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USE OF EMERGENCY MEDICAL SERVICES FOR RESPIRATORY DISTRESS AMONG LATINO ADULTS DURING THE EARLY COVID-19 PANDEMIC



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EXECUTIVE SUMMARY

Emergency Medical Services (EMS) are an essential component of the U.S. health care system and a vital sector in COVID-19 response efforts. Understanding differences in patient use of EMS is important to inform policies that can create a more equitable pre-hospital care system. In this brief, we summarize the findings in our recent study which examined differences in respiratory distress-related emergency medical service (EMS) calls among adults aged 50 and older from different racial and ethnic populations.[7]

Our study found that Latinos increased their use of EMS services due to respiratory distress relative to other groups, and particularly relative to non-Latino whites, between the first half of 2019 and the first half of 2020. While a year before the pandemic, the odds of calling EMS services for respiratory distress for white adults aged 50 and older were 28 percent higher than the odds for Latinos, during the early pandemic months, the odds for whites of calling EMS services due to respiratory distress were 10 percent lower than Latinos. The reversal in the use of respiratory-related EMS services between whites and Latinos may be indicative of the disproportionate effects of COVID-19 among Latino adults but has deeper implications for the EMS system and for Latinos who need better emergency medical services.

Our findings and past research show that the EMS system in California needs to adapt to the disproportionate negative health effects experienced by Latinos in two ways. First, the EMS system needs to be inclusive of Latinos, considering that Latinos have general distrust in EMS services due to financial concerns, immigration status, and patient-provider language discordance. Second, the EMS system will need to provide financial assistance to Latino patients, since Latinos will likely experience a disproportionate financial burden associated with medical care and bills.

Based on our study and on prior research summarized in this brief, we propose the following policy recommendations:

1. **Diversify the EMS workforce to better reflect communities served.**
2. **Expand the existing pool of Spanish-speaking and linguistically-capable emergency medical technicians (EMTs) and paramedics.**
3. **Enforce continuing education requirements in geriatrics and gerontology.**
4. **Prioritize the centralization of an EMS database in California.**
5. **Build trust in the community.**

LATINOS, EMERGENCY MEDICAL SERVICES, AND COVID-19

The COVID-19 pandemic disproportionately affected middle-aged and older adults from racial and ethnic minority groups.[3,8] These disparities were particularly alarming in California, where Latinos aged 50 and older were disproportionately represented among the COVID-19 cases and deaths.[2] Latinos comprise a third of California's 50-to-64-year-old population, but comprised half of confirmed cases and 64 percent of COVID-19 related deaths in this age group (as of August 19, 2021).[2] Similarly, Latinos aged 65 and older constituted 22 percent of the population in the state, but contracted 40 percent of confirmed cases and suffered 49 percent of deaths in this age group.[2] COVID-19 cases and deaths among Latinos aged 50 and older in California also surpassed the impacts of the virus in other states with a high share of Latinos, including Texas, Florida, Illinois, and New York.[9]

The disproportionate impact of COVID-19 among Latinos has been attributed to several factors:[3-6]

Employment and Housing. Latinos are overrepresented in frontline occupations most often associated with a higher risk of COVID-19 infection due to heightened exposure to infected individuals and environments.[10-11] Latinos were more likely than non-Latino Whites to live in overcrowded, and sometimes multigenerational, housing unsuitable for proper quarantine and isolation.[11,12] Multigenerational housing often increased the risk of infection and death for vulnerable individuals in the household, including middle-aged and older adults.[11] Use of public transportation, a risk factor for COVID-19 infection, was also higher among Latinos compared to non-Latino Whites.[5]

Pre-existing Conditions. Latinos had a higher prevalence of pre-existing medical conditions such as obesity, diabetes, cardiovascular disease, renal disease, and hypertension, which increased the risk of adverse health outcomes due to COVID-19.[6,13,14] Multiple factors stemming from lack of access to health care, accelerated aging, and early health deterioration heightened the risk of COVID-19 infection and death among Latinos, especially middle-aged and older adults.[3,5]

Socioeconomic and Demographic Factors. Discrimination, poverty, and inadequate health insurance also contributed to Latinos' heightened risk during the pandemic.[3-6] Eligibility and access to health insurance among the Latino population was influenced by immigration status, English language proficiency, and place of birth.[15-17] Uninsured and underinsured individuals were less likely to have a regular source of health care and more likely to delay seeking health care services, which increased the risk of adverse health consequences, including death.[16-18]

Emergency Medical Services (EMS) in the U.S. Before the COVID-19 Pandemic

Emergency medical services (EMS) are an essential component of the health care system in the U.S. and vital to COVID-19 response efforts. Pre-COVID-19 studies show that among adults aged 50 and older, Latinos were less likely to use EMS compared to Non-Latino Whites.[19-21] Barriers to EMS use among Latinos include general distrust of 9-1-1 services and concerns related to the patient's immigration status.[22-26] Financial concerns surrounding the cost of EMS, particularly ambulance transports, may also deter some patients from seeking necessary care during an emergency.[27]

The lack of racial, ethnic, and gender diversity of the EMS workforce is an additional barrier that may affect Latinos' use of the pre-hospital care system.[22-26] EMS personnel are often the first point of contact for patients accessing the U.S. pre-hospital care system.[28-29] The EMS workforce, however, does not resemble the racial, ethnic, and gender composition of the U.S. population reducing trust of EMS personnel among racial and ethnic minorities.[29] The lack of racial, ethnic, and gender diversity in the EMS workforce is also more pronounced among paramedics who are EMS professionals trained to provide a higher level of care than emergency medical technicians (EMTs).[29] Overall, the diversity in the EMS workforce is improving, but not at a fast enough rate to meet the needs of an increasingly heterogeneous population of adults aged 50 and older.

Patient-provider language discordance is another barrier in the pre-hospital care setting.[28] Language barriers may delay the dispatch of EMS services, affect on-scene care, and influence the patient's ambulance transport experience.[28] In most health care settings, professional interpreters are the preferred approach to address language barriers between providers and patients.[28] The use of professional interpreters, however, may not be as suitable in the pre-hospital care setting due to the delivery of health care services in uncontrolled environments where timeliness is often key to patient survival and recovery.[28]

EMS During The COVID-19 Pandemic

The early COVID-19 pandemic was characterized by changes in overall EMS use and types of calls received.[32-35] From January to June 2020, there was a rapid decline in the overall use of emergency services in the U.S.[31-32] After the U.S. federal government issued an emergency declaration in March 2020, EMS use decreased 26 percent from the first week of January 2020.[32] The early pandemic period was also characterized by changes in the types of EMS calls received.[32-34] Injury-related EMS calls decreased from 18 percent to 15 percent.[35] The decline in injury-related EMS calls was at least partially attributed to behavioral changes that resulted from stay-at-home orders.[35] Overdose-related cardiac arrests also increased during the early pandemic period.[34]

RESPIRATORY DISTRESS-RELATED EMS CALLS DURING THE EARLY COVID-19 PANDEMIC

Previous studies show the impact of the COVID-19 pandemic on the overall use and types of EMS calls received during the early pandemic period. Our study investigated racial and ethnic disparities in respiratory distress-related EMS calls among adults aged 50 and older during the early pandemic period, January to June 2020, compared to the same time period in 2019.[7] The focus of the study was on respiratory distress because these symptoms were common among symptomatic individuals with confirmed COVID-19 infection.[36] The study focused on Latino adults aged 50 and older since this population was overrepresented in the number of COVID-19 cases and deaths in California.[2] The complete study may be accessed here.

METHODOLOGY

Data

We used EMS data from the California Emergency Medical Services Information System (CEMSIS), the first state-wide demonstration project in California that offers a secure and centralized repository of pre-hospital care data. CEMSIS currently includes EMS data from 32 out of 33 local emergency medical service agencies (LEMSAs) in California.[37] Los Angeles County is the only LEMSA not currently submitting EMS data to CEMSIS because it is in the testing phase. The study focuses on EMS data from January to June 2019 and January to June 2020.

Analysis

The data include only patient contacts from adults aged 50 and older. The main independent variable of interest was patient race and ethnicity, with a focus on Latinos in comparison to other racial and ethnic groups (particularly non-Latino Whites). Our regression analysis uses a step-wise design that adds different variables in each model. Model 1 tests the association between race and ethnicity on presence or absence of respiratory symptoms. Model 2 adds gender to the first model. Model 3 adds geographic region to the second model. Lastly, the fourth model tests whether the presence or absence of respiratory symptoms significantly differs when considering the interaction between patient race and ethnicity and patient home region. We used 0.05 to determine statistical significance and included 95 percent confidence intervals for parameter estimates. More information regarding the methodology, study design, and data analysis of the study may be accessed here.

RESULTS

Descriptive Statistics

The final sample comprised 540,100 EMS activations with patient contact recorded for adults 50 and older between January and June 2019 and 585,075 EMS activations with patient contact recorded for adults 50 and older between January and June 2020 **(See Table 1)**. Between January and June 2019, 47 percent of patients in the sample identified as non-Latino White, 28 percent as other race, 11 percent as Latino or Hispanic, 9 percent as non-Latino Black, and 4 percent as non-Latino Asian. Approximately 12 percent of adults in this sample experienced respiratory symptoms between January and June 2019. Between January and June 2020, 44 percent of callers were non-Latino White, 34 percent were other race, 10 percent were Latino or Hispanic, 8 percent were non-Latino Black, and 4 percent were non-Latino Asian. Approximately 13 percent of adults in this sample experienced respiratory symptoms during the early pandemic period.

Table 1: Descriptive Statistics: Study Measures

	2019	2020
	%	%
RESPIRATORY SYMPTOMS		
YES	12.17	12.90
NO	87.83	87.10
AGE		
50-64	35.03	35.56
65-74	23.76	24.43
75-84	21.89	21.67
85	19.32	18.34
RACE/ETHNICITY		
OTHER	28.15	33.53
LATINO	10.98	9.91
BLACK	9.06	8.35
ASIAN	4.49	4.11
WHITE	47.31	44.11
	N=540,100	N=585,075

Source: California Emergency Medical Services Authority. (n.d.). *California EMS Information System (CEMSIS)*. Retrieved January 13, 2021, from https://emsa.ca.gov/cemsis/

Regression Results

From January to June 2019, non-Latino Whites had higher odds of respiratory distress-related EMS calls compared to Latinos across all four models ($p < 0.05$) **(See Table 2)**. Non-Latino Blacks and Asians also had higher odds of respiratory distress-related EMS calls compared to Latinos across all four models. From January to June 2020, the models show different results compared to the previous year **(See Table 3)**. Non-Latino Whites had lower odds of respiratory distress-related calls compared to Latinos across all four models in 2020. This finding differed from the previous year, which found higher odds of respiratory distress-related calls among non-Latino Whites compared to Latinos. The only racial group with statistically significant higher odds of respiratory distress-related calls during the early pandemic period, across all models, were non-Latino Blacks compared to Latinos.

Table 2: Logistic regressions models: Respiratory distress-related calls vs. non-respiratory distress-related calls among adults aged 50 and over between January and June 2019

	MODEL 1	MODEL 2	MODEL 3	MODEL 4
RACE/ETHNICITY (REFERENCE = LATINO)				
OTHER	1.05**	1.04**	1.07***	1.05*
BLACK	1.46***	1.46***	1.51***	1.46***
ASIAN	1.18***	1.17***	1.24***	1.14*
WHITE	1.24***	1.20***	1.23***	1.28***
COVARIATES	YES	YES	YES	YES

*** P<0.001, ** P<0.01, * P<0.05

Source: California Emergency Medical Services Authority. (n.d.). *California EMS Information System (CEMSIS)*. Retrieved January 13, 2021, from https://emsa.ca.gov/cemsis/

Model 2 controls for gender, Model 3 for region of residence and Model 4 test for the presence or absence of respiratory symptoms. The detailed regression analyses are available in the study.

Table 3: Logistic regressions models: Respiratory distress-related calls vs. non-respiratory distress-related calls among adults aged 50 and over between January and June 2020

	MODEL 1	MODEL 2	MODEL 3	MODEL 4
RACE/ETHNICITY (REFERENCE = LATINO)				
OTHER	0.91***	0.91***	0.88***	0.78***
BLACK	1.18***	1.18***	1.21***	1.09**
ASIAN	1.02	1.02	1.07**	1.08
WHITE	0.92***	0.92***	0.93***	0.90***
COVARIATES	YES	YES	YES	YES

*** P<0.001, ** P<0.01, * P<0.05

Source: California Emergency Medical Services Authority. (n.d.). *California EMS Information System (CEMSIS)*. Retrieved January 13, 2021, from https://emsa.ca.gov/cemsis/
Model 2 controls for gender, Model 3 for region of residence and Model 4 test for the presence or absence of respiratory symptoms. The detailed regression analyses are available in the study.

Additional analyses by gender and geographic region are available in the study.

SUMMARY & CONCLUSIONS

Few published studies have examined differences in EMS use by race and ethnicity. A major barrier in studying differences in EMS use by race and ethnicity is data quality and completeness. In this study, we examined differences in respiratory-related EMS calls by race and ethnicity in January to June 2019 compared to the early pandemic period, January to June 2020, using CEMSIS data.[7]

Between January and June 2019, Latinos had lower odds of respiratory distress-related EMS calls than non-Latino Blacks, Asians, and Whites. In comparison, between January and June 2020, Latinos had higher odds of respiratory distress-related EMS calls than non-Latino Whites. This finding may be indicative of the disproportionate effects of COVID-19 among Latino adults aged 50 and older. Future studies should explore the barriers discussed in our study to better understand differences in EMS use by race and ethnicity among middle-aged and older adults. General distrust in emergency services, immigration status, lack of diversity in the EMS workforce, patient-provider language discordance, and financial concerns are all barriers that should be examined further to create a more equitable pre-hospital care system in the U.S. It is also important for further research to consider other reasons why respiratory distress-related EMS calls may have increased among Latinos from January to June 2020, such as EMS resource availability, additional causes of respiratory distress, or policies that influenced patient decisions to call 9-1-1. A thorough discussion of next steps and study limitations may be accessed here.

POLICY RECOMMENDATIONS

Understanding EMS health differences can inform policies that create a more equitable pre-hospital care system for an increasingly ethno-racially heterogenous population, including middle-aged and older adults. Based on our study and on prior research summarized in this brief, we propose the following policy recommendations:

1. **Diversify the EMS workforce to better reflect communities served.**[29] Recruitment and training services require a targeted approach to increase the racial, ethnic, and gender composition of the EMS workforce. A targeted approach to diversify the EMS workforce may include creating elementary to high school pipeline programs, conducting targeted outreach in underrepresented communities, and building partnerships with trusted institutions. Another approach to facilitate the diversification of the EMS workforce is to reevaluate recruitment, training, and hiring processes.

2. **Expand the existing pool of Spanish-speaking and linguistically-capable emergency medical technicians (EMTs) and paramedics.** Patient-provider language concordance is an important factor in decreasing existing health disparities and improving quality of care in the pre-hospital care setting.[38] An option to increase linguistic diversity in the EMS workforce is to target outreach efforts in communities with a high proportion of Spanish-speaking residents. Mandating a language requirement should also be evaluated. Increased availability of bilingual 9-1-1 dispatchers may also address some of the general distrust of 9-1-1 services among Latinos.[25-26]

3. **Enforce continuing education requirements in geriatrics and gerontology.** EMTs and paramedics are often the first point of direct contact for middle-aged and older adults accessing the U.S. health care system. As such, they should have the knowledge, skills, and training to best meet the needs of older patients. Training in gerontology and geriatrics may help EMS personnel best identify and meet the needs of older adult patients.

4. **Prioritize the centralization of an EMS database in California.** The California Emergency Medical Services Information System (CEMSIS) is currently the database used to store EMS electronic patient care reports for the state. Although the database includes rich information on the pre-hospital care system, it does not contain EMS data from Los Angeles County, the most populous county in California. The inclusion of Los Angeles County in CEMSIS will improve EMS data quality in the state.

5. **Build trust in the community**. Create opportunities for community engagement between EMS personnel and community members to share knowledge, build skills, and foster trust. Community engagement and trust-building may facilitate the process of linking individuals with preventive and other non-emergency health care services, which may alleviate some of the non-emergency call volume that often saturates the EMS system.

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