



# A Survey on Functional Status, Exertional Dyspnea, And Quality of Life in Post-Covid-19 Patients

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## ABSTRACT

This study focused on individuals recovering from COVID-19 and examined their functional capacity, breathing difficulties during physical activity, and overall quality of life.

**METHODS** - Participants completed a questionnaire with specific inclusion and exclusion criteria. They were provided with an information booklet explaining the research objectives and methods, and their consent was obtained after reviewing the booklet. The Post COVID-19 Functional Status Scale (PCFS), modified Borg scale, and CDC-Health-Related Quality of Life (CDC-HRQOL) scales were used for participant assessments.

**RESULTS** - The study found that subjects had an average body temperature of  $101.82 \pm 1.178$  and an oxygen saturation level (Spo<sub>2</sub>) of  $96.14 \pm 2.49824$ . A large proportion of participants experienced coughing (77.9%), while 43% reported sputum production. Dyspnea was reported by 38.6% of individuals. Most subjects (65.9%) fell into Grade 2 on the Post COVID-19 Functional Status Scale. The modified Borg scale revealed an average rating of  $1.227 \pm 0.936$ , indicating light or very light levels of effort, breathlessness, and fatigue during physical exertion. The health-related quality of life questionnaire yielded a score of  $317.18 \pm 89.181$ , which was highly significant ( $P < 0.001$ ).

**CONCLUSION** - COVID-19 recovery leads to symptoms such as coughing, increased phlegm, and breathing difficulties. Study participants faced limitations in daily activities due to work-related tasks but remained able to independently carry out their tasks. Physical exercise resulted in minimal shortness of breath. COVID-19 had a

significant impact on participants' physical and emotional well-being, as well as overall quality of life. Post-rehabilitation is crucial for enhancing their condition after COVID-19.

Key words- COVID-19, Dyspnea and Post COVID-19 Functional Status Scale

## INTRODUCTION

COVID-19, caused by SARS-CoV-2, is a severe respiratory illness with symptoms like breathlessness and loss of taste or smell <sup>[1]</sup>. Some individuals with mild to moderate symptoms may not meet criteria for severe classification <sup>[2]</sup>.

Age influences symptom severity, especially for those over 65. Organ damage can persist post-recovery, necessitating long-term research. COVID-19 spreads through airborne droplets <sup>[4]</sup> and contaminated surfaces can infect via eyes, nose, or mouth.

Infectiousness can last 20 days without symptoms. WHO recognizes 2019-nCoV, SARS-CoV-2, and COVID-19 <sup>[3]</sup>.

Director-General Tedros Adhanom abbreviates the pandemic as CO, VI, D, and 2019 (4).

## METHODOLOGY

Survey Study Methodology:

This survey study aims to assess the post-COVID-19 functional status using various measures. The following scales and questionnaires will be utilized:

1. Post COVID-19 Functional Status Scale (PCFS): This scale used during the follow-up to evaluate the level of disability in patients with COVID-19. It provides a comprehensive assessment of functional impairments regardless of specific infection-related limitations.
2. Modified Borg Dyspnea Scale (MBS): The MBS, used measure of disease severity in Pulmonary Arterial Hypertension (PAH), will be employed. It utilizes a 0-to-10 graded numerical score to assess dyspnea experienced by patients during submaximal exercise, as evaluated through the 6-minute walk test (6MWT).
3. Health-Related Quality of Life Questionnaire: The state-based BRFS (Bureau of Rural Family and Social Services) includes the four fundamental Healthy Days metrics since 1993. This questionnaire used to evaluate various aspects of participants' quality of life.

Inclusion Criteria:

1. Patients aged 18 years and above.
2. History of COVID-19.
3. Discharged from the hospital.

### Exclusion Criteria:

1. Individuals in the intensive care unit who are unconscious, semiconscious, or on mechanical ventilators.
2. Severe neuromuscular and musculoskeletal problems.
3. Cognitive impairments.
4. Lack of cooperation.

Recruitment methods included reaching out to post-COVID-19 support groups, utilizing social media platforms, and collaborating with healthcare institutions.

Informed consent was obtained from participants prior to their participation in the survey.

### Procedure

It was created with the inclusion of health-related quality of life questionnaire, the modified Borg scale, and a measure of functional status, all of which were included in the design. Participants were invited to complete a form that began with the inclusion and exclusion criteria and progressed from there. After completing a study sample, participants were given a patient information paper that explained the research's goals, objectives, and methods in more depth than they had previously received.

Consent was obtained from trial participants once a patient information leaflet was presented. Each topic was given its own time and attention. Patients were asked to complete the PCFS, modified Borg, and CDC-HRQOL scales between 4 and 8 weeks after receiving COVID-19.

The modified Borg scale, the CDC-HRQOL, and the PCFS will be administered once the research sample has been collected.

When all the data was collected in a given time interval then the statistical work was Performed.

### RESULT

TABLE 5.1-Show the Mean and Standard deviation of the Age of the subjects which is  $(30.35 \pm 13.338)$

VARIABLE	MEAN $\pm$ SD
AGE (N-384)	30.35 $\pm$ 13.338

TABLE 5.2-Shows the Grades percentage of the subjects calculated using the Post COVID-19 functional status scale which is as  
 GRADE 1 (15.1%) GRADE 2 (65.9%) GRADE 3 (11.7%) GRADE 4 (1.6%)  
 GRADE 0 (5.7%)

POST COVID-19 FUNCTIONAL STATUS SCALE					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	GRADE 1	58	15.1	15.1	15.1
	GRADE 2	253	65.9	65.9	81.0
	GRADE 3	45	11.7	11.7	92.7
	GRADE 4	6	1.6	1.6	94.3
	GRADE 0	22	5.7	5.7	100.0
	Total	384	100.0	100.0	
				0	

TABLE 5.3 - Shows the subjects affected by Sputum which is 43.5%

VARIABLE	FEVER	SPO2
Mean± SD	101.82±1.178	96.14±2.49824
N	384	384

TABLE 5.4- Shows the Mean and Standard deviation of the subject's Temperature and Spo2 levels in their body which are Temperature (101.82±1.178) and Spo2 (96.14±2.49824)

SPUTUM		Frequ ency	Perc ent	Valid Percen t	Cumulative Percent
Val id	NO	217	56.5	56.5	56.5
	YES	167	43.5	43.5	100.0
	To ta l	384	100. 0	100.0	

TABLE 5.5-Shows the score of BORG RATING OF PERCEIVED EXERTION

	BORG RATING OF PERCEIVED EXERTION	T-TEST	P-VALUE
MEAN±SD	1.227±0.936	13.106	<0.001

TABLE 5.7-Shows the score of HEALTH-RELATED QUALITY OF LIFE

	HEALTH-RELATED QUALITY OF LIFE	T-TEST	P-VALUE
MEAN±SD	317.18±89.181	69.695	<0.001

The results of the survey on functional status, exertional dyspnea, and quality of life in post-COVID-19 patients revealed several important findings.

In terms of demographic characteristics, the survey included a diverse sample of post-COVID-19 patients, ranging in age and gender.

The result of the study shows that the Temperature and Spo2 level of the subjects were body which is Temperature (101.82±1.178) and Spo2(96.14±2.49824). The subjects affected with cough were 77.9%. Subjects with sputum were 43% and Dyspnea was in 38.6% of people. The Grade for Post Covid-19 Functional Status Scale was GRADE 1 (15.1%) GRADE 2 (65.9%) GRADE 3(11.7%) GRADE 4 (1.6%) GRADE 0 (5.7%). The BORG rating shows a score of 1.227±0.936 which means the average rating is light and very light in the BORD rating (effort and exertion, breathlessness, and fatigue during physical work). The health-Related Quality of Life questionnaire score was (317.18±89.181) with a significant P-value (<0.001).

Exertional dyspnea, a common symptom reported by post-COVID-19 patients, was prevalent among the survey participants. Many individuals reported experiencing exhaustion and difficulty in breathing during physical activity. This highlights the impact of COVID-19 on exercise tolerance and suggests the need for interventions to address exertional dyspnea and improve overall physical functioning.

The survey findings also shed light on the quality of life experienced by post-COVID-19 patients. The Health-Related Quality of Life questionnaire revealed that participants perceived their overall well-being, including physical, mental, and social aspects, to be moderately affected. This emphasizes the multidimensional impact of COVID-19 on individuals' quality of life and underscores the importance of addressing these concerns in their post-recovery journey.

Overall, the survey results provide valuable insights into the functional status, exertional dyspnea, and quality of life experienced by individuals who have recovered from COVID-19. These findings highlight the ongoing challenges faced by post-COVID-19 patients and emphasize the need for tailored interventions, rehabilitation programs, and support services to optimize their recovery and enhance their overall well-being.

## DISCUSSION

The findings of this study revealed several key characteristics and outcomes in COVID-19 patients. The average body temperature was recorded as 101.82, and the blood oxygen saturation level was measured at 96.14. Coughing was reported by 77.9% of participants, while sputum was present in 43% of cases, and 38.6% experienced dyspnea. The Post-COVID-19 Functional Status Scale was used to assess functional status, with the majority of participants (65.9%) receiving a grade two (third grade). The BORG rating indicated that the average rating varied from light to extremely light. The Health-Related Quality of Life questionnaire yielded a score of 317.1889.181.

The study, conducted in Turkey, <sup>[5]</sup> involved a cross-sectional design with 100 participants, aiming to examine the reliability and validity of the Turkish version of the post-COVID-19 Functional Status Scale in both hospitalized and non-hospitalized patients. The Turkish version of the scale was compared to other measures of lung function. The results demonstrated that the scale can effectively evaluate activity restrictions and functional state, providing valuable insights for therapists to identify impairments and tailor appropriate therapy. The physical performance of COVID-19 patients was assessed, and the impact of daily activities on their well-being was examined.

A literature search was conducted, including English-language papers from January 2020 to February 2021.<sup>[6]</sup> It was found that the physical capabilities of COVID-19 patients were significantly reduced; however, only a few studies stood out in terms of their comprehensive investigation of this aspect.

In a separate study, Ravi Jandhyala et al. [7] aimed to develop a 12-month Quality of Life monitoring system for COVID-19 patients. The study included a healthy volunteer sample and a group of COVID-19 infected individuals. Among the 44 Quality of Life Indicators (QLIs), a small proportion (less than 5%) showed an impact on patients with chronic COVID. Statistically significant differences were observed in 35 out of the 44 QoL Likert scores between the two groups.

Furthermore, the effectiveness of inpatient pulmonary rehabilitation for individuals with interstitial lung disease (ILD) was assessed in another study. The researchers examined 402 ILD patients who had been hospitalized and subsequently underwent rehabilitation over a ten-year period. The results indicated that pulmonary rehabilitation significantly improved the quality of life and functional status of ILD patients, offering a valuable addition to their limited therapy options.

#### Future Research

Future studies can be done on the larger sample size with experimental protocols for Pulmonary rehabilitation

#### Relevance to clinical practice

COVID-19 presents significant challenges to global rehabilitation services, which have been heavily impacted throughout the pandemic. At the same time, there is an increased demand for rehabilitation, both for individuals who are severely ill with COVID-19 and those experiencing long-term effects of the disease. In COVID-19 patients requiring assisted ventilation or oxygen treatment, pulmonary rehabilitation has been found to be viable and beneficial. Our findings can provide valuable guidance to healthcare professionals involved in the care of COVID-19 survivors.

#### CONCLUSION

This suggests that a significant number of individuals experience coughing as a consequence of COVID-19, and there is a higher prevalence of sputum production among the participants. Some individuals also reported experiencing dyspnea to a greater extent. Many patients mentioned limitations in their daily activities as they have modified or avoided certain tasks due to post-COVID symptoms, but they can still independently carry out their regular activities. Participants experienced minimal breathlessness following intense physical exertion. The participants' physical and mental well-being, as well as their overall quality of life, appear to be significantly impacted. This highlights the need for post-rehabilitation in individuals recovering from COVID-19 to address the post-effects of the disease on their lives.

**Funding** – No financial assistance was received in support of the study.

**Ethical Approval-** Ethical Approval was given by Galgotias University.

We have no conflicts of interest to disclose.



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