eye ailments (conjunctivitis, corneal ulcer), thus addressing nearly 84% of blindness and visual impairment (National survey 2015–2019, unpublished). Accordingly, India needs a very large health workforce to serve in the village vision complex (VVC, comprising of the community, primary and secondary level eye care). These eye care personnel would need different knowledge base, skill mix, and motivation; and they must be authorized by appropriate regulatory policy. Driving correction of refractive error and surgery of cataract through primary and secondary centres, respectively, has been time tested in India and is currently practiced with a large degree of efficiency (2016–2017 performance: cataract surgery: 6.48 million, 98.2% of target; free spectacles to school children: 757,906, 84.2% of target).[21] Could a similar system be developed for two other diseases, the retinopathy of prematurity (ROP) and diabetic retinopathy (DR)?

ROP, a disease of premature (<31 weeks), underweight (<1000 gms) babies, and often managed with inadequate supplemental oxygen, is an important cause of blindness in children worldwide. The largest numbers of affected children live in many low- and middle-income countries (LMIC) in South East Asia[22]; because of suboptimal neonatal care it is not unusual that even larger babies (1500–2000 gms) are affected in LMICs.[22,23] The essential sequential steps in ROP care are awareness creation in the community and in the non-ophthalmic professionals (neonatologists and neonatal nurses), ophthalmologist examination of babies in the neonatal units, and finally appropriate treatment by the specialist ophthalmologist. Two models of ROP care have been tested in India; these are: (a) screening in the neonatal care units within 30 days of birth,[24] and (b) tele-screening using non-physician person specifically trained for the purpose.[25] These efforts have largely remained in non-Governmental care. Infrastructure development and health personnel training in ophthalmic and neonatal care could create a sustainable model at public health system in India.[26,27]

Diabetes is a global public health problem. Studies in India indicate that as much as a third person with type 2 diabetes mellitus (T2DM) could develop DR and as much as a third person with DR could develop sight threatening DR (STDR).[28] By constituting the National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular diseases and Stroke (NPCDCS) in 2010, the Government of India recognizes that these non-communicable diseases (NCDs) account for near 60% of all deaths, and cause considerable loss in productivity. Under this program, NCD clinics are established in the district and community health centers (CHCs) to provide services for early diagnosis, treatment, and follow-up care to people with DM.[29] Currently, these centres do not include vision screening and DR care. Opportunistic screening, fundus photograph-based confirmation of retinopathy, and telemedicine-based remote screening would help reach people in both rural and urban India.[30,31]

Artificial intelligence (AI) using machine and deep learning for detecting ophthalmic disorders is the new tool that could empower people and to some extent overcome the deficient skilled workforce and geographical distances. Grading people with DR from fundus photographs requiring immediate or deferred referral for further care to ophthalmologists is already in clinical practice in one form or other.[32] Research in AI has now extended beyond the fundus photograph to optical coherence tomography and visual field so that it would encompass several other ophthalmic disorders including ROP.[33] While additional research is needed to resolve ethical issues and medico legal implications, the future of AI with deep and machine learning holds promise.

Many non-government organizations (NGOs) deliver primary eye care through stand-alone vision centers in India. A vertical eye care program in India has largely helped achieve a higher target though, an integration with the general health system at the primary level (PHCs and CHCs) would probably help attain universal eye health coverage faster. Dr Tedros A Ghebreyesus, Director-General, WHO, writing on the WRV, noted that we no longer have much choice but to take on this challenge. It is time to make sure that as many people as possible in all countries can see as well as current health technologies and health systems allow.[1]

An effective UHC needs a firm political will, a conductive government policy, and matching national programs. The characteristics essential to quality health-care services include being effective, safe, and people centered, so also being timely, equitable, integrated, and efficient.[1] The UHC could be measured by two key performance indicators: (a) proportion of a population that can access essential quality health services, and (b) proportion of the population that spends a large amount of household income on health. There is a global commitment of 193-member state of the United Nations to achieve UHC by 2030.[34] All partners recognize that achieving UHC requires coordinated efforts across multiple sectors and development of strong, sustainable, and equitable health systems that help to improve health outcomes. This is an opportunity the eye health providers would like to seize.

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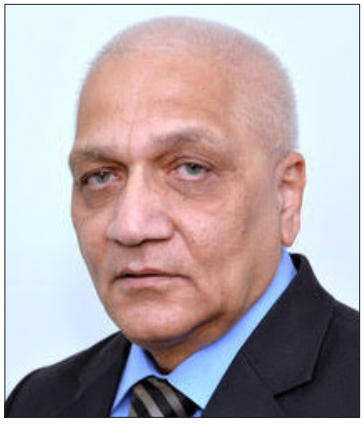

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