



THE THERAPIST

JOURNAL OF THERAPIES & REHABILITATION SCIENCES

<https://thetherapist.com.pk/index.php/tt>

Volume 4, Issue 2 (April-June 2023)



Original Article

Correlation of Chronic Fatigue with Post-Traumatic Stress Disorder and Symptom Severity in COVID-19 Survivors: A Cross-Sectional Study

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ARTICLE INFO

Key Words:

Chronic Fatigue, Post-Traumatic Stress Disorder, COVID-19, RT-PCR Testing

How to Cite:

Sarwar, H., Zaheer, A., Fatima, S., & Parveen, S. (2023). Correlation of Chronic Fatigue with Post-Traumatic Stress Disorder and Symptom Severity in COVID-19 Survivors: A Cross-Sectional Study: Correlation of Chronic Fatigue with PTSD. *THE THERAPIST (Journal of Therapies & Rehabilitation Sciences)*, 4(02). <https://doi.org/10.54393/tt.v4i02.117>

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Received Date: 6th April, 2023

Acceptance Date: 5th June, 2023

Published Date: 30th June, 2023

ABSTRACT

Corona virus (COVID-19) is an airborne contagious respiratory disease. Fatigue is much reported complain by post-COVID patients. COVID-19 had generated stress in a wide variety of patients can be termed as post-traumatic stress disorder. **Objective:** To find the correlation of chronic fatigue with post-traumatic stress disorder and symptom severity in COVID-19 survivors. **Methods:** The commencement of this study required the allowance from University of Lahore ethical committee. About 155 participants participated in this cross-sectional study who had been COVID-19 positive for once up till now, which had supportive evidence through reverse transcriptase polymerase chain reaction (RT-PCR) test. Only those participants got eligible for study who had survived COVID-19 infectious disease. The data were kept secured by negating any biasness. **Results:** From total of 155 COVID-19 survivors, 75 (48.39%) males and 80 (51.31%) females participated in study. Mean age was 29.32 ± 10.81 . About 123 (79.35%) had symptomatic COVID-19. Majority of patients 79 (50.97%) self-categorized them as struggling with moderate symptoms during their quarantine period. About 114 (73.54%) self-perceived they accompanied fatigue after recovering from COVID-19. While 87 (56.13%) COVID-19 survivors had encountered high impact post-traumatic stress disorder. **Conclusions:** It was concluded that majority of COVID-19 survivors had moderate level of fatigue and high impact post-traumatic stress disorder. This was seen more commonly among females. This is an important finding which needs to be taken into consideration when making a treatment plan for patients.

INTRODUCTION

Corona virus (COVID-19) is an airborne contagious respiratory disease. As viral pandemic got spread over the world, resulted in many deaths and morbidities, experts speculated that COVID-19 virus was to blame. COVID-19 had the potential to produce long term and devastating post-viral consequences [1]. It first emerged in the city of China, Wuhan back in December 2019. SARS-Cov-2 was discovered from the samples of three patients at Wuhan Jinyintan hospital in their bronchoalveolar lavage fluid and was confirmed as the cause of COVID-19 on 24 January 2020 [2]. COVID-19 is now linked to SARS-Cov-2 virus [3]. World Health Organization gave virus its novel name as

COVID-19 on 11th of February 2020. From its origin since 2019 it has shattered the economies globally, changed the lifestyles of people worldwide. Pakistan had its first case reported on 26th February 2020 due to which government had to enforce complete lockdown on March 13, 2020. Second wave started on 28th of October when the infectivity rate suddenly elevated due to ease of standard protocols and winter arrival. According to WHO, COVID-19 had reached across 223 countries till April 2021. There are four types of it namely alpha coronavirus, beta coronavirus, gamma coronavirus and delta coronavirus. After thoroughly studying the genome's full-length, it was

discovered that the virus is a member of the 2b beta coronavirus phylogenetic tree and is a novel human affecting coronavirus of beta category, previously undetected in people or animals [4]. It is important to study the post-COVID symptoms, complications. Much study is already done on COVID-19. Fatigue was much reported complain by post-COVID patients but chronic fatigue is entirely different from fatigue as it can be characterized as set of symptoms like lethargies, headache, sore throat, cough, malaise, sleepless nights, tender lymph nodes and impaired cognition which use to diminish concentration or memory to some extent of patients. A prior Cross-Sectional study was conducted among nursing staff in American hospital; they experienced psychological problems, poor sleep and fatigue during COVID-19. Moreover the healthcare providers had to work for 40 hours with a break of half an hour [5]. Vulnerability of chronic fatigue was more among younger population [6]. COVID-19 had generated stress in a wide variety of patients which can be termed as post-traumatic stress disorder. Previous research found a link between post-traumatic stress disorder and a number of viral illnesses [7]. Moreover, a previous study showed that epidemics have an impact on both infected as well as non-infected individuals mainly due to stress, isolation etc., [8, 9]. Furthermore, earlier research has shown that stress and anxiety enhance the sensitivity to COVID-19 infection [10]. Tarsitani et al., conducted cohort study regarding risk factor, prevalence of COVID-19 among hospitalized survivors of post-traumatic stress disorder within a span of 3 months. They concluded that patients with underlying pathologies and females are more prone to develop post-traumatic stress disorder [11]. Quarantine at home developed stress among patients. Critical patients at hospital also had undergone a lot of stress as they had to encounter high doses of medications, oxygen masks or ventilators to combat disease. The idea behind conducting research was lack of literature on current topic by Pakistani researchers, secondly there was peak of third wave with common complain of fatigue and dilemma of fear subjected as post-traumatic stress disorder as a symptom by COVID-19 survivors. Though studies have been conducted individually on chronic fatigue, post-traumatic stress disorder among COVID-19 survivors but no one has seen the combine effects of these study variable's so there was a dire need of studying the correlation of variables. COVID-19 can be categorized as mild, moderate and severe in terms of symptoms so accordingly fatigue as well as post-traumatic stress faced by patients can be associated.

METHODS

The commencement of this study required the allowance

from University of Lahore ethical committee. Sample size of about 155 participants was calculated through Epitool, participated in cross-sectional study from Lahore who had been COVID-19 positive for once up till now, which had supportive evidence through reverse transcriptase polymerase chain reaction RTPCR test [12]. Non-probability convenient sampling technique was used. Only those participants got eligible for study who had survived COVID-19 infectious disease. Data collection was performed from COVID-19 survivors by gaining their consent in the Google document form which was later transformed into SPSS through Microsoft Excel. The study was completed in 6 months after synopsis approval. Male and females of age group 18-50 were considered who had only undergone COVID-19 once and got recovered. Patients who had undergone COVID-19 twice confirmed by Reverse transcriptase polymerase chain reaction testing (RT-PCR), patients who died because of COVID-19, patients currently in I.C.U or on ventilator, patients having any life-threatening infectious diseases i.e. influenza, endocarditis and central nervous related disease before contracting COVID19, patients having some serious systemic illnesses like myocardial infarction, congestive heart failure, diabetes mellitus, asthma, blood pressure, patients who have been suffering from any malignancy or cancerous disease and patients who were ineligible to give consent was not included in study. Self-administered proformas was used for recording demographics as well as symptoms severity. Chronic fatigue was assessed through validated multidimensional fatigue inventory questionnaire which comprised upon 5 sub-scales ranging from general fatigue to mental fatigue translated from English version [13], while for monitoring post-traumatic stress disorder impact, a valid event scale-revised IES-R was used [14]. All the questions were validated through previous literature. The data were analyzed by using SPSS version 25.0. Qualitative data depicted as frequency, percentage, cross-tabulation, bar and pie chart. While quantitative variable manifested as mean standard deviation, range and histogram. Ethical approval was received from Ethical review Committee of University Institute of physical therapy, The University of Lahore, Lahore, Pakistan (Reference number: IRB-UOL-FAHS-/837-V/2021). All ethical rules and regulation were followed while conducting the study and the participants were included in the study based on informed consent.

RESULTS

From total of 155 COVID-19 survivors, 75 (48.39%) males and 80 (51.31%) females participated in study. Mean age was 29.32 ± 10.81 with majority of participants from 18-35 age groups. People from almost all sectors of society

participated in study. Out of total sample, 73 (47.1%) students, 23 (14.84%) doctors, 07 (4.52%) teachers, 07 (4.52%) bankers, 14 (9.04%) housewife, 05 (3.23%) engineers and 26 (16.77%) government or private category job holders/ businessman participated in study. Almost 123 (79.35%) had symptomatic COVID-19 out of which only 2 survivors availed ventilation during their stay at hospital. Majority of patients 79 (50.97%) self-categorized them as struggling with moderate symptoms during their quarantine period. About 114 (73.54%) self-perceived they accompanied fatigue after recovering from COVID-19.

Table 1: Descriptive statistics of five domains from MFI-20 scale (N=155)

Domains of Multidimensional Fatigue Inventory (MFI-20) scale	Mean \pm SD	Minimum value	Maximum value
General fatigue	11.86 \pm 2.86	4.00	18.00
Physical fatigue	11.86 \pm 3.48	4.00	20.00
Reduced activity	12.13 \pm 3.23	4.00	20.00
Reduced motivation	11.27 \pm 2.64	4.00	20.00
Mental fatigue	11.30 \pm 3.08	4.00	20.00

MFI (Multidimensional Fatigue Inventory- Scale) indicating five different domains of fatigue was configured out in this study with the minimum value ranging from 4 to the highest value of 20 in 4 domains apart from general fatigue which illustrates peak value of 18 respectively. While 87 (56.13%) COVID-19 survivors had encountered high impact post-traumatic stress disorder.

Table 2: Descriptive statistics of IES-R scale cut off score (N=155)

Total IES-R Score Cut off	Male	Female	Total
No PTSD	04 (2.58%)	08 (5.16%)	12 (7.74%)
Partial PTSD	16 (10.32%)	17 (10.97%)	33 (21.29%)
Probable PTSD	09 (5.81%)	14 (9.03%)	23 (14.84%)
High Impact PTSD	46 (29.68%)	41 (26.45%)	87 (56.13%)

IES-R (Impact Event Scale Revised) clearly indicated that most of the individuals who participated in this study got suffered with high impact post-traumatic stress disorder while only slight no. of individuals got no post-traumatic stress disorder at all. Table 3 exhibits correlation of 5 domains of fatigue through MFI scale with three domains of Impact event scale revised.

Table 3: Correlation of domains from MFI-20 with IES-R score cut off

Domains of MFI-20 scale	IES-R Score (r)	p-value
General Fatigue	0.164	0.041*
Physical Fatigue	0.261	0.001*
Reduced Activity	0.240	0.003*
Reduced Motivation	0.168	0.037*
Mental Fatigue	0.327	0.000*

Correlation is significant at 0.05* level (2-tailed)

DISCUSSION

Post-COVID complications mainly involve chronic fatigue,

post-traumatic stress disorder, cough, dizziness, breathing difficulty like set of symptoms. Specifically chronic fatigue has been reported by 61 (39.35%) females which back previous literature, suggesting that females encountered more fatigue than males [15]. This study did not take into account the demographics comparison with chronic fatigue or even with post-traumatic stress disorder in detail. The future studies should take this point into consideration so that it can be significant to society. Moreover prior data suggests that symptom of fatigue itself continued for a span of 3 or so months even after getting discharge [16]. Previous literature indicated that males were more immune to any stress, trauma, anxiety or post-traumatic stress disorder [17]. But study validates that male in number of 46 (29.68%) got suffered from high impact post-traumatic stress disorder in contrast to 41 (26.45%) females. Studies of Xiong et al., depicted that stress and anxiety were not amongst the much reported symptom post-COVID but our research validates other way round [16]. 131 patients were examined in a study at Wuhan which demonstrated 29% of patients had presence of COVID-19 symptoms for a time period of two weeks. Literature suggests that 75% of patients had the presence of at least one symptom after getting recovered from COVID-19 for a time period of 7 or 12 weeks. COVID-19 survivors have mostly self-categorized them as struggling with moderate level symptoms in the study. About 79 (50.97%) have rated moderate symptoms, 28 (18.06%) had mild while 16 (10.33%) were impacted by serious symptoms. Findings of Demeco et al., suggests that about 81% patients encountered mild degree of COVID-19 which is clearly not in line with our results [18]. The studies before did not take the correlation of fatigue with post-traumatic stress like disorder along with symptom severity but my study validates the correlation of chronic fatigue with post-traumatic stress disorder. Moreover my study includes correlation of the five domains of MFI-20 including general fatigue, physical fatigue, mental fatigue, reduced activity, reduced motivation with the three domains of post-traumatic stress disorder, priory literature lacked such evidence specifically in our region. The most significant amongst all five domains of fatigue was mental fatigue with post-traumatic stress disorder. Prior researches have considered critical conditions like stroke, renal failure, heart related diseases but our piece of research negates it [19, 20]. People who have exposed themselves in order to bring home got much more affected than those who stayed at home in quarantine specifically suffered with high impact post-traumatic stress disorder. Future studies should take symptom severity as study gap in order to find association with both chronic fatigue and post-traumatic stress disorder along with their domains as used in my

study.

CONCLUSIONS

Hence it was concluded that majority of COVID-19 survivors had moderate level of fatigue and high impact post-traumatic stress disorder. This was seen more commonly among females. This is an important finding which needs to be taken into consideration when making a treatment plan for patients.

Authors Contribution

Conceptualization: AZ

Methodology: HS

Formal analysis: HS, SP, SF

Writing-review and editing: HS, SP, SF, AZ

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

Source of Funding

The authors received no financial support for the research, authorship and/or publication of this article.

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