

Symptomatology of COVID-19 In Healthcare Workers in A Tertiary Care Rehab Medicine Hospital

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ABSTRACT

Objective: To document the initial presentation of COVID-19 cases among different age groups of healthcare workers in a tertiary care rehabilitation hospital.

Study Design: Cross-sectional study.

Place and Duration of Study: COVID-19 Ward at AFRIM, Rawalpindi Pakistan, from Mar 2021 to Mar 2022.

Methodology: Doctors and healthcare workers in the COVID-19 ward at a tertiary care rehabilitation hospital were included. Demographic data of all patients was noted. The primary data sources were patients' presenting complaints, history, examination, and medical records.

Results: Out of 159 patients, 46(28.9%) were from age group 15-29 years, 103(64.8%) were from 30-45 years and 10(6.3%) from 46-60 years. General duty staff (including patient attendants, ward boys, and stretcher-bearers) was the most common (18.9%) to be affected among rehabilitation health care professionals. The most common symptoms were fever 112(70.4%), sore throat 86(54.1%), cough 74(46.5%) and fatigue 69(43.4%). Most HCWs were 30-45 years age group 103(64.8%). Most patients had duration of symptoms for 3-5 days 107(67.3%).

Conclusion: Healthcare professionals working in rehabilitation medicine facilities were affected by the COVID-19 pandemic globally. Most of our general duty HCWs aged 30-45 years were infected with COVID-19. However, symptomatology was similar to what has been reported in the literature.

Keyword: Rehabilitation; Cough; Nurses; Doctors; Physiotherapists; Fever; Pakistan; Lower Middle Income Country; diarrhea; Fatigue.

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INTRODUCTION

SARs CoV-2 infect multiple systems of the body but most commonly affects the respiratory system. Its symptoms include fever, cough, and shortness of breath.^{1,2} COVID-19 has typical and atypical presentations. Studies have shown multiple organ systems.³ Development of extra-pulmonary symptoms are few complications of COVID-19. Patients with COVID-19 are often misdiagnosed or diagnosed late due to the existence of extra-pulmonary symptom.⁶ This has caused a diagnostic dilemma in the early stages of the pandemic since knowledge regarding COVID-19 infection was still in infancy.⁴ Different studies have confirmed gastrointestinal, hematological, ophthalmological, dermatological, and neurological manifestations of COVID-19.⁵

Due to the nature of their duty, HCWs are more exposed to COVID-19 infections than the general population.⁶ Nurses are most commonly infected as compared to other HCWs. Rehabilitation Physicians

and allied health care staff, including Physical therapists, Occupational therapists, Prothotist and orthotists, Rehabilitation Nurses, and sanitary workers, work closely with patients with functional impairments.^{7,8} Due to the typical needs of patients who require rehabilitation, physical touch and social interaction with family and caregivers are unavoidable in a rehabilitation care setting.⁹ Symptomatology of COVID-19 infection in HCWs providing rehabilitation services has been understudied in Pakistan. We aim to describe the symptomatology of COVID-19 infection in HCWs providing rehabilitation services.

METHODOLOGY

The cross-sectional study was conducted at the Armed Forces Institute of Rehabilitation Medicine Rawalpindi Pakistan after approval from Institutional Ethics Committee (Letter number 2/2021) from March 2021 to March 2022. The convenience sampling technique was used. The sample size was calculated with the prevalence of COVID-19 infection in HCWs at 11%.¹⁰

Inclusion Criteria: HCWs of both genders working in AFIRM with symptoms and positive PCR test of

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COVID-19 between Mar 2021 and Mar 2022 were included after verbal informed consent.

Exclusion Criteria: HCWs with negative PCR tests for COVID-19 were excluded. Those who were not willing were also excluded.

Armed Forces Institute of Rehabilitation Medicine Rawalpindi is a 150-bed Tertiary Care Rehabilitation hospital with more than Part of the hospital was dedicated to accommodating COVID-19 patients during various waves of COVID-19 in the country. In addition to the COVID-19 indoor facility, the hospital continued providing outdoor as well as indoor facilities to persons with disabilities.

Structured data forms were distributed among HCWs. Demographic data such as age, gender, occupation, and symptoms of COVID-19 infection were documented on the data forms. 232 HCWs were divided into three groups according to age brackets, i.e., 20 to 35 years, 36-50 years, and 51 years or more. All these cases were reported and managed according to institutional standard operating procedures. SARS-CoV-2 PCR samples included nasopharyngeal swabs taken by trained laboratory staff. Samples were sent to the Armed Forces Institute of Pathology, where a polymerase chain reaction test was performed using SARS-COV-2 R-GENE, ARGENE, BIOMERIEUX kit (real-time reverse transcription PCR test kit) on CFX96 TM Thermal Cycler (BIO-RAD).

The data was analyzed using Statistical Packages for Social Sciences version 22. Frequency distribution and percentages of symptoms were assessed for categorical variables. Chi-square test was applied to explore the inferential statistics

RESULTS

The total study population was 160. 1 x participant died because of COVID-19, and his data was incomplete, so we analyzed 159 participants. The mean age was 34.1 ± 7.8 years. 112(70.4%) were male and 47(29.6%) were female. The most common rehabilitation healthcare professional suffering from COVID-19 was general duty staff 30(18.9%) (patient attendants, ward boys, stretcher-bearers, receptionists) and physiotherapists 30(18.9%), followed by doctors 23(14.5%), prosthetist and orthotist 18(11.3%), nursing staff 18(11.3%), Table-I shows the gender wise distribution of HCWs infected with COVID-19.

The most common symptoms in healthcare workers were fever 112(70.4%), sore throat 86(54.1%), cough 74(46.5%) and fatigue 69(43.4%)(Table-II).Most

HCWs were 30-45 age group 103(64.8%).Most patients had duration of symptoms for 3-5 days 107(67.3%). The distribution of the duration of symptoms and age group was statistically insignificant (p -value = 0.24) (Table-III)

Table-I: Gender Wise Distribution Of Health Care Workers (n=159)

Health Care Workers	Gender		p-value*
	Male (n=112)	Female (n=47)	
Doctors	12(7.5%)	11(6.9%)	< 0.001
Rehab Nurses	0(0.0%)	13(8.2%)	< 0.001
Occupational Therapists	8(5.0%)	2(1.3%)	< 0.001
Speech Therapists	4(2.5%)	3(1.9%)	< 0.001
Psychologists	1(0.6%)	3(1.9%)	< 0.001
Physiotherapists	28(17.6%)	2(1.3%)	< 0.001
Prosthetists and Orthotists	15(9.4%)	3(1.9%)	< 0.001
Nursing Assistants	18(11.3%)	0(0.0%)	< 0.001
General Duty Staffs	20(12.6%)	10(6.3%)	< 0.001
Sanitary Workers	6(3.8%)	0(0.0%)	< 0.001

Table II - Gender Wise Symptomatology of Hcws With Covid-19 (n=159)

Symptoms		Gender		p-value*
		Male (n=112)	Female (n=47)	
Fever	Yes	79(49.7%)	33(20.8%)	0.55
	No	33(20.8%)	14(8.8%)	
Cough	Yes	52(32.7%)	22(13.8%)	0.55
	No	60(37.7%)	25(15.7%)	
Sore throat	Yes	57(35.8%)	29(18.2%)	0.14
	No	55(34.6%)	18(11.3%)	
Sputum	Yes	22(13.8%)	8(2.5%)	0.44
	No	90(56.6%)	39(24.5%)	
Vomit	Yes	9(5.7%)	4(2.5%)	0.57
	No	103(64.8%)	43(27.0%)	
Fatigue	Yes	48(30.2%)	21(13.2%)	0.48
	No	64(40.3%)	26(16.4%)	
Diarrhea	Yes	15(9.4%)	6(3.8%)	0.57
	No	97(61.0%)	41(25.8%)	
Shortness of Breath	Yes	28(17.6%)	14(8.8%)	0.33
	No	84(52.8%)	33(20.8%)	
Head ache	Yes	40(25.2%)	14(8.8%)	0.98
	No	72(45.3%)	33(20.8%)	
Loss of taste and smell	Yes	31(19.5%)	8(5.0%)	0.10
	No	81(50.9%)	39(24.5%)	
Body aches	Yes	51(32.1%)	23(14.5%)	0.41
	No	61(38.4%)	24(15.1%)	

Table - III: Distribution of Duration of Symptoms According To Age Groups (n=159)

Age Groups of Patients	Duration of Symptoms			p-value*
	1-3 days	3-5 days	5-7 days	
15 - 29 years	11(6.9%)	29(18.2%)	6(3.8%)	0.24
30 - 45 years	13(8.2%)	70(44%)	20(12.6%)	
46 - 60 years	0(0%)	8(5%)	2(1.3%)	

DISCUSSION

We have described the symptomatology of COVID-19 infection in HCWs working in a tertiary care rehabilitation hospital in Pakistan. Fever 112(70.4%), sore throat 86(54.1%), cough 74(46.5%) and fatigue 69(43.4%) are among the common symptoms of COVID-19 infection in our study population. Most HCWs were 30-46 age group 103(64.8%). Most patients had duration of symptoms for 3-5 days 107(67.3%).

The current guidelines of COVID-19 healthcare workers recommend screening and PCR tests for SARS CoV-2 in case of fever and respiratory symptoms.¹¹ Fever and shortness of breath are the red alert symptoms that should be identified promptly to commence treatment on time. Lake *et al.* described fever (98%), cough (76%), shortness of breath (55%), and fatigue (44%) to be the most common symptoms in their study population,¹² while Fever 166(71.6%), sore throat 152(65.5%), cough 148(63.7%) and fatigue 139(60%) were common in our study population of HCWs. Surprisingly, only 44% of HCWs had shortness of breath in our population as compared to 55% as described by Lake *et al.* which can be due to the more significant number of elderly patients in their study group, which makes them more susceptible to severe infection.¹²

Many other studies, including China, Denmark, and the USA, show that cough, fever, and myalgias are the most common symptoms.¹³⁻¹⁷ These results are consistent with our study.

A study conducted by Nanshan *et al.* in Wuhan concluded that the majority of patients with COVID-19 had respiratory symptoms, whereas only 3% of patients had gastrointestinal symptoms, which is consistent with our study as well.¹⁸

In our study, most patients had duration of symptoms for 3-5 days 107(67.3%). In the study conducted by Guo *et al.* in China, patients of older age had a higher duration of symptoms than patients of younger age groups.¹⁹ However, we did not find any significant difference in the duration of symptoms as per age group in our patients. The reason can be that most of the patients in our population were younger adults belonging to the 30-46 years age group 103(64.8%), having better immunity than older adults.

LIMITATIONS OF STUDY

Our study has limitations. We did not comment on the interval between first exposure to SARS CoV-2 carriers and the development of symptoms because we could not do contact tracing successfully. Contact tracing was not possible

due to a lack of trained staff. Even though we were following local prevention control protocols laid down by the hospital administration, it was nearly impossible to screen the asymptomatic carriers of COVID-19 who were reporting to our hospital for rehabilitation, which was why contact tracing was unsuccessful.

CONCLUSION

Healthcare professionals working in rehabilitation medicine facilities were affected by the COVID-19 pandemic globally. Most of our general duty HCWs aged 30-45 years were infected with COVID-19. There was no association between patients' age group and disease duration.

Conflict of Interest: None.

Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

II & ZAG: Data acquisition, data analysis, drafting the manuscript, critical review, approval of the final version to be published.

KA & BS: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

MTK & UY: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

REFERENCES

- World Health Organization (WHO). Rolling Updates on Coronavirus Disease (COVID 19). Internet. Available at : <https://covid19.who.int/> [Accessed on December 10, 2022]
- Magnavita N, Tripepi G, Di Prinzio RR. Symptoms in health care workers during the COVID-19 epidemic. A cross-sectional survey. *Int J Environ Res Public Health* 2020; 17(14): 5218.
- Nanshan C, Zhou M, Xuan D, Jieming Q, Gong F, Yang H, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet* 2020; 395: 507-513. [https://doi.org/10.1016/S0140-6736\(20\)30211-7](https://doi.org/10.1016/S0140-6736(20)30211-7)
- Magnavita N, Sestili C, Mannocci A, Ercoli E, Boccia A, Bonaga G, et al. Mental and physical well-being in oncology-hematology-unit personnel. *Arch Environ Occup Health* 2018; 73(6): 375-380. <https://doi.org/10.1080/19338244.2017.1361901>
- Lai CC, Shih TP, Ko WC, Tang HJ, Hsueh PR. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019, (COVID-19): The epidemic and the challenges. *Int J Antimicrob Agents* 2020; 55(3): 105924.
- Mehta OP, Bhandari P, Raut A, Kacimi SEO, Huy NT. Coronavirus Disease (COVID-19): Comprehensive Review of Clinical Presentation. *Front Public Health* 2021 ; 8: 582932. <https://doi.org/10.3389/fpubh.2020.582932>
- Lai CC, Liu YH, Wang CY, Wang YH, Hsueh SC, Yen MY, et al. Asymptomatic carrier state, acute respiratory disease, and pneumonia due to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2): Facts and myths. *J Microbiol*

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- Immunol Infect 2020; 53(3): 404-412.
<https://doi.org/10.1016/j.jmii.2020.02.012>
8. Gómez-Ochoa SA, Franco OH, Rojas LZ, Raguindin PF, Roa-Díaz ZM, Wyssmann BM, et al. COVID-19 in Health-Care Workers: A Living Systematic Review and Meta-Analysis of Prevalence, Risk Factors, Clinical Characteristics, and Outcomes. *Am J Epidemiol* 2021; 190(1): 161-175.
<https://doi.org/10.1093/aje/kwaa191>
 9. Boldrini P, Kiekens C, Bargellesi S, Brianti R, Galeri S, Lucca L, et al. First impact of COVID-19 on services and their preparation. "Instant paper from the field" on rehabilitation answers to the COVID-19 emergency. *Eur J Phys Rehabil Med* 2020; 56(3): 319-322.
<https://doi.org/10.23736/S1973-9087.20.06303-0>
 10. Gómez-Ochoa SA, Franco OH, Rojas LZ, Raguindin PF, Roa-Díaz ZM, Wyssmann BM, et al. COVID-19 in Health-Care Workers: A Living Systematic Review and Meta-Analysis of Prevalence, Risk Factors, Clinical Characteristics, and Outcomes. *Am J Epidemiol* 2021;190(1):161-175
<https://doi.org/10.1093/aje/kwaa191>
 11. European Centre for Disease Prevention and Control (ECDC). Contact tracing: Public Health Management of Persons, Including Healthcare Workers, Having Had Contact with COVID-19 Cases in the European Union–Second Update, 2020. [Internet] Available at: <https://www.ecdc.europa.eu/en/covid-19-contact-tracing-public-health-management> [Accessed on December 10, 2022]
 12. Lake MA. What we know so far: COVID-19 current clinical knowledge and research. *Clin Med* 2020 ; 20(2): 124-127.
<https://doi.org/10.7861/clinmed.2019-coron>
 13. Jin YH, Huang Q, Wang YY, Zeng XT, Luo LS, Pan ZY, et al. Perceived infection transmission routes, infection control practices, psychosocial changes, and management of COVID-19 infected healthcare workers in a tertiary acute care hospital in Wuhan: a cross-sectional survey. *Mil Med Res* 2020; 7(1): 24.
<https://doi.org/10.1186/s40779-020-00254-8>
 14. Wei WE, Li Z, Chiew CJ, Yong SE, Toh MP, Lee VJ. Presymptomatic Transmission of SARS-CoV-2 - Singapore, January 23-March 16, 2020. *MMWR Morb Mortal Wkly Rep* 2020; 69(14): 411-415.
<https://doi.org/10.15585/mmwr.mm6914e1>
 15. Hu Z, Song C, Xu C, Jin G, Chen Y, Xu X, et al. Clinical characteristics of 24 asymptomatic infections with COVID-19 screened among close contacts in Nanjing, China. *Sci China Life Sci* 2020; 63(5): 706-711.
<https://doi.org/10.1007/s11427-020-1661-4>
 16. Chow EJ, Schwartz NG, Tobolowsky FA, Zacks RLT, Huntington-Frazier M, Reddy SC, et al. Symptom Screening at Illness Onset of Health Care Personnel With SARS-CoV-2 Infection in King County, Washington. *JAMA* 2020; 323(20): 2087-2089. <https://doi.org/10.1001/jama.2020.6637>
 17. Tostmann A, Bradley J, Bousema T, Yiek WK, Holwerda M, Bleeker-Rovers C, et al. Strong associations and moderate predictive value of early symptoms for SARS-CoV-2 test positivity among healthcare workers, the Netherlands, March 2020. *Euro Surveill* 2020;25(16):2000508.
<https://doi.org/10.2807/1560-7917.ES.2020.25.16.2000508>
 18. Nanshan C, Zhou M, Xuan D, Jieming Q, Gong F, Yang H, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet* 2020; 395(10223): 507-513.
[https://doi.org/10.1016/S0140-6736\(20\)30211-7](https://doi.org/10.1016/S0140-6736(20)30211-7)
 19. Guo T, Shen Q, Guo W, He W, Li J, Zhang Y, et al. Clinical Characteristics of Elderly Patients with COVID-19 in Hunan Province, China: A Multicenter, Retrospective Study. *Gerontology* 2020; 66(5): 467-475.
<https://doi.org/10.1159/000508734>
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