Study on long COVID in patients treated at teaching hospital of Kalubowila, Sri Lanka

Dr. GL Palihakkara[1], Dr. Kalana Hareendra[2], Dr. Morris Abeygunasekera[3*]

[1,2,3]Urology Unit, Colombo South Teaching Hospital, Kalubowila, Sri Lanka

***Corresponding Author:** Dr. Morris Abeygunasekera, Urology Unit, Colombo South Teaching Hospital, Kalubowila, Sri Lanka E-mail: dr.morrisabeygunasekera@gmail.com

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ABSTRACT

Background & objectives: The COVID-19 pandemic has significantly affected the healthcare system, encompassing both the disease itself and its related sequelae. The aim of this study was to investigate the long-term effects of COVID-19 in individuals who have recovered from the disease, as confirmed by RT-PCR testing. **Methods:** This cross-sectional study was conducted at a tertiary COVID center. A total of 200 patients who had tested positive for COVID-19 by RT-PCR during the second wave of the pandemic were included. These patients received treatment and were subsequently followed up via telephone one year after their discharge. **Results:** The average duration of hospitalization was found to be 6.12 ± 3.25 days. After a period of one year following discharge, the prevailing long-term symptom of post-COVID-19 syndrome was found to be breathlessness, affecting 58% of individuals. Fatigue was the second most commonly reported symptom, affecting 50% of individuals. Conversely, weakness was reported by a minimum of 1% of individuals, while 25% of individuals reported being completely free of any lingering COVID-19 symptoms. **Conclusions:** Long COVID is a complex condition that affects several systems in the body, including myalgic encephalomyelitis/chronic fatigue syndrome, dysautonomia, various organ systems, as well as vascular and coagulation issues. COVID-19 exhibits long-term effects on patients, hence necessitating ongoing monitoring post-discharge to assess for enduring consequences.

Key words: Covid-19, co-morbidities, long covid.

INTRODUCTION

The COVID-19 pandemic has had significant implications on the healthcare system, resulting in a range of morbidities and mortalities. The discussion has focused on the risk factors and problems. The primary emphasis was first placed on mitigating the immediate effects of the condition. However, there is mounting data suggesting that COVID-19 can also lead to enduring implications, which are becoming a growing source of apprehension for healthcare systems. The term "Long Covid" is presently used to describe the enduring repercussions that persist for a duration exceeding three months following an individual's infection.[1]

The symptoms associated with extended COVID are characterized by a lack of clear definition, since patients often describe it as a variable sickness including a range of diverse symptoms. The National Institute

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for Health Research has proposed that post acute COVID-19 may encompass various separate clinical syndromes, such as post intensive care syndrome, chronic tiredness syndrome, long-term COVID-19 syndrome, and organ damage resulting from SARS-CoV-2 infection. Furthermore, despite the increasing understanding of risk factors during the acute phase, there remains a significant knowledge gap about predictive factors associated with the development of protracted COVID.[2] Despite the proposed categorizations, a definitive agreement has not yet been reached.

The COVID-19 pandemic has significantly affected the healthcare system of society, encompassing not only the sickness itself but also the various consequences that arise in connection with it. Studying the post-COVID consequences is imperative in order to establish prevention strategies, diagnose these issues, and offer timely care. This study sought to evaluate the characteristics and frequency of long-term consequences of COVID-19 among individuals who had tested positive with the virus using RT-PCR and subsequently recovered, within a hospital setting.

MATERIALS AND METHODS

This study was a cross-sectional, hospital-based investigation that involved a sample of 965 patients who were selected consecutively. The patients included in the study had tested positive for COVID-19 using RT-PCR in the second wave and were hospitalized to either the intensive care unit or general wards of study area. Following the administration of medication and the subsequent confirmation of two consecutive negative results on the Reverse Transcription Polymerase Chain Reaction (RT-PCR) tests, the patients exhibited signs of recovery and were subsequently discharged. One year following release in 2021, a telephone follow-up was conducted with a sample of 200 patients out of a total population of 965 patients who had been discharged. The study comprised persons who tested positive for Covid-19 in the second wave and were subsequently released after receiving treatment and obtaining two consecutive negative RT-PCR test results. persons who were unwilling to participate were removed from the study.

During the second wave, a total of 965 individuals who had tested positive for Covid-19 by the RT-PCR method were provided medical treatment at a tertiary care center. These patients were then discharged from the center after obtaining two consecutive negative results from the RT-PCR test. A follow-up assessment was conducted one year subsequent to the patient's discharge. The researcher obtained informed verbal consent from the study population through successive sampling, and proceeded to conduct the interview via telephone. After verifying the identities of the study individuals, inquiries were made regarding their post-COVID symptoms and any subsequent complications. Sociodemographic information and clinical profiles were obtained from the record room.

The categorical variables were represented using numerical values and percentages (%), while the continuous variables were represented using the mean ± standard deviation (SD) and median. The comparison of quantitative data was conducted using an Independent t-test between the two groups. On the other hand, the comparison of qualitative factors was performed using either a Chi-Square test or a Fisher Exact test. A p-value less than 0.05 was deemed to be statistically significant. The data was inputted into a Microsoft Excel spreadsheet, and subsequent analysis was conducted using the Statistical Package for Social Sciences (SPSS) version 21.0.

RESULTS

A majority of the patients, specifically 55%, fell within the age area of 41-60 years, while a minority of just 2% were in the extreme age range of 81-90 years. The average age of the patients was calculated to be 54.56 ± 12.21 years. In the conducted study, over two-thirds of the participants were identified as male, while nearly half of the participants resided in rural areas. (Table 1)

Table 1: Socio-demography of study subjects

Age group	**No. (%)**
20 – 40 years	28 (14%)
41 – 60 years	110 (55%)
61 – 80 years	60 (30%)
81 – 90 years	2 (1%)
Gender	
Male	130 (65%)
Female	70 (35%)
Area of residence	
Rural	90 (45%)
Urban	110 (55%)

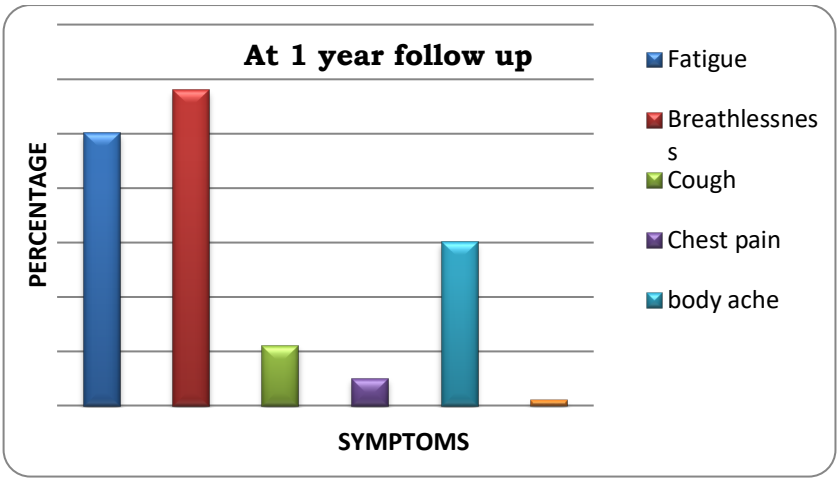
A total of 25% of patients were admitted to the Intensive Care Unit (ICU), with a mean hospital stay of 6.12 ± 3.25 days. The predominant symptom reported by the majority of individuals was fever, accounting for 60% of cases. This was followed by cough, which was reported by 22% of individuals. A smaller proportion, specifically 7.5%, experienced symptoms of sore throat. (Table 2)

Table 2: Hospitalization details of study subjects

Admitted in	**No. (%)**
ICU	50 (25%)
Wards	150 (75%)
Clinical features	
Cough	44 (22%)
Fever	120 (60%)
Breathlessness	22 (11%)
Sore throat	15 (7.5)
Length of hospital stay	
Mean (days)	6.12 ± 3.25

The most prevalent symptom experienced by individuals post-COVID-19 was dyspnea, with a reported incidence of 58%. This was followed by weariness, which was reported by 50% of individuals. Body ache was also a prominent symptom, reported by 30% of individuals.

Conversely, a small percentage of individuals, specifically 1%, reported experiencing a loss of taste or smell. Additionally, 5% of individuals reported chest pain, while 11% reported cough as a symptom. A quarter of the cases exhibited a complete absence of any symptoms. The provided visual representation, denoted as Figure 1.



DISCUSSION

A majority of the patients, namely 55%, fell within the age range of 41-60 years. Conversely, a small proportion of patients, specifically 2%, were in the extreme age group of 81-90 years. The average age of the patients was calculated to be 54.56 ± 12.21 years. In the conducted study, over two-thirds of the participants were identified as male, while nearly half of the participants resided in rural areas. Similar age group were seen by Stavem K, et al.[3] and ERJ open study[4]. Seyed Alinaghi S[5] found a rather high proportion of male individuals, accounting for around 62% of the sample. Given that our hospital functions as a tertiary care center, the majority of referred cases were admitted to our facility. However, the prevalence of COVID-19 in densely populated metropolitan areas resulted in a larger burden of cases (55%), which aligns with the findings of Sharifi et al.[6]

Post-COVID symptoms refer to the many health manifestations that individuals may have following their recovery from the COVID-19 infection. These symptoms might last for an extended period of After omitting those who were unavailable due to death, dementia emerged as a prevalent post-COVID symptom, with fatigue being reported by around 50% of the participants. Notably, Seyed Alinaghi's study[5] identified fatigue as the most common post-COVID symptom.

There is a growing body of evidence indicating that certain individuals exhibit persistent symptoms for extended periods following the initial manifestation of COVID-19, irrespective of the severity of the condition. As of the present moment, there has been no definitive establishment of the novel illness entity nor has there been a precise determination of the appropriate language to describe it. Thus far, there has been a variety of terms used to describe the condition, including "long COVID", "chronic COVID syndrome", "post-COVID syndrome", and "post-acute COVID-19 syndrome".[7,8] Given the continued presence of symptoms beyond a duration of 7 months, the decision was made to adopt the nomenclature of terminal post-COVID syndrome (PCS) instead of post-acute COVID-19 syndrome.[9]

Furthermore, there is a lack of a clearly defined clinical case definition for post-concussion syndrome (PCS). The majority of data was obtained from patients who were admitted to hospitals and exhibited serious symptoms. In recent scholarly investigations, the duration used to delineate the syndrome shown variability, with some studies employing a time frame exceeding 28 to 30 days, while others utilized a threshold of 60 days or a period surpassing 3 months.[10] Nevertheless, the time frames were determined by the maximum follow-up length of the cohorts in question, rather than through a rigorous assessment of the actual symptoms. The characterization of post-concussion syndrome (PCS) symptoms has not yet been subject to rigorous evaluation.[11] The symptoms most frequently described and hence linked to Post-COVID Syndrome (PCS) are shortness of breath, weariness, joint discomfort, anosmia, and ageusia. A deterioration in the quality of life was seen in two-thirds of patients who were admitted to the hospital.[12,13]

The majority of research conducted on persistent symptoms over an extended period of time has primarily involved individuals who were hospitalized due to COVID-19. These patients frequently reported experiencing symptoms for a duration ranging from 1 to 2 months or even up to 6 months following the onset of the disease. In contrast to individuals with mild cases of COVID-19, hospitalized patients have a greater susceptibility to experiencing protracted symptoms, which can be attributed to factors such as mechanical breathing or extended periods of immobilization.[14] It is important to note that these symptoms are not exclusive to COVID-19 and can occur in other medical conditions as well.[15,16] As a result, it is anticipated that these individuals would experience an extended period of recovery. The study conducted by Sudre et al.[17] involved a cohort of 4182 individuals diagnosed with COVID-19, who recorded their symptoms using a digital diary. Within this particular cohort, it was shown that symptoms persisted for a duration beyond 28 days in 13.3% of the patients, while a subset of 2.3% experienced symptoms for a period surpassing 12 weeks.[17] According to a recent study conducted by Huang et al.[18], a significant proportion of individuals who were hospitalized with COVID-19 continued to experience symptoms of fatigue or muscle weakness (63%) and sleep issues (26%) six months after their initial hospitalization. The study involved a total of 1655 patients.

CONCLUSION

Long COVID is a multisystemic disorder encompassing myalgic encephalomyelitis/chronic fatigue syndrome, dysautonomia, affects on numerous organ systems, and vascular and coagulation problems. It has already caused significant impairment to millions of persons globally. The findings of our study indicate that COVID-19 exhibits long-term impacts on patients, necessitating the implementation of post-discharge surveillance to assess enduring consequences.

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AUTHORS' CONTRIBUTION

All the authors have contributed equally.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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