

[news-medical.net](https://www.news-medical.net)

# Research uncovers new insights into post-COVID-19 syndrome (PCS) phenotypes and impact on quality of life

*By Pooja Toshniwal Paharia Jul 26 2023 Reviewed by Lily Ramsey, LLM*

7–8 minutes

---

In a recent study published in the [eClinical Medicine](#) Journal, researchers assessed post-coronavirus disease 2019 (COVID-19) syndrome (PCS) prevalence and severity by clinical phenotype and quality of life (QoL).



*Study: [Clinical phenotypes and quality of life to define post-COVID-19 syndrome: a cluster analysis of the multinational, prospective ORCHESTRA cohort](#). Image*

*Credit: PanchenkoVladimir/Shutterstock.com*

## Background

PCS, or post-acute COVID-19 sequelae, is a prevalent condition affecting individuals worldwide. The World Health Organization (WHO) criteria for PCS include individuals with a history of probable or confirmed severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection within three months of acute infection with symptoms lasting  $\geq 2.0$  months unexplained by alternative diagnoses.

Common PCS symptoms include breathlessness, fatigue, and cognitive decline, which may be either new or persistent post-COVID-19 recovery, fluctuating or relapsing with time. Studies have reported that COVID-19 convalescents with persistent symptoms in the post-acute phase of infection experience lowered QoL.

Symptom persistence may be due to immunological hyperactivity, inflammation, coagulative alterations, the direct effects of SARS-CoV-2, and its interactions with the host microbiota.

The lack of precise definitions of PCS's clinical characteristics, risk factors, and severity adversely impacts the development of novel prophylactic and therapeutic drugs.

ORCHESTRA, an H2020 project involving 37 partners from 15 nations, aims to produce robust COVID-19 prevention and treatment evidence.

## About the study

In the present study, researchers performed a cluster analysis of the international, prospective cohort ORCHESTRA study to assess PCS prevalence and severity by clinical phenotype and QoL using the World Health Organisation (WHO) criteria and symptom clusters.

They also investigated factors related to PCS by comorbidities, clinical phenotype, severity and management of acute COVID-19, SARS-CoV-2 vaccinations, SARS-CoV-2 variants of concern (VoC), and anti-SARS-CoV-2 spike (S) protein antibody (Ab) titers.



Breath Biopsy®: The Complete Guide eBook Intro to Breath Biopsy, including biomarkers, technology, applications and case studies. [Download the latest edition](#)

The study, conducted between February 2020 and June 2022 across five nations (France, Spain, the Netherlands, Argentina, and Italy), enrolled COVID-19 inpatients and outpatients aged >14 years with laboratory-confirmed COVID-19.

The participants were followed at three, six, and 12 months from COVID-19 diagnosis, with evaluations of biochemical and clinical factors, antibody titers, causative VOCs, and mental and physical QoL.

The study outcome was identifying protective and risk factors for post-COVID-19 syndrome by clinical phenotypes, settings, disease severity, treatments, and SARS-CoV-2 vaccinations. QoL was assessed using the 36-item short form (SF-36) survey and machine learning-based principal component analysis to identify

COVID-19 symptom clusters.

Generalized linear modeling was performed to analyze the influence of post-COVID-19 syndrome on quality of life and related preventive and risk factors. In addition, the team reviewed the literature to identify existing studies on the clinical characterization of PCS and its impact on quality of life (QoL).

[Nasopharyngeal swab](#) specimens were obtained to identify VoCs. Individuals with no symptoms persisting beyond 90 days of acute infection were included as controls.

## Results

Among 1,796 individuals enrolled, 57% (n=1016) were male, 43% (n=774) were aged 41 to 60 years, and 57% (n=1,030) suffered from  $\geq 1.0$  symptoms at 12 months.

clinical PCS phenotypes were identified: chronic fatigue-like syndrome (CF: memory loss, fatigue, and headaches, 42%, 757 individuals); respiratory syndrome (RE: dyspnea and cough, 23%, 502 individuals); neurosensorial syndrome (NS: altered smell and taste, 11%, 197 individuals); and chronic pain syndrome (CPs: myalgia and arthralgia, 22%, 399 individuals).

Female sex increased CFs, NSs, and CPs risks; neurological-type symptoms at COVID-19 diagnosis of CFs, REs, and NSs; chronic pulmonary disorders of REs; digestive symptoms at COVID-19 diagnosis of CFs; and oxygen treatment of REs and CFs; Early COVID-19 treatment with monoclonal antibodies (all phenotypes), COVID-19 vaccinations (CPs), and corticosteroid treatment for mild and severe cases (NS) showed a lower likelihood of being linked to PCS.

The largest decrease in quality of life was observed in CPs and REs (44 and 44 versus 57 among control controls, respectively).

Gastrointestinal symptoms and kidney-related complications during acute COVID-19 and the female sex showed a lower likelihood of increased severe PCR risk (quality of life below 50.0). Early therapy using monoclonal antibodies and vaccination lowered PCS severity risks.

In the literature search, PCS prevalence varied greatly among published studies due to a lack of precise descriptions and generic definitions.

The most commonly documented symptom was fatigue, with prevalence ranging between 10% and 53%, followed by respiratory disorders (8.0% to 37%) and cognitive impairments (including thinking difficulties, attention difficulties, brain fog, confusion, and memory loss; 6.0% to 35%).

Most studies showed lower quality of life among PCS patients than among the general public, although the studies were highly heterogeneous concerning assessment times and test types. Few studies reported that PCS symptomatology could be grouped into symptom clusters; however, cluster-wise preventive measures and risk factor determination are yet to be performed.

## **Conclusions**

Overall, the study findings provide new evidence on PCS classification by clinical phenotypes, revealing different impacts on QoL and pathogenic mechanisms.

The study identified factors associated with each clinical phenotype and severe PCS, aiding in the design of pathogenesis

studies and selecting high-risk patients for therapeutic and management clinical trials.

The analysis findings underpin the early determination of individuals at an increased risk of developing PCS and drive the implementation of suitable follow-up treatment protocols. They also support vaccinations for preventing CFs in the post-acute phase of COVID-19 and could inform public awareness campaigns and policy.

Journal reference:

- Elisa Gentilotti et al., (2023) Clinical phenotypes and quality of life to define post-COVID-19 syndrome: a cluster analysis of the multinational, prospective ORCHESTRA cohort, *eClinicalMedicine*. doi: 10.16/j.eclinm.2023.102107. [https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370\(23\)00284-5/fulltext#%20](https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(23)00284-5/fulltext#%20)