U.S. Generalized Anxiety Disorder Related to COVID-19 Pandemic by Age and Gender

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Background

- Generalized anxiety disorder (GAD), demonstrating excessive anxiety and worry occurring more days than not for a period of ≥6 months, is one of the most prevalent anxiety disorders in the general population.^{1,2}
- GAD is a debilitating mental health condition, placing a substantial burden on individuals, society, and the economy.¹
- Previous studies show higher prevalence of anxiety disorders in younger adults and females, suggesting a potential disparity in GAD prevalence by age and gender.^{3,4}
- Prior research suggests that the COVID-19 pandemic (COVID) may have multiple impacts on mental health in the United States (US). However, there's limited evidence about the impact of COVID on GAD prevalence, as well as how this may vary by age and gender in the US.

Objectives

- To assess GAD prevalence and severity of symptoms before and during COVID in the US, using the GAD 7-item (GAD-7) scale.
- To assess variations in GAD prevalence and severity of symptoms by gender and age groups before and during COVID in the US.

Methods

Study Design

- The National Health and Wellness Survey (NHWS) is an annual internet-based self-report survey; recruitment is designed to represent the general adult population in terms of age, gender, and race/ethnicity distributions in the US.
- Respondents who participated in the US NHWS, which was fielded from March to July 2019, were quota sampled by age and gender and recontacted to complete a short survey in April 2020 to assess the impact of COVID on their mental health (COVID Pulse Survey).
- Quota sampling by age and gender was implemented for recontacting the respondents from NHWS.
- In the NHWS, respondents were asked about their demographics and health-related characteristics. In both surveys, respondents were asked about their age and gender and completed the GAD-7.

Inclusion Criteria

- Aged ≥18 years Resident of the US
- Completed both 2019 US NHWS and COVID Pulse Survey

Exclusion Criteria

Respondents whose age mismatched within a few years between the two surveys

Variables

- GAD positive screen was defined by GAD-7 score as: yes (≥ 10), no (≤ 9).
- GAD symptom severity was defined by GAD-7 score as: none (≤4), mild (5-9), moderate (10-14), and severe GAD (≥15).6
- Sample characteristics measured at baseline (2019 US NHWS) included age, gender, race and ethnicity, marital status, education, employment status, health insurance type, and the Charlson Comorbidity Index (CCI).
- The CCI represents a weighted sum of multiple comorbid conditions predictive of mortality, with higher CCI scores indicating greater comorbidity burden.⁷ From a previous study, the cumulative mortality rate attributable to comorbid disease during a 10-year follow-up by CCI scores were: 0, 8%; 1, 25%; 2, 48%; \geq 3, 59%.

Data Analysis

- The distributions of sample characteristics at baseline were summarized as means and standard deviations (SDs) for continuous variables and numbers and percentages for categorical variables.
- Numbers and percentages of respondents with a GAD positive screen and by GAD symptom severity were summarized for the overall sample and by gender and age groups, both before and during COVID.
 - McNemar's tests were used to evaluate the changes in GAD positive screen distribution from before to during COVID. *P*-values <0.05, 2-tailed were considered to be statistically significant.

Study Sample

- Demographic characteristics of the study sample are presented in Table 1.
- Among the 1,000 respondents who completed both the NHWS and COVID Pulse Survey, 832 adults had consistent age and were included in the analysis.
- The average age of the respondents from the study sample was 47.9 ± 17.3 years. Most participants were aged 18-34 years (29.2%, n=243), followed by participants aged ≥65 (21.3%, n=177), 55-64 (18.9%, n=157), and 35-44 (17.1%, n=142) years.
- Overall, 47.2% (n=393) of the respondents were male, 11.7% (n=97) were African American 61.4% (n=511) were White, and 12.7% (n=106) were Hispanic.
- Overall, 57.0% (n=474) were married or living with a partner, 58.8% (342) had a university degree or higher education, and 62.7% (n=522) of the respondents were employed.
- More than half of the respondents had commercial health insurance (59.6%, n=496), and 9.5% (n=79) of the respondents had no health insurance.
- The average CCI score was 0.5 ± 1.2.

GAD Positive Screens Before and During COVID

- Data on GAD positive screens are shown in Figure 1
- Pre-COVID, 9.7% (n=81) of participants screened positive for GAD. The prevalence of GAD positive screen more than doubled during COVID (24.3%, n=202).
- The prevalence of GAD positive screen at least doubled during COVID across all age groups and among both males and females.
- Females had a higher positive screen prevalence than males, both before (12.1% vs. 7.1%) and during (28.0% vs. 20.1%) COVID.
- Females had a greater increase in positive screen prevalence than males during COVID (increase by 16% vs. 13%).
- Participants aged 18-34 and 35-44 years had a higher positive screen prevalence than older adults (≥45 years), both before (16.9% and 16.2% vs. ≤6.2% for older adults) and during (35.0% and 28.9% vs. ≤24.8% for older adults) COVID.
 - Participants aged 18-34 and 45-54 years had a greater increase in positive screen prevalence than the other age groups during COVID (increase by 18% and 19% vs. ≤13% for other ages groups).

GAD Symptom Severity Before and During COVID

- Data on GAD symptom severity are shown in Figure 2.
- The shift toward more severe GAD symptoms during COVID occurred across all age groups and among both males and females.
- Pre-COVID, 7.3% (n=61) and 2.4% (n=20) of participants reported moderate and severe GAD symptoms, respectively. During COVID, those reporting moderate GAD symptoms almost doubled (13.7%, n=114), and severe GAD symptoms were reported by 10.6% (n=88), >4 times the pre-COVID prevalence.
- Females had higher proportions of moderate and severe GAD symptoms than males, both before (moderate: 9.1% vs. 5.3%; severe: 3.0% vs. 1.8%) and during (moderate: 14.4% vs. 13.0%; severe: 13.7% vs. 7.1%) COVID.
 - There was a larger increase in moderate GAD symptoms among males than females (increase by 7.6% vs. 5.2%). However, a greater increase in severe GAD symptoms occurred among females than males (increase by 10.7% vs. 5.3%).
- Participants in the 18-34 and the 35-44 age groups had higher proportions of moderate and severe GAD symptoms than older adults (≥45 years), both before (moderate: 12.3% and 12.7% vs. ≤4.4% for older adults; severe: 4.5% and 3.5% vs. ≤1.8% for older adults) and during (moderate: 19.3% and 14.8 % vs. ≤14.2% for older adults; severe: 15.6% and 14.1% vs. ≤10.6% for older adults) COVID.
 - The largest increase in moderate GAD symptoms occurred among the 18-34 age group (increase by 9.8% vs. ≤8.5% for other ages groups). The largest increase in severe GAD symptoms was observed among the 18-34 age group and the 35-44 age group (increase by 11.1% and 10.6% vs. ≤8.8% for other ages groups).

Results

Table 1. Sample Characteristics at Baseline

	Study Sample
	(N=832)
Age (mean, SD)	47.9, 17.3
Age Category	
18-34	243, 29.2%
35-44	142, 17.1%
45-54	113, 13.6%
55-64	157, 18.9%
≥65	177, 21.3%
Male Sex (n, %)	393, 47.2%
Race/Ethnicity	
African American	97, 11.7%
White	511, 61.4%
Hispanic	106, 12.7%
Other	118, 14.2%
Marital Status (n, %)	
Married/living with partner	474, 57.0%
Single/not living with partner	263, 31.6%
Divorced/separated/widowed	95, 11.4%

	Study Sample (N=832)
Education (n, %)*	
Less than university	342, 41.1%
University or higher	489, 58.8%
Employed (FT/PT/SE) (n, %)	522, 62.7%
Health Insurance Type	
Commercial	496, 59.6%
VA/TRICARE	20, 2.4%
Medicare	161, 19.4%
Medicaid	56, 6.7%
Not sure	20, 2.4%
No insurance	79, 9.5%
CCI (mean, SD)	0.5, 1.2

*One participant declined to answer on education.

Figure 1. Prevalence of Positive Screen for Generalized Anxiety Disorder, Before and During COVID-19, from Overall Sample and by Gender and Age Group

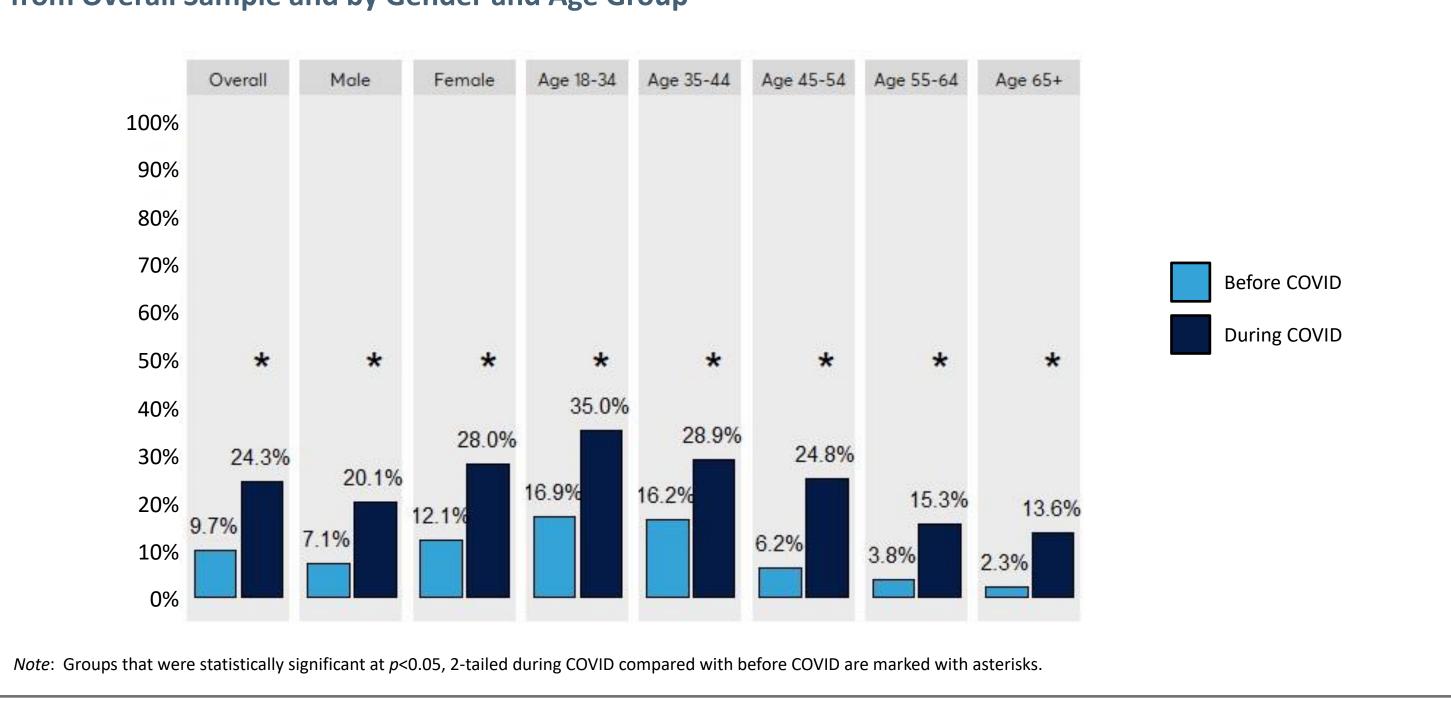
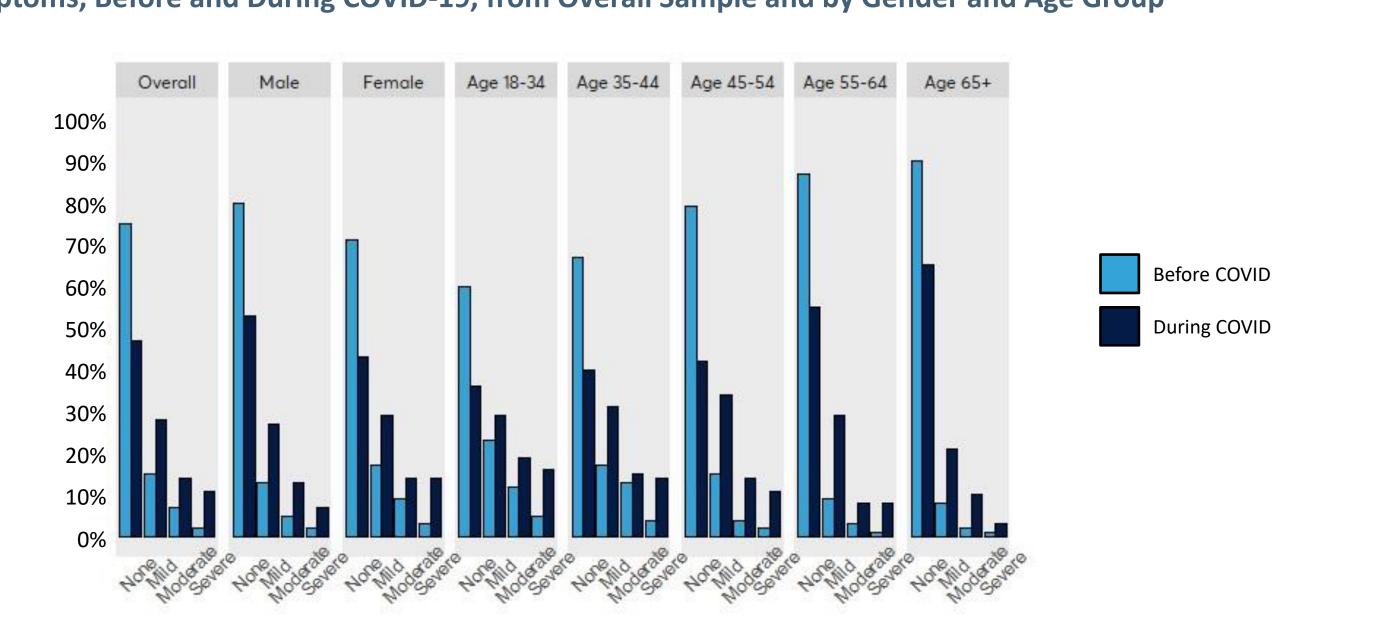


Figure 2. Proportion of Respondents with None, Mild, Moderate, and Severe Generalized Anxiety Disorder Symptoms, Before and During COVID-19, from Overall Sample and by Gender and Age Group



Limitations

- Our estimation of GAD prevalence may be influenced by selection bias as most respondents were recruited online and may not be representative of populations without access to internet.
- Our results only provide evidence on the prevalence of GAD positive screens and symptom severity and their changes during early COVID. Longitudinal assessments after early COVID are needed to understand whether there is a lasting COVID impact on GAD prevalence and severity.

Strengths

- This is the first study to compare the prevalence of GAD symptom severity and positive screen before and during COVID in the US.
- We used the GAD-7, which has demonstrated good validity and reliability in the general population,^{7,8} to

- screen for GAD and to assess symptom severity.
- We implemented the two surveys with closing dates to minimize the impact of factors other than COVID on GAD-7 screening.

Conclusions

- In the US, the percentage of adults (≥18 years) who had a positive screen for GAD increased to 24.3% during COVID and more than doubled from pre-COVID.
- The distribution of GAD symptoms shifted towards greater severity with 13.7% moderate (from 7.3%) and 10.6% severe (from 2.4%) GAD symptoms during COVID.
- The increase in GAD positive screen and shift in GAD symptom severity distribution occurred across all age and gender groups. Female and younger (aged 18-44 years) adults had a higher GAD positive screen prevalence before and during COVID, and they experienced greater increases in severe GAD symptoms during COVID.
- The substantial increase in anxiety symptom severity during COVID, and the disparity of GAD by age and gender, both before and during COVID, underscores the greater need for routine anxiety screening, especially among the younger adults.

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