

**Original Research Article**  
**Satisfaction of COVID-19 Patients with Health  
Care Facilities During Pandemic and Its  
Association with Knowledge, Attitude &  
Practice**

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**ABSTRACT**

**Aims:** Patient satisfaction is critical for ensuring the quality of the healthcare system, especially in the context of the COVID-19 pandemic. The public's knowledge, attitude, and practice (KAP) concerning COVID-19 may affect patient satisfaction. Since patient satisfaction and KAP plays an important role in controlling any public health crisis, the current study was conducted.

**Study design:** Community-based cross-sectional study.

**Place and Duration of Study:** This study was conducted in the Department of Physiology, SMS Medical College, Jaipur. The survey was done between January and March 2021 for residents of the Jaipur district.

**Methodology:** The present study is conducted via an online survey after the approval of the ethics committee. The Google Forms questionnaire link was shared with the public of Jaipur district (Raj.) India. Only hospitalized COVID-19 patients (n=68), satisfaction and KAP were estimated. Data were collected in an Excel sheet and further analyzed by the student chi-square and Pearson's correlation to find any association between different variables.  $p$ -value  $<0.05$  was set for the significance level.

**Results:** More than half of hospitalized patients were satisfied with doctors, particularly with the medical explanation of COVID-19, treatment plan, and hospital stay. No discernible difference was depicted in patient satisfaction scores between private (47.27) and government (48.29) hospitals. Patients' satisfaction was significantly positively correlated with good COVID-19 knowledge ( $r=0.511$ ) and practices ( $r=0.385$ ).

**Conclusion:** The present research found that the majority of hospitalized COVID-19 patients were satisfied with healthcare services, and knowledge and practice have an association with patients' hospital satisfaction levels. Therefore, we must increase the patient's understanding about the disease so that the patient is satisfied with the therapy received, which may improve the treatment outcome.

*Keywords: Attitude, COVID-19, Knowledge, Patient satisfaction, Practice*

## 1. INTRODUCTION

Patient satisfaction is an essential and widely used measure in evaluating the quality of the healthcare system [1]. It is influenced by various factors such as institution facilities, healthcare professionals' care, the general hospital atmosphere, staff behaviour, hospital costs, post-discharge facilities, etc. [2,3]. During COVID-19, hospitals were flooded with patients, demanding isolation wards, medications, personal protective equipment (PPE), and physicians and nurses [4]. The healthcare systems in under-developed nations were not well equipped, both financially and in terms of quality, to deal with the COVID-19 epidemic [5]. As a result, during COVID-19, healthcare systems have struggled to provide adequate care [4].

Patient satisfaction surveys may be a useful tool for improving the efficiency of services provided to the target population [6].

In the early phases of the COVID-19 pandemic, health care workers were inundated with unfiltered, unscientific information as per World Health Organization [7]. As a result, the coronavirus caused unnecessary anxiety, stress, and apprehension among healthcare personnel at first [8,9]. In these situations, assessing patient satisfaction was critical to determine whether or not the patient in the alarmed pandemic condition received adequate treatment. Developed nations continuously provided high-quality health care throughout COVID-19, especially during the second and third waves, despite the significant strain on the local health system [10], and nine out of ten Cardiff hospital patients rated their care as excellent [11]. The scenario in developing countries shows a different picture as the Urmia-Iran study reported a moderate level of satisfaction by most patients [12] while in North Shoa Zone, Oromia region, Ethiopia, patient satisfaction was very low [5].

While in India, varying degrees of satisfaction were reported in different regions [13,14], as well as the paucity of patient feedback surveys during the COVID pandemic in the Jaipur district of Rajasthan, India. To control any public health problem and for the motivation of the community, satisfaction with health care services is essential and plays a very crucial role. So, this study aimed to find out the satisfaction level of hospitalized COVID-19 cases in the Jaipur district of Rajasthan, India. For controlling this public health problem people's adherence to the prevention measures is also essential, which is affected by their knowledge, attitudes, and practices (KAP) towards COVID-19. So, knowing KAP and its association with patients' satisfaction levels could be used to fill up the gaps in the community and encouraged them to participate efficiently in controlling this disease.

## **2. MATERIAL AND METHODS**

### **2.1 Data Collection:**

The present study was a community-based online cross-sectional survey conducted during the pandemic to acquire knowledge, attitudes, and practices (KAP) as well as hospital satisfaction of residents of the Jaipur district. The survey was done between January and March 2021 during an unlock period after obtaining approval from the institution's clinical trial screening committee and ethical committee (No. 579/MC/EC/2020 Dated 18/8/20). With a 95% confidence interval and a 10% relative allowable error, the sample size for the Jaipur population was determined to be 400 individuals, assuming 50% of respondents would have the correct knowledge. Residents' opinions were collected using an online Google form until 500 replies were obtained.

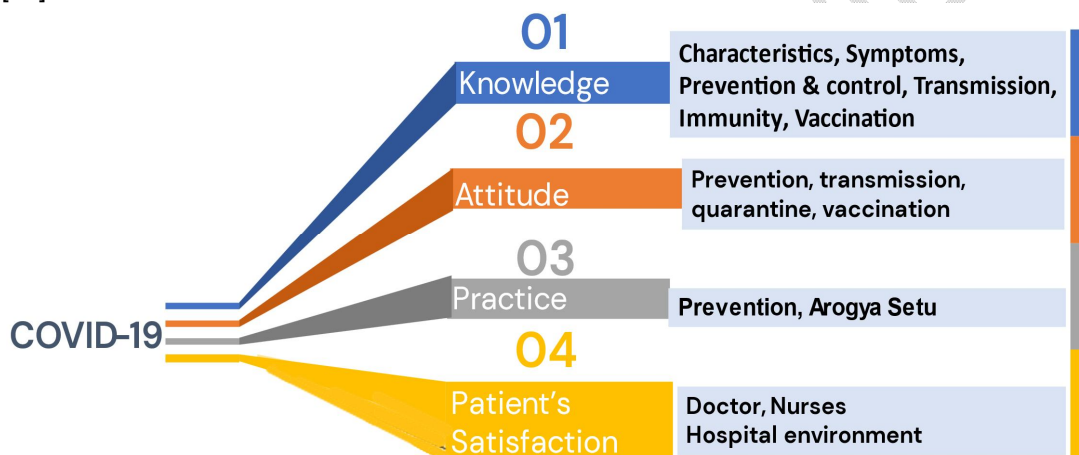
A structured questionnaire was prepared on Google forms and the link of the same was sent to residents of the Jaipur district via e-mail, WhatsApp groups, and personal mobile numbers obtained from the healthcare centre database of SMS Medical College and Hospital, Jaipur, Rajasthan. A returned Google Form was considered as an acceptance by the subject to be included in the study. Incomplete forms and forms filled by respondents under 15 years of age were excluded from the study.

**2.2 Survey Questionnaire:** The Google form is constituted of three sections. The first section included socio-demographic profiles such as age, gender, residence, education, employment, any comorbidity, etc. The second section contained the KAP questions [15] and was further divided into three subsections: Knowledge, Attitude, and Practice. The third section included questions about patient satisfaction with hospitals, which were exclusively completed by individuals who were admitted to hospitals during the COVID-19 epidemic.

The study's aim and methodology were described to the participants and given the option of participating voluntarily, and they were guaranteed anonymity and confidentiality. The individual's acceptance to participate in the research was assumed on received completed Google Form. After submitting the Google forms, each participant received a copy of the Government of India's COVID-19 guidelines to verify that they got the right information on COVID-19 transmission, prevention, and control. There are two main reasons to give this

assurance: first, it is ethical to impart knowledge, and second, it motivates people to give a response.

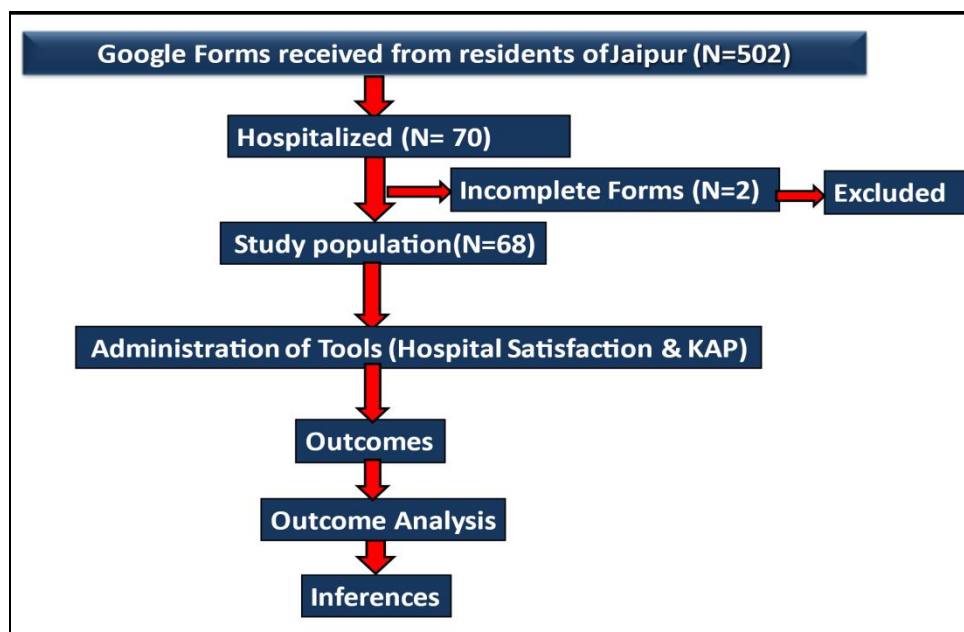
The incomplete, duplicate forms and those filled out by individuals under the age of 15 years were excluded from the survey. In this study, 502 KAP responses were received, out of which only 70 (14%) subjects were admitted to the hospital, only 68 responses were further analyzed after removing two patients' data, owing to inadequate information, and their satisfaction level was obtained by the questionnaire. Patients' satisfaction with their doctor, nurse, and hospital environment was measured using a questionnaire comprising three subsections: 6, 6 and 4 items, respectively. Each item was scored on a 5-point Likert Scale, with Strongly satisfied=4, Satisfied =3, Neutral=2, Dissatisfied=1, and Strongly Dissatisfied=0. The total score was obtained by adding all responses of 16 items in the subsection on patient satisfaction. The total scores ranged from 0 to 68. In this study, the KAP of only 68 hospitalized patients was calculated and subsequently correlated with the patient's hospital satisfaction. Details of the KAP methodology employed in the experiment for calculation and analysis of the scores have been given in the previously published article [15].



**Figure 1: Questionnaire construct of KAP (Knowledge, Attitude, and Practice) and Patients Satisfaction**

### 2.3 Statistical Analysis

The data was collected via Google Sheets and then cleaned, sorted, and coded in Microsoft Excel 2019. SPSS IBM version 20 was used to analyse the data. Data were presented as percentages or as mean  $\pm$  SD. The chi-square test was used to analyse the qualitative data. Pearson correlation was used to determine a correlation between independent variables (patient satisfaction) and the dependent variables (KAP). P-value < 0.05 was considered as significant.



**Figure 2: Study Flow chart for participants' selection**

Give adequate information to allow the experiment to be reproduced. Already published methods should be mentioned with references. Significant modifications of published methods and new methods should be described in detail. This section will include sub-sections. Tables & figures should be placed inside the text. Tables and figures should be presented as per their appearance in the text. It is suggested that the discussion about the tables and figures should appear in the text before the appearance of the respective tables and figures. No tables or figures should be given without discussion or reference inside the text.

### 3. RESULTS

Out of 14% (70) hospitalized subjects, only 68 responses were further analyzed after removing two patients' data, owing to inadequate information. The average age of respondents was  $31.76 \pm 10.68$  years, and the gender and domicile were approximately equal in number. Majority of the participants were between the ages of 26 and 50 years, had college degree, and works in the private sector with no comorbidities (Table 1).

**Table 1: Socio-demographic Profile of Admitted COVID- 19 Patients (N=68)**

Characteristic	Category	Count	Percentage
Gender	Male	31	45.58
	Female	37	54.41
Domicile	Urban	33	48.52
	Rural	35	51.47
Education	Elementary school	2	2.94
	High school	06	8.82
	Higher education	60	88.23
Age (years)	≤25	24	35.29
	26 -50	39	57.35

	≥51	05	7.35
Employment	Government	40	58.82
	Private	28	48.17
Profession	Health care	11	16.17
	Others	57	83.82
Comorbidity	Yes	03	4.41
	No	65	95.58
Hospital Admission	Government	44	64.70
	Private	24	35.29

N=Number of patients

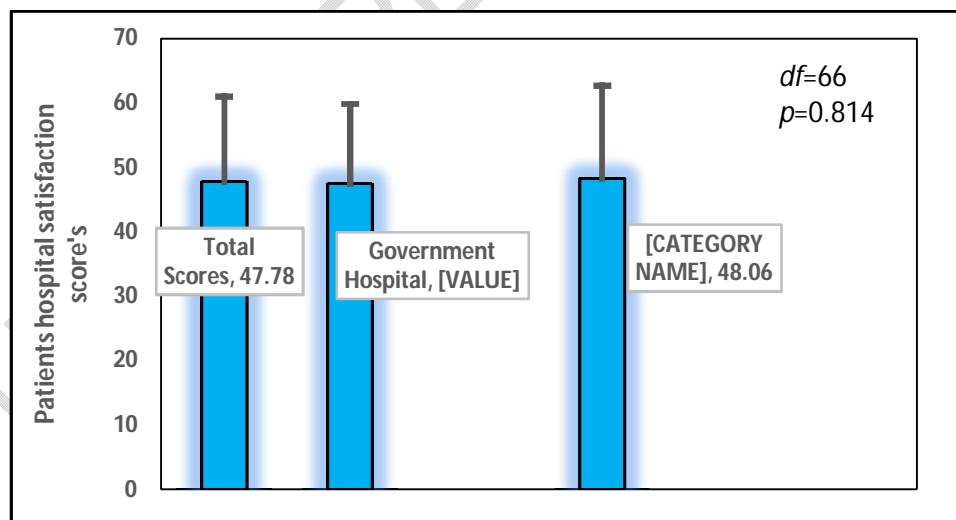
Mean and Standard Deviation of Knowledge, Attitude & Practice scores, and patients' satisfaction scores were towards higher side as shown in table-2.

**Table 2: Descriptive Statistics of KAP and Hospital Satisfaction of COVID-19 Patients (N=68)**

Variables	Scale Range	Observed range	Mean	Std. Deviation
Knowledge scores	0-22	7-22	17.90	3.337
Attitude scores	1-60	33-55	41.07	4.169
Practice scores	0-16	4-16	11.79	2.955
Patients' hospital Satisfactions scores	0-68	15-68	47.78	13.270

N=Number of patients

There was no discernible difference in patient satisfaction scores between private and government hospitals (Figure 3).



**Figure 3: Patient satisfaction Overall scores with private and government hospitals (N=68) *df* : degree of freedom**

More than half of hospitalized patients were satisfied with doctors, particularly with the medical explanation of COVID-19, treatment plan, and hospital stay. While some patients (20%) were dissatisfied with the ease with which they could get hospital admission. Nurses

were generally well-liked by patients, with more than half expressing satisfaction with their behaviour and services. The hospital atmosphere was also rated favourably by nearly half of the respondents. While roughly a quarter of patients were dissatisfied with the cleanliness of the toilets (Table 3).

**Table 3: COVID-19 Patients' satisfaction with hospital staff and its environment during hospitalization (N=68)**

<b>Patients' satisfaction statement</b>	<b>Extremely Dissatisfied n (%)</b>	<b>Dissatisfied n (%)</b>	<b>Neutral n (%)</b>	<b>Satisfied n (%)</b>	<b>Extremely Satisfied n (%)</b>
<b>Patient's Satisfaction towards Doctor</b>					
Ease of getting admission to hospital	02 (2.94%)	13(19.11%)	01(1.47%)	38(55.88%)	14(20.58%)
Ease of speaking directly with your doctor	03 (4.41%)	06 (8.82%)	03 (4.41%)	42 (61.76%)	14 (20.58%)
Regular follow-up during hospital stay	01 (1.47%)	06 (8.82%)	07(10.29%)	40 (58.82%)	14 (20.58%)
Appropriate response in case of emergency	02 (2.94%)	06 (8.82%)	05 (7.35%)	41 (60.29%)	14(20.58%)
Behavior/attitudes of doctor	01 (1.47%)	06 (8.82%)	04 (5.88%)	42 (61.76%)	15 (22.05%)
Medical explanation of disease course & treatment plan and duration of stay in hospital	01 (1.47%)	04 (5.88%)	03 (4.41%)	46 (67.64%)	14 (20.58%)
<b>Patient's Satisfaction towards Nurses'</b>					
Services provided by nursing staff	02 (2.94%)	04 (5.88%)	05 (7.35%)	42 (61.76%)	15 (22.05%)
Behaviour/attitudes of staff and nurses	02 (2.94%)	06 (8.82%)	04 (5.88%)	42 (61.76%)	14 (20.58%)
Clear and satisfied answers to patient questions	02 (2.94%)	07 (10.29%)	06 (8.82%)	42 (61.76%)	11 (16.17%)
Attending in suitable time on calling	02 (2.94%)	08 (11.76%)	03 (4.41%)	39 (57.35%)	16 (23.52%)
Patient received medication at the predetermined times	01 (1.47%)	04 (5.88%)	05 (7.35%)	43 (63.23%)	15 (22.05%)
Enough nurses for patient care throughout the day	03 (4.41%)	09 (13.23%)	02 (2.94%)	42 (61.76%)	12 (17.64%)
<b>Hospital environment (Statement)</b>					
Cleanliness of room	05 (7.35%)	07 (10.29%)	08(11.76%)	35(51.47%)	13 (19.11%)
Cleanliness of toilets	05 (7.35%)	11 (16.17%)	06 (8.82%)	34 (50%)	12 (17.64%)
Quietness during the hospital stay	04 (5.88%)	07 (10.29%)	02 (2.94%)	46 (67.64%)	09 (13.23%)
Food quality during the hospital stay	04 (5.88%)	06 (8.82%)	04 (5.88%)	43 (63.23%)	10 (14.70%)

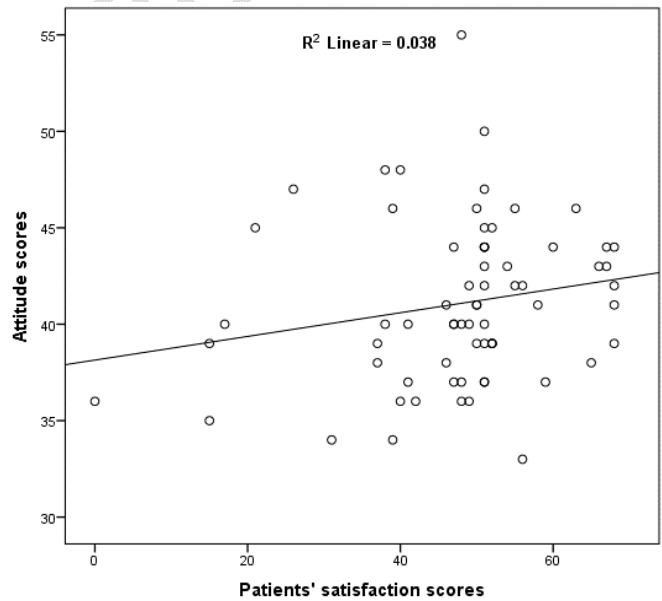
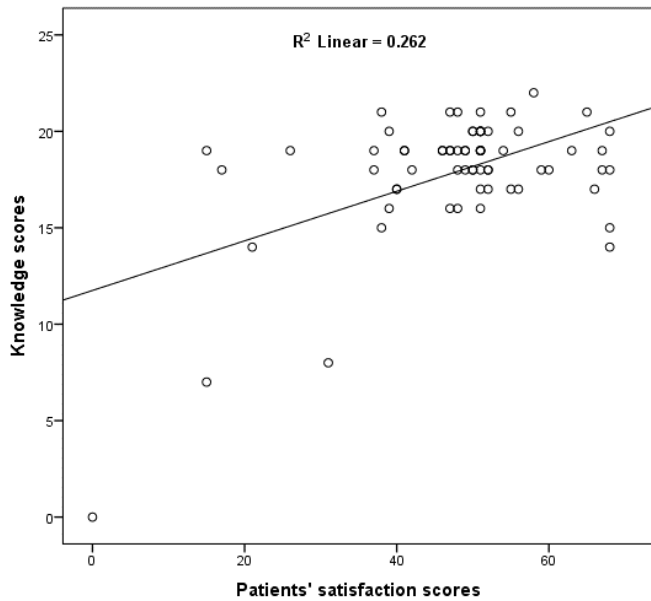
N=Number of patients, %= percentage of patients

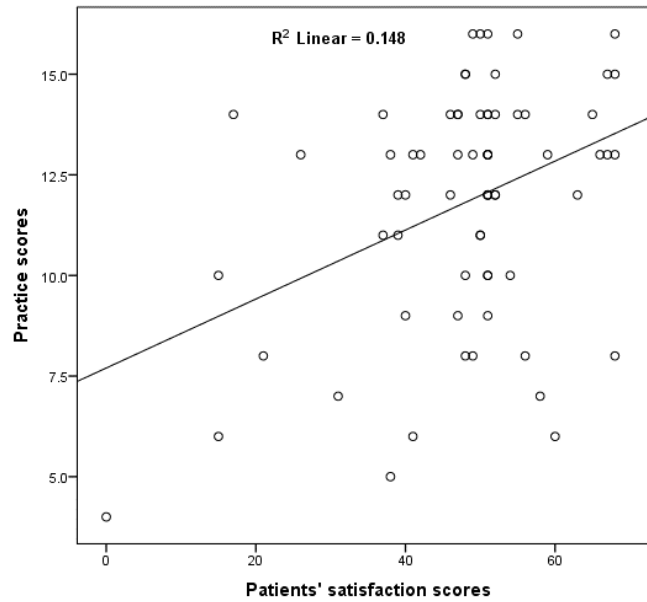
Patients' knowledge of COVID-19 was found to have a significant positive correlation with their attitude, practices, and satisfaction with the hospital. Patients' satisfaction was also significantly positively correlated with practices. A positive attitude, on the other hand had no impact either on their practices of COVID-19 or satisfaction with the hospital (Table 4, Figure 4).

**Table 4: Pearson correlation for COVID-19 Patients' satisfaction with KAP (N=68)**

Variables		Knowledge Scores	Attitude Scores	Practice Scores	Patients' satisfaction Scores
Knowledge Scores	Pearson Correlation	1	<b>.279</b>	<b>.393</b>	<b>.511</b>
	Sig. (2-tailed)		.021	<.001	<.001
Attitude Scores	Pearson Correlation		1	.048	.195
	Sig. (2-tailed)			.695	.110
Practice Scores	Pearson Correlation			1	<b>.385</b>
	Sig. (2-tailed)				<.001
Patients' satisfaction Scores	Pearson Correlation				1
	Sig. (2-tailed)				

*P* < .05(Significant), N=Number of patients





**Figure 4: Correlations between knowledge, practice, and attitude scores with COVID-19 patients' satisfaction towards the hospital**

#### **4. DISCUSSION**

The present study found a higher rate (68 to 85 %) of hospital satisfaction among admitted COVID-19 patients in the Jaipur district for doctors and nurse care. However, patients were less satisfied with the hospital environment, especially cleanliness. Patients' satisfaction with government hospitals and private hospitals did not differ significantly, although there was some inclination towards private hospitals. A positive association of patients' knowledge & practice with hospital satisfaction was also observed. Patients' hospital satisfaction was contributed significantly by Knowledge and practice, 26% and 15%, respectively while non-significantly by attitude, 3.8%.

The present survey finding is consistent with the study of Kraska R A from Germany, where all the hospitals (total 999) achieved high patient satisfaction in their inpatient care. The mean rating of patient satisfaction was approximately 81.5% in the four quality dimensions (medical care, nursing care, organization, and overall impression). Higher staffing ratios per bed and higher quality were associated with higher patient satisfaction. We also found that our results regarding patient satisfaction towards nurses are in line with the study by Alhowaymel et al [16], in which patients were highly satisfied with nursing care in general, including the level of care they received and the given information. High satisfaction rates were attributed to nurses who were knowledgeable, responsible, and prepared. Another study by Diab HS [17] in Egypt reported, patient satisfaction for physicians' care of moderate level (61%,) but each patient was only given a single response indicating satisfaction or dissatisfaction for each domain. Whereas we used a five-point Likert Scale to measure all ranges of responses of COVID-19 hospitalized patients.

While contradictory to the above results, the study from central India conducted by Sharma A [13] noted that services were not sufficient in terms of explaining the illness and providing medical treatment. Similarly, the study by Razeed [14] from Tamil Nadu revealed that patient satisfaction was low. Patients had to face lots of problems due to an insufficient number of doctors, nurses, and hospital employees, delays and unreliable investigation results of COVID-19, and lack of basic amenities like drinking water, food, medicine, and beds were available but doctors did not ready to admits due to governments orders. In the present

study, patient satisfaction was high not only towards doctors but also towards nurses, however, the percentage of extremely satisfied patients was low in the case of statement towards nurses. Another study by Deriba BS et.al [5] from North Shoa Ethiopia observed that level of patient satisfaction was very low during a COVID-19 pandemic and the primary reason for this was not getting prescribed medication.

High patient satisfaction in the present study may be explained by patients' high knowledge about COVID-19 as majority of participants had higher education.

#### **4.1 Limitations**

The present study had a few limitations, including the possibility that we would not be able to reach all segments of the target population because majority of participants were educated. The present survey included all patients admitted in the first wave of pandemic, so there was an interval of three to five months between the time of the patient's admission and the time of the survey. Thus, there may be a recall bias as the patient's experience is likely to change over time. Since the survey is based on a self-reported questionnaire, the results may be influenced by the subjectivity of participants.

#### **4.2 Strengths**

In our study, the questionnaire was based on Likert scales. In contrast to simple satisfied/dissatisfied, Likert Scales allow for a range of opinions from respondents, and may even allow respondents to remain silent thus providing a more comprehensive picture. This study also highlights the impact of knowledge, attitude, and practice (KAP) about COVID-19 on patient hospital satisfaction.

#### **4.3 Future recommendations**

The present study has important implications for achieving a high level of patient hospital satisfaction by imparting knowledge to the people about COVID-19. Lack of knowledge could be one of the main reasons behind workplace violence against healthcare workers. Periodic patient hospital satisfaction surveys should be conducted to know the deprived zones in healthcare industries to improve the quality of healthcare services. The patient's knowledge should be enhanced towards the causation of disease, possible treatment, and its side effects through audio-video mode in the hospital.

## **5. CONCLUSION**

The majority of hospitalized COVID-19 patients were satisfied with doctors and nurses, during the first wave of the pandemic. Whereas some patients were dissatisfied with cleanliness of hospital. There was no significant difference in satisfaction ratings between government and private hospitals. The present research found that the patient's knowledge and practice had an association on patients' hospital satisfaction levels. Therefore, we must empower the patient's knowledge about the disease so that the patient is content with the therapy provided and any violence caused by misunderstanding is avoided in the future.

## CONSENT

Authors may use the following wordings for this section: "All authors declare that 'written informed consent was obtained from the patient (or other approved parties) for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editorial office/Chief Editor/Editorial Board members of this journal."

## ETHICAL APPROVAL

All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

The survey was done after obtaining approval from the institution's clinical trial screening committee and ethical committee (No. 579/MC/EC/2020 Dated 18/8/20).

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