









## REVIEW ARTICLE

# COVID-19 and older people in Asia: Asian Working Group for Sarcopenia calls to actions

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The coronavirus disease 2019 (COVID-19) pandemic has casted a huge impact on global public health and the economy. In this challenging situation, older people are vulnerable to the infection and the secondary effects of the pandemic and need special attention. To evaluate the impacts of COVID-19 on older people, it is important to balance the successful pandemic control and active management of secondary consequences. These considerations are particularly salient in the Asian context, with its diversity among countries in terms of sociocultural heritage, healthcare setup and availability of resources. Thus, the Asian Working Group for Sarcopenia summarized the considerations of Asian countries focusing on responses and difficulties in each country, impacts of health inequity related to the COVID-19 pandemic and proposed recommendations for older people, which are germane to the Asian context. More innovative services should be developed to address the increasing demands for new approaches to deliver healthcare in these difficult times and to establish resilient healthcare systems for older people. *Geriatr Gerontol Int* 2020; 20: 547–558.

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## Introduction

The coronavirus disease 2019 (COVID-19) pandemic has evolved into a global public health and economic crisis that continues to throw curveballs at governments and healthcare systems worldwide. COVID-19 differs from previous severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) outbreaks in: its widespread impacts attributable to transmissibility (asymptomatic and pre-symptomatic spread);<sup>1,2</sup> major transmission among close contacts in the communities; and rapid escalation of cases that have overwhelmed available healthcare resources.<sup>3</sup> The case fatality rate (CFR) is not insignificant, particularly in older people aged >80 years (CFR: 14.8%–20.2%)<sup>4</sup> and those with comorbidities.<sup>5</sup> Global mortality is approximately 1%–2%, but this varies widely from 10.8% in Italy to 0.7% in Germany.<sup>6</sup> Nursing home residents are also particularly vulnerable with high COVID-19 fatality rates (49%–64%) in some countries.<sup>7</sup>

Owing to the lack of effective pharmacological intervention, management is mainly dependent on effective public health measures to mitigate spread and to flatten the pandemic curve. These measures include bans on public gatherings, compulsory stay-at-home policies, mandating closures of schools and nonessential businesses, face mask ordinances, quarantine and cordon sanitaire (i.e., a defined quarantine area from which those inside are not allowed to leave).<sup>8</sup> While public health measures have achieved success in reducing the effective reproductive number ( $R_t$ ) to <1.0,<sup>9</sup> there are other health, social and economic repercussions, which can disproportionately affect the vulnerable group of older people.<sup>10</sup> This has prompted calls for COVID-19 control measures to be more equitable and inclusive, and that failure to respect the needs of vulnerable groups will seriously undermine response efforts.<sup>11</sup> The overarching aim is to achieve a balance between successful pandemic control and active management of secondary consequences in older people (Fig. 1).

These considerations are particularly salient in the Asian context, with its diversity among countries in sociocultural heritage, healthcare setup and availability of resources.<sup>12</sup> This provided the impetus for this special article, which represents the joint response of member countries who were involved in the Asian Working Group for Sarcopenia (AWGS) 2019 consensus update.<sup>13</sup> The aim of this special article is to highlight the impact of COVID-19 on older people in Asian countries, share our experiences in navigating the impact of COVID-19-related public health measures and propose recommendations for older people, which are germane to the Asian context.

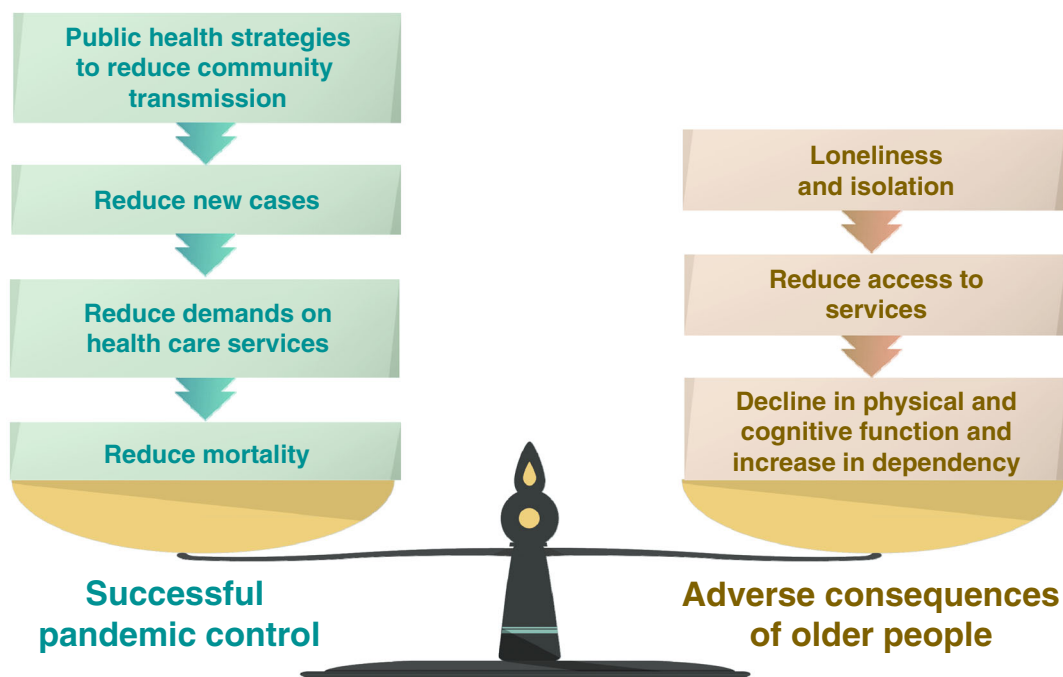
## Impact of COVID-19 on older people in Asian countries

The primary effect is the direct impact on older persons. Recent reports indicate that community-dwelling older persons as well as

those residing in nursing homes, assisted living facilities and other congregate living settings are vulnerable.<sup>14</sup> Evidence supports an age gradient in spectrum and mortality<sup>3,15</sup> from COVID-19 with older people bearing the brunt. In a case series from Beijing, the rates of severe disease were significantly different in ≥80 and 65–79 age groups compared with the 50–64 age group (81.3% vs. 43.2% vs. 19.8%,  $P < 0.001$ ).<sup>16</sup> Furthermore, mortality was also higher in the older age groups (18.8% vs. 4.5% vs. 1.2%,  $P = 0.025$ ). Comorbidities, e.g., hypertension, diabetes, cardiovascular disease, and chronic respiratory disease and cancer were associated with an increased risk of death.<sup>3</sup>

Notwithstanding their importance, public health measures designed to contain COVID-19 infection can exert unintended secondary effects through a wide range of downstream societal consequences.<sup>15</sup> Physical distancing can increase social isolation and loneliness, leading to collateral adverse consequences, e.g., depression, cognitive decline<sup>17–19</sup> and exacerbations of chronic diseases. A survey conducted in China during the initial outbreak of COVID-19 found that 53.8% of respondents rated the psychological impact of the outbreak as moderate or severe; 16.5% reported moderate to severe depressive symptoms; 28.8% reported moderate to severe anxiety symptoms, and 8.1% reported moderate to severe stress levels.<sup>20</sup> Moreover, the reduced operation of healthcare and social services can result in exacerbations of chronic diseases due to less frequent monitoring, possible disruptions in access to medication,<sup>21</sup> increased physical inactivity, dietary indiscretion or malnutrition, and reduced psychosocial support. Hoarding of food, medications and household products has reduced older people's access to these essential items.<sup>15</sup> Those staying alone or from lower socioeconomic strata are particularly vulnerable<sup>22</sup> and often rely on ad-hoc support from non-government organizations (NGO) and volunteers.

During the COVID-19 outbreak, community services, which are deemed “nonessential” have been suspended, including senior activity centers, dementia daycare centers, geriatric day hospital and outreach rehabilitation programs. This can be disruptive and stressful for many family caregivers, who now have to provide longer hours of caregiving in the context of decreased psychosocial support from family and professional services. The behaviors of persons of dementia may also be worsened due to disruption of usual routine and prolonged periods indoors. There are also concerns of increased elder abuse during this period.<sup>23</sup> In many Asian societies where filial piety is an esteemed value, the sandwiched generations of adult children caregivers are particularly at risk of worry about performance burden<sup>24</sup> and depression. Another characteristic of Asian societies is the reliance on foreign domestic workers in the care of older adults.<sup>25</sup> With reduced psychosocial support and increased isolation because of social distancing measures, foreign domestic workers are also vulnerable to caregiver burden.



**Figure 1** Balance between successful pandemic control and adverse consequences for older people.

## Experiences of Asian countries

Herein, we share accounts of the Asian experience of COVID-19 and the older people, paying special attention to the response measures, difficulties encountered and inequity issues.

### Mainland China

#### Hospitals accelerating online consultation

At present, the situation of prevention and control of COVID-19 pandemic is still evolving. Countries must develop a contingency plan for every suspected patient who presents to a fever clinic, general outpatient clinic or even an inpatient department. Prevention and control assume great importance in the interventional strategy, particularly for frail older people with multimorbidities. To reduce the risk of aggregation and respond to the routine medical needs of patients, particularly frail older patients, many general hospitals in mainland China such as the Peking Union Medical College Hospital have opened and continuously expanded its online specialist consultation service. Patients can get specialist guidance and help online through an official App. This innovation by the Peking Union Medical College Hospital to use “Internet + Medical treatment” serves to relieve the pressure of routine medical demand and benefit the majority of patients.

During the COVID-19 pandemic, all online consultation services were free of charge, focusing on alleviating the difficulty of patients seeking medical treatment during the pandemic. In response to the COVID-19 pandemic, the Peking Union Medical College Hospital undertook scientific treatment and specific measures, including constantly expanding the service radius and releasing high-quality medical resources such as the scientific pandemic prevention e-book “Questions and Answers for Public Protection against COVID-19 infection” and “Psychological Protection Association and practical Handbook for all kinds of

persons”, which can be read free online. These measures benefited frail older patients and received good feedback.

#### New ways to empower patients and families

Outside of the hospital, soon after the outbreak was confirmed, all long-term care facilities were closed to visitors, and staff were not permitted to leave. Home care services were suspended or became untenable across the country. Meanwhile, as a partner for pre- and post-hospitalization care continuum of hospitals such as the Peking Union Medical College Hospital, the Pinetree Care Group decided to continue providing support to patients at home: moved most services online and launched full virtual rehabilitation and nursing classes to empower patients and their families to do self-care (including wound care by family caregivers, which would normally be done by nurses); organized regular webinar sessions by national experts from different disciplines; and activated online communities/groups to quickly identify and respond to the needs for telecare, teleconsultation and delivery of medications/medical supplies.<sup>26</sup>

#### Quick responses and rehabilitation support

Both Peking Union Medical College Hospital and Pinetree joined the overnight quick response team to develop guidance to residents of long-term care facilities. In a recent webcast on rehabilitation guidelines for COVID-19 and other respiratory diseases,<sup>27</sup> a commitment was made together with the national advisory to produce video-based tele-rehab therapies in both Chinese and English languages, which would benefit users in China and many other countries.

#### A positive outlook

Looking beyond the pandemic, we anticipate that healthcare and internet will further integrate with this crisis. People who used to visit large hospitals for all sorts of health issues will now have to embrace teleconsultation and telecare. Encouragingly, doctors and

nurses are more motivated than ever to support and empower patients, with many professional teams joining online initiatives and activities. We are witnessing a unique watershed moment that will move our health system towards a stronger primary care and more value-based one. We see hope that temporarily affected businesses may actually improve relationships between hospitals and community health providers, pushing providers to be more innovative in addressing the increasing demand for new ways of delivering healthcare and finding opportunities in this crisis.

## **Hong Kong**

### *Response and difficulties*

The pandemic has resulted in many adverse outcomes in older persons in Hong Kong that have largely not been addressed by public health measures, or may be a direct result of such measures to contain the spread of infection. These include increased social isolation; physical and cognitive decline; and reduced access to health and social care. For example, Geriatric Day Hospital services (where comprehensive geriatric assessment, diagnoses and medication optimization, and rehabilitation take place for community living older people) have been suspended to avoid clustering of patients and at the same time reduce the use of personal protective equipment (PPE) as there is a shortage. Outreach rehabilitative services by the hospital authority continued but outreach rehabilitative services run by NGOs have been stopped for a period and just recently resumed. Essential services, e.g., meal delivery were maintained. These changes are expected to increase informal caregiver burden and increase reliance on ad-hoc NGO workers and volunteers. Policies announced to fight the pandemic often do not include clear guidelines regarding these services, as they have not been classified as essential (unlike hospital workers), resulting in a reduction and/or cessation without a replacement plan or policy. They are very general and do not mention contingency plans, e.g., staff segregation to limit quarantine scope if a case is confirmed.

The COVID-19 guidelines call for people to stay at home and to minimize social contact, without specific guidelines for older people requiring long-term care in the community. As a result, many service providers stopped providing services. The health and social consequences have not been considered by policy makers but are being observed and documented by geriatricians working in the community. Such services are essential for those living alone or living with their older spouse, as either one or both may be frail and/or have disabling diseases. This has already delayed discharges from hospitals, with families using this as a reason to resist hospital discharge. At the same time, foreign domestic helpers, one of the pillars of community long-term care, may be restricted in travelling between their home countries and Hong Kong, and belong to the high-risk group due to the habit of mass congregation in public places on their day off. There is no definitive policy regarding this group.

One positive aspect is the availability of infection control guidelines after SARS in 2003 for the long-term care facilities. Another commendable measure is government funding for private practitioners, and hospital authority-employed visiting doctors to manage episodic illness at the residential care homes for the elderly (RCHE) during this pandemic. However, it has been observed that RCHE staff may not be willing or capable of carrying out on-site quarantine if the need arises. Implementation of the no visiting policy has a great impact on the care of dependent older people in hospitals and RCHEs, particularly at the end of life. Normally, family members are encouraged to take part in the care process. However, infection control is still the overriding

consideration. Patients can only be visited on compassionate grounds when dying. Viewing of the body by family members is prohibited if the patient is COVID-19 positive.

### *Health inequity and the impact of COVID-19*

Taken together, there seems to be a social gradient in incidence, as those in the lower socio-economic status live in more crowded environments, and may not be able to afford PPE, etc. However, as yet, no statistics have been collected. In Hong Kong, the situation may be unusual, as most confirmed cases occur in middle-class families, either returning back to Hong Kong from tours or are students studying abroad. There appears to be an age gradient in severity and fatality based on mainland China, Hong Kong and other Asian data,<sup>28</sup> raising ethical issues of prioritization of use of intensive care beds and ventilators. Most use some sort of frailty and/or multimorbidity criteria.<sup>15</sup> Ventilators and intensive care capacity are still sufficient in Hong Kong, with low mortality. In general, there are lack of data regarding epidemiology, e.g., incidence for different age groups; incidence in residential care homes versus community living; as well as presentation, duration, outcome, discharge destination and functional/cognitive decline because of the disease or pandemic control measures. Such data would enrich current COVID-19 guidelines for older people.

## **Japan**

### *Response and difficulties*

In Japan, we had sporadic clusters of SARS-Cov-2 through visitors from mainland China during the Lunar New Year holidays until mid-March. When the infection spread in Europe and North America, we experienced a spike in infection from young travelers returning from abroad, which may have been further compounded by the 3-day holidays in late March. The spread of infection was mainly observed in large cities with a cluster infection and resulted in transmission to healthcare workers through the patients.

We adopted a strategy of slowing down the speed of infection by identifying COVID-19 clusters and reducing chances of contact. In counter-cluster measures, all patients and their close contacts were followed up by the government. The government has also encouraged people to avoid places where the “3Cs” (closed spaces, crowded places and close-contact settings) overlap and to observe social distancing based on the recommendations of the Advisory Committee. We have also tried to minimize the impact on society and economy through pandemic prevention. Polymerase chain reaction (PCR) tests have not been conducted so aggressively, targeting only moderate to severely sick patients and those with close contact. Costs incurred for PCR testing and COVID-19 treatment are covered by health insurance and the government.

Generally speaking, people comply with the government policy and wash their hands more often than usual, which may explain the relatively low trend of infections. In addition, many people habitually wear a mask outdoors to prevent influenza and hay fever in winter and early spring. In early March, the government decided to close schools nationwide to contain the spread among students. Furthermore, the government approved prescriptions for patients with stable medical conditions without visiting medical institutions to prevent unnecessary infection. In addition, information calling for attention to COVID-19 in day-care and day-service centers<sup>29</sup> and the manual for infectious disease prevention in nursing homes are provided.<sup>30</sup>

In spite of these efforts, the number of COVID-19 patients is still increasing and in total the number is 7384, including those

from the *Diamond Princess* as of April 12, 2020. Although no clinical guidelines for COVID-19 prevention and control are available, the mortality rate has been kept low in Japan and the rapid increase of patients has thus far not been observed, which might be explained by Japanese people's reputation for cleanliness and hand hygiene.

To prevent overshooting of the infection, the Japanese government declared a state of emergency in seven large cities, including Tokyo and Osaka, on April 7 and requested to avoid nonessential outings to reduce contact with others by approximately 80%. The government also proposed that young people not move to regional areas, where infections have not been spreading yet.

#### *Health inequity and the impact of COVID-19*

One of the problems related to COVID-19 is physical inactivity from being homebound due to fear of infection, which may lead to frailty in older people. The stigma against infected patients and their families is another concern along with unemployment and deterioration in economic conditions. These issues need to be addressed to avoid downstream corollaries of economic recession, suicide and disability of older people. To raise awareness of the prevention of frailty during this pandemic, the Japan Geriatrics Society published the literature "COVID-19, Practice Caution for Older People."<sup>31</sup>

#### *Experience from the Diamond Princess*

We would like to share a first-hand account of the COVID-19 situation aboard the *Diamond Princess* cruise ship, as one of the authors was onboard for 11 days from February 9 to 19, 2020. Among 3711 on board, 2643 were passengers and the average age was 60 years old. Of these, 223 were >80 years old, with the highest age being 95 years old. Special attention was paid to changes in the health status of frail older people, whose mental and physical deterioration and worsening of chronic diseases can be caused by minor stresses.

First, he used the onboard telephone to check relevant information, e.g., comorbidities, medications, activities of daily living, mood, appetite, sleep, pain and oral health, which is routine work as a geriatrician. When deterioration of health conditions was suspected, he or other medical staff visited the room wearing PPE and directly checked their health condition. He also checked the health status of 20–60 people per day by telephone and visited 5–15 people per day to advise on health, disease and exercises that could be done indoors.

In addition, he maintained vigilance in addressing the secondary effects of decline in physical and mental functions caused by living in isolation. The rooms on board were generally not large enough for physical exercise. A small number of older people adapted and continued exercising indoors via walking, stepping, squatting and stretching. However, the majority was sedentary and spent their time lying down on the bed, raising concerns of physical inactivity. Furthermore, after the quarantine started, meals were served in each room and there were limited dietary choices, resulting in decreased appetite in some of the older adults. The decrease in food intake was further aggravated by loss of denture stabilizer or inadvertent damage to dentures. Thankfully, feedback was conveyed to the chefs and prompt action taken to increase the amount of Japanese food served in consideration of their preferences and swallowing ability.

## **Singapore**

### *Response and difficulties*

Singapore was one of the first countries outside of mainland China to be affected by COVID-19, with the first case detected on January 23, 2020. After a period of relatively well containment, there was a recent spike in new cases due to emergent clusters in foreign worker dormitories. As of 16 April 2020, there were 4427 cases and 10 (CFR 0.23%) deceased, with all mortality cases aged ≥64 years. Those aged >60 years comprise 6.5% of cases, and only 0.6% were >80 years.<sup>32</sup> There were 15 nursing home residents from three nursing homes who were infected, and two deaths.<sup>7</sup>

Since its experience with SARS, Singapore has been systematically strengthening its ability to manage another emerging infectious disease outbreak, including the construction of the National Centre for Infectious Disease, a 330-bed purpose built infectious disease treatment facility with integrated clinical, laboratory and epidemiologic functions. Singapore adopted a whole-of-nation public health strategy premised on: a comprehensive surveillance system and community-based containment efforts; strong public education that emphasizes personal and collective responsibility; and a network of >800 public health preparedness clinics to enhance the management of respiratory infections in the primary care setting.<sup>33</sup> The reorganization of healthcare services into regional healthcare systems strengthened hospital-community networks and enabled the first nursing home cluster to be swiftly contained with strong hospital support in terms of manpower and expertise.<sup>34</sup> The Agency for Integrated Care also issued COVID-19 advisories to guide processes on the ground in nursing homes and inpatient hospices.

Given what is known about the epidemiology and transmission dynamics of COVID-19, there was a special focus on the vulnerable older adult population in the implementation of physical distancing measures. For instance, visitors were barred from nursing homes after the first cluster was detected and older adults were discouraged from interacting with other family members (including grand-children) not residing in the same household. With the cessation of nonessential services introduced during the "circuit-breaker" period starting April 7, supportive measures to minimize disruption of healthcare services to older adults included medication delivery services; teleconsultations to minimize hospital visits; use of technology to help older adults stay connected; and financial assistance schemes. These were supplemented by efforts on the ground from NGOs, voluntary welfare organizations and ad-hoc volunteers to support affected older persons and their caregivers.

While the healthcare and social system response to contain infections is appropriate during the COVID-19 pandemic, it can also lead to unintended secondary effects. With the overarching focus on acute care for both COVID-19 and non-COVID-19 admissions and less emphasis on intermediate care, there were fewer opportunities as a result for comprehensive geriatric assessment to inform needs-directed person-centered care. In addition, the isolation in acute care facilities of frail older adults admitted for suspected COVID-19 can lead to negative consequences. Fall rates in isolation facilities were higher than in general wards, and the rates of restraint use increased. Strict visitation policy in acute care settings may also have affected caregiver training and the dying experience. Hospitals often had to be responsive to balance infection control with humanistic considerations for patients who are dangerously ill or where death was imminent. Furthermore, the reduction of health and social care delivered to older adults in the community, including the closure of dementia daycare centers, may have resulted in worsened behaviors in persons with

dementia and increased caregiver stress. Lastly, adverse psychosocial impact due to further weakening of social networks in older adults can increase the risk of social isolation, which in turn can result in adverse effects on physical and mental health.

#### *Health inequity and the impact of COVID-19*

In Singapore, the cost of testing and treatment for COVID-19-positive cases are borne by the government. Test swabs done at nursing homes are also fully covered. Though no data have been collected, it is likely that health inequalities brought about by advanced age and social frailty<sup>35</sup> (poorer socio-economic status and social support) can result in reduced health and social care access and influence health outcomes for the affected older persons, which in turn would affect population management and outcomes. For instance, rumors led to panic purchasing to the extent that shops ran out of some food and supplies.<sup>36</sup> Less advantaged groups (e.g., persons with dementia and older adults living alone with no family support) will require an augmented population-level approach for health and social care that is context-specific during the COVID-19 pandemic.

Notably, 58% of older Singaporeans reported not using the Internet at all, while 8% reported difficulties using the Internet due to health conditions.<sup>37</sup> This implies that traditional media such as television and radio still play a critical role in the multi-pronged strategy for public health messaging and helping older adults stay connected. There is also a need to develop guidelines for COVID-19 targeted towards care of older people.

#### **South Korea**

##### *Epidemiologic characteristics of COVID-19 in South Korea*

In South Korea, in total, 10 591 confirmed cases were reported as of April 15, 2020 and 4266 (40.3%) for men, and 6325 (59.7%) for women.<sup>38</sup> South Korea has made great efforts to trace the disease with a thorough epidemiologic investigation and to treat it with early isolation by rapid diagnostic tests. The age group most represented in confirmed cases is those in their 20s, because they are the group socially active and many of them linked to a particular religious group identified as the epicenter of the outbreak.<sup>39</sup> The spread of COVID-19 appears to be curbed as the daily number of cases began to decline as of March 3. Sporadic infections continue to emerge, but >90% of infection routes are epidemiologically identified. Of the total cases, 225 people have died, fatality rate is 2.14% (118 males, 2.77%; 107 females, 1.69%). The average duration of symptom onset to death was 10 days (1–24 days). People in their 60s showed 2.46% of CFR, while those in their 70s and 80s or over showed 9.69% and 22.18%, respectively. The increase in mortality rates by age was closely related to the presence of underlying diseases.<sup>40</sup> Meanwhile, several cases of cluster infections occurred in long-term care facilities (LTCFs) and many of the deaths were older adults confirmed in these facilities. In Daegu city and surrounding Gyeongsangbuk-do province, once the epicenter of South Korea's outbreak, intensive COVID-19 diagnostic tests have been done by conducting a thorough investigation of LTCFs in the region.

##### *Guidelines for COVID-19 targeted towards care of older people*

In 2017, the Korea Centers for Disease Control and Prevention and Korean Society of Infectious Diseases announced a standard guideline for health-associated infections to increase the level of infection control for hospitals and LTCFs after experiencing the H1N1 flu in 2008–2009 and the MERS outbreak in 2015.<sup>41</sup> Therefore, the capability of infection control has improved mainly

in general hospitals. Still, the infection management system of LTCFs such as long-term care hospitals and nursing homes is insufficient. Since October 1, 2018, it is mandatory for all hospitals with more than 150 inpatient beds to set up and operate the infection control committee, and for the other hospitals to designate the personnel responsible for infection control.

As COVID-19 began to rise, health authorities considered LTCFs as a major risk area and recognized older adults as the high-risk group. They have been struggling to prevent clusters of infections in these facilities. The Korean Geriatric Society released the recommendation on the prevention of COVID-19 in LTCFs on March 11, 2020. This recommendation is mainly following the guidelines for LTCFs announced by the World Health Organization.<sup>42</sup>

##### *Response and difficulties*

Since the national threat alert level was raised to the “highest” on February 23 due to the rapid increase in the number of confirmed cases, the intense social distancing continues to be emphasized across the country. Restrictions are being imposed on healthcare for seniors, in particular, frail older adults. Ministry of Health and Welfare issued a temporary regulation that allows telephone-based consultation and prescription. The Korean Geriatric Society released the guidance and advice for living tips against COVID-19 for older adults on March 11, 2020.

When patients with long stays in long-term care hospitals are infected with SARS-Cov-2, cluster infection cases with high fatality rates occur. Therefore, most facilities have made an effort to minimize the transfer of hospitalized patients. When medical care of other institutions is needed, it is difficult to transfer the patients for appropriate intensive treatment and to return them after the treatment. In addition, older cases are prone to physical deconditioning, requiring exercise and physical therapy to prevent and treat it. However, PPE was primarily given to the frontline staff caring for infected patients. Thus, consulting physicians or physical therapists who need to contact the patients were restricted from providing their services. It may influence the rehabilitation outcome of the post-acute period after discharge from acute care.

##### *Health inequalities in the impact of COVID-19*

South Korea has the universal health coverage system through National Health Insurance with a low public burden on medical costs, which has greatly helped health inequality in providing essential medical services, e.g., the diagnosis and treatment of infectious diseases. It costs about \$140 for a COVID-19 confirmation test and it is reimbursed if the result is positive, with the government bearing expenses for any treatments they receive. It is believed that most reasonable prevention–diagnosis–treatment process has been carried out among countries in the face of the COVID-19 outbreak. However, in this crisis, health inequality must have existed among low-income older adults or those living alone. Public health centers continue to provide visiting nursing services by telephone to vulnerable people in trouble due to the intense social distancing.

#### **Taiwan**

##### *Response and difficulties*

The Central Epidemic Control Center (CECC) in Taiwan was launched on January 20, 2020 to fight against the potential spread of an atypical pneumonia that had occurred in Wuhan, China. CECC led by the Ministry of Health and Welfare extensively

integrated resources from public sectors, governmental organizations, private sectors and academia to respond to the coming threats. CECC operation was upgraded in February in response to the pandemic.<sup>43</sup> CECC announced guidelines for all long-term care facilities for face mask wearing, regular body temperature checks, enhanced personal hygiene, visitor restrictions and all necessary actions for infection control.<sup>44</sup> Airport infection controls for incoming flights started in January 2020 and were extended depending on the situation of individual countries. Meanwhile, the government initiated the compulsory purchase of face masks, alcohol disinfectant products and related items for infection controls to improve the distribution to all citizens. To accelerate the production of face masks, the Ministry of Economy organized a national committee for manufacturing face masks, as well as alcohol disinfectant products. Affiliated with community pharmacies and the internet technology, all citizens were able to secure purchases of face masks and alcohol disinfectant products. Furthermore, people can pre-order face masks using the health insurance card in all convenience stores. To cope with the threats of potential community spread, the government developed a cellular tracking system together with conventional epidemic investigations for citizens to take necessary precautions.

The CECC published guidelines for COVID-19 in the prevention, screening and management in different healthcare settings.<sup>43–45</sup> The Health Promotion Administration of the Ministry of Health and Welfare published recommendations for older adults to prevent functional declines, loneliness and isolation during the pandemic, and suggested regulated social activities, indoor and outdoor exercise programs. In Taiwan, all cities are free from lockdown and citizens maintain necessary social activities based on regulations from the CECC. Schools and business activities remain open, but the CECC continues to monitor activities and locations with crowding potentials and induces necessary controls. Hospitals began patient and visitor controls in late January through travel history checks and body temperature measurements at all entrances. With support from the Administration of National Health Insurance and Immigration Agency, the international travel history of all citizens is available on their insurance cards. These actions minimize the risk of nosocomial transmission of COVID-19. A few and controllable hospital-transmitted cases occurred and no nursing home infection was identified.

According to the Taiwan National Infectious Disease Statistic System,<sup>46</sup> six of 382 patients were confirmed as dead from COVID-19 by April 10. The cumulative incidence rate was highest in young adults aged 20–24 years (5.41/100 000), 1.26/100 000 in 65–74 and 0.69/100 000 in  $\geq 75$ . Compared with international statistics,<sup>15</sup> the low incidence rate of COVID-19 might be because of successful border controls, and the risk of community spread is also reduced; therefore, the case number in older adults is relatively low ( $n = 54.14\%$ ). Rapid responses by border controls, epidemiologic investigations, national committee for face masks and alcohol disinfectant product manufacture, hospital and nursing home visitor controls, design and implementation of various internet technologies, the civil awareness for infection control and personal hygiene all contribute to the success of the pandemic control in Taiwan.

#### *Health inequity and the impact of COVID-19*

Taiwan has well-established National Health Insurance, “Long-Term Care 2.0” program, and a public health system covering infection surveillance and control, so the health inequity is minimized through these national policies. Moreover, CECC set up a toll-free hotline 1922 for all citizens with any inquiries about

COVID-19, which also reduced the inequity for information access. Hence, the health inequity related to COVID-19 is minimized by internet technology and public policies. Even rural residents or deprived persons are provided with sufficient protection and access to information or healthcare services.

#### *Community resilience on combating COVID-19*

Currently, community-based activities for health promotion and disability/dementia prevention are temporarily discontinued, which have restricted physical, psychological and social activities of older adults. The visitor controls in long-term care facilities and hospitals may aggravate loneliness and isolation of older people. Although some schooling, business and administrative activities have been shifted to online activities, web-based health promotion activities for older people are still limited. The lack of outdoor activities and reduced social interaction may jeopardize the physical and mental health of older people, which needs extensive efforts to recover after the COVID-19 pandemic. Taiwan’s Health Promotion Administration recommends proper outdoor exercise and social activities, and is working on promoting personal and community resilience to regain well-being as soon as the COVID-19 pandemic ends. The resilience enhancement program includes physical, mental and social dimensions through media, public health stations and community centers to ensure information transparency, complete and timely communication, to relieve anxiety/depressive mood of citizens and to provide home-based health promotion activities together with wearable devices and internet technology.

#### *Thailand*

##### *Response and difficulties*

To the best of our knowledge, Thailand was the first country to document the first COVID-19 case outside mainland China on January 13, 2020.<sup>1</sup> Initially, the Thai government started the screening process mainly at international airports and harbors, as foreign tourists were solely the ones spreading the virus in to the country. When the Lunar New Year holidays started on January 25, the greater influx of tourists brought about the total confirmed case of 32 cases on February 10. The first mortality case was recorded on March 1. The second wave of outbreak came from a large gathering at the boxing stadium on March 6 in the heart of Bangkok and from Thai workers returning home when there was the first large outbreak outside mainland China in Daegu, South Korea. The outbreak became worse, during the third wave, when the Bangkok Metropolitan Authority suddenly announced a shut-down of nearly all large businesses in Bangkok, e.g., department stores, restaurants, theaters and other entertainment businesses on March 22. The majority of these workers who lost their jobs had to go back to their homes throughout the country. Since then, new cases were increasingly reported from outside Bangkok. As such, the government declared a state of emergency and imposed a curfew for the whole country between 10.00 and 16.00 h, which was started on April 3. As expected, the outbreak in Thailand is so far slowing down gradually compared with many other Association of Southeast Asian Nations countries.

As of April 15, the number of confirmed cases was 2643. Approximately 87.2% were Thai citizens; 57% recovered and were discharged back home. The median age was 37 years old with the age range of 1 month–97 years old. The mortality rate was 1.6%. Analysis on the mortality cases ( $n = 43$ ), the mean age was  $59.7 \pm 14.8$  years old with age range of 28–88 years old. Nineteen of the deceased (44.2%) aged  $\geq 60$  years old. It seems that the

mortality in Thailand is quite different from what occurred in mainland China.<sup>3</sup>

Under the primary healthcare supported by the health volunteer system, >1 million health volunteers are working in the community nationwide to survey, detect, quarantine or refer suspected cases to nearby hospitals. Some of the health volunteers also work as long-term care providers for housebound older people. The World Health Organization Thailand was impressed by the effectiveness of the health volunteer system that they witnessed coping with this health emergency.

Regarding the impact on older persons, as many could not refill their medications due to the closure or limited services of hospitals and clinics. Those who were on the surgical waiting list for cancer, cardiovascular disease and so on also had their treatment postponed. All these active health problems could deteriorate due to a shortage of medicine and delayed surgical treatment. However, many hospitals used telemedicine to delivery health consultations and drug refills were sent by the postal service to the patient's home. Things became worse in some hospitals as the infected cases arrived at hospitals for treatment but hid their previous history of travel to a pandemic area, e.g., attending a large crowded religious activity in Malaysia. The hospital staff who were in contact with these infected cases had to be quarantined.

Concerning the impact on caregivers and the social support system, the informal caregiver may have more free time, as other family members who have to work at home could spend more time with older people. However, the economic crisis due to lockdown and job loss certainly affects some informal caregivers financially. The government has launched a contingency fund to support those in need up to 5000 baht per month for 3 months. For formal caregivers under the national long-term care system, no interruption of community service is evidenced for the time being as the outbreak mainly occurred in the city.

#### *Health inequity and the impact of COVID-19*

There is little evidence of ageism or health inequality for Thai older people whatsoever due to two main reasons. Under their system of universal health coverage, all Thai citizens could access essential treatment free of charge. The other reason is that older people are generally well-respected according to Thai culture. There is no policy of prioritization of use of intensive care units and ventilators as has occurred in the West.

The Thai Society of Gerontology and Geriatric Medicine has created a guideline towards the care of older people and has been circulated via website (Thai version guidance,<sup>47</sup> English version guidance,<sup>48</sup> Infographic Thai version,<sup>49</sup> Infographic English version<sup>50</sup>) as well as other social media, namely, LINE and Facebook.

## Recommendations

### *Summary of country experience*

From the rich accounts of each country experience, it is evident that older people bear the brunt of COVID-19, not just in terms of the direct impacts on health and mortality risk but also from the unintended secondary effects of public health measures designed to contain the pandemic.<sup>10,15</sup> Drawing upon the invaluable insights distilled from the unique response measures as well as difficulties and inequity issues encountered, we propose the following recommendations for older people in the Asian context, which complement recently published guidance from the International Association for Gerontology and Geriatrics, Asian/Oceania

(IAGG-AO) region on the prevention of COVID-19 in older adults.<sup>51</sup>

### *Well-being of older people (COVID International Association for Gerontology and Geriatrics, Asian/Oceania advisory)*

Based upon the various preventive strategies being implemented in the region, the mnemonic COVID-IAGG-AO (Table 1) was proposed as a basic guidance to prevent COVID-19 in older adults. This comprehensive advisory covers broad areas that promote the well-being of older people, namely:

- Prevention of COVID-19 infection through safe distancing and optimizing personal hygiene.
- Enhancing physical resilience through proper sleep,<sup>52</sup> adequate nutrition and exercise<sup>13,53</sup> and prevent frailty. Getting enough sunlight in the morning to obtain vitamin D may reduce the risk of infection in older adults with suboptimal levels of vitamin D.<sup>54</sup>
- Promoting mental resilience by being optimistic and increasing social interaction and support networks through appropriate use of user-friendly technology for communication. In the era of social media where “fake news” can be rampant, obtaining specific up-to-date and accurate information of the local outbreak situation and related health news was associated with a lower psychological impact of the outbreak and lower levels of stress, anxiety and depression.<sup>20</sup> In settings where the level of digital literacy is low, traditional media such as television and radio can still play a critical role in the multi-pronged strategy for public health messaging and helping older people stay connected.
- Ensuring access to emergency services, medications and food supplies during the COVID-19 pandemic. Measures at the systems level to ensure medication access include prevention of stockpiling and drug shortages, as well as expanding capacity for online medication refill and home delivery; incentives should be provided for pharmacies, particularly independent stores located in underserved areas, to offer home delivery services at no cost.<sup>21</sup>

### *Other specific recommendations*

In addition, it is important to reconsider the preventive and management strategy for populations that require special considerations. We would like to highlight some of these special populations and situations.

1. AWGS proposes developing context-specific and culturally-appropriate community and hospital-based initiatives to support persons with dementia and their caregivers, as well as dissemination of COVID-19-related resources for clinicians and persons with dementia.<sup>55</sup> Persons with dementia during the COVID-19 pandemic need special assistance in their access to accurate information, safeguard procedures, vulnerability to adverse physical and psycho-social consequences of public health measures, challenges of diagnostic swabbing for COVID-19, behavioral problems or delirium at hospitalizations,<sup>56</sup> and others.
2. AWGS recommends telephone- or online-based support interventions for homebound seniors to prevent functional declines, anxious and/or depressive mood;<sup>57</sup> adequate psychosocial support and financial relief schemes should be rendered to the “invisible workforce” of family caregivers and foreign/domestic

**Table 1** COVID-IAGG-AO guidance with response examples

Abbreviation	Recommendation goals	Response examples
C	<u>C</u> atnap (get adequate sleep)	Set up regular schedule for sleep and waking up Avoid taking daytime naps and maintain daily daytime exercise habit Avoid products containing caffeine, heavy meals, excessive fluids and vigorous exercise too close to bedtime Reduce anxiety or panic from disturbing thoughts by sharing them with family, relatives or friends
O	<u>O</u> ptimistic (good emotion to prevent depression)	Maintain mental well-being, challenge negative thoughts and employ relaxation techniques (e.g., deep breathing) to combat anxiety Obtain accurate and real-time information and knowledge of COVID-19 situation from reliable sources Keep contact with others, such as family, friends or health providers to prevent loneliness Seek professional assistance if needed
V	<u>V</u> igor (active exercise indoor)	Reduced sitting time through intentional physical activity, e.g., when watching TV, consider walking around, standing up, or doing resistance exercises, e.g., sit-to-stand from a chair Provide online or TV programs that empower senior to exercise at home Group exercise or mobility activities via video conferencing or social media app
I	<u>I</u> ntake (adequate nutrition and maintain oral hygiene)	Eat well, have a balanced nutrition and introduce variety in diet Consume adequate amounts of protein to prevent frailty and sarcopenia Obtain support from family, friends or social services for meals, if necessary Take good care of oral health: <ul style="list-style-type: none"> <li>• Maintain oral good hygiene, e.g., brush teeth and clean dentures regularly</li> <li>• Prevent decline of chewing and swallow function through regular use, e.g., chat daily, eat three meals a day, and chew one's food well.</li> </ul> It is also important to choose foods consciously that are a bit chewy to facilitate the chewing process Adjust diet texture for persons with swallowing problems, if necessary
D	<u>D</u> istancing	Stay at home as much as possible Maintain safe distancing as per the recommendations in your country Reduce the time spent in hospital or clinics to lower the risk of infection Avoid places where the "3Cs" (closed spaces, crowded places and close-contact settings) overlap Monitor consequences of social distancing, e.g., physical and mental decline, social isolation and emotional impact
I	<u>I</u> ncrease your social support/social contact through communication technology with family/friends	Keep regular social contact with family, friends or others in your neighborhood to avoid loneliness and anxiety via phone, video conference app or social media Obtain help from family members or friends if you encounter difficulty using the device Obtain online links to reliable sources of information Obtain online links to simple, bite-sized Internet or communication-app or platform user guides Be open to learning new things through the use of technology devices
A	<u>A</u> dminister routine medication	Take your routine medications regularly Explore alternative ways of replenishing supply of routine medications, e.g., registration for drugs via phone, fax and online systems; delivery services to home or nearby pharmacy Extend the duration of prescription for stable chronic diseases to prolong the need for regular clinic visits Explore online consultation, if available
G	<u>G</u> et enough sunlight in the morning	Get enough sunlight in the morning to provide for vitamin D Consider vitamin D supplementation, if deficient in vitamin D

(Continues)

**Table 1** Continued

Abbreviation	Recommendation goals	Response examples
G	<u>Go</u> to emergency room/call emergency services if shortness of breath, chest pain, continuous fever, decrease food intake, feeling fatigued all the time, or when your caregiver/family cannot wake you up or you cannot communicate with them	Seek medical attention if you experience shortness of breath, chest pain, continuous fever, decrease food intake, persistent fatigue or change in level of alertness
A	<u>Actively</u> washing your hand with sanitizer or soap	Wash your hands with sanitizer or soap when you touch any materials outside or intake Avoid touching your face, particularly the eyes, nose and mouth Measure body temperature daily and assess for the presence of symptoms, e.g., cough, running nose, loss of smell or shortness of breath Wear face mask when outdoors if unwell or in crowded places
O	<u>Order</u> your food and medical supplies through your family/caregiver/online	Ask for help in getting food and medical supplies from family, relatives and friends Use online shopping and home delivery services, if available If available, tap upon helpline of social care system to request for assistance with food and medical supplies

Adapted with permission from JK Chhetri, P Chan, H Arai, *et al.* Prevention of COVID-19 in older adults: A Brief Guidance from the International Association for Gerontology and Geriatrics (IAGG) Asia/Oceania Region.<sup>51</sup>

helps to ensure appropriate day-to-day care for seniors in home settings.

- AWGS recommends COVID-19-specific strategies for long-term care facilities, including support for staff members, infection prevention and control processes, e.g., PPE, physical distancing measures, environmental cleaning and disinfection, visitor policy and restriction of movement.<sup>42</sup> Moreover, a COVID-19 support platform to advise care via telemedicine, implement screening for COVID-19 and provide support for staff<sup>58</sup> is recommended.
- AWGS recommends specific attentions to be paid to common geriatric conditions (e.g., delirium and falls), functional rehabilitation and end-of-life care for frail older adults admitted to acute hospitals, as these patients may be looked after by non-geriatricians.<sup>59</sup>
- AWGS recommends that ethical frameworks that are developed for outbreak response should not automatically disqualify older people from access to intensive care based on age cutoffs.<sup>60</sup> Instead, they should be premised on goals of care and whether the older person will benefit from intensive care treatment.<sup>61</sup>
- AWGS recommends active implementation of home and community intervention programs to enhance resilience of older adults and their communities, not just preventing frailty or social isolation, so as to accelerate recovery from the COVID-19 pandemic.<sup>34,62</sup>
- AWGS recommends advisories to provide guidance on communication and end-of-life procedures in COVID-19 acute care settings, including access of caregivers to loved ones who are dangerously ill or imminently dying.
- AWGS recommends research regarding geriatric-specific issues, e.g., functional decline, cognitive impact, end-of-life issues, caregiver issues and innovations in models of care, because of the disease or pandemic control measures for older adults.<sup>63</sup>

## Conclusions

The COVID-19 pandemic presents unique challenges and may be opportunities for Asian countries to redesign the care for vulnerable

populations of older people. A holistic strategy towards high-performing resilient health systems is urgently needed to meet the challenges for older adults encountering various conditions, including infectious disease pandemics. Drawing upon insights gathered from the experience of Asian countries, we propose some recommendations that aim to balance between successful pandemic control and active management of secondary consequences in older people. We hope that these recommendations will spur the development of COVID-19 policies with an emphasis on older adults within the general public health framework, which are commensurate with the available resources and sociocultural context of the country. As aptly described by an eminent geriatrician, “What will remain after the SARS-CoV-2 (is) defeated? ... Hopefully, we will ... contribute for a better society ... a society able to give more value to persons, independently of their age.”<sup>64</sup>

## Disclosure statement

The authors declare no conflict of interest.

## References

- Bai Y, Yao L, Wei T *et al.* Presumed asymptomatic carrier transmission of COVID-19. *JAMA* 2020; **323**: 1406–1407.
- Wei WE, Li Z, Chiew CJ, Yong SE, Toh MP, Lee VJ. Presymptomatic Transmission of SARS-CoV-2—Singapore, January 23–March 16, 2020. *MMWR Morb Mortal Wkly Rep* 2020; **69**: 411–415.
- Wu Z, McGoogan JM. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention. *JAMA* 2020; **323**: 1239–1242.
- Onder G, Rezza G, Brusaferro S. Case-fatality rate and characteristics of patients dying in relation to COVID-19 in Italy. *JAMA* 2020. <https://doi.org/10.1001/jama.2020.4683>.
- Jordan RE, Adab P, Cheng KK. Covid-19: risk factors for severe disease and death. *BMJ* 2020; **368**: m1198.
- Omer SB, Malani P, del Rio C. The COVID-19 pandemic in the US: a clinical update. *JAMA* 2020. <https://doi.org/10.1001/jama.2020.5788>.
- Comas-Herrera A, Zalakain J, Litwin C, Hsu AT, Fernandez-Plotka J-L. Mortality associated with COVID-19 outbreaks in care homes: early international evidence [monograph on the Internet]. *Int Long-Term Care*

- Policy Network 2020. [Cited 18 April 2020.] Available from URL: <https://lccovid.org/2020/04/12/mortality-associated-with-covid-19-outbreaks-in-care-homes-early-international-evidence/>.
- 8 Hartley DM, Perencevich EN. Public health interventions for COVID-19: emerging evidence and implications for an evolving public health crisis. *JAMA* 2020. <https://doi.org/10.1001/jama.2020.5910>.
  - 9 Pan A, Liu L, Wang C *et al*. Association of public health interventions with the epidemiology of the COVID-19 outbreak in Wuhan, China. *JAMA* 2020. <https://doi.org/10.1001/jama.2020.6130>.
  - 10 Lloyd-Sherlock P, Ebrahim S, Geffen L, McKee M. Bearing the brunt of covid-19: older people in low and middle income countries. *BMJ* 2020; **368**: m1052. <https://doi.org/10.1136/bmj.m1052>.
  - 11 Berger ZD, Evans NG, Phelan AL, Silverman RD. Covid-19: control measures must be equitable and inclusive. *BMJ* 2020; **368**: m1141. <https://doi.org/10.1136/bmj.m1141>.
  - 12 Woo J. The myth of filial piety as a pillar for care of older adults among Chinese populations. *Adv Geriatr Med Res* 2020; **2**: e200012.
  - 13 Chen LK, Woo J, Assantachai P *et al*. Asian Working Group for Sarcopenia: 2019 consensus update on sarcopenia diagnosis and treatment. *J Am Med Dir Assoc* 2020; **21**: 300–307.e302.
  - 14 Applegate WB, Ouslander JG. COVID-19 presents high risk to older persons. *J Am Geriatr Soc* 2020; **68**: 681. <https://doi.org/10.1111/jgs.16426>.
  - 15 Le Couteur DG, Anderson RM, Newman AB. COVID-19 is a disease of older people. *J Gerontol A Biol Sci Med Sci* 2020. <https://doi.org/10.1093/gerona/glaa077>.
  - 16 Niu S, Tian S, Lou J *et al*. Clinical characteristics of older patients infected with COVID-19: A Descriptive Study. *Arch Gerontol Geriatr* 2020; **89**: 104058. <https://doi.org/10.1016/j.archger.2020.104058>.
  - 17 Chan A, Malhotra C, Malhotra R, Ostbye T. Living arrangements, social networks and depressive symptoms among older men and women in Singapore. *Int J Geriatr Psychiatry* 2011; **26**: 630–639.
  - 18 Valtorta NK, Kanaan M, Gilbody S, Ronzi S, Hanratty B. Loneliness and social isolation as risk factors for coronary heart disease and stroke: systematic review and meta-analysis of longitudinal observational studies. *Heart* 2016; **102**: 1009–1016.
  - 19 Zhong BL, Chen SL, Conwell Y. Effects of transient versus chronic loneliness on cognitive function in older adults: findings from the Chinese longitudinal longevity survey. *Am J Geriatr Psychiatry* 2016; **24**: 389–398.
  - 20 Wang C, Pan R, Wan X *et al*. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *Int J Environ Res Public Health* 2020; **17**: 1729. <https://doi.org/10.3390/ijerph17051729>.
  - 21 Alexander GC, Qato DM. Ensuring access to medications in the US during the COVID-19 pandemic. *JAMA* 2020. <https://doi.org/10.1001/jama.2020.6016>.
  - 22 Ng TP, Jin A, Feng L *et al*. Mortality of older persons living alone: Singapore longitudinal ageing studies. *BMC Geriatr* 2015; **15**: 126–126.
  - 23 ABC News. Concerns COVID-19 lockdown could prompt rise in elder abuse [monograph on the Internet]. 2020. Available from URL: <https://www.msn.com/en-in/health/news/concerns-covid-19-lockdown-could-prompt-rise-in-elder-abuse/vp-BB12cMUx>.
  - 24 Lim WS, Cheah WK, Ali N *et al*. Worry about performance: a unique dimension of caregiver burden. *Int Psychogeriatr* 2014; **26**: 677–686.
  - 25 Ha NHL, Chong MS, Choo RWM, Tam WJ, Yap PLK. Caregiving burden in foreign domestic workers caring for frail older adults in Singapore. *Int Psychogeriatr* 2018; **30**: 1139–1147.
  - 26 Xinhua News. Who said webcast is only for entertainment? Orthopedics experts discussed key points for home health care during COVID-19 lockdown. (Chinese Version only) [monograph on the Internet]. 2020. Available from URL: [http://www.xinhuanet.com/health/2020-03/25/c\\_1125766269.htm](http://www.xinhuanet.com/health/2020-03/25/c_1125766269.htm).
  - 27 Chinese Association of Rehabilitation Medicine (CARM). Guidance of COVID-19 Respiratory Rehabilitation. (Chinese version only) [monograph on the Internet]. 2020. Available from URL: <http://www.carm.org.cn/Home/Article/detail/id/2524.html>.
  - 28 Verity R, Okell LC, Dorigatti I *et al*. A model-based analysis. *Lancet Infect Dis* 2019. [https://doi.org/10.1016/S1473-3099\(20\)30243-7](https://doi.org/10.1016/S1473-3099(20)30243-7).
  - 29 Japan Geriatrics Society. Home service (out-of-town, short-term admission) users/family related information regarding new coronavirus (Japanese version only) [monograph on the Internet]. Available from URL: [https://www.jpn-geriat-soc.or.jp/citizen/pdf/for\\_tsusho.pdf](https://www.jpn-geriat-soc.or.jp/citizen/pdf/for_tsusho.pdf)
  - 30 Japan Geriatrics Society. Infection disease prevention in nursing homes (Japanese version only) [monograph on the Internet]. Available from URL: [https://www.jpn-geriat-soc.or.jp/citizen/pdf/for\\_short\\_stay.pdf](https://www.jpn-geriat-soc.or.jp/citizen/pdf/for_short_stay.pdf)
  - 31 Japan Geriatrics Society. COVID-19. Older people, practice caution [monograph on the Internet]. Available from URL: [https://www.jpn-geriat-soc.or.jp/en/covid/pdf/covid\\_01.pdf](https://www.jpn-geriat-soc.or.jp/en/covid/pdf/covid_01.pdf).
  - 32 Ministry of Health Singapore. Coronavirus Disease (COVID-19) Situation Report [monograph on the Internet]. 2020. Available from URL: <https://www.moh.gov.sg/covid-19/situation-report>.
  - 33 Lee VJ, Chiew CJ, Khong WX. Interrupting transmission of COVID-19: lessons from containment efforts in Singapore. *J Travel Med* 2020. <https://doi.org/10.1093/jtm/taaa039>.
  - 34 Lim WS, Wong SF, Leong I, Choo P, Pang WS. Forging a frailty-ready healthcare system to meet population ageing. *Int J Environ Res Public Health* 2017; **14**: 1448.
  - 35 Teo N, Gao Q, Nyunt MSZ, Wee SL, Ng TP. Social frailty and functional disability: Findings from the Singapore longitudinal ageing studies. *J Am Med Dir Assoc* 2017; **18**: 637.e613–637.e619.
  - 36 Peckham R. The covid-19 outbreak has shown we need strategies to manage panic during epidemics [monograph on the Internet]. *BMJ Opinion* 2020 Available from URL: <https://blogs.bmj.com/bmj/2020/02/21/robert-peckham-covid-19-outbreak-need-strategies-manage-panic-epidemics/>.
  - 37 Malhotra R. Helping Older Folks Stay Connected [Monograph on the Internet]. *The Straits Times*; 2020. Available from URL: <https://www.straitstimes.com/singapore/health/helping-older-folk-stay-connected>.
  - 38 Korea Centers for Disease Control and Prevention. Coronavirus Disease-19, Republic of Korea. [monograph on the Internet]. 2020. Available from URL: <http://ncov.mohw.go.kr/>.
  - 39 Korean Society of Infectious Diseases, Korean Society of Pediatric Infectious Diseases, Korean Society of Epidemiology, Korean Society for Antimicrobial Therapy, Korean Society for Healthcare-associated Infection Control Prevention, Korea Centers for Disease Control Prevention. Report on the Epidemiological Features of Coronavirus Disease 2019 (COVID-19) Outbreak in the Republic of Korea from January 19 to March 2, 2020. *J Korean Med Sci* 2020; **35**: e112.
  - 40 Korean Society of Infectious Diseases, Korea Centers for Disease Control Prevention. Analysis on 54 Mortality Cases of Coronavirus Disease 2019 in the Republic of Korea from January 19 to March 10, 2020. *J Korean Med Sci* 2020; **35**: e132.
  - 41 Korean Center for Disease Control and Prevention and Korean Society for Healthcare-associated Infection Control and Prevention. Standard guideline for healthcare-associated infection control and prevention 2017 [monograph on the Internet]. 2017. Available from URL: [http://cdc.go.kr/CDC/cms/content/mobile/26/75626\\_view.html](http://cdc.go.kr/CDC/cms/content/mobile/26/75626_view.html).
  - 42 World Health Organization. Infection prevention and control guidance for long-term care facilities in the context of COVID-19: interim guidance [monograph on the Internet]. World Health Organization; 2020. Available from URL: <https://apps.who.int/iris/handle/10665/331508>.
  - 43 Taiwan Centers for Disease Control. Prevention and Control of COVID-19 in Taiwan [monograph on the Internet]. Taiwan Centers for Disease Control 2020. Available from URL: <https://www.cdc.gov.tw/File/Get/LO4JGwYKrJ5urP3CQeLbw>.
  - 44 Taiwan Centers for Disease Control. Guidelines for prevention of SARS-CoV-2 infection in residential long term care facility [monograph on the Internet]. Taiwan Centers for Disease Control 2020. Available from URL: <https://www.cdc.gov.tw/File/Get/mC8GRARogARUf3y8OMXdw>.
  - 45 Taiwan Centers for Disease Control. Interim Guideline for Clinical Management of SARS-CoV-2 Infection (5th edition) [monograph on the Internet]. Taiwan Centers for Disease Control 2020. Available from URL: [https://www.cdc.gov.tw/File/Get/StZLNCwujK7x\\_pxOU0iGAQ](https://www.cdc.gov.tw/File/Get/StZLNCwujK7x_pxOU0iGAQ).
  - 46 Taiwan Centers for Disease Control. Taiwan National Infectious Disease Statistics System [monograph on the Internet]. Taipei, Taiwan; 2020. Available from URL: <https://nidss.cdc.gov.tw/en/>.
  - 47 Thai Society of Gerontology and Geriatric Medicine, Institute of Geriatric Medicine, Department of Medical Services *et al*. A Guideline to Care for Older Persons during the COVID-19 Pandemics (Thai version only). *J Gerontol Geriatr Med* 2020; **19**: e2.
  - 48 Thai Society of Gerontology and Geriatric Medicine, Institute of Geriatric Medicine, Department of Medical Services *et al*. A Guideline to Care for Older Persons during the COVID-19 Pandemics. *J Gerontol Geriatr Med* 2020; **19**: e1.
  - 49 Mahidol University. What to care for older people staying at home during Covid-19 outbreak? (Thai version only) [monograph on the Internet]. 2020. Available from URL: [http://www.thaigeron.or.th/download-doc-advice\\_elderly\\_covid19\\_infographic\\_th.jpg/](http://www.thaigeron.or.th/download-doc-advice_elderly_covid19_infographic_th.jpg/).
  - 50 Mahidol University. What to care for older people staying at home during Covid-19 outbreak? [monograph on the Internet]. 2020. Available from URL: [http://www.thaigeron.or.th/download-doc-advice\\_elderly\\_covid19\\_infographic\\_en.jpg/](http://www.thaigeron.or.th/download-doc-advice_elderly_covid19_infographic_en.jpg/).
  - 51 Chhetri JK, Chan P, Arai H *et al*. Prevention of COVID-19 in older adults: A brief guidance from the International Association for Gerontology and Geriatrics (IAGG) Asia/Oceania Region. *J Nutr Health Aging* 2020; **1–2**. <https://doi.org/10.1007/s12603-020-1359-7>.

- 52 Petit L, Azad N, Byszewski A, Sarazan FF, Power B. Non-pharmacological management of primary and secondary insomnia among older people: review of assessment tools and treatments. *Age Ageing* 2003; **32**: 19–25.
- 53 Dent E, Lien C, Lim WS *et al.* The Asia-Pacific clinical practice guidelines for the Management of Frailty. *J Am Med Dir Assoc* 2017; **18**: 564–575.
- 54 Grant WB, Lahore H, McDonnell SL *et al.* Evidence that vitamin D supplementation could reduce risk of influenza and COVID-19 infections and deaths. *Nutrients* 2020; **12**: 988.
- 55 Alzheimer's Disease International. ADI offers advice and support during COVID-19 [monograph on the Internet]. 2020. Available from URL: <https://www.alz.co.uk/news/adi-offers-advice-and-support-during-covid-19>.
- 56 Wang H, Li T, Barbarino P *et al.* Dementia care during COVID-19. *Lancet* 2020; **395**: 1190–1191.
- 57 Boots LM, de Vugt ME, van Knippenberg RJ, Kempen GI, Verhey FR. A systematic review of internet-based supportive interventions for caregivers of patients with dementia. *Int J Geriatr Psychiatry* 2014; **29**: 331–344.
- 58 Rolland Y, Benetos A, Villars H, Braun H, Blain H. A COVID-19 support platform for long term care facilities. *J Nutr Health Aging* 2020: 1–2. <https://doi.org/10.1007/s12603-020-1364-x>.
- 59 Society BG. Coronavirus and ronograph on the Internet]. 2020. Available from URL: <https://www.bgs.org.uk/resources/resource-series/coronavirus-and-older-people>.
- 60 Rosenbaum L. Facing Covid-19 in Italy — ethics, logistics, and therapeutics on the Epidemic's front Line. *N Engl J Med* 2020. <https://doi.org/10.1056/NEJMp2005492>.
- 61 Muscedere J, Waters B, Varambally A *et al.* The impact of frailty on intensive care unit outcomes: a systematic review and meta-analysis. *Intensive Care Med* 2017; **43**: 1105–1122.
- 62 Legido-Quigley H, Asgari N, Teo YY *et al.* Are high-performing health systems resilient against the COVID-19 epidemic? *Lancet* 2020; **395**: 848–850.
- 63 Bedford J, Enria D, Giesecke J *et al.* COVID-19: towards controlling of a pandemic. *Lancet* 2020; **395**: 1015–1018. [https://doi.org/10.1016/S0140-6736\(20\)30673-5](https://doi.org/10.1016/S0140-6736(20)30673-5).
- 64 Cesari M, Proietti M. Geriatric medicine in Italy in the time of Covid-19. *J Nutr Health Aging* 2020; **24**: 459–460. <https://doi.org/10.1007/s12603-020-1354-z>.
- 65 Tan LF, Seetharaman S. Preventing the spread of COVID-19 to nursing homes: experience from a Singapore geriatric Centre. *J Am Geriatr Soc* 2020. <https://doi.org/10.1111/jgs.16447>.
- 66 Cheung E. Wuhan pneumonia: Thailand confirms first case of virus outside China [monograph on the Internet]. *South China Morning Post* 2020. Available from URL: <https://www.scmp.com/news/hong-kong/health-environment/article/3045902/wuhan-pneumonia-thailand-confirms-first-case>.

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