UHC for the Silver Dividend: Building Health Systems for an Ageing India

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Introduction

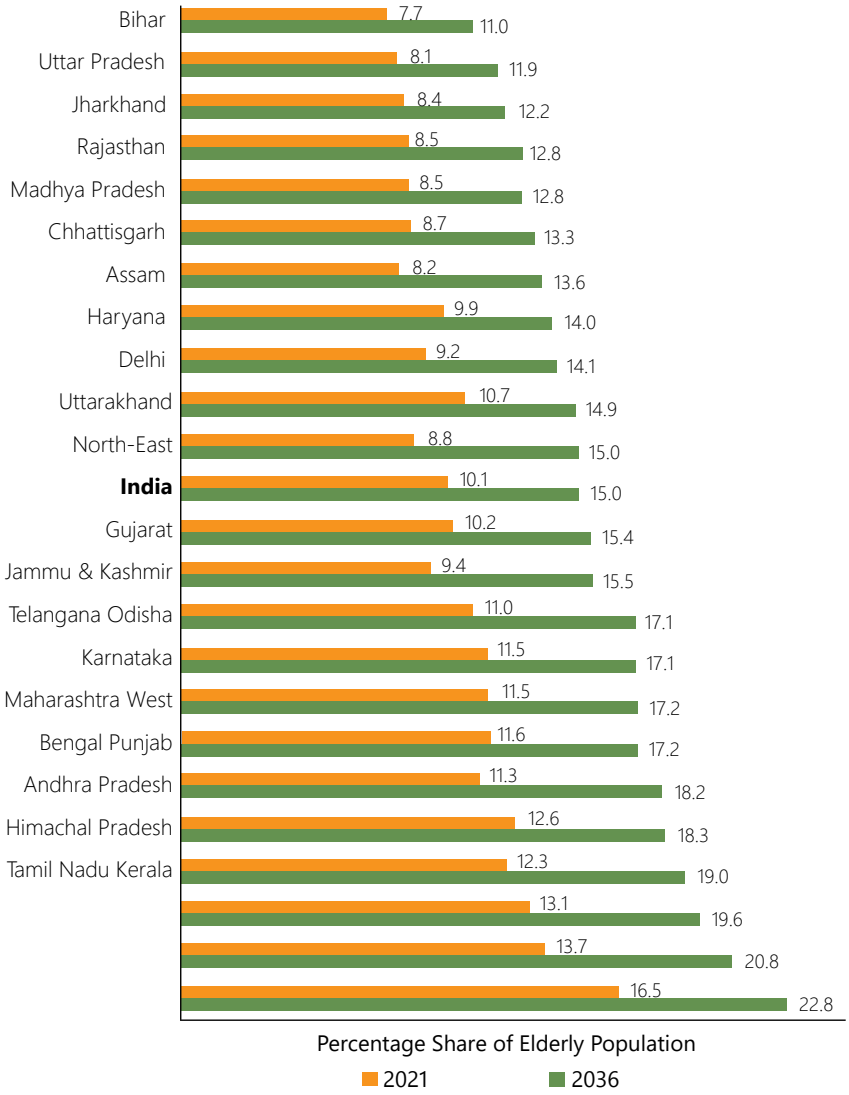
India stands at a critical demographic crossroads, marked by the momentum of a youthful population and the steady expansion of its elderly cohort. As the world's largest pool of young individuals matures into a workforce in an increasingly digital economy, India can leverage the strength of this demographic group and reap the potential dividend for sustained economic growth and social progress. At the same time, however, this transformation is occurring alongside an ageing population that is projected to reach 193 million by 2030, consisting of 13 percent of the total population.[1] These twin trends demonstrate the need for a health system that is robust, equitable, and responsive to the needs of both the young and the elderly. Universal Health Coverage (UHC)[a] thus becomes a pillar in ensuring that healthcare systems can effectively cater to a diverse population, mitigating disparities and maximising the contributions of all age groups to national development.

The transition towards an ageing society presents challenges but also opens pathways to tap into the emerging "silver dividend". A healthier, more engaged elderly population can remain economically and socially productive through extended workforce participation, the provision of care, and mentorship. Realising this potential, however, requires a shift in healthcare planning—one that integrates preventive care, digital health solutions, long-term care strategies, and financial protection mechanisms. Current initiatives such as Ayushman Bharat, launched in 2018, and the National Programme for Healthcare of the Elderly (NPHCE, 2011), provide a foundation, but gaps persist in geriatric care, mental health, and financial security. To build a resilient, inclusive health system that benefits from both its young and elderly populations, India must adopt a forward-looking strategy that balances immediate healthcare needs with long-term demographic preparedness.

a 'Universal Health Coverage', as defined by the World Health Organization, means "that all people have access to the full range of quality health services they need, when and where they need them, without financial hardship. It covers the full continuum of essential health services, from health promotion to prevention, treatment, rehabilitation and palliative care."

At the state level, India displays stark variations in population age structures, as depicted in Figure 1. This demographic shift presents challenges, including a rising old-age dependency ratio (Figure 2) and an increased healthcare burden. Yet, it also offers the potential for a silver dividend, wherein a healthier, more active ageing population contributes to society and the economy.

Figure 1: Share of the Elderly Population, India and States (2021 and 2036)

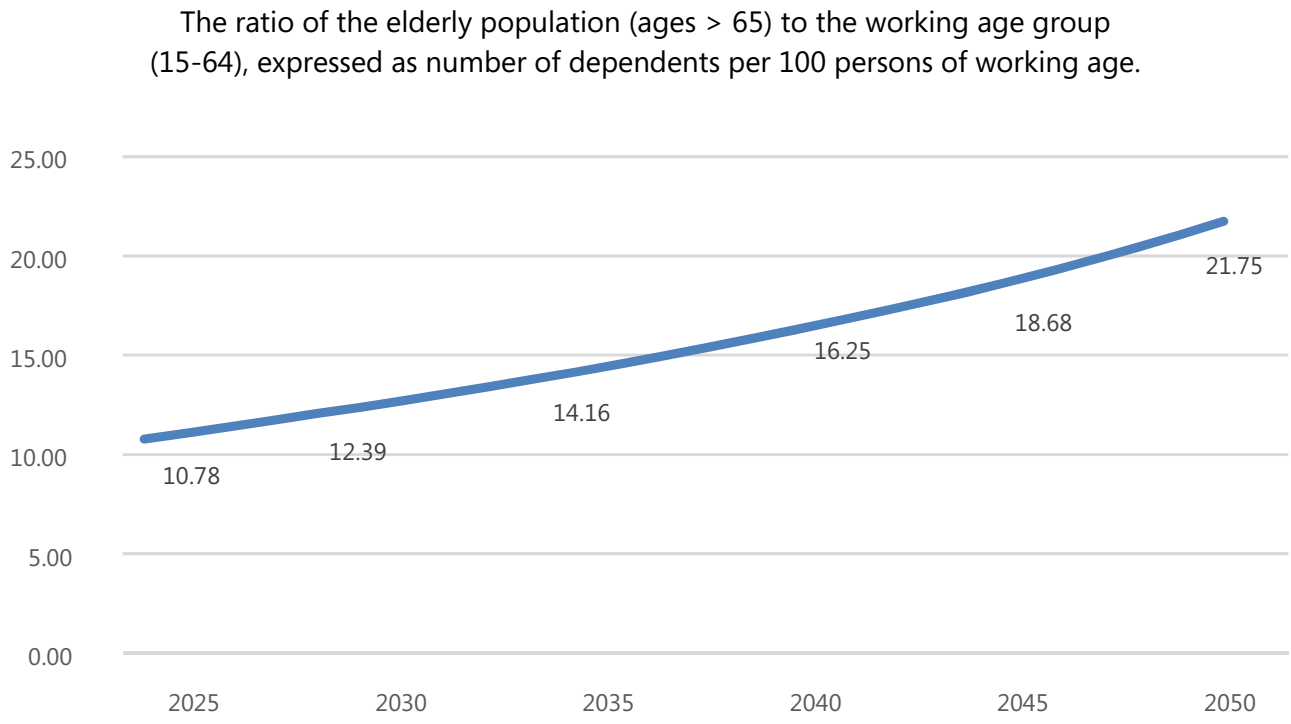


Source: UNFPA, 2023[2]

As India progresses towards its long-term development goals under *Viksit Bharat*,[b] supporting the ageing population and harnessing their potential can drive inclusive growth and economic sustainability. To support the rising proportion of the elderly, the Indian health system must be prepared to promote equity, sustainability, and healthier ageing. Health in old age is influenced by multiple economic, social, psychological, and physiological factors that affect well-being and quality of life, often increasing psychological distress and vulnerability.

UHC is central to harnessing the silver dividend. At its core, UHC ensures that everyone can access the health services they need, when and where they need them, without financial hardship. While the government has promoted healthier ageing, progress remains limited in addressing key concerns of the elderly—such as mental health, social connectivity, productive engagement, and the development of consumer products for the senior citizens market.

Figure 2: Old-Age Dependency Ratio Projections for India



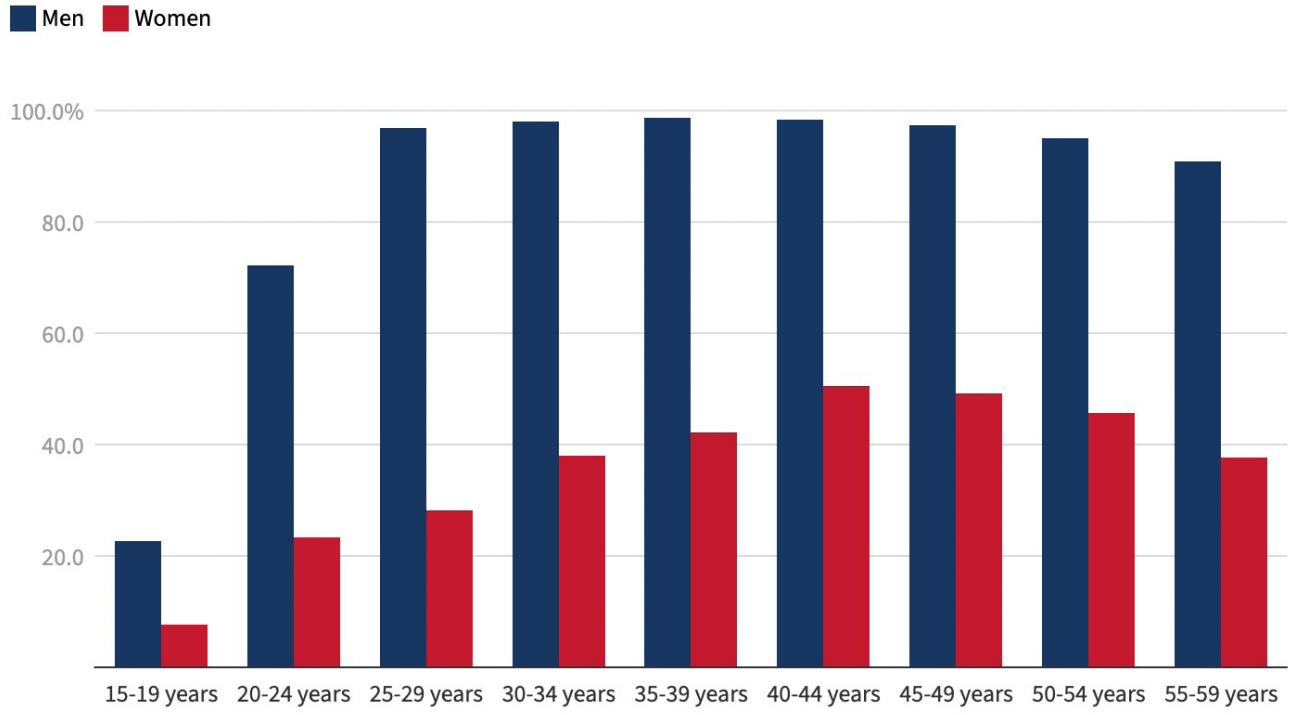
Source: Authors' own, based on UN data[3]

b 'Viksit Bharat' literally translates to 'Developed India'. Coined in the context of Viksit Bharat@2047, it is the Government of India's vision for transforming the country into a fully developed nation by its 100th year of independence in 2047.

Rethinking Age and Workforce Participation

India is often perceived as a young country, with a median age just over 28 years.[4] However, this view oversimplifies the evolving demographic reality. Historically, working age is defined as 15-59 years, and older populations are seen as dependent and non-working. These definitions, however, require re-evaluation amid shifting economic and social dynamics. In urban India, labour force participation begins to rise only after the age of 25 (Figure 3), as more young people pursue higher education.[5] Moreover, with better healthcare and longevity, 60 is no longer an appropriate threshold for old age. Simulations in multiple countries show that individuals remain capable and productive well beyond 60.

Figure 3: Labour Force Participation Rates, by Working Age Group and Gender (2022-23)



Source: Centre for Economic Data and Analysis (CEDA), Ashoka University, 2024[6]

The lack of income security heightens the vulnerability of the elderly. When employment is the primary income source, their dependence on work tends to increase with age.[7] Japan, by considering functional age alongside chronological age, has successfully leveraged its silver dividend to address both ageing-related challenges and labour shortages.[8] Redefining age thresholds for employment and retirement can help improve retirement policies, enhance workforce engagement, and promote economic inclusion for older populations.

Overlooking the non-market activities of older individuals—such as caregiving, volunteering, mentoring, and household work—undervalues their contribution to society. Rather than viewing ageing solely as a burden, societies can benefit from the experience and skills of older adults in both productive and unpaid activities.

Changing Family Structures and Social Challenges

Traditionally, elderly care in India depends on familial support, with multigenerational households providing a built-in safety net. However, changing family structures, increasing urbanisation, and migration have left many elderly isolated and vulnerable. In 2021, about 22 percent of older adults lived alone or only with a spouse, up from 9 percent in 1992.[9] Nearly 20 percent face mental health challenges—a concern highlighted during the COVID-19 pandemic, when rising elderly suicide rates underscored the declining quality of life and dignity in ageing.[10]

Moreover, the feminisation of ageing—where women outlive men but face greater financial and social hardships—is a defining feature of India's demographic landscape, demanding targeted policy responses.[11] As of 2020, the average life expectancy was 69.5 years for men and 72.2 years for women.[12] Fertility rates have also declined, especially in urban areas where they have remained below replacement level for the last 20 years.[13] Nationally, India reached replacement-level fertility in 2020, influencing workforce availability and dependency ratios. These trends necessitate a re-evaluation of long-term socio-economic planning, greater state involvement, and the adoption of market-driven solutions.

Trade-offs of Ageing

The trade-offs between an ageing population and slackening growth can be circumvented by harnessing the silver dividend. A 2023 micro-econometric analysis from Japan highlights the financial burden of functional health decline among the elderly. It is estimated that foregone wages due to functional limitations in individuals in their 60s amounted to approximately US$266 million, while long-term care costs for those above 85—driven mainly by care needs rather than medical care—were approximately US$72.7 billion.[14] The study concluded that appropriate health interventions can prevent labour market exits and reduce both medical and long-term care costs. The monetary value of improved survival outweighs the increase in health spending, showing the economic benefits of investing in preventive healthcare and wellness to sustain an active ageing population.

The United Nations Population Fund (UNFPA) has been advocating for the National Transfer Accounting (NTA),[15] a framework that examines the interplays between population and economic flows across age groups. It tracks transfers—such as pensions and family support—from the working-age population to the elderly, helping assess whether current investments can sustain an ageing population and identifying early-stage investments with long-term health benefits. This framework has been applied in over 60 countries.[16] Recently, a core group of 22 members from Indian ministries, academic institutions, and research organisations received NTA training through a UNFPA-National Council of Applied Economic Research (NCAER) initiative. India has yet to have true UHC, as it lacks mechanisms to pool risks and resources across all population segments. Nevertheless, the increasing demand for elderly care presents an economic opportunity for healthcare providers and policymakers, highlighting the need for an integrated, streamlined approach to elderly welfare.

I. Universal Health Coverage and the Silver Dividend: Opportunities and Challenges

Addressing the unique healthcare needs of the elderly requires a data-driven, forward-looking approach that reflects India's changing demographic profile and guides structural change. However, reforms in policy and the healthcare system have so far lagged behind these demographic realities. The Observer Research Foundation (ORF) and the United Nations Population Fund (UNFPA) jointly conducted a closed-door roundtable discussion with policymakers, researchers, and health practitioners to assess India's preparedness for an ageing population. The discussion centred on two core themes: advancing UHC to better meet the needs of older adults, and harnessing the 'silver dividend'—the socio-economic value an ageing society can offer with the right policy support. Insights from the roundtable underpin this report's analysis and inform its policy recommendations.

India has over a dozen elderly care policies. These include the 1999 National Policy on Older Persons, the 2007 Maintenance and Welfare of Parents and Senior Citizens Act, insurance coverage under Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB PMJAY) for all those ages 70 and above, and initiatives such as the National Programme for Healthcare of the Elderly (NPHCE) and Ayushman Bharat Health and Wellness Centres (AB-HWCs). India's 2021 Atal Vayo Abhyuday Yojana envisions a society where all citizens live healthy, happy, empowered, dignified, and self-reliant lives with strong social and intergenerational bonds.[17] Aligned with this

goal, this section explores the challenges and opportunities that extend beyond demographic indicators and the healthcare system. It considers cultural norms, socio-economic differences, and other contextual factors in line with recent efforts by economists aimed at broadening the scope of the notion of 'vulnerability' to better understand the impact of healthcare shocks on households and the healthcare system.

Infrastructure and Workforce for Geriatric Care

Access to quality geriatric care requires infrastructural investments, particularly in rural and underserved regions. As of 31 March 2023, India has 169,615 Sub-Centres (SCs), 31,882 Primary Health Centres (PHCs), 6,359 Community Health Centres (CHCs), 1,340 Sub-Divisional/District Hospitals (SDHs), 714 District Hospitals (DHs), and 362 Medical Colleges (MCs) across both rural and urban areas.[18]

The Pradhan Mantri Ayushman Bharat Health Infrastructure Mission (PM-ABHIM) is working to strengthen healthcare infrastructure, adopting a three-pronged approach focused on treatment, diagnostics, and surveillance to provide a continuum of care across primary, secondary, and tertiary levels. Under the scheme, 17,788 Sub Centres (SCs), 11,024 Ayushman Arogya Mandirs (AAMs), 3,382 Block Public Health Units (BPHUs), 730 District Integrated Public Health Labs (IPHLs), and 602 Critical Care Hospital Blocks (CCBs) have been built.[19] Even though the government spent 48 percent of the total health expenditure on infrastructure in 2021-22, overall spending remains at just 1.84 percent of the Gross Domestic Product (GDP), raising concerns about whether this allocation is sufficient to meet the needs of the elderly.[20]

Despite a well-structured system, functionality remains uneven across regions. In rural regions, 10.7 percent of SCs lack electricity, and 5.8 percent do not have regular water supply.[21] There is also an over-reliance on private healthcare, with 60 percent of in-patient and 80 percent of out-patient services accessed privately[22]—indicating that public health systems are not functioning optimally. These statistics vary across states, having serious implications for cost escalations where the utilisation of private care is higher. Public-private models must be carefully structured to ensure UHC accessibility.

As a relatively new domain, geriatric care is largely limited to tertiary-level facilities in urban areas.[23] There is a need for evidence-based protocols for geriatric care delivery, along with investments in public geriatric ambulances, independent geriatric hospitals and research centres, public-private partnerships, and research and development, accompanied by monitoring frameworks to ensure uniform and quality care in public and private facilities, as well as increased awareness. A comprehensive geriatric care delivery plan should also be designed for emergency situations.

India's healthcare workforce is unevenly distributed across regions and facility levels. It comprises 2,39,911 health workers at SCs, 40,583 doctors/medical officers at PHCs, 26,280 specialists and medical officers at CHCs, and 45,027 doctors and specialists at SDHs and DHs, 47,932 staff nurses at PHCs, 51,059 nursing staff at CHCs, and 135,793 paramedical staff at SDHs and DHs.[24] This workforce also varies in expertise, particularly in delivering geriatric care services and managing age-related conditions. Strengthening capacity through dedicated training across all levels is essential to meet the growing demand for geriatric services in both institutional and community settings. According to UNFPA, training the trainers in geriatric care is also important.[25]

Table 1: Package of Services to be Made Available at Different Levels Under NPHCE

Health Facility	Services
Sub-centre	• Health Education related to healthy ageing • Domiciliary visits for attention and care to home-bound/bedridden elderly persons and provide training to the family care providers • Arrange for suitable calipers and supportive devices from the PHC to the elderly disabled persons to make them ambulatory • Linkage with other support groups and day care centres, etc. operational in the area
Primary Health Centre	• Weekly geriatric clinic run by a trained Medical Officer • Maintain records of the elderly using standard format during their first visit • Conducting a routine health assessment of the elderly persons based on simple clinical examination relating to vision, BP, blood sugar, and other vitals • Provision of medicines and proper advice on chronic ailments • Public awareness on promotional, preventive and rehabilitative aspects of geriatrics during health and village sanitation day/camps • Referral for diseases needing further investigation and treatment, to Community Health Centre or the District Hospital as per need

Health Facility	Services
Community Health Centre	• First Referral Unit (FRU) for the Elderly from PHCs and below • Geriatric Clinic for the elderly persons twice a week • Rehabilitation Unit for physiotherapy and counselling • Domiciliary visits by the rehabilitation worker for bedridden elderly and counselling of the family members on their home-based care • Health promotion and prevention • Referral of difficult cases to District Hospital/higher health care facility
District Hospital	• Geriatric Clinic for regular dedicated OPD services to the elderly • Facilities for laboratory investigations for diagnosis and provision of medicines for geriatric medical and health problems • Ten-bedded Geriatric Ward for in-patient care of the elderly • Existing specialities like General Medicine; Orthopaedics, Ophthalmology; ENT services, and others, will provide services needed by elderly patients • Provide services for the elderly patients referred by the CHCs/PHCs and others • Conducting camps for Geriatric Services in PHCs/CHCs and other sites • Referral services for severe cases to tertiary hospitals
Regional Geriatric Centre	• Geriatric Clinic (Specialised OPD for the Elderly) • 30-bedded Geriatric Ward for in-patient care and dedicated beds for the elderly patients in the various specialties viz. Surgery, Orthopedics, Psychiatry, Urology, Ophthalmology, Neurology and others • Laboratory investigation required for the elderly with a specialised sample collection centre in the OPD block • Tertiary health care to the cases referred from medical colleges, district hospitals and below

Source: Ministry of Health and Family Welfare[26]

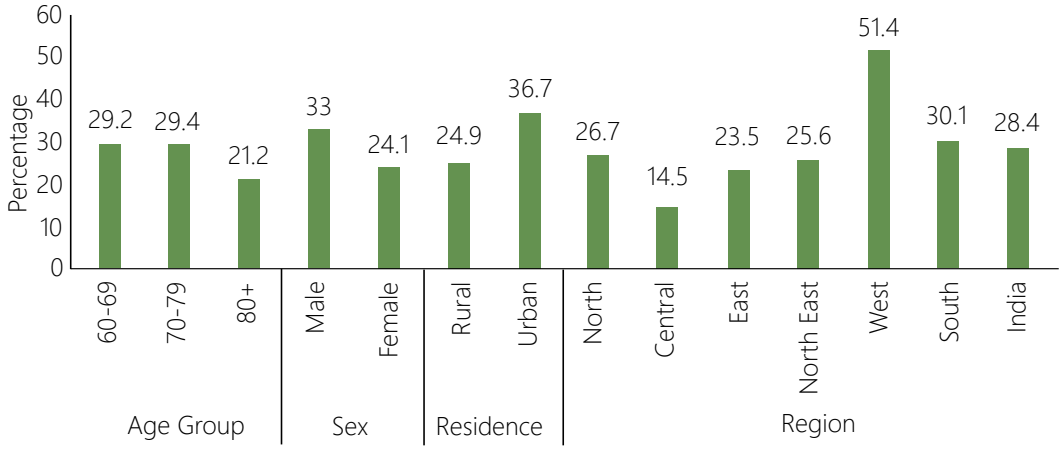
Financial Security and Universal Health Coverage

India's UHC model for elderly care must address the realities of an ageing population while remaining financially sustainable. Although the financial instruments market for elderly care is expanding, multidimensional poverty among the elderly persists—primarily due to inadequate financial protection.[27] With the rise of nuclear families and limited income sources, the State must play a stronger role in financial planning for the elderly.

Medical expenditure is supported through insurance schemes such as the AB PMJAY, Central Government Health Scheme (CGHS), Employees State Insurance Scheme (ESIS), various central and state government schemes, community/cooperative insurance, and private health insurance. These have helped reduce out-of-pocket expenditure (OOPE) from 62.6 percent in 2014-15 to 39.4 percent in 2021-22.[28]

According to Wave 1 of the Longitudinal Ageing Study in India (LASI) 2017-18, insurance coverage among the elderly remains low and varies by background characteristics (see Figure 4). The highest coverage is amongst the 60-69 years old (20.4 percent), with 60.5 percent of them availing state government health insurance schemes. Uptake remains limited due to lack of awareness (52.9 percent) and non-affordability (21.6 percent). Coverage also varied across states, age group, gender, marital status, and employment status.

Figure 4: Coverage of Health Insurance Schemes Across Background Characteristics Among the Elderly



Source: UNFPA, 2023[29]

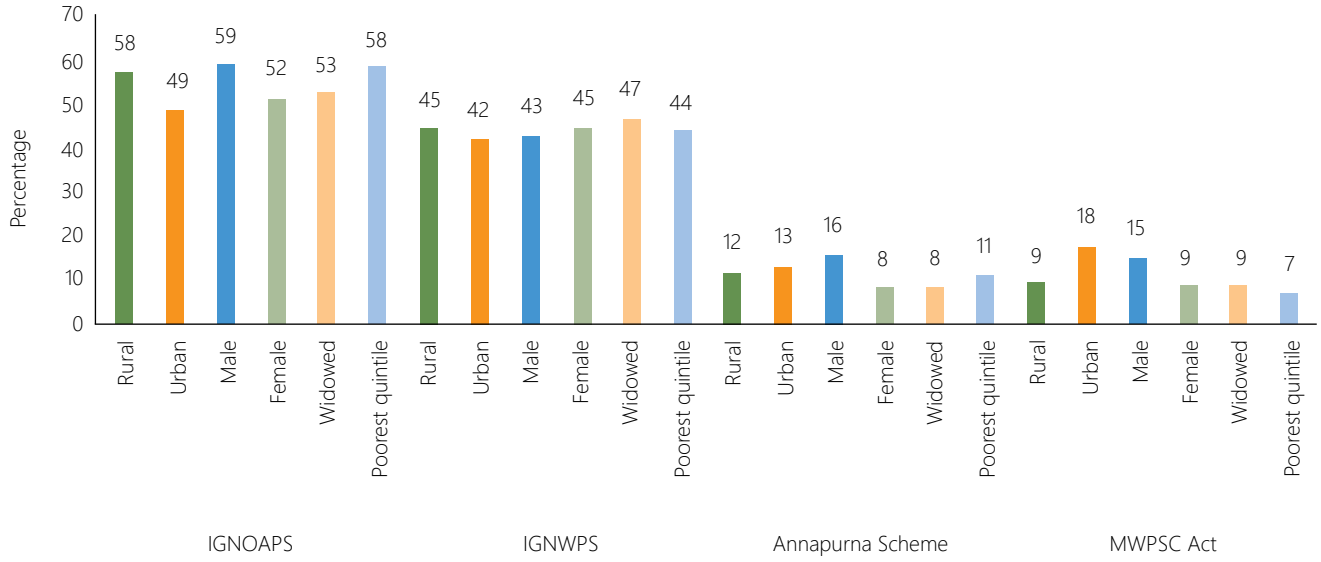
The expansion of the 2018 AB PMJAY in 2024 included insurance coverage for all ages 70 and above, irrespective of income bracket.[30] However, its impact remains to be seen. Additionally, OOPE for outpatient care continues to be a concern, as no scheme currently provides comprehensive coverage for such services.

Data from the National Health Accounts for 2021-22 indicates social security expenditure accounts for 8.7 percent and private health insurance expenditure comprises 7.4 percent of the total health expenditure (THE).[31] Public financing instruments must be optimally designed to reduce reliance on private insurance models to avoid excluding high-risk elderly individuals.

While insurance-based healthcare financing is widely adopted, it is not a universal solution. The American healthcare system—where insurance dominates—spends 18 percent of its GDP on healthcare, yet has poorer health outcomes than nations like Singapore, which spends only 4 percent.[32] This highlights the need to select financial instruments that maximise effectiveness and efficiency. Innovative alternatives include long-term care insurance, social impact bonds, community-based financing models,[33] reverse mortgages, tax and GST reforms on senior care products, and geriatric health insurance.[34]

A large segment of India's elderly lacks access to pensions or retirement savings, despite schemes such as the Indira Gandhi National Old Age Pension Scheme (IGNOAPS), Indira Gandhi Widow Pension Scheme (IGNWPS), and the Annapurna Scheme. Many rely on personal savings, which erode due to inflation and reduced interest rates, exacerbating financial insecurity. Awareness of these schemes remains at 55 percent (for IGNOAPS), 44 percent (IGNWPS), and 12 percent (Annapurna), varying across regions. Amongst those who are aware of such schemes, notable proportions refrain from availing benefits due to either the process which they find cumbersome (35 percent), incomplete paperwork (25.7 percent), and ineligibility. Compounding the challenge are the instances of corruption, where individuals report having to pay a bribe, or else not receiving the fund although they are eligible and enrolled.[35] Moreover, these schemes are inadequate both in terms of the financial assistance they provide and the coverage they offer.

Figure 5: Percentage of the Elderly (ages 60 and above) with Awareness of Social Security Schemes and the MWPSC Act



Source: UNFPA, 2023[36]

The Maintenance and Welfare of Parents and Senior Citizens Act (MWPSC), 2007, allows older adults to claim maintenance funds from their children. However, stronger enforcement and greater awareness are needed to protect the rights and welfare of the elderly. Furthermore, the India Ageing Report has pointed to the need for a convergence of the various schemes and services, with a focus on elder care under initiatives like the Sansad Adarsh Gram Yojana.[37]

Community-Based Healthcare Models

The impact of policy interventions and research depends on their translation into actionable measures. Given India's wide regional variations in demography, health indicators, public service use, and social security schemes, localised, data-driven solutions are essential for effective implementation. In this context, community-based healthcare models offer cost savings and foster social inclusion, and can be tailored to suit local needs.

A large proportion of India's elderly continues to work beyond the conventional retirement age. According to the 2017-18 LASI, 50.9 percent of men and 22 percent of women over 60 remained employed, with variations by location. In rural areas, elderly individuals often engage in manual labour or what scholars refer to as "distress-driven employment".[38] Many, particularly in low-income and rural settings, avoid institutional healthcare due to wariness with clinical settings and fear of high costs, preferring home-based or community-led care. This underscores the need for affordable, locally accessible healthcare in familiar settings.

Community healthcare workers have played a vital role in maternal and child health programmes. Utilising their skills and developing similar programmes for elderly care can help extend services to the ageing population. Strengthening primary care infrastructure, expanding home-based healthcare, investing in community health workers, and driving awareness of elderly health and well-being are key to building a more inclusive and effective healthcare system for India's elderly.

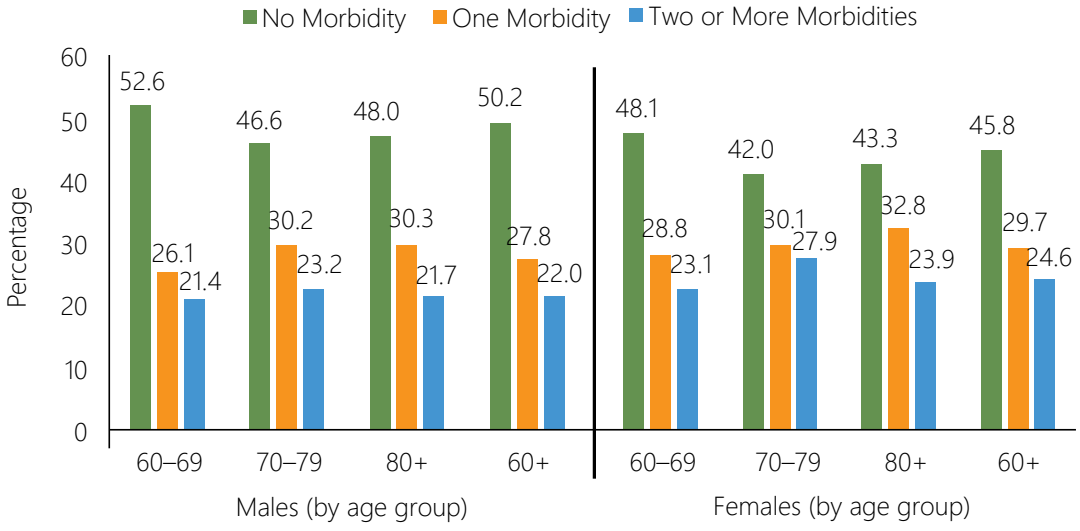
India's care economy remains undervalued, with women spending an average of four hours daily on unpaid caregiving.[39] When assigned a "shadow wage", this labour is estimated to contribute nearly 10 percent of India's GDP.[40] Between 2017-18 and 2023-24, female labour force participation in rural India has increased by 23 percentage points, driven by economic programmes. However, in urban India, labour force participation among women in caregiving age groups has remained stagnant, largely due to caregiving responsibilities.[41] Recognising and formalising the care economy through policy interventions, financial incentives, and professional

caregiving programmes can both capture its economic value and reduce the burden on unpaid caregivers of economic burdens. State support for caregiving institutions is essential—not only for elderly care but also to ensure that women, who disproportionately shoulder this responsibility, can engage in paid work.

Managing Non-Communicable Diseases and Mental Health

India's epidemiological transition has led to a rise in non-communicable diseases (NCDs) among the ageing population, with significant numbers suffering from at least one chronic condition. As the number of elderly citizens is expected to double by 2050, the burden of chronic diseases will rise accordingly, posing serious challenges for families and the healthcare system. Despite many NCDs being preventable, investment in early detection and disease management remains insufficient. India's healthcare system is treatment-oriented rather than prevention-focused, leading to avoidable complications and increased incidence of hospitalisation. Preventive strategies are therefore indispensable to reducing long-term health risks.

Figure 6: Prevalence of Chronic Morbidities Among the Elderly, by Age and Sex

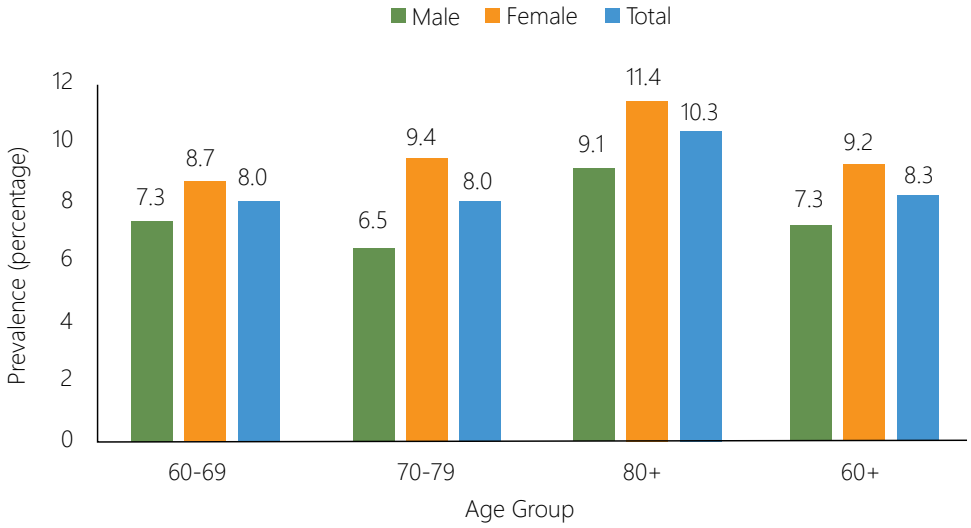


Source: UNFPA, 2023[42]

According to the 2017-18 LASI, 16.8 percent of India's elderly are overweight and 5.8 percent are obese, while 27.1 percent suffer from undernutrition.[43] Campaigns on elderly nutrition, adult vaccination, and lifestyle-based disease prevention can reduce hospitalisations and improve long-term health outcomes. Healthy ageing inherently starts with early investments in maternal and child health, nutrition, and preventive care. Viewing healthy ageing as a continuum and promoting lifelong well-being policies can help individuals remain active, productive, and financially secure in their later years.

Mental health among the elderly also remains particularly neglected. Conditions like depression, anxiety, and cognitive decline are widespread, yet mental health services remain inadequate. According to LASI, 8 percent of the elderly experience cognitive decline—affecting nearly eight million Indians.[44] Implementation of the Mental Healthcare Act of 2017 remains weak. Psychiatric care is concentrated in urban hospitals, leaving rural populations with limited access, if at all. Stigma around mental health further discourages the elderly from seeking support.[45] Mental health services must be bolstered, with psychiatric and psychological support rooted in routine geriatric care.

Figure 7: Prevalence of Depression Amongst the Elderly, by Age and Sex



Source: UNFPA, 2023[46]

The National Programme for Non-Communicable Diseases (NCD) Prevention has introduced the concept of "meaningful involvement" for people living with NCDs.[47] Similar models must be developed to involve the elderly within their own communities, enabling a better understanding of their perspectives and lived experiences to design solutions catered to their needs.

Palliative Care and Quality of Life

Palliative care, mental health services, and elderly care form a triangle, with each side being essential for promoting healthy and dignified ageing. In spite of the increasing recognition of their importance, these areas remain neglected, with only 1 percent of the Indian population having easy access to palliative care due to low awareness and the absence of adequately trained professionals.[48]

Palliative care, often misunderstood solely as end-of-life care, encompasses holistic management of chronic illness, pain relief, and psychological support. Historically, medical training in India has focused on curative treatment, leaving healthcare professionals ill-equipped to provide palliative services. Until 2001, palliative care was absent from the undergraduate medical curriculum, and its inclusion remains inconsistent across medical institutions—resulting in a healthcare system that prioritises aggressive treatment over patient comfort.[49] Although the National Medical Commission has introduced geriatrics and palliative care into medical education, stronger institutional emphasis is still required.

Many elderly individuals lack immediate family support, leaving caregiving responsibilities to untrained relatives. In the absence of caregiver support programmes, families often struggle to balance economic obligations with caregiving demands. Caregivers are often forced to make difficult choices without sufficient guidance or institutional support. Structured support programmes are essential to equip families with the necessary resources and training to provide effective care.

The National Health Policy, 2017 acknowledged the need for strengthening palliative care by improving infrastructure and workforce training.[50] Rethinking approaches to palliative care and mental health can help integrate these services into the broader UHC framework. Incorporating palliative care into primary healthcare institutions and AB-HWCs, along with developing structured home-based care models, would enable elderly patients to receive dignified, personalised care at home.

II Digital Health and the Population Dividend: Bridging the Gaps for UHC

India's demographic change presents both challenges and opportunities, the latter often framed as the "silver dividend"—the potential of an active, healthier elderly population to contribute socially and economically.[51] Realising this silver dividend will involve harmonising India's digital health efforts with the needs of the country's ageing population, consistent with the nation's UHC approach. Digital health is a powerful facilitator of UHC, riding on telemedicine, mobile health, and electronic medical records to reach underserved masses.[52] However, older Indians face barriers including low digital literacy, usability issues, affordability, and poor infrastructure. Around 10 percent of Primary Health Centres (PHCs) experience unreliable power supply, and 5 to 10 percent of rural health centres lack motorable roads and proper water supply.[53] These deficits constitute massive barriers to the deployment of digital health solutions and further restrict elderly access to care.

Most elderly patients in India struggle to navigate telehealth platforms because of low digital literacy, poor user experience, and cognitive burden.[54] Smartphones and computers are often difficult for them to use, and telemedicine platforms can feel intimidating. In the United States, over 30 percent of the population ages 65 and over were not prepared for telehealth; the situation in India could be worse, given lower digital maturity among older adults.[55] Age-related impairments compound these challenges: nearly two-thirds of people ages 70 and above

have substantial hearing impairment, and vision issues are common, making video or phone consultations difficult.[56] Cognitive impairments, such as dementia (found in an estimated 7.4 percent of India's elderly), further hinder the use of complex apps or portals.[57] One in three seniors also report depressive symptoms, worsened by low life satisfaction.[58]

Many older patients perceive telemedicine as impersonal and less empathetic than conventional care, leading to "technological anxiety". Personal inertia and technophobia have been identified as primary setbacks among the elderly population, reported by Indian researchers, as they require simple-to-use interfaces and reassurance from the providers to adopt telehealth.[59] Mobility restrictions, paradoxically, can enable and constrain the use of digital health by the elderly. Although less mobile older people benefit from home-based teleconsultations, homebound patients often require assistance to operate devices. In India, around 24 percent of the elderly have difficulty engaging with at least one activity of daily living (ADL), limiting clinic visits and making them ideal candidates for telemedicine[60]—if designed with their needs in mind. Without human-centric design, the very individuals who could benefit the most may only remain excluded. Ultimately, technology must be a facilitator, not a barrier, to digital health adoption among India's ageing population.

The Indian Landscape: Digital Health in an Unequal System

As India advances toward UHC, digital interventions play an increasingly vital role in bridging healthcare gaps. Yet, digital health debates often assume a homogenous population with equal capacity to receive and benefit from technological innovation. The fact is that older adults, who make up an increasing share of India's population, face unique challenges that digital health must address to avoid becoming a new form of exclusion.

The face of Indian health has evolved over the decades, with increased service delivery and expanded public health insurance.[61] However, deep structural disparities persist—especially in rural areas, where access to primary healthcare remains limited. Although 65 percent of the population live in rural India, PHCs are often under-resourced.[62] This rural-urban imbalance disproportionately affects the elderly, who are more likely to have mobility limitations and chronic illnesses requiring regular medical attention. Rural areas also face a deficit of qualified

healthcare professionals, with an urban-to-rural doctor density ratio of 3.8:1.[63] These systemic shortcomings further compound the healthcare challenges faced by the elderly.

Financial security among the elderly is a similarly urgent issue. While telemedicine and mobile health can reduce transportation and opportunity costs for caregivers, many adults cannot afford smartphones, data plans, or private teleconsultation charges.[64] Telemedicine is widely recognised for expanding specialist access in remote areas. The government's eSanjeevani platform has facilitated over 353 million tele-consultations, serving some 245,000 patients daily[65] and extending access to specialists, including geriatricians. Tele-Intensive Care Unit programmes in district hospitals have provided synchronous collaboration among local physicians and specialists located in large cities and improved the quality of care offered to critically ill patients.[c,66] Yet, telemedicine use among the elderly is still restricted because of digital literacy barriers, cognitive impairments, and lack of easy-to-use interfaces for the elderly. Use of electronic health records (EHRs) is another possibility for augmenting geriatric care, especially for maintaining continuity of care for patients with multiple chronic condition. EHRs can enable healthcare providers to monitor patient histories, alert patients about drug interactions, and suggest preventive screenings.[67]

A 2024 India-centric systematic review notes that the elderly remain the most digitally excluded, despite rapid Information and Communications Technology (ICT) development and growing smartphone penetration.[68] Only 7 percent of India's online population are above 55 years of age, largely due to low digital literacy, limited smartphone access, and stark rural-urban disparities.[69] Although the Digital India Programme envisions universal internet access, just 5 percent of those over 55 years use smartphones.[70] Contrary to the other developed countries where there are official government-sponsored digital literacy programmes for older adults—often fostering intergenerational relationships—India's elderly face compounded challenges of economic insecurity, geographical heterogeneity, and marginalisation in policymaking. To meet the challenges, inter-agency cooperation between the government and private sector providers is necessary in providing digital money and healthcare services to older persons.[71]

c The establishment of tele-ICUs in taluk hospitals across Mysuru, Mandya, Chamarajanagar, and Hassan has improved healthcare access for rural patients.

Public-private partnerships (PPPs) have been pivotal in advancing digital health efforts, especially telehealth and Artificial Intelligence (AI)-based diagnostics. The Ayushman Bharat Digital Mission (ABDM), launched in 2021, aims to develop a digitally interconnected, nationally integrated health infrastructure, highlighting how PPPs can leverage combined resources.[72,73] For most older adults, however, digital technologies add complexity rather than simplification. Nations like Japan and Denmark—whose future demographic profiles resemble India's ageing population—have taken conscious efforts to make digital health more accessible. In Japan, where nearly 29 percent of the country's population is over 65, AI-powered eldercare robots and voice-based telemedicine solutions aim to close the accessibility chasm, although evidence shows such technologies may also increase the caregiver's workload.[74,75] Denmark, meanwhile, has focused on building digital competence among the elderly through local training initiatives and a national eHealth portal visited by nearly 2.3 million users monthly.[76,77] India has yet to implement such targeted interventions at scale, leaving much of its elderly population digitally disenfranchised.

While digital health holds promise for transforming elderly care, it cannot replace the human touch in caregiving. Investments in age-friendly interfaces, community-oriented digital literacy, and financial safeguards are essential to ensure that digital health serves not just efficiency but also healthcare equity.

Providing Infrastructure and Access

India's past experience with financial inclusion offers lessons for leveraging digitalisation to improve healthcare access, particularly for the elderly. Aadhaar-linked bank accounts and Direct Benefit Transfer (DBT) schemes have facilitated the distribution of subsidies with ease, resulting in financial inclusion for tens of millions of the previously unbanked.[78] As of August 2018, over 83 percent of active Pradhan Mantri Jan Dhan Yojana (PMJDY) accounts were Aadhaar-linked, enabling seamless benefit transfer and trust in digital financial networks.[79] The takeaways of these initiatives: interoperable platforms, open consent models, and secure infrastructure—can serve as a model for deploying digital health solutions across India's healthcare ecosystem.

ABDM aims to replicate this achievement through interoperable digital health IDs that integrate patient data and enable seamless data among healthcare units.[80] This system rests on robust data protection practices, transparent consent mechanisms, and well-designed governance frameworks to foster trust in digital health platforms. India's Health Data Management Policy sets the floor level for privacy and security, but for digitally illiterate older populations, accessibility should be given priority.[81] The issue is not how to create a central database but how to give the elderly more than mere access to it.

While internet penetration has gained momentum in India, with rural India covering almost 398 million active internet subscribers in 2024, connectivity remains unbalanced.[82] Many remote geographies still do not have stable broadband connectivity, stalling the uptake of telemedicine, real-time EHR access, and AI-based diagnostics. Weak digital infrastructure disproportionately affects older rural patients, who often have limited mobility and rely on local PHCs. Strategic investment in last-mile connectivity is thus key to improving the capacity of PHCs to take advantage of digital innovations. Interventions such as low-bandwidth applications, offline mode, and solar-powered health kiosks can enable digital health in areas with poor infrastructure.[83] PHCs with effective geriatric telehealth support systems can improve specialist referrals, diagnosis rates, and treatment efficiency among rural elderly patients. However, older adults may struggle to understand how their health data is handled, transmitted, or processed. Simple-to-understand transparency-based models of consent for the elderly, protection of data from misuse, and strong mechanisms of accountability must be integrated into digital health platforms so that the elderly could feel safe and enabled to use such technologies.

Human-Centric Digital Health

Frontline health personnel—Accredited Social Health Activists (ASHAs), Auxiliary Nurse Midwives (ANMs), and Anganwadi workers—form the backbone of rural and community healthcare in India.[84] They are the key link between digital health programmes and geriatric patients in the remote areas of the country. On the ground, these workers face huge caseloads against fewer resources. Their function in the adoption of digital health is therefore critical.[85]

With suitable hardware and training, ASHAs and Anganwadi workers can utilise mobile apps to capture health information, arrange check-ups, and arrange teleconsultations for the elderly who cannot move out. India has nearly 1,000,000 ASHAs at the village level, and enrolling them in easy-to-use technology would expand the coverage of digital health to all villages and informal settlements.[86,87]

Frontline workers face challenges in adopting digital tools, particularly due to language and interface barriers. Most apps are released in English, while ASHAs and Anganwadi workers are more confident using their local language. In 2021, the government introduced the Poshan Tracker app for Anganwadi centres to monitor nutrition information. However, it was difficult to use as the software was in English and resource-heavy, and it was also prone to crashing on the low-end phones that were provided.[88,89] Most Anganwadi workers, mostly women with basic education, struggled with English menus and often had to seek help from children or neighbours.[90] The app bogged down their phones and hindered their work; in a sign of protest, more than 1,000 government-supplied phones were handed in by the workers.[91] This experience demonstrated how bad design, language mismatches, excessive system demands, and convoluted forms can make the best electronic health initiatives fail.

Human-centric design can enhance the effectiveness of digital health for both providers and elderly patients by focusing on the end-user's context. For frontline staff, apps must have user-friendly interfaces, local language support, and offline capability for places with spotty internet. After-sales support and training are crucial too.[d] Simple usability, such as big font settings, high-contrast displays, and voice navigation, can be a game-changer.[e]

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d A success story is the eCompliance treatment system for TB. The computer programme, developed by an NGO, employs a fingerprint biometric scan to capture each dose consumed by a TB patient, ensuring compliance with the 6-month medication. For frontline healthcare workers, it replaced cumbersome pen-and-paper records with a finger scan, but without unnecessary complexity. See: https://www.csis.org/blogs/smart-global-health/achieving-tb-milestones-through-last-mile-delivery-india. Likewise, telemedicine platforms streamlined for one-click implementation, e.g. one tablet tap to initiate a consult, can allow village health workers to refer geriatric patients conveniently to distant doctors. At the patient's end, human-centric design translates to making digital health simple to use for elderly patients with minimal tech savvy or physical disability.

e For example, a tablet-based home health app with a Crisis/SOS button accessible in one click or teleconsulting gets even a weak, non-tech-savvy old person help in seconds. If ASHAs observe that an application simplifies their work (e.g., having immunisations automatically calculated or highlighting high-risk cases), they can adopt it in good faith. Such human-oriented solutions empower digital health and make it more effective.

Inclusion: Making Digital Health Work for the Elderly

Genuine inclusion means addressing the accessibility challenges faced by older adults. In 2017, a survey conducted in the National Capital Region (NCR) revealed that around 86 percent of the elderly lacked the ability to operate digital technology.[92] Digital literacy rates are lower for senior women (female literacy above 65 is below 33 percent nationwide).[93]

To combat this, digital health solutions are increasingly using universal design for senior citizens. One such promising direction forward is voice technology.[94] Voice interfaces in local Indian languages can enable an older individual to communicate with a health app simply by speaking, without the need to click through menus. Ambient or wear-at-home sensors are another such example that can monitor the sleep patterns and vital functions of an elder and alert caregivers automatically in case of difficulty. A small, user-effort-free wristband or wearable device will sense a fall or an irregular heart rhythm and alert a doctor. Passive monitoring would suit elderly folks who might not remember to put data in or feel intimidated by the equipment.

Simplified interfaces with larger icons, fewer words, minimal text, voice guidance, and multilingual support are also important; several telemedicine apps provide navigation and customer support—such as Hindi, Bangla, Tamil, and others—enabling elderly users to independently access telehealth, e-pharmacy, and related services.

Regulation and Interoperability

At present, there is no single regulatory body in India dedicated to digital health. Oversight is fragmented: The Ministry of Health and Family Welfare (MoHFW) sets standards, the National Health Authority (NHA) runs programmes like ABDM, and the Ministry of Electronics and Information Technology (MeitY) regulates data. This lack of a sectoral regulator affects service quality and access, especially for vulnerable groups like the elderly. A central authority could establish uniform standards for EHRs, telemedicine, data protection, and device certification.

Recognising this need, the MoHFW proposed the creation of a National eHealth Authority (NeHA) as early as in 2015.[95] The National Health Policy 2017 also called for a National Digital Health Authority to steer and advance digital health governance in India.[96]

NeHA was envisioned as a statutory body to shape e-health policy, enforce interoperability standards, and ensure quality control in digital health services. For example, it would mandate standardised data formats for all EHR systems and set minimum care standards for telemedicine providers. As of 2025, however, NeHA remains on paper. The absence of a central regulator continues to hinder the development of a cohesive digital healthcare ecosystem in India.

ABDM is encouraging standardised data formats and open protocols to ensure interoperability across health IT systems. It has embraced international standards such as HL7 FHIR (Health Level 7 Fast Healthcare Interoperability Resources) and is developing the Unified Health Interface (UHI)—a health-sector equivalent of the Unified Payments Interface (UPI)—to allow multiple public and private applications to operate on a shared platform and exchange health data. Implementation is well underway: as of July 2025, over 4.12 lakh healthcare facilities are utilising ABDM-compliant software.[97] More than 79 crore ABHA digital health IDs have been provided to citizens, with nearly 60.8 crore health records linked—reflecting the massive amount of data integration being carried out.[98]

India's health system is extremely fragmented, with thousands of private clinics and hospitals—many using incompatible software or none at all—and each state running its own systems. Getting them all onto one network is a huge task. Private providers are often hesitant to invest in new IT systems or raise concerns about data security. Moreover, challenges of data quality and consistency remain; linking records serves little purpose if the underlying data quality and consistency remain problematic; linking records serves little purpose if the underlying data is inaccurate or incomplete. While ABDM provides the necessary framework, serious effort is needed to digitise legacy records and train doctors in their effective use.

The second issue is getting the small players in: whereas big hospitals may be easily accommodated, a single-practitioner physician or small senior-care homes—often serving a high proportion of elderly patients—may lack the capacity to implement ABDM information systems. To ensure full network coverage, the government may need to incentivise or subsidise their participation.

As digital health expands, data privacy and security have become critical concerns—especially for older adults, who may be reluctant to adopt technology without trust. India's Digital Personal Data Protection Act, 2023, mandates encryption, breach reporting within 72 hours, and secure identity verification for personal data, including health records.[99] High-profile breaches, such as the All India Institute of Medical Sciences (AIIMS) ransomware attack in 2022, highlight the vulnerabilities.[100] For digital health to gain acceptance among older adults, clear communication, strong enforcement, and sector-specific safeguards are essential to build trust and protect sensitive information.

Conclusion: Towards a Longevity Economy

As a rapidly growing and complex economy undergoing institutional and societal transformation, India stands at a crucial juncture, where it can learn from ageing global economies while avoiding the pitfalls faced by many Western nations. India's socio-economic context requires solutions that support, rather than compromise, broader economic development goals. While a number of OECD[f] countries have adopted progressive elderly care policies, their models are not without challenges and cannot be transplanted wholesale. The issue must be addressed institutionally, with India crafting a balanced approach that aligns economic growth with sustainable, context-specific elderly care policies.

Few countries are as uniquely positioned as India to leverage the global ageing trend. As India navigates its demographic transition, it must adopt a holistic approach that integrates healthcare, economic security, and social inclusion. Policy frameworks should reflect cultural sensitivities while ensuring long-term financial sustainability. The real challenge is not just delivering services, but building an adaptive, resilient system that allows older adults to live with

f The Organization for Economic Co-operation and Development (OECD) has 38 member countries from North America, Europe, and the Asia-Pacific region.

dignity and purpose. India's approach to elderly care must be forward-looking, data-driven, and aligned with its economic growth imperatives. By addressing both local needs and global ageing dynamics, the country can transform its ageing challenge into an opportunity and emerge as a leader in innovative, sustainable eldercare solutions.

With an evolving demography, India's approach to elderly care will determine both health outcomes and economic sustainability in the coming decades. A combination of state intervention and market-driven solutions must be leveraged to expand elderly care equitably and sustainably. Adopting a holistic approach is essential to securing the health and well-being of the ageing population, and India may then stand to reap its silver dividend.

India must gradually transform itself into a longevity economy[g]—one where older individuals are no longer seen as dependents but as active economic and social contributors. By 2050, nearly 300 million people will be over the age of 60, marking a profound shift in societal dynamics and policy priorities.

This demographic change presents both opportunities and threats: healthcare and pension systems will need reform, but older individuals can remain vital contributors to the workforce, caregiving, healthcare, well-being, and tourism-related spending. India's response to the longevity economy must be one where the elderly are not isolated but effectively integrated through economic security initiatives, digital empowerment, and age-friendly infrastructure. This transformation could be achieved by addressing the following:

- **Digital Health Initiatives:** Investing in digital literacy programmes for the elderly, developing age-friendly user interfaces for telehealth platforms, ensuring multilingual support, and providing affordable data plans and smartphones to utilise frontline health workers (ASHAs, ANMs, Anganwadi workers) with training and appropriate technology to bridge the digital divide in rural areas.

- **Financial Security:** Upscaling pension schemes, improving access to low-cost health insurance, and reducing out-of-pocket healthcare expenses. Explore innovative financial instruments like long-term care insurance, social impact bonds, and community-based

g The term 'longevity economy' refers to the increasing economic activity brought about by a progressively aging global population and extended life spans.

financing models and increase awareness and simplify access to existing social security schemes.

- **Healthcare Infrastructure:** Increase public investment in healthcare infrastructure, especially in rural and underserved areas. Develop evidence-based protocols for geriatric care, establish dedicated geriatric ambulances and hospitals, and invest in research and development to ensure uniform, high-quality care across both public and private facilities.

- **Workforce Development:** Strengthen the medical workforce through dedicated geriatric care training at all levels. Redefine employment and retirement age thresholds to reflect increased life expectancy and formally recognise the non-market activities of older individuals, such as caregiving and volunteering.

- **Community-Based Care:** Develop and implement localised, data-driven community-based healthcare models to strengthen primary care infrastructure and expand home-based healthcare. Invest in community health workers and formally recognise the care economy as a vital component of health service delivery.

- **Policy and Regulation:** Establishing a central authority for digital health regulation and facilitating inter-ministerial coordination. Ensure interoperability across health IT systems through standardised data formats and enact and enforce laws to protect the rights and welfare of the elderly.

Telemedicine, wearable health trackers, and AI-based diagnostics enable older individuals to manage chronic diseases, reducing hospitalisation and improving their quality of life. Technology can also extend their productive years, with internet portals providing part-time consulting, telework, and exchange of information. Such innovation, however, must be supplemented with robust health systems that make them affordable and accessible. Heavy public investment in digital literacy initiatives, targeted healthcare spending, and infrastructure—particularly internet connectivity—is essential for digital health to benefit the elderly. Second, fostering lifelong learning and participation in community life—through volunteering and social networking—can help ensure that older individuals remain active and contributing members of society. Through these initiatives, India can harness its ageing population as an asset and ensure that they not only live longer but better.

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