Impact of comorbidities on SARS-CoV-2 infection in staff working in New Jersey Long Term Care Facilities

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Background: COVID-19 illness resulting from SARS-CoV-2 infection has caused significant health consequences, especially in persons with underlying comorbidities. Exposure and infection rates were significant in persons working in long-term care facilities (LTCFs). This study aims to evaluate the association between comorbidities and SARS-CoV-2 infection among LTCF staff.

Methods: This is a cross-sectional survey of antibodies to SARS-CoV-2 in staff at ten LTCFs. Comorbidity, demographics, and health data were collected via IRB-approved self-administered questionnaires. Evidence of prior infection was determined by prior positive SARS-CoV-2 PCR or antigen, or serological presence of IgG/IgM antibodies to Nucleocapsid Protein (N-Protein). Multivariate logistic regression was utilized to determine association of comorbidities and SARS-CoV-2 infection history.

Results: Serology was obtained on 667 staff, including 528 (79.2%) women and 139 (19.5%) men. Median age was 51 (IQR 41, 59). 309 (46.3%) had a history of SARS-CoV-2 infection. Most common comorbidities were obesity (35.5%), hypertension (29.5%), diabetes (11.1%) and lung disease (8%). Among these variables, only lung disease was positively associated (p=0.029), but not statistically significant after adjusting for age, race, and gender (p=0.064). 86 (12.5%) were current smokers. After adjusting for age, race, and gender, smokers were significantly less likely to have prior SARS-CoV-2 infection compared to non-smokers (AOR 0.53, CI 0.304,0.927) (p=0.026). Other comorbid conditions failed to reach a statistically significant association.

Conclusion: Smoking was significantly associated with reduced odds of having a history of SARS-CoV-2 infection compared to people who reported not being a smoker. Smokers were significantly less likely to have prior SARS-CoV-2 infection compared to non-smoker, even after adjusting for age, gender, and race/ethnicity. This negative association has been reported previously without a known cause. Comorbid health conditions recorded in this study did not show significant correlation with evidence of prior infection with SARS-CoV-2 in LTCF staff.