

Redesigning Long-Term Senior Care: Design Solutions to Facilitate Different Levels of Care Needs in Senior Housing - Using Hong Kong's Latest Senior Housing as Example

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ABSTRACT

Over the next two decades, between 2017 and 2037, China will see an enormous increase in its population of senior citizens (people over 65). This increase will result in two hundred million seniors needing to be accommodated. In Hong Kong, the issue of an aging society is even more critical: in just 15 years, the city will need to accommodate another one million seniors, one-seventh of its current total population.

Thanks to advances in healthcare and technology, today's seniors are expected to enjoy a dynamic and high-quality lifestyle for a much longer period of time after they retire. The extended lifespan of these "new generation senior citizens" poses a number of uncertainties and unprecedented challenges in terms of the design of senior housing and the provision of sustainable elements – these designs need to be adapted to help seniors enjoy their dynamic lifestyle as well as assist them through the aging process.

This paper explores how the different stages of life and aging are categorised in different countries and which long-term senior care needs are associated with these categorisations. It also investigates the country-specific regulations and guidelines formulated for the needs of seniors, and discusses how design solutions can facilitate their implementation. Japan, Australia and Canada have comprehensive pension and senior care policies. Their long-term care systems were studied in this paper.

Lastly, the paper discusses two senior housing projects in Hong Kong, Harmony Place and The Tanner Hill, as case studies. The paper concludes four design strategies that will help achieve sustainable long-term senior care in housing developments in China and Hong Kong.

1. THE AGEING TREND IN THE POLULATION OF CHINA AND HONG KONG

1.1 Rapid ageing

The ageing of China's population has become more apparent as it enters the 21st century. According to scholar Florian Coulmas' definition of an ageing society in his study on Japan, a country is an 'ageing society' when its seniors (aged 65+) account for 7% of the total population. It becomes an 'aged society' when the percentage rises to 14%, and a 'hyper-aged society' when the percentage reaches 21% (Figure 1). According to the census and forecast data of the World Health Organization, China became an ageing society in 2000, and will become a hyper-aged society come 2040.

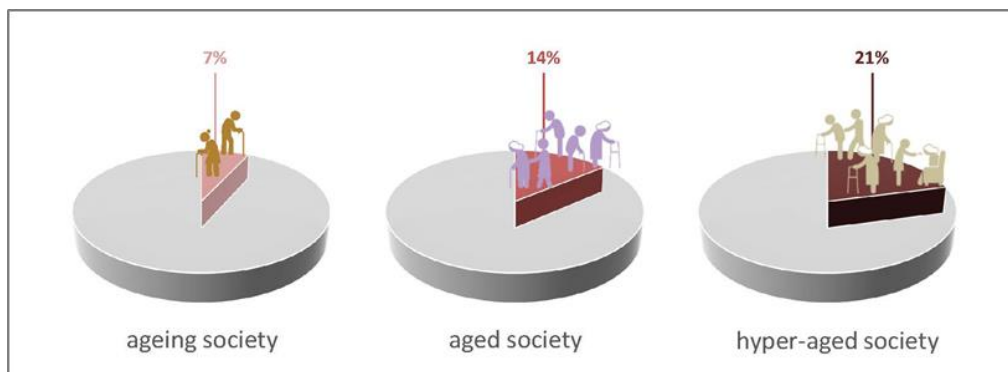


Figure 1: Definition of "ageing society", "aged society" and "hyper-aged society"

Based on the ageing rate, China will enter a period of rapid ageing after 2030. It takes 30 years (2000 - 2030) for an ageing society to become an aged society, but it takes only 10 years (2030 - 2040) for it to move further into a hyper-aged society. As far as the senior ratio is concerned, it takes merely 22 years (2010 - 2032) for it to double to 25%. It is estimated that by mid-century, China's senior ratio will reach its peak, with one-quarter of its population aged 65+. This ratio is higher than the definition for a hyper-aged society, and far higher than the world average (Figure 2).

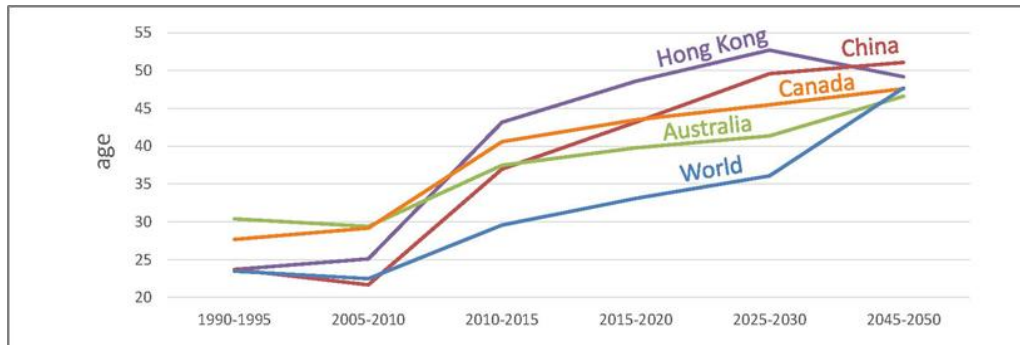


Figure 2: Median age of population in China, Hong Kong and other countries
(Source: United Nations, Department of Economic and Social Affairs, Population Division (2015). *World Population Prospects: The 2015 Revision*. New York: United Nations)

Although the senior ratio at its peak in China is still far lower than some of the developed and developing countries (such as Japan and Singapore, etc.), in terms of absolute numbers, it still represents an enormous growth, and the number of seniors has long topped the global league. It took Hong Kong and China merely 30 years from the end of the last century to evolve from an ageing society into an aged society, a speed that far surpasses the ageing process of developed countries at the beginning of the last century (Figure 3).

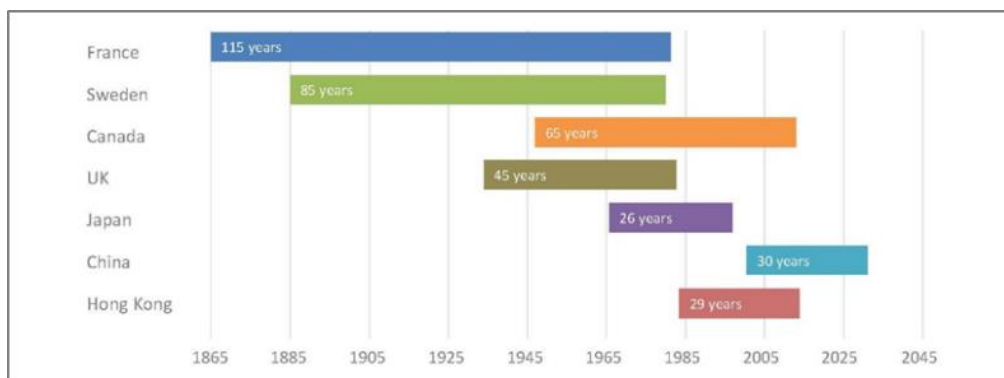


Figure 3: Time required for seniors of various countries to grow from 7% to 14%
(Source: United Nations University, and WHO Kobe Centre. "The Wisdom Years: Ageing into the 21st Century". <http://wisdom.unu.edu/en/ageing-societies/index.html> and United Nations, Department of Economic and Social Affairs, Population Division (2015). *World Population Prospects: The 2015 Revision*. New York: United Nations)

So what are the implications for the economy of a rapid rise in population and an enormous number of seniors? Statistically, China will, within the next two decades (2017-2037), have an added 200 million seniors (aged 65+), which is equivalent to Japan's current population x2 (Figure 4). This means society must now make provisions for the many challenges brought about by these 200 million seniors.

Compared with China as a whole, Hong Kong's ageing population problem is even more serious. Its senior population will grow by close to a million within 15 years (2014-2029) (Figure 5). Seniors numbered 1 million in 2014, accounting for 15% of the population, but rapid growth will take the numbers to 2 million and 26% respectively in 2029. It will be a serious challenge to provide housing and related senior care services for these additional 1 million seniors in the next 10 to 15 years.

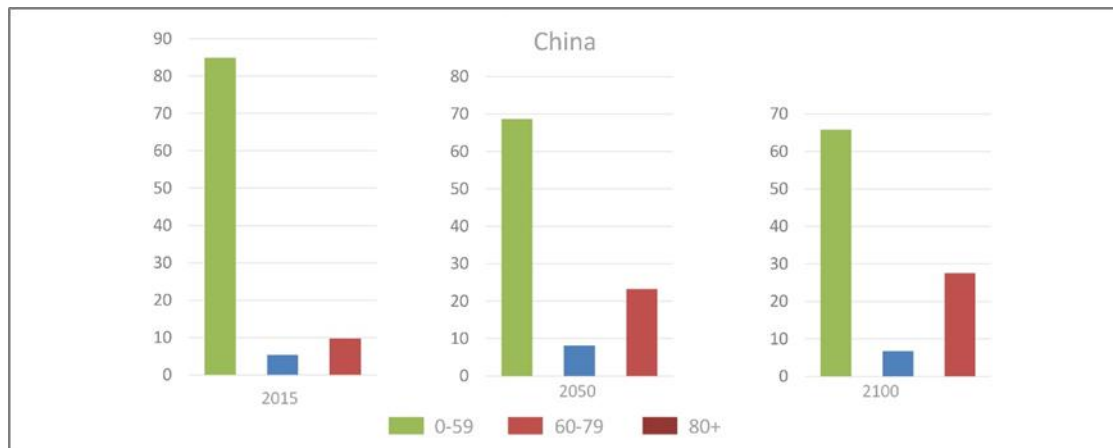


Figure 4: The ageing trend in China's population, 2015, 2050, and 2100
(Source: United Nations, Department of Economic and Social Affairs, Population Division (2015). *World Population Prospects: The 2015 Revision*. New York: United Nations)

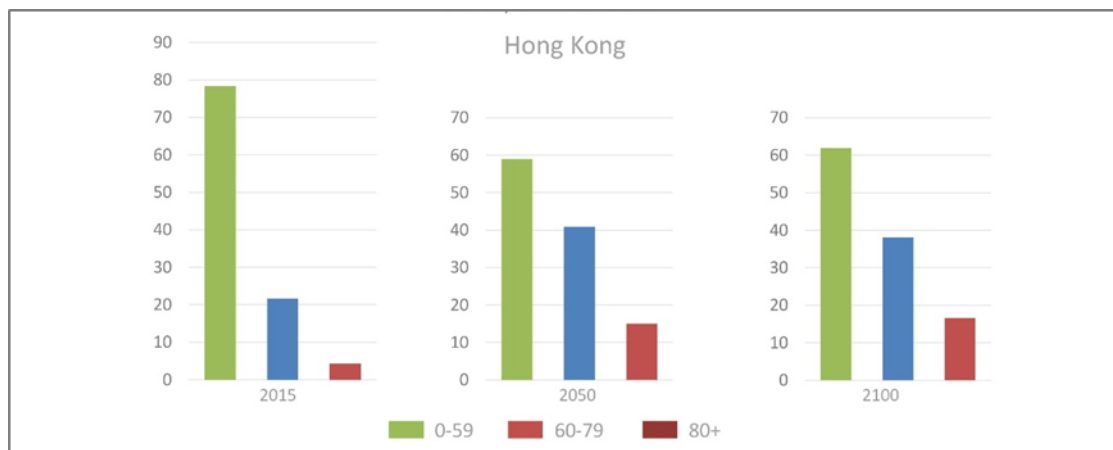


Figure 5: The ageing trend in Hong Kong's population, 2015, 2050, and 2100
(Source: United Nations, Department of Economic and Social Affairs, Population Division (2015). *World Population Prospects: The 2015 Revision*. New York: United Nations)

1.2 The extension of senior living

Following the ageing in the population, there is also an extension in the period of senior living. As the general retirement age in China is around the age of 60, related rule and regulations and definitions on senior care are also based on 60 years of age. Consequently, the drastic changes in the lifestyle of a senior actually precede his physiological changes.

Due to historical reasons, and using 60 years of age as the cut-off point, the growth in the ratio of younger seniors will be more rapid than those in the 65+ group. At its peak, one-third of the population could be over 60 years of age. Therefore, the number of people approaching or entering a senior lifestyle could exceed the number based on physiological grounds.

There is a continued rise in life expectancy in China, exceeding the age of 80 at mid-century when the number of seniors reaches its zenith. In other words, seniors will, in future, enjoy more than 20 years of old-age living. The situation in Hong Kong is even more pronounced, as its general life expectancy will remain on top from now until mid-century (Figure 6). Between 2045 and 2050, its life expectancy is close to 90 years of age, meaning that Hong Kong seniors will enjoy almost 30 years of old-age living. The extension of senior living creates different demands on senior care services and housing facilities.

2010-2015			2025-2030		2045-2050	
1	Hong Kong	83.7	Hong Kong	86.0	Hong Kong	88.7
2	Japan	83.3	Japan	85.5	Singapore	88.3
3	Italy	82.3	Singapore	85.4	Japan	88.1
4	Switzerland	82.7	Italy	85.3	Martinique	88.1
5	Singapore	82.6	Switzerland	85.0	Italy	88.0
6	Iceland	82.3	Iceland	84.7	Chile	87.8
7	Spain	82.3	Spain	84.7	Republic of Korea	87.7
8	Australia	82.1	Israel	84.7	Switzerland	87.6
9	Israel	82.1	Chile	84.7	Israel	87.5
10	Sweden	81.9	Australia	84.6	Guadeloupe	87.4

Figure 6: Life expectancy of the Top 10 countries/ regions based on year of birth
(Source: United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision. New York: United Nations)

Date of appointment	Normal retirement age
On or after 1 June 2000 but before 1 June 2015	- 60 for civilian officers
	- 55/ 57 for disciplined services officers
On or after 1 June 2015	- 65 for civilian officers
	- 60 for disciplined services officers

Figure 7: Normal retirement age for civil servants in Hong Kong
(Source: Administration of the Civil Service, Civil Service Bureau, The Government of the Hong Kong Special Administrative Region 2016)

2. DIFFERENT LEVELS OF SENIOR CARE IN OVERSEAS COUNTRIES

2.1 Levels of care based on age in Canada

In the population ageing process, the speed of ageing and the physiological changes vary based on age. The speed of physiological decline varies from person to person, but is largely related to age. The decline in body functions must be matched by an appropriate level of care, therefore different age brackets are often used to determine the level of care. According to the Canadian Department of Health definitions in the 1990s, 60+ senior care is divided into three categories:

- Independent self-care: Generally refers to from retirement to 75 years of age (varying according to individuals). Seniors in this category have not experienced serious decline in their body functions, and may only require simple assistance for certain activities. They can choose to live independently, or in nursing homes that provide only basic lodging facilities. They can seek limited care services as required. From the age point of view, independent self-care is the most important stage of senior care.
- Semi-independent: Generally refers to 72+ of age. Seniors in this category have undergone certain levels of decline physiologically, and would find it difficult to stay fully independent. They would be recommended to choose nursing homes that provide basic care services.
- Full care 1: Generally refers to 79+ of age. Seniors in this category have experienced a higher level of decline. A full-service nursing home would provide the needed care.
- Full care 2: Generally refers to 84+ of age. Depending on individuals, seniors in this category may need to live in a nursing home or an associated medical care facility indefinitely.

2.2 Different levels of senior care and daily assistance facilities in Japan

In 1997, Japan introduced standards for long-term senior care needs. The assessment divided senior living self-care capabilities into 7 categories, viz, independent, assistance needed, and care services needed (class I to V). 'Independent' seniors refer to those who can live independently without any assistance. 'Assistance needed' seniors refer to those who can basically live by themselves, but may need assistance for social activities. 'Care needed' seniors class I refer to those who need some care; class II refer to those who need a low level of care; class III refer to those who need a medium level of care; class IV refer to those who need a high level of care; and class V refer to those who need the highest level of care.

In 2006, Japan revised the standards from the original 7 categories into 8 categories by splitting the 'assistance needed' category into class I and II. It also re-confirmed that all 'care services needed' categories require care services.

The long-term senior care classification is not solely based on the individual's health condition, but also on the time needed for the care services, and the level of care needed. Initially, Japan adopted a method of measuring the degree of care per minute for the sake of standardization. They assigned a bar code for each type of care services, and then recorded two consecutive days of care services data. After electronic processing, they worked out the degree of care on a per minute basis, and came up with the time required for individual care services, and hence the basis for classification.

However, the resultant data can show a significant difference from the actual time, and tend to push the services onto a higher category. By using a number of other approaches, the Japanese government improved on the original software in 2003. They put all the care services through a statistical analysis, and based on their inter-relationships, devised a tree-like model in order to measure the care time. In deciding on the classification, they take into consideration the seniors' physical and psychological well-being, and their medical diagnosis.

Based on the time required for the care services, the classification works out as follows: independent - below 25 points; assistance needed: 25 - 32 points; care needed - class I: 32 - 50 points, class II: 50 - 70 points, class III: 70 - 90 points, class IV: 90 - 110 points, and class V: 110+ points (Figure 8).

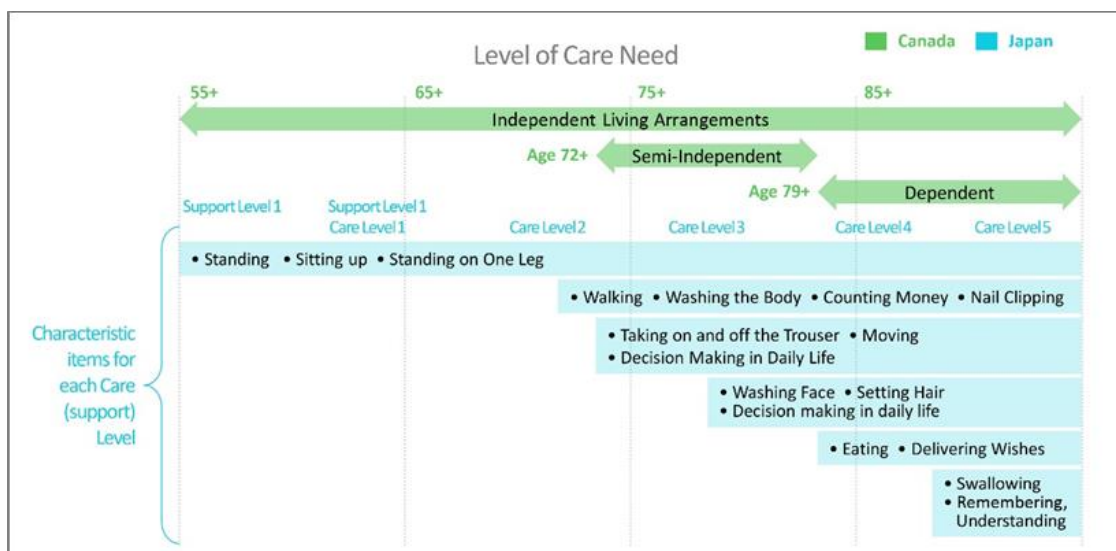


Figure 8: Canadian senior classification and Japanese senior care classification

2.3 Different levels of senior care system and policy in Australia

Based on different levels of senior care needs, Australia divides its hostel type of senior care, or the traditional nursing homes, into three categories. Its low level care allows the seniors to lead an independent life, but receive, at the same time, assistance with meals, washing, personal matters and care. The typical mode of operation is the specialized serviced apartments for seniors. Its high level care provides 24-hour care, in addition to meals, washing, cleaning, health care and personal care. The typical mode of operation is the traditional nursing home. Hospice

care provides for specialized care and medical attention for seniors with a terminal illness, making sure that patients enjoy a quality life to the very end.

As the majority of seniors opt for a low level of care and only parts of the high level care, a substantial portion of Australian seniors prefer to remain at home, or live in the local community with access to care services. Some seriously ill seniors or those with Alzheimer's disease also share the same preference. In order that these people can receive the same level of care services as in nursing homes, the Australian government has, in recent years, reinforced its support for community care services, and has, since August 2012, included community care services for Alzheimer's disease sufferers in the National Health Priority Area.

Currently, Australia has a very comprehensive community care service, and can provide for bespoke services to meet specific needs. Therefore, seniors can enjoy a longer period of independent living. This not only leads to very obvious social benefits, but also alleviates the pressure on nursing homes, thereby reducing social costs.

Based on different classes of care, Australia's community care services include:

- Home and community care (HACC): It includes seniors' daily care and health care services, home services, meals, transport, and repairs & maintenance.
- Community aged care project (CACP): It provides a variety of care services for seniors or those in weak health, and seniors with more complex needs.
- Long-term home care project: It provides for more flexible and personal services than CACP for those who need a high level of care.

2.4 Classification of current senior care policy in China

Currently, China's "Basic Policy of Social Welfare Agencies for Seniors" divides the care needs of people of 60+ years of age into three categories:

Self-care: Fully independent in everyday life without relying on others;

Device-aided: Relies on railing, walking stick, wheelchair and elevator in everyday life;

Nursing-cared elderly: Relies on care services in everyday life.

Based on the care needs of different age groups, the policy provides guidelines on the range of specific services (Figure 9).

For self-care seniors: Daily cleaning to ensure there are no flies, mosquitoes, rats, cockroaches and bugs; provision of clean, proper clothes plus washing (weekly in winter, spring and autumn, and more regularly in summer); maintaining a flow of fresh air; assistance with bedding management; weekly replacement of blanket cover, bed sheet and pillow cover (including immediate replacement as necessary); 2 bathing sessions per week in summer, one in other seasons; reminders on washing and cutting hair, and nail clipping; 24-hour care services based on established procedures; and adjustment of services depending on circumstances.

For device-aided seniors: Daily cleaning to ensure there are no flies, mosquitoes, rats, cockroaches and bugs; provision of clean, proper clothes plus washing (weekly in winter, spring and autumn, and more regularly in summer); maintaining a flow of fresh air; assistance with bedding management; weekly replacement of blanket cover, bed sheet and pillow cover (including immediate replacement as necessary); 2 bathing sessions per week in summer, one in other seasons; assistance with washing hair and nail clipping; regular barber service to ensure proper grooming; regular washing of towels and cleaning of wash basin; weekly toilet disinfection; assistance with visits to the toilet; 24-hour care services based on established procedures; and adjustment of services depending on circumstances.

For nursing-cared elderly: Daily cleaning to ensure there are no flies, mosquitoes, rats, cockroaches and bugs; provision of clean, proper clothes plus washing (weekly in winter, spring and autumn, and more regularly in summer); maintaining a flow of fresh air; assistance with bedding management; weekly replacement of blanket cover, bed sheet and pillow cover (including immediate replacement as necessary); assistance with dressing in

the morning and undressing at night; 2 bathing sessions per week; regular hair washing and nail clipping; dental care; regular barber service to ensure proper grooming; regular washing of towels and cleaning of wash basin; weekly toilet disinfection; meal delivery and feeding; assistance with visits to the toilet; provision of walking stick, wheelchair and other devices as needed; assistance with personal cleaning in the morning and feet washing in the evening; weather permitting, accompanying the elderly daily for a one-hour session of outdoor activities; 24-hour care services based on established procedures; adjustment of services depending on circumstances; assistance with purchasing tickets for travel; special protection for females, the intellectually handicapped and those suffering from mental illness; and special provisions for elderlies with communicable diseases, including isolation arrangements and treatment, based on the principle of maintaining their dignity and consideration for others.

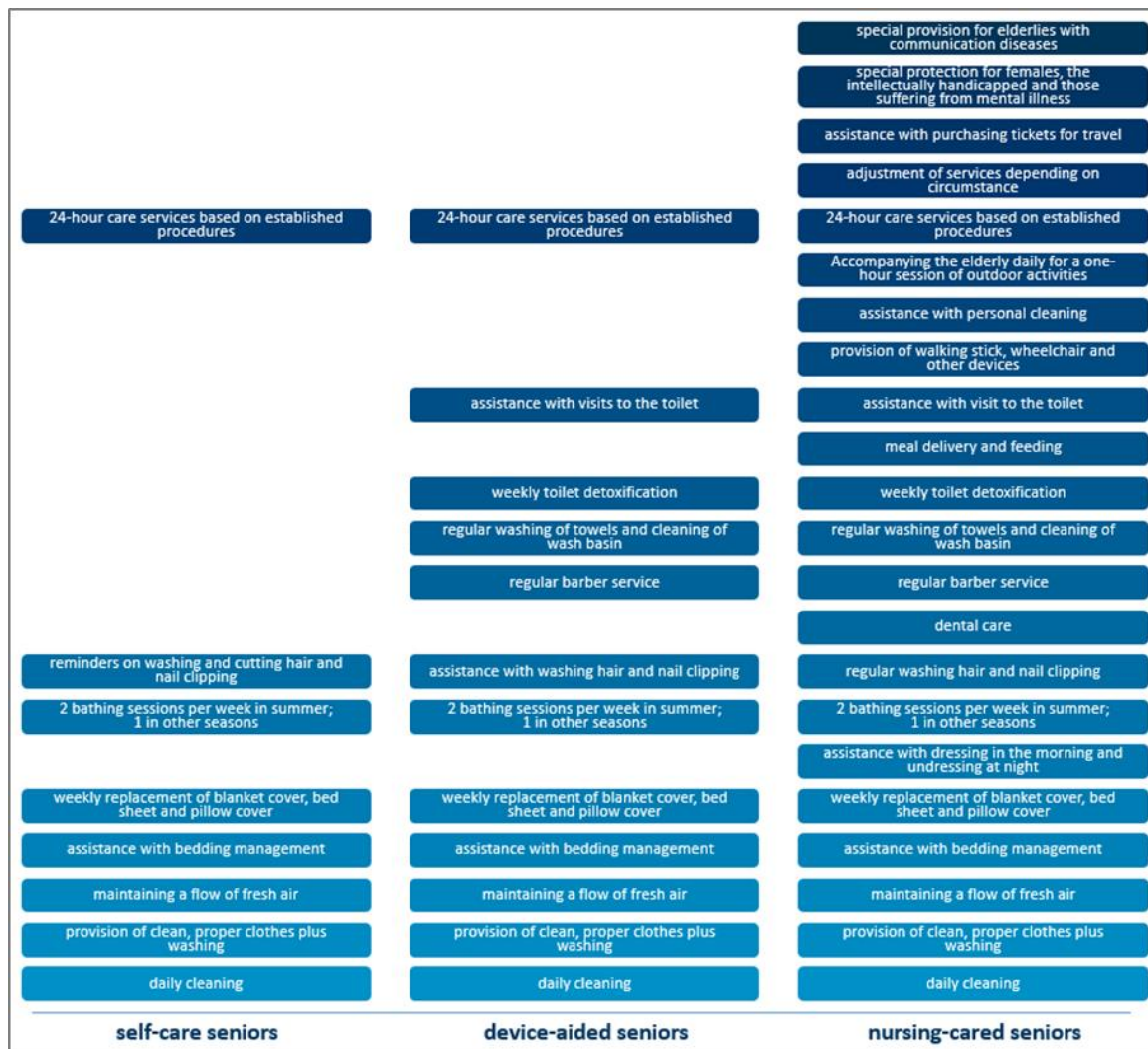


Figure 9: Guidelines on the range of specific services to be provided to different age groups with different care needs

To meet the different levels of care needs, China's senior care facilities feature different modes:

- Homes for the Aged: Cater to seniors who are independent, need assistance or care. They provide lodging, entertainment, rehabilitation and medical care services.
- Hostels for the Elderly: Provides communal living facilities for the elderly, including meals, hygiene, entertainment and medical care services.
- Homes for the Device-aided Elderly: Provides assistance to the elderly, including lodging, entertainment, rehabilitation, and medical care services.
- Nursing Homes: Provides care services to the elderly, including lodging, entertainment, rehabilitation, and medical care services.

- Homes for the Elderly in the Rural Areas: Provides services for those without certified volunteer helper, or with certified volunteer helper who does not have the capability to provide care services; those who are incapable; and those who have no sources of income. Services encompass meals, clothing, lodging, medical care and funeral services, in addition to entertainment and rehabilitation.
- Nursery for the Elderly: Provides short-term (day care, full care and contingency care) services, including lodging, entertainment, rehabilitation, and medical care services.
- Center of Service for the Elderly: Provides a comprehensive range of social services, including entertainment, rehabilitation, medical care and home visit services.

3. ASSISTANCE AND DESIGNS GEARED TO THE NEEDS OF CHINESE SENIORS

3.1 Senior assistance principles

3.1.1 Evolution of the concept of senior care

Ageing population has become an important social issue in both China and Hong Kong. Census data show that China is fast becoming an ageing society, and the trend will intensify in the first half of the 21st century. But with the advances in medical science and the improvement in the physiology of seniors, the definition of old age is becoming out of sync with the actual rate of physiological decline.

Old age is the final stage of a person's life when physiological decline no longer allows the person to handle the demands of social activities. While a person can live with complete independence in his youth, he will begin to need special care as he gets older. Therefore, old age demands adjustments in one's lifestyle. The normal work life gives way to a complete withdrawal from work into a lifestyle that requires assistance. In other words, a retirement lifestyle.

But this concept is beginning to veer from actual practice. China established the retirement age at between 50 to 60 (for special jobs, it could be as early as 45), which no longer matches the actual rate of physiological decline. The majority of retirees at age 50 to 60 are still bubbling with energy, and physically they can keep up with the younger set both in lifestyle and, to some extent, in work. This situation looks set to continue for 10 to 20 years.

Nowadays, many people who have just entered the old age bracket choose to continue to live at home, until they become incapable of looking after themselves, because traditional hostels and nursing homes tend to focus on the physiological decline in seniors, and overlook their social and psychological needs. In providing a certain degree of medical care, these establishments should also respond to these demands, so that seniors can live their life to the full independently in the post-retirement period which may last for 20 years.

3.1.2 The psychology and social needs of younger seniors

Like their younger counterparts, seniors have a host of psychological needs that must be satisfied, in addition to their basic survival needs. They include:

A sense of security and affection: They long for care and attention; they would like to live in a familiar environment where everything is agreeable, or at least bearable.

Social recognition: They look for respect from people that matter.

Personal values and dignity: They look for the ideal life.

Besides physiological decline due to ageing, the change in his social role also triggers a psychological impact on the senior. This is especially apparent in the early stage of ageing when the abrupt change in his social role causes discomfort. Retirement leads to a change in lifestyle and the loss of his old circle of friends, personal values and social status. The decline in physique and consciousness, and the reduction in income lead to a progressive decline in a sense of security. Other traumas in life, like the loss of spouse, also demand a transition period of adjustment.

Traditionally, senior care facilities focus on medical services without sufficient attention to psychological adjustments and care for the seniors. Accommodation-wise, we need to create a comfortable and secure living

environment for them. On a social level, we should ease them into a new chapter of their lives by maintaining as much as possible their pre-retirement social life. If we prematurely limit their new lifestyle and social circle to their contemporaries, or even older people, as practiced in most nursery homes, they would find it very hard to make the necessary adjustments. Senior care establishments should encourage them, health permitting, to at least maintain a part of their previous lifestyle, continue to work to a certain degree, and to actively participate in community activities.

3.1.3 Medical care

When a senior falls ill, its severity could vary by a wide margin, so the best way is to send him expeditiously to the nearest medical facility for treatment. A senior, no matter he is living by himself or with his family normally could not afford a 24-hour medical care service, so senior housing should aim at being able to send the patient to hospital within a specified time, and providing the doctor with accurate and detailed data.

A doctor from resident medical services of a local private hospital points out that when they treat emergency cases of seniors, the crux lies in early detection and in whether those who accompany the patient can accurately determine its degree of seriousness. Doctor needs to know the patient's condition to facilitate diagnosis and treatment. As time is of the essence, the trip to the emergency ward of the hospital must be as short as possible.

3.1.4 Domestic safety and convenience

Statistics shows that the majority of seniors who have had a domestic accident, such as slipping, would sustain a degree of injury. With their physiological decline, some of these injuries could cause serious harm, and it is often very difficult to recuperate. Therefore, domestic designs for seniors should take into account not only the convenience factor, but also the safety factor. The decline in physical capability means that seniors cannot independently deal with certain household chores, and require an appropriate level of assistance.

- Decline in memory and consciousness: Seniors are slow to react to changes in the domestic environment because of weakened sensory functions and memory, leading to accidents when they engage in day-to-day household matters and activities. Most younger seniors live alone, and even if they have company, they often perform certain functions by themselves, like taking a bath or going to the toilet. Therefore, there must be warning signs for any steps in the domestic environment. When accidents occur, such as a fire, an additional alarm system would minimize casualties.
- Decline in mobility: Seniors are physically not as strong as young people, and with ageing and/or illness, they would need a walking stick or wheelchair to facilitate movement. When there is insufficient support or the standing duration is too long, accidents will happen. Toilets equipped with railing support and anti-slippage designs will reduce the incidence of accidents.

3.2 Design strategy for senior housing

Ageing population has become a social problem that must be faced squarely in both China and Hong Kong. The composition of the senior population and the new trend of their health status mean that traditional senior care facilities lag far behind current needs, stretching into the next 50 years. The new generation of seniors are looking forward to a new model in senior care facilities, something that can provide assistance for 10 - 20 years of high-quality retirement living. Given proper assistance, seniors can maintain a lifestyle that is not vastly different from their youth. If their previously neglected psychological needs are met in addition to their physiological demands, they can make a smooth transition to a more advanced stage of ageing. In response to seniors' multifarious needs, housing designs can make specific adjustments to provide for a high-quality senior lifestyle.

3.2.1 Private and social space

The abrupt change in the social role after retirement often causes discomfort for seniors, so social activities can maintain their contact with society and the community, thereby easing the feeling of loneliness. Seniors also feel that the private space they enjoyed while they were young have now been reduced to a certain extent, because of the need for care and assistance due to their physiological decline. As long as their safety is in place, we should let them enjoy as much of their serene private space as possible. At the same time, we should, through the

provision of convenient space for social activities, meet their psychological desire for company or for participation in group activities (Figure 10).

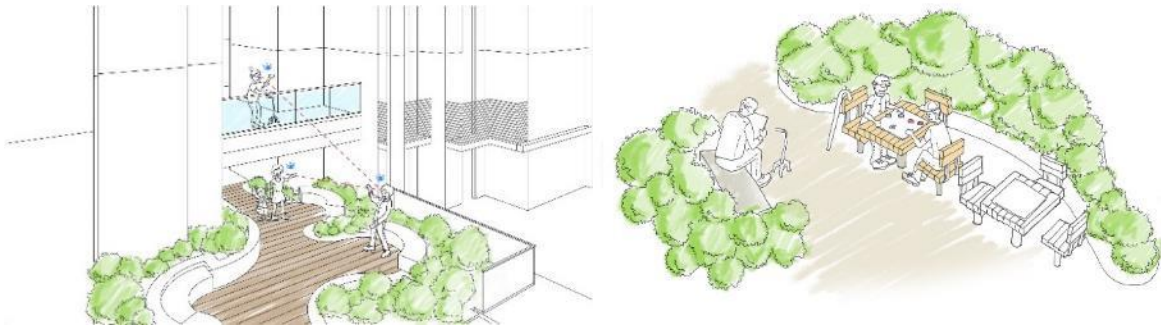


Figure 10: Social infrastructure and stimulation for establishing new friendships and interaction with peers

3.2.2 A comfortable and agreeable environment

Your submission must provide the details of the work to readers. It should be clearly divided into sections, with heading/ sub-headings, so that readers can follow the logical development of work. Using headings is a great way to organise the paper and to increase its readability, so make sure to format them correctly.

Seniors are comparatively more sensitive to environmental impacts such as noise and light pollution. The abrupt change in their social role and their ageing body have created a sense of insecurity, making them yearn for a comfortable and predictable living environment. If their building makes use of natural materials like timber, and opts for a warmer palette, they will nurture a more homey feel, and, at the same time, reduce the sensory impact and feeling of loneliness. Natural lights, ventilation and greenery not only improve the general hygiene indoors, but will also enhance the overall tranquillity and comfort level. Conditions permitting, we should let seniors come into contact with a green outdoors environment as much as possible (Figure 11).

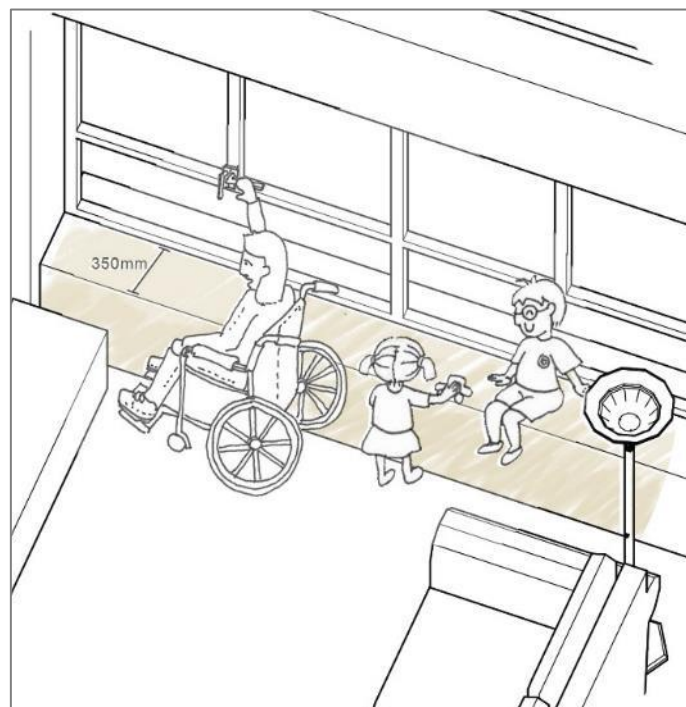


Figure 11: A shallow bay window and appropriate window designs would facilitate lighting and ventilation, and enables seniors to open/ close them more easily.

3.2.3 Prominent signage

To enable seniors to familiarize with their living environment and understand any changes, both interior and exterior signage should be bold and clear. For example, each floor level and emergency exits should be marked in bigger fonts and in strong colours, so that those with poor eyesight can easily read them (Figure 12). The front door peephole should be installed at both standing and wheelchair levels, so that seniors can identify visitors at various stages of their mobility (Figure 13). Corridors and partitions should be installed with built-in night lights, so that seniors do not have to grope for the light switch; and they should be soft enough as not to affect sleep. Other safety installations, like smoke sensors and fire alarms, should be set at levels that are visible to wheelchair users.



Figure 12: Seniors will be able to read the signage more easily if it is in bigger fonts and stronger colours

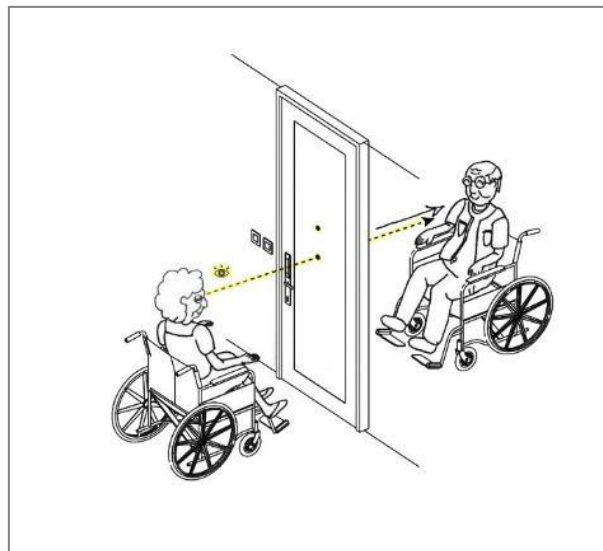


Figure 13: Peep-holes in front doors should be installed at both standing and wheelchair levels.

3.2.4 Smooth emergency passage

Your submission must provide the details of the work to readers. It should be clearly divided into sections, with heading / sub-headings, so that readers can follow the logical development of work. Using headings is a great way to organise the paper and to increase its readability, so make sure to format them correctly.

Accidents and sudden illness could have very serious impact on seniors, and they must receive prompt medical attention. Therefore, the trip from home to the hospital should be as short as possible. Senior homes must be so designed as to enable the early detection of sudden changes in the senior's health. Seniors who live by themselves or in private rooms should install a motion detector, so that if there is no movement for an extended period due to illness, his family can be alerted as early as possible.

In private spaces like the bathroom or the toilet, they should install sliding doors that can be opened in emergencies, to facilitate entry without hitting the senior who may have fallen or fainted (Figure 14). In order that patients may reach the hospital as soon as possible in emergencies, senior housing should be sited close to medical facilities with pre-determined transport routing and arrangements. There should also be provisions for ambulance loading/unloading. The lobby and lifts in the building must be able to accommodate mobile beds or stretchers, so that whether lying or in wheelchair, the senior who needs urgent medical attention can directly access the ambulance (Figure 15).

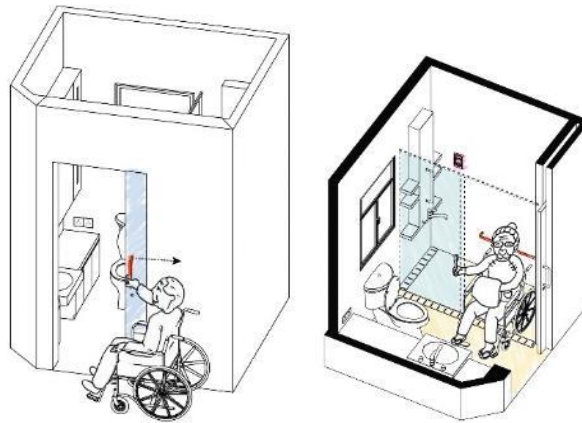


Figure 14: Bathrooms and toilets should install sliding doors that can be opened in emergencies.

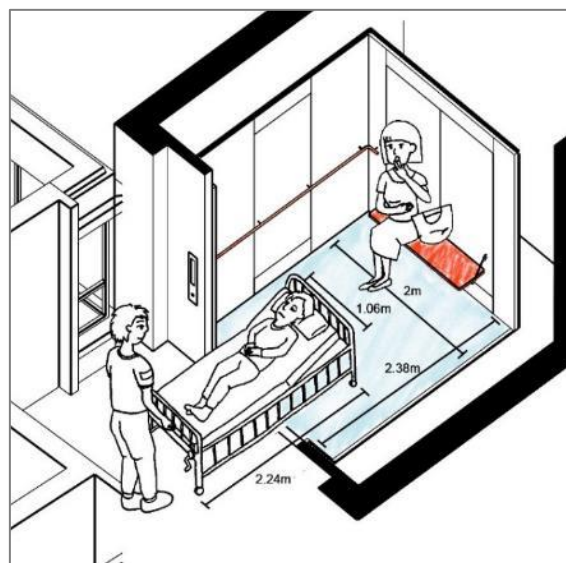


Figure 15: Lifts that can accommodate mobile beds.

3.2.5 Convenience and safety considerations

Senior housing should be designed to assist occupants in their daily lives so that, despite their physiological decline, they can still conveniently accomplish a majority of household tasks free of accidents. Owing to their failing physique, seniors often require additional assistance and support. Therefore, corridors should be installed with railings that seniors can avail of, whether standing or in wheelchairs. The same principle applies to public spaces, including lifts and passageways (Figure 16).

There could be provisions for a bench in lifts for tired legs to minimize the danger of falling due to weakness or movements. As some physically handicapped seniors may need a wheelchair on a short-term or long-term basis, building designs should cater to their special needs, for example, lowering the height of furniture. Kitchen benchtops should be lowered by 0.8 meters, and microwave and cupboards should be installed below 1.3 meters (Figure 17).

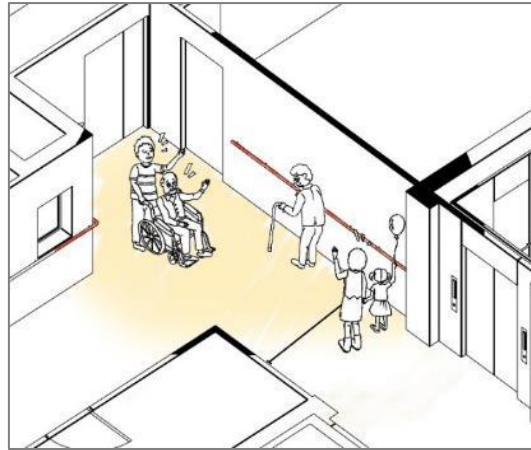


Figure 16: Public spaces should install support railings.

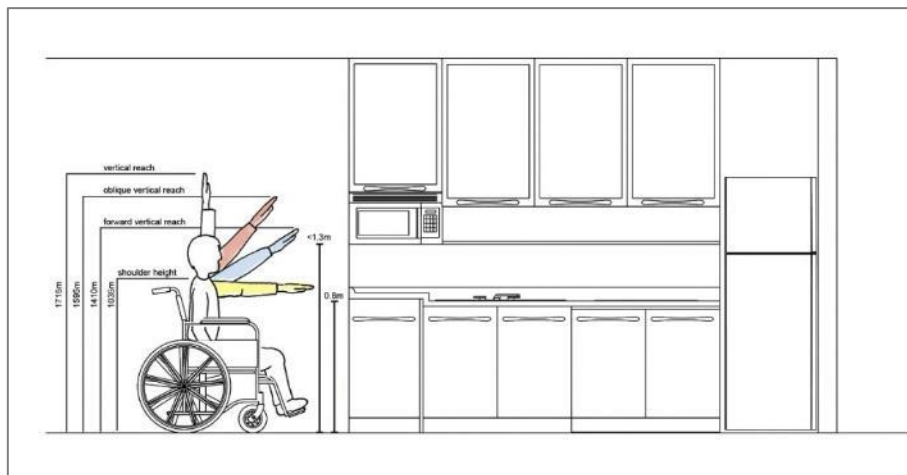


Figure 17: Household designs that cater to wheelchair users.

3.3 Senior housing development in a high-density city environment

China's ageing population has created a heavy demand for senior housing that meets their specific needs. To meet this rising trend, different countries are exploring a variety of options. In the Asian region, a senior care community model that adapts to a high-density city environment is probably the answer. This model should be based on a 'family first' concept, and re-create the living environment of a traditional family mansion in the spatial context of a high-density city environment.

China's cultural tradition has always been based on the family and its close relationships as the bedrock of society, with the older generation enjoying a lofty position in the hierarchy. This characteristic is reflected in China's traditional housing designed for extended family living together. A typical example is seen in the rectangular garden mansions (Si He Yuan 四合院) commonly seen in northern China, where family elders live in the main house, and the younger generations live in the subordinate blocks, creating a central open compound for family bonding and communal activities. Different generation members look after one another, providing spiritual support and nurturing a sense of belonging among their members.

The Chinese society has, over time, undergone modernization. As more and more people congregate in the cities, the urbanization process has ushered in high-density cities as major hubs of habitation, and traditional family mansions have been replaced by units stacked vertically on top of one another. The old extended family concept has evolved into individual families creating their own nucleus of living, posing a threat to traditional family values. As a result, seniors not only face new difficulties with their physiological decline, but also a loss of spiritual and physical support and sense of belonging, because of the separation with their children in their habitation. This situation is even more pronounced in high-density Hong Kong and in China's other major cities.

However, this traditional practice of extended family living and respect for elders runs deep in Chinese culture, and most families are still prepared to share the load of looking after the older generation. We may be able to solve the problem of senior care brought about by ageing population through the study of two approaches in spatial utilization in a high-density city:

3.3.1 Vertical 'generational integration' model

In a multi-storeyed, high-density development, the building can be divided into zones on a vertical basis. The lower-level zone is devoted to senior hostels, with special provisions in the design to meet their needs, while the higher-level zone is made up of normal apartments, together with related communal facilities. This configuration allows members of an extended family to live in different zones of the same building. Each generation has its own private space, but can maintain communication and meet in communal spaces. It is, in reality, the remake of the traditional garden mansion in a vertical mode.

3.3.2 A consolidated model with diversified lodgings

A second approach features a small community that comprises a diversity of lodgings to suit different families. Seniors would live in low-rise terrace houses/units, while the younger generation would live in adjacent high-rise blocks because of their smaller number of family numbers. The two types of lodgings would share the same outlook and communal facilities. It is, in essence, a modern version of extended family living which promotes inter-generation interaction and mutual care.

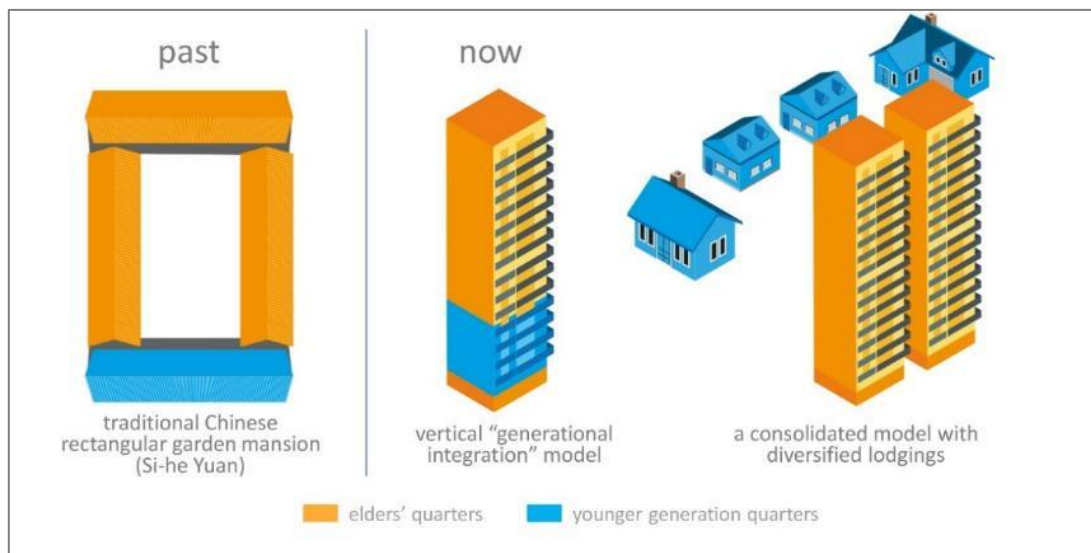


Figure 18: Harmony living in Asia

3.4 Case studies

3.4.1 Vertical 'generational integration' model

Located in Shau Kei Wan on Hong Kong Island, Harmony Place is an urban renewal project completed in 2015. It comprises a multi-function block and a 42-storey residential block. The project aims to promote a senior care mode with the senior living close to other family members, and addresses the current trend of ageing population. About 30% of the development is made up of senior apartments for lease, while the rest are private residential units for sale (Figure 19). Residential unit owners have priority in leasing the lower-level apartments for elders in the family, so that seniors and their family members each have their own private space, and are close to each other. The multi-function block is designed with seniors in mind, and comprises retail shops, clinics and senior service centres.

Generational integration design aims to encourage younger family members to live with the older generation, and provides support to seniors suffering from physiological decline. Although retirees these

days are physically much fitter than previously, improvements in the finer details of interior design would lift their quality of life. More importantly, a number of ancillary medical facilities and household services, like clinics, can provide basic medical services to seniors from their retirement to a more advanced hostel-bound stage of their old age, a period that could span nearly 20 years.

A senior hostel obviates the need for a senior who lives in an ordinary apartment to make a move to a nursing home as he grows older and suffers from physiological decline. The older one gets, the lower the ability to adapt to new circumstances. The abrupt change in the living environment impacts heavily on seniors both physically and psychologically. Senior hostels have adequate basic facilities which can be adjusted to meet changing needs, enabling seniors to continue living in a familiar and caring environment for as long as possible. It is a blessing for both the senior and his family members.

Generational integration also dovetails with the new trend of an extended retirement life and a new breed of healthier and more agile seniors. It not only effectively looks after their health, but also provides private space for both parties in spite of their physical closeness. This mode of living largely maintains their original lifestyle, including family gatherings, reunion with friends, and to a certain extent their previous work. Therefore, it meets the seniors' two psychological needs: the care of family and friends, and their social status and recognition. Living close to family members in a semi-independent mode can effectively alleviate the feeling of loneliness, and of isolation from society due to retirement.



Figure 19: The generational integration design of Harmony Place comprises lower-level senior hostel for lease, and higher-level private residential units for sale.

3.4.2 Thoughtful interior designs: The Tanner Hill

Your submission must provide the details of the work to readers. It should be clearly divided into sections, with heading/ sub-headings, so that readers can follow the logical development of work. Using headings is a great way to organise the paper and to increase its readability, so make sure to format them correctly.

Located in North Point on Hong Kong Island, The Tanner Hill comprises two 24-storey towers and a 29-storey tower, offering a total of 588 units that range from 344 sq ft to 1,231 sq ft. The lower-level podium comprises the residents' clubhouse and medical services centre that offers entertainment and medical services respectively. There is also a day-care centre, a cognitive training centre and a nursing home, providing rehabilitation treatments, plus day care and 24-hour care as needed.

The residential units have been designed with seniors in mind, and incorporate many detailed considerations. The unit entrance is deliberately wide and free of doorsteps. The front door is fitted with a U-shaped handle at an appropriate level, as well as two peep-holes at two levels. The interior signage and alarm systems have taken into account the decline in sensory sensitivity of seniors. Therefore, the fire alarm adopts an audio-visual approach to enable hearing or sight impaired seniors to detect such mishaps as early as possible. All rooms and corridors are installed with night lights so that seniors can find their way with ease; and there are stripe designs on the sliding door of the shower.

As seniors grow older, some of them may have to resort to wheelchairs, therefore the positioning and measurements of furniture and fittings in bathrooms and toilets have been adjusted in accordance with the height of wheelchair users (Figure 20). Cabinets in the open kitchen and specified bathrooms are movable for their convenience. Kitchen amenities have also been adjusted so that they can easily manage, while the shower sliding door can be replaced with shower curtains. All light switches and sockets have been enlarged and conveniently positioned. For the sake of safety, interiors, and especially the bathroom and showers, are equipped with emergency call buttons.



Figure 20: Kitchen cabinets and benchtop have been adjusted to suit wheelchair users.

The interior design concepts are extended to the exterior public places. For example, there are clear signage and alarm systems. Each floor level is clearly labelled in bigger-than-average fonts to help residents identify their own abode (Figure 21). The lift lobby, the lift interiors and corridors are all fitted with support hand railings at an appropriate height; and the lifts all feature seating for those weak on their feet. To prevent slipping, the floors feature anti-slippage designs.

Another important consideration in the design of public open space is to ensure that ambulances can arrive at the scene promptly in the event of accidents or other unforeseen circumstances. After the application of first aid, they must be able to transport the patient to the hospital as quickly as possible. The crux lies in the design of the lifts, the residential unit and the lobby of the building. The Tanner Hill has made provisions for special jumbo lifts that can accommodate stretchers or mobile beds. In the event of an emergency, the senior patient can be transported in these lifts directly to the ambulance with a minimum of delay.



Figure 21: The Tanner Hill features clear level signage and appropriately positioned lift buttons.



Figure 22: The Tanner Hill provides extra common areas for leisure and social gathering.

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