# Connecting and caring: innovations for healthy ageing

Restricted mobility and social isolation do not have to go hand in hand with getting old. Monique Tsang reports on the potential of innovative technologies to help maintain the physical health and independence of older people.

For 69-year-old "Grandma" Cheung, age is no barrier to learning. Every Wednesday she attends a computer class at her neighbourhood centre for senior citizens in Hong Kong Special Administrative Region, China. She has been living alone since her husband moved into a nursing home three years ago after having a stroke. She seldom gets to see her three children: with her daughter living in the Netherlands and her sons in mainland China, the telephone has been her main means of staying in touch. But now that she knows more about the Internet, she hopes that it will provide her with another way to keep in touch with, and to even see, the faces of her children and grandchildren. Thinking about her daughter and grandchild in the Netherlands, she says: "I would very much like to [see their faces]. I haven't seen them for such a long time. I really miss them."

Migration is one of the changing social dynamics that is affecting the care and well-being of older people throughout Asia, according to David Phillips, who studies the impact of social trends on the ageing experience at Lingnan University in Hong Kong SAR. As families get smaller and younger family members move away or abroad, it is now more common to find older people living on their own. China, with its huge economic development, offers a stark example of this. "You hear of villages of China where you almost only find older people or small kids with grandparents looking after them. You won't find many people of university age or young working age," Phillips said.

But around the world, as people live longer, the health and well-being of older populations is receiving more attention. This year's World Health Day, celebrated on 7 April, will focus on ageing and health. According to World Health Organization (WHO) statistics, older people are the fastest-growing age group worldwide. By 2050, two billion people – or nearly one out of every four people – will be older than 60 years. This population ageing is occurring fastest in less-developed countries, which have consequently had less time than developed countries to build the infrastructure and tools to deal with this major social transition. By 2050, 80% of the world's older people will be living in these countries. As people age, they are more likely to have mobility difficulties and chronic conditions such as cancer, stroke and dementia. They are also vulnerable to depression, as many face loneliness and poverty.

"While the challenges facing less-developed countries are daunting, they are not insurmountable," says Francis Moussy, from the Innovation, Information, Evidence and Research Cluster at WHO, where he is leading a new project aimed at increasing access to medical and assistive devices for older people in low- and middle-income countries.

"First we need to find out what these countries need and the barriers to lack of access so that we can identify possible solutions," he says. "The WHO initiative then focuses on boosting research, development and production of appropriate devices for low- and middle-income countries. The result of this initiative will be an increased supply of devices designed for ageing populations in poor settings."

In India, the internet and mobile phones have vastly improved communication between older and younger people, says Ravi Samuel, a psychotherapist and honorary secretary for Vision Age India, a non-profit-making organization that offers community-care services for elderly people in Chennai, India.

Technologies can also improve the physical health and independence of seniors, according to Majd Alwan, a technology expert at LeadingAge, an American-based industry association that promotes innovations for ageing. For instance, mobile devices can connect medical professionals with seniors to monitor and collect information about their chronic conditions. Technologies are available to help older adults stick to medication, diet and exercise plans, while others can identify and alert professionals to potential health problems. For example, devices that monitor sleep behaviour and toilet use can provide carers with early warning signs of urinary tract infections, a common condition affecting older people.

Devices can help older people stay safe. Motion and vibration sensors can detect falls, a common cause of disability and death for older people, and summon help. Other devices monitor stove use and raise alarms in case the older person forgets to turn it off.

But Jotheeswaran Thiyagarajan, a research fellow at the Centre for Public Mental Health at King's College, London, is skeptical that many of those technologies are applicable in developing countries. He agrees that, while the mobile phone has greatly helped older people to stay in touch, that is as far as technology goes in being helpful. Through his

Courtesy of the Tin Ping Neighbourhood Elderly Centre

Learning to use the internet is helping these older people to engage with society



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research in India he has met more than 1000 elderly people, and not one – not even those in urban areas – has benefited from technologies used by the elderly in more developed countries.

The problem is twofold. First is the issue of cost. In India, nearly 70% of older people live in rural areas and are poor. "All the technologies or technology developments are focused on people in urban settings who have money to actually buy these technologies," he says. The other issue is appropriateness. Thiyagarajan refers in particular to "smart home" technologies and improvements to household design to accommodate people with limited mobility. It is all very well to have devices that "can lift chairs and set them to a proper height, but there are some houses that do not even have any chairs and the person has to sit on the floor," he says. "So how can you rely on such technologies when the basic needs aren't even fulfilled?"

He emphasizes local need as the key for technology development. "We must look at the needs of the people and then develop the technology. Directly taking the technology to the people and telling them to use it will not work." Two kinds of assistive devices are needed in India, he says. One is technology that can improve the delivery of health services for older people, to supplement the short consultation times that doctors have for each patient in health clinics. The other kind are simple things that can help people maintain independent living, such as hearing aids and corrective glasses.

Moreover, Thiyagarajan adds that users should be at the centre of design, and innovations must be tested with the people who will actually be using the products. For a developing country such as India, where many older people do not have access to doctors, the involvement of community health workers is crucial because they are the ones who have daily contact with people in the community, he says.

Innovation design should also involve health professionals and caregivers, said Alwan. "If there's an interface for the family or caregiver, they have to be involved in the early stages."

Alwan acknowledges the cost barrier for many new technologies. Most of them are taken up first in richer countries. "But as the technology becomes more mainstream, it reaches a price point where it can proliferate much faster in other parts of the world," he says. "We are seeing developing countries moving directly to mobile health where the cell phone becomes the gateway to take measurements and manage chronic conditions. You can also use it to reach physicians hundreds of miles away."

Technology does not have to be complex and costly, says WHO's Francis Moussy. "Medical devices are needed in low- and middle-income countries. They should be in the same category as drugs, vaccines and diagnostics with regard to access for poor populations."

But technology development may be hindered by inherent cultural practices and attitudes. According to Thiyagarajan, as people get older and become more frail, they may already be prepared to die. "So how do you actually motivate the person – who has accepted the changes they're going through and who is prepared to die – to use technologies to help [them] live longer?" he asks.

He also adds that older people are not always comfortable with technology and some are hampered by conditions such as dementia and hearing impairments. "Health reforms should look at the preference of older persons before investing money in technology. Technologies that help their caregivers may be preferable," he says.

To help older people to live independently, the layout and design of living spaces – from user-friendly electrical sockets to accessible public transport – are very important. In the densely populated city of Hong Kong SAR (where around one third of elderly people are living in poverty), many facilities such as shops, pharmacies, medical clinics and senior centres are incorporated into housing estates.

Grandma Cheung lives in a small apartment on the eighth floor of a public housing estate. Fortunately the building has a lift and, if she ever needs to see the doctor, there is a clinic ten minutes' walk from her home. Her husband's nursing home is a short bus ride away and she visits him twice a week. Her senior centre is also conveniently nearby, allowing her to go there several times a week to keep herself busy. Besides taking computer lessons, she is also learning to sing and regularly plays gateball, a team sport similar to croquet.

In less-developed settings, poor access to facilities could pose a major problem for older people. For example, the public transport system in India is "absolutely elderly unfriendly," says Ravi Samuel of Vision Age India. "If elderly people cannot afford private transport, it is very difficult for them to commute or attend social, religious and family functions."

This is where the idea of an age-friendly city comes in. David Phillips says that it is "absolutely essential" to take a cross-sectoral approach when designing age-friendly living spaces by involving specialists in town planning, transport, housing and education.

The approach also needs to be intergenerational. "I think it's wrong to focus in many ways just on calendar age," said Phillips. "Instead we need to look at the needs of the people in the communities. There are 35-year-olds who are just as disabled as some 70-year-olds." Making spaces more age-friendly is a win-win situation. "An environment that's good for older people is actually good for people of all ages," he says. ■

Courtesy of the Tin Ping Neighbourhood Elderly Centre

Seniors stay active in a dance class in Hong Kong, Special Administrative Region, China