Anticipating the Impact of an Aging World

This past July 11, 2019, marked World Population Day, an event established by the United Nations Development Program to call attention to the impact of population changes.[1] This year's World Population Day highlighted a major demographic shift. For the first time in human history, the global population now skews old with more people over age 65 than under 5. And this trend is expected to continue—by 2050, the number of persons over 65 will be double the size of this youngest cohort. An aging population will mean huge increases in demand for health services and increasing pressure on already limited resources.

By Michele Cleary

As longevity far exceeds the typical work lifespan and as birth trends reduce the number of taxpayers needed to sustain government budgets, stakeholders must rapidly consider new approaches to improving health status and/or reducing health resource utilization if healthcare financing systems are to sustain this ballooning elderly population.

This article presents some of the demographic trends that are impacting the health systems around the world before proposing some possible solutions to extend healthy living and minimize economic demands.

THE SIZE OF THE GRAY TSUNAMI

Despite an estimated 83 million people added to humanity each year, our global population is rapidly becoming increasingly old—very old. Today, 8.5 percent of people worldwide are at least 65 years old. This segment is expected to balloon to nearly 17 percent by 2050—1.6 billion people over 65 by 2050. Even more astonishing is the expected growth of the "oldest old"—people aged 80 and older—whose numbers are expected to more than triple by 2050, growing from 126.5 million to 446.6 million.

While this "graying" of society has long been a concern in many developed countries, aging is a global trend. The developing world is also growing older. China's population of persons over 65 will swell from 110 million today to over 330 million by 2050. However, this demographic shift is still years away in the developing world. For instance, while Japan's oldest population surpassed its youngest in 1978, the Sub-Saharan region of Africa will not do the same until 2079.

THE IMPACT OF FERTILITY CHANGES, GROWING LONGEVITY

This demographic shift has been driven by changing fertility rates—both booms and busts—and remarkable increases in life expectancy.

Fertility: Much of the developed world experienced a spike in fertility rates during the mid-20th century, creating an enormous population cohort that is just now reaching old age.[2] The Baby Boom dramatically increased the birth rates across the United States, Canada, New Zealand, Australia, United Kingdom, France, Austria, Scandinavia, Czech Republic, and Latin America, while smaller "boom-lets" echoed across Germany, Switzerland, Belgium, and the Netherlands. It's notable that this trend was largely absent from Italy, Greece, Portugal, Spain, Poland, Bulgaria, Russia, Estonia, and Lithuania. Since then, global fertility rates have dropped to near or below replacement levels in all regions except Africa.

Longevity: The other population driver has been increased longevity. Since the Age of Enlightenment, the average global life expectancy has steadily climbed. In the pre-modern world, life expectancy hovered around age 30. By 1900, few babies lived past 50 years. Today, average global life expectancy exceeds 72 years and is projected to climb above 76 years by 2050.[3]

Nowhere have these gains been greater than in Africa, where life expectancy has gained nearly 7 years since 2000 (it rose only 2 years throughout the 1990s). Dramatic increases have also been shown in India and South Korea where a century ago life expectancy hovered near 23 years for both countries, but has since nearly tripled in India and almost quadrupled in South Korea.

Gaps in longevity persist between the developed and the developing world. However, these gaps are closing, and they are projected to diminish significantly by 2050 thanks to aggressive measures to combat childhood mortality and broad initiatives to fight human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) and other infectious and noncommunicable diseases. While many of these measures have significantly reduced disease burden, especially in young children, rates of disease burden (as measured by daily adjusted life-year [DALY] loss rates) remain highest in the youngest and oldest population groups with DALY loss rate remaining highest among the oldest old.[3]

SHIFT FROM COMMUNICABLE TO CHRONIC, NONCOMMUNICABLE CONDITIONS

During the 20th century, the leading causes of disease and death changed dramatically, shifting from infectious and parasitic diseases to noncommunicable diseases and chronic conditions. The multi-country Global Burden of Disease Project revealed that health problems typically associated with wealthy and aged populations now impact a widening segment of the global population as health behaviors commonly associated with the developed world (eg, tobacco and alcohol use, insufficient consumption of vegetables and fruit, low levels of physical activity) take root in the developing world. Over the next 20 years, global rates of noncommunicable diseases, such as heart disease, cancer, chronic obstructive pulmonary disease (COPD), osteoarthritis, and diabetes are projected to increase dramatically.[4] And as developing countries adopt more Western diets and lifestyles, the incidence of cancer is expected to accelerate; the number of new cancer cases is projected to rise to 17 million each year by 2020 and to 27 million by 2030.

And yet despite the tremendous impact of these noncommunicable conditions, communicable diseases, such as influenza, will continue to pose a significant health threat to older individuals. The World Health Organization has highlighted the continued threat of communicable diseases, especially in crowded environments. Future older cohorts will be highly susceptible to infectious diseases due to their immunosenescence—the progressive deterioration of immune function with age—and frailty.

GROWING IMPACT OF DEMENTIA

Dementia will also present a tremendous challenge to these aging populations. The Organization for Economic Cooperation ›

and Development summarized how the risk of dementia increases sharply with age. The prevalence of dementia increases from 3 percent among persons aged 65 to 69 to almost 30 percent among persons aged 85 to 89 years. Roughly 81percent of people with dementia are over age 75.

Alzheimer's Disease International projects that 115 million people worldwide will be living with Alzheimer's disease or dementia in 2050.[5] This growth will be most dramatic in low- and middle-income countries, increasing from 20 million today to nearly 80 million people with dementia by 2050. For these countries, healthcare labor demands associated with dementia and other memory loss conditions will put further tremendous strain on their future financing systems.

TOO FEW PROVIDERS, TOO FEW CAREGIVERS

One significant challenge will be finding enough providers and caregivers—paid or unpaid—to care for this aging population. Many are predicting staggering healthcare labor shortages. The American Association of Medical Colleges predicted that the United States will face a shortage of between 40,800 and 104,900 physicians by 2030.

Families are unlikely to fill this labor gap. Historically, the elderly may have had family support to monitor nutrition, health events (stroke, falls, accidents, heart attacks), and medication adherence to ensure health and quality of life. But today, fewer older people have families to care for them due to a range of issues: decreased family size, female labor force participation, high divorce rates.

This shift in demographics and disease means that there will be a huge increase in patients who require longitudinal management of their progressive diseases rather than incident care for intermittent sickness and injury.

Already many elderly live alone, especially in developed countries. Nordic countries have the highest levels of elderly women and men living alone, between 45 percent and 50 percent for women and close to 25 percent for men. With declining support from families, society will need better information and tools to ensure the well-being of the world's growing number of older citizens to help expand independent living.

HITTING THE BUDGET CEILING

Globally, health systems will strain to meet the needs of aging societies. During ISPOR's 2018 Asia Pacific conference, Toshihiko Takeda, former Directory-General at the Health Policy Bureau at Japan's Ministry of Health, Labor and Welfare, summarized how Japan is contending with an aging population—a preview for the rest of the world.[6] He noted that the portion of Japan's population over age 65 has grown from 5 percent in 1950 to nearly 27 percent. This aged sector is predicted to grow before peaking at 38 percent in 2065. Among developed countries, South Korea is expected to reach a similar peak in 2065 following an even more rapid demographic shift (from 10 percent in 1980 to 37.7 percent in 2065). He compared this growth trend with those predicted for the United States, United Kingdom, France, and Sweden, noting that for each of these countries, the percentage of elderly should peak at roughly 25 percent by the mid-2030s.

He continued, outlining the significant budgetary deficits Japan now faces due to the booming social security expenditures (pensions, medical costs, welfare) and the falling tax revenues stemming from a shrinking working population relative to the number of retirees. He noted that this is further challenged by the adoption of advanced medical technology coupled with labor shortages.

While Dr. Takeda's presentation may provide a preview for the rest of the world, many countries already lack the tax base, pension systems, or insurance payment systems to pay for increasing health services demanded by an aging population. In the United States, 10,000 individual Baby Boomers retire each day, removing more taxpayers to pay for the care of the elderly. The global financial crisis of 2008 has limited the ability for many European countries to respond to these growing needs. This crisis forced Greece, Spain, Italy, and Portugal to reform pension systems, increasing the retirement age, limiting the number of benefits, and reducing resources allocated for healthcare and social care. Working lifetimes may need to be extended elsewhere around the world to parallel increasing longevity.

These financial demands will hit developing countries especially hard as their populations become old before their societies become wealthy. France had almost 150 years to adapt to a doubling of their over-60 population from 10 percent to 20 percent. Places such as Brazil, China, and India will have slightly more than 20 years to make the same adaptation.

FINDING SOLUTIONS

This shift in demographics and disease means that there will be a huge increase in patients who require longitudinal management of their progressive diseases rather than incident care for intermittent sickness and injury. Debate continues over whether societies can achieve a "compression of morbidity" and hold down health and societal costs through better public health initiatives, vigilant screening programs, and efficient treatment of chronic conditions.

Healthcare budgets will have limited capacity to accommodate these growing needs of a rapidly aging population. New solutions are needed. Some countries are focusing on disease prevention measures to expand healthy years of life, such as Croatia's Guide for Healthy Aging. Others are exploring new elder-friendly environments to meet the needs of their growing population of elders, such as age-friendly cities and adapting traditional services and products to meet new consumer needs. And many are exploring mHealth (including telemedicine) solutions that encourage a more active role for patients in their conditions, prompting medication and therapy adherence,

and providing fall detection as well as more efficient delivery of services, especially to home-bound seniors.

Innovative solutions, such as mHealth (telemedicine) and digital health (apps/wearables/monitors), can help treat people in place at home or in a nursing facility.[7] These solutions could help prolong independent years by encouraging healthy behaviors (eg, smoking cessation, dietary changes, weight management). They can help patients adhere to treatment protocols with clinical appointment reminders and daily medication management. Providers could obtain real-time patient information, remotely monitor vitals, alerting providers of possibly serious health events. And they can summon help in the event of a fall.

These solutions will need to meet seniors where they are by working within their physical and cognitive limits, especially if seniors are living independently.

In the previously mentioned talk, Dr. Takeda was optimistic that artificial intelligence (AI) and other new technologies could also improve productivity as Japan contends with their growing healthcare financing challenges stemming from an aging population.

SOLUTIONS MUST CONSIDER HEALTH LITERACY AND COGNITIVE LIMITS

These solutions will need to meet seniors where they are by working within their physical and cognitive limits, especially if seniors are living independently. Cognitive and mental impairments are common among the elderly, particularly among the oldest old, which can lead to a lack of social support, failure to follow medical treatment plans, inability to perform self-care, and increased need for structured supervision and institutionalization. Physical impairments, such as hearing and vision loss, may also compromise the impact of these solutions. Solutions must address these inherent limitations.

Many older individuals will struggle with diminished health literacy—a factor found to be associated with risk of all-cause mortality among older adults. Patients with low health literacy use emergency services more frequently, have higher healthcare costs, and utilize preventive services less frequently.[8] But the 2003 National Assessment of Adult Literacy estimated only 3 percent of older adults aged 65 and older were proficient with health literacy skills.[9]

WHERE ISPOR STANDS

For 2 years in a row, ISPOR members have voted "aging" to be one of the Top 10 HEOR Trends. ISPOR special interest groups in medical technology/medical device, medication adherence, clinical outcomes assessment/patient preferences, and nutrition can provide added research focused on aging trends and their impact on health and health services utilization patterns. Knowledge of the social environment is critical for the large number of elders who have limitations in mobility or self-care; it is also essential for ensuring that prescribed medical regimens are delivered correctly in both home and community settings. Data on the physical environment are important as well for minimizing falls, injuries, and the progression of disability and, in some cases, for preventing deaths from climate-related causes. Finally, innovative sources of real-world evidence may be needed to identify areas for improvements to improve diagnostics and treatment adherence.

CONCLUDING THOUGHTS

Healthcare systems and policymakers need to start planning now to cover costs and delivery issues before the system reaches the breaking point. How will aging affect healthcare and social costs? How will population aging play out differently for low-income countries that will age faster than their counterparts have, but before they become industrialized and wealthy?

Health economics and outcomes research will be critical to decision-support structures that determine how limited resources will be distributed. By focusing more attention on these issues today, stakeholders may be able to develop high-impact solutions that can both improve and preserve health for all demographic groups.

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