

Characteristics, Clinical Outcomes and Psychological Experiences of Patients Hospitalized in a Field Hospital Dedicated for COVID-19 in Saudi Arabia

Mohammed Alrawi^{1*}, Olayan Alfraidi¹, Khalid H. Alanazi¹, Emad Khadawardi², Rustom Bashtawi², Hanan Hathout¹, Mervat Eladlatouni¹, Abu Baker AlJifri¹, Moteb AlSaedi², Saad Almohammadi¹

¹Ministry of Health, Saudi Arabia

²King Faisal Specialist Hospital and Research Center, Madinah

*Corresponding author: asmamhz@outlook.com

Received February 01, 2021; Revised February 12, 2021; Accepted February 26, 2021

Abstract Objective: To explore the characteristics, clinical outcomes and psychological experience of patients infected with COVID-19 admitted to a field hospital in Madinah, Saudi Arabia. **Methodology:** Medical records of patients with laboratory-confirmed COVID-19 who were hospitalized in the COVID-19 field hospital in Madinah, Saudi Arabia from July 20 to November 9, 2020 were reviewed. Clinical features and outcomes of patients were collected for analysis. A telephonic questionnaire was used to explore the hospital stay experience of COVID-19 discharged patients. **Results:** A total of 208 patients were included (mean age, 51.5 years; range 26-85 years; 76.9% male). The most common comorbidities were diabetes (106; 50.96%) and hypertension (81; 38.94%). On admission, all patients (n= 208, 100%) had pneumonia, 40.86% were febrile, and 47.11% of patients had an oxygen saturation level below 93%. Headache and fatigue were also documented among 37% and 30% of all patients respectively on admission. During the study period, only one patient died in the center. Analysis of psychological experience of 81 patients showed that 45.68% of patients rejected the idea of receiving care in a hospital dedicated for COVID-19. However, the patients' attitude toward their experience changed from negative to finally quite positive about the care they received. **Conclusion:** Field hospitals can be effectively used to provide care for COVID-19 patients with good clinical outcomes. Appropriate psychological interventions are required to change the patients' attitude towards such settings and improve the hospital stay experience.

Keywords: COVID-19, Field Hospital, patient experience, clinical outcomes

Cite This Article: Mohammed Alrawi, Olayan Alfraidi, Khalid H. Alanazi, Emad Khadawardi, Rustom Bashtawi, Hanan Hathout, Mervat Eladlatouni, Abu Baker AlJifri, Moteb AlSaedi, and Saad Almohammadi, "Characteristics, Clinical Outcomes and Psychological Experiences of Patients Hospitalized in a Field Hospital Dedicated for COVID-19 in Saudi Arabia." *American Journal of Infectious Diseases and Microbiology*, vol. 9, no. 1 (2021): 20-24. doi: 10.12691/ajidm-9-1-5.

1. Introduction

Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is considered a global health issue. The virus was first identified in Wuhan, China in December 2019 and has spread rapidly throughout China, and in more than 209 other countries and territories affecting more than 50 million persons in the world as on November 2020 (WHO). [1,2] With the early spread of the disease around the world, WHO declared worldwide that COVID-19 constitutes a public health emergency of international interest and declared the disease as a pandemic on March 11, 2020. [3] For that, WHO adopted measures to control the disease growth curve around the world. Increasing healthcare capacity for the needs of

COVID-19 patients is considered by the WHO as an essential outbreak response measure. [4]

In the Kingdom of Saudi Arabia, on March 2, 2020, the country announced the first positive COVID-19 case. [5] The total number of COVID-19 cases in the country continues to grow to 350,000 confirmed cases including more than 5500 deaths as on November 8, 2020. [6]

One of Saudi Arabia' strategies entailed the creating and utilization of field hospitals to address the patient surge as the disease continues to spread and affect health sector in the country. On July 9, 2020, a field hospital was launched in Madinah and named Nujood Medical Center after a Saudi nurse died of COVID-19. The center has been built within 59 days over land of 15,000 m² with a bed capacity of 100 beds. Nujood Medical Center was equipped with advanced medical supplies needed to support COVID-19 patients including 40 ventilators, a laboratory, a pharmacy, and medical gas pipeline systems.

Characteristics and psychological experience of patients hospitalized in dedicated hospitals for COVID-19 were described in some countries. In China, a COVID-19 designated hospital, Fangcang shelter hospital, was effective in providing necessary medical care with good outcomes in addition to safety in isolating patients [7]. With regards to the psychological experience of patients, one study conducted in India found that two-fifth of the hospitalized patients with COVID-19 infection were screened positive for depression and/or anxiety disorder prior to their discharge in a general hospital. [8] Another study conducted in China found the anxiety and depressive symptoms to be prevalent at rates of 18.6% and 13.4%, respectively among hospitalized patients in a COVID-19 hospital. [9]

The literature from Saudi Arabia has so far offered limited insight into the characteristics and psychological experience of patients with COVID-19 during their stay in a dedicated field hospital for COVID-19 along with their attitude towards that before admission. The aim of this study was to explore the characteristics, clinical outcomes and psychological experiences of patients infected with COVID-19 who have been admitted to a field hospital in Saudi Arabia between July and November 2020.

2. Methods

This study was conducted at a COVID-19 field hospital in Madinah, Saudi Arabia. All hospitalized patients from 23 July to 9 November 2020, were identified and included in the analysis. The analysis included demographic data including patient's age, gender, nationality, presence of other comorbidities on admission, clinical signs at admission, hospital length of stay, clinical outcome (discharge, transfer or death). The overall experience during the patients' hospital stay was assessed through a self-designed questionnaire and the data were collected telephonically. Data collection were performed by two investigators and reviewed by two other different investigators. Descriptive statistics were performed to analyze and describe the demographic data, clinical and psychological characteristics using IBM SPSS 20 TM software.

3. Ethical Approval

Ethical approval was obtained from the Institutional Review Board at King Fahad Medical City, Saudi Ministry of Health, Riyadh, Saudi Arabia.

4. Results

4.1. Patient Characteristics

208 patients with laboratory confirmed COVID-19 infection were hospitalized for the analyzed period. The mean age of patients was 51.50 years. The male sex dominated among the analyzed COVID-19 patients and female patients represented less than one third of the total patients. Most of the patients were non-Saudis (109, 52%) while 99 Saudi patients were hospitalized during this period.

4.2. Clinical Findings at Admission

The leading clinical findings at admission were pneumonia, fever and cough. All patients had pneumonia (n= 208, 100%) while fever and oxygen saturation below 93% were found in 40.86% and in 47.11% of patients respectively. Headache and fatigue were also found at admission on 37% and 30% of all patients respectively. Analysis showed that (106; 50.96%) of patients were diabetic and (81; 38.94%) had hypertension.

4.3. Patient Outcomes

Of the 208 patients hospitalized between 23 July and 9 November 2020, 193 patients recovered and discharged, 14 patients needed to be transferred to other hospitals and one patient died in the center. The patient who died was 80-year old female admitted with other comorbidities including diabetes and hypertension. The patient was admitted for 8 days before developing severe complications and dying in the 9th day.

Table 1. Demographics and Baseline Characteristics of Hospitalized Patients with COVID-19

Characteristics	All patients (n = 208)
Age, Mean, Years, (Range)	51.50 Years (26–85)
Gender n (%)	
Male	160 (76.92)
Female	48 (23.07)
Comorbidity, n (%)	
Hypertension	81 (38.94)
Diabetes mellitus	106 (50.96)
Clinical Findings at Admission n (%)	
Pneumonia	208 (100)
Fever	85 (40.86)
Low Oxygen Saturation Level	98 (47.11)
Cough	98 (47.11)
Headache	77 (37.01)
Fatigue	64 (30.76)
Clinical Outcomes n (%)	
Recovery	193 (92.78)
Transfer	14 (6.73)
Death	1 (0.48)
Length of Stay, Mean, (Range)	8.5 (2–18)

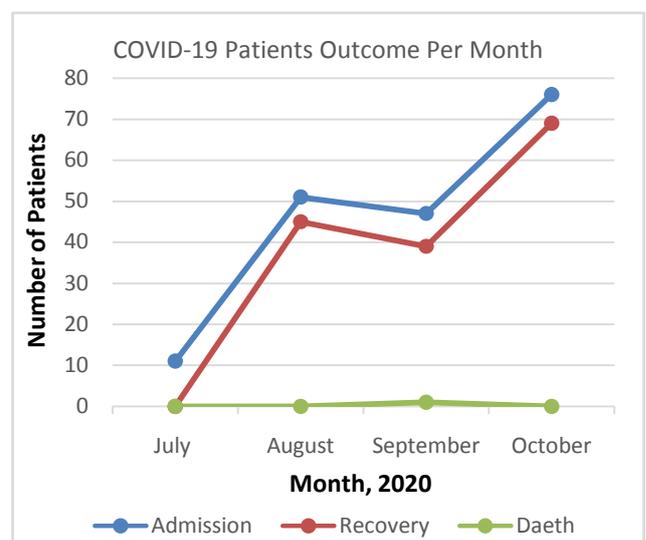


Figure 1. Admission of COVID-19 Patients Per Month (July – October 2020)

The mean length of stay in the hospital was 8.5 days (range 2–18 days). The greatest number of monthly admission of patients was in October (76 patients, 36.53%) while 11 patients were admitted in the month of July (during only the last week of the month). 51 patients and 47 patients were admitted in the months of August and September respectively (Figure 1).

4.2. Patients' Psychological and Hospital Stay Experience

All patients hospitalized during the study period were considered for analysis of psychological experience during their COVID-19 infection and hospital stay. However, only 81 patients were included in the analysis while the remaining patients were either refused to participate or could not be contacted. Most of the respondents were male 65 (80.2%) while 16 (19.8%) were female. Respondents aged 50 years and more represented 87.7% (n = 71) while respondents that are below 50 years represented 12.3% (n = 10). When asked about their first feelings to the information about their COVID-19 positive status, most respondents shared primarily multiple negative feelings, with the most common emotional feeling being that of

sadness (n = 67; 82.72 %) and being scared and anxious (n = 66; 81.48%) followed by being shocked (n = 48; 59.26%). When respondents were asked about how they initially reacted to the option of receiving care in a hospital designated for COVID-19, a vast majority of patients rejected the idea (n = 37; 45.68%) while 17 patients (20.99%) accepted the idea and 26 patients (32.10%) had no specific reaction towards admission in a hospital designated for COVID-19 patients.

After discharge, 27% of respondents said that it had been pleasant hospital admission experience, 30% said it had been a painful experience while a higher proportion of respondents (32%) said that the experience of admission to a COVID-19 hospital had been neither good nor bad. With regards of care provided to them during their hospital stay, 45% (n = 37) of respondents said they had received "excellent care, better than regular hospitals" while 16 patients (19.75%) reported an inability to obtain adequate care because only limited number of staff allowed access to the room. When asked about their overall experience of their COVID-19 infection after recovery, majority of respondents described the experience as one of the bad phases of life (81 %) and "the worst phase of life ever" (12 %). (Table 2)

Table 2. Psychological Experience of COVID-19 Patients

Question	All Patients (n: 81)	
What was your first feeling when you knew you had COVID-19? multiple responses permitted	Shocked, n (%)	48 (59.26)
	Denied, n (%)	4 (4.94)
	Sad, n (%)	67 (82.72)
	Scared and anxious, n (%)	66 (81.48)
	Other, n (%)	2 (2.47)
What was your initial reaction regarding the idea of receiving care in a hospital designated for COVID-19 patients?	No specific reaction; like any other hospital, n (%)	26 (32.10)
	Rejection, n (%)	37 (45.68)
	Acceptance, n (%)	17 (20.99)
	Pleasant, n (%)	22 (27.16)
How do you describe your experience regarding admission in a hospital designated for COVID-19?	Neither good nor bad, n (%)	26 (32.10)
	Painful, n (%)	25 (30.86)
	Torture, n (%)	2 (2.47)
How do you describe the level of care in this COVID-19 hospital during your admission?	Lack of care due to staff fear of being infected, n (%)	5 (6.17)
	Inability to obtain adequate care because only limited number of staff allowed access to the room, n (%)	16 (19.75)
	Normal care, like any other hospital, n (%)	22 (27.16)
	Excellent care; better than regular hospitals, n (%)	37 (45.68)
In general, how do you rate your experience of contracting COVID-19 after recovery?	One of the best stages of my life	0 (0.00)
	Neither good nor bad, n (%)	5 (6.17)
	It was one of the bad stages of my life, n (%)	66 (81.48)
	It was the worst phase of my life ever, n (%)	10 (12.35)

5. Discussion

In this study, we reviewed the characteristics, clinical outcomes and psychological experiences of patients infected with COVID-19 who were admitted to a field hospital in Saudi Arabia between July and November 2020. All patients had laboratory confirmed COVID-19 infection and were admitted and hospitalized because of

pneumonia. Other clinical signs present at admission included fever (40.86%), cough (47.11%), fatigue (30.76) and low level of oxygen saturation in blood (47.11). These clinical signs are in agreement with the findings of several previous studies but were found in lower numbers of patients in this study compared to previous ones. [10,11,12] This could be explained by early medical care that some patients had received in other hospitals before

referral to this COVID-19 dedicated center and resulted in some clinical improvements.

The study population were adults and older patient; half of them were diabetic and about 40% were hypertensive. Similarly, in previous studies, high proportions of hospitalized patients with COVID-19 were found to have underlying conditions, including diabetes mellitus and hypertension. Alsofayan, Y. et al found hypertension and diabetes to be the most underlying comorbidities identified among 1,519 COVID-19 patients. [13] Another study by Garg, S. et al found hypertension in 49.7% and diabetes mellitus in 28.3% of 178 COVID-19 cases. [14]

About 93% of hospitalized patients have recovered and discharged and only one recorded death in this hospital during the it's the first three months of operation, that is, 0.48% mortality rate. Almalki et al (2019) found a similar number of deaths among 453 hospitalized patients with COVID-19 in another hospital in Saudi Arabia. [15]

The participants in this study were almost unanimously negative, seeing only bad aspects, about the experience of contracting COVID-19, and initially were negative about their treatment in a dedicated hospital for COVID-19. Negative feelings of sadness (82.72 %) and being scared and anxious (81.48%) were the most emotional states of the participants when they knew they had COVID-19 infection. These findings are in line with two previous studies which found prevalent negative emotional feelings among the patients when they knew their COVID-19 infection. [8,16] Initially, the majority of patients rejected the idea of receiving care in a hospital dedicated for COVID-19 (n = 37; 45.68%). This might be caused by a perceived fear of hospitals dedicated only for COVID-19 patients linked with being totally isolated. However, the participants' attitude toward their experience changed from negative, to cautious acceptance, to finally quite positive about the care they received.

Sun et al (2021) found similar outcomes and suggested that appropriate psychological interventions may mediate the positive change in attitude and emotion. Similarly, these authors' studies on the welfare of staff involved in care of COVID-19 patients showed initial negative attitude followed by increasingly positive attitude. In total it would appear that psychological interventions, specifically designed to promote and maintain a positive attitude would benefit all those involved, both patients and staff. [17,18]

The current study had limitations. First, data in this study were from a single COVID-19 filed hospital that may not be generalizable. Second, the current study described the outcomes of patients until discharge or transfer from this field hospital. Therefore, the outcomes of patients transferred to other hospital were not included. The limitations of this, and other studies, are also based in the relative newness and uniqueness of this pandemic. It is difficult at this early stage to be certain which factors contributed to the mood improvement noted by researchers, and only further study would show which psychological factors and/or supports (apart from surviving a potentially deadly disease) contributed to this change in attitude, and perhaps could form the basis for further study.

6. Conclusion

Field hospitals can be effectively used to provide care for patients with COVID-19 to expand the healthcare capacity in a short time with good patient outcomes. Appropriate psychological interventions are required to change the patients' attitude towards such settings and improve their hospital stay experience.

References

- [1] Report of Clustering Pneumonia of Unknown Etiology in Wuhan City. Wuhan Municipal Health Commission; 2019. <http://wjw.wuhan.gov.cn/front/web/showDetail/2019123108989>.
- [2] WHO. WHO Coronavirus Disease (COVID-19) Dashboard. World Health Organization. Published Nov 9, 2020. Available at: <https://covid19.who.int/> Accessed Nov 9, 2020
- [3] World Health Organization. Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV). [Updated 2020 January 30. Cited 2020 Nov 9]. Available from URL: [https://www.who.int/news/item/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-\(2005\)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-\(2019-ncov\)](https://www.who.int/news/item/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-(2019-ncov)).
- [4] World Health Organization. WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020. [Updated 2020 March 11. Cited 2020 Nov 9.] Available from URL: <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>.
- [5] MOH News - MOH Reports First Case of Coronavirus Infection. (2020). Retrieved Nov 9 2020. Available: <https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/News-2020-03-02-002.aspx>.
- [6] MOH, 2020b MOH, 2020. COVID 19 Dashboard: Saudi Arabia. Retrieved Nov 9 2020. Available at: <https://covid19.moh.gov.sa>
- [7] Liu, P., Zhang, H., Long, X., Wang, W., Zhan, D., Meng, X., ... & Chen, R. (2020). Management of COVID - 19 patients in Fangcang shelter hospital: clinical practice and effectiveness analysis. *The Clinical Respiratory Journal*.
- [8] Sahoo, S., Mehra, A., Dua, D., Suri, V., Malhotra, P., Yaddanapudi, L. N., ... & Grover, S. (2020). Psychological experience of patients admitted with SARS-CoV-2 infection. *Asian Journal of Psychiatry*.
- [9] Dai, L. L., Wang, X., Jiang, T. C., Li, P. F., Wang, Y., Wu, S. J., ... & Cheng, Z. (2020). Anxiety and depressive symptoms among COVID-19 patients in Jiangnan Fangcang Shelter Hospital in Wuhan, China. *Plos one*, 15(8), e0238416.
- [10] Wang D, Hu B, Hu C, et al. Clinical characteristics of 138 hospitalized patients with 2019 Novel Coronavirus-infected Pneumonia in Wuhan, China. *JAMA*. 2020; 323(11):1061-1069.
- [11] Goyal, P., Choi, J. J., Pinheiro, L. C., Schenck, E. J., Chen, R., Jabri, A., ... & Hoffman, K. L. (2020). Clinical characteristics of Covid-19 in New York city. *New England Journal of Medicine*.
- [12] Richardson S, Hirsch JS, Narasimhan M, et al. Presenting Characteristics, Comorbidities, and Outcomes Among 5700 Patients Hospitalized With COVID-19 in the New York City Area. *JAMA*. 2020; 323(20): 2052-2059.
- [13] Alsofayan, Y. M., Althunayyan, S. M., Khan, A. A., Hakawi, A. M., & Assiri, A. M. (2020). Clinical characteristics of COVID-19 in Saudi Arabia: A national retrospective study. *Journal of Infection and Public Health*.
- [14] Garg, S. (2020). Hospitalization rates and characteristics of patients hospitalized with laboratory-confirmed coronavirus disease 2019—COVID-NET, 14 States, March 1-30, 2020. *MMWR. Morbidity and mortality weekly report*, 69.
- [15] Almalki, Z. S., Khan, M. F., Almazrou, S., Alanazi, A. S., Iqbal, M. S., Alqahtani, A., ... & Alahmari, A. K. (2020). Clinical Characteristics and Outcomes Among COVID-19 Hospitalized Patients with Chronic Conditions: A Retrospective Single-Center Study. *Journal of multidisciplinary healthcare*, 13, 1089.

- [16] Sahoo, S., Mehra, A., Suri, V., Malhotra, P., Yaddanapudi, N., Puri, G. D., & Grover, S. (2020). Lived experiences of the Corona Survivors (patients admitted in COVID wards): A Narrative real-life documented summaries of internalized guilt, shame, stigma, anger. *Asian Journal of Psychiatry*.
- [17] Sun, N et al. Qualitative study of the psychological experience of COVID-19 patients during hospitalization. *Journal of Affective Disorders*, 2021; 278: 15-22
- [18] Sun, N et al. A qualitative study on the psychological experience of caregivers of COVID-19 patients. *American Journal of Infection Control* 2020 (20), 30201-30207.



© The Author(s) 2021. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).