#1908

Social Risk Factors for COVID-19-Related Hospitalizations in Adults

Olivia D. Reese[1], Ashley Tippett[1], Laila Hussaini[1], Luis Salazar[1], Megan Taylor[1], Caroline R. Ciric[1], Khalel de Castro[1], Grace Taylor[1], Chris Choi[1], Laura A. Puzniak[3], Robin Hubler[3], Srinivas Valluri[3], Ben Lopman[4], Satoshi Kamidani[1], Christina A. Rostad[1], John McLaughlin[3], and Evan J. Anderson[1,2]

EMORY UNIVERSITY SCHOOL OF MEDICINE

Background

- Demographic and social factors associated with increased risk of COVID-19 hospitalization are poorly understood.[1-3]

Methods

- Active surveillance at two hospitals in Atlanta, GA
- May 2021 – June 2022
- **Study Eligibility:**
  - Adults ≥18 years of age admitted with an acute respiratory infection (ARI)
  - Willing to participate in an interview regarding medical, social and vaccination history
  - Able to provide NP swabs at enrollment or from hospital testing
- Extensive in-person interview on demographic and social factors (e.g., employment status, smoking history, alcohol use, COVID-19 associated behaviors).
- Enrolled patients' medical records, past medical history, and vaccine documentation were reviewed and abstracted.
- COVID-19 status determined using hospital PCR results or documentation from medical record.
- **Analysis**
  - Baseline characteristics were compared with bivariate analysis (two-tailed p-value <0.05).
  - Descriptive statistics were reported, and groups were tested using T-test, Chi-square, and Fischer's exact test where applicable.
  - Adjusted Odds Ratios were calculated using a step-wise logistic regression model, with 0.05 being the inclusion limit.
  - The final adjusted model included education, employment, home health, healthcare visit within 3 months, childcare >6 hours/week, travel, going to restaurants, and smoking status.
  - All statistics were calculated using SAS v.9.4

Results

- 1444 subjects were enrolled and had SARS-CoV-2 PCR results available (773 [54%] positive and 671 negative [46%]).
- Median age was greater in SARS-CoV-2 negative cohort than in positive cohort (60 and 54 years, respectively; P< 0.0001).
  - **Table 1** and **Table 2** demonstrate the baseline differences between COVID-19 positive and negative patients.
  - **Table 3** summarizes the multivariate model results

Table 2. Other Social Factors Among COVID-19 Positive and COVID-19 Negative Patients

	COVID-19 Positive (n = 773)	COVID-19 Negative (n=671)	Bivariate p-value
Household: Live alone	161 (20.8)	164 (24.4)	0.1
Live with other adults	581 (75.2)	491 (73.2)	0.4
Live with children under 5 yo	98 (12.7)	57 (8.5)	*0.01*
Live with children between 5-17 yo	205 (26.5)	131 (19.5)	*0.002*
Healthcare: Receives home healthcare	53 (6.9)	87 (13.1)	*<.0001*
Healthcare visit in the past 3 months*	360 (46.99)	369 (55.1)	*0.002*
Exposure to Children: Daycare Attending children*	60 (14.6)	47 (15.0)	0.9
Weekly Exposure to Children under 5yo*	169 (22.0)	135 (20.3)	0.4
Performing childcare for >6hr /week*	197 (25.6)	110 (16.4)	*<.0001*
Childcare age: <5 years old*	104 (52.8)	70 (63.6)	0.08
5-12 years old	117 (59.4)	51 (46.4)	*<.0001*
13-18 years old	45 (22.8)	18 (16.4)	*0.004*
Travel: Traveled out of state in the past month*	155 (20.0)	78 (11.6)	*<.0001*
Social Distancing: Yes (Always + Usually)	689 (89.1)	582 (88.9)	0.4
Sometimes (About 1/2 and seldom)	67 (8.7)	69 (10.3)	
Never	17 (2.2)	19 (2.8)	
Masking Indoors: Yes (Always + Usually)*	681 (88.1)	593 (88.5)	0.5
Sometimes (About 1/2 and seldom)	71 (9.2)	53 (7.9)	
Never	21 (2.7)	24 (3.6)	
Gym/Sports Center: ≥once/week*	66 (8.5)	33 (4.9)	*0.02*
Monthly	16 (2.1)	13 (1.9)	
Never (ref)	691 (89.4)	624 (93.1)	
Restaurant/Café: ≥once/week*	175 (22.6)	112 (16.7)	*0.005*
Monthly	159 (20.6)	173 (25.8)	
Never (ref)	439 (56.8)	385 (57.5)	
Shopping Center: ≥once/week*	374 (48.4)	264 (39.4)	*0.002*
Monthly	137 (17.7)	153 (22.8)	
Never (ref)	262 (33.9)	253 (37.8)	
Smoking and drug use: Currently Smoke*	60 (7.9)	115 (17.2)	*<.0001*
Previously Smoked	199 (26.1)	244 (36.6)	
Never Smoked (ref)	503 (66.0)	308 (46.2)	
Drug Use*	44 (5.7)	41 (6.1)	
Consuming alcohol	300 (38.8)	243 (36.2)	0.3

* Missing data not listed separately or in the denominator

Table 1. Baseline Demographics, Education, and Employment Among COVID-19 Positive and Negative Patients

Demographic (n=1444)	COVID-19 Positive (n = 773)	COVID-19 Negative (n=671)	Bivariate p-value
Age, median [IQR]	54 [42, 65]	60 [47, 70]	*<.0001*
Female, n (%)	427 (55.2)	363 (54.1)	0.7
Race: White	174 (22.5)	184 (27.4)	0.07
Black or African American	554 (71.7)	449 (66.9)	
Multiracial	17 (2.2)	7 (1.0)	
Asian	10 (1.3)	13 (1.9)	
Other/Not Specified	18 (2.3)	18 (2.7)	
Ethnicity: Hispanic or Latino	38 (4.9)	27 (4.0)	0.5
Non-Hispanic nor Latino	711 (92.0)	618 (92.1)	
Not Specified	24 (3.1)	26 (3.9)	
Education: None/Some High School*	76 (10.0)	92 (13.8)	*0.003*
High School Grad/GED	192 (25.1)	193 (29.0)	
Some College/Associate degree/Trade School	249 (32.6)	161 (24.2)	
College Grad (reference)	179 (23.4)	152 (22.8)	
Advanced Degree	68 (8.9)	67 (10.1)	
Employment: Employed Currently (reference)	368 (47.6)	162 (24.1)	*<.0002*
Not employed	282 (36.5)	367 (54.7)	
On Disability	123 (15.9)	142 (21.2)	
Healthcare worker	52 (14.1)	28 (17.3)	0.4
Work Face-to-Face with Public	184 (50.0)	90 (55.6)	0.2
Work from home: Cannot work from home*	235 (63.9)	98 (60.5)	0.09
Work from home 1-2 days/week	25 (6.8)	5 (3.1)	
Work from home 3 or more days/week	23 (6.2)	18 (11.1)	
Work from home exclusively	85 (23.1)	41 (25.3)	
Workplace Requires COVID-19 Vaccination*	67 (18.9)	45 (28.7)	*0.01*

* Missing data not listed separately or in the denominator

Table 3. Multivariate Analysis of Social Risk Factors Associated with COVID Positivity*

	Adj-OR	95% Wald (CI)	
Employment: Disability vs Current	0.487	0.347	0.684
Employment: No vs Current	0.429	0.329	0.559
Home Healthcare	0.666	0.453	0.977
HC Visit w/in 3months	0.724	0.576	0.909
Childcare >6hr/wk	1.379	1.037	1.834
Travel	1.634	1.181	2.261
Restaurant: Monthly vs Never	0.671	0.504	0.892
Smoking: Previous vs Never	0.337	0.231	0.49
Smoking: Current vs Never	0.589	0.456	0.76

* Table simplified to include only those social factors with statistical significance in the multivariate analysis

Limitations

- Self-reporting bias and voluntary enrollment may impact the results.
- Asymptomatic SARS-CoV-2 infections not included.
- Changing behaviors (e.g., nonpharmaceutical interventions) over time may have impacted the observed outcomes.

Conclusions

- SARS-CoV-2 positive patients were typically younger, more likely to care for school-aged children, more likely to work outside the home, but less likely to receive home healthcare or smoke.

- Personal and public health strategies to mitigate COVID-19 should take into consideration modifiable social risk factors.

References

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Address for Correspondence: Evan J. Anderson, MD, Departments of Pediatrics and Medicine, Emory Children's Center, 2015 Uppergate Dr. NE, Atlanta GA, USA 30322; E-mail: evanderson@emory.edu; Telephone Number: 404-727-1746

[1]Department of Pediatrics, [2]Department of Medicine, Emory University School of Medicine, Atlanta, GA; [3]Pfizer Inc., Collegeville PA; [4]Rollins School of Public Health, Emory University, Atlanta, GA, USA