



Short Communication

Workers at long-term care facilities and their risk for severe COVID-19 illness

Jessica Greene^{*}, Diane M. Gibson

Marx School of Public and International Affairs, Baruch College – City University of New York, 135 East 22nd St., Room 816D, New York, NY 10010, USA



ARTICLE INFO

Keywords:

Long-term care
 COVID-19
 Health care worker

ABSTRACT

Given the high concentration of COVID-19 cases in long-term care (LTC) facilities in the United States, individuals working in these facilities are at heightened risk of SARS-CoV-2 exposure. Using data from the nationally-representative 2017 and 2018 National Health Interview Surveys on adults who reported working in LTC facilities, this study examines the extent to which LTC workers are also at increased risk or potentially at increased risk for severe illness from COVID-19 including hospitalization, intubation, or death. We used the Centers for Disease Control and Prevention's list of conditions placing individuals in these risk categories to the extent possible. We also examined the sociodemographic characteristics of LTC workers by occupation and COVID-19 illness severity risk status.

One percent (552 out of 52,159) of the weighted NHIS sample worked in LTC facilities. Workers in LTC facilities were disproportionately Black, female, and low income. Half of LTC workers (50%) were at increased risk of severe illness from COVID-19 and another 19.6% were potentially at increased risk. There were few significant differences in demographic characteristics between risk groups, though those at increased risk had lower educational attainment and recent trouble affording prescription medications.

Despite the high degree of vulnerability of both LTC residents and workers to severe illness from COVID-19, many LTC facilities still have inadequate supplies of personal protective equipment and COVID-19 tests. Given that state budget deficits due to the COVID-19 pandemic limit the potential for state actions, enhanced federal efforts are needed to protect LTC residents and staff from COVID-19.

1. Introduction

Forty-one percent of COVID-19 deaths in the United States have been linked to nursing homes, assisted living centers, and other long-term care (LTC) facilities (Kaiser Family Foundation, 2020). LTC residents' illness, isolation, and fear during the COVID-19 epidemic have received substantial media attention (Chason and Tan 2020; Kosofsky 2020), but there has been less focus on LTC workers' experiences. Their jobs often require close contact with residents, and LTC facilities have had widespread shortages of personal protective equipment (PPE), putting workers at high risk for SARS-CoV-2 exposure (Berklan 2020; McGarry et al. 2020). Some LTC workers have described the situation as "terrifying," and workers in several states have protested for more PPE, hazard pay, and better staffing (Chen 2020; Eaton 2020; Khimm 2020). Workers, in fact, account for over a third (38%) of COVID-19 nursing home cases, though, to date, far fewer deaths (2%) (Centers for Medicare

and Medicaid Services, 2020).

Not only are LTC workers at heightened likelihood of being exposed to COVID-19, they may also be at an increased risk for severe illness from COVID-19, including hospitalization, intubation, and death. LTC workers are disproportionately low income and people of color, characteristics associated with having comorbidities linked to increased risk or potentially increased risk of severe illness from COVID-19 (Koma et al. 2020). To better understand the risk among LTC workers, we estimated the percentage who are at increased risk and potentially at increased risk for severe COVID-19 illness. We also examined the sociodemographic characteristics of LTC workers by occupation and COVID-19 illness severity risk status.

2. Methods

We used data on adults (aged 18+) from the 2017 and 2018 waves of

^{*} Corresponding author at: Marx School of Public and International Affairs, Baruch College – City University of New York, 135 East 22nd Street, Box D-901, New York NY 10010, USA.

E-mail address: jessica.greene@baruch.cuny.edu (J. Greene).

<https://doi.org/10.1016/j.ypmed.2020.106328>

Received 13 July 2020; Received in revised form 28 September 2020; Accepted 15 November 2020

Available online 19 November 2020

0091-7435/© 2020 Elsevier Inc. All rights reserved.

the National Health Interview Survey (NHIS), a nationally representative survey of the U.S. noninstitutionalized civilian population. Our sample was comprised of the 552 out of 52,159 adult respondents who reported that they currently worked at a nursing or residential care facility (National Industrial Classification code 623).

In late June 2020, the U.S. Centers for Disease Control and Prevention (CDC) announced a revised list of conditions that increase the risk of severe illness from COVID-19, including hospitalization, intubation, and death (Centers for Disease Control and Prevention 2020a). The CDC additionally issued a list of conditions that potentially increase the risk of severe COVID-19 illness. To the extent possible, we constructed measures of these conditions using information in the 2017–2018 NHIS. Individuals were categorized as “at increased risk” of severe illness from COVID-19 if they were aged ≥65 years or if they self-reported having one or more of the following conditions: chronic kidney disease, chronic obstructive pulmonary disease, diabetes, obesity (body mass index of 30+) and cardiovascular disease (Centers for Disease Control and Prevention 2020a). The NHIS does not distinguish between types of diabetes and therefore all individuals with diabetes were categorized as at increased risk even though only Type 2 diabetes is on the CDC’s list of conditions.

LTC workers were categorized as “at potentially increased risk” of severe illness from COVID-19 if they self-reported having one or more of the following conditions: moderate to severe asthma (operationalized as reporting an asthma attack in prior year), ever had a stroke, liver disease, hypertension, currently pregnant, and ever smoked cigarettes. We categorized LTC workers into one of three categories: increased risk, potentially increased risk (but not increased risk), and not at increased or potentially increased risk.

The occupations reported by LTC workers were grouped into the following categories: managers and operations staff, health care providers and technicians, health aides and other health support roles, personal support roles (fitness instructors, hairdressers, drivers,

teachers), and “other” workers (food service, cleaning, security and maintenance occupations). Demographic and socioeconomic characteristics considered included age, gender, educational attainment, race/ethnicity, health insurance status, family financial resources, and the availability of paid sick leave.

We estimated the prevalence of conditions that place individuals at increased risk and potentially increased risk of adverse COVID-19 outcomes among all workers at LTC facilities and for LTC workers grouped by occupation category. We also examined the demographic characteristics of LTC workers by occupation and COVID-19 illness severity risk categories. Comparisons across categories were made using the F statistic from the Rao-Scott corrected Pearson chi-square test. All estimates accounted for the NHIS complex survey design and observations were weighted using NHIS annual sample weights divided by two (Elliott et al. 2018).

3. Results

One percent of adults in the weighted NHIS sample worked in LTC facilities. The vast majority of LTC workers in the sample were women (83.3%) (Table 1). Over three-quarters (77.0%) of LTC workers had not obtained a bachelor’s degree, and Black adults were disproportionately represented (23.7%). Almost one-third (30.8%) of LTC workers had a family income less than twice the poverty level, nearly a fifth (17.2%) reported recently worrying that their supply of food would run out, and more than 10% did not have health insurance (12.4%). Paid sick leave was available to two thirds (66.6%) of LTC workers.

The largest percentage of LTC workers worked in medical support roles (32.3%), as health care providers/technicians (25.3%), or in personal support positions (14.7%, e.g. hairdressers, drivers). There were significant differences across occupation categories in the distribution of educational attainment, availability of health insurance, and family financial resources, with lower levels of each among health aides,

Table 1
Occupation and demographic characteristics of all workers at long-term care (LTC) facilities and workers grouped by risk of severe COVID-19 illness.

	All LTC workers n = 552 Weighted %	Risk of severe COVID-19 illness			p-value
		Increased risk n = 298 (50.0%) Weighted %	Potentially increased risk n = 118 (19.6%) Weighted %	Not at increased risk n = 136 (30.4%) Weighted %	
Type of worker					0.08
Managers and operations staff	8.7	5.2	14.0	11.1	
Health care providers and technicians	25.3	22.1	35.4	24.0	
Health aides and other health support	32.3	35.8	28.4	29.2	
Personal support	14.7	14.8	10.6	17.0	
Other workers	19.0	22.1	11.6	18.7	
Female	83.3	86.9	78.1	80.8	0.24
Education					<0.00
Less than high school	9.8	11.4	13.4	5.0	
High school degree	23.8	27.6	22.3	18.5	
Some college	43.4	46.3	37.2	42.6	
College degree or more	23.0	14.7	27.2	33.9	
Race/ethnicity					0.80
White (non-Latino)	60.1	58.0	67.4	58.7	
Black (non-Latino)	23.7	26.3	16.2	24.3	
Latino	11.8	11.4	11.2	13.0	
Other	4.4	4.4	5.1	4.0	
Has health insurance	87.6	87.3	84.6	90.0	0.57
Family financial resources					
Income <200% of federal poverty level	30.8	34.9	27.6	26.3	0.24
Could not afford prescriptions in past 12 months	10.3	15.0	9.7	2.8	<0.00
Worried food would run out, past 30 days	17.2	19.9	17.6	12.7	0.32
Has paid sick leave	66.6	69.0	66.9	62.4	0.53

Note: Differences in percentages across levels of risk were tested using the F statistic from the Rao-Scott corrected Pearson chi-square test. Estimates were all weighted, and took into account the complex NHIS design.

personal support workers and “other” workers in comparison to managers and operations staff and health care providers and technicians (Supplemental Table 1).

Fifty percent of LTC workers in the NHIS sample were at increased risk of severe COVID-19 illness and 19.6% were potentially at increased risk (Table 1). There were few significant differences in demographic characteristics between groups categorized by their risk of severe COVID-19 illness. Those who were at increased risk, though, had lower educational attainment and were more likely to report having had trouble in the past year paying for prescription medications than workers not at risk.

Of the conditions that increase or potentially increase the risk of severe COVID-19 illness, obesity (37.4%), ever having smoked (34.7%), and hypertension (18.9%) were the most prevalent (Supplemental Table 2). The prevalence of each increased-risk and potentially-increased-risk condition did not differ significantly across occupation categories. LTC workers who worked in personal support or “other” roles were more likely to be aged ≥ 65 years relative to those in other occupation categories.

4. Discussion

Assuming estimates from the 2017–2018 NHIS sample of LTC workers hold for LTC workers in 2020, 50% of LTC workers are at increased risk of severe COVID-19 illness and an additional 20% are potentially at increased risk. This is of grave concern because of the high likelihood that LTC workers are exposed to SARS-CoV-2 and the continuing shortages of PPE in LTC facilities (Gibson and Greene, 2020; McGarry et al. 2020). Thus, in addition to residents of LTC facilities being highly vulnerable to COVID-19, these findings suggest that employees of the facilities, who are disproportionately Black, female, and low income, are also highly vulnerable to COVID-19.

LTC facilities have also struggled to access adequate COVID-19 testing, which is crucial for identifying asymptomatic disease (Suderman 2020). CDC guidance states that workers who test positive must leave the workplace and that there should be “non-punitive, flexible” sick leave policies (Centers for Disease Control and Prevention 2020b). Yet, we estimate that a third of LTC workers do not have paid sick leave and many are financially insecure. Further, many are not eligible for the 14-day paid sick leave included in The Families First Coronavirus Response Act because nursing homes can exempt employees from the provisions (U.S. Department of Labor 2020).

These findings should be interpreted in light of the study’s limitations, which include that information on comorbidities and other individual characteristics is self-reported. Risk estimates are likely to be measured with some error, as the NHIS lacked information on several comorbidities that would categorize workers as “at increased or potentially increased risk”, such as sickle cell disease, cystic fibrosis and pulmonary fibrosis, and it was not possible to distinguish between Type 1 and Type 2 diabetes. Additionally, information on whether LTC workers worked part or full-time or whether they worked at multiple LTC facilities, which would provide further insight into the COVID-19 risk and financial situation of LTC workers, was not available in the NHIS.

5. Conclusion

As of September 2020, long-term care workers in every state have contracted COVID-19 and one fifth of nursing homes still report not having sufficient PPE for the next week (Centers for Medicare and Medicaid Services, 2020). While many states have made efforts to

reduce shortages of PPE and to support staff in LTC facilities, the COVID-19 pandemic has left states facing enormous budget deficits (McBride 2020; Mulvihill 2020). The high degree of vulnerability to adverse COVID-19 outcomes among both residents and staff of LTC facilities combined with the precarious financial position of many states, adds support to calls for more comprehensive federal efforts to protect the health of all of these individuals (American Geriatrics Society 2020; Madara 2020; The Editorial Board 2020).

Funding

This research did not receive any specific grant funding from agencies in the public, commercial, or not-for-profit sectors.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jpmed.2020.106328>.

References

- American Geriatrics Society, 2020. American Geriatrics Society policy brief: COVID –19 and nursing homes. *J. Am. Geriatr. Soc.* <https://doi.org/10.1111/jgs.16477>.
- Berklan, J., 2020. McKnight’s COVID Survey Reveals Vast PPE, Staffing Shortages (McKnight’s Long Term Care News).
- Centers for Disease Control and Prevention, 2020a. People Who Are at Increased Risk for Severe Illness, Updated 6/25/2020 [WWW Document]. URL: <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-at-higher-risk.html> accessed 7.13.20.
- Centers for Disease Control and Prevention, 2020b. Preparing for COVID-19 in Nursing Homes [WWW Document]. URL: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/long-term-care.html> accessed 7.13.20.
- Centers for Medicare and Medicaid Services, 2020. COVID-19 Nursing Home Data. Chason, R., Tan, R., 5/28/2020. Isolated and at risk. *Wash. Post*.
- Chen, E., 2020. St. Louis Nursing Home Workers Demand Paid Sick Leave If They Catch Coronavirus. *St. Louis Public Radio*.
- Eaton, J., 2020. Nursing Home Workers Face Danger during Coronavirus: Low Pay, Inadequate Protection [WWW Document]. AARP. URL: <https://www.aarp.org/care-giving/health/info-2020/nursing-home-workers-during-coronavirus.html>. accessed 6.17.20.
- Elliott, M.R., Raghunathan, T.E., Schenker, N., 2018. Combining estimates from multiple surveys. In: Wiley StatsRef (Ed.), *Statistics Reference Online*. John Wiley & Sons Ltd, Chichester, UK, pp. 1–10. <https://doi.org/10.1002/9781118445112.stat08079>.
- Gibson, Diane, Greene, Jessica, 2020. State Actions and Shortages of Personal Protective Equipment and Staff in U.S. Nursing Homes. *Journal of the American Geriatrics Society*. <https://doi.org/10.1111/jgs.16883>. In press.
- Kaiser Family Foundation, 2020. State Data and Policy Actions to Address Coronavirus [WWW Document]. Sept. 21. URL: <https://www.kff.org/health-costs/issue-brief/state-data-and-policy-actions-to-address-coronavirus/#long-term-care-cases-deaths>.
- Khimm, Z., 2020. The Forgotten Front Line: Nursing Home Workers Say they Face Retaliation for Reporting COVID-19 Risks (NBC News).
- Koma, W., Artiga, S., Neuman, T., Claxton, G., Rae, M., Kates, J., Michaud, J., 2020. Low-Income and Communities of Color at Higher Risk of Serious Illness if Infected with Coronavirus.
- Kosofsky, I., 2020. After months apart. In: *Mother’s Day Visits Through a Doorway*. *New York Times*. <https://doi.org/10.1101/2020.05.31.20114991v1>.
- Madara, J.L., 3/30/2020. Letter from James Madara, American Medical Association CEO to President Trump. *Am. Med. Assoc.*
- McBride, B., 2020. Strategies for COVID-19 Response for Populations Receiving Long-Term Care.
- McGarry, B.E., Grabowski, D.C., Barnett, M.L., 2020. Severe staffing and personal protective equipment shortages faced by nursing homes during the COVID-19 pandemic. *Health Aff.* <https://doi.org/10.1377/hlthaff.2020.01269>.
- Mulvihill, G., 8/10/2020. No federal relief leaves states, cities facing big deficits. *Assoc. Press*.
- Suderman, A., 5/24/2020. White House goal on testing nursing homes unmet. *Assoc. Press*.
- The Editorial Board, 5/20/2020. There is one ingredient essential to reopening the economy, and still no federal plan to get it. *Wash. Post*.
- U.S. Department of Labor, 2020. Families First Coronavirus Response Act: Questions and Answers [WWW Document]. URL: <https://www.dol.gov/agencies/whd/pandemic/fcra-questions#56> accessed 7.14.20.