Background: Everyday, every day, doctors and individuals in the field of healthcare must make calculated decisions which have important consequences, impacting patients on the individual level, and communities. According to WHO data, it was believed that the COVID-19 disease had only two outcomes: recovery or death, with most patients recuperating within two weeks. Fatal cases were linked to respiratory system failure or multi-organ dysfunction with comorbid conditions. Intensive research commenced to understand the virus, pharmacological and non-pharmacological protective measures, and the development of vaccines. However, despite efforts by WHO, scientific research fell short of providing comprehensive answers to this global challenge. The disease persisted, evolving.

Objective. This Editorial aims to explain and describe our own experiences with diagnostics and treatment of patients with symptoms of Long Covid in our survey during past times.

Methods: We used a descriptive method based on facts about personal experiences in our polyclinic, also compared with other experiences explained in current scientific literature published and stored in indexed databases like PubMed Central, Hinary, Embase etc.

Results and Discussion: WHO declared the end of the pandemic, and epidemiological data indicate ongoing acute cases with a rising trend. Long-term symptoms have emerged, potentially causing even greater consequences for overall human health. Public media and healthcare systems have somewhat neglected these epidemiological data, failing to highlight the significant increase in diseases related to the chronic course of COVID-19. Long-term symptoms are not exclusive to COVID-19; they are observed in other viral diseases like viral hepatitis, Ebola, and Lyme disease. The well-known chronic fatigue syndrome (ME/CFS) can be a post-viral syndrome. Over 200 different symptoms associated with Long Covid have been reported. There are significant individual, gender, and racial differences in symptom presentation, making each patient’s clinical manifestation unique. Diagnosing Long Covid is challenging due to its wide range of symptoms. Although numerous clinical studies have been conducted, there is still no definitive protocol for clinical practice. Physicians are forced to create their protocols for prevention, diagnosis, and treatment based on their acute phase experience. Unfortunately, there are no educational models to disseminate existing knowledge about Long Covid and raise awareness among the public about this significant global health problem. The diversity in clinical symptoms and etiopathogenetic factors necessitate different approaches for specific Long Covid syndromes and multiple clinical trials to develop prevention, diagnosis, and treatment strategies.

Conclusion: Global, national, and local healthcare systems need to emphasise the importance of forming multidisciplinary teams and patient pathways based on existing Long Covid syndromes. Public health and family medicine associations play a crucial role in spreading accurate information about Long Covid incidence and manifestations, enabling patients to initiate timely preventive and therapeutic procedures.

Keywords: Primary Health Care system, Family medicine, Long Covid, New challenges, Decision makers, Decisions.
covery, and sometimes even affects the whole family (6). SARS-CoV-2 infects a variety of cells in the human body, including lung cells, intestinal cells, vascular endothelial cells, olfactory epithelial cells, etc. (7, 8). The damages caused by the infections of these cells and enduring immune response are the basis of long-term COVID-19 (9). Notably, the changes in gene expression caused by viral infection can also indirectly contribute to long Covid (9-11). Initially, it was believed that the disease had only two outcomes: recovery or death, with most patients recuperating within two weeks. Fatal cases were linked to respiratory system failure or multi-organ dysfunction with comorbid conditions. Intensive research commenced to understand the virus, pharmacological and non-pharmacological protective measures, and the development of vaccines. However, despite efforts by WHO, scientific research fell short of providing comprehensive answers to this global challenge. The disease persisted, evolving.

2. DOMINATED HEALTH PICTURES OF LONG COVID INFECTION

Initially dominated by respiratory symptoms and high fever, the last two years of the pandemic have seen a shift toward multi-organ disturbances. Patients now experience general weakness, muscle pain, diffuse abdominal pain with diarrhoea, headaches affecting concentration, insomnia, mental fog, intense sweating, palpitations, dizziness, and a marked decrease in exercise tolerance. Gastrointestinal disturbances, often the initial signs of the disease, hint at the possibility of the digestive system being an entry point for the virus, spreading via the faecal-oral route. Patients with long Covid – the long-term symptoms like brain fog, fatigue, or memory loss in the months or years following COVID-19 – can exhibit a reduction in circulating levels of the neurotransmitter serotonin, according to new research published in Cell (12).

Changes in the clinical picture may be attributed to the virus’s continuous mutations. Despite WHO recommendations, not all protective measures and vaccines were universally implemented, facilitating the rapid spread of SARS-CoV-2 across regions. Different countries with varying healthcare systems and economic capacities failed to enforce all necessary protective measures and timely vaccinations, allowing the virus to persist actively. Unfortunately, its prolonged presence led to the development of a chronic form, known as Long-Covid, with diverse symptoms affecting different organs and organ systems.

3. PROPOSED WHO DECLARATION(S) FOR HEALTH PROTECTION

World Health Organization (WHO) recommends a maximum recovery time for COVID-19 of two weeks for mild disease and six weeks for severe disease (9). Although WHO declared the end of the pandemic, epidemiological data indicate ongoing acute cases with a rising trend. Long-term symptoms have emerged, potentially causing even greater consequences for overall human health. Public media and healthcare systems have somewhat neglected these epidemiological data, failing to highlight the significant increase in diseases related to the chronic course of COVID-19. Long-term symptoms are not exclusive to COVID-19; they are observed in other viral diseases like viral hepatitis, Ebola, and Lyme disease. The well-known chronic fatigue syndrome (ME/CFS) can be a post-viral syndrome. Unfortunately, the emergence of long Covid did not receive enough attention from the public or decision-makers within healthcare systems. Long-standing scepticism regarding the possibility of long Covid hindered early etiological diagnosis, delaying necessary clinical trials and the development of clinical guidelines for diagnosing and treating various forms of this disease.

WHO has defined Long COVID-19 as the continuation of symptoms from various organic systems of COVID-19 after three months from the onset of the acute phase. This definition should include the duration of symptoms (at least two months) and the need to exclude alternative diseases. The exact frequency of Long Covid is not yet known, but it is estimated that nearly one in five patients develops Long Covid symptoms after the acute phase.

4. A FEW CURRENT IMPORTANT EXPERIENCES FROM DIFFERENT PART OF WORLD ALREADY PUBLISHED IN SCIENTIFIC DATABASES

Various theories exist about the mechanism behind the chronic course, with one possibility being changes in the immune system. T, B, and stem cells, the main actors in the immune response, retain information about the nature of the SARS-CoV-2 virus even a year after infection, influencing the creation of anti-inflammatory factors and contributing to the persistence of long-term symptoms. Another theory posits the prolonged presence of the virus in certain human tissues, which, during weakened immune response phases, can induce a spectrum of different symptoms. Changes in gut microbiota and the initiation of autoimmune processes during the active phase of the disease are significant cofactors in the pathogenesis of Long Covid. Specific microbiome profiles in the digestive tract are linked to the occurrence of certain Long Covid syndromes as well as the severity and duration of the disease. Many Long Covid symptoms reflect dysfunction in the autonomic nervous system, closely linked to immune changes. Haematological changes in the coagulation process and inflammatory changes in the endothelium of small vascular structures could be common etiological factors for different clinical entities of Long Covid.

A team of scientists from the University of Pennsylvania (USA) proposed a new theory about the aetiology of Long Covid based on the discovery of serotonin level...
changes in those affected by the disease. The finding of low serotonin levels in severe Long Covid cases could explain many neuropsychiatric symptoms, such as cognitive impairment, memory loss, and general weakness. Serotonin influences the function of the vagus nerve and the brain-gut-liver axis. Viral particles in the intestines stimulate the immune system to produce pro-inflammatory factors and interferons. Interferons trigger inflammation, hindering tryptophan absorption, an essential component for serotonin creation in the intestines..

5. DOMINANT SYMPTOMS DESCRIBED BY PHYSICIANS

Symptoms of Long Covid fall into several categories based on affected organs and organ systems. The most common include (1, 9, 12):

- General Fatigue and Muscle Pain
- Cardiorespiratory Syndrome: Chest pain, cough, shortness of breath, palpitations, reduced exercise tolerance, fever.
- Neuropsychiatric Syndrome: Headaches, insomnia, mental fog, cognitive disorders, depression, anxiety, memory loss.
- Gastrointestinal Syndrome: Diffuse abdominal pain, nausea, bloating, diarrhoea, vomiting, loss of appetite.
- Genitourinary Syndrome: Lower urinary disturbances, lower abdominal pain.
- Neurosensory Syndrome: Impaired sense of smell and taste.
- Dermatological Syndrome: Various skin manifestations with circulatory disorders, and hair loss.
- Multisystemic Syndrome: All Long Covid symptoms can occur simultaneously or in small intervals, indicating multi-organ damage.

Over 200 different symptoms associated with Long Covid have been reported. There are significant individual, gender, and racial differences in symptom presentation, making each patient’s clinical manifestation unique. Diagnosing Long Covid is challenging due to its wide range of symptoms. Although numerous clinical studies have been conducted, there is still no definitive protocol for clinical practice. Physicians are forced to create their protocols for prevention, diagnosis, and treatment based on their acute phase experience. Unfortunately, there are no educational models to disseminate existing knowledge about Long Covid and raise awareness among the public about this significant global health problem (1-3). The diversity in clinical symptoms and etiopathogenetic factors necessitate different approaches for specific Long Covid syndromes and multiple clinical trials to develop prevention, diagnosis, and treatment strategies. However, practising physicians already have enough information about this multisystemic disease to apply simple preventive, diagnostic, and therapeutic measures for their patients. Assessing the patient’s immune status and active phase data, along with comorbid conditions, and analysing symptom occurrence and duration, can guide attention toward Long Covid. Routine tests, determining COVID-specific IgM and IgG antibody titers, and D-dimer values as a parameter for possible coagulation disorders, can provide significant information for a final diagnosis. An integrative and comprehensive approach allows for an accurate assessment of the virus’s impact on physical, mental, spiritual, and social aspects of health. Most patients require a multidisciplinary approach due to the broad spectrum of symptoms and affected organs. Research is ongoing to identify specific biomarkers to aid Long Covid diagnosis. There is a possibility of detecting viral particles in stool, low serotonin levels, and increased interferon concentrations..

6. CURRENT NON-SPECIFIC MEDICATIONS PROPOSED IN HEALTH PRACTICE BY FAMILY TEAMS

Currently, there are no specific medications in practice to treat all Long Covid clinical syndromes. Drugs that increase serotonin levels in the blood might improve memory and cognitive functions. Implementing healthy lifestyle principles, including individualised dietary interventions, herbal therapy, physical exercises, stress management, nature exposure, adequate sleep, and additional vitamin and antioxidant supplements, is crucial. For the appearance of respiratory and cardiac insufficiency symptoms, appropriate cardiological and pulmonary examinations and interventions are necessary due to frequent occurrences of myocarditis and embolic complications. MRI of the cranium is essential for neurological manifestations of the disease, potentially leading to specific treatments for identified pathological changes (13-17).

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-wide preventive measures and risk factor determination are yet to be performed (18).

"Our findings may not only help to untangle some of the mechanisms that contribute to long COVID but also provide us with biomarkers that can help clinicians diagnose patients and objectively measure their response to individual treatments." (Maayan Levy, PhD, senior author, assistant professor of Microbiology at Penn Medicine) (12).
7. CONCLUSION
Global, national, and local healthcare systems need to emphasise the importance of forming multidisciplinary teams and patient pathways based on existing Long Covid syndromes. Public health and family medicine associations play a crucial role in spreading accurate information about Long Covid incidence and manifestations, enabling patients to initiate timely preventive and therapeutic procedures.

Special and highly important to doctors and patients alike, as well as the broader population is the medical decision approached by physicians who have personal experience with COVID-19 in the past because medical decisions are vital - to both patients and society (15).

They are difficult and may provide positive outcomes, or poor complications. They test doctors maximally and provide insight into the effectiveness of doctors. And finally, they are improvable, through increased financial support, legal regulations, peer monitoring and assistance, and increased levels of knowledge and information, which may stem from a strong system of medical documentation through medical informatics. technologies and appropriate software including adequate minimal data sets about every patient who has symptoms of Long COVID.

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