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

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 on various WhatsApp groups. And data were collected about patient's satisfaction and KAP from those (n=68) who had been admitted to any of the hospitals in past for COVID-19. Data thus collected were analyzed by the student chi-square and Pearson's correlation to find any association between different variables. A p-value <0.05 was considered as significant.

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 compliance and prognosis.

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

1. INTRODUCTION

Patient satisfaction is an essential and widely used outcome 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, trust, interaction, and empathy. [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

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24 have struggled to provide adequate care [4]. Patient satisfaction surveys may be a useful
25 tool for improving the efficiency of services provided to the target population [6].
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27 In the early phases of the COVID-19 pandemic, healthcare workers were inundated with
28 unfiltered, unscientific information as per World Health Organization [7]. As a result, the
29 coronavirus caused unnecessary anxiety, stress, and apprehension among healthcare
30 personnel at first [8,9]. In these situations, assessing patient satisfaction was critical to
31 determine whether or not the patient in the alarmed pandemic condition received adequate
32 treatment.
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34 In developed nations, high-quality health care was provided throughout COVID-19 specially
35 during the second and third waves[10], which was evidence by a study that out of 10 Cardiff
36 hospital, nine were having excellent patients care [11]. The scenario in developing countries
37 shows a different picture as the Urmia-Iran study reported a moderate level of satisfaction by
38 most patients [12] while in North Shoa Zone, Oromia region, Ethiopia, patient satisfaction
39 was very low [5].
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41 Although in India, varying degrees of patient satisfaction were reported in different regions in
42 this regard [13,14] In Rajasthan, there is the paucity of such studies. And to better control
43 any public health problem satisfaction with health care services is essential. So, this study
44 aimed to find out the satisfaction level of hospitalized COVID-19 cases in the Jaipur district
45 of Rajasthan, India. For controlling this public health problem people's adherence to the
46 prevention measures is also essential, which is affected by their knowledge, attitudes, and
47 practices (KAP) towards COVID-19. So, knowing KAP and its association with patients'
48 satisfaction levels could be used to fill up the gaps in the community and encouraged them
49 to participate efficiently in controlling this disease.
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51 **2. MATERIAL AND METHODS**

52 **2.1 Data Collection:**

53 This present study was a community-based online cross-sectional survey, conducted during
54 an unlock period of COVID-19 pandemic to find out the level of hospital satisfaction of
55 responds and to associate it with their knowledge, attitude, and practice. This study was
56 conducted on 68 subjects who has responded with self-hospital admission for COVID in
57 past, among 502 responses received.
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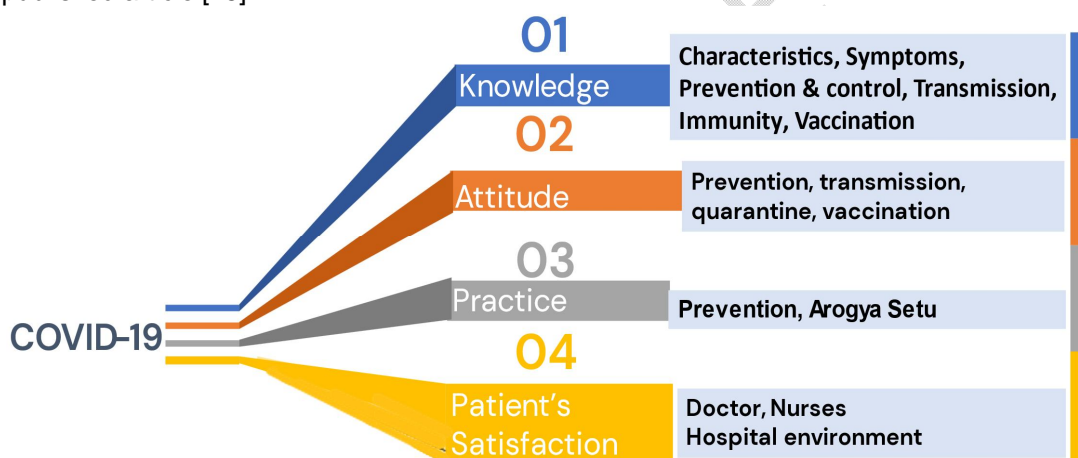
59 A structured questionnaire was prepared on Google forms and the link of the same was sent
60 to residents of the Jaipur district via e-mail, WhatsApp groups, and personal mobile numbers
61 obtained from the healthcare centre database of SMS Medical College and Hospital, Jaipur,
62 Rajasthan. A returned Google Form was considered as an acceptance by the subject to be
63 included in the study. Incomplete forms and forms filled by respondents under 15 years of
64 age were excluded from the study.
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66 **2.2 Survey Questionnaire:** For data collection a Google form was used which was
67 having three sections. First section included socio-demographic profiles such as age,
68 gender, residence, education, employment, any comorbidity. The second section contained
69 the KAP questions [15]. In this questionnaire, knowledge was assessed regarding
70 symptoms, mode of transmission, prevention and control of COVID and Attitude was
71 assessed for preventive measures, quarantine and vaccination. In KAP questionnaire,
72 practice was assessed for using preventive measures and Arogy Setu App. The third section
73 of Google form was questions about patient satisfaction with hospitals, doctors and nurses.
74 (Figure 1)

75 The study's aim and methodology were described to the participants and given the option of
76 participating voluntarily, and they were guaranteed anonymity and confidentiality. Receiving

77 filled Google form is assumed as consent of subject. After receiving the Google forms, a
78 copy of the Government of India's COVID-19 guidelines, was sent to each of subjects for
79 ethical reason to enrich them with right information about COVID-19 transmission,
80 prevention, and control. There are two main reasons to give this assurance: first, it is ethical
81 to impart knowledge, and second, it motivates people to give a response.
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83 The incomplete, duplicate forms and those filled out by individuals under the age of 15 years
84 were excluded from the survey. In this study, 502 KAP responses were received, out of
85 which only 70 (14%) subjects were admitted to the hospital, only 68 responses were further
86 analyzed after removing two patients' data, owing to inadequate information, and their
87 satisfaction level was obtained by the questionnaire. Patients' satisfaction with their doctor,
88 nurse, and hospital environment was measured using a questionnaire comprising three
89 subsections, each section consisted by 6,6 and 4 items, respectively. Each item was scored
90 on a 5-point Likert Scale, with Strongly satisfied=4, Satisfied =4, Neutral=3, Dissatisfied=2,
91 and Strongly Dissatisfied=0. The total score was obtained by adding all responses of 16
92 items in the subsection on patient satisfaction. The total scores ranged from 0 to 68. In this
93 study, the KAP of only 68 hospitalized patients was calculated and subsequently correlated
94 with the patient's hospital satisfaction. Details of the KAP methodology employed in the
95 experiment for calculation and analysis of the scores have been given in the previously
96 published article [15].



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

100 2.3 Statistical Analysis

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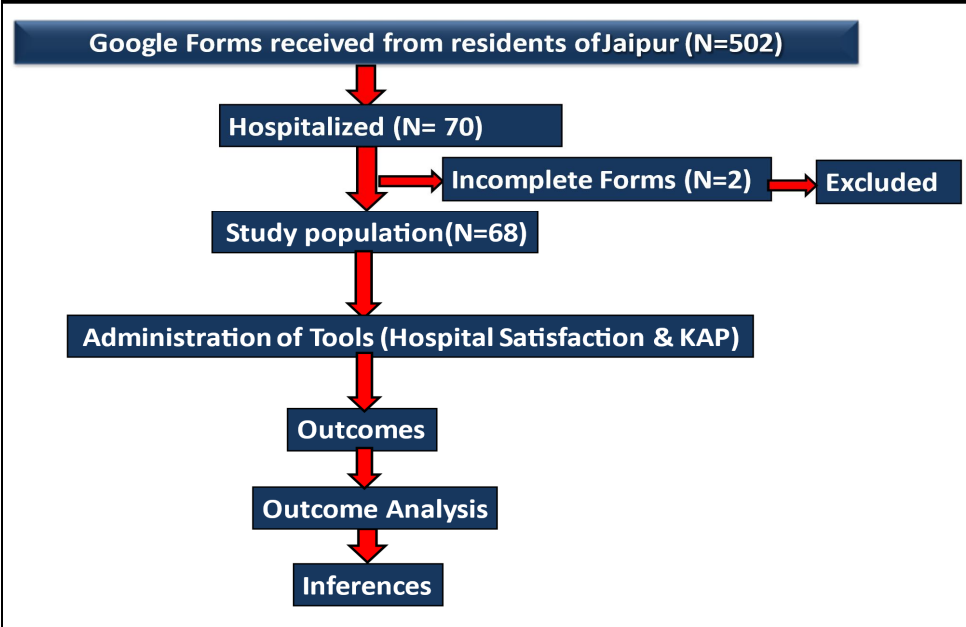


Figure 2: Study Flow chart for participants’ selection

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 ± 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

123 N=Number of patients

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125 Mean and Standard Deviation of Knowledge, Attitude & Practice scores, and patients'

126 satisfaction scores were towards higher side as shown in table-2.

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128 **Table 2: Descriptive Statistics of KAP and Hospital Satisfaction of COVID-19 Patients**

129 **(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 Satisfaction scores	0-68	15-68	47.78	13.270

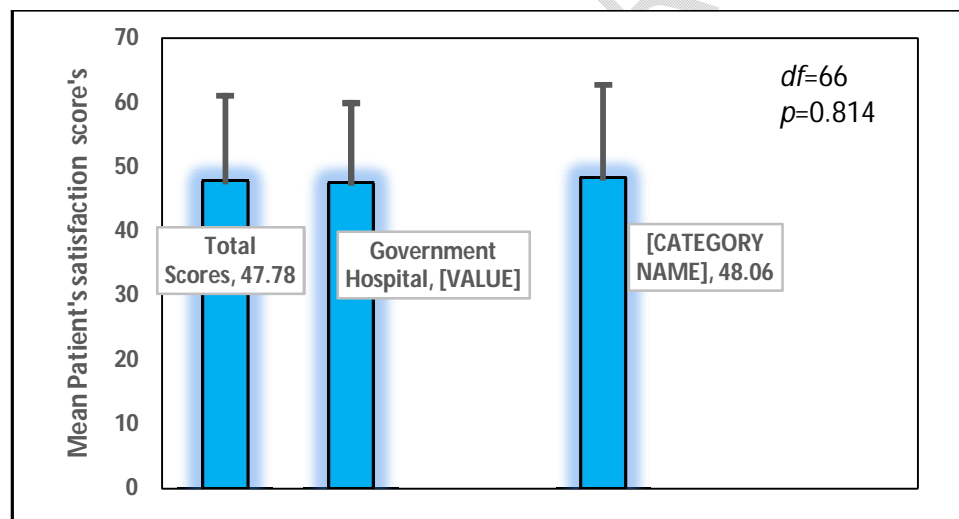
130 N=Number of patients

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132 There was no discernible difference in patient satisfaction scores between private and

133 government hospitals (Figure 3).

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136 **Figure 3: Mean patient satisfaction scores in total and in private and government**

137 **hospitals (N=68) df : degree of freedom**

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139 More than half of hospitalized patients were satisfied with doctors, particularly with the

140 medical explanation of COVID-19, treatment plan, and hospital stay. While some patients

141 (20%) were dissatisfied with the ease with which they could get hospital admission. Nurses

142 were generally well-liked by patients, with more than half expressing satisfaction with their

143 behaviour and services. The hospital atmosphere was also rated favourably by nearly half of

144 the respondents. While roughly a quarter of patients were dissatisfied with the cleanliness of

145 the toilets (Table 3).

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147 **Table 3: COVID-19 Patients' satisfaction with hospital staff and its environment during**

148 **hospitalization (N=68)**

Patients' satisfaction statement	Extremely Dissatisfied n (%)	Dissatisfied n (%)	Neutral n (%)	Satisfied n (%)	Extremely Satisfied n (%)
Patient's Satisfaction towards Doctor					
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 visits 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%)
Patient's Satisfaction towards Nurses'					
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%)
Hospital environment (Statement)					
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%)

149 N=Number of patients, %= percentage of patients

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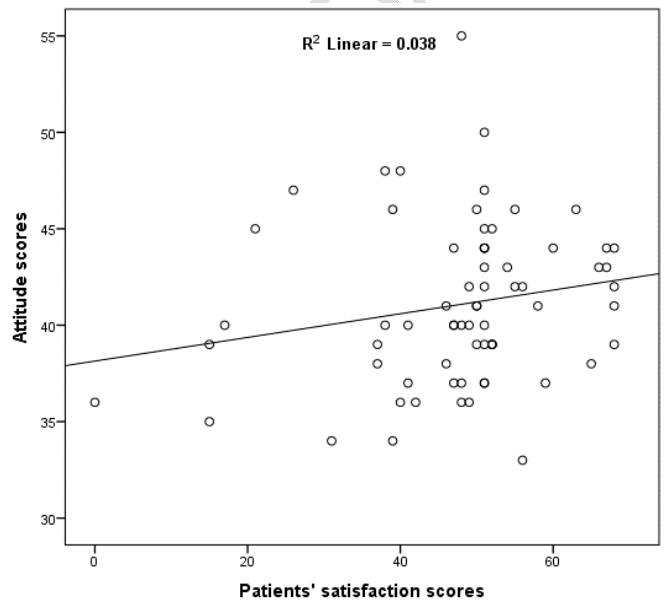
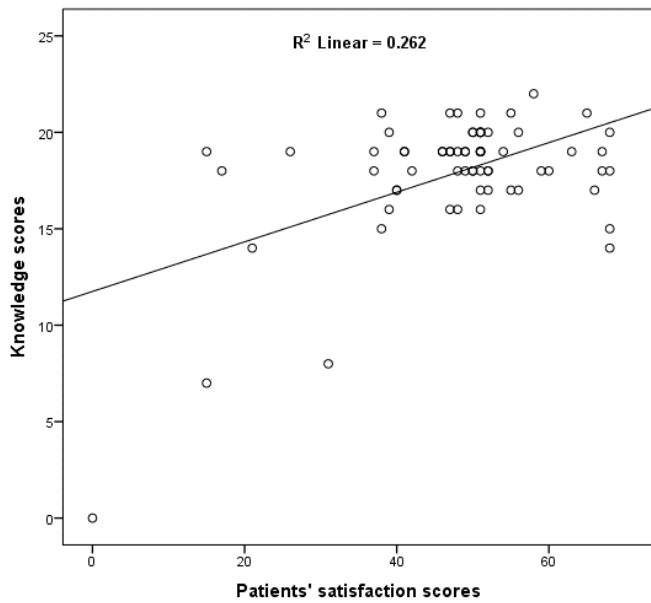
151 Patients' knowledge of COVID-19 was found to have a significant positive correlation with
 152 their attitude, practices, and satisfaction with the hospital. Patients' satisfaction was also
 153 significantly positively correlated with practices. A positive attitude, on the other hand had no
 154 impact either on their practices of COVID-19 or satisfaction with the hospital (Table 4, Figure
 155 4).

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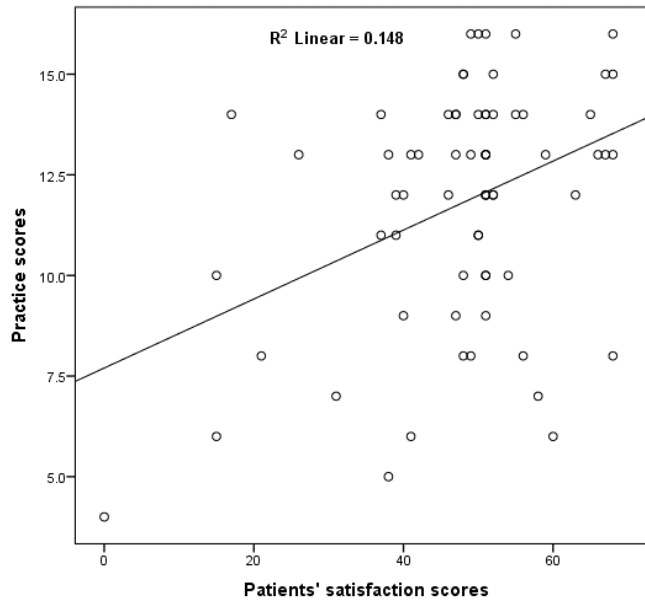
157 **Table 4: Pearson correlation for COVID-19 Patients' satisfaction with KAP (N=68)**

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

158 $P < .05$ (Significant), N=Number of patients



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

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4. DISCUSSION

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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%.

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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.

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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

193 study, patient satisfaction was high not only towards doctors but also towards nurses,
194 however, the percentage of extremely satisfied patients was low in the case of statement
195 towards nurses. Another study by Deriba BS et.al [5] from North Shoa Ethiopia observed
196 that level of patient satisfaction was very low during a COVID-19 pandemic and the primary
197 reason for this was not getting prescribed medication.
198 High patient satisfaction in the present study may be explained by patients' high knowledge
199 about COVID-19 as majority of participants had higher education.

200

201 **CONCLUSION**

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203 This present study concludes that patient satisfaction is increased with knowledge & practice
204 of respondents. Therefore, it is recommended that IEC activities should be increased to
205 enhance patient's knowledge and practice.

206 This increase patient satisfaction will result in better treatment compliance and doctor-patient
207 relationship, so strengthening to health educational activities is advisable.

208

209 **LIMITATIONS**

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

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218 **STRENGTHS**

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

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225 **RECOMMENDATIONS**

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

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234 **Consent**

235 As per international standard or university standard, patient(s) written consent has been
236 collected and preserved by the author(s).

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ETHICAL APPROVAL

This survey was conducted in the period from January to March 2021, after obtaining approval from the institution's ethical committee (No. 579/MC/EC/2020 Dated 18/8/20).

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