

Izvorni znanstveni rad | Original scientific paper

## COVID Impact on Functional Status of Hospitalized Patients

### Utjecaj COVID-a na funkcionalni status hospitaliziranih bolesnika

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#### Summary

Originating with unexplained symptoms from Wuhan, city of China, COVID-19 being a global pandemic causing tremendous morbidity and mortality, has proved to be the biggest challenge of the 20th century. This study aimed to explore the functional impacts of COVID-19 upon those patients who were diagnosed with this disease and were admitted in hospitals. This cross-sectional survey included 183 COVID-19 diagnosed patients from COVID-19 isolation wards of public and private hospitals of Islamabad and Rawalpindi. After getting ethical permission from Institutional Review Board of Shifa International Hospital (Ref # 070-21), this survey was conducted for the time period of 6 months from December 2020 to May 2021. Through convenient sampling, 183 patients with the age range of 25 to 55 years with no already diagnosed psychological complaints were assessed for eligibility briefed regarding the study purpose and then were asked for their voluntary participation. The Functional Status Scale for the Intensive Care Unit (FSS-ICU) was used to assess the functional status impacted due to COVID-19 during hospitalization. Frequencies and percentages were calculated through SPSS-21. On FSS-ICU, out of 183 COVID-19, 11 (6%) patients reported that they were dependent, 18 (9.8%) required maximum assistance, 32 (17.5%) required moderate assistance, 27 (14.8%) required minimal, 24 (13.1%) required supervision to complete their tasks, 28 (15.3%) required assistive devices, whereas 43 (23.5%) were totally independent. Results indicated a temporal impact of COVID-19 upon functional status of hospitalized patients in intensive care units, therefore highlighting the need of physiotherapeutic and psychotherapeutic interventions.

#### Sažetak

Pojavom neobjašnjivih simptoma u Wuhanu, Kini, globalna pandemija COVID-19, pokazala se najvećim izazovom 20. stoljeća uzrokujući ogroman pobol i smrtnost. Cilj istraživanja bio je istražiti funkcionalne učinke COVID-19 na bolesnike kojima je dijagnosticirana ova bolest i koji su hospitalizirani u zdravstvenim ustanovama. Ovo poprečno istraživanje obuhvatilo je 183 bolesnika s dijagnozom COVID-19, a koji su smješteni u izolacijske odjele javnih i privatnih bolnica u Islamabadu i Rawalpindiju. Nakon dobivanja dopunske Etičkog povjerenstva Bolnice Shifa (br. # 070-21), istraživanje je provedeno u razdoblju od 6 mjeseci, od prosinca 2020. do svibnja 2021. Prikladnim uzorkovanjem, ukupno je 183 bolesnika u dobi od 25 do 55 godina bez prethodno dijagnosticiranih psiholoških tegoba, analizirano radi ispunjavanja kriterija istraživanja. Nakon što su ispitanici bili upoznati sa svrhom istraživanja, zamoljeni su za dobrovoljno sudjelovanje. Skala za određivanje funkcionalnog statusa bolesnika u jedinici intenzivnog liječenja (engl. Functional Status Scale – Intensive Care Unit, FSS-ICU) korištena je za procjenu utjecaja COVID-19 na funkcionalni status bolesnika tijekom hospitalizacije. Frekvencije i postoci izračunati su koristeći SPSS-21. Na FSS-ICU ljestvici, od 183 bolesnika s COVID-19, 11 (6%) je ovisno o tuđoj pomoći, 18 (9,8%) treba maksimalnu pomoć, 32 (17,5%) treba umjerenu pomoć, 27 (14,8%) treba minimalnu pomoć, 24 (13,1%) treba nadzor kako bi izvršili svoje zadatke, 28 (15,3%) treba pomoćna sredstva, dok je 43 (23,5%) bilo potpuno neovisno. Dobiveni rezultati ukazali su na vremenski utjecaj COVID-19 na funkcionalni status hospitaliziranih bolesnika u jedinicama intenzivnog liječenja te stoga naglašavaju potrebu fizioterapeutskih i psihoterapijskih intervencija.

## Introduction

In the late 2019, a novel virus with symptoms quite similar to pneumonia gained international recognition when originated in Wuhan, China.<sup>[1]</sup> Within few days, this virus cases started spreading worldwide and finally a global pandemic was declared in March 2020.<sup>[2]</sup> Initially starting with the unexplained symptoms of dry cough, flu and fever, hundreds of cases were reported in the hospitals, eventually resulting in the shortage of space at the hospitals to accommodate further patients. Therefore, as a measure to control the situation and to facilitate the patients, governments in many countries including Pakistan decided to build COVID-19 centres.

This pandemic had an unprecedented impact on the people's lives across the globe. The fear of getting infected by this virus has transformed our lives rapidly to a lot of new restrictions. More than 217 million cases of COVID-19 were reported until August 2021 while the death rate was as high as 4.51 million worldwide.<sup>[3]</sup> Corona pandemic has proved to be more threatening in some countries than others. Countries which were most affected by COVID-19 include China, Italy, Germany, Spain and France. Italy remained on top of the list with most infected people by COVID-19 both in Europe and outside China.<sup>[4]</sup> The spread of SARS-CoV-2 virus was observed to be comparatively higher in these countries. Lack of early preventive measures and not considering the seriousness of the situation, has contributed to the rapid spread of infection.

COVID-19 has proven to be the biggest challenge of the 21<sup>st</sup> century.<sup>[5]</sup> Being a low middle income country, Pakistan was not spared from this virus and the very first two cases were reported in late February 2020. A drastic rise in the number of cases reported started majorly due to exchange of students, teachers, scientists, tourists and business community.<sup>[6]</sup> Due to lack of awareness, non-existent cure and surge of deaths, this viral infection has led to anxiety, depression and distress among the population.<sup>[7]</sup> The major impact on physical and mental health status was witnessed globally, therefore leading to functional, physiological and physical consequences.<sup>[8]</sup> The chronic symptoms that were obvious from one's physical health impacted functional status of everyone reported among COVID-19 patients worldwide.

Even after following WHO guidelines on COVID-19 infection including physical distancing, frequent hand washing, sanitization, avoiding public places and physical contact, the fear of getting affected by this virus and the fear of death couldn't be controlled. This fear led to insomnia, negative impacts on mental health, physical health and level of functioning among general population, especially those with co-morbidities

and diagnosed with COVID-19.<sup>[7,9]</sup> Though counselling services were made the part of intervention plan along with physiotherapy services provided to patients hospitalized at many health care centres but many studies reported negative impacts upon patients' health especially in stats reported from low middle income countries.<sup>[10]</sup>

People with pre-existing health concerns including physical, neurological, mental or substance abuse disorders were found to be more vulnerable to COVID-19. Along with these health concerns, financial crisis, isolation, dejection and trauma played a significant role in impacting health of patients affected. In response to this epidemic, suicidal rate got increased too reporting suicides as well.<sup>[11]</sup> Previous studies primarily focused on effects on general population's mental and physical health but so less is known about functional impacts of those diagnosed with COVID-19.

In emergency settings, COVID-19 has proved to be a great challenge for physicians, and paramedic staffs. They were facing substantial risks than the others as they had to deal with those infected with the corona virus. Health and life of those doctors and paramedic staff were at risk while treating people affected by this viral infection.<sup>[12]</sup> Even after following strict standard operating procedures (SOPs) many doctors and paramedic staff got infected.<sup>[8]</sup>

This pandemic has proved to be stressful and critical stage in those diagnosed with this viral infection.<sup>[13,14]</sup> In addition to many other physical diseases, these patients experience considerable anxiety and stress. Many researches were conducted in order to assess the physical, mental and psychological impacts on physicians, nurses, physical therapists but these aspects of COVID-19 patients were neglected due to the risk of infection.<sup>[15]</sup> No major research or study has been performed on assessing the functional impacts of COVID-19 upon those patients who were admitted in different public and private hospitals during this pandemic. Therefore, extensive focus was over the functional impacts upon COVID-19 patients admitted in the hospitals of Islamabad and Rawalpindi cities of Pakistan. Due to literature gap of functional impacts upon COVID-19 patients, this study was performed. Therefore, it was crucial to conduct researches to investigate that to what extent COVID-19 has affected the population in order to discover its cure. The researchers can be used for further studies based on literature review regarding impacts on daily functioning of COVID-19 patients.

## Methodology

This six-month cross-sectional study was conducted from December 2020 to May 2021, with prior approval from the Institutional Review Board of Shifa Interna-

tional Hospital (Ref # 070-21). Rao Soft software was used to calculate study sample, and non-probability-convenient sampling technique was used to select the patients. After getting special permission to get data from COVID-19 wards from different isolation institutes and hospitals, a total of 183 COVID-19 positive patients were selected from the public and private hospitals of Islamabad and Rawalpindi cities of Pakistan. Those patients in COVID-19 wards were approached who were in complete consciousness, could respond to the questions, and follow the instructions up to their best. After that, they were briefed regarding the procedure and importance of the study. Written consent was sought from those who voluntarily participated in the study. The participants and their caretakers were briefed that the anonymity of the participants, as well as their cultural and moral values, will be protected.

Both male and female patients who were currently admitted in the hospital with the diagnosis of COVID-19 and were currently in isolation rooms were approached after following all standard operating procedures of COVID-19 departments. As per inclusion criteria, those clients with the age range of 25 to 55 years of age, those who could read, write, understand and follow simple commands were selected for the study. Whereas according to exclusion criteria, those who had undergone surgery within the previous 6 months or who had been pre-diagnosed with any psychological illnesses (e.g., depression, mood disorders, schizophrenia, personality disorders, eating disorders, etc.) were excluded from the study.

The patients were briefed that the whole assessment process could take on average of 15 to 20 minutes, and the assessment pack includes a few questions regarding their bio data and also some simple performance-based task. Data was recorded on Google forms in tabs, and after every visit to COVID-19 ward, all gadgets including tabs were disinfected. After getting the consent paper signed from the participant, they were interviewed with the assessment pack that included a demograph-

ic sheet and Functional Status Score for the Intensive Care Unit (FSS-ICU) questionnaire.

FSS-ICU was used to assess the impact of COVID-19 on functional health of patients. It is a five-item performance-based assessment that is used for determining the physical functional status of COVID-19 patients. It is a 5-item performance-based measure that utilizes an eight-point, ordinal scale to measure physical function of the patients in Intensive Care Units. It examines patient's ability to perform rolling, transfer from supine to sit, sitting at edge of bed, transfer from sit to stand, and walking on different levels from total dependency to being independent. The construct and criterion validity of FSS-ICU were both good, with Cronbach's alpha values ranging from 0.78 to 0.95.<sup>[16]</sup> The information was gathered in a quantitative manner. This is a functional status score used to assess physical functional status of COVID-19 patients.

Functional status is the ability to manage daily routine activities, essential for healthy physical lifestyle, required to meet person basic needs and fulfil his daily requirements. This functional status of COVID-19 patients is measured through FSS-ICU scale.<sup>[17]</sup> All patient identifiers like names, hospital ID's/PCN numbers, and telephone numbers remained confidential and will not be used in any publication. Participant's cultural and moral values as well as privacy were respected in every way. Completed questionnaires were given numerical codes. SPSS-21 software was used to determine the frequencies and percentages.

### Results

The statistical methods employed were descriptive statistics. A total of 183 manual assessments were carried out on COVID-19 patients admitted to hospitals in Rawalpindi and Islamabad. After following enrolment criteria, 61.2% male participants participated in the study. Further details regarding gender, age, occupation, number of dependents and comorbidities of participants are given in Table 1.

TABLE 1. DEMOGRAPHICS OF PARTICIPANTS  
 TABLICA 1. DEMOGRAFSKE KARAKTERISTIKE ISPITANIKA

Variables	Categories	Frequency (N)	Percent (%)
Gender	Male	112	61.2
	Female	71	38.8
Age range	25-30	29	15.8
	31-35	26	14.2
	36-40	36	19.7
	41-45	17	9.3

<b>Age range</b>	46-50	31	16.9
	51-55	44	24.0
<b>Occupation</b>	Labour	65	35.5
	Private job	53	28.9
	Govt. job	26	14.2
	Jobless	39	21.3
<b>Number of dependents</b>	0	21	11.4
	1-4	78	42.6
	More than 4	84	45.9
<b>Co-morbidities</b>	No disease except COVID-19	69	37.7
	Diabetes	37	20.2
	Tuberculosis	4	2.1
	High B.P	31	16.9
	Low B.P	19	10.3
	Others	23	12.5

According to the FSS-ICU scale, 6.0% of the participants were completely reliant on their caregivers/nurses, 9.8% required maximum assistance, 17.5% required moderate assistance, 14.8% required minimal assistance, 13.1% required supervision to complete their tasks, and 15.3% required assistance (Table 2).

TABLE 2. FREQUENCY OF FUNCTIONAL STATUS (FSS-ICU)  
 TABLICA 2. PROCJENA FUNKCIONALNOG STATUSA (FSS-ICU)

Functional status	Frequency	Percent
Dependent	11	6.0
Maximum assistance	18	9.8
Moderate assistance	32	17.5
Minimal assistance	27	14.8
Supervision required to complete task	24	13.1
Modified independent	28	15.3
Independent	43	23.5

### Discussion

COVID-19 has led to devastating impact on human functioning as it severely affects our body functionality. Since it is air born, we can't ensure which environment is safer for us. The aim of this study was to provide information regarding health services planning and decision making by identifying potential functional impacts on COVID-19 patients during the outburst of this pandemic.

The COVID-19 pandemic has a severe and unprecedented impact on the lives of people around the

world. Our daily lives have rapidly transformed in response to new standards and restrictions, with these changes having a pervasive impact on health and well-being. Pandemics have a significant effect on human functioning, due to their influence on bodily functions and structures, the activities we participate in and the environments in which we live.<sup>[1]</sup> All health services, regardless of their scope, will need to respond to the functional impact of the COVID-19 pandemic.

Functional status is one's ability to perform daily life skills and activities that are required to meet one's basic needs, fulfil usual roles, and maintain well-being. The Functional Status Questionnaire used in the study can be used as a self-administered functional assessment for the patients seen in primary care. Maintaining and improving functional status, such as patients' ability to ambulate improves quality of life. Functional impacts on different COVID-19 patients reported differently. Along with physical impacts, the functional impacts ranged between the levels of mild to profound.<sup>[18]</sup>

Together the physical and functional impacts lead to COVID-19 patients being weak, having fever, suffering from anxiety and depression, not just this they had joint pain, muscle pain, sore throat, nasal congestion, headache, loss of smell and taste and diarrhoea.<sup>[19]</sup> Less common physical symptoms include discoloration of toes or fingers while the serious physical and functional symptoms include chest pain or pressure, difficulty breathing, loss of speech and movement.<sup>[8]</sup>

The main motive of our study was to assess the functional impacts of the patients infected with COVID-19 admitted in the hospitals of Islamabad and Rawalpindi.



di. To evaluate this impact, FSS-ICU was administered upon those diagnosed patients who voluntarily participated in the study. The literature emphasizes that functional impacts differ between population groups, and highlights the distinction between the concepts of ‘medical’ and ‘functional’ risk.<sup>[20]</sup> Results of our test for Functional Status Scale-Intensive Care Unit (FSS-ICU) showed that 11 (6.0%) were totally dependent on their caretakers/nurses/support staff, 18 (9.8%) required maximum assistance, 32 (17.5%) required moderate assistance, 27 (14.8%) required minimal assistance, 24(13.1%) required supervision to complete their tasks, 28 (15.3%) required assistive devices and were considered as modified independent and 43 (23.5%) were totally independent functionally.

Likewise, a study performed in the US by K.S. Wolfe to assess critically ill COVID-19 survivors at the hospital discharge.<sup>[20]</sup> During April to November 2020, 100 COVID-19 recovered patients were enrolled. They used FSS-ICU scale to evaluate the impact of COVID-19 on their functional status. The results showed the mean score of FSS-ICU upon discharge was 24, which was highly consistent with functional impairment.

### Limitations and recommendations

This study aimed to explore COVID-19 impacts on patients admitted to the hospitals of Islamabad and Rawalpindi, but due to the peak in cases reported during the third wave, it was quite difficult to get permission from hospitals for data collection. Therefore, data was collected from few hospitals from where permission was granted. Also, even after following all precautionary measures and standard operating procedures for data collection, it was quite difficult and risky to approach and brief patients and their caretakers regarding the importance of this study during this crucial time of pandemic. Due to time limitations and critical situation, previous physical and mental health and functional status of the participating patients couldn't be assessed, that could assist in identification of difference in pre and post COVID-19 health impacts.

Further researches are critically needed to assess the long-term impact upon functional level of recovered patients. Furthermore, development and implementation of effective physical therapy and psychotherapy should be provided to COVID-19 patients that may help them recover fast.

Moreover, it is recommended that trials should be conducted in low middle income countries including Pakistan to assess the impact of therapeutic procedures and interventions upon health of COVID-19 diagnosed patients. If anxiety and depression are not addressed

through early physical and psychological interventions, the risk of physical complaints, post-traumatic stress disorder (PTSD) and other health implications, and their daily living may face a great risk significantly.

### Conclusion

Significant impacts on functional status of hospitalized COVID-19 patients were observed. Furthermore, many patients reported a significant decline in their daily functioning ability after getting diagnosed with COVID-19 during third peak of this outbreak. This study can provide better understanding regarding functional health of diagnosed COVID-19 patients admitted in hospitals of Rawalpindi and Islamabad.

**Ethics approval:** The study received ethical approval from the Institutional Review Board of Shifa International Hospital (Ref # 070-21) and written informed consent from all participants. All patient identifiers like names, hospital ID's/PCN numbers, and telephone numbers remained confidential and will not be used in any publication. Participant's cultural and moral values as well as privacy were respected in every way. Completed questionnaires were given numerical codes.

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### Conflict of Interest

The authors have no relevant financial or non-financial interests to disclose.

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