

Accessed May 27, 2021. <https://www.cdc.gov/nchs/data/icd/Announcement-New-ICD-code-for-coronavirus-19-508.pdf>.

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Table S1. ICD-10 COVID-19 code presence among SARS-CoV-2-positive skilled nursing facility residents, by symptom status

Table S2. Prevalence of ICD-10 COVID-19 codes for skilled nursing facility residents with lab-confirmed SARS-CoV-2 infection, by quarter

SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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COVID-19 transmission and case fatality in long-term care facilities during the epidemic first wave

INTRODUCTION

Institutionalized populations experience a higher risk of several infectious diseases especially in settings with frequent interpersonal close contact and overcrowding.¹ Besides the higher risk of infection, institutionalized people tend to be more vulnerable to its consequences as they are older and present multiple and severe comorbidities.^{1,2}

Large proportions of cases and deaths due to COVID-19 occurred in long-term care facilities (LTCF) in several countries: in May 2020, 37–66% of COVID-19 fatal cases occurred in LTCF.³ In Portugal, by November 2020 about 34% of COVID-19 deaths had occurred in these facilities.⁴

The heterogeneity of COVID-19 impact raises the hypotheses of transmission inside LTCF merely reflect the infection dynamics in the surrounding community or COVID-19 more severely affect those institutionalized. Thus, we estimated the cumulative incidence and the case fatality rate of SARS-CoV-2 infection in LTCF, considering age-adjusted comparisons to the general population.

METHODS

Eight public health units from the Portuguese Northern region provided data for the period of April to June 2020 on age, diagnosis and prognosis of 13,736 individuals (7642 residents and 6094 workers) living or working in 247 LTCF (about 10% of all LTCF in mainland Portugal, 36% of its Northern region). Data collection spanned from April to

June 2020. The number of SARS-CoV-2 infections in the Portuguese population and of COVID-19-related deaths by age was obtained from the Directorate-General of Health, and data on the population size by age groups from the Portuguese National Institute of Statistics.

The Northern Health Regional Administration Ethics Committee approved the study (CE/2020/35).

We estimated the cumulative incidence of SARS-CoV-2 infection and case fatality in each setting and in the overall sample. We compared the frequency of SARS-CoV-2 infection and death in LTCF to the community using indirect standardization. Standardized infection and mortality rates were calculated as the ratios of the incident (diagnosed) cases or deaths in LTCF residents and/or workers, and the sum of the predicted individual probabilities of infection or death from all population according to age groups (aggregated in classes of 10 years). Confidence intervals (95%) were calculated according to Hosmer and Lemeshow.⁵

RESULTS

A positive RT-PCR was observed in 416 (3.0%) individuals, 3.5% of residents, and 2.4% of workers. Incidence proportions by LTCF varied from 0.3% to 100%.

Age distribution was available for 10,531 (76.7%) individuals, 5374 (70.3%) residents (median age 85 years-old [P_{25} – P_{75} = 80–90]), and 5157 (84.6%) workers (median age 46 years-old [P_{25} – P_{75} = 36–55]). In the subsample with available data on age, we observed 166 infected individuals in LTCF while only 98 were expected according to the age incidence in the general population (Figure 1). Residents presented a 37% higher risk and

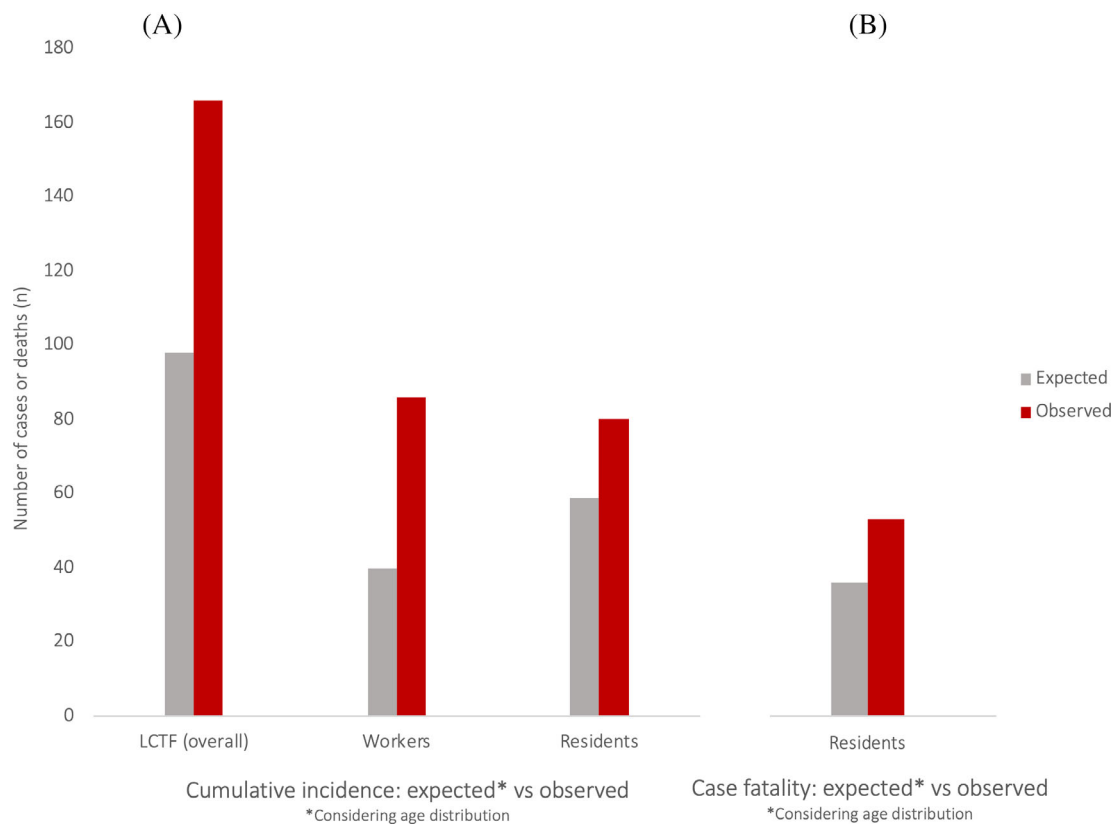


FIGURE 1 (A) Comparison of the expected cumulative incidence in long-term care facilities (LTCF), with the cumulative incidence observed in the settings. (B) Comparison of the expected case fatality in LTCF with the case fatality rate observed among the settings' residents (there were no deaths observed among workers)

workers twice the risk of being infected than expected from their age distribution (Figure 1).

A fifth (53, 19.9%) of all residents diagnosed with SARS-CoV-2 infection died of COVID-19. No COVID-19-related deaths were observed among workers. The expected case fatality rate considering the age distribution was 48% higher in residents of LTCF than in the general population (Figure 1).

DISCUSSION

By June 30, 2020, 0.4% of the Portuguese population had been diagnosed with SARS-CoV-2 infection. The frequency in our sample (3.5%) was much higher even considering that undiagnosed cases in the general population roughly varied from three to six times those diagnosed⁶ and LTCF population was extensively tested.

The excess risk of SARS-COV-2 infection in LTCF workers and residents may be linked to the risk of living and working in settings with high occupancy rates, lack of trained workers, and shortage of personal protective equipment in the early months of the epidemic, and to the higher probability of being

tested, as, in this period, tests were more intensively performed in LTCF than in the community. The excess case fatality risk among residents could be due to the management of COVID-19 consequences in these settings, but also to its residents' excess comorbidities or alternatively the impact of unmeasured social disadvantages, even in a country with universal access to care.

It could be expected that containment measures and training of workers would more effectively limit the dissemination of the infection in these settings. The large variation of the incidence and case fatality rates, here observed and previously reported in a systematic review,⁷ suggests that adequate physical conditions, human resources, equipment and training, and local governance (through communication and articulation with social, public health and clinical health services and/or the articulation with the municipalities and civil protection organizations) could better control COVID-19 transmission in these settings and prevent deaths among the institutionalized older populations.

CONFLICT OF INTEREST

The authors have no (financial or personal) conflicts.

AUTHOR CONTRIBUTIONS

Henrique Barros conceptualized the study. Henrique Barros, Teresa Leão, and Milton Severo contributed to the study design. Milton Severo performed data analysis. Teresa Leão wrote the first draft of the manuscript. The Public Health Research Group (Alice Magalhães, Bernardo Gomes, Cristiana Silva, Gustavo Martins-Coelho, Joana Moreno, Mariana Carrapatoso, Marie Oliveira, Paula Teixeira) contributed to data collection. All authors contributed to the interpretation of results, reviewed and approved the final manuscript.

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COMMENTS

Helping older adults vote safely during the COVID-19 pandemic

To the Editor:

Turnout rates from recent U.S. elections reveal voting is important to older adults. In November 2020, 74% of adults 65 years and older voted.¹ By comparison, 69% of adults aged 35- to 64-year-old and 57% of adults 18- to 34-year-old cast ballots.¹ This high turnout among older adults was not just a one-time occurrence; in 2018, a non-presidential election year, 65% of older women and 68% of older men voted.²

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Since 2016, Penn Medicine has acknowledged the connection between voting and health and supported nonpartisan initiatives to expand patient voting access. Through voting, patients are able to express views on candidates and issues that impact their health.³ For example, a vote for a particular candidate could affect health insurance options for an older adult, and a vote against zoning for a factory could prevent pollutants from entering their environment.