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Review Article

# Death among Plenty-How Disjointed Policies Failed Older People Living in Residential Care in Times of COVID-19

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## Abstract

In spite of the wealth of Hong Kong, the existence of an essentially free public health system, and infection control policies that suppressed case numbers and mortality during the first two years of the COVID-19 pandemic, the emergence of the omicron strain resulted in over 90% of residential Care Homes (RCHEs) reporting outbreaks and 5000 deaths between February and May 2022, representing the highest death rate per million population worldwide, with 71%, 80 years and over and 17% between 70 to 79 years. The physical environment of RCHEs, lack of staff, the frail profile and poor nutrition status of residents, vaccine hesitancy, and lack of a coordinated policy for integrated care for older people all contributed. A policy concentrating on infection control and closing of borders alone, without addressing existing deficiency in other policy areas relating to vulnerable older people, is unlikely to reduce excess mortality. Hong Kong is one of the wealthiest cities in the world, and able to provide free vaccinations and COVID-19 tests for all. The pandemic effectively puts a spotlight on the longstanding problem of long-term care of dependent older people, showing an urgent need for an integrated policy covering health and social care aspects of vulnerable older people.

**Keywords: COVID-19; Residential care homes; Mortality; Health and social care policy**

## Introduction

It is well known that the beginning of the COVID-19 pandemic resulted in a devastating effect on older people living in residential care settings world-wide [1]. Yet only a few cases were documented during the first six months of the pandemic in 2020 in Hong Kong [2-4]. With successive mutations of the virus, establishment of infection control policies and availability of vaccines, the impact of the infection on residential care homes world-wide has become milder with omicron being the dominant strain [5]. In contrast in Hong Kong, the emergence of the omicron strain resulted in over 90% of residential care homes reporting outbreaks and 5000 deaths between February and May 2022. During this period Hong Kong reported the highest death rate per million population worldwide [6], with 71%, 80 years and over and 17% between 70 to 79 years [7].

Hong Kong is a wealthy city, with a GDP per capita of US$44,535 (December 2021) [www.tradingeconomics.com/hong-kong/gdp], with a good essentially free public health system and many charitable foundations providing various types of support for the disadvantaged. For example the largest of these, the Hong Kong Jockey Club Charities Trust ranking among the top ten in the world, committed a total of HKD 1.5 billion for special initiatives in response to COVID-19 between February 2020 to June 2021 [8]. This article addresses the question of why this has occurred in Hong Kong compared with other countries in spite of its wealth and free public health system and seemingly effective infection control policies that proved successful before the emergence of the omicron strain.

## Infection Control Policy

Hong Kong was the epicenter of SARS in 2003, when there were widespread outbreaks and mortality among older people living in Residential Care Facilities [RCHEs]. Since that period a Centre for Health Protection had been set up with implementing infection control policy regulations for residential care homes [2-4]. The Hospital Authority community outreach teams were well established to provide medical support and advice for older adults living in residential care homes [3]. Mask wearing and no visitor's policies were well accepted by RCHEs. Also there was a heightened awareness of preventive measures among the general public in terms of mask wearing and hand hygiene. Free vaccinations with inactivated vaccine (Sinovac) as well as mRNA vaccine (Pfizer) became available at the beginning of 2021, with a policy of vaccinating older people first.

When the COVID-19 pandemic began in 2020, Hong Kong essentially instituted a close border policy to 'keep out' the virus, only allowing Hong Kong residents to enter Hong Kong with 21 days hotel quarantine, PCR testing before boarding the flight, on arrival at the airport, as well as repeated testing during the quarantine period. With the emergence of the Delta strain, and a large number of cases in the UK, all direct flights between UK and HK were suspended for five months and no one who has been in the UK during the previous 21 days was allowed entry. During this period the total number of cases in HK did not raise much compared with other countries. However with the emergence of the more infectious omicron strain which

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could be asymptomatic, Hong Kong experienced a surge of cases to about 57,000 per day during the first 5 months of 2022 (the fifth wave) inspite of the stringent close border measures. With this community spread, RCHEs began to be affected, likely introduced by staff. Of the 62% of the total population who had completed vaccination program, only 10% of the RCHE population had completed the vaccination programme. For the first four months of 2022, among those who were 70 to 79 years, the percentage of deaths were 68%, 3% and 0.2% for those who were unvaccinated, or had received 2 or 3 doses of mRNA vaccines respectively [7]. Corresponding figures for older adults 80+ years were 75%, 1% and 0.1%.

## The RCHE Landscape

Various government departments are involved in the regulation and service provision of RCHEs. The Department of Health monitors the implementation of infection control guidelines, as well as keeps record of infections. It also provides outreach teams to RCHEs for education. The Social Welfare Department is responsible for regulations relating to the operation in terms of quality assurance, as well as multidisciplinary allied health outreach teams (physiotherapist, occupational therapist, speech therapist). It also provides subvention for some RCHEs, which allows for the employment of more staff, as well as means tested residential care vouchers for prospective clients to allow choice and indirectly promote service quality. It administers an assessment system using the Resident Assessment Instrument (RAI) [9], for prospective clients to qualify for acceptance by subvented homes. A threshold of dependency must be met for acceptance. There is a long waiting list for entry into subvented homes, as well as for assessments. Thus resident profile is dominated by those who are physically dependent and cognitively impaired or have dementia. The Hospital Authority provides community geriatric outreach support for RCHEs, consisting of nurses under the leadership of a geriatrician. Large non-government organizations that provide many services including RCHEs may have the flexibility of employing their own professional health care team. Some RCHEs employ visiting medical officers from the private sector.

### Implication of the aging population and impact on profile of long-term residential care

HK is an ageing population, with 20.5% of the population aged 65 years and over in 2021 [www.census2021.gov.hk]. It ranks seventh among places where people are most likely to live to 100, with 47 centenarians per 100,000 populations (3561 people) in 2020 [10]. This demographic change is also reflected in the increase in centenarian deaths by 136% between 2001 and 2010, with pneumonia being the leading cause (34% of deaths), far exceeding the second and third causes (ischaemic heart disease (4.3%) and dementia (4.2%)) [11]. Notably 31% of deaths occurred between January and March, with an inverse correlation with average monthly temperature (-0.72).

A survey of 1820 residents living in RCHEs carried out using the RAI showed a high prevalence of cognitive and mood disorders, communication and visual impairments, chronic diseases and functional disabilities, the profile being worse in those living in private RCHEs [12]. The current profile is likely to be worse, since there is evidence of an increasing trend of frailty and disability among older adults [13,14]. Staffing levels required for care was estimated to be insufficient for adequate care, particularly among non-government subvented homes. This shortfall in care staff, and by implication quality of care, will likely be greater [15].

Poor nutritional status in terms of protein calorie malnutrition and suboptimal vitamin status have also been documented [16,17], one factor being low staffing levels [18]. There is a suggestion that residents of non-subvented RCHEs have greater utilization of emergency room and hospitalization compared with subvented homes, possibly due to low staffing levels or lack of training [19]. Increase in hospital mortality has been shown to be associated with malnutrition [20]. Influenza-like illness is a common cause for hospitalization. During a one year period, surveillance of four RCHEs linking episodes with infectious agents. Two fifty nine episodes occurred in 194 subjects throughout the year, with approximately 53% and 47% of bacterial and viral in origin respectively. The clinical presentation is non-specific with cognitive and functional deterioration. Mortality at 1 month was 10%, with Methicillin Resistant Staphylococci, low body mass index and poor function predisposing to mortality. No association with influenza vaccination status was observed [21].

Frailty and malnutrition predispose to mortality, and in reality a significant proportion of residents have limited life expectancy and are near the end of life with frequent hospital admissions. Indeed the Hospital Authority have constructed a score based on number of recurrent admissions and number of chronic diseases (the Harpe score), whereby average life expectancy is approximately six months for a score of >0.4 [22].

It has been documented worldwide that vulnerability to COVID 19 increases sharply with age, as a result of biological, contextual and policy-related factors [23]. Atypical symptoms such as delirium were more frequent with older age and concomitant cognitive and physical function impairment, perhaps hindering timely diagnosis [24,25]. Frailty reduces survival as well as increase post infection care needs [26,27], and use of routinely captured frailty index have been used to identify high risk patients in some countries [28]. Although COVID-19 vaccines are effective in older adults in reducing hospital admissions [29], even though it is known that immune response declines with age, and response to vaccine stimulus (eg., influenza) is poor among those who are frail, with higher rates of influenza-like illness with increasing frailty [30]. For COVID-19, compared with non-frail patients, those who are frail had lower levels of vaccine protection against hospitalization and death [28]. It is also uncertain how antibody titres correspond with clinical outcomes among older people: while this indicator of immune response is more easily measurable, T cell immunity is seldom available from clinical studies.

Characteristics of RCHEs are also important, as many would not fulfill isolation requirements in the provision of single rooms, adequate distances between cubicles (many have an open plan), and adequate ventilation allowing frequent air exchanges. Such physical environments would allow widespread transmission. There are also difficulties in enforcing wearing of masks and hand hygiene among residents who are dependent on others for care, or who have dementia. Increased admission and discharges between RCHEs and hospitals also increases transmission risk. Inadequate staff number, inadequate personal protective equipment, is also factors contributing to increased risk of infection. A national cross-sectional survey in long term care facilities in England during the first wave of COVID-19 showed that various management practices among these facilities contributed to outbreaks [31]. A recent high court ruling that policies in the early weeks of the pandemic failed to take account of the risks posed to older and vulnerable residents from patients being discharged from hospitals to care homes without COVID testing or appropriate isolation [32].

### Would the fifth wave have occurred if vaccination policies were implemented according to plan?

There is a tendency to attribute the high number of deaths among RCHE residents to low vaccine uptake. Although the policy for vaccination recognizes that older people are at high risk and should have the highest priority in receiving vaccination, which is free of charge and available approximately 8 months before the fifth wave, the implementation of the policy was problematic. Vaccination was not mandatory, nor should it be. However, when vaccines became available, the issue of side effects was highlighted by the media, and the public narrative was that it may be more common among those with underlying diseases. Indeed the government announced a compensation plan for those who developed side effects. The number of cases in the community was low when vaccines were introduced, and no cases occurred in RCHEs. Furthermore a written consent form was needed, to prove that the recipient of the vaccine was aware of all the side effects, which were extensively listed. From an individual's point of view, it may appear that the risks outweighed the benefits. Furthermore in the RCHE setting, many have cognitive impairment and are not able to provide written consent. Some do not have relatives, and RCHE staff may find it difficult to agree to the vaccination on the residents' behalf. Relatives may be reluctant to provide consent for the same reason as low uptake among the general public. The penetration of COVID-19 to RCHEs could be attributed to the mutation to a strain that has higher transmissibility, or to personal fatigue among RCHE is staff.

Inability to comply with infection control measures on the part of residents due to cognitive and physical impairment, frailty and poor nutritional status compromising immune response (with and without vaccination), atypical presentations such as delirium, failure to eat resulting in delayed diagnosis.; staff shortages dues to sickness aggravated by no visiting policies which prevented helpers from home who normally contributed to personal care; a health response system that is entirely dependent public hospitals with little surge capacity; and the physical environment of RCHEs all contributed to the rapid spread of infection, hospital admissions and fatality.

It may be over simplistic to assume that a high vaccination rate would have prevented the large number of deaths of RCHE residents. Resident profile, the physical structure of RCHEs as well as health care management of infected residents are likely to be contributory factors and should not be neglected.

Many countries have documented excess mortality during the pandemic that is due to causes other than COVID-19, attributed to delay in seeking care or lack of timely care due to staff shortages [33]. In Hong Kong such an analysis, although of importance for formulation of ageing policies, may be difficult to carry out based on institutional data alone without a detailed analysis of individual cases by geriatricians, to determine whether the patient died of COVID-19 or with COVID-19. Nevertheless, in examining the pattern of excess mortality during the fifth wave (which occurred during a prolonged period of cold and damp weather when mortality among the very old increases), compared with previous years, there was clearly a sharp peak in mortality exceeding the annual increase during the colder months of the year (Figure 1). An examination of all-cause and cause-specific hospitalization and deaths during the first year of COVID-19, when a COVID-19 elimination strategy was in force, showed that compared with 2010-2019 baseline, there was an overall reduction in all-cause hospitalizations and a concurrent increase in deaths There was a reduction in excess mortality within hospitals but an increase outside hospitals [34].

The findings suggest that pandemic policies have an indirect effect on population morbidity and mortality, in changing health seeking behaviour that is most noticeable among vulnerable groups. Since only public hospital data was included, it is possible that the effect was magnified among those who could not afford healthcare in the private sector.

## Quality of Care during the Fifth Wave

Another pertinent question is whether poor quality of care as a result of staff shortages in health services other than within RCHEs contributed to the high mortality (whether dying from or dying with COVID-19). Anecdotal evidence of poor care is available from the media [35]. Reports of older people in isolation facilities not being washed, developing pressure ulcers, urinating in their beds, not eating or drinking, being frightened and lonely (no visiting policy), and exhausted staff working 12 hour shifts looking after 80 or more patients 'giving up on the elderly'. The no visiting policy resulted in many elderly patients dying alone, in spite of the existence of the policy allowing compassionate visits.

The Hospital Authority community geriatric outreach teams that support RCHEs worked within their remit, in providing telemedicine consults, onsite team visits, dispensation of 'pandemic packs' of commonly used medicines such as Panadol, and laxatives, and arranging for residents to contact family members virtually, with the objective or management in the RCHE, rather than being admitted to hospitals [6].

### Healthcare policy for older adults

The fifth wave with high fatality among RCHE residents shows that infection control policies in isolation is not effective among older people - a coordinated/integrated approach involving multiple government departments responsible to care of older people is needed.

Furthermore policies need to be implemented effectively with adequate resources. The healthcare system did not cope, and volunteer healthcare teams as well as construction teams from mainland China arrived to help with care in hospitals and isolation facilities, as well as rapidly construct isolation facilities and COVID-19 hospitals.

Health and social care professionals working in care of older adults have long been aware of the growing pressures and inadequacies of long term as well as acute and rehabilitative care of older people in the public sector, and by inference the opportunity for better care in the private sector, a seldom discussed health inequality. The pandemic put a spotlight on this issue in a dramatic way. Hopefully the fifth wave would accelerate better central coordination of policies relating to care of older people, rather than allow infection control policies to stand alone and be applied across all situations without considering the heterogenous needs of older people, overriding all other considerations.

Infection control policies also need to be reviewed in terms of benefits and harms, based on evidence, rather than simply focusing on the number of infections. Thus a literature review and meta-analysis of the effects of lockdowns on COVID-19 mortality concluded that lockdowns have had little to no public health effects, but have imposed enormous economic and social costs. The authors suggest that they should be rejected as a pandemic policy instrument [36]. Similarly the no hospital visiting policy failed to account for individual and societal

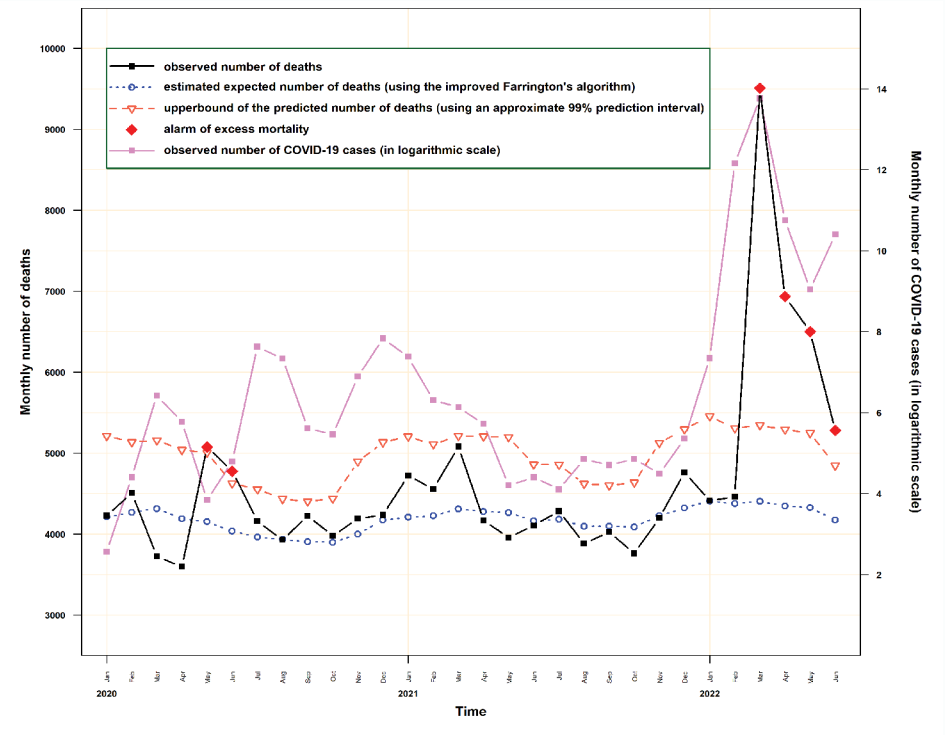


**Figure 1**: Mortality trend in Hong Kong (2020 to 2022): Excess Mortality during the COVID-19 Pandemic.

costs of patients dying alone, and it could be argued that hospital visitation policy should be reconceptualised as a civil rights issue [37].

### Lessons learnt and preparations for the future

Few would argue that the fifth wave with the high mortality rate for older people in residential care was unavoidable. The pandemic put a spotlight on longstanding deficiencies in care of older people in long term care as well as in hospitals, and the need for integrated policies that complement current infection control policies rather than be dominated by the latter. Currently there are multiple providers of care for older people in RCHEs, raising the question of who has overall ownership of integrated care. Such an approach needs to be formulated urgently, since the COVID-19 pandemic may last in terms of years, with successive mutations that increase transmissibility. The initial close border policy which helped to 'keep out' virus cannot be maintained for a long period; rather it merely confers a false assurance of being an 'effective' policy, as for the initial phases. In comparing excess mortality data with other countries, taking into account the stringency of government policies, the Hong Kong data shows that in spite of having one of the highest stringency indexes, excess mortality was the highest compared with UK, USA and Singapore [38]. This shows that for older people in the residential care setting, policies concentrating on infection control and restriction of travel alone, without addressing existing deficiency in other policy areas relating to vulnerable older people, are unlikely to reduce excess mortality. Hong Kong is one of the wealthiest cities in the world, and able to provide free vaccinations and COVID-19 tests for all. The pandemic effectively puts a spotlight on the longstanding problem of long-term care of dependent older people, which should not be ignored any longer. An integrated policy covering health and social care aspects is urgently needed.

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