

# Vaccination Status and Symptom Burden for Outpatients with COVID-19 Infection

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## Background

- COVID-19 pandemic has lasted over 2 years with more than 79.5 million cases and 968,839 deaths in the United States.
- COVID-19 vaccination is associated with less severe disease, death, and lower hospitalization rates.
- Outpatient vaccination is associated with less frequent fevers and shorter illness course.
- We lack data on the effect of vaccination status on symptomology and overall disease burden of outpatient SARS-CoV-2 infection

## Objective

- Compare the symptom type and severity from SARS-CoV-2 infection among unvaccinated patients with those vaccinated within 6 months.

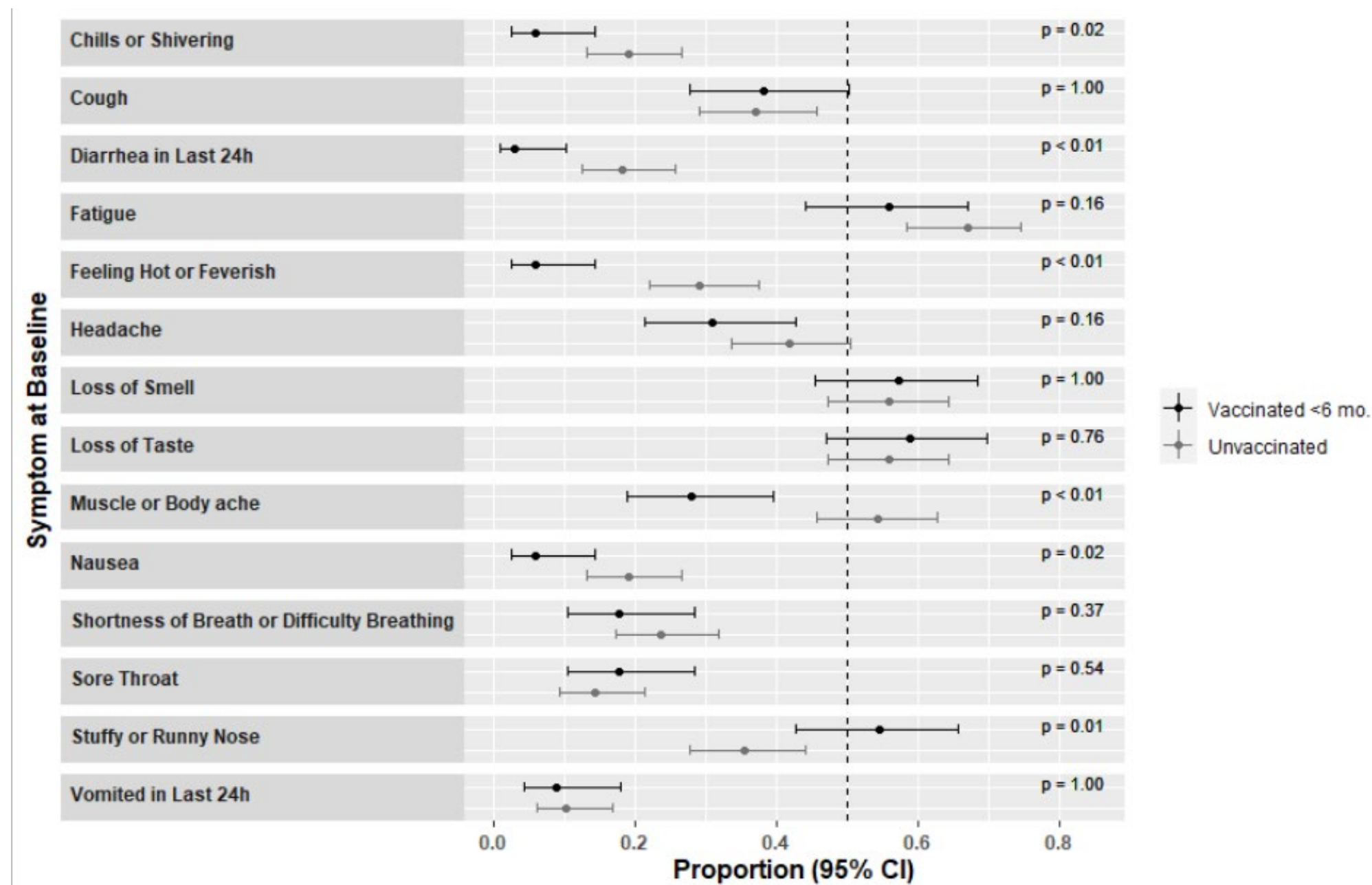
## Sample

- COVID-OUT trial is an outpatient treatment trial of SARS-CoV-2 infection
- Ages 30-85 adults with BMI of  $\geq 25\text{kg/m}^2$
- eligible within 3 days of a positive COVID-19 test; symptoms not required but must be <7 days if present.
- Sites: University of Minnesota, Northwestern University, UCLA/LA county
- Of the 272 participants who provided vaccination status through September 12, 2021, 94 had been vaccinated <6 mo of which 72.3% gave baseline symptom data. 159 were unvaccinated 78% of which gave baseline symptom data

## Methods

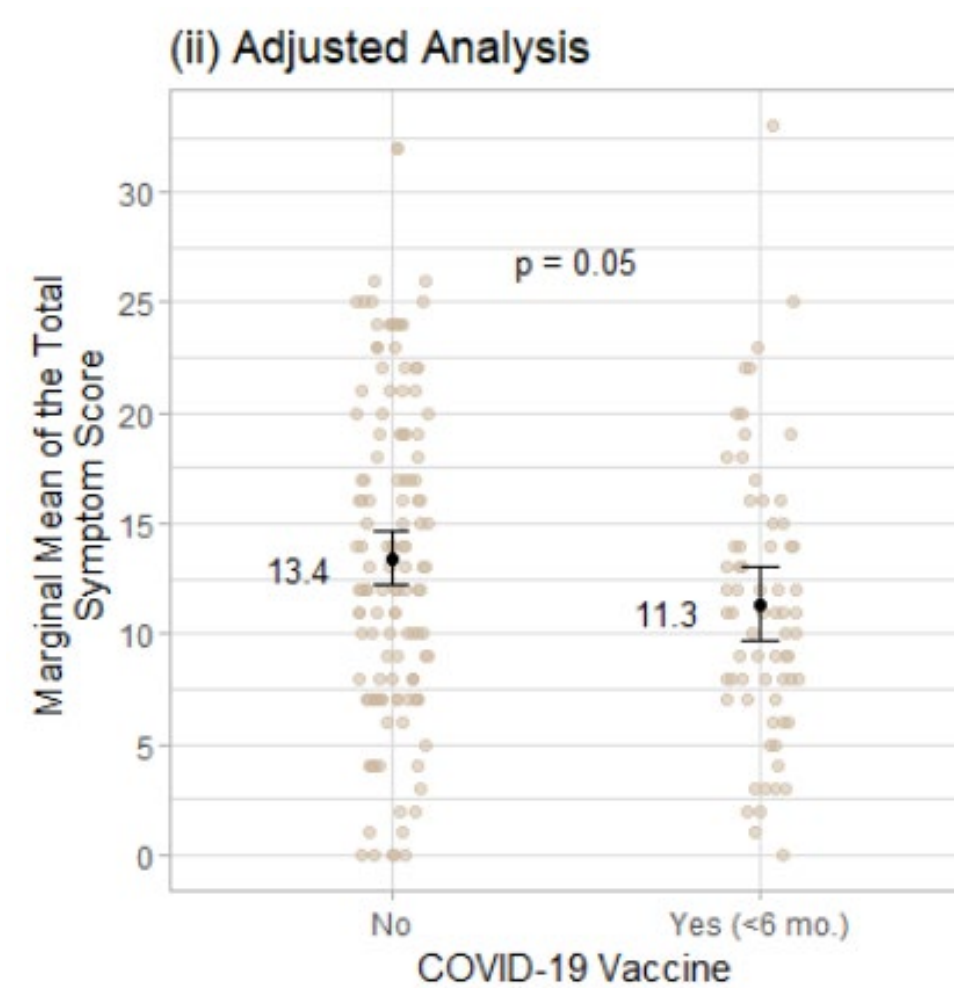
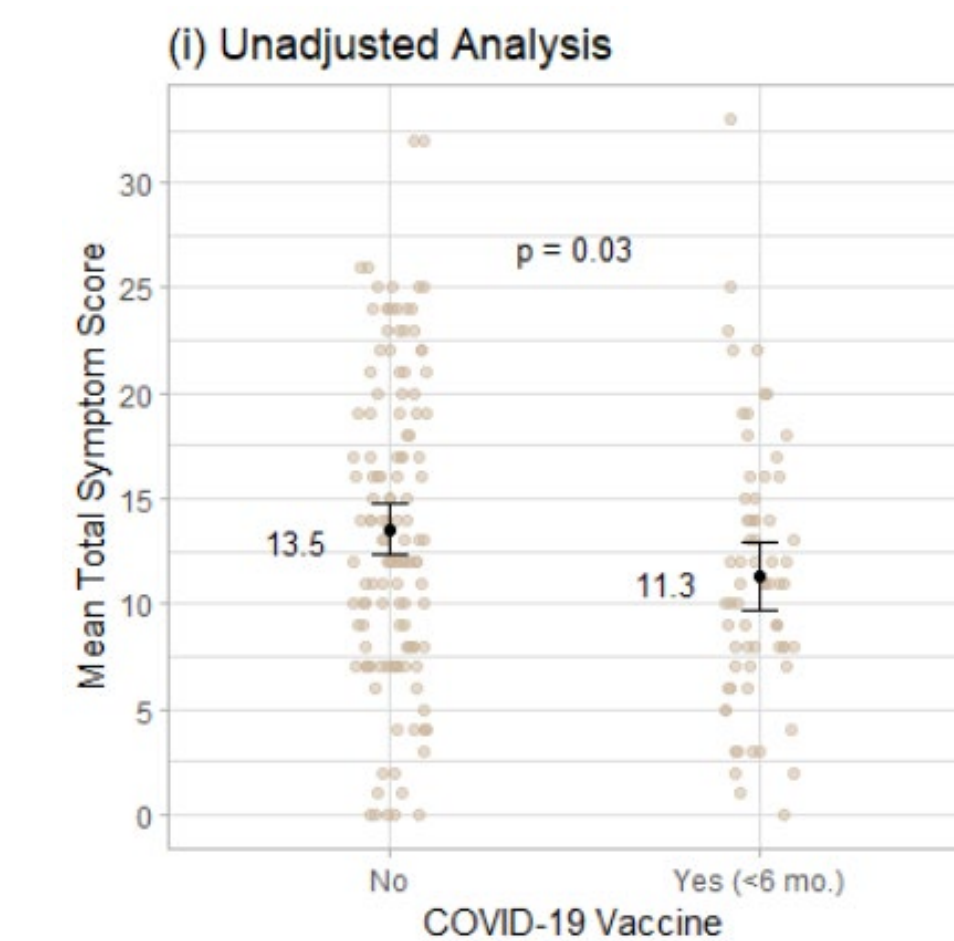
- Baseline symptom data was self reported on a paper daily symptom log provided.
- We computed a total symptom score for each participant using baseline symptom data prior to randomization to reflect symptom severity and total number of symptoms, assigning numeric values to each grade of symptom severity (mild, moderate, severe), with more points given for higher severity.
- Treating the total symptom score as continuous, we fit a linear regression model to assess the association between total symptom score and vaccination status adjusting for sex, age, BMI, race (white vs non-white), and comorbidities (chronic bronchitis, diabetes, CHF, Hypertension, COPD, prior MI, CAD).

## Results



Baseline Symptom Proportions among Vaccinated vs Unvaccinated

Symptom	Proportion (unvaccinated)	Proportion (vaccinated)	p value
Chills/shivering	19%	6%	p=0.02
Diarrhea last 24 h	18%	3%	p<0.01
Body aches	54%	28%	p<0.01
Nausea	19%	6%	p=0.02
Runny/stuffy nose	35%	54%	p=0.01



## Results

- Unvaccinated reported more chills/shivering, diarrhea, feeling hot or feverish, muscle or body aches, and nausea. Vaccinated reported more stuffy or runny nose. There was no significant difference in cough, headache, loss of smell or taste, fatigue, shortness of breath, difficulty breathing, sore throat, or vomiting between groups.
- The mean total symptom score for unvaccinated participants was 13.5 (95% CI: (12.3, 14.7)), which was significantly larger than the average total symptom score of 11.3 (95% CI: (9.7, 13.0)) observed in participants vaccinated within 6 months (p = 0.03).
- Results remained similar even after adjustment for potential confounders. The marginal mean of the total symptom score for unvaccinated participants was 13.4 (95% CI: (12.2, 14.6)), which was larger than the marginal mean for vaccinated <6 mo. participants (11.3, 95% CI: (9.6, 13.0); p = 0.05). The mean difference between the total symptom score for vaccinated <6 mo. and unvaccinated participants was -2.09 (95% CI: -4.21, 0.02).

## Conclusions and Future Directions

- We identified an association between vaccination and symptom type and baseline severity from COVID-19.
- Unvaccinated individuals reported more systemic symptoms (fever, chills, and diarrhea);
- Vaccinated participants reported more mucosal symptoms (runny nose) at baseline.
- Although vaccination was associated with a lower total symptom score than those who were unvaccinated, these differences may not track with functional outcomes such as return to work.
- Limitations include small sample size and lack of randomization to vaccination, which may leave residual confounders.
- Future endeavors include looking at symptom type, severity, and length not only at baseline but throughout the whole illness course and in response to treatment.

## Funding

The trial was funded by the Rainwater Foundation; the Parsemus Foundation; and the UnitedHeath Foundation.  
Dr. Bramante was funded by the National Institutes of Health's National Center for Advancing Translational Sciences, grants KL2TR002492 and UL1TR002494; and the National Institute of Digestive, Diabetes, and Kidney diseases K23 DK124654-01-A1  
• Dr. Nicklas was funded by career development award from the Heart Lung and Blood Institute at the National Institutes of Health (K23HL133604).