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Clinical and Epidemiological Features of COVID-19 in a Long-Term Care Facility in Spain

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Abstract: The COVID-19 pandemic has had a profound impact on residents and staff in long-term care facilities (LTCFs) in Spain, resulting in disproportionate rates of morbidity and mortality. This article examines the clinical characteristics, epidemiological features, outcomes, and lessons learned from COVID-19 outbreaks in Spanish LTCFs. Through analysis of major studies and epidemiological reports, we detail presenting symptoms, comorbidity profiles, transmission dynamics, and facility-level risk factors, providing insight for future preparedness.

Keywords: COVID-19, Long-term care facilities (LTCFs), Morbidity and mortality, Epidemiological features, Outbreaks.

INTRODUCTION

Long-term care facilities house highly vulnerable populations, typically characterized by advanced age, frailty, and multiple comorbidities. The emergence of COVID-19 exposed unique risks in these environments:

- High population density and group living
- Difficulty implementing infection control
- Dependence on physical care
- Limited dedicated medical facilities on site

Spain, with its large elderly population and diverse LTCF landscape, became one of the earliest and hardest-hit countries in Europe. The first fatality in a Spanish care home was reported in early March 2020, followed by an exponential rise in cases and deaths within weeks[1][2].

EPIDEMIOLOGICAL FEATURES

Incidence and Attack Rate

- By late May 2020, Spain reported more than 237,000 confirmed COVID-19 cases and 27,119 deaths nationally[1].
- Older people (>70 years) comprised approximately 37% of all known cases, 48% of all hospitalizations and 86% of total deaths[1].
- In one study of six LTCFs in Albacete:
    - 33.6% of residents were probable COVID-19 cases during a single month.

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- 198 residents and 190 workers were actively monitored, with pooled mortality rates reaching 15.3% at one month and 28% at three months[3][4].
- Excess mortality reached 564% in the first month of the outbreak[3][4].

Mortality

- The case fatality rate for LTCF residents ranged from 21% to as high as 33.7%, disproportionately higher than the community[5][1][6][4].
- In some regions, care home deaths accounted for around 70% of all COVID-19 fatalities during the first wave[2].
- Mortality was highest among the oldest, most frail, male residents, and those with multiple comorbidities[3][7][8][4].

Transmission Dynamics

- Initial outbreaks were often linked to staff movements or visitors before restrictions were put in place.
- PPE shortages, inadequate protocols, and rapid staff turnover contributed to rapid spread inside facilities[1][4].
- A high proportion of staff (24.6% in one facility) also contracted COVID-19 or were suspected cases during major outbreaks[3][4].

Clinical Features

Symptom Presentation

- The most common presenting symptoms were:
  - Fever (up to 50% of cases)
  - Dyspnea (difficulty breathing; present in 28–45% of cases)
  - Cough (dry, non-productive)
  - Asthenia (weakness)
  - Diarrhea (in a minority, but more common than in younger adults)[9][3][8][4]
- Other symptoms included confusion, reduced oral intake, and acute functional decline, often outpacing respiratory symptoms in frail older adults[8].

Table 1: Common Clinical Features in Spanish LTCF COVID-19 Residents

Symptom	% of Cases (Range)
Fever	35–50%[8][4]
Dyspnea	28–45%[8][4]
Cough	25–35%[8][4]
Asthenia	10–18%[8]
Diarrhea	8–15%[8]
Confusion	20–30%[10][8]

Comorbidities and Functional Status

- High levels of frailty and dependence were common.
- Dementia, heart failure, diabetes mellitus, and chronic kidney disease consistently associated with worse prognosis[10][7][8].
- Dementia was both a risk factor for infection due to impaired adherence to preventive measures and a predictor of mortality[10][8][4].

Outcomes

- Hospitalization rates among LTCF residents ranged from 22% to 54.5% across different locations and periods[8][6][4].
- A significant percentage of residents died without being hospitalized, emphasizing high mortality within the facilities themselves[7][6].
- Median duration of symptomatic illness in survivors was just over one week[8].

Table 2: Outcomes in Spanish LTCF COVID-19 Residents

Metric	Value/Range

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Hospitalization Rate	22–54.5%[6][8][4]
1-Month Mortality	15.3–21.7%[3][8][4]
3-Month Mortality	Up to 28%[3][4]
ICU Admission	Rare (<5%)[1][4]
Median Symptom Duration	7–9 days[8]

Risk Factors for Severe Disease and Death

- **Demographic and clinical risk factors:** advanced age, male sex, severe dependency, comorbidity burden (notably dementia and heart disease), presence of fever, dyspnea, confusion, low oxygen saturation[11][10][3][7][8][4].
- **Facility risk factors:** large residential size, staff shortages, lack of infection control, lower staff training, private ownership, and facility age[12][13].

Institutional Challenges and Costs

- Facilities faced major staff shortages due to illness, quarantine, and psychological stress[1][3][4].
- High rates of replacement staffing often furthered infection spread due to lack of training[3][4].
- The monthly cost of managing a single LTCF outbreak exceeded €276,000, mostly due to hospitalizations, medical interventions, and staff replacement needs[3][4].

Lessons Learned

- Early and aggressive infection control, adequate testing resources, and comprehensive PPE supply are critical.
- Multidisciplinary coordination between health and social care systems should be prioritized.
- Psychosocial support for residents and staff is necessary to mitigate the secondary effects of isolation and burnout.

Visual Data

Figure 1: Age-Stratified COVID-19 Case Fatality Rates in Spain, Spring 2020

Age Group	Fatality Rate (%)
70–79	14
80+	21

Figure 2: COVID-19 Symptom Distribution

Symptom	% of Residents
Fever	50
Dyspnea	28
Cough	35
Asthenia	18
Diarrhea	15
Confusion	25

Figure 3: Monthly Excess Mortality (March–April 2020)

- Excess mortality in LTCFs reached 564% in the first month of the outbreak compared to previous years[3][4].

DISCUSSION AND FUTURE DIRECTIONS

The scale and rapid progression of COVID-19 in Spanish LTCFs highlight the urgency of systematic preparedness in institutional elder care. Key priorities for the future include:

- Creating pandemic response plans specific to care homes
- Improving staff training and working conditions
- Strengthened surveillance and rapid response for outbreaks

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- Balancing infection control with resident rights and quality of life

CONCLUSION

COVID-19's impact in Spanish long-term care facilities was devastating, with extremely high rates of infection and death, especially among the very old and frail. Symptom monitoring should prioritize fever and dyspnea, but also functional and mental status changes. Bold investments in staff training, infection control policies, resident support, and intersectoral coordination are essential to reduce future risks and ensure the dignity and safety of LTCF populations.

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