

Prevalence of Post Recovery Manifestations in Post-COVID Patients: A Cross-Sectional Study

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ABSTRACT

Post recovery manifestations are another concern in patients who have recovered from COVID-19. Various reports have shown that COVID-19 has variety of long-term effects on almost all systems of the body. We aimed to investigate the prevalence and post-recovery manifestations among COVID-19 survivors. This study enrolled in 160 recovered COVID-19 patients in Almora and Ramnagar. A special questionnaire was designed to inquire about the current health status of patients and their persistent symptoms in the post-COVID period. Data was analysed by using SPSS- 20 software. The results concluded that a considerable part of patients with COVID-19 had persistent symptoms even 4–5 months after COVID-19 diagnosis, and even patients with a mild-to-moderate disease suffered from persistent symptoms. Post-COVID syndrome (PCS) has been associated with poor quality of life but in our study, there is no association between gender and quality of life among the five parameters i.e., mobility, self-care, usual activities, pain/ discomfort and anxiety/ depression. Patients should be enlightened about the long-term effects of COVID-19 and awareness about post-recovery follow-up should be raised.

Keywords: Post-COVID syndrome, Novel Coronavirus disease 2019, COVID-19

INTRODUCTION

Novel Coronavirus disease 2019 (COVID-19) was crowned as the second pandemic of the twenty-first century by the World Health Organisation (WHO) on March 11th, 2020 [1]. The coronavirus disease 2019 (COVID-2019), which is a transmission of SARS-CoV-2 to humans, was reported first in Wuhan, Hubei province, China in December 2019. Later, COVID-19 rapidly spread worldwide creating a pandemic [2].

At the end of 2019, many people in Wuhan, China, developed signs of a hitherto unknown infection. Hospitalized individuals presented primarily with fever, cough, and muscle pains, many of them showed abnormalities in the chest CT and 29% developed acute respiratory distress syndrome (ARDS) [3]. A novel coronavirus was identified as the causal agent [4] and dubbed as SARS-CoV-2 [5], a novel strain from the *Coronaviridae* family.

SARS-CoV-2 is a positive-sense, single stranded enveloped RNA virus that transmits via respiratory droplets and fomites [6]. The virus causes a disease spectrum ranging from asymptomatic to severe acute respiratory distress syndrome (ARDS), and death. An ongoing pandemic of COVID-19 caused by the SARSCoV-2 virus strongly affects all levels of the health care system. Severe acute respiratory syndrome coronavirus-2 is believed to have evolved into its present state in bats, the original animal reservoir, and may have

passed through an intermediate host before being finally transmitted to humans [7].

Post-acute COVID-19 syndrome, defined as “persistent symptoms and/or delayed long-term complication of SARS-CoV-2 infection beyond 4 weeks from the onset of symptoms” [8], was reported in more than one-third of individuals in the USA [9]. Further findings from China [10] and European countries (the UK [11], France [12], Italy [13] and Spain [14]) also reported persistent symptoms such as fatigue (in 35–63% of individuals), joint pain (5–27%), dyspnoea (11–43%), chest pain (5–22%) and other.

The evidence-based role of physiotherapy interventions arose as highly relevant in addressing COVID-19 rehabilitation. Acute and post-acute rehabilitation in hospital settings and long-term rehabilitation in outpatient practices were reported to be of notable benefit for patients [15-17]. Respiratory organs are the most affected by the SARS-COV-2 virus. Respiratory rehabilitation, also known as pulmonary rehabilitation, is generally recommended as a main rehabilitation strategy for patients with persistent respiratory symptoms [18,19], although clinical studies in patients with COVID-19 are still ongoing [20]. In addition to pulmonary impairments, COVID-19 survivors often suffer from neuromuscular complications, muscle weakness, fatigue and joint problems too. Thus, neuromuscular rehabilitation is likewise of great importance in the outpatient physiotherapeutic practice [18,21,22].

Researches have shown that COVID-19 has a variety of long-term effects on almost all systems of the body including respiratory, cardiovascular, gastrointestinal, neurological and psychiatric systems. The aim of the study is to investigate the characteristics of post-COVID syndrome among COVID-19 survivors.

MATERIALS & METHODS

SAMPLE:

- a. **Number of subjects:** 160 patients was selected on the basis of inclusion and exclusion criteria.
- b. **Source of subjects:** COVID-19 survivors in Almora and Ramnagar.
- c. **Study design:** Cross-sectional study.

INCLUSION CRITERIA

- Recovered COVID-19 patients

EXCLUSION CRITERIA

- Non- coordinated patients
- Unpublished reports

INSTRUMENTATION

- Post COVID-19 Questionnaire

METHODS OF SELECTING AND ASSIGNING THE SUBJECTS

- Subjects are selected according to inclusion and exclusion criteria.

PROCEDURE

160 patients were selected on the basis of inclusion and exclusion criteria. A consent form was signed prior to the start of procedure to ensure safety. The subject received detailed explanation of the procedure and purpose of the study. A special questionnaire was designed to inquire about the current health status of patients and their persistent symptoms in the post-COVID period. Then questionnaire was filled by the subjects. Analysis was performed using IBM SPSS software.

STATISTICAL ANALYSIS

- The data was analysed by using SPSS-20 software.
- Paired t- test was applied between COVID history symptoms before hospital and COVID history symptoms still present in 17 various categories.
- Chi square test was applied for association between Gender and Quality of life in 5 various categories.
- Level of significance was set as 0.05.

RESULT

1. Paired t-test

- There is significant difference between shortness of breath, sore throat, cough, chest congestion, chest pain, palpitation, fever, fatigue, weakness, loss of taste and smell and muscle or joint pain among the patient before they were

admitted in hospital and after they were discharged.

- There is insignificant difference between hoarse voice, nausea/ vomiting, diarrhea.

2. Chi square test

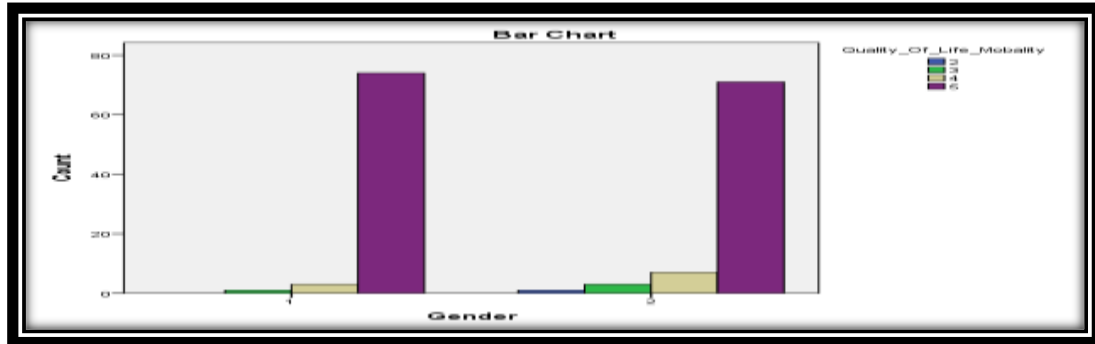


Fig. 1. Association between Gender and Quality of life (Mobility)

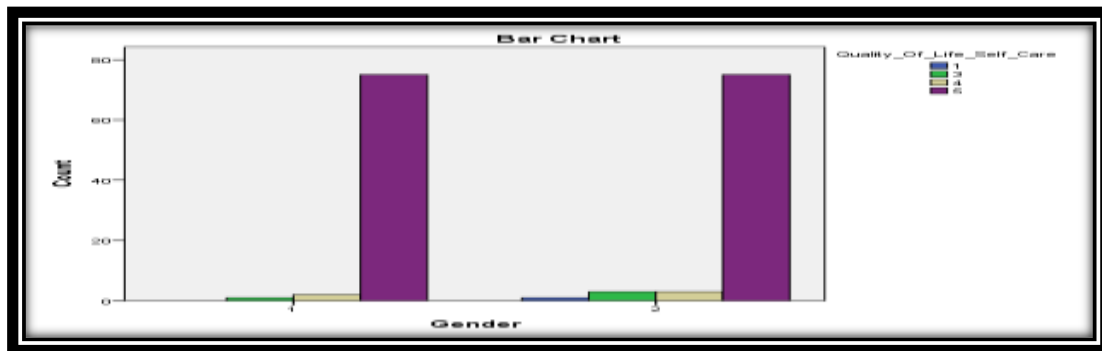


Fig. 2. Association between Gender and Quality of life (Self Care)

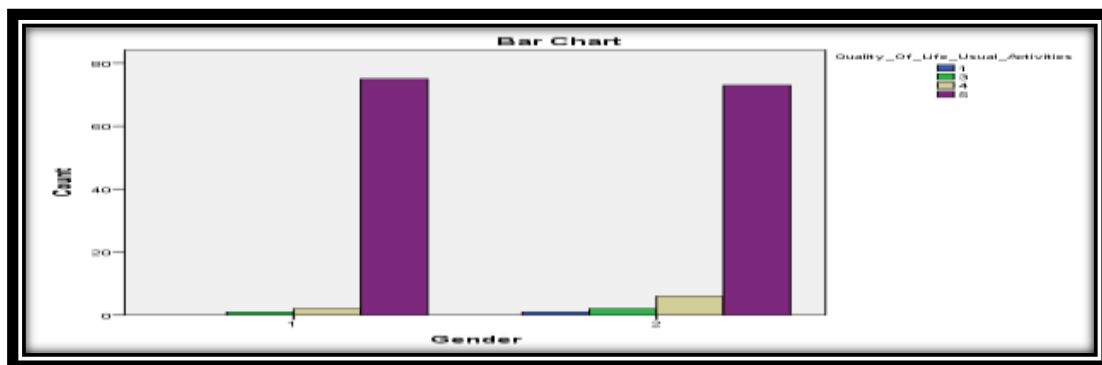


Fig. 3. Association between Gender and Quality of life (Usual Activities)

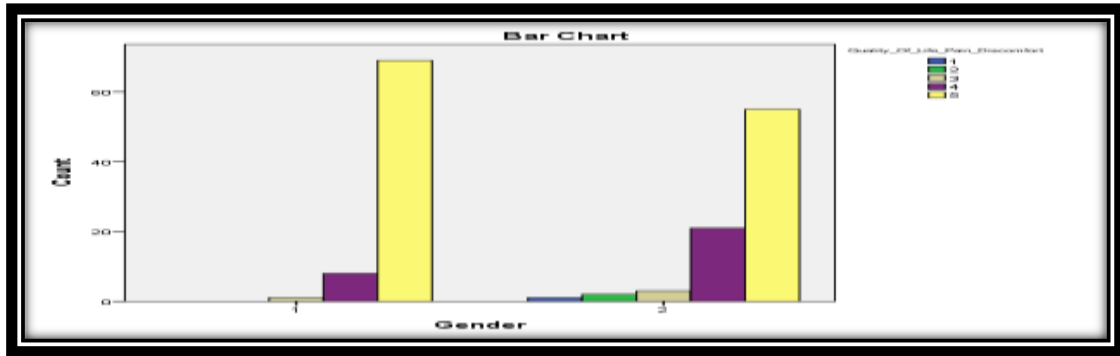


Fig. 4. Association between Gender and Quality of life (Discomfort)

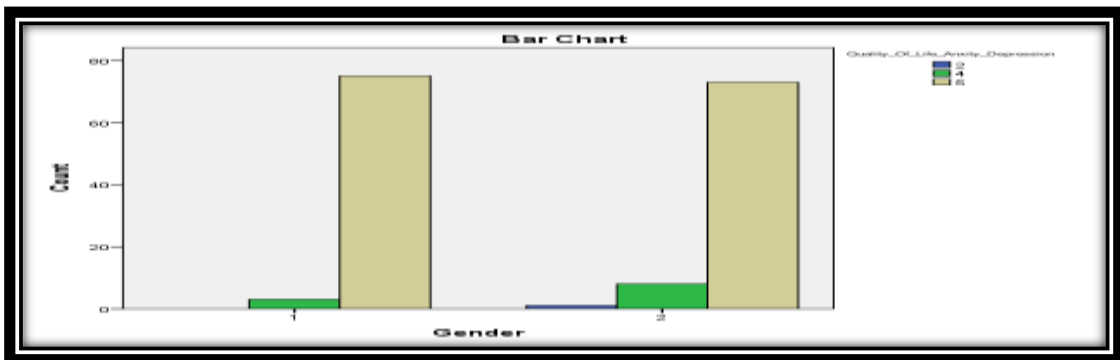


Fig. 5. Association between Gender and Quality of life (Anxiety Depression)

DISCUSSION

In the present study, we investigated the characteristics of post-COVID syndrome among COVID-19 survivors and demonstrated that some of the patients suffer from persistent symptoms. In the present study, although most participants had a mild-moderate COVID-19, persistent symptoms were common even among them. The persistent symptoms may be associated with different reasons including the sequel of infection, ongoing inflammation, complications of COVID-19, or complications related to treatments drugs, nonspecific effects of hospitalization, or deconditioning.

There is significant difference between shortness of breath, cough, chest congestion, chest pain, palpitation, fatigue, weakness and muscle or joint pain among the patient before they were admitted in hospital and after they were discharged.

There is insignificant difference between sore throat, fever and loss of taste and smell. Pavli A.^[23] et al. in their study also found that post-COVID syndrome, which affects approximately 10% of COVID-19 patients, is not limited to patients with severe acute COVID-19. Symptoms of post-COVID syndrome are usually mild, showing improvement with time, and with no identified predictors.

Moreno-Pérez O.^[24] et al. also found high incidence of persistent symptoms in patients with COVID-19 (around 50%), 10–14 weeks after disease onset.

Augustin M.^[25] et al. in their study of 958 SARS-CoV-2 convalescent patients, found that the majority initially presented with absent to mild symptoms.

Post- COVID patients have poor effect on quality of life. But there is not any evidence regarding gender wise effect on quality of life. The study also indicates that there is no association between gender and quality of

life among the five parameters i.e., mobility, self care, usual activities, pain/ discomfort and anxiety/ depression.

Malik P.^[26] et al found that 58% of the post-COVID-19 patients had reported poor quality of life. A few studies have reported that PCS results in a poor quality of life and one potential explanation for this phenomenon is that COVID-19 may result in PTSD. A hypothesis for the development of PTSD is that it may have a higher incidence in people who have comorbidities that are associated with higher COVID-19 mortality rates.

Anaya JM.^[27] et al. found that a significant number of patients present with a clinical spectrum after SARS-CoV-2 infection recovery, affecting the quality of life and requiring interdisciplinary approach.

CONCLUSION

The results concluded that a considerable part of patients with COVID-19 had persistent symptoms even 4–5 months after COVID-19 diagnosis, and even patients with a mild-to-moderate disease suffered from persistent symptoms. Although the persistent symptoms of the patients are not vital, follow-up of these symptoms in the post-recovery period is important due to its resulting disrupting life quality. Patients should be enlightened about the long-term effects of COVID-19 and awareness about post-recovery follow-up should be raised. PCS has been associated with poor quality of life but in our study, there is no association between gender and quality of life among the five parameters i.e., mobility, self-care, usual activities, pain/ discomfort and anxiety/ depression.

Declaration by Authors

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Conflict of Interest: The authors declare no conflict of interest.

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