# Healthcare Seeking Behaviour of Hospitalised COVID-19 Patients During Second Wave in Tertiary Care Hospital of Northern India

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#### Abstract

**Background:** The coronavirus disease (COVID-19) pandemic continues its deadly reign all over the world. Devising effective strategies for detecting and controlling the infection has become ever more critical. Effective prevention and control of the pandemic is entirely dependent on human behavior in terms of practicing preventive and curative measures. During the second wave of COVID-19, people's perceptions of preventive and curative measures changed.

Objective: To study healthcare-seeking behavior of hospitalized COVID-19 patients.

**Methods:** Hospitalized patients due to COVID-19 in the month of March, April and May of 2021 were included in the study. Their attendants/close relatives were contacted telephonically to know about the admitted patients' healthcare-seeking behavior. Verbal consent was taken from attendants before the commencement of the interview, followed by informing them about the purpose of the interview.

**Results:** Amongst the subjects, there were more males than females (67.5 vs 32.4%), age ranged between 18 to 88 with a mean value of  $56.61 \pm 14.7$  years. Self-medication was significantly associated with study subjects' mortality (p=0.03).

**Conclusion:** Elderly people were having higher mortality rate than their younger counterparts. People were hesitant to visit primary care physicians after having symptoms of COVID-19.

**Keywords:** Humans, Male, Female, Aged, Adolescent, Young Adult, Adult, Middle Aged, Aged, 80 and over, Pandemics, COVID-19, Patient Acceptance of Health Care, Physicians; Informed Consent

### INTRODUCTION

The coronavirus disease (COVID-19) pandemic has completely affected the lives of people since its onset in December 2019 across the world. The current coronavirus disease (SARS CoV 2 infection) was declared a global pandemic by the World Health Organization (WHO) on 11<sup>th</sup> March 2020.<sup>[1]</sup> India had first confirmed case of COVID-19 on 27<sup>th</sup> January 2020 and the first confirmed death on 12th March 2020.<sup>[2,3]</sup> Till 29<sup>th</sup> July 2022 India has witnessed 43,979,730 cases and 526,258 deaths.<sup>[4]</sup> The B.1.617.2 (delta) variant was first detected in India in December 2020 and became most commonly reported variant in mid-April 2021.<sup>[5]</sup> In India, mortality and morbidity due to the delta variant touched an all-time high during the second wave in year 2021 because

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DOI:

10.47203/IJCH.2023.v35i01.019

of increased transmissibility and pathogenicity of delta variant. The outcome of an illness largely depends on timely intervention during the natural course of the disease by the infected individual. This intervention could be preventive or primary by getting a vaccination, secondary by early diagnosis on the appearance of symptoms (in the form of seeking medical help). Healthcare-seeking behavior (HSB) of a population serves as one major determinant of the health

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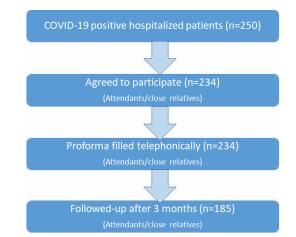
**How to cite this article:** Sharma P, Singh SP, Chaudhary A, Kaur A, Sharma S, Girdhar S, Satija M, Gupta VK, Bansal P, Bansal A, Kashyap H. Healthcare Seeking Behaviour of Hospitalised COVID-19 Patients During Second Wave in Tertiary Care Hospital of Northern India. Indian J. of Com. Health. 2023;35(1):103-108.

Received: 07-11-2022, Accepted: 27-02-2023, Published: 31-03-2023

status of a country and, thus, its socio-economic development. <sup>[6]</sup> HSB encompasses a people's inaction, procrastination or action undertaken following recognition by themselves of departing from good health or having a particular health problem to finding an appropriate remedy to restore health. <sup>[7]</sup> Healthcare-seeking behavior of infected person involves performance and actions of seeking medical help by the people who are at potential risk of illness or have symptoms of the disease. The WHO defines self-medication as the use of medicinal products to treat self-diagnosed disorders or symptoms or the intermittent or continued use of a medication prescribed for chronic or recurring diseases or symptoms.[8] Strong evidence shows that people self-medicate using antibiotics such as azithromycin (AZM). Other medicines commonly used for self-medication are antimalarials such as chloroquine (CQ) and hydroxychloroquine (HCQ) which are believed to be effective in the prophylaxis and treatment of COVID-19. This has consequently led to a shortage of hydroxychloroquine because of its overuse and misuse during COVID-19.<sup>[9]</sup> For infectious disease like COVID-19, early diagnosis and treatment without any delay is important and necessary. Otherwise, not only does the patient acts as a reservoir, but also increases the risk of infection transmission and spread of the disease. Symptoms experienced by persons with mild COVID-19 symptoms are similar to the common cold. It has been observed that symptomatic people negate the possibility of infection with coronavirus and may go to quacks for medication, increasing the risk of exposure to others and limiting the chance of tracing back to the first case of infection. <sup>[10]</sup> Vaccines for COVID-19 are highly effective in preventing hospitalization and deaths.<sup>[11]</sup> The COVID-19 vaccination campaign in New York (USA) averted 290,467 cases, 48,076 hospitalizations, and 8,508 deaths from 14th December 2020 to 15th July, 2021.<sup>[12]</sup> In India from 16th January 2021 vaccination drive for COVID-19 was started exclusively for healthcare workers, subsequently from 1st March 2021 vaccination was open for the general public.<sup>[13]</sup> Currently, without any specific drugs, infection prevention and control is a major measure for curbing COVID-19. The use of healthcare services during the COVID-19 pandemic is affected by knowledge and information about the disease, perception of the illness, financial ability and social norms. Delay in healthcare-seeking behavior increases the progression and fatality of the disease. Until now, most of the research is mainly focused on the epidemiology and clinical characteristics of patients infected with COVID-19. As per the current situation, the scientific literature is scarce about the health-seeking behavior of patients with COVID-19. Therefore, in this study, we recorded the healthcare behavior of hospitalized patients with COVID-19 to analyze the influence of healthcare-seeking behavior on disease process and outcome.

## **M**ETHODS

Study type: Prospective follow-up study Study population: Hospitalised COVID-19 patients



Study design: This study was conducted in a tertiary care hospital where only moderate and severe category patients having COVID-19 were admitted. The moderate category was defined as - pneumonia with no signs of severe disease adults with clinical features of dyspnea and/or hypoxia, fever, cough, including SpO<sub>2</sub> 90 to  $\leq$ 93% on room air, a respiratory rate more or equal to 24 per minute. The severe category was defined as - severe pneumonia/septic shock/ ARDS adults with clinical signs of pneumonia plus one of the following; respiratory rate >30 breaths/min, severe respiratory distress, SpO<sub>2</sub> <90% on room air.<sup>[14]</sup> Total 250 consecutive patients with COVID-19 infection admitted in March, April and May in 2021 were included in this study. A list of patients admitted daily were procured from record office with the phone number of attendants/close relatives of patients. Due to the health condition of patients and COVID-19 restrictions, information was not collected directly from the hospitalized patients. Attendants/close relatives were contacted telephonically within 1-2 days of admission and verbal consent was taken before the commencement of the interview. Out of 250 calls made to attendants/close relatives of hospitalized patients, only 234 agreed to participate in the study. Investigators took the interview focusing on sequence of events on appearance of symptoms, self-medication, any delay in seeking healthcare advice, first medical contact followed by collection of samples, diagnosis of COVID-19 infection, if doctor's advice was followed, contact with any COVID-19 patient, if symptoms were monitored at home, vaccination status and testing of family members. The sequence of events were asked to know about any delay in healthcare seeking behavior. After 3 months, attendants/ close relatives were contacted again telephonically to know about the duration of the hospital stay and recovery status. Different proforma was used after 3 months because purpose of interviewing was to know about their recovery. We could contact only 185 attendants of previously hospitalised patients as the rest did not respond to the phone call.

**Inclusion criteria:** COVID-19 patients hospitalized in the month of March, April and May in 2021.

**Exclusion criteria:** Age <18 years and not willing to participate.

**Statistical analysis:** Questionnaires were reviewed and entered into an excel file before being exported to SPSS version 26 for analysis. Percentages and proportions were used in descriptive analyses to describe frequency. The degree of association was determined using the chi-square test with a *p*-value of 0.05 in the 95% confidence range. Kaplan Meier curve was used to plot the survival curve.

#### **Ethics Approval**

Ethics approval was taken from the Institutional Ethics Committee of Dayanand Medical College & Hospital, Ludhiana, Punjab, India and the ethics approval number was 2021-660.

## RESULTS

A total number of study participants were 234 hospitalized COVID-19 patients with moderate and severe infection. Information was collected by calling their attendants/close relatives. The number of responses varied because informants did not know all patient demographic and health-related data (Age, comorbidity, vaccination history etc). All study participants i.e. 234 were followed up after 3 months to know their status of recovery. We were able to contact only 185 study participants. As shown in Table 1, there were more males than females (67.5 vs 32.4%), and age ranged between 18 to 88 with a mean age of  $56.61 \pm 14.7$  years. Most common age group admitted in the hospital was of 61-80 years (41.47%), followed by 41-60 years with 37.7% of patients. A substantial proportion of patients presented with fever (51.4%) followed by breathlessness (17.5%) and cough (12.25%). Prior to admission in the hospital, 57.9% of the patients were monitoring their symptoms (oxygen saturation, body temperature) at home. Mean time from symptom onset to diagnosis of COVID-19 was 4.8 days. The maximum delay was found in 81-90 age group as they took an average of 5.1 days to get hospitalized after symptom onset. 81.1% of participants sought doctor consultation, while only 16.7% of participants relied on selfmedication. It was found that 69.6% of hospitalized study subjects underwent COVID-19 testing within 24 hours of consulting a doctor followed by 22.9% who gave their sample within 1-5 days. Time taken from a sampling of COVID-19 RTPCR to result was less than 5 days in 99.5% of hospitalized patients. In the group of 185 who were followed up after 3 months, 52.43% recovered. 73% of deceased study subjects were not vaccinated for COVID-19. Only 13.3% completed their immunization with the second dose, while 77.1% did not receive any dose of vaccine for COVID-19. Among all participants, 13% had high-risk contact with COVID-19positive persons. The mean time between symptom onset and hospital admission had no impact on survival (2.2 vs 3.1 days p = 0.12). Age was significantly related to a recovery status. As per Table 2 study, participants aged < 60 years had better chances of recovery than >60 years old (p = 0.03). The male gender had a better recovery than their female counterpart. (p = 0.04). Self-medication was significantly associated with the mortality of study subjects (p = 0.03). The survival analysis

had 179 study participants, out of which 95 recovered. The Kaplan-Meier survival plot revealed a statistically significant relationship between self medication and recovery sequelae presented in Figure 1. It can be inferred from the curve that the risk of mortality is directly proportional to the tendency of self-medication.

## DISCUSSION

Healthcare-seeking behavior has a significant impact on the disease course and spread. This article aims to describe the healthcare-seeking behavior of patients with COVID-19 infection having moderate and severe categories, with consideration of variables including vaccine uptake and factors affecting health-seeking behavior. Several studies have identified epidemiological factors that are associated with the spread of COVID-19, but there is still limited evidence of the importance of social factors that explain health-seeking behaviors and early diagnosis in the face of a COVID-19 infection. Information of 234 COVID-19 positive patients was collected from close relatives. The mean age of participants was  $56.61 \pm 14.7$  years, it is comparable to study done in Hong Kong by Kwok et al., where mean age of the overall cases was 55.7 years.<sup>[15]</sup> Another study conducted by Knights et al. in the United Kingdom on hospitalized COVID-19 patients had mean age of  $68.7 \pm 1.5$  years. Patients who died were significantly older than those who recovered (mean difference  $13.76 \pm 3.12$  years.<sup>[16]</sup> Differences in the mean age can be attributed to the variation in age demographics. In the present study mean time from symptom onset to date of hospitalization was 4.5 days. Studies in other nations reported a mean time from symptom onset to the hospitalization of 2.62 days in Singapore, 4.41 days in Hong Kong and 5.14 days in the United Kingdom. The mean time from symptom onset to consulting the doctor was 2.6 days.[17] For better control of COVID-19 and limit the negative health consequences of an infection, it is crucial to avoid time delay in diagnosis. Evidence indicates that delayed access to health care is associated with adverse health outcomes, and this is particularly true when it comes to infectious diseases such as COVID-19. For delayed care is associated with heightened mortality in COVID-19 patients.<sup>[18]</sup> From consulting the doctor

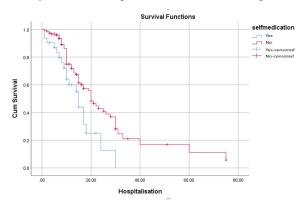


Figure 1: Kaplan-Meier survival plot for self-medication.

not all answers were known by attendants/close relatives)					
Variables	Number	Percentage (%)			
Gender	n=234				
Male	158	67.50			
female	76	32.40			
Age	n=217				
0–20	1	0.46			
21–40	35	16.12			
41–60	82	37.70			
61–80	90	41.47			
81–100	9	4.10			
	56.61 ± 14.7				
Chief complaint	n=204				
Fever	105	51.40			
Breathlessness	35	17.15			
Cough	25	12.25			
Low saturation	9	4.41			
Sore throat	6	2.90			
Heart problem	6	2.90			
Body pain	4	1.96			
Weakness	4	1.96			
Edema	4	1.96			
Headache	4	1.96			
Vomiting	2	0.98			
Followed doctor's advice	n = 230				
yes	226	98.20			
no	4	1.80			
Contact with COVID-19 patient	n = 230				
yes	30	13			
no	200	87			
Monitoring symptoms at home	n=202				
yes	117	57.90			
no	85	42.10			
Vaccination	n=210				
complete	28	13.30			
no	162	77.10			
1 <sup>st</sup>	20	9.50			
Treatment	n=227				
Self-Medication	38	16.70			
Consulted Doctor	184	81.10			
Both	5	2.20			
Consultation to sample given (days)	n=214				

 Table 1: Descriptive statistics applied on initial evaluation of all variables used in the semi-structured questionnaire (n varies because not all answers were known by attendants/close relatives)

Table continued....

0		149	69.60		
1–5		49	22.90		
5–10		14	6.50		
11–15		2	1.00		
Comorbidity		n=191			
Hypertensior	n	49	25.6		
Diabetes mel	litus	63	32.9		
Cardiac probl	lem	21	10.9		
No		58	30.3		
Follow up da	ta collected after	3 months of hosp	ital admi	ssion	
Hospital stay		n=185			
Duration (days)		13.85 ± 11.12			
Outcome		n=185			
Recovered		97	52.43		
Deceased		88	47.56		
Table 2: Ass	ociation of varial	oles with COVID-19	disease	recovery	
Variables	Recovered (%)	Deceased (%)	Х <sup>2</sup>	p-value	
Age (n=174)					
<60	56 (60.2)	32 (39.5)	7.4	0.003	
≥60	37 (39.7)	49 (60.5)			
Self- medication (n=179)					
Yes	12 (12.6)	19 (22.6)	7.3	0.007	
No	83 (87.3)	65 (77.4)			

to testing, no delay was observed in 69% of study subjects. Therefore delay in seeking healthcare did not contribute to mortality. Biological and pathological factors may also contribute to the delay of treatment among older adults. The time from symptom onset to hospitalization was highest in the population aged >80 years. Symptoms like fever are more likely to be absent for older adults with infection, and this may result in diagnostic delays.<sup>[19]</sup> In this study almost half of the participants had fever as their presenting complaint, followed by breathlessness in 17.1% of cases. Both genders showed a mean of 2.6 days from beginning symptoms to consulting a healthcare provider. It shows that healthcare accessibility and healthcare-seeking behavior was similar in both genders. Several studies have indicated that during the COVID-19 pandemic, self-medication is a common practice, with a prevalence of 32.5-81.5% worldwide.[20-22] The present study found that 18.9% of people self-medicated. According to the WHO guidelines on self-medication, individuals should know the medication's method of use, efficacy, adverse effects and management.[23] Self-medication during the COVID-19 pandemic can worsen the current health crisis situation for which no country is fully prepared.<sup>[24]</sup> During the study period primary focus of vaccination in India was on healthcare workers and frontline workers, in this study, it was seen that among hospitalized COVID-19 patients, only 13.3% were fully vaccinated, while 9.5% received their 1<sup>st</sup> dose. According to various studies, it has been found that on admission, 20–51% of patients were reported as having at least one comorbidity.<sup>[25-27]</sup> In our study 69.6% of people had at least one comorbidity. WHO has recognized Non-communicable diseases (NCDs) as the leading cause of death in the South-East Asia Region. Each year, an estimated 7.9 million lives are lost due to NCDs, accounting for 55% of all deaths.<sup>[28]</sup> Our findings present some initial and suggestive evidence on the healthcare-seeking behavior of people infected with COVID-19. This can further help us reduce the morbidity and mortality due to COVID-19.

# CONCLUSION

This study presents suggestive evidence on the healthcareseeking behavior of hospitalized COVID-19 patients. Elderly people tend to have higher mortality than their younger counterparts, emphasizing the need for closer surveillance of them. It was found that 77.1% of study participants have not received even first dose of vaccination for COVID-19. The positive association between mortality and self-medication indicates that people were reluctant to visit 1st level physicians in the initial phase of the disease. Mortality among admitted COVID-19 patients was 47.56% and no delay was found in this study from the appearance of symptoms to consulting a doctor. More research is required to better understand the interplay of mechanisms i.e. biological, economic, social and health literacy. Future research can guide policymakers in striking the right balance between strengthening the primary care system and developing modern hospitals and advanced technologies that can help tackle future public health challenges.

# LIMITATION

This study was done on moderate and severe categories of COVID-19 patients. Hence, results cannot be extrapolated to all patients having COVID-19 infection. Baseline information as well as follow-up (after 3 months) was completed by calling attendants/close relatives of patients, and recall bias may affect data recorded in the study. We could not interview hospitalized patients. Therefore, knowledge regarding the disease on the part of patients, which determines healthcare seeking, could not be ascertained. The small sample size undermines the external validity of our study and prevents us from a conclusive validation.

# ACKNOWLEDGEMENT

The authors thank the participants for providing their valuable time. We would also like to thank the nursing staff for helping us in this study.

# **FINANCIAL SUPPORT AND SPONSORSHIP** Nil.

# **C**ONFLICTS OF INTEREST

There are no conflicts of interest

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