

# COVID-19 and institutional long-term care: strategies in four Latin American countries

COVID-19 e cuidados institucionais de longa duração: estratégias em quatro países latino-americanos

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## Abstract

**Objective:** COVID-19 had a disproportionate impact on older people; within this group, those living in long-term care facilities were particularly affected. In this context, the present study aims to understand the impact of and responses to COVID-19 in institutional long-term care (LTC) in four Latin American countries: Brazil, Chile, Costa Rica, and Mexico.

**Methods:** Retrospective country-level study (narrative review) using secondary databases.

**Results:** In all countries, older people were disproportionately affected by COVID-19; despite the hypothesis that this impact may have been even greater for people receiving institutional care, no information was available. Our analysis shows that countries adopted specific strategies to address this challenge, including isolation and vaccination in all countries, as well as other actions, such as support for caregivers and in-kind and in-cash benefits.

**Conclusions:** The implementation, monitoring, and evaluation of COVID-19 response initiatives in institutional LTC across Latin America are hindered by a lack of information, including the number, distribution, and features of LTC facilities, residents, and staff.

**Keywords:** long-term care; COVID-19; institutional care; long-term care; health policy.

## INTRODUCTION

The COVID-19 pandemic represented an unprecedented shock for countries around the world. The impact was greater in low- and middle-income economies such as Latin American (LATAM) countries, where health systems are more vulnerable due to fragmentation and limited economic resources.<sup>1,2</sup> Although the pandemic affected everyone, its impact on older adults was disproportionate due to their vulnerability associated with worse health conditions and difficulties in accessing healthcare.<sup>3,4</sup>

Older people living in long-term care facilities (LTCFs) deserve special attention.<sup>5-7</sup> Acknowledging this situation, the World Health Organization published several documents to help address COVID-19 in LTCFs;<sup>8,9</sup> however, certain elements need to be considered when implementing strategies in countries lacking strong health systems and long-term care (LTC) strategies. In LATAM, LTCFs have been identified as underfunded and lacking adequate quality.<sup>9,10</sup> Another element that prevented a better response to the pandemic in LTCFs was the lack of information:<sup>11-13</sup> in many countries, there is no official registry of the number of LTCFs, their location, conditions, number of residents, and other basic data. Furthermore, the existence of informal facilities implies an underestimation of the problem and prevents a comprehensive response.<sup>14</sup>

In this context, understanding the COVID-19 coping strategies adopted in LTCFs from four countries in LATAM — Brazil, Chile, Costa Rica, and Mexico — is relevant for extracting lessons not only to address future health crises, but also to identify gaps for improving institutional LTC in the Region.

## METHODS

A retrospective, country-level study (narrative review) was conducted to evaluate the impact of the COVID-19 pandemic and policies to mitigate its burden in LTCFs. Data were collected from publicly available, open-access databases of four countries: Brazil, Chile, Costa Rica, and Mexico. Countries were selected based on the availability of information about strategies to address COVID-19 in institutional LTC, leveraging support from the Pan American Health Organization (PAHO).<sup>13</sup> When needed, researchers contacted PAHO country offices and governmental and non-governmental statistics agencies to access the data of interest. Collected data were then compiled into country reports. First, for each country, we identified the impact of COVID-19 on older people (cases, hospitalizations, and

deaths; these findings have been published elsewhere<sup>13</sup>) and, when available, information on the specific impact on older people living in LTCFs.

The next section presents the sources of information and describes issues related to the data collection process in each of the selected countries.

### Brazil

COVID-19 data were updated daily by the Ministry of Health (MoH) through information provided by the State Departments of Health of the 27 federative units of Brazil; these data were consolidated from the primary-care electronic patient record of the Unified Health System (*Sistema Único de Saúde*, SUS).<sup>15</sup> After the influenza A outbreak of 2009, the Brazilian MoH developed a countrywide surveillance system for severe acute respiratory infection (SARI), known as InfoGripe, which allowed COVID-19 cases to be recorded since the very start of the pandemic. The MoH published weekly epidemiological bulletins on COVID-19 and monitored alert levels in its Notifiable Diseases Information System through the InfoGripe platform, including cases and deaths due to SARS-CoV-2 infection.<sup>16,17</sup>

The MoH Health Surveillance Department, State Departments of Health, and some State Public Prosecutors' offices monitored outbreaks of COVID-19 in Brazilian LTCFs. However, this information is not publicly available, nor are data on confirmed cases, confirmed deaths, and vaccination rates of LTCF residents and staff.

### Chile

Monitoring of COVID-19 has been carried out by the coordinated efforts of the Department of Statistics and Epidemiology at the MoH. During the first and second waves, a mandatory regulation instructed health professionals to upload data from all suspected cases to the National Epidemiological Surveillance System (EPIVIGILA).<sup>18</sup> This regulation was also applied to laboratories processing SARS-CoV-2 RT-PCR samples, which uploaded results that confirmed or ruled out COVID-19 diagnosis. The MoH delivered daily reports, and the Ministry of Science constructed a COVID-19 data repository with all publicly available data.

Regarding LTCFs, the National Service for Older Adults (*Servicio Nacional del Adulto Mayor*, SENAMA) put together a nationwide field team to update a registry of residents and staff. Jointly with the MoH, these data were combined with the EPIVIGILA registry, enabling it to generate a daily report of all cases, deaths, and immunization in LTCFs.

## Costa Rica

The data search considered different sources, including the National Institute of Statistics and Censuses (*Instituto Nacional de Estadísticas y Censos*, INEC), the statistical year-books of the MoH, and the Costa Rican Social Security Fund (*Caja Costarricense de Seguro Social*, CCSS). The period of analysis was limited to May 30, 2022, as the institutional cyberattack on Costa Rica in April 2022 made it impossible to retrieve further information.<sup>19</sup> The Geographic Health Observatory (*Observatorio Geográfico en Salud*, OGES) of the Costa Rican MoH provided data on the number of cases, sex, age, and area of residence of people over 60; population statistics were obtained from the INEC.

Cumulative data (not open access) provided by the Epidemiological Surveillance Department of the MoH were used to obtain the number of cases, deaths, and hospitalizations in both LTCF workers and residents, but there are no data on total counts. Information on vaccination in older people was collected from reports made available by the CCSS Epidemiological Surveillance Unit.

## Mexico

Data on suspected SARS-CoV-2 cases were collected using the System for Epidemiological Surveillance of Respiratory Diseases (*Sistema de Vigilancia Epidemiológica de Enfermedades Respiratorias*, SISVER), a nationwide surveillance system updated daily and managed by the General Directorate of Epidemiology of the Mexican MoH.<sup>20</sup> Sociodemographic and clinical information is collected, including SARS-CoV-2 infection status. The 2021 National Health and Nutrition Survey (*Encuesta Nacional de Salud y Nutrición*, ENSANUT 2021) provided data on COVID-19 seroprevalence, vaccination, socioeconomic status, occupation, and chronic health

conditions.<sup>21</sup> COVID-related rates were estimated using each year's population from the National Population Council in Mexico. Regarding policies for older people and LTCFs, data sources included the special COVID-19 portal developed by the Mexican MoH as well as documents compiled by government entities such as the National Institute of Geriatrics, the National System for Comprehensive Family Development, and the National Institute for Older Adults.

## RESULTS

Table 1 summarizes the impact of COVID-19 on older people and institutional LTC (LTCF residents and caregivers) in each country.<sup>22-25</sup> The information collected for each country was used to assess two dimensions of the link between COVID-19 and institutional LTC: impact and policy implementation.

Unfortunately, most countries do not have sufficient data to establish reliable comparisons. In some cases, information is available for older people, but it is not disaggregated for LTCFs; in other cases, information is not representative or complete. Furthermore, the quality of the data (e.g., collected from different sources, using different methodologies) hinders comparisons between and within countries (e.g., between regions or periods). Some idiosyncratic country issues are discussed below.

### Policies to mitigate the impact of COVID-19 in long-term care facilities

Policies applied to address the pandemic were systematized based on a classification proposed in previous studies.<sup>6,26,27</sup> COVID-19 containment strategies in LTCFs were grouped into four main categories:

**TABLE 1** Impact of COVID-19 on older people in selected countries.

Country	Older people			LTCF residents			LTCF staff		
	Cumulative cases [per 1 000 000 pop]	Hospitalization rate [per 100 000 pop]	Cumulative deaths [per 1 000 000 pop]	Case rate [per 100 000 pop]	Hospitalization rate	Death rate	Case rate	Hospitalization rate	Death rate
Brazil <sup>22</sup>	38.12 million (381 23)	1 234 567 (1234)	676 45 (6,76)	> 1 million (10)	n.d.	> 50 000	n.d.	n.d.	n.d.
Chile <sup>23</sup>	5.02 million (256 094)	n.d.	60 076 (3217)	26,000	n.d.	6300	n.d.	n.d.	n.d.
Costa Rica <sup>24</sup>	7.23 million (224 227)	n.d.	0,072 (2526)	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Mexico <sup>25</sup>	1.16 million (56 738)	320 313 (2 058 40)	331 105 (1751)	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.

LTCF: long-term care facilities; n.d.: no data.

1. Infection prevention and control (IPC) measures,
2. Workforce challenges,
3. Residents' wellbeing, and
4. Immunization. Finally, different initiatives were identified for each strategy using the information collected from each country.

Table 2 provides an overview of public policies implemented within LTCFs to decrease the burden of COVID-19 on residents and caregivers,<sup>22-37</sup> followed by the details for each country's results regarding the impact of COVID-19 in older adults, particularly in LTCFs. Most countries implemented LTCFs-specific procedures to address the COVID-19 pandemic, particularly the implementation of IPC measures and immunization, as the main strategies to reduce the impact of the disease in institutionalized populations. Information on other topics, such as workforce issues and policies related to improving residents' well-being, was scarce. This was expected, as human resources and care quality (directly related to residents' wellbeing) are unsolved issues in the LTC agenda, not only in the LATAM region but also worldwide.<sup>38-40</sup>

## Brazil

In Brazil, people aged 60+ accounted for 67.9% of all deaths from COVID-19 by December 31, 2021 (394 860 of 581 291 deaths). In January 2022, 63.3% of deaths occurred in people aged 70+, the highest monthly percentage since the beginning of the pandemic. The mortality rate per 100 000 population among older people with incomplete vaccination schedules was 27 to 33 times higher than for those who had received all recommended doses.<sup>41,42</sup> The highest cumulative lethality rates among older people were observed in the states of Bahia (56.46%), Rio de Janeiro (48.10%), and Pernambuco (40.76%).<sup>2</sup> Although the Brazilian MoH and the National Health Surveillance System record COVID-19 and SARS outbreaks in Brazilian LTCFs, these data are not open access. Identifying deaths or hospitalizations among LTCFs residents or workers was difficult since data, which are collected at the municipal level and individualized by the decedent's home address, were not stratified or linked to LTCFs. The only publicly available data on the number of cases and deaths from COVID-19 in LTCFs come from studies including non-representative samples of LTCF

**TABLE 2** Comparisons of strategies implemented to reduce the impact of COVID-19 in long-term care facilities.

Strategy/Countries	Brazil <sup>28</sup>	Chile <sup>23,27,29,30</sup>	Costa Rica <sup>31,32</sup>	Mexico <sup>33-37</sup>
Infection prevention and control measures				
IPC guidelines and protocols	x	x	x	
External isolation (no visitors)	x	x	x	x
Internal (residents') isolation	x	x	x	x
Epidemiological surveillance in LTCFs	x	x	x	x
Provision of/Access to personal protective equipment	Partially*	x		
Workforce challenges				
Guidelines to support caregivers/staff	X	x		x
Staff training	Partially*	x	x	
Surge staffing		x		
Social/psychological support			x	x
Residents' wellbeing				
Communication strategies (staff and family)	Partially*		x	
Clinical support	Partially*	x		
In-kind/in-cash support	x			x
Immunization				
Priority group (time)	x	x	x	x
Priority group (coverage)	x	x	x	x

\*Only a portion of Brazilian LTCFs (particularly nonprofits) received financial support or donations from the private sector for personal protective equipment procurement. Training and information dissemination initiatives for workers in the sector did not come from the government, but from organized third-sector groups, scientific societies, and academia; initiatives related to communication strategies (staff and family) and clinical support were guided by the same institutions mentioned above, with support from some State Public Prosecutors' offices.

IPC: prevention and control; LTCFs: long-term care facilities.

residents.<sup>5,43</sup> Therefore, ascertaining the impact of COVID-19 in LTCFs in Brazil is challenging, as no information system centralizes this data. According to the National Health Survey (*Pesquisa Nacional de Saúde*, PNS), 2.5% of older Brazilians live in LTCFs. Also, there is no official information on the number of cases, hospitalizations, and deaths in LTCF workers, and available data cannot be generalized.

By December 22, 2021, Brazil had 88.9 and 66.7% of the total population vaccinated with one and two doses of any COVID-19 vaccine, respectively.<sup>16</sup> It is estimated that more than 165 000 hospitalizations of individuals aged 60 years and older due to COVID-19 were prevented in the first seven months of the vaccination campaign, and more than 58 000 lives were saved; an additional 104 000 hospitalizations and 47 000 deaths could have been averted if immunization had started earlier.<sup>44</sup>

### Chile

As in other countries, the pandemic affected older people disproportionately, particularly in terms of hospitalizations and deaths. Cases, hospitalizations, and deaths show a marked reduction for all age groups after the mass vaccination rollout in the country; the decrease was largest for people aged 60+ years.<sup>29</sup>

Since the start of the COVID-19 pandemic, SENAMA conducted epidemiological surveillance in LTCFs, which included recording the frequency and impact of COVID-19 on residents and staff. However, these data are not publicly available. Nevertheless, using the SENAMA database, one study reported a mortality rate of 5.92% among residents after the first wave of infection, dated September 2020.<sup>45</sup> Another study found that, by November 2020, half of all LTCFs on the SENAMA registry had recorded at least one COVID-19 case and 26.6% had recorded at least one death.<sup>27</sup> A study conducted between September and November 2020 among 5577 older people in 105 LTCFs in three regions (Metropolitan, Valparaíso, and O'Higgins) estimated a similar mortality rate (6.3%) and a prevalence of 26% using clinical records, RT-PCR results, and IgG/IgM antibodies. Finally, the estimated case fatality rate — before mass COVID-19 vaccination — was 5.5%.<sup>23</sup>

### Costa Rica

In Costa Rica, the first identified case of COVID-19 was on March 6, 2020, and the first death occurred in an older adult on the 19th of the same month.<sup>46,47</sup> According to public data from the MoH Geographic Health Observatory, as of May 2022, 89 580 cases of COVID-19 among people aged 60+ years had been recorded nationwide. Cases were

not distributed evenly across the country, with the provinces of San José (with the highest population density) and Alajuela being most affected.<sup>24</sup> In terms of mortality, there were 5916 officially recorded deaths; the mortality rate of the 60+ population was 792.01 per 100 000, being highest among people aged 85+.

The Health Surveillance Directorate of the MoH records data from various sources: disease notification forms (VE01), epidemiological investigation files, laboratory databases, hospitalization data, function sheets, outbreak investigations, and epidemiological analyses conducted by public and private health care services. Cumulative data on COVID-19 cases in LTCF residents and workers until May 30, 2022, were obtained from this agency (non-public information). For the year 2020, information was available only from epidemiological weeks 18 (last week of April) to 43 (third week of October), with 472 cases of COVID-19; of these, 332 occurred in residents and 140 in workers. There was no information on hospitalizations. In this period, 44 (13.2%) deaths were recorded in older people, with no deaths among workers. In 2021, 597 cases were recorded in LTCF residents, of which 70 (11.7%) were hospitalized and 46 (7.7%) died. Among workers, 221 tested positive and 5 (2.26%) required hospitalization; there were no deaths. In 2022, 389 cases were recorded among residents (until May 30), with 27 (6.9%) hospitalizations and 3 (0.77%) deaths. There were 280 cases among workers; only 1 (0.3%) required hospitalization, and there were no deaths. Infection rates could not be estimated, as there are no reliable data on the total population of LTCF residents or workers.

As in other countries, immunization was the main strategy to address the pandemic. After vaccination, a decrease in case rates was observed among people aged 60+, although vaccination coverage rates decreased over time (from 94% for the first and second doses to 76.4 and 19.4% for the third and fourth doses).<sup>48</sup> As of May 2022, 3160 LTCF workers had received the first dose of COVID-19 vaccine, 2800 had received the second dose, 1188 received a third dose, and only 6 workers had received a fourth dose.<sup>48</sup> There is no such information for LTCF residents.

### Mexico

From March 2020 to November 1, 2022, a total of 881 353 SARS-CoV-2 infections were reported in people aged 60+ years in Mexico, among which 320 313 required hospitalization, 24 437 required ICU admission, and 41 275 required mechanical ventilation; 191 469 deaths were registered as related to COVID-19 during the study period (Table 1).

Rates of hospitalization decreased in 2021 compared with 2020, coinciding with the start of COVID-19 vaccinations in older people, with a marked decrease in 2022 — in line with the application of booster COVID-19 vaccinations and the less severe Omicron variant of SARS-CoV-2. Likewise, the case-fatality rate for older people decreased from 33.5% in 2020 to 26.3% in 2021, and 6.04% in 2022. Vaccination statistics (up to November 2021) were estimated using data from ENSANUT 2021: 87.14% of people aged 60+ years had received at least one dose of COVID-19 vaccine (95%CI 85.72 – 88.57), with 76.97% (95%CI 74.79 – 79.15) being fully vaccinated and 10.17% (95%CI 8.57 – 11.78) having received only one dose of a two-dose protocol. This represents an estimated 12 427 560 fully vaccinated older people (95%CI 11 473 614 – 13 381 506) and 1 643 169 with partial vaccination (95%CI 1 349 687 – 1 936 652). Notably, no official open data resource offers immunization and booster figures for LTCF residents or workers.

## DISCUSSION

This article aimed to describe the impact and response to COVID-19 in institutional LTC in four LATAM countries. COVID-19 was a challenge for institutional LTC around the world, revealing the limited ability of this sector to address the pandemic and provide adequate services.<sup>49</sup>

Our analysis reveals that, unfortunately, information systems for LTCFs in the studied countries are not enough to report even basic data on the impact of the pandemic: while countries have information for older people, data are scarce when it comes to people living and working in LTCFs. This is a problem that goes beyond COVID-19: informational issues are the standard in institutional LTC, and COVID-19 highlighted these deficiencies and the need to address them.<sup>13</sup>

The most salient issue arising from this analysis refers to the availability of information regarding COVID-19, LTCFs, and health policies implemented during the pandemic. As highlighted throughout the text, information proved to be more of a problem (in terms of availability, systematization, and completeness, among others) than help. The information gap regarding LTCFs in these countries has been previously reported.<sup>13</sup> The country cases described herein show that the pandemic helped generate new information in an attempt to understand the scale of the problem (Table 1) and implement solutions (Table 2).

Key findings of our analysis include:

- Countries do not have up-to-date information on COVID-19 infection and mortality rates for people

living and working in LTCFs, hindering assessment of the impact of the pandemic in these vulnerable groups and comparability across countries.

- Countries lack LTC strategies, which prevents the development of information systems; these, in turn, are key to monitoring the impact of COVID-19 in LTCFs and the reporting of official statistics.
- Policies were reported, but evaluations of their implementation and impact are lacking. This is particularly challenging in a context of incomplete information, such as institutional LTC.
- There is a need to establish international collaborations to gather data in LATAM countries to assess the ongoing impact of COVID-19 in LTCFs and that of future public health emergencies.

Regarding strategies implemented to address COVID-19 in LTCFs, all countries reported specifically designed policies, particularly isolation and immunization of residents and staff. Although this is good news, information was again an issue: even though policies were made, the lack of high-quality information on LTCFs specifically — not only regarding the impact of the pandemic, but also core information such as the number, distribution, and features of these facilities, their residents, and their staff — hindered their implementation and evaluation. This lack of information makes invisible the need to strengthen LTC policies and practices, especially in LTCFs, to provide better care and support for residents and workers.

Our findings should be interpreted with caution, particularly considering the lack of information about LTCFs in all countries. Access to administrative data could help further elucidate the impact of COVID-19 and evaluate the results of policies implemented during the pandemic. Given the heterogeneity of the country cases reported herein — including country contexts, but also institutional care settings<sup>13</sup> — results are not generalizable, although it is expected that the information problem we identified will also be present in other countries of the region.

## CONCLUSION

Although the end of the COVID-19 pandemic as a public health emergency of international concern was declared in May 2023, its lessons and challenges for improving institutional LTC are still timely to ensure better preparedness for future health emergencies. Improving institutional LTC will require long-term efforts, including modifications in the workforce, cultural views, and the way services are delivered

and funded.<sup>49</sup> LATAM countries need to focus on improving their provision of LTC.<sup>38</sup>

- Setting standards: this should include not only regulation and monitoring of infrastructure and workforce capacity, but also monitoring of results, including incentives for quality-improvement.
- Improvement information: by defining a minimum set of information to be collected and systematized, including indicators for:
  - o LTCFs: number, location, beds/vacancies, and other characteristics (such as ownership/management structure, cost/price, and care quality assessment).
  - o Residents: overall number and profile, including age, gender, functional ability, and other individual characteristics.
  - o Staff: overall number and profile, including educational background/training level, type of work performed, job characteristics (hours, days, shifts worked), level of caregiver burden, and other individual characteristics.
- Countries should also move towards the establishment of a monitoring and evaluation framework for institutional LTC.

We hope that countries can take advantage of the impact and the momentum generated by the COVID-19 pandemic to revise, rethink, and enhance their delivery of institutional LTC, particularly through the generation and systematization of information and the implementation of quality-improvement initiatives.

## DECLARATIONS

### Conflict of Interest

The author, Patrick A. Wachholz is the Editor-in-Chief of Geriatrics, Gerontology and Aging. To ensure an impartial review, this manuscript was handled independently by Prof. Renata Rebutini, with no involvement from the Editor-in-Chief in the editorial decision-making process. The other authors declare no conflicts of interest.

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### Authors' Contribution

Pablo Villalobos Dintrans: conceptualization, formal analysis, methodology, supervision, writing – original draft, writing – review & editing. Patricia Morsch: conceptualization, formal analysis, methodology, project administration, supervision, writing – review & editing. Patrick Alexander Wachholz: conceptualization, data curation, formal analysis, methodology, writing – review & editing. Isabel Barrientos-Calvo: data curation, formal analysis, writing – review & editing. Jorge Browne: data curation, formal analysis, writing – review & editing. Omar Yaxmehen Bello-Chavolla: data curation, formal analysis, writing – review & editing. Enrique Vega: conceptualization, project administration, writing – review & editing.

### Ethical approval and informed consent

Not applicable

### Data availability statement

Data will be made available on request.

### Reporting standards guidelines

This manuscript has been prepared following the STROBE guidelines.

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