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Integrated multidisciplinary post-COVID-19 care in Egypt

COVID-19 can have physical, social, and psychological effects on patients lasting beyond their acute illness. Such post-acute sequelae of SARS-CoV-2 infection (PASC) consist of a wide spectrum of symptoms, from mild to debilitating multiorgan consequences. In a study of 430 patients in Egypt,¹ 370 (86%) reported persistent post-COVID-19 symptoms, the most common being myalgia (258 [60%]), arthralgia (246 [57%]), chest pain (140 [33%]), and dyspnoea (125 [29%]). Decreased daily activities were seen in 245 (57%) patients, which could have a devastating economic and health effect on a larger scale.

Egypt is the most populous country in the Middle East with an estimated population of 103 million people,² of whom 21 million reside in the capital, Cairo.³ As of April 13, 2021, there had been 211 307 confirmed COVID-19 cases in Cairo, 159 999 of whom recovered.⁴ The increasing number of cases in Egypt with significant ongoing symptoms suggested the need for management of long-term complications. Yet there was no organised way to follow up these patients to monitor their recovery.

We report the founding of the first private post-COVID-19 clinic in Cairo after many patients, who were not previously hospitalised with COVID-19, but were presumed to have had the virus and associated PASC, reported interest in treatment for PASC. Our multidisciplinary clinic was inaugurated in February, 2021. The team of health-care professionals includes five nurses, six consultants, a physiotherapist, a phlebotomist, and a radiology technician. The clinic also includes rehabilitation, physical therapy, laboratory and radiological services.

Patients voluntarily join the clinic by scheduling an appointment via a telephone call. They are seen initially by a trained nurse who administers a questionnaire that was developed to assess patients' baseline clinical status. Patients then receive an initial diagnostic workup—including laboratory testing, echocardiography, pulmonary function testing, and electrocardiogram—before being seen by the staff pulmonologist and cardiologist who can recommend additional workup or refer the patient to another specialist if needed. Laboratory workup consists of assessments of complete blood count; liver function; thyroid profile; renal function test; and C-reactive protein, D-dimer, creatine kinase, ferritin, lactate dehydrogenase, fasting and postprandial glucose, and glycated haemoglobin concentrations. Patients are seen at 1-month, 3-month, and 6-month intervals from their initial visit and more frequently if needed. Their medical information is electronically stored, with consent, and updated continuously. We will identify the patient data for retrospective analysis after long-term follow up.

50 patients with PASC currently attend the clinic, which will expand as more resources become available to meet the growing interest. More women than men came to the clinic, which is consistent with previous studies that more women have PASC.⁵ The long-term symptoms encompass a wide spectrum, including fatigue, dyspnoea, insomnia, tachycardia, joint pain, prolonged loss of smell, and a variety of psychosocial effects. The most common symptoms seen in the clinic were respiratory, cardiac, and neurological. Follow-up at the centre is high, which we believe is because of the timely and centralised care available.

Older patients (≥ 65 years) with comorbidities have been most commonly affected by post-COVID-19 complications and long-term

sequelae, including pulmonary fibrosis, restrictive ventilatory defect, heart disease, renal disease, hepatocellular injury, thromboembolic disease, neurological deficits related to stroke, and deconditioning. The clinic allowed patients to receive a comprehensive evaluation and timely diagnosis of persistent symptoms or complications that might otherwise go unnoticed. The model is not only convenient for patients, but it also facilitates communication and collaboration between specialists.

COVID-19 has not only affected patients physically, but it has also had detrimental effects on their social, psychological health, and quality of life. Reports of increased risk of depression, anxiety, post-traumatic stress disorder, and substance use disorder are concerning.⁶ The health-care system in Egypt is not optimised for the time-consuming and individualised comprehensive approach needed to treat everyone with post-acute COVID-19. Thus, we aim to expand our practice beyond the management of physical ailments to target the psychosocial health of our patients who had recovered from COVID-19. We hope to incorporate an evaluation by an experienced psychiatrist into the overall assessment of our patients. We also believe that organising support groups can provide patients with platforms to interact, share their experiences, and support each other.

We recognise limitations in our approach including the inability to provide telemedicine, which can allow more frequent monitoring of patients. However, we believe our model provides the foundation for a multidisciplinary approach. We encourage clinicians to continue to actively engage with patients to successfully identify this increasing population of patients with PASC to help resolve and manage long-term symptoms and decrease this secondary and vastly underestimated global toll of the pandemic. Additionally, we



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believe that, with the launch of this clinic and other post-COVID-19 clinics globally, longitudinal data collection from patients will help us understand the pathophysiology of PASC, which will guide long-term management strategies.

We declare no competing interests.

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