



# Editorial

## Impact of the Post COVID-19 Condition in Peru. An Overview

### Impacto de la Condición Post COVID-19 en Perú. Una perspectiva general

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COVID-19 is a disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). As of April 2024, this disease has affected the world with more than 775 million confirmed cases and has caused more than 7 million deaths, according to the World Health Organization (WHO)<sup>(1)</sup>. Since the beginning of the COVID-19 pandemic (2020), our country has been one of the most affected in all of Latin America, with more than 4.5 million confirmed cases and more than 220,000 deaths<sup>(2)</sup>.

Persistent COVID-19, post-COVID-19 syndrome, or post-acute sequelae of SARS-CoV-2 infection<sup>(3,4)</sup> is a prolonged and complex condition that affects between 10% and 20% of people who have experienced COVID-19 disease<sup>(5)</sup>. Post COVID-19 Condition (PCC) is the official name designated by WHO and is characterized by the presence of various medium- and long-term effects after recovery from the initial illness. Common clinical manifestations, according to the U.S. Centers for Disease Control and Prevention (CDC), include fatigue, shortness of breath, headaches, muscle aches, joint pains, cognitive problems, depression, anxiety, and others<sup>(6)</sup> (Figure 1). In a systematic review and meta-analysis study conducted by Mudgal SK et al., 46 studies involving a total of 17,976 COVID-19 survivors were analyzed. The main findings revealed that the most common symptoms reported were: dyspnea on exertion (34%), difficulty concentrating (32%), fatigue (31%), frailty (31%), and arthromyalgia (28%)<sup>(7)</sup>.

For the diagnosis of PCC, we must rely on the symptoms and medical history of each patient, usually diagnosed 3 months after the onset of COVID-19 disease<sup>(8)</sup>. For a person to develop PCC, he or she must have a history of COVID-19 infection; additionally, these people present comorbidities such as asthma, obesity, and smoking or vaping habits. Furthermore, it has been observed that it affects more women and people who, in general, had poor health and/or mental health conditions prior to contracting COVID-19<sup>(4,8)</sup>.

In our country, PCC is emerging as a significant challenge for the healthcare system and society. About 300,000 people are experiencing prolonged symptoms that affect their ability to work, study, and lead a normal life<sup>(9)</sup>. Access to medical care to treat the symptoms of PCC can be limited, especially in remote or low-resource communities. Therefore, it is vitally important that we pause to consider the prolonged impact that COVID-19 disease is having on the physical and mental health of those affected.

An advanced search in PubMed, Scopus, Virtual Health Library, Scielo, and Google Scholar using the terms "Post-Acute COVID-19 Syndrome", "Long COVID", "Persistent COVID-19", and "Peru" identified four studies, including a total of 421 patients diagnosed with this condition. These studies revealed the frequent presence of respiratory, musculoskeletal, neurological, and psychological sequelae among patients. Table 1 details the characteristics of the studies<sup>(10-13)</sup>.

The impact of PCC is much broader than physical impairment. Many patients are also dealing with the emotional and psychological stress of living with a chronic and debilitating disease<sup>(14)</sup>. Uncertainty about the future, concern about health, and

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#### CONFLICT OF INTEREST

The authors deny any conflict of interest.

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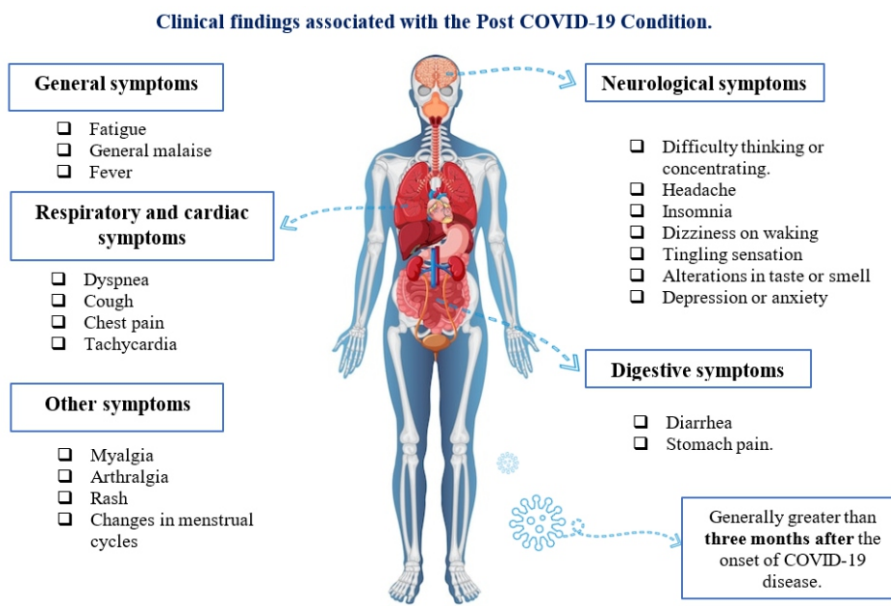
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difficulties adjusting to a new reality are additional challenges faced by those struggling with this syndrome.

To address this developing public health crisis, urgent action is needed. First, it is crucial to increase public awareness of PCC and its effects. Education about symptoms, diagnosis, and treatment is critical to ensuring that those suffering from it receive appropriate care. According to the CDC, to prevent PCC, COVID-19 transmission should be avoided, as should vaccination before or after COVID-19 infection, as immunization represents the most effective public health strategy against the SARS-CoV-2 pandemic<sup>(15)</sup>. To cope with PCC, one should keep regular medical appointments, ensure adequate rest, engage in regular physical activity, receive psychological support, and adopt a healthy diet (Figure 2)<sup>(8)</sup>.

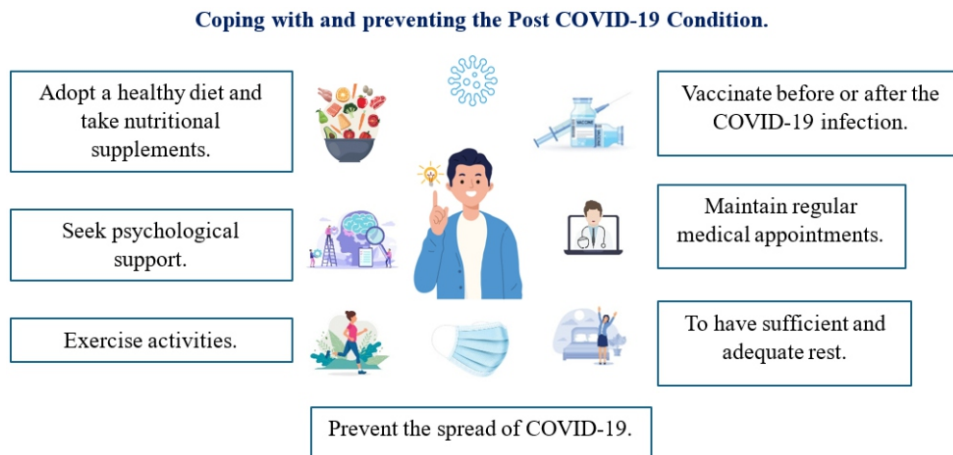
Currently, more research is needed to better understand this syndrome and develop effective treatments. Long-term epidemiological studies are essential to identify the underlying causes and best management practices. However, there is little evidence in our country on the impact on these patients (Table 1). Also, greater investment in mental health resources is needed to support those struggling with the stress and anxiety associated with PCC<sup>(14)</sup>.

It is crucial that the government, health institutions and all of society in Peru work together to address the impact of PCC. We need to recognize the seriousness of this condition and take concrete actions to support those facing its devastating effects.



**Figure 1.**

Clinical findings associated with the Post COVID-19 Condition, according to the Centers for Disease Control and Prevention<sup>(8)</sup>



**Figure 2.**

Coping with and preventing the Post COVID-19 Condition<sup>(8)</sup>

**Table 1. Studies developed in Peru on the Post COVID-19 Condition**

Author and year	Type of study	Region	Sex	Age (years)	Population	Sample	Symptoms of Long COVID	Long COVID signs	Pathological antecedents	Date of data collection	Place where the study was carried out	Method of data collection	Time after COVID-19 infection
Mauricio Trelles P, et al. (10) (2022)	Cross-sectional	Junin	M (30) F (58)	18 -35: 19 36-59: 51 60 and over: 18	General Population	88	Fatigue (85), shortness of breath (82), cough (65), joint pain (57), chest pain (78), rapid heartbeat or palpitations (41), loss of smell or taste (23), and others (tinnitus, dizziness, depression) (12).	Fever (32), conjunctivitis (49), rash (15), redness of hands and feet (8), red and split lips (10), and others (paleness, excessive sweating) (7).	Diabetes (31), cardiovascular disease (25), thromboembolic disease (18), acute respiratory distress syndrome (10), and others (obesity and malnutrition) (16).	September 2021 and January 2022. Second and third pandemic waves.	Hospital Regional Docente Clínico Quirúrgico Daniel Alcides Carrión de Huancayo.	Medical records	Follow-up of 1 year and 3 months (January 2020 to April 2021).
Goicochea Rios E, et al. (11) (2022)	Longitudinal descriptive	La Libertad	NS	21-30: 81 31-45: 12 46 and over: 2	General Population	95	Dysphagia (6), dyspnea (49), dysphagia and dysphonia (2), odynophagia (1), headache (8), anosmia/ageusia (8), anosmia (3), joint pain (3), muscular pain (3), dorsalgia (33), muscular hypotrophy (2), anguish, depression (1), hair loss (2), digestive symptoms (5), and pruritus (1).		Not reported	Second and fourth quarters of 2021. Second pandemic wave.	Hospital Essalud Florencia De Mora	Clinical histories and epidemiological records.	21 to 30 days: 85.3% of 31 to 45 days: 12.6% of More than 46 days: 2.1% of patients.
Dávila Morán RC, et al. (12) (2021)	Cross-sectional	Lima	M (47) F (154)	NS	Metal-mechanic industry workers.	201	Among the signs and symptoms evaluated were fatigue (42.68%), anxiety (35.26%), and depression (15.21%).		Body mass index > 26 Kg/m <sup>2</sup>	Third quarter 2020 and first quarter 2021. First and second pandemic waves.	46 metal-mechanical industries in the city of Lima.	Occupational medical evaluations.	Persistent symptoms for more than 4 weeks.
Tarazona-Fernández A, et al. (13) (2020)	Letter to the Editor	Lima	M (10) F (27)	Mean: 43 Range: 27 to 62	General Population	37	Posterior chest pain (21), headache (13), anterior chest pain (12), myalgia (3), arthralgia (4), cough (12), dyspnea on exertion (11), dyspnea on medium exertion (10), dyspnea on small exertion (2), cough (5), sore throat (4), hyporexia (5), diarrhea (3), anxiety (2), depression (1), asthma (6), fever (3), weight loss (3), and ocular pruritus (1).		Not reported	July 2020. First pandemic wave.	General hospital in Lima.	Medical records and patient evaluation.	Average symptom onset time of 40 days. Persistent symptoms for more than 4 weeks.

⚠️ A search for articles was conducted in PubMed, Scopus, the Virtual Health Library, Scielo, and Google Scholar using the terms "Post COVID-19 Condition"; "Long COVID"; "Persistent COVID" and Peru.  
 ¥ The sample consists of patients diagnosed with Post COVID-19 Condition; M: Male; F: Female; NS: Not specified.

**BIBLIOGRAPHIC REFERENCES**

- COVID-19 Cases | WHO COVID-19 Dashboard. Available online: <https://data.who.int/dashboards/covid19/cases> (accessed on 28 April 2024)
- Covid 19 en el Perú - Ministerio del Salud. Available online: [https://covid19.minsa.gob.pe/sala\\_situacional.asp](https://covid19.minsa.gob.pe/sala_situacional.asp) (accessed on 6 April 2024)
- Thaweethai T, Jolley SE, Karlson EW, Levitan EB, Levy B, McComsey GA, et al. Development of a Definition of Postacute Sequelae of SARS-CoV-2 Infection. *JAMA*. 2023;329(22):1934-46. doi:10.1001/jama.2023.8823.
- Rodríguez-Morales AJ, Lopez-Echeverri MC, Perez-Raga MF, Quintero-Romero V, Valencia-Gallego V, Galindo-Herrera N, et al. The global challenges of the long COVID-19 in adults and children. *Travel Med Infect Dis*. 2023;54:102606. doi:10.1016/j.tmaid.2023.102606.
- Coronavirus disease (COVID-19): Post COVID-19 condition. Available online: [https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-\(covid-19\)-post-covid-19-condition](https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-(covid-19)-post-covid-19-condition) (accessed on 28 April 2024).
- CDC. Centers for Disease Control and Prevention. Available online: <https://www.cdc.gov/coronavirus/2019-ncov/long-term-effects/index.html> (accessed on 28 April 2024).
- Mudgal SK, Gaur R, Rulaniya S, T L, Agarwal R, Kumar S, et al. Pooled Prevalence of Long COVID-19 Symptoms at 12 Months and Above Follow-Up Period: A Systematic Review and Meta-Analysis. *Cureus*. 2023;15(3):e36325. doi:10.7759/cureus.36325.
- Post COVID-19 Condition - PAHO/WHO | Pan American Health Organization. Available online: <https://www.paho.org/en/topics/coronavirus-infections/coronavirus-disease-covid-19-pandemic/post-covid-19-condition> (accessed on 28 April 2024).
- Blog USIL. 300 mil peruanos podrían padecer de covid persistente. Available online: <https://blogs.usil.edu.pe/novedades/300-mil-peruanos-podrian-padecer-de-covid-persistente> (accessed on 25 April 2024)
- Trelles PBM, Cadillo DNG. Caracterización clínica epidemiológica de las secuelas Covid-19 en adultos recuperados de un hospital de Huancayo. *Rev Peru Cienc Salud*. 2022;4(1):9-15. doi:10.37711/rpcs.2022.4.1.364.
- Rios E del SG, Soldán OMCP, Goicochea NIG, Villacorta JV. Secuelas post infección por COVID 19 en pacientes del Hospital I Florencia de Mora. Trujillo - Perú: Post-infection sequelae by COVID 19 in patients at Hospital I Florencia de Mora. Trujillo, Peru. *Rev. Fac. Med. Humana* 2022, 22. doi:10.25176/RFMH.v22i4.5045.
- Morán RCD, Corzo E del CA, Dávila LV, Rios HP, Nizama JLR, Paredes CEG, et al. Reincorporación de trabajadores recuperados COVID-19 y COVID persistente en la industria metalmeccánica en Lima Perú 2021. *Bol Malariol Salud Ambient*. 2021;61(3):486-95.
- Tarazona-Fernández A, Rauch-Sánchez E, Herrera-Alania O, Galán-Rodas E, Tarazona-Fernández A, Rauch-Sánchez E, et al. ¿Enfermedad prolongada o secuela pos-COVID-19? *Acta Médica Peru*. 2020;37(4):565-70. doi:10.35663/amp.2020.374.18669.
- Montserrat-Capdevila J, Fornells-Barberà I, Roso-Llorach A, Olivares-Sanzo P, Romero-Gracia A, Ichart JX. Impacto de la COVID-19 en la salud mental de la población: estudio en atención primaria. *Aten Primaria*. 2024;56(3). doi:10.1016/j.aprim.2023.102813.
- Rodríguez-Morales AJ, León-Figueroa DA, Romani L, McHugh TD, Leblebicioglu H. Vaccination of children against COVID-19: the experience in Latin America. *Ann Clin Microbiol Antimicrob*. 2022;21(1):14. doi:10.1186/s12941-022-00505-7.