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397 Assessment of Sociodemographic Disparities in Emergency Department Pain Management

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Study Objectives: Decades of research have demonstrated sociodemographic disparities in medical practice, including the treatment of acute and chronic pain. Our study aims to identify sociodemographic variations in pain management for adult patients across 21 emergency departments (ED) in a Northern California integrated health care system. Results will provide a granular understanding of current practice patterns in acute pain management in our EDs.

Study Design/Methods: This retrospective, data-only, cohort study of adult patients who presented to the ED with a chief complaint of abdominal pain from 1/1/2019 to 12/31/2020 aims to assess for variations in the receipt of an opioid pain reliever (OPR) according to patient sociodemographic characteristics (primary exposure: self-reported race/ethnicity; secondary exposures: age, sex, and primary language). The primary aim was to evaluate if specific patient characteristics are associated with a decreased likelihood of receiving an OPR as part of acute pain management.

Results/Findings: In multivariable analyses, adjusting for key confounders, we estimated the odds ratios and associated 95% confidence intervals for receiving an OPR by race/ethnicity, sex, primary language, and age (see Table.1). After controlling for several demographic and clinical variables including severity of illness, results show significantly lower odds of receiving an OPR among Asian, Black and Hispanic patients (compared to White patients), patients over 75 years (compared to 18-30 years) and non-English primary language speakers (compared to English speakers). No significant difference was seen with regards to sex (female vs male).

Conclusion: While this study did not attempt to assess the clinical appropriateness of less or more opiate use, consistent with other published studies, our study demonstrates that significant sociodemographic disparities exist in the management of acute pain in the ED. To address these disparities, future initiatives will focus on system level changes, including the modification of triage protocols and the creation of pain management order-sets. The consistent use of standardized order-sets has the potential to decrease variation in pain management. Further studies are warranted to evaluate if these interventions are effective.

Table 1. Adjusted odds ratio (OR) of receiving an OPR by race/ethnicity, sex, age, language, and severity of illness.

Variables	OR of receiving OPR [95 % Confidence Interval]
Race/Ethnicity (reference=non-Hispanic White)	
Black (including Black-Hispanic)	0.74 [0.71, 0.77]
Hispanic	0.87 [0.84, 0.90]
Asian/Pacific Islander (including Asian Hispanic)	0.70 [0.68, 0.73]
Sex (reference=Male)	
Female	0.99 [0.96, 1.01]
Age (reference = 18-30 years)	
76 years and older	0.85 [0.80, 0.90]
Primary Language (reference=English)	
Non-English	0.87 [0.84, 0.91]
Severity of illness (reference = Urgent Acuity level) *	
Resuscitative/ Emergent	1.68 [1.62, 1.75]
Minor/ Non-Urgent	0.11 [0.06, 0.19]

*Note: Severity of illness is a five-level scale based on the "Emergency Severity Index" triage scale. Urgent is the mid-level of acuity (Level 3 out of 5), Resuscitative and Emergent are Levels 1 and 2, and Minor and Non-urgent are levels 4 and 5, respectively. We also adjusted for neighborhood median household income, insurance status, and ED disposition.

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Mode of Respiratory Support and Mortality in Patients With Acute Hypoxemic Respiratory Failure from COVID-19



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Study Objectives: The optimal method of respiratory support for patients with acute hypoxemic respiratory failure from COVID-19 is unclear. Early advice was generally to intubate patients, while later advice was to aggressively use noninvasive respiratory support (high flow nasal oxygen or noninvasive positive pressure ventilation) to avoid mechanical ventilation. The goals of this study are to use a large data set from a large hospital system in the western United States to retrospectively evaluate: 1.) outcomes in patients treated with early invasive mechanical ventilation versus noninvasive respiratory support, and 2.) outcomes between the two modes of noninvasive support.

Methods: We utilized inverse probability of treatment weighted cause-specific Cox proportional hazard models, where participants that died are censored at the time of death. Models include predictors for age, body mass index, ethnicity, first treatment assignment, sex, hospital size, white race, respiratory rate (breaths/min), the ratio of oxygen saturation by pulse oximetry to the fraction of inspired oxygen (SPO2/FIO2), and first treatment start in days after hospital admission. Multiple imputation by chained equations was used to construct 50 imputation datasets. Then, for each data set, propensity scores for the probability of receiving a given first treatment were estimated using generalized boosted models with four stopping criteria to balance the groups. For each imputation data set, a weighted model using the propensity scores from the generalized boosted models was fit.

Results: During the study period there were 2354 COVID-19 patients who met criteria for inclusion. There was an increased hazard of dying associated with noninvasive respiratory support compared to invasive mechanical ventilation (HR: 1.61, $p < 0.0001$, 95% CI: 1.35 - 1.93) in the of time to in-hospital death model. High flow nasal oxygen showed an increased hazard of dying compared to noninvasive positive pressure ventilation (HR: 1.59, $p = 0.0001$, 95% CI: 1.27 - 2.00). The cause-specific hazard model of days from hospital entrance to live hospital exit with death treated as a competing risk showed an increased probability of leaving the hospital alive for those initially treated with noninvasive respiratory support compared to invasive mechanical ventilation (HR: 1.71, $p < 0.0001$, 95% CI: 1.47 - 1.99). Patients initially treated with either high flow nasal oxygen (HR: 1.34, $p = 0.0455$, 95% CI: 1.01 - 1.79) or noninvasive positive pressure ventilation (1.72, $p < 0.0001$, 95% CI: 1.48 - 2.01) had increased probabilities of leaving the hospital alive compared to invasive mechanical ventilation. There was not a statistically significant difference in the hazard of live hospital exit between high flow nasal oxygen and noninvasive positive pressure ventilation (HR for noninvasive positive pressure ventilation vs. high flow nasal oxygen: 1.28, $p = 0.0972$, 95% CI: 0.96 - 1.72).

Conclusion: These data showed that for patients with COVID-19, noninvasive respiratory support presented a paradox for outcomes. Patients were less likely to survive, but those that did survive were discharged from the hospital sooner than if they had been intubated early. Future work should focus on early identification of patients failing noninvasive respiratory support to avoid excess mortality.

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399 Racial and Ethnic Variation in Emergency Department Disposition and Access to Hospital-Based Care



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Background/Study Objective: The emergency department is the primary portal through which patients access hospital-based care. Medicaid beneficiaries and uninsured patients experience higher rates of interhospital transfer and are discharged at higher rates compared to patients with private insurance. Black and LatinX patients are the most likely racial and ethnic group patients to be uninsured and rely on Medicaid coverage. The primary aim of this study was to examine the association between race