International Journal of Physical Education, Sports and Health 2022; 9(3): 86-88

P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (ISRA): 5.38
IJPESH 2022; 9(3): 86-88

www.kheljournal.com
Received: 10-03-2022
Accepted: 16-04-2022

Anand Jagdishchandra Patel
Assistant Professor, Shrimad Rajchandra College of Physiotherapy, Gujarat, India

Corresponding Author:
Anand Jagdishchandra Patel
Assistant Professor, Shrimad Rajchandra College of Physiotherapy, Gujarat, India

Assessing level of fatigue after exposure of individual with Covid-19 virus: An observational study

Anand Jagdishchandra Patel

DOI: https://doi.org/10.22271/kheljournal.2022.v9.i3b.2515

Abstract
Background: COVID-19 is a truly multisystem disease, with common extra-respiratory complications affecting the cardiac (arrhythmias and myocardial injury), renal (acute kidney injury), gastrointestinal, nervous (neuropathy, encephalopathy), endocrine and musculoskeletal (weakness, pain, and fatigue) systems. Fatigue is a common symptom in those presenting with symptomatic COVID-19 infection. However, it is unknown if COVID-19 results in persistent fatigue in those recovered from acute infection. This study highlights the importance of assessing those recovering from COVID-19 for symptoms of severe fatigue, irrespective of severity of initial illness, and may identify a group worthy of further study and early intervention.
Purpose of study: There is currently very limited information on the nature and prevalence of post- COVID- 19 symptoms after hospital discharge.
Methodology: Patient exposed with covid-19 virus were followed up and they were assessed for severity of fatigue by using Chalder fatigue scale. Online google forms were sent to participants. Participants who were unable to understand the scale were followed up by telephone screening method.
Result: Fatigue was present in 76% patients who was suffered from covid-19 with standard deviation of 19.558 ± 4.69.
Conclusion: COVID-19 is a new illness, with symptoms post COVID-19, yet to be researched. Prevalence of fatigue is high in post COVID patients.

Keywords: Covid-19, fatigue level and chalder fatigue scale

Introduction
World health organisation (WHO) declared, coronavirus disease 2019 (COVID-19) as global pandemic on 11th of march 2020. In accordance with the Law of the People's Republic of China on the Prevention and Control of Infectious Diseases, COVID-19 has been classified as a Category B infectious disease, with prevention and control measures for Category A infectious diseases adopted against the disease. Multiple COVID-19 diagnosis and treatment guidelines have been released by the National Health Commission of the People's Republic of China, all of which have contributed to the gradual control of the epidemic [5]. COVID-19 is a viral infection caused by sars-cov-2 that primarily targets the respiratory system, with initial symptoms often including shortness of breath and fever. Multiple symptoms like fever, cough, fatigue, dyspnoea, headache, diarrhoea, nausea and vomiting, have been reported during the hospital stay. About 60 days after onset of the first COVID-19 symptom, only 13% of the previously hospitalised COVID-19 patients were completely free of any COVID-19-related symptom, while 32% had one or two symptoms and 55% had three or more [6].
A commonly reported symptom of COVID-19 is fatigue, and evidence suggests that some people continue to experience severe levels of prolonged fatigue as they recover from this infection. This is not surprising, as post-infectious fatigue has been widely observed across a variety of other viral and non-viral infections [2].
Fatigue is recognized as one of the most common presenting complaints in individuals infected with sars-cov-2, the cause of the current covid-19 pandemic [2]. In particular, concern has been raised that sars-cov-2 has the potential to trigger a post-viral fatigue syndrome. Whilst the presenting features of sars-cov-2 infection have been well-characterized, the medium and long-term consequences of sars-cov-2 infection remain unexplored [3]. In particular, concern has been raised that sars-cov-2 has the potential to trigger a post-viral fatigue syndrome [3].

We sought to establish whether patients recovering from sars-cov-2 infection remained fatigued after their physical recovery, and to investigate whether there was a relationship between severe fatigue and a variety of clinicopathological parameters [2].

Methodology

Study design

Online survey was done by creating google forms.

Inclusion criteria

Individual who has been diagnosed with covid-19 by RT-PCR test. A person who is being negative 6 week or more after the exposure of covid 19.

Exclusion criteria

Individual below 18 years are excluded from this study. Person with Dementia, learning disability, cognitive or communication impairments were also excluded.

Method

Study was conducted in one of the largest hospitals in ASIA with approximately 1200 beds. 62 samples were collected with the inclusion/ exclusion criteria mentioned before. A google forms questionnaire was made using CHALDER fatigue scale. Informed verbal consent was taken with each respondent. Routine demographic information was collected from participants. Dates of covid-19 symptoms, inpatient admission, treatment with supplemental oxygen and admission to the critical care/intensive care unit (ICU) were collected. Background medical history was assessed by obtaining a list of medical comorbidities. Telephonic follow up was taken by the researcher physiotherapist.

Chalder fatigue scale

Fatigue was assessed using the validated chalder fatigue scale (CFQ-11).

Briefly, participants are asked to answer these questions with particular reference to the past month in comparison to their pre-covid-19 baseline, with responses measured on a Likert scale (0-3).

From this a global score can be constructed out of a total of 33.

chalder fatigue scale

name: _____ date: _____

We would like to know more about any problems you have had with feeling tired, weak or lacking in energy in the last month. Please answer ALL the questions by ticking the answer which applies to you most closely. If you have been feeling tired for a long while, then compare yourself to how you felt when you were last well. Please tick only one box per line.

	less than usual	no more than usual	more than usual	much more than usual
do you have problems with tiredness?				
do you need to rest more?				
do you feel sleepy or drowsy?				
do you have problems starting things?				
do you lack energy?				
do you have less strength in your muscles?				
do you feel weak?				
do you have difficulties concentrating?				
do you make slips of the tongue when speaking?				
do you find it more difficult to find the right word?				
	better than usual	**no worse than usual**	**worse than usual**	**much worse than usual**
how is your memory?				

This scale can be scored "bimodally" with columns representing 0, 0, 1 & 1 and a range from 0 to 11 with a total of 4 or more qualifying for "caseness". Alternatively it can be scored in "Likert" style 0, 1, 2 & 3 with a range from 0 to 33. Mean "bimodal" score for CFS sufferers was 9.14 (SD 2.73) and for a community sample 3.27 (SD 3.21). Mean "Likert" score was 24.4 (SD 5.8) and 14.2 (SD 4.6).

total (0-33) =

Cella, M. and T. Chalder (2010). *"Measuring fatigue in clinical and community settings."* J Psychosom Res 69(1): 17-22. This study involved 361 CFS sufferers and 1615 individuals from the community. Average age was in the 30's. Fatigue levels were similar for males and females. A score of 29 discriminated between CFS sufferers and the community sample in 96% of cases and a score in the 30's discriminated in 100% of cases. The CFS sufferers also scored a mean of 26.99 on the Work & Social Adjustment Scale (W&SAS) with a SD of 8.6 (i.e. about 70% scoring between 18.4 and 35.6).

Result

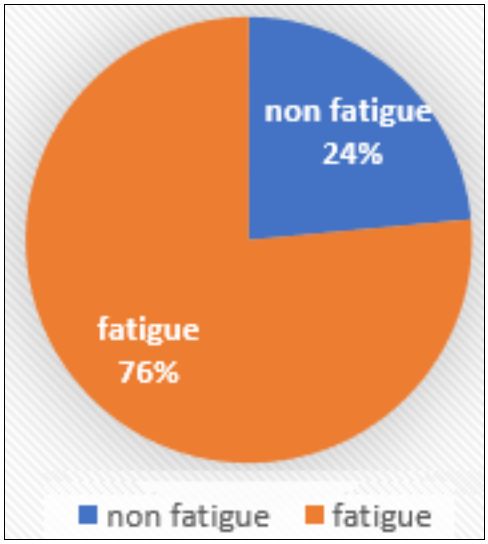

Fig 1: Percentage of subjects who experienced fatigue

Many patients were sent google forms, out of them 102 patients responded, with mean age of 33.88192 ± 13.64784. Fatigue was assessed using the cfq-11 in all participants and fatigue was found in 76% individual with the mean score of 19.09804 ± 4.633218

Discussion

Results demonstrated that the prevalence of chronic fatigue was relatively high. Presence of chronic fatigue are common in covid-19 patient who participated in this study. There is a significant burden of fatigue at median follow up of six weeks, with half of the patient reporting severe fatigue.

Felicia ceban *et al*. in her study suggested that There are multiple mechanisms whereby SARS-CoV-2 infection can engender or exacerbate persistent fatigue and/or cognitive impairment. Neurological dysfunction can ensue due to non-mutually exclusive factors including but not limited to direct viral encephalitis, neuroinflammation, hypoxia, and cerebrovascular disease. Multiple studies have identified neuroanatomical alterations and neurodegeneration cerebral microvascular injury, and metabolic aberrations (including hypometabolism in areas associated with motivation, such as the dorsolateral prefrontal cortex) in the brains of COVID-19 patients [7].

It is also recognized that systemic sequelae including endothelial dysfunction, hyperinflammation, autoimmunity, latent viral reactivation, multi-organ pathology, and autonomic nervous system dysfunction can interact with the foregoing in a synergistic manner. The causal relationship between specific pro-inflammatory cytokines, mood symptoms, and cognitive decline is firmly established. We report that a subset of individuals consistently exhibited markers of inflammation following the resolution of acute COVID-19 infection, suggesting hyperinflammation is an amenable cause of fatigue and/or cognitive impairment in PCS. Indeed, other post-infectious syndromes (e.g., post-infectious encephalitis) have been previously associated with elevations in inflammatory parameters [7].

J. Agergaard *et al*. found a high incidence of myopathic qEMG following a mild to moderate COVID-19 where 50% of the patients were not even hospitalized. Although patients referred for neurophysiological evaluation for sensory disturbances as long-term symptoms, most patients had physical fatigue and myalgia when interviewed specifically for muscle symptoms. We, therefore, consider our findings to be of great importance as a possible explanation for fatigue which has been reported as a common symptom of both acute and long-term COVID-19 [8].

Conclusion

COVID-19 appears to result in symptoms of severe fatigue that outlast the initial acute illness. Over more than half of individuals in the current study demonstrated symptoms consistent with severe fatigue a median of 6 weeks after their initial illness. A lengthy post-infection fatigue burden will impair quality of life and will have significant impact on individuals, employers and healthcare systems. These findings should be used to inform management strategies for these patients, and allow intervention to occur in a timely manner.

Limitations

- Sample size is small.
- Scale was not translated to local language.

Conflict of interest

There was no conflict of interest.

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