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Prevalence and Severity of Fatigue in SARS-CoV-2 Patients

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Abstract: ***Coronaviruses are enveloped non-segmented positive-sense RNA viruses belonging to the family and broadly distributed in humans and other mammals. Although corona virus leads severe acute respiratory syndrome coronavirus. Post covid syndrome include common signs and symptoms time that are Fatigue, Cough, Joint pain, Chest pain, Memory, concentration or sleep problems, Muscle pain or headache, Depression or anxiety. Postinfectious fatigue syndrome (PIFS) refers to severe, disabling, and persistent/recurrent physical and/or mental fatigue following infectious triggers, such as viruses, bacteria, and parasites. Aim of the study to find out prevalence and severity of fatigue in patients with post mild and moderate covid-19 cases and the relation between fatigue post covid-1. The current study is carried out in 155 individual with a positive SARS-COV-2. Written consent was taken. Fatigue is assessed using Fatigue Sevirity Scale (9 Items Scale) (r=0.91) and there is correlation between RTPCR VALUE and fatigue was done. Results were analysis in SPSS version 20. Mean age of population was (33.45±1.07). Data was not normally distributed so non parametric test were used. Prevalence of the fatigue was 3.96% and fatigue severity score was >36 more than half of the population. There was weak negative correlation between FSS and RTPCR VALUES Spearman rho correlation value r=-2.06. The study concluded that prevalence of fatigue and its severity does not rely on RTPCR value.***

Keywords: SARS-C0V-2, post infectious fatigue syndrome (PIFS), FATIUGE SEVIRITY SCALE

1. Introduction

The new coronavirus, classified as severe acute respiratory syndrome (SARS) -CoV-2 that emerged in Hubei province in China, causes a new coronavirus disease, which was termed COVID-19 by WHO on 11 February 2020. [1] The SARS-CoV-2 virus belongs to β-coronavirus are enveloped non-segmented positive-sense RNA viruses belonging to the family Coronaviridae and broadly distributed in humans and other mammals. [2] virus having crown-like spikes on their surface. The SARS-CoV-2 virus belongs to β-coronavirus, which also include MERS-CoV, SARS-CoV-1, NCoV-OC43 and HCoV-HKU1. The primary target cells for SARS-CoV-2 are the epithelial cells of the respiratory and gastrointestinal tract [1]. The entry of SARS-CoV into human host cells is mediated mainly by a cellular receptor angiotens in-converting enzyme 2 (ACE2), which is expressed in human airway epithelia, lung parenchyma, vascular endothelia, kidney cells, and small intestine cells. [3] common symptoms of COVID-19 were fever and dry coughat the onset of illness. examination revealed that most patients dyspnea showed bilateral ground-glass opacities on chest computerized tomography scans. the most characteristic symptom of patients is respiratory distress. That lead to respiratory failure known as sever acute respiratory distress syndrome. [2]

Since the beginning of the SARS-CoV2 pandemic, health-care professionals have been challenged by its variable clinical manifestations. Nevertheless, the post-COVID phase is still worth exploring. (4) Post COVID complications are like, Body pain, Joints pain or headache, hyperglycemia, Fever, Fatigue, Feeling of tiredness or lack of energy, Loss of taste or smell, Shortness of breath or difficulty breathing, Coughing or Chest pain, Myalgia, Insomnia, anxiety disorder or depression, orthostatic hypotension) [5]

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 [6] Persistent fatigue lasting 6 months or longer without an alternate explanation is termed chronic fatigue syndrome (CFS). This may be observed after several viral and bacterial infections. There have also been links between CFS and depression [6]. SARS-CoV2 was recently reported to be a potential trigger for postinfectious fatigue syndrome (PIFS). Theterms myalgic encephalomyelitis (ME), chronic FS (CFS) and postviral FS (PVFS) are also used to describe this condition. The etiology of PIFS remains elusive; however, a number of mechanisms have been suggested, such as immunodysfunction, neuroinflammation, enhanced oxidative stress, mitochondrial dysfunction, neuroendocrine disorder, and hereditary predisposition. PIFS affect patient's functional level must decrease by more than 50% compared with preillness levels. No cure currently exists; therefore, treatment of PIFS aims mainly atalleviating symptoms and improving functional status. (4) The economic impact of PIFS on society is also substantial, because this disorder may result in decreased productivity and loss of employment. [4]

The aim of this study is to find out prevalence and severity of fatigue following post SARS-COV 2 phase. The present study focuses on fatigue as one of the compontes post SARS-COV-2 phase. To better understand and quantify fatigue severity many scales have been developed. The most commonly used fatigue scale is the Fatigue Severity Scale (FSS) developed by Krupp et al. Prevalence and severity of fatigue in SARS-COV-2 patients by the FATIUGE SEVERITY SCALE (FSS) present study focused about

Health-care professionals should be aware of such disorder because it greatly affects functional status and quality of life of the patients comparably with other diseases As such, rehabilitation care for COVID-19 survivors with PIFS must be focused on and delivered by multidisciplinary teams. rehabilitation of post-COVID patients is crucial for recovering from fatigue and improving functional status. It is also mandatory to manage residual post-COVID deficits of these patients, even after their discharge, through rehabilitation. This may decrease the consequences of fatigue and improve functional outcomes in activities of daily living.

2. Materials and Methodology

- Source of data: various hospital at Ahmadabad and Gandhinagar
- Study type: observational study
- Sample size: 155
- Sampling technique: Convenience sampling
- Study duration: 4 weeks

An online community based survey was done by using goggle form.

Inclusion Criteria

- Subjects diagnosed with COVID-19 and confirmed by real-time RT-PCR.
- Participation had to occur at least 6 weeks after either: (i) Date of last acute COVID-19 symptoms (for outpatients) and (ii) Date of discharge for those who were admitted during their acute COVID-19 illness.
- Patients known with English language.
- Both gender males and females.
- Subjects who willingly wants to participate.

Exclusion Criteria

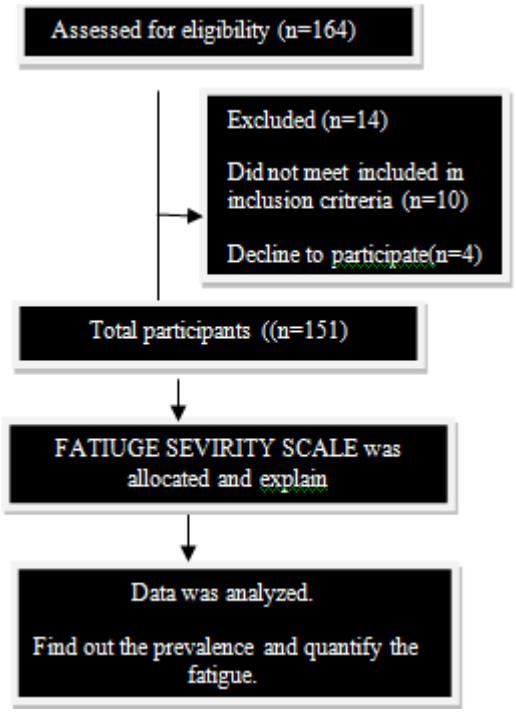
- Having an unstable clinical condition.
- Having cognitive and perception deficit.
- Not being able to fill questionnaire.

3. Procedure

A Goggle form was generated with basic information and diagnosis of patients and circulated through online mode via mail, whatsapp, FB messenger, telegram to the individuals. Ethical approval and informed consent was taken from the participants in the beginning of the questionnaire. The form was self generated from with the basic questions regarding their demographic, medical details, RT-PCR value etc. The study is carried out in 155 individual with a positive SARS-COV-2 according to inclusion and exclusion criteria. Fatigue is assessed using FATIUGE SEVIRITY SCALE. The data was collected in 4 week of time period.

Assessment of Fatigue:

Fatigue was assessed using the validated FATIUGE SEVIRITY SCALE. The FSS is a 9 question validated instrument that indicates a perception of fatigue that might require medical intervention.



Fatiuge Sevirity Scale

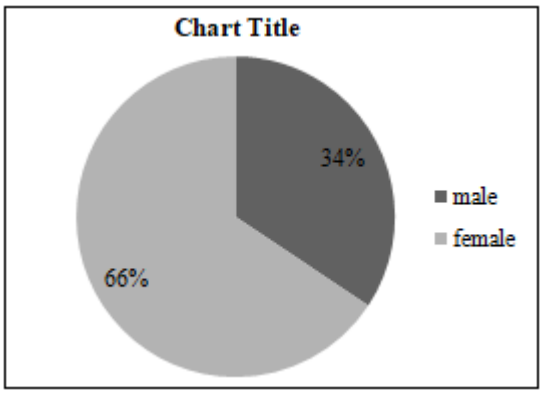
It is a fatigue screening instruments. fatiuge is feeling of overtired, with low energy and strong desire to sleep that interferes with normal daily activities. The FSS-9 has demonstrated adequate reliability (ranging from 0.87 to 0.91) and construct validity. FSS-9 is 9 question scale and scoring is like 7 point likert scale where a score of 7 is associated with greater amounts of fitgue. The sum of responses is taken and divided by number of items for the scale score. the mean score is taken. A total score of less than 36 suggest that you may not be suffering from fatigue. A total score of 36 or more suggest that you suffering from fatiuge.

4. Result

Data is collected duration of 4week of period. Total 155 participants is including. Mean age of the participants was (33.45±1.07, 66%female). Analysis was done in SPSS version 20. Find out normality of data by using Shapiro-wilk test. Data was not normally distributed so non parametric test were used. More than half reported Fatigue persistence (106/155, 66%) and severity (106/155, >36 score). There was weak negative correlation between FSS and RTPCR VALUES Spearman rho correlation value r=-2.0

Table 1: Shown gender distribution of total population

Total	155 (100%)
Male	49 (34%)
Female	106 (66%)



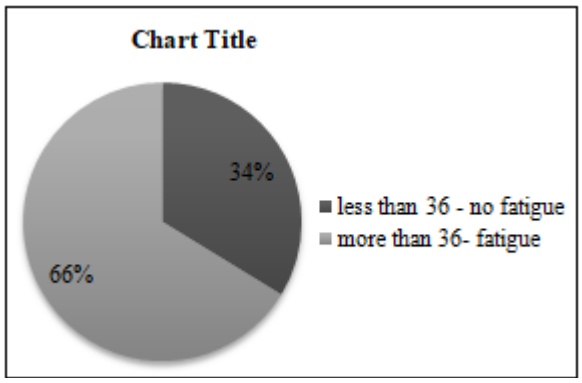
Graph 1: Shows gender distribution of total population

More than half people reported with fatigue total participants (106/155).66% prevalence of fatigue of total population.

Severity of fatigue is measured with mean score of total scoring. From the total participants (106/155) more than 4 grade (total 36 score).

Table 2: shows severity and prevalence of fatigue.

Variable	FSS
Prevelance	66%
Severity	66% (more than 4 mean score)



Graph 2: Shows severity of fatigue of total population

5. Discussion

In this study we concerned with examination of prevalence and severity of the fatigue following SARS-COV-2 infection in mild and moderate cased by people with age between 30 to 45 year. This study proved that the fatigue is prevalent among adult people post mild and moderate covid-19 cases after 3-5 months following recovery from acute covid. fatiuge severity scale were used for find out prevalence and severity of fatigue. There are many scale were developed to measure fatigue but FSS scale is scale is qutify fatigue. Present study found 66% of prevelance and severity in post covid patients. A findings of this study is a the fatigue score was not associated with RTPCR value. General analysis based on weighting according to sample size showed negative correlation between fatigue and RTPCR value. The rate of post COVID fatigue appear much higher than those previously reported following EBV other infection disease. Dr Charles Shepherd et al, medical adviser he concluded that Brain and central nervous system abnormalities in post-viral syndrome have been investigated using a variety of techniques. In addition, CFS is associated with changes in the activity of mitochondria in cells, the energy-producing organelles. This appears to allow enhanced viral replication together with reduced mitochondrial DNA replication and increased oxidative damage. Several past studies may support findings that reported that higher level of fatigue were related to decersed in NK cells. however, no relationship was found between fatigue and T cells and B cells. Several past studies may support findings that reported that higher level of fatigue A systemic review demonstrated the possibility the increased fatigue score related with age, BMI, ethnicity, menopausal status, psychological stress and Association between basic attributes and living habits with COVID 19 patients. Some study suggests that the absence of a specific immune signature associated with persistent fatigue is a striking positive finding CFS has been associated with a large number of differing changes in the inflammatory markers and immune cell populations. However, no consistent change has been reported across multiple studies. This, in combination with our results, leads us to speculate that the pathological changes associated with CFS and post-COVID fatigue are more subtle. Also show a distinct female preponderance in the development of fatigue.

6. Limitation of Study

- Study has a smaller sample size
- Online survey study
- Associated potential complex factors was not determine

7. Further Recommendation

- Large cohorts will be required to tease out fatigue subgroups
- Potential complex factors at play that effect on fatigue will be determine
- The management of this post-COVID syndrome and advocate early analysis of multi-disciplinary fatigue management strategies should be done.

8. Conclusion

A relatively uniform post-infective fatigue syndrome persists in a significant minority of patients for six months or more after clinical infection with several different viral and non-viral micro-organisms. 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. Prevalence of fatigue and its severity does not rely on RTPCR value.

Acknowledgement
Thanks for participating individuals.

Conflict of Interest:
No conflict of interest.

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