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Abstract

Background: Post-COVID-19 syndrome covers a wide range of new, recurring or ongoing health conditions, which can occur in anyone who has recovered from COVID-19. The condition may affect multiple systems and organs.

Aims: To evaluate the frequency and nature of persistent COVID-19 symptoms among healthcare providers in Jordan.

Methods: Post-COVID-19 syndrome refers to symptoms extending beyond 4–12 weeks. We conducted a historical cohort study among 140 healthcare staff employed at the National Center for Diabetes, Endocrinology and Genetics, Amman, Jordan. All of them had been infected with COVID-19 virus during March 2020 to February 2022. Data were collected through face-to-face interviews using a structured questionnaire.

Results: Some 59.3% of the study population reported more than 1 persisting COVID-19 symptom, and among them 97.5%, 62.6% and 40.9% reported more than 1 COVID-19 symptom at 1–3, 3–6 and 6–12 months, respectively, after the acute phase of the infection. Post-COVID-19 syndrome was more prevalent among females than males (79.5% vs 20.5%) (P = 0.006). The most frequent reported symptom was fatigue. Females scored higher on the Fatigue Assessment Scale than males [23.26, standard deviation (SD) 8.00 vs 17.53, SD 5.40] (P

Conclusion: More than half (59.3%) of the healthcare workers in our study reported post-COVID-19 syndrome. Further studies are needed to better understand the frequency and severity of the syndrome among different population groups.

Keywords: COVID-19, post-COVID syndrome, healthcare workers, fatigue, Jordan

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Introduction

Globally, as of 29 July 2022, 572 239 451 cases of COVID-19 and 6 390 401 deaths had been confirmed. In Jordan, between 3 January 2020 and 29 July 2022, 1 709 879 confirmed cases of COVID-19 and 14 074 deaths were reported to the World Health Organization (1).

In July 2021, persistent and significant increase in cases of post-COVID-19 syndrome as a health problem , the Office for Civil Rights of the Department of Health and Human Services and the Civil Rights Division of the Department of Justice jointly recommended that post-COVID-19 syndrome be recognized as a disability under the Americans with Disabilities Act (2).

Post-COVID-19 conditions cover a wide range of new, recurring or ongoing health symptoms experienced by individuals ≥ 4 weeks after recovery from the acute phase of COVID-19 infection. Post-COVID conditions include: long COVID-19, long-term effects of COVID-19, long-haul COVID-19, post-acute COVID-19 or chronic COVID-19.

Although there is no consensus regarding the definition of post-COVID-19 syndrome, the US Centers for Disease Control and Prevention describes it as the persistence of symptoms more than 4 weeks after being infected with COVID-19 (2). Post-acute COVID-19 has been classified as subacute or persistent symptoms (up to 12 weeks from the initial acute phase) and chronic or post-COVID-19 symptoms when symptoms are present beyond 12 weeks (3). Others have defined post-acute COVID-19 and chronic COVID-19 as symptoms extending beyond 3 weeks and beyond 12 weeks respectively from the onset of the first symptoms (4).

The symptoms can occur in anyone who has been infected with COVID-19, even if the illness was asymptomatic or mild. Commonly reported post-COVID-19 symptoms include shortness of breath, fatigue or tiredness, post-exertional malaise, difficulty concentrating or thinking (brain fog), cough, chest or stomach pain, headache, palpitations, joint or muscle pain, diarrhoea, sleep problems, fever, dizziness, mood changes and change in smell or taste (2).

A recent cohort study conducted on 418 young adults showed that more than half the COVID-19-positive outpatients reported persistent symptoms up to 10 months after infection, with fatigue, smell/taste disorder, dyspnoea and memory impairment being the most commonly encountered symptoms. Being female and overweight/obese were predictors of persistent symptoms (5).

In Jordan, a cross-sectional online questionnaire-based study reported that 72% of patients who had recovered from COVID-19 infection experienced ≥ 1 post-COVID-19 syndrome symptoms, with dyspnoea, fatigue, impairment of taste/smell, cough and depression being the most commonly reported. Female sex, age ≥ 30 years, having a co-morbidity such as diabetes, hypertension or respiratory disease or having had a neuropsychological disturbance during the illness were all associated with a significantly higher risk of developing post-COVID-19 syndrome (6).

The wide variety of symptoms that have been reported in post-COVID-19 syndrome, involving

multiple systems and organs, necessitate not only a long-term follow-up but also a better understanding of the heterogeneity of post-COVID-19 syndrome. The primary objective of this study was to evaluate the frequency and nature of persistent symptoms of COVID-19 infection among a group of Jordanian healthcare providers working at the National Center for Diabetes, Endocrinology and Genetics.

Methods

Participants

This was a historical cohort study. We recruited all 140 healthcare workers (nurses, physicians, pharmacists and other staff) at the National Center for Diabetes, Endocrinology and Genetics in Amman, Jordan, who had been infected with COVID-19 virus in the period March 2020–February 2022. Participants were diagnosed using polymerase chain reaction (PCR) test on a nasopharyngeal swab.

This study aimed to detect post-COVID-19 syndrome among healthcare providers. Data were collected by 2 general practitioners working at the National Center for Diabetes, Endocrinology and Genetics through face-to-face interview using a pre-designed, structured questionnaire. The questionnaire had 3 parts: the first part gathered information on sociodemographic and general personal health characteristics along with the presenting symptoms of COVID-19 and any medications given as treatment for the infection. The second part covered the most frequent signs and symptoms of COVID-19 infection during the acute phase and ≥ 3 months after recovery. The COVID-19 symptoms were compared with those of influenza-like illness in terms of severity, and were subsequently classified into: similar, milder, more severe or extremely more severe than the usual influenza symptoms. As there is no consensus definition about timing of post-COVID-19 symptoms, post-COVID-19 syndrome in our study refers to those symptoms extending beyond 4–12 weeks. Therefore, symptoms which persisted beyond 4–12 weeks after the initial infection were recorded.

The third part of the questionnaire assessed fatigue and cognitive status 12 weeks after recovery from the acute illness. Since the Fatigue Assessment Scale (FAS) has been used to assess fatigue as a valid and reliable measure in several disorders (7), we selected the FAS questionnaire as a tool to assess the presence of fatigue in participants before and 12 weeks after recovery from acute COVID-19 infection. The FAS questionnaire comprises 10 questions from 2 different viewpoints: 5 questions investigate mental fatigue, the other 5 investigate physical fatigue. Responses are analysed by attributing numerical values 1–5 to the answers; answers to questions 4 and 10 are reverse scored. The total score obtained by summing up the score of all answers ranges from 10 to 50. Each score ranges from 5 to 25. A patient with a score