OPEN ACCESS

Scholars International Journal of Obstetrics and Gynecology

Abbreviated Key Title: Sch Int J Obstet Gynec
ISSN 2616-8235 (Print) |ISSN 2617-3492 (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: https://saudijournals.com

Original Research Article

Pregnancy in a Post-Pandemic World: Long Covid and Post-Covid in Pregnancy

Najimudeen M[1*], Myo Hla Myint[1], Winson S.M[2], Thavamani R.M[1], Anisah J[1], Myint Myint Maw[1]

[1]International Medical School, Management and Science University Malaysia
[2]Gladstone Hospital, Queensland Health, Australia

DOI: https://doi.org/10.36348/sijog.2025.v08i02.005 | **Received:** 14.01.2025 | **Accepted:** 19.02.2025 | **Published:** 22.02.2025

***Corresponding author:** Najimudeen M
International Medical School, Management and Science University Malaysia

Abstract

Long COVID or POST-COVID is continuation or development of new symptoms after three months of infection. Long COVID (also called post-acute sequelae of SARS-CoV-2 infection, or PASC) refers to a range of symptoms that persist for weeks, months, or even longer after the acute phase of COVID-19 infection has resolved. Long COVID can affect many organs. More than 200 symptoms have been identified with impacts on multiple organ systems. At least 65 million individuals worldwide are estimated to have long COVID, with cases increasing daily. Long COVID-19 in pregnant women include a wide spectrum with fatigue, cognitive dysfunction, respiratory symptoms and psychological disturbances. There are adverse maternal and foetal complications. Two doses of vaccination can substantially reduce post COVID problems.

Keywords: Post COVID, Long COVID, COVID 19 infection, Vaccination.

INTRODUCTION

The World Health Organization (WHO) defines Long COVID, also known as Post-COVID Conditions, as "the continuation or development of new symptoms 3 months after the initial SARS-CoV-2 infection, with these symptoms lasting for at least 2 months with no other explanation.". 'Long COVID' is commonly used to describe signs and symptoms that continue or develop after acute COVID-19. It includes both ongoing symptomatic COVID-19 (from 4 to 12 weeks) and post-COVID-19 syndrome (12 weeks or more) [1].

Since the outbreak of COVID-19 from January 2020 to June 2022, the world health organisation has recorded 536 million cases and 6.3 million deaths [2].

Long COVID can affect many organs. More than 200 symptoms have been identified with impacts on multiple organ systems. At least 65 million individuals worldwide are estimated to have long COVID, with cases increasing daily [3].

Depend on the period involved, the clinical case definitions to identify and diagnose the long-term effects of COVID-19 are as follows: [4], (a) Acute COVID-19 Signs and symptoms of COVID-19 for up to 4 weeks. (b)Ongoing symptomatic COVID-19 is signs and symptoms of COVID-19 from 4 weeks up to 12 weeks. (c) Post-COVID-19 syndrome Signs and symptoms that develop during or after an infection consistent with COVID-19, continue for more than 12 weeks and are not explained by an alternative diagnosis.

MATERIALS AND METHODS

This is a review study of literature on Pregnancy in a post-pandemic world: Long COVID and post-COVID in pregnancy.

DISCUSSION

The UK National Institute for Health and Care Excellence (NICE) defines post-COVID-19 condition (PCC) as 'Signs and symptoms that develop during or after an infection consistent with COVID-19, continue for more than 12 weeks and are not explained by an alternative diagnosis [5].

The PCCS involves many organs. There can be as much as 200 symptoms. Therefore, it can be easily mistaken for other common conditions.

Psychological symptoms, including depression and anxiety are noted in many patients [6].

The Centres for Disease Control and Prevention (CDC) describes that Long COVID includes a wide range of ongoing health problems that can last weeks, months, or years. The condition might appear to be an extension of the original COVID symptoms, or they may recur after the initial illness subsided, or they may be new symptoms that weren't present during COVID. They can affect any part of the body, and serious cases may affect multiple body systems, including the heart, lungs, kidneys, skin, and brain.

In one study the symptoms are :fatigue/weakness (28%, 95% CI: 18-39), dyspnoea (18%, 95% CI: 13-24), arthromyalgia (26%, 95% CI: 8-44), depression (23%, 95% CI: 12-34), anxiety (22%, 95% CI: 15-29), memory loss (19%, 95% CI: 7-31), concentration difficulties (18%, 95% CI: 2-35), and insomnia (12%, 95% CI: 7-17) were the most prevalent symptoms at one-year follow-up. COVID-19 survivors still experience residual symptoms involving various body systems one year later [7].

System-clustered symptoms of post-COVID-19 conditions 3 months after the onset of acute disease (n = 140). Neurological (headache, attention deficit, insomnia, anosmia, ageusia-dysgeusia) 84 (60%). Cutaneous (skin alterations, persistent hair loss, alopecia) 77 (55%). Psycho-emotional (anxiety, depression, PTSD symptoms) 45 (32%). Cardiovascular (dyspnoea, dizziness) 31 (22%). Respiratory (cough, dyspnoea, thoracic pain) 30 (21%). Musculoskeletal (myalgia, arthralgia) 19 (14%). Digestive (weight loss, appetite loss, diarrhoea) 14 (10%) [8].

People with Long COVID can have a wide range of symptoms that can last weeks, months, or even years after infection. Sometimes the symptoms can even go away and come back again. For some people, Long COVID can last weeks, months, or years after COVID-19 illness and can sometimes result in disability.

Long COVID and Post-COVID in Pregnancy

Nearly one in 10 people who get COVID while pregnant will go on to develop long COVID.

Long COVID is diagnosed when a pregnant mother experiences the symptoms of COVID-19 for more than 30 days. Unfortunately, the symptoms such as fatigue, shortness of breath and sleep disturbances are common complains in normal pregnant mothers and the mothers infected with COVID-19.

The reported symptoms of Long COVID-19 in pregnant women include a wide spectrum, with fatigue, cognitive dysfunction, respiratory symptoms and psychological disturbances being the most reported. Fatigue was the most frequently observed symptom across studies, with prevalence rates ranging from 54.5% to 76% [9].

The clinical impact of Long COVID-19 on pregnancy extends beyond persistent symptoms. It is associated with adverse maternal and perinatal outcomes, such as preterm birth, low birth weight and an increased need for neonatal intensive care. The presence of long-term respiratory and neurological symptoms, such as thromboembolic events, may complicate daily activities and postpartum care, further stressing the need for targeted follow-up and support for pregnant women with Long COVID-19. This highlights the need for comprehensive care models that integrate physical, mental and perinatal health [10].

The potential impact of Long COVID-19 on maternal and foetal health is a growing area of research. Early findings indicate that pregnant women with severe COVID-19 are more likely to develop long-term respiratory and neurological symptoms, which could interfere with their ability to perform daily activities and care for their newborns [11].

Obesity, pre-existing mental health conditions, and severe acute infection were significantly associated with higher risk of developing Long COVID-19 [12].

Pregnant women with long-term COVID-19 had a significantly higher risk of developing gestational hypertension, gestational diabetes and foetal growth restriction [13].

The most common symptoms of PCC are fatigue, shortness of breath and cognitive impairment. These symptoms are commonly reported by women during normal pregnancy. Women who tested positive for Covid-19 during childbirth but had no symptoms did not have fatigue.

In a study of 409 pregnant women were recruited at acute diagnosis, and 286 were followed up. The mean time to follow-up was 92 weeks (standard deviation ± 28 weeks; median 100 weeks (Interquartile range: 76; 112). A total of 140 patients had at least one post-COVID-19 symptom at least three months after acute infection. Neurological (60%) and cutaneous (55%) manifestations were the most frequent findings [14].

The Clinical examination and routine investigations may be normal.

The risk of developing PCC does not seem to be linked to the severity of the acute COVID-19 infection. The care and the management of a pregnant mother is same as the care of non-pregnant mother. The basic care involves daily pulse oximetry, and optimising general health with sleep, diet, smoking cessation and limiting alcohol and caffeine intake. Medical

management include symptomatic treatments, optimising control of pre-existing medical conditions, antibiotics for secondary infection, referral to other specialties such as mental health services and pulmonary rehabilitation.

Pregnant women who experience long COVID may have specific risks and challenges due to the physiological changes and immune adaptations associated with pregnancy. Here are some key points to consider:

***Increased Risk of Severe Symptoms*:** Pregnant women are at an increased risk of severe disease if they contract COVID-19, especially in the third trimester. Long COVID could prolong this risk and complicate pregnancy.

***Fatigue and Brain Fog*:** Pregnancy itself can lead to fatigue, so combining it with long COVID symptoms like brain fog and severe tiredness can severely impact the quality of life.

Cardiovascular Implications: Pregnancy places additional strain on the heart and circulatory system. Long COVID can potentially worsen these issues, leading to complications like chest pain, heart palpitations, or difficulty breathing.

***Mental Health Impact*:** Pregnancy is often associated with mood changes and mental health challenges, and long COVID symptoms such as depression, anxiety, and sleep disturbances could exacerbate these issues.

Impact on Pregnancy Outcomes: There is limited research on the direct effect of long COVID on pregnancy outcomes (e.g., preterm birth, low birth weight), but some studies suggest there could be an increased risk of adverse outcomes, especially in individuals with severe or prolonged COVID-19 symptoms.

PLACE OF VACCINATION

Can the vaccine reduce the incidence and gravity of PCC? A recent UK study involving over 28,000 patients showed a 12.8% reduction in the odds of developing PCC after one vaccination and a further 8.8% decrease after a second dose. Vaccination may therefore contribute to a reduction in the population health burden of PCC and should be encouraged during pregnancy [15].

People who are not vaccinated against COVID-19 and become infected may have a higher risk of developing Long COVID compared to people who have been vaccinated. Vaccination has already been described as a potential preventive factor for post-COVID-19 symptoms vaccination was shown to be a significant protective factor against developing post-COVID-19 condition [16].

CONCLUSION

Pregnancy in a post-pandemic world: Long COVID and post-COVID in pregnancy is a challenging and growing problems. The symptoms are ambiguous. The diagnosis can be difficult. The impact on the mother can vary. Careful diagnosis and appropriate follow up are important to prevent the complications. Pregnant individuals with long COVID may experience a combination of typical long COVID symptoms (fatigue, brain fog, etc.) along with the additional physical and emotional strains of pregnancy. There are potential risks to both maternal and foetal health, especially in the case of severe or persistent symptoms. Healthcare providers should closely monitor pregnant patients who have had COVID-19, paying special attention to both physical and mental health. Vaccination against COVID-19 remains a critical preventive measure for pregnant individuals to avoid the severe consequences of COVID-19 infection, including long COVID.

REFERENCE

1. *A clinical case definition of post COVID-19 condition by a Delphi consensus, 6 October 2021*. World Health Organisation;2021. https://www.who.int/publications-detail-redirect/WHO-2019-nCoV-Post_COVID-19_condition-Clinical_case_definition-2021.1 [Google Scholar]
2. World health statistics https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports Date: 2022)
3. Davis, H. E., McCorkell, L., Vogel, J. M., & Topol, E. J. (2023). Long COVID: major findings, mechanisms and recommendations. *Nat Rev Microbiol, 21*(6), 408. doi: 10.1038/s41579-023-00896-0
4. Soriano, J. B., Murthy, S., Marshall, J. C., Relan, P., & Diaz, J. V. (2021). WHO clinical case definition working group on post-COVID-19 condition. A clinical case definition of post-COVID-19 condition by a Delphi consensus. *Lancet Infect Dis, 22*, e102–e107. https://doi.org/ 10.1016/S1473-3099(21)00703-9. Epub ahead of print. PMID: 34951953; PMCID: PMC8691845
5. *COVID-19 Rapid Guideline: Managing the Long-Term Effects of COVID-19 [Internet] National Institute for Health and Care Excellence (NICE); London: 2022. https://www.nice.org.uk/guidance/ng188/resources/covid19-rapid-guideline-managing-the-longterm-effects-of-covid19-pdf-51035515742 [PubMed] [Google Scholar]*
6. Vetrugno, L., Sala, A., Deana, C., Meroi, F., Grandesso, M., Maggiore, S. M., Isola, M., De Martino, M., Restaino, S., & Vizzielli, G. (2023). Quality of life 1 year after hospital discharge in unvaccinated pregnant women with COVID-19 respiratory symptoms: A prospective observational study (ODISSEA-PINK study). Front Med (Lausanne), 10(1225648), PubMed/NCBI View Article : Google Scholar)
7. *A clinical case definition of post COVID-19 condition by a Delphi consensus, 6 October 2021*. World Health Organisation;

2021. https://www.who.int/publications-detail-redirect/WHO-2019-nCoV-Post_COVID-19_condition-Clinical_case_definition-2021.1 [Google Scholar]

8. Qing, H., Bang, Z., Luke, D., & Aziz, S. (2022). Long-Term Sequelae of COVID-19: A Systematic Review and Meta-Analysis of One-Year Follow-Up Studies on Post-COVID Symptoms. *Pathogens*, *11*(2), 269. doi: 10.3390/pathogens11020269. PMID: 35215212. PMCID: PMC8875269. DOI: 10.3390/pathogens11020269
9. Malgina, G. B., Dyakova, M. M., Bychkova, S. V., Shikhova, E. P., & Klimova, L. E. (2023). Post-COVID syndrome in pregnant women with a history of mild and moderate COVID-19. *Obstet Gynecol*, 87–94.
10. Twanow, J. E., McCabe, C., & Ream, M. A. (2022). The COVID-19 pandemic and pregnancy: Impact on mothers and newborns. *Semin Pediatr Neurol*, *42*(100977). PubMed/NCBI View Article : Google Scholar
11. Falahi, S., Abdoli, A., & Kenarkoohi, A. (2023). Maternal COVID-19 infection and the fetus: Immunological and neurological perspectives. *New Microbes New Infect*, *53*(101135). PubMed/NCBI View Article : Google Scholar)
12. Metz, T. D., Reeder, H. T., Clifton, R. G., Flaherman, V., Aragon, L. V., Baucom, L. C., Beamon, C. J., Braverman, A., Brown, J., & Cao, T. (2024). Post-acute sequelae of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) after infection during pregnancy. *Obstet Gynecol. 144*, 411–420. PubMed/NCBI View Article : Google Scholar)
13. Yao, Y., Sun, L., Luo, J., Qi, W., Zuo, X., & Yang, Z. (2024). The effect of long-term COVID-19 infection on maternal and fetal complications: A retrospective cohort study conducted at a single center in China. *Sci Rep*, *14*(17273). PubMed/NCBI View Article : Google Scholar)
14. Davis, H. E., Assaf, G. S., McCorkell, L., Wei, H., Low, R. J., & Re'em, Y. (2021). Characterizing long COVID in an international cohort: 7 months of symptoms and their impact. *EClinicalMedicine*, *0*(0), Journal Website
15. Mar Muñoz-Chápuli Gutiérrez,a,b Ainoa Sáez Prat,b Ana Durán Vila,a,d Mireia Bernal Claverol,b Pilar Payá Martínez,b Pilar Pintado Recarte. Post-COVID-19 condition in pregnant and postpartum women: a long-term follow-up, observational prospective study
16. Soriano, J. B., Murthy, S., Marshall, J. C., Relan, P., & Diaz, J. V. (2022). WHO clinical case definition Impact of COVID-19 vaccination on the risk of developing long-COVID and on existing long-COVID symptoms: a systematic review. *eClinicalMedicine*, 53101624.