

## COMMENTARY

# Respiratory epidemics and older people

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## Abstract

Coronavirus disease 2019 (COVID-19) has been particularly severe on older people. Past coronavirus epidemics namely Severe Acute Respiratory Syndrome and the Middle East Respiratory Syndrome have also been severe on older people. These epidemics lasted for only a limited period, however, and have proven short lived in the memories of both the public and public health systems. No lessons were learnt to mitigate the impact of future epidemics of such nature, on older people. This complacency we feel has claimed the lives of many older people during the current COVID-19 global epidemic. The nature of risks associated with acquiring infections and associated mortality among older people in respiratory epidemic situations are varied and of serious concern. Our commentary identifies demographic, biological, behavioural, social and healthcare-related determinants, which increase the vulnerability of older people to respiratory epidemics. We acknowledge that these determinants will likely vary between older people in high- and low-middle income countries. Notwithstanding these variations, we call for urgent action to mitigate the impact of epidemics on older people and preserve their health and dignity. Intersectoral programmes that recognise the special needs of older people and in unique contexts such as care homes must be developed and implemented, with the full participation and agreement of older people. COVID-19 has created upheaval, challenging humanity and threatening the lives, rights, and well-being of older people. We must ensure that we remain an age-friendly society and make the world a better place for all including older people.

**Keywords:** older people, epidemics, COVID-19, pandemics, coronavirus

## Key points

- Coronaviruses have been particularly severe on older people.
- Lessons from past epidemics have not been learnt and applied in COVID-19.
- Demographic, biological, behavioural, social and healthcare determinants increase risks in older people.
- COVID-19 has especially highlighted the vulnerabilities and needs of older people during epidemics.
- Urgent actions to mitigate the impact of all epidemics on older people and preserve their health and dignity are needed.

## COVID-19 and older people—an introduction

The impact of coronavirus disease 2019 (COVID-19) has been particularly severe amongst older people. In total, 80% of deaths amongst confirmed COVID-19 cases in the United States have been in adults aged over 65. Data from April 2020 reported a mortality rate of 4–11% for those aged 65–84 and 10–25% in those over 85 [1]. In Italy, one of the

reasons proposed for the high death rate has been the proportion of older people in the population. Data from China, South Korea and Spain [2–4] all confirm that older people are disproportionately affected. The impact of COVID-19 has been particularly apparent in care homes and similar institutions. In the United Kingdom, all-cause mortality in care homes increased by 220% during the epidemic [5]. In this commentary, we discuss the vulnerability of older people to epidemics in general. We provide recommendations on

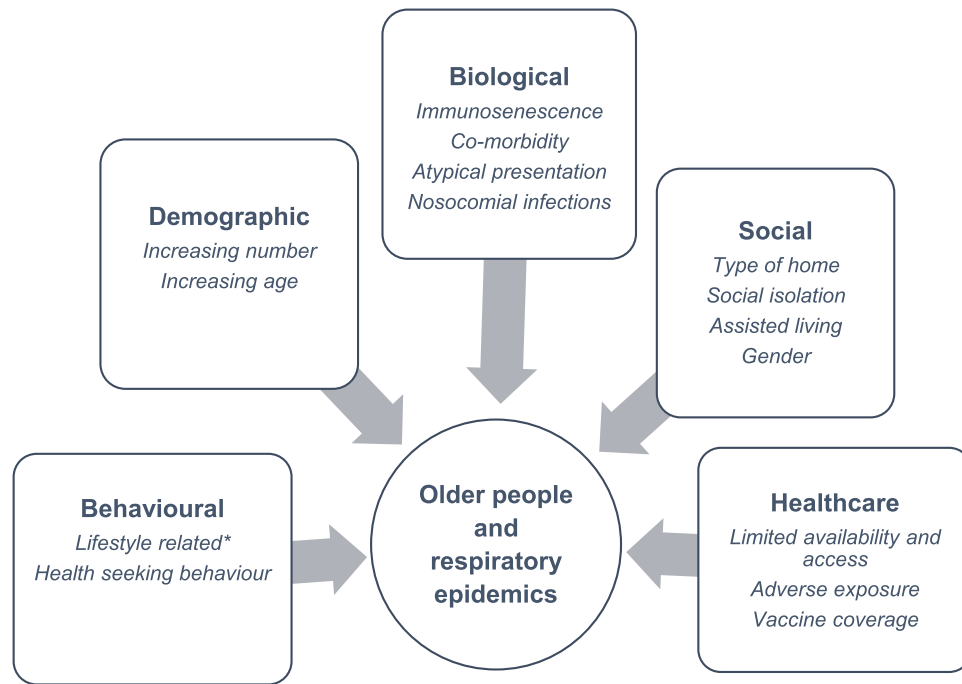


Figure 1. Vulnerability of older people to epidemics. \* indicates nutrition; physical activity; sleep; stress; social relationships and mental health; tobacco and alcohol use.

how the needs and views of older people need to be systematically factored into the current and future epidemic responses.

### Impact of past epidemics on older people

In the last century, influenza viruses were primarily responsible for global respiratory epidemics. Those under the age of 65 were severely affected by some of these, most notably the 1918 influenza pandemic [6]. A high prevalence amongst children and young adults was observed in the H1N1 epidemic of 2009. One possible explanation for low H1N1 mortality amongst older people may have been immunity due to prior exposure to similar serotypes [7]. Alternative explanations include differences in cytokine storm responses [8] and antigenic imprinting between the age groups [6]. The age distribution of typical annual seasonal influenza epidemics exhibits a different pattern, however. In 31 countries between 2002–2011, 67% of influenza deaths occurred in those 65 years of age or older, 26 times the mortality in those under 65 [9].

The novel coronaviruses SARS-CoV1 and MERS-CoV emerged in the last 20 years, causing severe acute respiratory syndrome and the Middle East respiratory syndrome. These coronaviruses impacted older people disproportionately before subsiding [10]. These epidemics lasted for only a limited period, however, and have proven short lived in the memories of both the public and public health systems, as they were claimed to have been well controlled and largely spared the ‘healthy adult’ segment of society. No lessons were learnt about how to mitigate the impact of coronavirus epidemics on older people.

### COVID-19 and older people—overlooked vulnerabilities

The response of many countries to the COVID-19 pandemic has arguably represented a major injustice to older populations, with slow or inadequate attempts to control population spread, slow implementation of case finding and contact tracing, failure to protect particularly vulnerable populations such as in care homes and in some cases apparent de-prioritisation of access to healthcare.

Older people are vulnerable to epidemics because of demographic, biological, behavioural, sociological and healthcare determinants (Figure 1).

#### Demographic determinants

Both absolute numbers and the proportion of the older population who are especially at risk during epidemics have grown. The global older population increased from 128 million in 1950 to more than 700 million in 2019. In the United States, older people constituted 4.1% of the population in 1900 and 15.2% in 2016 [11]. The number of very old people is also increasing; in the United States, there were 6.4 million people over 85 years in 2016, 50 times more than in 1900 [12]. Government policy, health and social care and wider society should therefore plan to meet the particular needs of older people during epidemics much more than previously.

#### Biological determinants

Several biological mechanisms make older people more prone to the effects of infections. The immune system is

critical to survival of a host against pathogens. Old age is associated with immuno-senescence, the decline in immune function with increasing age [13]. Immuno-senescence is likely to be one of the main reasons for increased attack rates, higher hospitalisation and mortality due to COVID-19 [14]. Similar evidence emerged in previous coronavirus epidemics too [15].

Older people suffer more co-morbidities such as diabetes, hypertension, coronary heart disease, chronic obstructive pulmonary disease, renal disease and cancer. A 2016 study from Hubei, China, reported the prevalence of one or more non-communicable diseases amongst older people to be 74% [16]. These co-morbidities could both exacerbate immuno-senescence and render compromised organs more vulnerable to the virus. Related to, but distinct from, the effects of multimorbidity are the effects of frailty—the loss of homeostatic reserve that renders many older people disproportionately vulnerable to the impact of even relatively minor stressors. Recovery from any illness is less likely when frailty is present, recovery takes longer and those recovering are more prone to further episodes of illness.

Older people are less likely to display typical disease symptoms than their younger counterparts. Notably, fever is often absent, but case definition in viral epidemics often includes fever. Standard tests, such as X-rays, may initially fail to detect pneumonia [17]. Atypical presentations such as decreased appetite or functional status, dehydration, falls or delirium may lead to missed or late diagnosis, increasing the likelihood of morbidity, mortality and transmission of the virus [18].

Iatrogenic harm remains high amongst older people requiring healthcare, including nosocomial infection due to urinary catheters, feeding tubes and other invasive devices and to exposure to pathogens in healthcare settings [19]. Older people are also more likely to suffer side effects and adverse consequences from drug therapy, and adverse effects of the healthcare environment.

### Behavioural determinants

Physical activity and nutrition are important lifestyle determinants for risk of disease. A high proportion of older people in both high- and low-middle income nations are sedentary [20]. Only a minority consume the recommended five servings a day of fruits and vegetables [21]. Smoking and alcohol use, and reduced cessation efforts with age, predispose to risk during epidemics [22]. Stress and fear associated with an epidemic compound the already high prevalence of insomnia with a variety of proposed adverse health consequences [23].

Health literacy is a strong psychosocial determinant of health. It varies by age and older people risk being further marginalised during pandemics due to inadequate or inconsistent health communication [24]. Health communication strategies need to account for sensory impairments, older people's preferences for specific communication styles, take account of the prevalence of dementia and mild cognitive

impairment in the older population and dependence on carers and family members [25,26]. Poor pandemic communication may contribute to increased risks for older people, particularly around seeking healthcare when this is restricted by competing demands, isolation or distancing restrictions [27].

### Social determinants

In the United Kingdom, 34% of older people live in homes that do not provide an appropriate standard of warmth, comfort and hygiene [28]. The winter predilection of most epidemic respiratory viruses places older people living in inadequate homes or experiencing fuel poverty at heightened risk. Generally, individuals with greater social ties have better health and survival [29]. Social isolation and loneliness exacerbate physical and mental health problems [30]. Reports highlight a profound impact of the current lockdown on older people's physical, social and mental health [31]. The United Nations in its policy brief on the impact of COVID-19 has warned that, 'Lockdowns and concentration of health resources on COVID-19 may marginalise older persons and create barriers to obtaining health services for their existing underlying conditions, some of which may increase their vulnerability to COVID-19' [32].

### Care delivery

Many older people require personal care delivered by paid carers. There were 1.2 million adult social care workers in the United Kingdom in 2018, who see up to 20 clients a day. An estimated 540,000 older people in the UK receive home care at least weekly. Epidemics pose a challenge in ensuring that such care is still deliverable without increasing the risk of infection either directly from care staff or by cross-transmission between clients. This depends on an adequate supply of personal protective equipment, robust and frequent staff testing, processes that enable exposed or infected staff to stop work and isolate without financial penalty and adequate staff in reserve to enable services to continue when staff are ill. Epidemics pose similar challenges for older people living in care homes, assisted living facilities, foster and group homes and chronic disease wards, who are known to be vulnerable to seasonal influenza and norovirus outbreaks.

### Healthcare determinants

Older people are more likely to attend hospital, as an inpatient, outpatient or visitor [33]. Exposure of older people to healthcare environments risks bringing them into contact with pathogens. Seasonal influenza vaccine coverage of older people has improved in recent years, but in some countries at least, it is far from universal. Vaccination, even when available, often provides only partial protection to older people [34]. New vaccines are often tested on healthy volunteers, and their safety and usefulness for older people requires specific testing, and this is likely to be the case for candidate

COVID-19 vaccines. In lower-income nations, healthcare access for older people remains limited both in quantity and quality, even during normal times [35]. COVID-19 has already provoked a debate on ‘who should get a ventilator?’ Older people (and those who care for them) are at risk of being considered at ‘low priority’ for a variety of healthcare interventions that are in short supply [36]. It is reasonable to assume that impoverished communities will see a further reduction of the resources available for the care of older people during epidemics.

## Conclusion

The risks for older people in epidemic situations are varied and of serious concern. Risk of both infection and poor health outcomes can be influenced by demographic, biological, behavioural, social and healthcare access factors. Direct and indirect effects of pandemics contribute to increased and premature mortality, infection-associated morbidity, neglected co-morbid conditions and impaired well-being and quality of life for older people.

Amongst all the epidemics encountered so far, COVID-19 has especially highlighted the vulnerabilities and needs of older people. This attention should translate into urgent action to mitigate the impact and preserve health and dignity. Health professionals and policymakers must work with older people to ensure inclusion of their special needs in preparedness and action plans. This requires leadership and guidance from national geriatrics societies, healthcare professionals, civil society and academia.

Intersectoral programmes that recognise the special needs of older people and in unique contexts such as care homes must be developed and implemented, with the full participation and agreement of older people at all stages. Such programmes should include: (i) need-based health awareness programmes in areas such as self-care and prevention; (ii) increasing the availability and accessibility of essential basic healthcare services (including telehealth) for addressing both acute infections and co-morbidities and (iii) enhancing education programmes for healthcare professionals to include topics that remain neglected in traditional curricula and (iv) strengthening the collection and analysis of data to guide programmes and policies for the protection and care of older people.

COVID-19 has created upheaval, challenging humanity and threatening the lives, rights, and well-being of older people. We must ensure that we remain an age-friendly society and make the world a better place for all including older people.

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