

## COMMENTARY

# Why is COVID-19 more deadly to nursing home residents?

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COVID-19 is deadly to older adults, with research showing that being older and having underlying chronic diseases are significant risk factors for COVID-19 related deaths. However, though similarities exist between both nursing home residents and older community-dwelling people, nursing home residents are substantially more vulnerable to COVID-19. A closer review of both demographic groups provides clarity concerning the difference within the context of COVID-19. Therefore, to address the research gap, drawing insights from Maslow's hierarchy of needs model, this article aims to examine similarities and differences in COVID-19 risk factors experienced by nursing home residents and community-dwelling older people.

## Background

The coronavirus 2019 (COVID-19) is a once-in-a-century catastrophe. As of January 8<sup>th</sup>, 2021, the pandemic has already claimed approximately 88 million infections and 2 million deaths across the world.<sup>1</sup>

Older people, collectively, are the ground zero of the COVID-19 pandemic.<sup>2</sup> Though young infected people only have 19.8% chances of developing severe complications from COVID-19, the probability rose to 80.7% for people 80 years and older.<sup>3</sup> In addition to the health challenges older people face daily, they often experience substantial financial difficulties compared with younger adults.<sup>4,5</sup> Recurring evidence indicates that being older and having underlying chronic diseases are significant risk factors for COVID-19.<sup>2</sup> Most older adults (65 years and older) face the issues of frailty and underlying health conditions, risk

factors for high COVID-19 infection and deaths rates in this population.<sup>2</sup> In the United States, approximately 80% of older adults have at least one chronic health condition, while over 33% of them face limitations in daily activities such as meal preparation and housekeeping.<sup>6</sup> Data further indicate that not all older adults have an equal vulnerability to these risk factors.

Research shows that 83.5% of nursing home residents are aged 65 years and older, with 71.5% of them having hypertension, 47.8% having dementia and 46.3% having clinical depression.<sup>7</sup> Compared to those living in community-dwellings, nursing home residents face moderately higher overall disease burden. Nursing home residents have lower reported chronic disease rates, but higher rates of dementia,<sup>6,7</sup> the vulnerability of these residents' to COVID-19 is far greater than their community-dwelling counterparts. In a study on 627 nursing home facilitates in the US, COVID-19 incidence rates are 13

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times higher than corresponding rates in community-dwelling older people.<sup>8</sup> These insights combined indicate that demographics and disease history alone may not be able to explain the different levels of COVID-19 vulnerability experienced by these two populations.

Social environments also play a role in shaping the ability of nursing home and community-dwelling residents in navigating COVID-19.<sup>9</sup> Research suggests that nursing home residents are often disproportionately affected by COVID-19 safety measures, such as lockdowns and social distancing mandates, mechanisms which make visitations from the outside world as well as informal care from family and friends less likely.<sup>10</sup> Critical insights regarding risk factors for COVID-19 across any demographic will increase the efficiency of health resource allocation and planning. However, while useful insights are available in the literature, research is needed to explore how risk factors for COVID-19 in nursing home residents and community-dwelling older people differ. Therefore, to address the research gap, drawing insights from Maslow's hierarchy of needs model,<sup>11</sup> this article aims to examine similarities and differences in COVID-19 risk factors experienced by nursing home residents and community-dwelling older people.

## Materials and methods

Using established research as the review framework,<sup>12</sup> and a comprehensive review of PubMed literature, we obtained information on factors that influence older adults and nursing home residents' susceptibility to COVID-19. Furthermore, to make sure up-to-date evidence was obtained, verified news articles were also included in the review.

## Results

### Theoretical framework

Maslow's hierarchy of needs states that human behavior is motivated by a sequence of requirements: physiological (e.g. food and shelter) safety (e.g. safety and access to medicine), to love and belonging (e.g. relationships built with family and friends), esteem (e.g. status and respect) and self-actualization (e.g. achieving one's full potentials) needs.<sup>11</sup> The model posits that to achieve higher-level objectives (e.g. love and belonging, esteem and self-actualization needs), individuals need to address necessities, such as physiological and safety needs first.<sup>11</sup> This model might be particularly relevant in shedding light on social phenomena amid global crises like COVID-19, when unexpected changes in social sectors (e.g. access to healthcare) have disrupted or halted lives and livelihoods, especially among vulnerable populations such as older adults.<sup>13,14</sup>

### Nursing home residents compared with older people

From a definition perspective, nursing home residents are not just older adults<sup>15</sup> living in long-term care settings. Equally, this may contrast with community-dwelling older people, who are not living in a residential environment and may have relatively more freedom to choose their housing options.<sup>16</sup> In other words, nursing home residents are a unique population that face health and economic challenges community-dwelling older people face, as well as unique difficulties that their community-dwelling counterparts are less familiar with.<sup>17</sup> The living environment is one of the main differences between nursing home residents and community-dwelling older people. However,

commonalities and differences between these two populations are more complex than their living arrangements.<sup>17</sup> To truly understand nursing home residents' vulnerability to COVID-19 compared with community-dwelling older people, a detailed comparison of these two groups' similarities and differences is warranted.

### Similarities between nursing home residents and community-dwelling older people

Being older and living with health challenges or multiple chronic conditions, as well as facing economic hardship are key defining attributes shared by these two populations.<sup>7</sup> These factors combined indicate that both nursing home residents and community-dwelling older people, compared with their younger counterparts, may experience more significant difficulties in fulfilling their needs.<sup>18-20</sup> According to Maslow's hierarchy of needs,<sup>11</sup> highlighted above, are necessities that humans need to fulfill to sustain life, with advanced needs being addressed after basic needs are met.<sup>11</sup> The ability to which individuals can efficiently and effectively manage their basic and advanced needs influence their overall health and well-being,<sup>11</sup> which may partially explain why older people, both living at nursing homes or in community settings, face considerable challenges amid COVID-19.<sup>21-23</sup>

Compared to younger adults, particularly considering resources constraints mainly caused by COVID-19,<sup>24,25</sup> it seems that older adults may face declining abilities to fulfil their needs. While the basic needs that involve securing food and shelter as well as maintaining individual safety and accessing to basic, yet essential, healthcare services.<sup>18-20</sup> This commonality shared by nursing home residents and community-dwelling older people may explain why severe COVID-19 cases are high in these two populations.<sup>26,27</sup> However, it may fall short of describing the unnerving high morbidity and mortality rates seen in nursing home residents.<sup>8</sup>

### Differences between nursing home residents and community-dwelling older people

One reason that may shed light on nursing home residents' heightened risk to COVID-19 centers on these individuals' pronounced lack of capabilities to fulfil their lower-level needs<sup>28</sup> and higher-level needs.<sup>29</sup> For example, mounting evidence has linked cognitive impairment with individuals' diminishing abilities to address their physical and psychological needs.<sup>30-32</sup> As 47.8% of the nursing home residents have dementia, only approximately 33% of community-dwelling older people have the illness,<sup>6,7</sup> there are considerable implications to be considered. These insights combined indicate that, compared to community-dwelling older people, nursing home residents may face greater hardship in addressing their essential needs to maintain the living standards they prefer.

Moreover, different from community-dwelling older people, nursing home residents have significantly reduced physical access to family, friends, as well as acquaintances, the majority of which are pillars to their social support system.<sup>33,34</sup> Being a primary source of social support, family and friends also serve as informal caregivers.<sup>35</sup> This social contact provides companionship and offers human interconnectivity and relationship that helps satisfy the needs for love and belonging, esteem and self-actualization.<sup>36,37</sup> While owing to COVID-19 and subsequent social distancing mandates, both community-dwelling counterparts and nursing home residents have reduced access to their

key social contacts; situations are substantially worse for nursing home residents.<sup>38,39</sup> Available evidence indicates that during COVID-19, almost all nursing homes have prohibited visitations from the outside,<sup>36</sup> effectively stripping a key social support component away from these residents.<sup>40</sup>

Another key difference that distinguishes nursing home residents from community-dwelling older people is that nursing home residents' health and well-being are often subject to nursing home facilitates' abilities to provide care and other types of services.<sup>41–43</sup> In other words, highly capable and competent nursing home facilities can yield positive influences to nursing home residents' health outcomes, whereas inadequate nursing home facilitates could subject their residents to grave health consequences.<sup>41–43</sup> Evidence indicates that nursing homes with better star rating experienced fewer confirmed COVID-19 infection and death cases.<sup>41–43</sup> Findings further suggest that every 20-min increase in care offered by nursing home staff may translate into 22% fewer deaths in these facilities.<sup>41</sup> Disturbingly, even with draconian social distancing measures in place, based on available evidence, it is clear that only an insufficient number of nursing home facilities were able to weather the storm of COVID-19 with little to no human consequences.<sup>44</sup>

Another aspect of potential unintended consequences caused by COVID-19 safety measures like lockdowns and social distancing mandates is the elevated neglect and abuse faced by nursing home residents, mainly from nursing home staff. Elderly neglect and abuse become more alarming social malaises amid COVID-19, where unnerving reports of domestic abuse of older people have been surfacing in both home settings and nursing home facilities.<sup>45–47</sup> However, while elderly neglect and abuse are health disparities faced by older people across societies, this health disparity is more pronounced for nursing home residents, contributable primarily to their greater inadequacy in self-care abilities and accessing social support.<sup>10</sup> This health disparity, inevitably, further exacerbates nursing home residents' susceptibility to the pandemic, which, in turn, may further explain the high COVID-19 infection and death rates seen in these populations.

## Conclusion

The similar and distinctive challenges nursing home residents and community-dwelling older people face may explain why these two populations are particularly vulnerable to the pandemic<sup>2</sup> and why nursing home residents are more susceptible to COVID-19 infection and deaths.<sup>8–10</sup> Some papers suggest that, worldwide, the actual death toll of nursing home residents may be significantly higher than what has been currently reported.<sup>48–50</sup> Despite most of the issues nursing home residents face, such as under-resourced facilities, the requirement for systematic and structural changes, cost-effective and timely solutions can address some, if not all, of the health challenges.

Many technology-based solutions, including artificial intelligence-powered disease surveillance systems, smart home-based monitoring systems, wearable biometric sensors, teleconsultation services, as well as increasingly older people friendly social media platforms such as Facebook,<sup>51–53</sup> can all be integrated into improving nursing home residents and community-dwelling older people's abilities to brace for pandemics like COVID-19. One critical step to make these solutions relevant and practical to these two populations is an in-depth understanding on why these communities are particularly vulnerable to the pandemic and what are the differences in

their varying degrees of vulnerability to COVID-19. We believe insights of this paper can bridge this critical knowledge gap, and in turn, contribute to the body of research and practice that aim to improve older people's health and well-being amid and beyond pandemics like COVID-19.

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## Authors' contribution

Z.S. developed the research idea and drafted the manuscript, D.M.D. and Y.L. reviewed and revised the manuscript.

*Conflict of interest.* None declared.

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