A Systematic Review of Patient Satisfaction Scales and Their Applicability to Covid-19 Hospitalized Patients: Gaps and Emerging Needs

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Introduction

Patient satisfaction is largely a dynamic multifaceted construct consisting of patient’s appraisal of their experience on quality of care received at the health care facility. The most frequently cited criteria for measuring satisfaction with hospitals include particular health condition and type of treatment availed, hospital environment, quality of hospital services, overall behavior of the staff, cost of hospitalization, and post-discharge (follow up) facilities (1). However, factors such as age, income, communication, employment status, gender, and education of the patient can also affect the perception of satisfaction. Therefore, it becomes important to understand the scope of construct of ‘patient of health’ (2) from patients’ perspective. Patients carry certain expectations before their visit to the hospital and the resultant satisfaction or dissatisfaction is the outcome of their actual experience (3). All such information can be utilized effectively to identify barriers, address treatment gaps, enhance patient turnover, and build more sustainable health care services.

However, the key determinants of patient satisfaction in non-covid-19 period might be different as compared to the situation in the emergence of a grave pandemic. As people’s understanding and response to Covid-19 varied, the health care providers across the globe also struggled to make sense of their patient’s expectation from the existing healthcare services. Symptoms of Covid-19 disease and treatment outcomes along with patient engagement in the treatment process became important aspects of patient satisfaction during the Covid-19 pandemic (4,5). Though it is understandable that isolation services can cause much inconvenience not only for the patients and the hospital service providers, the mechanism of how it affects patient satisfaction is less studied. For instance, dealing with isolation, adjusting to the PPE kits and masks while communicating, following rigorous hygiene schedule, personal human touch in treatment practicing social distancing rules, and providing basic psychological support could be key factors impacting patient satisfaction of patients hospitalized for Covid-19. E.g., few studies during SARS reported that patients in general felt alienated by doctors wearing goggles, gown and masks, felt less secure without relatives present, and be dissatisfied with the changing duty schedule of the treating doctors due to week-on, week-off roster (6).

Financial implications could be a key determinant of satisfaction during the hospitalization, particularly in view of economic slowdown, job loss, uncertainty about future of occupational opportunities. Hence, low-cost treatment may also boost the satisfaction level. Overall, the studies assessing patient satisfaction of Covid-19 patients have been very limited till date. In fact, it is worth exploring in resource crunch low-and-middle-income-countries.

Subsequent to bio-psychosocial model of health and health care, and other theories of patient satisfaction in 1980s, several attempts were made to measure patient satisfaction in an objective manner either through questionnaires or scales in different settings including primary care and hospitals (7,8). And many of these are often silent about the psychometric information concerning those measures. It is imperative to measure the patients’ satisfaction in the changed health care delivery system during Covid-19. And outlining these parameters in

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patient satisfaction may help hospitals in better quality of health care service delivery. We conducted a systematic study to review the existing scales on patients’ satisfaction used for hospitalized patients and their application in Covid-19 situation. We also reviewed the methodology and the tools used in the recent studies that investigated patients’ satisfaction of the patients hospitalized for treatment of Covid-19 to identify the gaps and needs in this field.

**Material and Method**

**Literature Search and Retrieval Process**

Pubmed, SCOPUS and Science Direct databases were searched. Search strategies were developed for each database, using controlled vocabulary and key words to capture patient satisfaction of Covid-19 patients. Phrased search such as ‘patient satisfaction Covid-19’ was used (Table 1). Key words such as patient satisfaction/patient experience/patient perception + respiratory illness/Covid-19/SARS/MARS/H1N1 etc. were used. Data extraction followed PRISMA guidelines and studies were included following inclusion and exclusion criteria (Figure 1).

**Results**

**Search Results**

Out of 8,442, 8,145 records were eliminated as the title were not mentioning patient satisfaction or patient perception, unavailability of full papers, non-English language publications. Thus, 297 potential documents were screened. 258 documents were further excluded on the basis of abstracts (as these studies examined patient satisfaction of patients with conditions other than respiratory illness, studies were on patient satisfaction/perception from caregivers’ perspectives or from health care workers perspectives), leaving only 39 full text articles for analysis. 24 full text articles that examined patient satisfaction with tele-health service utilization, studies on patient satisfaction in community sample, and studies measuring patient satisfaction with scales other than patient satisfaction were excluded. Finally, 15 studies were included (Table 2).

5 relevant qualitative studies utilizing patient satisfaction survey for patient with Covid-19 were included for comprehensive understanding (Table 3). In the current review, no study till date could be identified assessing satisfaction of hospitalized Covid-19 patients using a valid measurement instrument.

**Scale Characteristics**

**Year of tool development:** While 2 standard scales developed prior to 2000, 5 scales were developed between 2001–2010 followed by 8 scales developed between 2010–2020. Thus, the awareness on and advocacy for patients’ satisfaction for improvement in healthcare functioning is not very old and recent advancement in objectively and scientifically measuring it has increased in last three decades.

**Country-wise distribution** (Figure 2): 44% of scales on patient satisfaction and specifically, patient satisfaction in patients with respiratory illness like SARS, MARS were contributed by Europe, followed by other countries including India (20%), USA (13.33%). Australia, Singapore, China and Hong Kong contributed 6.66% each.

**Type of rating scale:** All the 15 scales reviewed in the current study were in Likert type format, rated by the participants in a self-report format.

**Number of items:** The number of items in the scales ranged from 6 in Satisfaction Assessment Questions) to 90 in Quality-of-Care Questionnaire. The patient satisfaction questionnaire with 50 items also has a short version called, Patient Satisfaction Questionnaire Short Form (PSQ-18) with 18 items.

**Response format** (Figure 3): 60% of the scales (N = 9) followed a 5-point and 13.33%(N = 2) scales followed 4-point Likert response format. One scale was in a 7-point response format (6.66%), one (6.66%) had multiple response formats (4 versions) and one scale was not specific (6.66%).

**Scale Domains:** Multiple domains of patient satisfaction were assessed in 11 studies (73.33%). The number of domains ranged from 4 domains (Doctors’ care quality, Nurses’ care quality, Quality of the environment, and facilities) to 10 domains (general information, improvement in health, infrastructure, availability of services, Services providers, time spent, communication, billing, cleanliness and...
confidentiality in the patient satisfaction). 2 scales (13.33%) were unidimensional and 2 (13.33%) were silent on scale dimensions.

**Standardization Sample Group:** Scale validation sample ranged from a broad sample including adult patients seeking hospital services in various departments to assessing patient satisfaction in specific populations such as patients suffering from chronic conditions, receiving lung transplants, or radiotherapy or incontinence treatment etc. however, except Covid-19.

**Psychometric Properties:** Except two scales (13.33%), 13 scales (86.66%) had established psychometric properties. For most of the scales with reported psychometric properties, high Cronbach alpha values was the method of assessing internal consistency/ reliability. One scale reported Mokken’s ρ (rho) and Pearson Separation index was used in Primary Care Satisfaction Scale. For reporting validity of the scales’ construct, concurrent, face and content validity were reported.

**Survey Analysis** (Table 3): All five descriptive surveys (online/offline mode) were carried out on the Covid-19 treatment seeking patients, two were semi-structured and three were casual surveys. These studies neither specify the survey domains/theme of enquiry nor the number of items on which the data was generated. Except the online survey (N = 4,598) done in China, other surveys had a very small sample size ranging from 11–12 to 76–300.

**Quality of Tools**

Some scales have focused on patients utilizing inpatient services as compared to others emphasizing on patients seeking outpatient treatment. Also, the study population has been varied in terms of certain studies focusing on broad sample seeking services from various hospital units to certain studies with a very narrow focus on one specific condition. Moreover, the studies in the current review are diverse in terms of research objectives, sample size, context (e.g.; scale development, adaptation in other language etc.), target sample group and study methodology. Also, as patient satisfaction itself is a multifaceted construct, studies explored contextual domains of patient satisfaction.
| S.N. | Scale Name                          | Author(s) and Publication Year | Sample                                                                 | Items | Measured dimensions                                      | Types of Scale       | Psychometric Properties                                                                 | Language | Country      | Validation Studies |
|------|------------------------------------|--------------------------------|------------------------------------------------------------------------|-------|----------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------------|----------|--------------|--------------------|
| 1    | Short Patient Satisfaction Questionnaire | Konerding (9) et al. (2019)    | 1202 patients from six different countries                            | 6     | Not mentioned                                            | 5-point scale        | Inter item correlation, Regression                                                        | English  | Hong Kong    | Not available      |
| 2    | Patient Satisfaction Scale         | Javadekar (10) et al. (2017)   | 103 admitted patients                                                 | 40    | Ten Dimensions: General information, Improvement in health, Infrastructure, Availability of services, Services providers, Time spent, Communication, Billing, Cleanliness and Confidentiality | 5-point scale        | Not mentioned                                                                      | English  | India        | Not available      |
| 3    | Primary Care Satisfaction Scale (PCSS) | Cimas (11) et al. (2016)       | Primary Care Attending Adult patients (N = 3,020)                     | 10    | Unidimensional                                           | 5-point scale        | Reliability: Pearson Separation Index (0.79), Satisfactory convergent validity with overall satisfaction with primary care | English  | Spain        | Not available      |
| 4    | In-Patient Satisfaction Questionnaire For The Chinese Population | Wei (12) et al. (2015)         | Conscious patients who had stayed in the hospital for over three days (N = 6,640 + 695 in pilot) | 28    | Four Dimensions: Doctors' care quality, Nurses' care quality, Quality of the environment and facilities, Comprehensive quality. | 5-point scale        | Factor analysis, Cronbach's alpha coefficients (each dimension): above 0.7, inter-subscale correlation: 0.72-0.83. | Chinese  | China        | Not available      |
| 5    | Hospital Quality Questionnaire      | Itumalla (13) et al. (2014)    | 246 in-patients                                                       | 25    | Seven Dimensions: Medical, Nursing, Support, Administrative services, Patient safety, Communication, Hospital infrastructure | Not mentioned        | Cronbach's Alpha (.75 to .97), Content validity, Face validity Factor Analysis           | English  | India        | Not available      |
| 6    | Patient Satisfaction Questionnaire for Outpatients | Goel (14) et al. (2014)        | 942 outpatients                                                       | 17    | Six Dimensions: Location of the health facility, administration, the waiting area, physician, pharmacy and basic facility | 5-point scale, Likert Type | Cronbach's alpha (0.72-0.93), test-retest reliability (0.54 to 0.80) Construct validity | English  | India        | Not available      |
| S.N. | Scale | Author(s) and publication year | Sample | Items | Measured dimensions | Types of scale | Psychometric properties | Language | Country | Validation studies |
|------|-------|-------------------------------|--------|-------|---------------------|----------------|-------------------------|----------|---------|-------------------|
| 7.   | Assessment of Patient Satisfaction Scale | Hawthorne (15) et al. (2013) | Females undergoing Post urinary incontinence treatment (physiotherapy or surgery), recruited from two incontinence clinics (N = 420) | 7 | Seven Dimensions: Effectiveness, Information, Technical skill, Participation, Relationship Access and facilities, Satisfaction general/other | 5-point scale, Likert Type | Convergent and Divergent Validity Cronbach alpha (0.86), Mokken’s ρ (rho) Discriminatory functional analysis performed | English | Australia | Not available |
| 8.   | Patients’ Overall Satisfaction with Primary Care Physicians | Hojat (16) et al. 2011 | 535 outpatients | 10 | Unidimensional | 7-point scale, Likert Type | Cronbach’s alpha (0.97), item total correlation, factor analysis, concurrent validity, criterion validity | English | USA | Not available |
| 9.   | A Core Questionnaire for the Assessment of Patient Satisfaction in Academic Hospitals | Kleefstra (17) et al. 2010 | 40,678 patients | 16 | Six dimensions: Admission procedure, Nursing care, Medical care, Information, Patient autonomy, Discharge and aftercare | 5-point scale, Likert Type | Cronbach’s alpha (0.79 to 0.88), Factor analysis, Regression | English | Netherlands | Not available |
| 10.  | Patient Satisfaction with Doctor–Patient Interaction | Tang (18) et al. (2005) | Patients visiting radiotherapy center during the Severe Acute Respiratory Syndrome outbreak (N = 149) | 29 + 1 (part 1) and 15 (part 2) | Four Domains of satisfaction with Doctor–Patient Interaction: Information exchange, Interpersonal skills, Empathy, Quality of time; Two Domain Knowledge about SARS: General questions about SARS knowledge, Satisfaction with SARS precautions and Open-ended questions | Four-point scale, Likert Type | Not Available | English/Chinese | Singapore | Respiratory inhalation device satisfaction and preference and has been validated in both patients with Asthma and patients with COPD. |
| 11.  | In-Patient Satisfaction Questionnaire | González (19) et al. (2005) | 650 discharged patients | 34 | Six dimensions: Information and medical care, Nursing care, Comfort, Visiting, Privacy, Cleanliness | Response scale varied number of options, Cronbach’s alpha (.70 to.90), Factor analysis | Not Available | English | Spain | Not available |
| S.N. | Me Scale | Author(s) and publication year | Sample | Items | Measured dimensions | Types of scale | Psychometric properties | Language | Country | Validation studies |
|------|----------|--------------------------------|--------|-------|--------------------|----------------|-----------------------|----------|---------|-------------------|
| 12.  | Short Questionnaire for Out-Of-Hours Care (SQOC) | Salisbury (20) et al. (2005) | People contacting an out-of-hours GP co-operative (N = 1,906) | 7 | Six Dimensions: Contacting the service, Receptionist, Wait for visit, Doctor’s manner, Explanation and advice, Overall satisfaction | Five-point scale, Likert Type | Cronbach’s alpha | English | United Kingdom | Not available |
| 13.  | The Picker Patient Experience Questionnaire | Jenkinson (21) et al. (2002) | 62,925 Acute Care Hospital Patient | 15 | Not mentioned | Likert Type Multiple scales | Cronbach’s alpha (0.80 to 0.87) | English | United Kingdom | Norwegian acute care patients |
| 14.  | Quality of Care Questionnaires | Arnetz (22) et al. (1996) | Patients in Each department, divided as equally as possible among inpatients and Outpatients (n = 1,834 + 2,499) | 90 | Eight Dimensions: Information-illness, Information-routines, Physical environment, Security, Accessibility, Diagnosis, care, Work environment | Four-point scale, Likert Type, (Except single domain is 5 point scale) | Cronbach’s alpha (0.80–0.60), Inter item correlation, Factor analysis, correlation analysis | English | Sweden | Swedish health care Environment |
| 15.  | Patient Satisfaction Questionnaire Short Form (PSQ-18) | Marshall (23) et al. (1994) | Patients diagnosed with heart diseases, hypertension, diabetes, depression symptoms (n = 2,197) | 18 | Seven Dimensions: General satisfaction, Technical quality, Interpersonal manner, Communication, Financial aspects, Time spent with doctor, Accessibility and convenience | Five-point scale, Likert Type | Cronbach’s alpha (0.91 to 1) | English | USA | • Indian health care environment for OPD patient • Malaysian health care environment for OPD patient |
Patient satisfaction is a common health care quality metric, however often overlooked and underemphasized. The key domains of patient satisfaction parameters play a key role in measuring right assessment indicators. The role of confounding variables will always be there in each study on

### Table 3. Studies on Patient Satisfaction Survey for COVID-19 Patients.

| SN | Author(s) and publication Year | Sample | Items | Measured Dimensions (Patient Satisfaction) | Types of scale | Language | Country |
|----|--------------------------------|--------|-------|---------------------------------------------|----------------|----------|---------|
| 1. | Liu et al. (24) (2020)          | Data from patients receiving remote diagnosis and treatment via consultation services for COVID-19 concerns at the online outpatient clinic (n = 4,589) | NA | Online satisfaction survey | Survey | English/Chinese | China |
| 2. | Tomlinson et al. (25) (2020)    | Inpatients included in the audit had a confirmed or suspected diagnosis of COVID-19 infection (n = 76) | NA | Patient satisfaction form | Survey | English | United Kingdom |
| 3. | Shaban et al. (26) (2020)       | COVID-19 patients admitted to a designated COVID-19 facility (n = 11) | NA | 5 themes: “Knowing About COVID-19,” “Planning for, and responding to, COVID-19,” “Being infected,” “Life in isolation and the Room,” and “Post-discharge life.” | Semi structured interviews; lived experiences | English | Australia |
| 4. | Tucker et al. (27) (2020)       | Patients with COVID-19 symptoms enrolled in COVID-19-specific remote patient monitoring solution (n = 300) | NA | Satisfaction survey | Survey | English | USA |
| 5. | Tiwari et al. (28) (2003)       | Diagnosed and admitted for SARS (n = 12) | NA | Patient’s perception of their illness and experience: Three themes emerged: (1) concern, fears and frustration; (2) a Change in outlook; and (3) nurse as career. | Semi structured interviews | Chinese | Hong Kong |

**Figure 2.** Country wise distribution of the scales.

**Figure 3.** Response formats of the scales.

### Discussion

Patient satisfaction is a common health care quality metric, however often overlooked and underemphasized. The key
patient satisfaction (29), however, scrutiny of existing scales is helpful in selecting and/or cross-cultural adaptation of the tool easier. Again, in the absence of patient satisfaction tool for Covid-19 patients issues the review will be helpful in developing new tools for objective assessment of patient satisfaction among Covid-19 hospitalized patients. High levels of satisfaction with health-care services have an impact in health not only for covid-19 patients (16).

The issue of lack or inadequate psychometric properties of patient satisfaction instruments (30), however, subsequently was addressed and Assessment of Patient Satisfaction Scale (15) and Primary Care Satisfaction Scale (11) had better psychometric properties. With respect to validation, the Patient Satisfaction-and-Preference Questionnaire (PASAPQ) Direct Comparison Version has been validated for patients with Asthma and COPD; Patient Satisfaction With Doctor–Patient Interaction during the Severe Acute Respiratory Syndrome Outbreak in a radiotherapy center has been validated as measure of respiratory inhalation device satisfaction and preference for patients with Asthma; Quality of Care Questionnaire has been validated for Swedish health care environments. Thus, no scale till date has been validated for the use with patients with Covid-19.

While patient specific variables in patient satisfaction largely encompass patient’s socio-economic background and corresponding expectations from the hospital/treatment and the quality health care services provided by the health care, patients’ satisfaction is established that degree of patients’ satisfaction reduces with longer stay as an in-patient (31). In Covid-19 cases, this may become an important parameter as there is no out-patient treatment and discharge protocol at least 11 days ± 3 days in case of mild-moderate but longer stay of 21–30 days is average for severe patients. Patient satisfaction during initial months of Covid-19 (especially before September 2020) could be different as compared to patients admitted after that due to many reasons such as clarity in discharge protocol, more information on fomite contamination, information about vaccine, and better sensitization among the health care staffs and treatment team to enhance communication with the patients admitted.

Treatment related financial implications during the pandemic can be a key determinant of perceived patient satisfaction of hospitalized patients as improvements in quality will require increases in cost (or conversely, cost reductions could reduce quality (32). And due to increased demands on hospitals during Covid-19 peak periods, quality of care (particularly as perceived by the patients) may get affected and in turn the perceived cost-benefit analysis by the patient can play a significant role in patient satisfaction regarding hospital care. Quality can be a significant predictor of cost and vice versa (33). Cost of hospitalisation and patients’ satisfaction can have inverse relationship, especially due to economic slowdown during pandemic. In case of low-cost treatment or free treatment, in the context of Covid-19, when there are financial difficulties at almost all levels, can in fact be a more important parameter of increased patient satisfaction. The Patient Satisfaction Questionnaire-18 (and the long version with 55 items) is the only scale that includes financial aspects of patient satisfaction. One possibility is that)

Doctor-patient interaction in the presence of Covid-19 specific safety measures such as masks, goggles, head gear, PPE the quality of communication can be obstructed.

Figure 4. Assessment indicators model for patient satisfaction in pandemic.
In addition, these precautionary measures found to affect the perception of empathy in the patient satisfaction with Doctor–Patient Interaction Scale during SARS (18).

On the basis of the review of scales on general patient satisfaction developed in early 1990s and before that (34–39), these 11 scales and few systematic reviews (6) on patient satisfaction during SARS, we can outline the different determinants of patient satisfaction in pandemic.

A new scale incorporating items across these four domains (Figure 4: patient, illness, treatment, and hospital specific services) such as compulsory intake and discharge briefing, empathetic interaction by the treating team and hospital staff, hospital infection prevention measures, treatment of co-morbidities (particularly in case of mild-moderate hospitalized patients), cost of the hospital services and insurance coverage should be included in the new scale.

**Conclusion**

Patient satisfaction across four domains namely, patient, illness, treatment, and hospital specific services with a methodologically sound new or modified scale can be useful during Covid-19 period. And patient satisfaction as a relevant outcome in health care delivery and clinical practice can result in better health status and quality of health care services. Therefore, improvement of patient satisfaction scales should be a priority in Covid-19 health care.

**Declaration**

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