Somatic Symptoms and Associated Psychological Perceptions among Patients with and without Post-Acute Sequalae of SARS-CoV-2 and Controls

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Background

- Post-acute sequalae of SARS-CoV-2 (PASC) affects approximately 10-30% of COVID-19 patients.[1]
- Symptoms associated with PASC vary in range, intensity, and course, and can lead to significant physical and emotional disability.
- Previous research has investigated the relationship between somatic symptoms and psychological distress.[2]
- Improved understanding of the psychological experience of PASC patients can inform better overall clinical care of COVID-19 illness.

Aim

- To compare somatic symptomatology and related psychological distress between patients with a history of COVID-19 (with and without PASC) and a control group

Methods

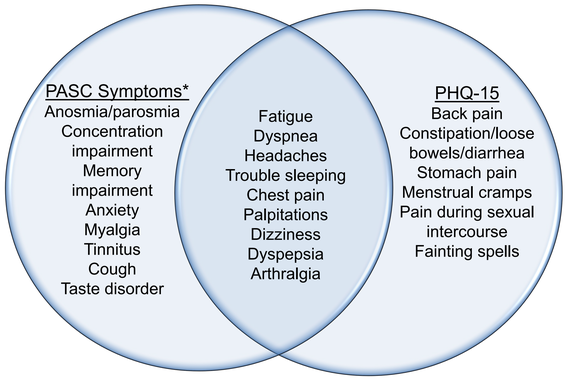
- Study: Sub-analysis of a NIAID clinical longitudinal study of COVID-19 (NCT04411147)
- Sample: Convenience sample of 128 patients and 155 controls who completed online self-report surveys on enrollment (at least 6 weeks after acute infection) between Mar.2021-Jan.2023
- Measures/Clinical Information:
  - **Patient Health Questionnaire-15 (PHQ-15):** 15-item survey of somatic symptoms (0-30)
  - **Somatic Symptom Disorder-B Criteria Scale (SSD-12):** 12-item survey of psychological distress regarding somatic symptoms (0-48)
  - **General Anxiety Disorder-2 (GAD-2) & Patient Health Questionnaire-2 (PHQ-2):** ultra brief 2-item surveys of anxiety and depression symptoms (0-6)
  - **Alcohol Screening Questionnaire (AUDIT):** 10-item survey of alcohol consumption (0-40)
  - **PASC:** defined as any symptom or medical condition that 1) developed or worsened after the onset of SARS-CoV-2 infection 2) was still present at the baseline protocol visit 3) cannot be attributed to another cause
- Data Analysis:
  - Multivariate linear regression controlling for age, sex, anxiety, depression, alcohol consumption, BMI was used to compare PHQ-15 and SSD-12 total scores between groups.

Results

Table 1: Participant Characteristics

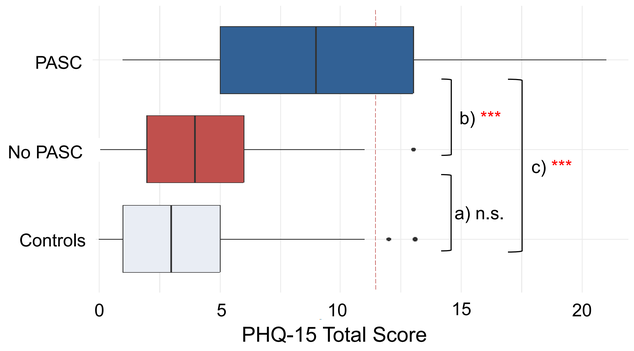
	PASC (N=68)	No PASC (N=60)	Controls (N=155)
Mean age years (*SD*)	48.3 *(9.9)*	43.6 *(12.7)*	45.7 *(14.4)*
Range	19-63	19-72	19-76
Female % *(n)*	72.1 *(49)*	71.7 *(43)*	65.8 *(102)*
Race % *(n)*			
White	79.4 *(54)*	75.0 *(45)*	*65.2 (101)*
Black/AA	7.4 *(5)*	10.0 *(6)*	*12.9 (20)*
Asian	7.4 *(5)*	13.3 *(8)*	14.2 *(22)*
Other*	5.8 *(4)*	1.7 *(1)*	7.7 *(12)*
Hispanic or Latino % *(n)*	11.8 *(8)*	5.0 *(3)*	12.3 *(19)*
Mean Scores of Measures†			
PHQ-2 *(SD)*	1.1 *(1.7)*	0.5 *(1.2)*	0.2 *(0.7)*
GAD-2 *(SD)*	1.7 *(2.1)*	0.9 *(1.5)*	0.6 *(0.9)*
AUDIT *(SD)*	4.0 *(3.3)*	4.5 *(3.6)*	3.4 *(3.4)*
BMI *(SD)*	29.0 *(6.1)*	27.5 *(4.3)*	26.7 *(6.0)*

**Includes Hawaiian/Pacific Islander, Native Indian/Alaska Native, Mixed Raced, and Unknown. †Clinically significant cutoff scores: PHQ-2: ≥ 3; GAD-2: ≥ 3; BMI: ≥ 30; AUDIT: ≥ 15*



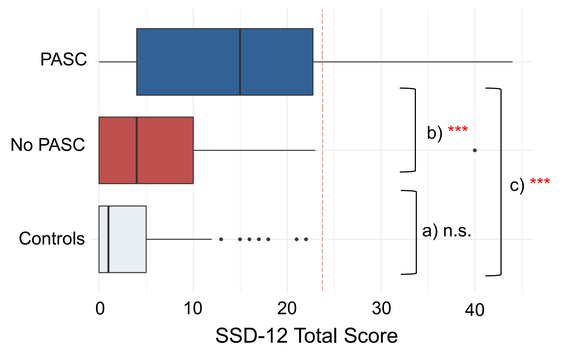
**PASC symptoms endorsed ≥ 5% of patient cohort*

Figure 1: Comparison of PASC Symptoms and PHQ-15 Somatic Symptoms Measures



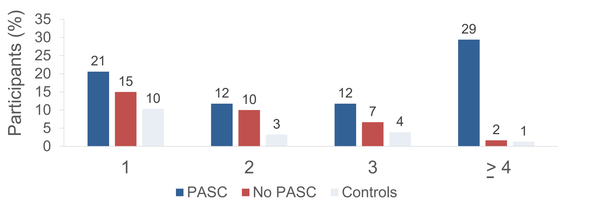
****: p < 0.001*
---: Somatic symptom disorder cutoff ≥ 12

Figure 2: Comparison of PHQ-15 Total Scores



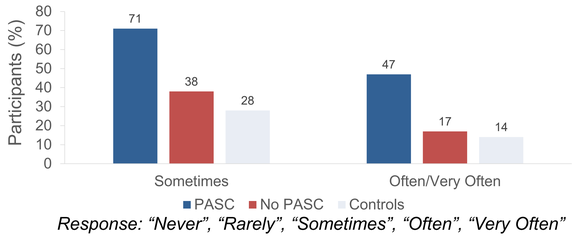
****: p < 0.001*
---: Somatic symptom disorder cutoff ≥ 23

Figure 3: Comparison of SSD-12 Total Scores



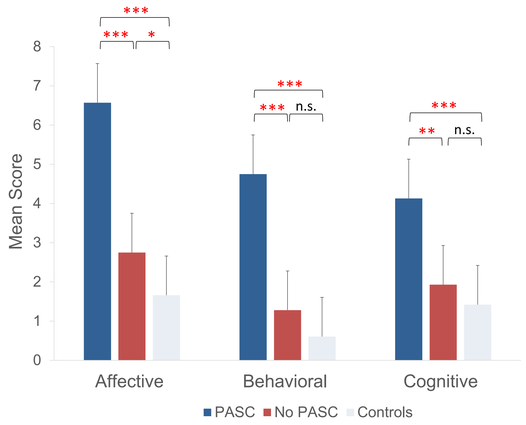
Response: "Not bothered at all", "Bothered a little", "Bothered a lot"

Figure 4: Number of PHQ-15 Symptoms Endorsed as "Bothered A Lot"



Response: "Never", "Rarely", "Sometimes", "Often", "Very Often"

Figure 5: SSD-12 Item Severity



****: p < 0.001 **: p < 0.01 *: p < 0.05*
Cognitive (items 1, 4, 7, 10); Affective (items 2, 5, 8, 12); Behavioral (items 3, 6, 9 ,11)

Figure 6: SSD-12 Sub-Criteria

Discussion

- PASC symptoms overlap with PHQ-15 items, but there are notable exceptions (e.g. anosmia, cognitive symptoms).
- Patients with PASC experienced significantly more somatic symptoms (PHQ-15) than patients without PASC and controls (Fig 2).
- Psychological distress about illness experiences (SSD-12) was significantly higher in patients with PASC compared to patients without PASC and controls (Fig 3).
- Affective aspects of psychological distress regarding somatic symptoms in patients with PASC were most prominent (Fig 6).

Limitations

- Pre-pandemic somatic symptom and related psychological data for participants were unavailable.
- The study used a convenience sample and may not represent those with more severe COVID infections.

Conclusions

- The PHQ-15 and SSD-12 (traditionally used as screening tools for diagnosing SSDs) provide additional clinical information about the COVID-19 illness experience in patients with persistent symptoms and those who recovered from their infection.
- Ongoing research may further clarify if there is a relationship between SSDs and long COVID syndromes, despite overlap between PHQ-15 and PASC symptoms.
- Future analyses could examine the relationship of psychological distress associated with somatic symptoms and health-related quality of life measures in patients with PASC.

References

1. Munipalli, B., Seim, L., Dawson, N. L., Knight, D., & Dabrh, A. M. A. (2022). Post-acute sequelae of COVID-19 (PASC): a meta-narrative review of pathophysiology, prevalence, and management. *SN Comprehensive Clinical Medicine*, *4*(1), 90.
2. Simon, G., Gater, R., Kisely, S., & Piccinelli, M. (1996). Somatic symptoms of distress: an international primary care study. *Psychosomatic Medicine*, *58*(5), 481-488.

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