Demographic and Epidemiological Factors Associated with Death of Presumptive Positive COVID-19 Patients Evaluated in an Urban Emergency Department

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Background

The first detected case of COVID-19 in the State of Louisiana was reported on March 9, 2020. Since then, the number of individuals who tested positive for infection increased to more than 39,920 by the end of May 2020, showing a higher rate of spread in Louisiana than in many other states.[1] Furthermore, within only one month, the virus spread to all 64 parishes in the State of Louisiana.[2]

Louisiana Department of Health data reveal that Black and elderly patients are disproportionately affected by the virus.[2] It is important to identify which patient factors may be contributing to poorer outcomes in these patients.
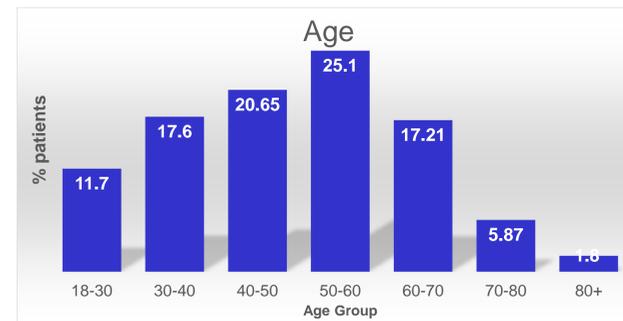
Objective

We aim to identify demographics, chief complaints, and comorbidities among patients who tested positive for COVID-19 in the University Medical Center New Orleans (UMCNO) ED and to identify which variables are associated with death.

Methods

A retrospective chart review of the first 500 patients >/= 18 years old testing positive for COVID-19 at UMCNO-ED was conducted. We queried for patient characteristics, clinical care practices, and hospital courses. Data was stored in RedCap. Descriptive and multivariate analyses were conducted using de-identified patient data in Microsoft Excel and SAS 9.4. Logistic regression was used for associations with death. Reported odds ratios are unadjusted as no confounding variables were identified.

Results

Gender
Female 56.20%, Male 43.60%

Race
Black 87.80%, White 8%, American Indian 4.80%, More than one race 1.25%, Other 0.40%

Ethnicity
Not Hispanic or Latino 94.40%, Hispanic/Latino 5.00%

Insurance Coverage
Government 45.70%, Private 41.00%, Uninsured 13%

Age
11.7 (18-30), 17.6 (30-40), 20.65 (40-50), 25.1 (50-60), 17.21 (60-70), 5.87 (70-80), 1.8 (80+)

	COVID(+) patients, n = 500	Expired patients, n = 23
Mean age	49	63
Predominant age range	50-59	60-69

BMI
13.42 (18.5-25), 25.58 (25-30), 26 (30-35), 34.59 (>35)
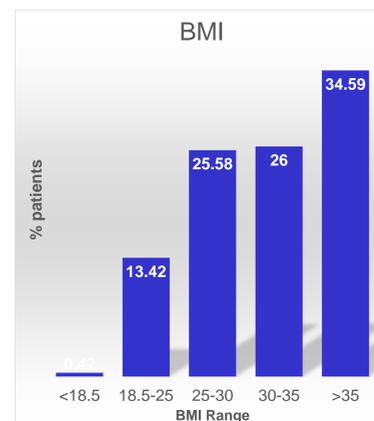
Chief Complaints
In descending order of frequency

COVID(+) patients, n = 500	Expired patients, n = 23
1. Fever	1. Shortness of breath
2. Flu-like symptoms	2. Fever
3. Cough	3. Cough

Pre-Existing Health Conditions
In descending order of frequency

COVID(+) patients, n = 500	Expired patients, n = 23
1. Obesity	1. Diabetes
2. Hypertension	2. Hypertension
3. Diabetes	3. Obesity

Patient Characteristics Associated with Death in COVID(+) Patients

Patient Characteristic	Odds Ratio	95% Confidence Interval	P value
Age > 65	4.9	2.1	0.0002
Shortness of breath	2.9	1.2	0.02
PMHx diabetes	6.2	2.5	0.0001

Discussion

Our study described the predominant demographics, pre-existing health conditions, and chief complaints of the first 500 patients to test positive for COVID-19 at UMCNO-ED. The factors associated with a higher likelihood of COVID-19-related death were identified as age > 65 years, shortness of breath as a chief complaint, and a past medical history of diabetes. Patient characteristics of gender, obesity, chief complaints of fever, flu-like symptoms, and cough, and past medical history of hypertension were not found to be associated with an increased likelihood of death in our sample (data not shown). Comparing our results to worldwide data, other studies have shown associations of advanced age, multiple comorbidities including obesity, and male gender with death. [3,4] Further investigation into the health disparities between patient populations in our local sample is warranted, as they may be associated with higher incidences of COVID-19 infection and mortality. Further directions on this topic may include analysis of insurance coverage type, home zip code, and employment status on health outcomes following infection with COVID-19.

Sources

1. "Louisiana." Worldometer, www.worldometers.info/coronavirus/usa/louisiana/.

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3. Corradini E, Ventura P, Ageno W, et al., Clinical factors associated with death in 3044 COVID-19 patients managed in internal medicine wards in Italy: results from the SIMI-COVID-19 study of the Italian Society of Internal Medicine (SIMI). Intern Emerg Med. 2021 Jun;16(4):1005-1015. doi: 10.1007/s11739-021-02742-8. Epub 2021 Apr 24. PMID: 33893976; PMCID: PMC8065333.

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