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# Frailty, COVID-19 Disease Severity and Outcome Among Hospitalised Older Adults

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## Abstract

***Aim***

To examine the characteristics and outcomes of hospitalised older adults with COVID-19.

***Methods***

Retrospective, multi-centre, cohort observational study. Data from sixty-nine hospitalised patients aged over 70 years with reverse transcriptase polymerase chain reaction-confirmed COVID-19 at three Irish hospitals were collected from health records. Symptom profile, COVID-19 severity level based on Irish Thoracic Society guidelines, Clinical Frailty Scale (CFS), Cumulative Illness Rating Scale-Geriatric (CIRS-G) scores, laboratory and radiological data were reviewed.

***Results***

Patient mortality rate was 23.2% (n=16). Median survivor age was 81.5 years (IQR 76.5-86.5). Mean CFS and CIRS-G scores were 5; (SD1.6) and 8.19; (SD4.4). Most patients (n=56, 81.1%) were categorised as mild COVID-19 cases. Five patients (n=5, 7%) were asymptomatic. Atypical symptom presentation was 7%(n=5). Delirium was noted in almost one-third of patients (n=21, 30.4%). Seven patients (n=7,10.1%) required intubation and intensive care unit admission. Over 1/3 of delirious patients died (n=8, 38%). Frail patients were older (*P*= 0.005), more likely to have dementia (*P*=0.04) and required less ventilatory support than non-frail patients (*P*=0.001) but were categorised as mild COVID-19 on admission (*P*=0.004).

***Conclusion***

Despite mild COVID-19 symptoms, mortality and delirium rates remained high. Low co-morbidity burden & atypical symptom rates were recorded despite high frailty rates.

## Introduction

Growing numbers of studies report that older adults, and those with underlying chronic health conditions, have more severe clinical manifestations and higher mortality rates with COVID-19 infection.[1-2] To date, over 50% of all COVID-19-related deaths in the EU occurred in those aged 80 years and older.[3] Such co-morbidity burden in older patients is frequently associated with frailty, a multi-dimensional syndrome characterised by the loss of physiological and cognitive reserves.[4] Frailty may result in atypical presentation of COVID-19 infection and can also influence the disease trajectory and time to recovery from COVID-19 infection.[5-6]

While inflammatory markers and other acute clinical data are associated with the requirement for critical care and increased mortality,[7] there are few data on their influence on outcomes in older people. Comparative study results of frail and non-frail COVID-19 patients based on gender are also lacking. The importance for COVID-19 epidemiological data to be presented by age and gender has been consistently emphasised during the pandemic, in order to tailor public health strategies to those at risk.[8]

Recent papers in single-study centres have examined the relationship between age and frailty among older patients hospitalised with COVID-19.[9-10] These studies noted that many hospitalised severely frail patients survived. While older COVID-19 patients have poorer intensive care outcomes, longer inpatient stay and higher mortality, even the oldest and most frail may benefit from hospitalisation.[9] A paucity of information exists on older patients in terms of co-morbidity profile, COVID-19 severity on admission, and maximum airway support received. The primary objective of this study was to examine characteristics of older adults with laboratory confirmed COVID-19 infection. Secondarily, we examined a broad range of clinical, laboratory and radiological predictors of outcomes including ICU admission, mechanical ventilation and death.

## Methods

All patients aged ≥70 years with RT-PCR laboratory confirmed COVID-19 infection; hospitalised between February 27$^{th}$ 2020 and April 24$^{th}$ 2020 in three hospitals in Cork City, (Cork University Hospital, Mercy University Hospital, St Finbarr's Hospital) were included in this observational cohort study. Confirmation of COVID-19 was via combined nasopharyngeal and oropharyngeal swabs as per Irish Health Protection Surveillance Centre guidelines.[11]

Cork University Hospital (CUH) is an 800-bed university teaching hospital and tertiary referral centre. Mercy University Hospital (MUH) is a 330-bed university city centre teaching hospital. Both CUH and MUH provide 24/7 acute medical, surgical and critical care services. St. Finbarr's Hospital comprises a 71-bed specialist rehabilitation unit for older patients. Patients in this unit included individuals admitted directly from a residential care facility with suspected COVID-19 infection. The study protocol was approved by the Cork Clinical Research Ethics Committee (CREC) Reference: ECM 4 (e) 05/05/2020 COVID-19.

Demographic (age and gender), clinical (symptoms on presentation, COVID-19 severity,[12] Clinical Frailty Scale,[13] Cumulative Illness Rating Scale-Geriatric[14]), laboratory (full blood count(FBC), C-reactive protein (reference value <5mg/L), radiological data,admission medications, antibiotic use, weight, delirium incidence and length of stay (LOS) were collected following review of medical records by doctors with specialist training in Geriatric Medicine.

The severity of COVID-19 infection on admission was determined by categorisation of respiratory parameters using the Irish Thoracic Society guideline document.[12] Categories A/B/C1/C2/D reflect increasing oxygen requirements and decreasing oxygen saturations. Category A refers to a respiratory rate (RR) of <20 breaths per minute and oxygen saturations (SpO2) of >94% on room air (RA) or nasal cannula ≤3L/min. Category B refers to a RR>20 or SpO2 <94% requiring nasal cannula >3L/min or Venturi mask 24-60% 02 with good response. Category C1 refers RR>20 or SPO2 <94% with poor response to Venturi mask requiring high flow, humified oxygen via AIRVO$^{TM}$ . Category C2 refers to RR >20 or SPO2 <94%, with poor response to Venturi mask, requiring non-invasive ventilation (NIV) . Category D refers to those individuals who require immediate anaesthetic review with consideration for intubation and ICU care, having a RR>20 with SpO2 <94% with poor response to AIRVO$^{TM}$/NIV.

Frailty status was assessed using the Rockwood Clinical Frailty Scale (CFS)[13] via retrospective analysis of medical records. Retrospective use of the CFS has recently been validated to measure frailty in older hospitalized patients.[15]
The CFS is a nine item, clinically orientated scale that was formulated on the Canadian Study of Health and Ageing Frailty Index. The scale ranges from 1 (very fit) to 9 (terminally ill) based on descriptors and pictorial images of activity and functional status.

The Cumulative Illness Rating Scale (CIRS), and its refinement for geriatric use (CIRS-G), is a tool validated for geriatric hospitalised patients.[14.] The calculated score ranging 0 to 4 is the result of disease severity for each of 14 items representing possible organs affected by a chronic disease. A score ≥29 is deemed high. This scoring system is designed to rate the severity as well as the presence of disease. It has been validated as a predictor of readmission for hospitalized older adults[16-17] and as a predictor of long-term mortality when assessed in inpatient settings.[16,18]

Results for continuous and categorical variables are reported as median and interquartile range and number (percentage). Differences between survivors and non-survivors were examined using Mann-Whitney U test and chi-square test for continuous and categorical variables. Association of age, frailty, and other baseline characteristics with outcome were evaluated by Spearman *r* and multiple logistic regression. Two tailed *P* values <0.05 were deemed significant. All analysis were performed using SPSS® (IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp)

## Results

*Baseline characteristics*

Main biological and clinical characteristics of older patients with COVID-19 by gender are presented in *Table 1***.** Sixty nine patients aged ≥70 years were hospitalized with RT-PCR confirmed COVID-19 during the study period. Most were male (n=40, 58%). Median age 79 years (IQR 75-85 years), the majority were aged 70-79 years (n=36, 52.1%,*P*=0.005). Median number of co-morbidities was 6 (IQR 5-10). The most common were hypertension (60.9%,*P*=<0.001), ischemic heart disease (42%) and hypercholesteremia (37.7%). Prior smoking history was recorded in nine patients (n=9, 13%), while respiratory co-morbidities (COPD or pulmonary fibrosis) were noted in twelve (n=12, 17.3%) patients. Delirium was noted in almost one-third of patients during admission (n=21, 30.4%).

Most cases were classified as mild COVID-19 (Category A and B) (n=60, 87%). The majority of patients received antibiotics during their admission (n=55, 79.7%). Median length of stay (LOS) was 21 days;(IQR 8-42.5). Median weight recorded 73kg(IQR 59.9-83.25).

**Table 1: Main biological and clinical characteristics of older patients with COVID-19 by gender, including COVID-19 severity, maximum airway support, CFS and outcome.**

| Characteristic | Male n = 40 | Female n = 29 | Total n = 69 | *P* value |
|---|---|---|---|---|
| **Age, years** | 78 (74-84) | 83 (76-91) | 79 (75-85) | 0.108 |
| **Age Category** | | | | |
| 70-79 years | 24 (34.8) | 12 (17.4) | 36 (52.2) | 0.005 |
| 80-89 years | 15 (21.7) | 9 (13.0) | 24 (34.8) | 0.076 |
| >90 years | 1 (1.4) | 8 (11.6) | 9 (13.0) | 0.718 |
| **Co-morbidities** | | | | |
| Hypertension | 26 (37.7) | 16 (23.2) | 42 (60.9) | <0.001 |
| Ischaemic heart disease | 23 (33.3) | 6 (8.7) | 29 (42.0) | 0.068 |
| Heart failure | 6 (8.7) | 6 (8.7) | 12 (17.4) | 0.432 |
| Atrial fibrillation | 14 (20.3) | 6 (8.7) | 20 (29.0) | 0.218 |
| Hypercholesterolaemia | 12 (17.4) | 14 (20.3) | 26 (37.7) | 0.052 |
| Diabetes | 13 (18.8) | 6 (8.7) | 19 (27.5) | 0.218 |
| Hypothyroidism | 5 (7.2) | 7 (10.1) | 12 (17.4) | 0.438 |
| Obesity | 3 (4.3) | 2 (2.9) | 5 (7.2) | 0.762 |
| COPD | 5 (7.2) | 3 (4.3) | 8 (11.6) | 0.632 |
| Pulmonary fibrosis | 3 (4.3) | 1 (1.4) | 4 (5.8) | 0.831 |
| Chronic kidney disease | 7 (10.1) | 2 (2.9) | 9 (13.0) | 0.632 |
| History of stroke | 8 (11.6) | 1 (1.4) | 9 (13.0) | 0.717 |
| Hx of Malignancy | 9 (13.0) | 5 (7.2) | 14 (20.3) | 0.428 |
| Osteoarthritis | 12 (17.4) | 5 (7.2) | 17 (24.6) | 0.289 |
| Osteoporosis | 5(7.2) | 4 (5.8) | 9 (13.0) | 0.568 |
| Depression | 5(7.2) | 4 (5.8) | 9 (13.0) | 0.588 |
| Dementia | 6(8.7) | 5 (7.2) | 11 (15.9) | 0.477 |
| Parkinson's disease | 5(7.2) | 1 (1.4) | 6 (8.7) | 0.780 |
| BPH/incontinence | 7(10.1) | 2 (2.9) | 9 (13.0) | 0.632 |
| Hx of thrombosis | 4(5.8) | 1 (1.4) | 5 (7.2) | 0.831 |
| Vascular surgery | 7(10.1) | 3 (4.3) | 10 (14.5) | 0.555 |
| Smoking history | 7(10.1) | 2 (2.9) | 9 (13.0) | 0.660 |
| Alcohol excess | 3(4.3) | 1 (1.4) | 4 (5.8) | 0.831 |

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|---|---|---|---|---|
| **Clinical presentation** | | | | |
| Cough | 20 (29.0) | 8 (11.6) | 28 (40.6) | 0.061 |
| Pyrexia (Temp ≥38.0°C) | 18 (26.1) | 15 (21.7) | 33 (47.8) | 0.581 |
| Dyspnoea | 19 (27.5) | 8 (11.6) | 27 (39.1) | 0.094 |
| Delirium | 15(21.7) | 6(8.7) | 21(30.4) | 0.197 |
| Lethargy | 5 (7.2) | 7 (10.1) | 12 (17.4) | 0.208 |
| Chest pain | 2 (2.9) | 1 (1.4) | 3 (4.3) | 0.755 |
| Diarrhoea | 5 (7.2) | 2 (2.9) | 7 (10.1) | 0.447 |
| Anorexia | 3 (4.3) | 4 (5.8) | 7 (10.1) | 0.393 |
| Abdominal pain | 0 (0) | 1 (1.4) | 1 (1.4) | 0.237 |
| Hypoxia | 2 (2.9) | 2 (2.9) | 4 (5.8) | 0.739 |
| **Radiological findings** | | | | |
| Chest x-ray performed | 37 (53.6) | 26 (37.7) | 63 (91.3) | |
| Normal | 5 (7.2) | 11 (15.9) | 16 (23.3) | 0.314 |
| Consolidation | 32 (46.4) | 15 (21.7) | 47 (68.1) | <0.001 |
| Not performed | 3 (4.3) | 3 (4.3) | 6 (8.7) | |
| **Admission COVID-19 Category** | | | | |
| Category A | 19(27.5) | 21(30.4) | 40(57.9) | 0.006 |
| Category B | 10(13) | 10(14.5) | 20(28.9) | 0.186 |
| Category C1 | 3(4.3) | 0 (0) | 3(4.3) | 0.085 |
| Category D | 5 (7.2) | 1 (1.4) | 6(8.6) | 0.780 |
| **Maximum ventilatory support** | | | | |
| None (room air) | 11 (15.9) | 15 (21.7) | 26 (37.7) | 0.070 |
| Nasal prongs/face mask | 13 (18.8) | 11 (15.9) | 24 (34.8) | 0.080 |
| High-flow oxygen | 8 (11.6) | 2 (2.9) | 10 (14.5) | 0.606 |
| Non-invasive ventilation | 1 (1.4) | 1 (1.4) | 2(2.9) | 0.324 |
| Mechanical ventilation | 5 (7.24) | 2 (2.89) | 7 (10.1) | 0.804 |
| **Clinical Frailty Scale** | | | | |
| Fit/Well | 9 (13.0) | 3 (4.3) | 12 (17.4) | 0.459 |
| Vulnerable | 9 (13.0) | 4 (5.8) | 13 (18.8) | 0.481 |
| Mildly Frail | 10 (14.5) | 6 (8.7) | 16 (23.3) | 0.293 |
| Moderately Frail | 7 (10.1) | 6 (8.7) | 13 (18.8) | 0.392 |
| Severely Frail | 5 (7.2) | 10 (14.5) | 15 (21.7) | 0.342 |
| **CIRS-G** | | | | |
| 0-5 | 12(17.3) | 9 (13.0) | 21 (30.4) | 0.186 |
| 6-10 | 16 (16.6) | 17(24.6) | 33 (47.8) | 0.005 |
| 11-15 | 7(10.1) | 3(4.3) | 10(14.5) | 0.555 |
| 16-20 | 4(5.8) | 0(0) | 4(5.8) | 0.432 |
| >20 | 1(1.4) | 0(0) | 1(1.4) | |
| **Polypharmacy** | | | | |
| ≤5 medications | 17 (25.0) | 12 (17.6) | 29 (42.6) | 0.081 |
| 6-10 medications | 15 (22.1) | 14 (20.6) | 29 (42.6) | 0.030 |
| ≥11 medications | 7 (10.3) | 3 (4.4) | 10 (14.5) | 0.555 |
| **Outcome** | | | | |
| Survived | 29 (42.0) | 24 (34.8) | 53 (76.8) | 0.319 |
| Died | 11 (15.9) | 5 (7.2) | 16 (23.2) | |

*Table 1: Data are presented as median (IQR) or n (% of total). COPD, chronic obstructive pulmonary disorder; BPH, benign prostatic hyperplasia; PE, pulmonary embolism; DVT, deep vein thrombosis. P<0.05 was considered significant.*

*Clinical symptoms on presentation*

The majority patients with COVID-19 infection (n= 64, 93%) had symptoms at presentation. Five patients (n=5, 7%) were asymptomatic. The most common symptoms on presentation were pyrexia (≥38°C) (47.8%), cough (40.6%), and dyspnoea ( 39.1%). Atypical symptoms of diarrhoea (10.1%), anorexia (10.1%) and lethargy (17.4%) were noted. Most patients with atypical symptoms were male (52%), median age 79 years; (IQR 76.5-84.5) and mean CIRS-G 8.42, SD 4.

*COVID Category on admission & Maximum level of respiratory support*

Most patients were classified as mild COVID-19 Category A or B on admission (n=60, 87%), Six patients were classified as Category D on admission requiring immediate anaesthetic review for intubation and transfer to ICU (n=6, 8.6%). No C2 category patients were noted. Two patients initially triaged as COVID-19 category B, required increased ventilatory support during admission. One patient was subsequently intubated and one patient received ward-based management with palliative care input.

*Radiological and laboratory characteristics*

The majority of patients (n= 63, 91%) had a chest radiograph, with most having consolidation reported (n=47, 68%, $P<0.001$). Bilateral consolidation was reported on twenty-six patients during admission (n=26, 41.2%). Sixteen patients had a normal chest x-ray report (n=16, 23.2%). Frail patients did not have higher CRP values ($P=0.086$) or higher lymphopenia rates ($P= 0.111$) compared to non-frail patients.

*Co-morbidities & Frailty status*

The mean (CIRS-G) score was 8.18 ( SD 4.45), which represents a low burden of chronic disease.
No significant association was seen between CIRS-G score and mortality ($P=0.473$) or maximum ventilatory support required ($P=0.134$).

The main biological and clinical characteristics of older patients with COVID-19 based on CFS groupings are presented in *Table 2***.**

**Table 2: Main biological and clinical characteristics of older patients with COVID-19, including COVID-19 severity, maximum airway support and outcome, based on CFS group**

| **Characteristic** | **CFS 1-4** **n = 25** | **CFS 5-7** **n = 44** | **Total** **n = 69** | ***P* Value** |
|---|---|---|---|---|
| **Gender** | | | | |
| Male | 18 (26.1) | 22 (31.9) | 40 (58.0) | 0.075 |
| Female | 7 (10.1) | 22 (31.9) | 29 (42.0) | |
| **Age, years** | 77 (72-82) | 83 (76-89) | 79 (75-85) | 0.005 |
| **Age Category** | | | | 0.014 |
| 70-79 years | 18 (26.1) | 18 (26.2) | 36 (52.2) | |
| 80-89 years | 7 (10.1) | 17 (24.6) | 24 (34.8) | |
| ≥90 years | 0 (0.0) | 9 (13.0) | 9 (13.0) | |

| | | | | |
|---|---|---|---|---|
| **Co-morbidities** | | | | |
| Cardiovascular | 18 (26.1) | 36 (52.2) | 54 (78.3) | 0.342 |
| Respiratory | 8 (11.6) | 5 (7.2) | 13 (18.8) | 0.035 |
| CKD/Dialysis | 3 (4.3) | 6 (8.7) | 9 (13.0) | 0.846 |
| Malignancy | 4 (5.8) | 10 (14.5) | 14 (20.3) | 0.504 |
| Osteoarthritis | 6 (8.7) | 11 (15.9) | 17 (24.6) | 0.926 |
| Dementia | 1 (1.4) | 10 (14.5) | 11 (15.9) | 0.041 |
| Vascular Surgery | 4 (5.8) | 6 (8.7) | 10 (14.5) | 0.789 |
| Smoking history | 5 (7.2 | 4 (5.8) | 9 (13.0) | 0.196 |
| **Symptoms on Presentation** | | | | |
| Cough | 13 (18.8) | 15 (21.7) | 28 (40.6) | 0.145 |
| Pyrexia (≥38.0° C) | 9 (13.0) | 24 (34.8) | 33 (47.8) | 0.138 |
| Dyspnoea | 13 (18.8) | 14 (20.3) | 27 (39.1) | 0.099 |
| Delirium | 6 (8.6) | 15 (21.7) | 21 (30.4) | 0.381 |
| Lethargy | 5 (7.2) | 7 (10.1) | 12 (17.4) | 0.667 |
| Chest pain | 2 (2.9) | 1 (1.4) | 3 (4.3) | 0.262 |
| Diarrhoea | 3 (4.3) | 4 (5.8) | 7 (10.1) | 0.7 |
| Anorexia | 1 (1.4) | 6 (8.7) | 7 (10.1) | 0.203 |
| Abdominal pain | 0 (0.0) | 1 (1.4) | 1 (1.4) | 0.448 |
| Hypoxia | 3 (4.3) | 1 (1.4) | 4 (5.8) | 0.097 |
| **COVID Category** | | | | |
| Category A | 10 (14.4) | 31 (44.9) | 41 (59.4) | 0.004 |
| Category B | 9 (13.0) | 12 (17.4) | 21 (30.4) | |
| Category C | 2 (2.9) | 2 (2.9) | 4 (5.8) | |
| Category D | 6 (8.7) | 0 (0.0) | 3 (4.3) | |
| **Polypharmacy (n=68)** | | | | |
| ≤5 medications | 12 (17.6) | 17 (25.0) | 29 (42.6) | 0.663 |
| 6-10 medications | 9 (13.2) | 20 (29.4) | 29 (42.6) | |
| ≥11 medications | 3 (4.3) | 7 (10.3) | 10 (14.7) | |
| **Maximum Ventilatory Support** | | | | 0.001 |
| None (room air) | 7 (10.1) | 19 (27.5) | 26 (37.7) | |
| Nasal prongs/facemask | 5 (7.2) | 19 (27.5) | 24 (34.8) | |
| High flow oxygen | 4 (5.8) | 6 (8.7) | 10 (14.5) | |
| Non-invasive ventilation | 1 (1.4) | 0 (0.0) | 1 (1.4) | |
| Mechanical ventilation | 8 (11.6) | 0 (0.0) | 8 (11.6) | |
| **Radiological findings** | | | | 0.074 |
| Normal | 2 (2.9) | 14 (20.3) | 16 (23.3) | |
| Abnormal | 20 (29.0) | 27 (39.1) | 47 (68.1) | |
| Not performed | 3 (4.3) | 3 (4.3) | 6 (8.7) | |
| **Outcome** | | | | |
| Survived | 19 (27.5) | 34 (49.3) | 53 (76.8) | 0.904 |
| Died | 6 (8.7) | 10 (14.5) | 16 (23.3) | |

Data are presented as median (IQR) or n (% of total). *P*<0.05 was considered significant.*[Note: Cardiovascular =HTN,IHD,A fib, CCF, Hypercholesterolaemia, Respiratory = COPD, Asthma, Pulmonary fibrosis, CKD=Chronic Kidney Disease]*

The mean CFS was 5; (SD 1.59). CFS 5 represented the largest category of patient (23.2%). In all, 63% of patients were deemed frail (CFS ≥5). No CFS 8 or 9 patient groups were recorded. Older patients accounted for higher CFS scores, with median age 83 years (IQR 76-89) in CFS 5-7 group. Female patients were non-significantly frailer than male patients (*P*=0.075).

The mean number of medications was 6; (SD 3.42). Male patients had non-signficantly higher levels of polypharmacy (≥5 medications) compared to female patients (*P*=0.855)

*Outcomes*

Study mortality rate was 23.3% (n=16). Most patients had been discharged at time of last review (n=48, 69.5%). Five remained as inpatients (7.24%). Median age of survivors was 81.5 years, (IQR 76.5-86.5). The oldest surviving patient was 103 years.
Frail patients were older (*P*=0.005), more likely to have dementia (*P*=0.04), but less likely to have respiratory co-morbidities (*P*=0.035).Frail patients required less ventilatory support than non-frail patients (*P*=0.001) but had milder COVID-19 categorisation on admission(*P*=0.004).

Among the seven ventilated ICU patients,4 died (n=4, 57%), median age 77 years (IQR 71-84. Overall, most deaths occurred in frailer patients, although this did not reach statistical significance (*P*=0.9) and no difference in survival time between frail and non-frail groups was noted (*P*=0.296).

**Discussion**

This study represented all hospitalised patients aged ≥ 70 years admitted in the Cork metropolitan area, a population of 305,000 people, in the first 100 days of the Irish COVID-19 pandemic. While mortality was high (23%), and comparable with other studies internationally[19-20]; 76% of patients survived, indicating that inpatient hospital care for this older COVID-19 cohort was not futile.

Frailty was common, affecting 63% of inpatients but was not associated with poorer outcomes. A recent study from Australia advocates against using frailty screening tools as a sole component in critical care decisions among older COVID-19 patients.[21] With this in mind, our study also rated total co-morbidity disease burden in older persons using the CIRS-G scale. Over one third of patients had CIRS-G score greater than 10, which may prove a useful marker for re-admission rates and long-term mortality.[16,17] As a marker of biological frailty, recent studies indicate that 20-30 % COVID-19 patients will develop delirium during hospitalisation.[22] Our study results were higher at 30.4%, a serious complication requiring vigilance from clinical staff to reduce the risk of adverse outcomes.

Atypical symptom presentation in our study was 7%, lower than other published studies.[23] A previous study reports advanced age and increased number of comorbidities as potentially increasing the probability of atypical presentations[24]; our atypical symptom group had low co-morbidity burden, highlighting the need for further studies to elicit the disease trajectory of these patients.

The majority of patients were classified as mild COVID-19 cases on admission and one third required no supplemental airway support. Only seven patients required ICU transfer for intubation. This discrepancy in airway support could be due to severely frail patients not requiring high levels of airway support, or perhaps reflect conservative goals of treatment for individual patients decided between patient and physician. Collaborative inpatient escalation of care discussions are vital at an early stage of COVID-19, in order to balance realistic expectations with available treatment options.[25]

Our data have to be treated with caution, given the small sample size. This will limit generalisation to different hospitalised settings. Inconsistencies were also seen in the severity of COVID-19 categorisation in older patients on admission, which may be due to referral bias from community medical services and needs to be considered when reviewing our significant results.

Our study was a multi-centre collaboration that allowed a rich dataset to be collated. Very severely frail patients did not present to our study sites. Potentially, decisions regarding care goals for these patients were discussed in the community, care goals that did not involve hospital admission. Proactive planning of older persons' care needs should be prioritised, in both acute hospital settings and with community healthcare colleagues.

In conclusion**,** the majority of patients in our study had a low chronic disease burden, fewer atypical symptoms and mild COVID-19 symptoms. Despite this, both mortality rate and delirium incidence were high.

**Declaration of Conflicts of Interest:**
The authors have no conflicts of interest to declare.

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