

The effect of medical and technological progress on the lives of seniors – has it allowed them to live better and more independently?

Krishani Dinali Imasha Perera

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Recent advances in science and technology have driven healthcare systems and facilities forward in leaps and bounds. It is undeniable that better healthcare prolongs lifespan. However, old age always awaits you at the horizon unless immortality is achieved to preserve youth. Growing old always paints a very grim picture in our minds eye, depicting melancholy, aches and pains and a bunch of 'old' memories. Ageing with a chronic disease such as diabetes, arthritis, cancer, neurological disorders and cardiovascular diseases including heart attacks and strokes would only add more pain. Based on our lifestyles and observations, scientific evidence is not necessary for us to comprehend that the possibility of inevitable old age being coupled with a chronic disease is higher than ever. According to recent statistics, the population above 60 years would increase up to 25% over the next 20 years in United States alone and incidence of chronic diseases, utilization of healthcare and its cost will reciprocally increase with age. Effective treatments are yet to be discovered for most of these diseases. Expensive supportive or symptomatic treatment only alleviates suffering, extends life by a couple of years and requires attention of dedicated caregivers. Therefore, funding agencies are in collaboration with scientists to discover and develop preventive, therapeutic and disease management strategies for all kinds of health-related issues. Meanwhile, new high throughput diagnostic techniques allow early diagnosis of diseases to implement treatments or predict diseases that might surface in the future. New devices are innovated and tested to aid functions which would usually require assistance of another person, to compensate for the shortage in caregivers.

Loneliness and depression are two other companions of old age. In the past, people revered elders in the community and valued their advice and opinions; elders were prominent members in the family. With the everchanging society, more priorities, new technology, job opportunities, growing cities and changing life styles, this trend is slowly drifting away from the younger generations and they often see their parents and elders as a huge burden. Elderly individuals require increased attention, patience and time in addition to health and medical expenses. Therefore, responsibility towards elders are often left at homes for the aged or

nursing homes. On the other hand, many elderly people prefer living at their own dwellings, alone or in the company of their loved ones, which avoids higher institutional costs. My own grandma is a strong woman in mind and does not wish to leave her own house although her body is weak and fragile and requires assistance of a wheelchair. My personal experiences and interactions with the elderly also lead me to assume that many people prefer to be independent and are determined to plan retirement and insurances ahead of time to make the retired life secure. Even though ageing while living alone would be challenging, prudent planning, medical advances, innovative technology and smart devices would allow us to age in style.

Imagine yourself as a 70 years old widower. Your only son is living abroad. Despite your son's earnest requests, you always wanted to live in your own house where every nook and corner carries memories of the past. Leaving home is a torture even in imagination and you managed to convince your son to allow you to live alone. Today is just an ordinary day. You always wake up at 7am as a habit. It takes several minutes for you to get up from the bed, your body is weak but still you can do everything on your own without any help. The sensor near the bathroom records the time you step in; it keeps a record of your frequency of visits to bathroom. You get dressed and move to the kitchen. Your refrigerator screen notifies you what to prepare for breakfast according to the dietary schedule by your dietician. It indicates the ingredients for the recipe and the amount of calories. You easily prepare food with the help of your smart cooker that can automatically switch off after a period of inactivity. No accidental fires! The refrigerator screen pings again, it is time for you to replenish the food stocks and you put a reminder in your smart phone. Your smart pill box alerts you to take the morning medicine at the same time; it is hard to miss any doses with this device. Now, you sit in your favorite armchair anticipating a video call. Your son contacts you through Skype every day at 8am. It is so easy to contact him and you know that he cares for you because even during the day, he texts you from time to time. After a chat with him, you decide to walk a bit in the garden. When you come back inside, you check your smart watch. It shows your heart rate, oxygen saturation, blood pressure, calorie consumption and activity level. You know that if something goes wrong, this device can automatically notify the emergency care and your doctor in the local hospital within seconds. It beeps again reminding you to check the blood glucose level for the day. Your insurance company has analyzed your personal reports as a part of case management to implement and coordinate a personalized healthcare plan for you. All the devices and sensors in the 'home health telecare unit' installed in your house monitor and record your activities and vitals on a daily basis and reports to your doctor, who then analyzes your reports of vitals, adherence to diet and medication guidelines and

changes in daily habits between visits, to monitor your overall physiological condition and identify or predict underlying or emerging disease conditions, and advices you during the visits to the hospital- if data is not transmitted daily, telecare unit beeps and warns you. Pricking your finger is a gruesome activity for you and you need to divert your attention to something else. So, you decide it is best to order grocery in the morning, then they home deliver it early. You used to go grocery shopping but driving alone with poor eyesight and coordination is dangerous and online shopping is easy. Everything is at your fingertips and you can take your time and choose what you like through your smart phone while sitting comfortably, without dragging a heavy cart along aisles in a busy mall. It takes seconds to press several buttons to open the front gate and the front door after recognizing the delivery guy's face from the CCTV transmissions and he carries your grocery into the kitchen. Lost in a train of thoughts, you accidentally check the time. There is still some time left for you to get ready to attend the monthly meet-up of the senior citizens in your community. It is a fun event and a good opportunity to interact with each other and play some games while chatting over each other's aches and pains. You also reserve a taxi to take you there through your smart phone. You can even request the assistance of a nurse or a cleaner through your phone; everything is easy. You feel relaxed and comfortable sitting in your favorite chair. Your daily activities and physiological conditions are monitored and you are in contact with your loved ones. Your retired life is peaceful and you enjoy what you really wanted in life after your retirement from a busy lifestyle.

This is the lifestyle I desire for every senior citizen even though it is yet another dream for those in my life. It is truly amazing how technology integrated with advancements in medicine can influence your lifestyle. Most of the technological aspects described above are either publicly available or exist as a prototype. Insurance companies, healthcare providers or the government should support more innovative ideas, provide incentives to developers and consumers and assure that these are readily available at an affordable price to everyone regardless of income, level of education or social strata. Effective tech-integrated medical care would also require monitoring of health and activities of patients to reduce emergency events while managing health after diagnosis of a disease condition and motivating patients to adhere to guidelines and utilize technology on a regular basis by educating and engaging them along with the family members or caregivers. The current generation stepping into old age lived an 'offline' life and would require coaching to be integrated into the technological innovations. However, the new generation has more exposure and experience with technology and the demand for technological interventions will be higher in the future with their ageing. Therefore, it is definitive that technology and technology based advances in medicine has

enabled elderly individuals to live independently and provide assurance to their caregivers and loved ones. However, according to my beloved grandmother, human feelings and interpersonal relationships are irreplaceable and a simple visit or a 'hearty' chat with someone you deeply love would magically cure all aches of mind and body.

- By Krishani D. Perera