

Letters

RESEARCH LETTER

Symptoms Reported With New Onset of Loss of Taste or Smell in Individuals With and Without SARS-CoV-2 Infection

There have been reports of loss of taste or smell associated with viral infections, including SARS-CoV-2. However, it is not clear whether these symptoms are more frequent in SARS-CoV-2 infection compared with other viral infections.^{1,2} Prior studies among individuals with SARS-CoV-2 infection suggest loss of taste or smell occurs early in the disease course and is associated with younger age, female sex, and milder disease.^{1,3-5} Those studies largely have not examined which symptoms occur with new loss of taste or smell. Identifying concomitant symptoms may guide future studies to identify a pattern of

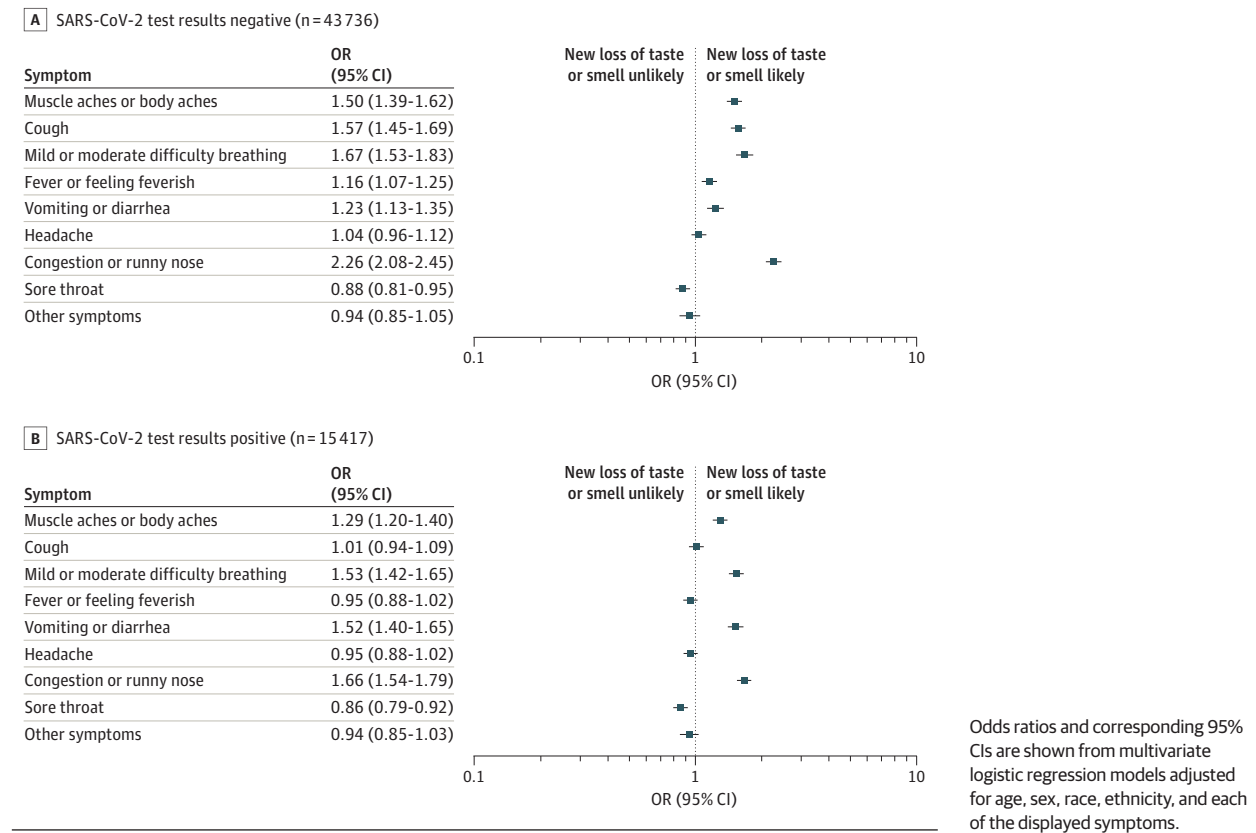
symptoms that form a unique clinical presentation. We therefore described which symptoms were reported with new loss of taste or smell among individuals with and without SARS-CoV-2 infection.

Methods | Data for this cross-sectional study were collected from the Centers for Disease Control and Prevention's Coronavirus Self-checker (online since March 2020), an online tool designed to assist users in deciding whether to seek testing or medical care per guidelines from possible SARS-CoV-2 exposure.⁶ Users selected hard-coded responses that included demographics (age, sex, race, ethnicity), any COVID-19 test results within the past 10 days (positive, negative), and symptoms (new loss of taste or smell, muscle aches or body aches, cough, mild or moderate difficulty breathing, fever,

Table. Characteristics of Respondents, February to May 2021, by SARS-CoV-2 Testing Status

Characteristic	Prevalence, No. (%)		
	Overall (N = 59 153)	Negative test results (n = 43 736)	Positive test results (n = 15 417)
Age, y			
18-29	15 792 (26.7)	12 389 (28.3)	3403 (22.1)
30-39	13 203 (22.3)	9876 (22.6)	3327 (21.6)
40-49	12 058 (20.4)	8823 (20.2)	3235 (21.0)
50-59	10 290 (17.4)	7223 (16.5)	3067 (19.9)
60-69	5949 (10.1)	4156 (9.5)	1793 (11.6)
≥70	1861 (3.2)	1269 (2.9)	592 (3.8)
Sex			
Female	38 798 (65.6)	29 593 (67.7)	9205 (59.7)
Male	18 969 (32.1)	13 016 (29.8)	5953 (38.6)
Unknown	1386 (2.3)	1127 (2.6)	259 (1.7)
Race/ethnicity			
American Indian or Alaska Native	419 (0.7)	320 (0.7)	99 (0.6)
Asian	2895 (4.9)	2016 (4.6)	879 (5.7)
Hispanic	4723 (8.0)	3399 (7.8)	1324 (8.6)
Multiracial	935 (1.6)	750 (1.7)	185 (1.2)
Non-Hispanic Black	8045 (13.6)	5578 (12.8)	2467 (16.0)
Non-Hispanic White	37 025 (62.6)	27 718 (63.4)	9307 (60.4)
Unknown	5111 (8.6)	3955 (9.0)	1156 (7.5)
Symptoms			
New loss of taste or smell	8434 (14.3)	3394 (7.8)	5040 (32.7)
Muscle aches or body aches	26 240 (44.4)	17 299 (39.6)	8941 (58.0)
Cough	27 105 (45.8)	16 958 (38.8)	10 147 (65.8)
Mild or moderate difficulty breathing	9963 (16.8)	5745 (13.1)	4218 (27.4)
Fever or feeling feverish (eg, chills, sweating)	11 928 (20.2)	8438 (19.3)	3490 (22.6)
Vomiting or diarrhea	19 484 (32.9)	13 455 (30.8)	6029 (39.1)
Headache	31 522 (53.3)	22 412 (51.2)	9110 (59.1)
Congestion or runny nose	22 864 (38.7)	14 865 (34.0)	7999 (51.9)
Sore throat	23 376 (39.5)	18 070 (41.3)	5306 (34.4)
Other symptoms	9056 (15.3)	6703 (15.3)	2353 (15.3)

Figure. Adjusted Odds Ratios (ORs) for Symptoms Associated With New Loss of Taste or Smell Among 59 153 US Adults



vomiting or diarrhea, headache, congestion or runny nose, sore throat, other). Vaccination status was not recorded. The sample included 59 153 completed uses of the tool occurring between February 2 and May 3, 2021, by US adults 18 years or older who reported test results. This study was reviewed by the Centers for Disease Control and Prevention (CDC), and its conduct was consistent with applicable federal law and CDC policy (45 CFR §46, 21 CFR §56, 42 USC §241(d), 5 USC §552a, and 44 USC §3501 et seq). This study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guideline.

To evaluate the association between each symptom and new loss of taste or smell, multivariate logistic models estimated odds ratios (ORs) stratified by test positivity and adjusted for each demographic variable and symptom. For all statistical analyses, SAS, version 9.4 software (SAS Institute Inc) was used.

Results | The Table shows respondent characteristics from 59 153 completed uses of the tool. The largest age group was 18 to 29 years (15 792 [26.7%]), 38 798 (65.6%) were female, and 37 025 (62.6%) were non-Hispanic White respondents. Symptoms associated with new loss of taste or smell varied by SARS-CoV-2 test positivity (Figure). Among individuals with negative test results, congestion or runny nose was more strongly associated with loss of taste and smell (OR, 2.26 [95% CI, 2.08-2.45]) compared with those with positive test results (OR, 1.66

[95% CI, 1.54-1.79]). Among individuals with negative test results, cough and fever were significantly associated with new loss of taste or smell (cough: OR, 1.57 [95% CI, 1.45-1.69]; fever: OR, 1.16 [95% CI, 1.07-1.25]) but not among those with positive test results (cough: OR, 1.01 [95% CI, 0.94-1.09]; fever: OR, 0.95 [95% CI, 0.88-1.02]). Vomiting or diarrhea was more strongly associated with new loss of taste or smell among those with positive test results (OR, 1.52 [95% CI, 1.40-1.65]) compared with those with negative test results (OR, 1.23 [95% CI, 1.13-1.35]).

Discussion | The findings of this cross-sectional study suggest that differences in symptoms occurring with new loss of taste or smell were seen between groups based on SARS-CoV-2 test positivity. In both groups, muscle aches or body aches, mild or moderate difficulty breathing, vomiting or diarrhea, and congestion or runny nose were associated with a new loss of taste or smell. However, in both groups with positive and negative test results, congestion or runny nose had strong associations with new loss of taste or smell, suggesting the latter may not be a valid marker of test positivity in this sample.

One particular strength of this study is the large sample of recent data. Limitations include possible residual confounding inherent in observational data and potential for data to partially reflect individuals who used the tool multiple times and/or had been vaccinated. There may also be selection bias from analyzing online data, as respondents were, on average,

younger and more likely to be female compared with the general population. Users may also have been aware of loss of taste or smell as a symptom of COVID-19, which may have resulted in bias and/or loss of power. Further studies in other populations may elucidate whether symptoms accompanying a new loss of taste or smell may form part of a unique clinical presentation associated with a milder course of disease.

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