

A hospital satisfaction measurement model for service improvement in a moroccan public hospital: psychometric validation and organizational diagnosis

Soukaina Benchekroun^{1*}, Omar Taouab¹, Nouredine Abdelbaki¹

¹Laboratory for Research in Organizational Management Sciences, National School of Business and Management, Ibn Tofail University, Kenitra, Morocco

*Corresponding author: soukaina.benchekroune@uit.ac.ma

Abstract

At the Provincial Hospital of Tetouan, patient satisfaction was studied as both a measurement issue and a useful source of hospital diagnosis. This article validates a multidimensional scale designed to organize patient feedback around the main stages of a public hospital pathway in Morocco. Data were collected between September and December 2023 through a single-center discharge survey involving 1,200 adult patients. Interviewing patients at discharge helped collect their views after admission, reception, waiting time, administrative procedures, medical care, information exchange, coordination, and preparation for going home. Validation involved ordinal recoding of responses, treatment of structural missing data, treatment of “not concerned” responses, reliability analysis, exploratory factor analysis, confirmatory factor analysis and assessment of convergent and discriminant validity. Factor analysis was based on 857 complete cases. The exploratory analysis retained eight factors that accounted for 74.796% of total variance. The final confirmatory model included 59 items in 10 correlated constructs and had an acceptable overall fit. The most clear and stable dimensions that emerged were clinical competence, clarity of explanations, relationships with doctors, relationships with nurses and caregivers, reception procedures, accessibility, the physical environment and discharge preparation. Other domains like perceived equity, coordination, continuity of care and expectations need to be interpreted more carefully due to their weaker psychometric structure. The final model should therefore be understood as a measurement structure and a diagnostic framework, not as a causal model. It can help hospital managers identify concrete areas for improvement, especially communication, accessibility, coordination, continuity of care, professional credibility, and patient-centered organization.

Keywords: patient satisfaction; patient experience; hospital quality; psychometric validation; organizational diagnosis; Morocco



Copyright © 2025 The Author(s). Published by IRAFEM.
This work is licensed under a Creative Commons Attribution 4.0 International License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

1. Introduction

When leaving the hospital, patients do not judge one medical act or one brief contact with the staff. They look back at a full care path. This pathway involves admission, reception, waiting time, administrative procedures, explanations, care, contact with doctors and nurses, care between services, the physical environment and preparation for discharge. For this reason, patient satisfaction cannot be reduced to a single opinion or a simple global score. It is a retrospective judgement, pieced together from different parts of the hospital stay and shaped by the way patients measure their expectations against what actually happened (Pascoe, 1983; Sitzia & Wood, 1997; Ware et al., 1983). Common indicators of hospital quality include clinical outcomes, safety measures, technical measures, and administrative data. These indicators are needed because patients cannot judge every technical or biomedical aspect of care. However, they do not provide a complete picture of how patients experience, understand and evaluate the care they receive. The framework of Donabedian is still useful, because it describes healthcare quality in terms of structures, processes and outcomes, and not only in terms of final clinical results (Donabedian, 1988). Quality is also experienced from the patient's perspective in concrete situations: the right service, waiting for care, receiving clear information, being treated with respect, understanding medical explanations and leaving the hospital with sufficient guidance. Patient reported information, when collected and analyzed methodologically, can therefore supplement traditional quality indicators (Doyle et al., 2013; Manary et al., 2013).

Measuring patient satisfaction is difficult because it is multidimensional. Previous studies indicate that it can be influenced by access, reception, communication, interpersonal treatment, information, perceived quality, expectations, trust and interpretation of care results (Batbaatar et al., 2015, 2017; Cleary & McNeil, 1988; Pascoe, 1983; Ware et al., 1983). Other studies mention the role of waiting time, respect, listening, perceived competence, clarity of explanations, physical conditions, continuity of care, and discharge support (Naidu, 2009; Sitzia & Wood, 1997). A global satisfaction score can tell you if patients are satisfied or dissatisfied, overall. However, it does not always indicate which part of the hospital pathway has informed this judgment. This is a real limit to hospital managers. A low global score may result from problems in reception, access, communication, coordination, professional interaction, physical environment, or discharge preparation (Beattie et al., 2015; Sixma et al., 1998). This problem acquires special significance in the Moroccan public hospital setting. The public hospital admits patients who differ from each other socially, economically, educationally, and clinically. The public hospital also experiences multiple organizational constraints such as waiting time, administration process, lack of information, and high demands concerning dignity, response, and support. Indeed, there are previous Moroccan studies dealing with patient satisfaction in practical hospital settings, particularly in the fields of acute medicine and the emergency department (Damghi et al., 2013; Soufi et al., 2010). It is therefore confirmed that patient satisfaction may be researched at Moroccan hospitals. Nonetheless, its boundaries continue to be associated with certain clinical specialties. Staying in a public hospital implies more than just being in one department, contacting one professional, or benefiting from one health care intervention.

This paper further develops earlier research on patient satisfaction in Morocco. The first paper is a result of a systematic literature review, which revealed several clinical and non-clinical factors associated with patient satisfaction and demonstrated that there is no complete consensus regarding the set of factors that have to be used in its measurement (Bencheikroun et al., 2023a). The second piece is an exploratory qualitative research project, which yielded

relevant statements considering the specific conditions of healthcare in Morocco, patients' expectations and cultural peculiarities, as well as key steps of the treatment process (Bencheikroun et al., 2023b). This current paper represents the next quantitative phase of the research cycle.

Hence, the problem handled by the article does not lie in the lack of studies on patients' satisfaction conducted in Morocco. The problem consists in the lack of multidimensional tools, the validity of which would be checked in the context of Moroccan public hospitals and which would enable going further than merely estimating the level of overall satisfaction. The use of patients' feedback data in service improvement requires structuring it into meaningful dimensions. In the absence of such dimensions, a survey can provide information about patient satisfaction without being specific enough to assist with hospital diagnostics. Thus, the task of this article is to distinguish between two tasks: psychometric validation of the questionnaires, which would reveal whether or not its items make up coherent and valid dimensions, and organizational diagnosis, based on those dimensions. It is important to note that the model proposed by the authors is not meant to be understood as causal (Boateng et al., 2018; Brown, 2015; Kline, 2016). This research was carried out at the Provincial Hospital of Tetouan. The data collection took place from September to December 2023 using a questionnaire for 1,200 adults who were undergoing discharge from the hospital. This point was selected since the participants would be able to give feedback on their experiences during all phases of their stay at the hospital. The answers provided by the participants were based on a recent and concrete experience, which entailed admission, reception, waiting, administration process, treatment and nursing services, explanation, coordination, physical surroundings, and discharge (Manary et al., 2013; Wong et al., 2013).

Ordinal coding was done for responses, structural missing values were considered, and "not concerned" responses were also taken into account. In the process of validating the survey tool, reliability testing, exploratory factor analysis, confirmatory factor analysis, and convergent and discriminant validity testing were applied. Factor analyses were performed using 857 cases. The number of cases is indicated separately from the total of 1,200 people as the measurement model used only the data that was complete for the selected items (Brown, 2015; Kline, 2016). This methodology is in line with standard procedures for developing scales. A survey is not considered valid based only on the relevance of its questions; its questions must demonstrate internal consistency, construct its dimensionality, and establish validity and reliability (Boateng et al., 2018; Churchill, 1979). Confirmatory factor analysis can help to assess if the selected dimensions are correlated yet unique, particularly where various aspects of the hospital visitation are closely interrelated in reality (Brown, 2015; Kline, 2016).

In addition to these two contributions, one must add another. Indeed, the paper contributes to showing how patient structured feedback allows organizations to conduct diagnosis in order to make improvements in several fields, including but not limited to reception, accessibility, communication, coordination, continuity of care, credibility, physical environment, and discharge preparations. In this regard, psychometric validation is not simply a statistical process; it is the necessary prerequisite for turning perceptions into useful information for hospital management (Beattie et al., 2015; Doyle et al., 2013; Manary et al., 2013). This paper begins with an overview of literature related to patient satisfaction, patient experience, hospital quality, and multidimensionality assessment. Then, information is provided on the settings of the study, questionnaire, data preparation, and validation process. In the empirical part of the paper, findings on reliability, factor analysis, and convergent/discriminant validity

are presented. Lastly, the clinical utility of the adopted model, its limitations, and suggestions for future research are discussed.

2. Literature review

2.1. Patient satisfaction, hospital quality, and patient experience

The satisfaction of patients within hospitals is achieved through an actual encounter. Patient satisfaction cannot be merely defined as an opinion. During a hospital stay, patients are likely to experience sickness, anxiety, delays, dependency on professionals, and lack of knowledge about medical technology. In the case of the hospital, a stay is structured in terms of departments, processes, documents, medical actions, and discharges. From the perspective of patients, a stay is an itinerary that has to be tracked, followed, and evaluated. Hence, satisfaction can be considered a judgment made in retrospect of an actual experience (Naidu, 2009; Pascoe, 1983; Sitzia & Wood, 1997). Patient satisfaction cannot be confined to an expression of opinion or to a direct evaluation of quality of technical services. The patient's response whether he or she is satisfied or not with his hospitalization experience includes various aspects such as reception, waiting period, information provided, communication with doctors and nurses, courtesy, environment, coordination, continuity of treatment, competence, and preparation for discharge. Hence, patient satisfaction has been considered a multidimensional evaluative judgment rather than an emotional response (Cleary & McNeil, 1988; Pascoe, 1983; Ware et al., 1983). This is crucial since quality of care in hospitals is usually defined by clinical outcomes, safety measures, technical benchmarks, and administrative statistics. This measure is essential, as patients cannot judge all the technical aspects involved in health care delivery. Yet, they fail to capture the whole picture on the quality of health care services from the patient's perspective. The Donabedian model becomes relevant here, as it defines quality of care through structures, processes, and results (Donabedian, 1988).

These processes become evident to the patients in straightforward actions such as locating the right services, waiting time, obtaining proper information, respect, explanation, and useful discharge instructions. Satisfaction of the patient thus supplements traditional quality criteria. It is not a substitute for medical outcomes and/or clinical effectiveness. It assists in assessing patient interpretation of care services. This perspective has been confirmed by the research findings about the patient experience. These include those obtained based on the data collected using efficient methods (Doyle et al., 2013; Manary et al., 2013). A composite satisfaction index is meaningful as an indicator of patient satisfaction, but it may lack value if it cannot identify which step in the care pathway affected their perception. It is also helpful to contrast patient satisfaction with patient experience. While patient experience is more concerned with what actually occurred in terms of care, wait times, explanations, listening, transition, or discharge, patient satisfaction entails adding the evaluative aspect. In essence, patient satisfaction has to do with patient judgment of their experience. Such differentiation is vital for the sake of measurement since the one that asks about events alone will not capture the patient's judgment, while the one seeking satisfaction alone will overlook experience (Beattie et al., 2015; Doyle et al., 2013; Manary et al., 2013).

2.2. Multidimensional satisfaction and expectations

Satisfaction studies assume that the judgment of hospital treatment by the patient does not consist only of one factor. Patients' judgment of their satisfaction includes access, welcome, waiting, interpersonal relations, information, communication, respect, perceived competence, physical environment, continuity of care, and support on discharge (Batbaatar et al., 2015,

2017; Cleary & McNeil, 1988; Sitzia & Wood, 1997; Ware et al., 1983). Therefore, overall satisfaction becomes a composite of several factors. These factors can be consistent or inconsistent. Thus, for instance, the patient may be satisfied with the doctor's professional qualities while being dissatisfied with waiting or lack of proper information.

Such a multidimensional perspective is similar to studies of service quality. SERVQUAL is not designed specifically for the hospital setting; however, it can still be used because it analyzes perceived service quality from the perspective of factors such as reliability, responsiveness, assurance, empathy, and tangibles (Parasuraman et al., 1988). In terms of hospital services, those factors might manifest themselves via the provided explanations, availability of personnel, cleanliness, trust in the professionals, consistency in administration, and assistance throughout the process of treatment. Nonetheless, a hospital is a unique service environment where patients may be particularly vulnerable, anxious, and dependent upon professionals who are making technical choices for them.

Another factor that contributes to satisfaction is expectation. This can be described using Oliver's theory of expectation disconfirmation, where satisfaction results from comparing people's expectation and perception of their reception (Oliver, 1980). In hospital based services, patient expectations are related to waiting time, respect, staff availability, explanation, expertise, reassurance, safety, or information about discharge. The problem with expectations is that they are not always consistent or known. Expectations may be formed on the basis of previous experience, fear, hope, or social norms. This makes measuring of expectations hard too. The low reliability of expectation variables should not lead us to assume that expectations play no role whatsoever. They might simply not fit into one neat scale. Instead, their function might be more interpretational as they define the way patients evaluate the quality of treatment they have received. The complex nature of patient satisfaction is also reflected in its assessment methods. While the overall score can reflect the patient's ultimate opinion on their experience, this method fails to account for the reasons that may influence this opinion. It is essential for both research purposes and managing a hospital to have a multidimensional scale that allows us to understand whether the dissatisfaction concerns access, reception, wait time, communication, coordination, competencies, environment, or preparation for discharge (Beattie et al., 2015; Gill & White, 2009; Manary et al., 2013).

2.3. Public Moroccan Hospitals and the Research Gap

This problem is particularly relevant within the Moroccan public hospitals' setting. Patient satisfaction was previously investigated in Moroccan hospitals. Studies conducted by Soufi et al. (2010) on patient satisfaction within the acute medicine department, and by Damghi et al. (2013) within the emergency department, are notable for establishing the viability of conducting patient satisfaction studies in Morocco, but their scope is limited to clinical specialties. The comprehensive public hospital experience goes beyond a single department or a single interaction. It includes admission, reception, administration, waiting, contact with physicians and nurses, information transfer, service coordination, physical environment, treatment provision, and discharge preparation. The measurement of satisfaction applied to this context must capture the patient journey through the hospital process. At the same time, it must be organised in such a way that it can facilitate this scientific study.

The first limitation is not limited to the lack of Moroccan literature regarding patient satisfaction, rather, the gap relates to the absence of multidimensional scales validated for use in Moroccan public hospitals. Such measures are required in order to separate out the different components of the patient experience. By relying upon a single measure of

satisfaction, the hospital administration will be able to judge whether patients are satisfied or dissatisfied. Yet, there may be no information about what aspect of their visit caused this satisfaction or dissatisfaction. This paper represents part of the efforts made within a larger research project that focuses on the satisfaction of healthcare service consumers in Morocco. In the first place, a paper was published in order to explore the factors determining patient satisfaction, and their diverse nature was revealed (Benchebkroun et al., 2023a). Secondly, based on those previous findings, items for measuring satisfaction in the Moroccan healthcare setting were developed, taking into account patients' needs, cultural values of the society, and care process phases (Benchebkroun et al., 2023b). The current paper is a further step in this research program. Contrary to those earlier efforts, the aim here is to explore patient response patterns.

2.4. Psychometric Validation and Diagnostic Application

In using patient satisfaction for research and hospital management purposes, psychometric validation becomes inevitable. The fact that the questions of a questionnaire appear to be relevant does not make it valid. The tool needs to be evaluated internally before being used for interpretation, comparison, or diagnosis. The scale development process requires that the measurement technique be capable of specifying its construct, assessing item characteristics, testing reliability, and providing evidence of validity (Boateng et al., 2018; Churchill, 1979). It is even more significant for the studies on hospital satisfaction. Different aspects are theoretically different, but their relationship in practice is strong. Dimensions such as communication, trust, competence, coordination, and discharge preparation can be investigated individually, but the respondent may have experienced these factors together. The application of exploratory factor analysis will assist in examining how these patient responses cluster empirically. Confirmatory factor analysis will be applied to test whether the empirical structure selected in the previous step can be presented as a measurement model. Reliability analysis is essential, although it is not enough.

Additional analysis on convergent and discriminant validity should be performed. (Brown, 2015; Fornell & Larcker, 1981; Henseler et al., 2015; Kline, 2016). This paper tackles patient satisfaction studies, psychometric validation, and hospital services improvement. The aim was to check if the answers provided by 1,200 adult patients of the Provincial Hospital of Tetouan after their discharge from September to December 2023 could be structured. Factor analysis was done on 857 answered questionnaires. The validation steps included reliability testing, exploratory factor analysis, confirmatory factor analysis, convergent validity, discriminant validity, and interpretation of the selected factors. It should thus be considered a measurement structure and a diagnostic system but not an evidence base for proving causality. In theory, the research connects the lived hospital experience with partial evaluations, from which emerges multidimensional patient satisfaction, followed by the use of validated patient evaluations as an organizational diagnosis framework.

3. Methodology

3.1. Research design and data source

For this research, a quantitative and cross-sectional survey design approach was adopted. Data were collected from the Provincial Hospital of Tetouan, Morocco, during the months of September through December 2023. The data collection involved adult patients who were discharged from the hospital after completing their medical care process. Discharge timing was selected because it gave the opportunity to patients to retrospectively review all the phases experienced during their stay at the hospital. Those phases were admission, reception,

wait period, paperwork process, meeting with doctors and nurses, treatment administration, communication, cooperation, physical environment, and discharge preparation. This is in accordance with the conceptualization of patient satisfaction as stated in the article. Patient satisfaction is viewed not as a response to one single event but as a retrospective evaluation following multiple events along the path of health care services. Previous research on patient satisfaction has also defined patient satisfaction as an evaluation that incorporates various elements within the overall process of health care services (Pascoe, 1983; Sitzia & Wood, 1997; Ware et al., 1983).

The complete database consisted of 1,200 adult patients. The questionnaires were included if the respondent was an adult patient, he/she had experienced a healthcare encounter, and had consented to participation. The questionnaires were not included if the respondent was not an adult, if the case did not fall within the study framework, if the healthcare encounter pathway could not be determined, and if the questionnaire was not usable. The EFA and CFA procedures were performed based on a sample size of 857 complete cases. It is necessary to note that there is a difference between them. Indeed, whereas 1,200 respondents make up the survey database, 857 complete cases make up the data analysis sample. Mentioning both figures prevents misunderstanding and ensures that all psychometric analyses were not conducted on the full survey database. Such an approach is common practice when validating scales where the usable number of observations may vary depending on retained items and the analysis technique applied (Boateng et al., 2018; Brown, 2015; Kline, 2016).

Table 1. General features of the empirical design

Item	Description
Research site	Provincial Hospital of Tetouan
Duration of data	September 2023 to December 2023
Study design	Single center, cross sectional, questionnaire based discharge survey
Population included	Adult patients interviewed during discharge
Population excluded	Non adult patients, off topic subjects, incomplete care episodes, incomplete/unusable questionnaires
Total survey database	1,200 cases
Analytical sample for EFA/CFA	857 usable cases

Source: Authors' creation.

3.2. Questionnaire and data preparation

The survey was developed with the aim of measuring the multidimensional concept of patient satisfaction in hospitals. It included various stages of the patient journey, such as access, reception, waiting, administrative process, communication with professionals, perceptions of clinical competence, physical surroundings, coordination, continuity, discharge, and trust in the institution. The used tool was based on previous research on item development for the Moroccan context in healthcare settings (Benchekroun et al., 2023b). The former was a qualitative study that ensured the survey took into consideration patients' expectations, cultural values, and key steps of the pathway. Before any statistical analysis was done, the database was item-by-item inspected. The aim of this stage was to ensure consistency of

coding, direction of responses, and interpretation of each response category. Where necessary, recoding of items was done into ascending ordinal categories such that high numbers represented positive evaluation of care delivery. This process was crucial since it is impossible to interpret a satisfaction scale if the direction of responses varies across items.

Much thought was put into structural missing data as well as the “not concerned” answers. Within the hospital discharge questionnaire, some variables may not be applicable to everyone in the same manner. This may be because the question about intended admission or intended follow-up care does not carry the same significance among those who entered the hospital via emergency channels. By considering this missing data as a nonresponse case, we would end up combining two issues. Therefore, the answers “not concerned” were not coded using ordinal categories where it would have resulted in a fabrication of information. The coding process distinguished non-response from missing information associated with the care pathway design. This aligns with studies which indicate that missing information should be treated based on its significance and origin rather than the absence of information (Enders, 2010; Little & Rubin, 2002).

3.3. Approach to psychometric validation

The procedure for validation was structured logically. Initially, consistency within the measure was explored. For this purpose, Cronbach’s alpha served as an established measure of reliability, while additional measures of reliability were employed where necessary. Subsequently, composite reliability was computed for the retained constructs. Reliability was found to be helpful but was not considered a measure of validity. A set of items may have high consistency yet low conceptual quality. This is why reliability was evaluated along with the factor structure and validity. It aligns with common guidelines on constructing measurement scales (Boateng et al., 2018; Churchill, 1979; Cronbach, 1951). Second, the adequacy of the data set for factor analysis was determined. To determine if there was a proper correlation structure among variables, Kaiser-Meyer-Olkin Measure of Sampling Adequacy was applied. To test if the correlation matrix had significant common variance to perform factor analysis, Bartlett’s Test of Sphericity was applied. Exploratory factor analysis was carried out using the 857 complete cases. Principal Axis Factoring method was employed in the analysis, while Varimax rotation was performed to enhance interpretability of the exploratory model. Exploratory factor analysis did not solely depend on technical procedures for the identification of factors. Both statistical and substantive considerations were employed in determining the number of factors to be retained during analysis. Some of the factors considered included factor loadings, item homogeneity, statistical properties, and factor meanings.

As for the exploratory phase, Q50, Q89, and Q90 were dropped as they reduced the structural coherence or interpretation of the factorial structure. Expectations, on the other hand, received careful handling since their psychometric structure was highly unstable. However, this does not imply that expectations were irrelevant. In this case, it is only to say that, in this particular data set, they cannot be regarded as an integrated measurement construct. Finally, the exploratory design retained was assessed using confirmatory factor analysis. The purpose was to determine if the selected items could be conceptualized as correlated yet distinct factors. In order to test the confirmatory model due to the nature of the responses in the survey instrument, DWLS was applied. Model fit was evaluated using multiple criteria such as chi-square to degree of freedom ratio, CFI, TLI, RMSEA, SRMR, GFI, and AGFI. The evaluation was done collectively rather than by a single criterion value. This procedure is aligned with the principles of confirmatory factor analysis and structural equation modeling (Brown, 2015;

Hu & Bentler, 1999; Kline, 2016). Following additional validation procedures, questions Q11, Q17, and Q51 were also dropped in the final analysis. It was important to note that these questions were not automatically excluded due to statistical concerns but were included in efforts to maintain an empirically and practically sound model.

Table 2. Analytical procedure for the psychometric validation of the scale

Step	Objective	Major activity
Data preparation	Assure coding consistency and consistency in analysis	Checking item by item, recoding items in an ordinal format, handling nonresponses and not concerned responses
Reliability testing	Conduct internal consistency testing	Cronbach's alpha, supplementary reliability statistics, composite reliability
Factorability testing	Confirm if factor analysis is suitable	Kaiser-Meyer-Olkin measure and Bartlett's sphericity test
Exploratory factor analysis	Determine response organization	Principal axis factoring and Varimax rotation
Confirmatory factor analysis	Test the measurement structure	Correlated-factor model estimated with DWLS
Validity testing	Assess construct quality	AVE, CR, Fornell-Larcker criterion, and HTMT
Measurement interpretation	Connecting validated constructs to improving the hospital	Validation of selected dimensions as measures/diagnostics

Source: Authors' creation.

3.4. Validity analysis and interpretation of the model

The construct validity was analyzed using both convergent and discriminant validity analysis. Convergent validity is an assessment tool used to establish if items from the same construct have enough association. This was determined using average variance extracted and composite reliability. Discriminant validity is an analysis tool used to verify whether different constructs are indeed independent. This was evaluated using Fornell-Larcker comparisons and HTMT ratio (Fornell & Larcker, 1981; Henseler et al., 2015). This was critical since there could be several dimensions of the hospital pathway which are close in terms of patients' experience. Dimensions like communication, coordination, perceived competence, continuity of care, and discharge preparedness can be treated as separate entities for analysis, but from the perspective of patients' experiences, these might be viewed as part of one process. Hence, validity procedures were performed in order to help with interpretation and avoid the artificial separation of constructs which could not be easily distinguished. Finally, the developed model was interpreted as both measurement structure and diagnostic model. It was not treated as a causal model. The purpose was to define the dimensions of patient satisfaction that can be measured and interpreted as meaningful within an organizational diagnostic context.

3.5. Ethical and procedural considerations

The research was done as an anonymous voluntary survey using questionnaires. The patients were informed about the goal of the survey and were left to decide whether to take part in the research or not. There does not exist any personal data used in this paper. The analyzed dataset was anonymized. There was no outside funding for this research, and the authors state that there are no conflicts of interest. There was no ethical committee approval for this questionnaire-based survey, which must be considered when evaluating the procedural approach to the research.

4. Results and discussion

Based on the findings regarding validation, one can conclude that patient satisfaction in the Provincial Hospital of Tetouan is a form of evaluation characterized by multiple aspects and influenced by several stages of the hospitalization process: admission, access, communication, professional relations, clinical explanations, physical conditions, coordination, continuity, and discharge planning. As the previous studies show, patient satisfaction can be treated as an elaborate construct consisting of multiple dimensions of health care experience (Batbaatar et al., 2015, 2017; Naidu, 2009; Ware et al., 1983). Furthermore, it is possible to distinguish between more stable and less stable dimensions of patient satisfaction. Specifically, the most stable dimensions include factors visible for patients during their stay in the hospital, such as reception, access, physical conditions, relationships with doctors and nurses, clinical skills, explanations, and discharge information. In fact, the less stable dimensions include perceived equity, coordination, continuity, and expectations, which do not imply a compact and stable perception of satisfaction. However, the weakness of their stability does not mean their lower significance since they depend on comparison, past experience, and expectations (Oliver, 1980).

4.1. Internal consistency of the initial dimensions

The first procedure analyzed the internal consistency. Table 3 below gives the results of internal consistency measured by Cronbach's alpha and McDonald's Omega of the principal initial dimensions of the scale. In general, the results regarding the reliability were quite positive; however, they were not uniform among all the dimensions. The highest values of reliability coefficients were obtained for the areas of clinical competence and clarity of explanations, physician-patient relationships, nurse/patient care aide relationship, discharge education, physical environment, accessibility, and reception. This is significant since these domains are related to actual patient experiences. The patients themselves can notice how well they have been received, explained things to them, how professionals attended to their complaints, if the physical environment was satisfactory, and if they were properly prepared for discharge.

The two factors of clinical competence and clarity of explanations had extremely high consistency. This suggests that the indicators of explanations, perceived competence, information utility, and comprehension of the care were highly consistent indicators. The same was observed for the relationship with physicians and nurses/care aids. This dimension is essential since patients frequently base their judgment on credibility on communication, listening, availability, and assurance. Reliability was also high for reception, accessibility, and physical environment. These aspects refer to the observable structure of the hospital. Patients have to assess the clarity of the admission process, the ease of orientation, the understanding of the waiting process and formality, and also the supporting physical environment. Some other aspects have to be evaluated cautiously. Perceived equity had fragile reliability.

Coordination and continuity were found in the fragile to acceptable range. These areas cannot be excluded from the interpretation, but one needs to pay special attention to them. Patients do not necessarily see coordination directly; they assume it indirectly through various delays, explanations, transfers, or lack of information. The expectations construct showed the lowest reliability. This finding is important since it refers to expectations, which are fundamental in satisfaction theory, particularly the confirmation/disconfirmation approach (Oliver, 1980). Nevertheless, in the current database, expectations were a relatively weak and unstable construct.

Table 3. Initial internal consistency of the scales

Dimension/Construct	Items	Alpha	Omega	Interpretation
Global satisfaction	Q1–Q4	0.761	0.761	Acceptable
Trust	Q9–Q11	0.701	0.705	Acceptable
Perceived equity	Q12–Q14	0.607	0.683	Fragile
Dignity and respect	Q15–Q17	0.736	0.740	Acceptable
Reception and administrative pathway	Q24–Q28	0.897	0.901	Good
Accessibility, orientation, and formalities	Q30–Q36	0.909	0.909	Good to very good
Physical environment and care offer	Q37–Q43	0.925	0.926	Very good
Participation, personalization, and privacy	Q46–Q51	0.742	0.751	Acceptable
Coordination and continuity of care	Q52, Q61, Q82, Q87–Q90	0.677	0.739	Fragile to acceptable
Clinical competence and clarity of explanations	Q54–Q60	0.949	0.948	Excellent
Physician-patient relationship	Q65–Q70	0.950	0.950	Excellent
Nursing/care aide relationship	Q72–Q79	0.970	0.970	Excellent
Discharge information and safe return home	Q83–Q86	0.937	0.938	Excellent
Initial expectations	Q113–Q120	0.388	0.527	Insufficient

Source: Authors' creation.

4.2. Exploratory factor analysis and items purification

The exploratory factor analysis was employed to explore patient response clustering in the dataset. The idea was not to apply the structure of the questionnaire at the very beginning. It was about checking whether there were dimensions emerging from the responses.

Table 4. Main characteristics of the final exploratory factor analysis

Indicator	Result
Number of retained items	62
Complete cases	857
Global KMO	0.871
Item KMO min–max	0.428–0.950
Bartlett chi-square	71,871.203
p-value	< 0.001
Extraction method	Principal axis factoring
Rotation	Varimax
Number of retained factors	8
Total explained variance	74.796%
Items removed during EFA	Q50, Q89, Q90, and expectations block Q113–Q120

Source: Authors' creation.

Table 4 reveals that the data was fit for factor analysis. The global value of KMO was 0.871 while Bartlett's test turned out significant. In the end, six factors remained in the exploratory solution. The solution contained 62 variables accounting for 74.796% of the total variability. It is clear that patients did not respond in accordance with just one general satisfaction factor but rather made groups according to the different steps of hospital pathway. The exploratory phase assisted in cleansing the scale. The questions Q50, Q89, and Q90 were deleted since they had little influence on the factorial pattern. Additionally, the block of expectations, questions Q113-Q120, were also deleted from the main exploratory solution since they failed to form a dimension. However, this does not mean that expectations are not significant. According to the theory of confirmation-disconfirmation, satisfaction is associated with the difference between expectations and perceived fulfillment (Oliver, 1980).

However, in this research, expectations have not followed the same pattern as other tangible dimensions, such as reception, physician communication, nurse-patient communication, explanations by doctors, or discharge instructions. They might work more as a backdrop against which other variables can be interpreted. The exploratory analysis thus confirmed the multidimensional rationale behind the tool. The categories of reception, accessibility, physical environment, professional interaction, clinical performance, coordination, and discharge preparation were not only abstract concepts but were also evident from the patients' responses to the survey. This finding is similar to findings indicating that satisfaction is determined by organisational, interpersonal, informational, and clinical aspects instead of a single global measure of satisfaction (Batbaatar et al., 2015, 2017; Naidu, 2009; Ware et al., 1983).

4.3. Confirmatory factor analysis and final model

The confirmatory factor analysis provided more rigorous test for the structure. At first, there were 62 items in the model. However, after some improvements, only 59 remained in the final model divided into 10 correlated factors. The items that were dropped in this step were Q11, Q17, and Q51. No additional residual correlations were considered at this point. It was a necessary step since, otherwise, the model would differ from the content of the survey (Brown,

2015; Kline, 2016). In total, the final model consisted of ten constructs – CER, ACC, ACCESS, ENV, PART, COORD, COMP, MED, NURS, and DISCHARGE. These constructs correspond to the following areas: confidence, equity, and respect; reception and administrative pathway; accessibility and pathway intelligibility; physical environment and care offer; participation and personalization; coordination and continuity; clinical competence and explanation clarity; physician relationship; nursing/care aide relationship; and discharge information.

Table 5. Fit indices of the measurement model

Model	N	Items	Chi-square/df	CFI	TLI	GFI	AGFI	RMSEA	SRMR
Initial model	857	62	4.065	0.984	0.983	0.979	0.977	0.060	0.154
Final model	857	59	3.290	0.988	0.988	0.984	0.982	0.052	0.151

Source: Authors' creation.

According to Table 5, the final model enhanced some goodness-of-fit indexes. First, the chi-square/degrees-of-freedom ratio fell from 4.065 to 3.290. Second, CFI and TLI attained the value of 0.988, and RMSEA decreased from 0.060 to 0.052. Finally, GFI and AGFI also showed improvement. Nevertheless, SRMR still showed an elevated result of 0.151. It cannot be disregarded. Hence, the final model can be said to be functional and sensible but not ideal. Therefore, it requires an interpretation with caution. The model needs to be evaluated based on a number of criteria simultaneously: goodness-of-fit indexes, reliability, convergent validity, discriminant validity, and theoretical soundness (Brown, 2015; Hu & Bentler, 1999; Kline, 2016).

4.4. Convergent validity and composite reliability

Convergent validity was tested using average variance extracted and composite reliability. The results are shown below in Table 6. The most robust factors in this analysis include ACC, ACCESS, ENV, COMP, MED, NURS, and DISCHARGE. These measures have excellent composite reliability and AVE value. These factors constitute the most robust part of the proposed model. They are also practical as they correspond to different stages of hospitalization that patients can experience and see: reception, access, environment, explanations of the clinical process, interaction with doctors and nurses, and discharge information. There are CER, PART, and COORD that require additional attention in interpreting results. The reliability of these measures is satisfactory; however, their AVE is less than 0.50. It means that these factors could be included into further analysis. They are also theoretically sound. Yet, unlike the strongest factors, they should not be viewed with the same level of confidence in interpreting data.

The distinction between the first reliability table and the second validity table should be noted. The coefficients alpha and omega were computed for the first stage of theoretical grouping, whereas AVE and composite reliability for those constructs that remained after the test confirmation. Thus, it is normal that there were differences in item groupings from the first and second stages. It is common in scales' validation when the model gets refined through reliability analysis, exploratory factor analysis, test confirmation, and validity check (Boateng et al., 2018; Brown, 2015; Fornell & Larcker, 1981). This question is vital for coordination and continuity due to indirect perception of the domains by patients. These factors can be noticed because of repetitive questions, waiting, transfers, lack of information, or inability to

understand further procedures. This fact can be the reason for the difficulty of measuring coordination and continuity as one domain.

Table 6. Convergent validity and composite reliability for retained constructs in the confirmatory analysis

Construct	Retained items	AVE	CR	Conclusion
CER	Q9, Q10, Q12, Q13, Q14, Q15, Q16	0.397	0.817	CR acceptable; AVE below threshold
ACC	Q24, Q25, Q26, Q27, Q28	0.649	0.901	Valid
ACCESS	Q30, Q31, Q32, Q33, Q34, Q35, Q36	0.568	0.901	Valid
ENV	Q37, Q38, Q39, Q40, Q41, Q42, Q43	0.643	0.926	Valid
PART	Q46, Q47, Q48, Q49	0.442	0.756	Partial convergent validity
COORD	Q52, Q61, Q87, Q88	0.436	0.753	Partial convergent validity
COMP	Q54, Q55, Q56, Q57, Q58, Q59, Q60	0.740	0.952	Valid
MED	Q65, Q66, Q67, Q68, Q69, Q70	0.795	0.959	Valid
NURS	Q72, Q73, Q74, Q75, Q76, Q77, Q78, Q79	0.835	0.976	Valid
DISCHARGE	Q83, Q84, Q85, Q86	0.829	0.951	Valid

Note: AVE = average variance extracted; CR = composite reliability.

Source: Authors' creation.

4.5. Discriminant validity and interpretations of similar constructs

Based on discriminant validity analysis, it became clear that the developed final model is mostly interpretable, but there were constructs which were fairly similar to each other. The primary concern here was the similarity between constructs COORD and COMP, where the value of HTMT is 0.914. It is not simply an issue of statistics. It has a practical aspect as well. The patient will not be able to distinguish between the organizational aspects of the pathway and the credibility of the treatment provided. In case there is poor coordination, then the patient will find flaws in the organization of services as well as in the quality of the care provided. The same holds true for other linkages as well, particularly those related to ACCESS-DISCHARGE, ENV-COMP, and ENV-COORD. This association is important since patients may relate different elements within the healthcare process when assessing their experiences. Although these concepts like accessibility, discharge preparation, physical environment, coordination, and competence are analytically separate from each other, they might be interrelated in practicality. The same conclusion is in line with the Donabedian's

approach of health care evaluation where three dimensions were different yet related (Donabedian, 1988).

4.6. Organizational diagnosis and managerial implications

The chosen model will help in an organizational diagnosis since it allows the transformation of comments made by patients into hospital actions. Reception and accessibility pertain to the first meeting with the hospital. The following areas may be improved through the above-mentioned dimensions: admission procedure, orientation, signs in the hospital, waiting, and clarity concerning administrative matters. The relations of physicians and nurses/care aids have to do with communication, listening, reassurance, availability, and quality of the relationship. Clinical competence and clarity of information pertain to how diagnoses, treatment procedures, medical examination, and results of these processes are communicated to patients.

Table 7. Constructs retained, empirical robustness, and managerial value

Construct	Level of empirical robustness	Level of managerial value
Reception and administrative pathway	Strong internal consistency; stable entry-point judgment	Front-office redesign, simplification of admission and orientation
Accessibility and pathway intelligibility	High composite reliability; salient access interface	Wayfinding, opening hours, waiting logistics, procedural clarity
Physical environment and care offer	Very strong convergent coherence	Comfort, hygiene, material conditions, visible service environment
Physician and nursing relationships	Highest psychometric stability among relational blocks	Communication routines, listening, empathy, time allocation
Clinical competence and clarity of explanations	Very strong reliability and AVE	Clinical explanation, reassurance, credibility of decisions
Coordination and continuity	Acceptable, but partly overlapping with competence	Handover quality, continuity rules, cross-unit pathway management
Discharge information and safe return home	Very strong reliability and validity	Medication information, warning signs, follow-up, post-discharge support

Source: Authors' creation.

According to Table 7, there are certain areas where improvements can be made that may seem quite straightforward, including reception, signs, waiting, admission procedures, and discharge information. However, there are other areas where improvement is not simply a matter of making adjustments within one process; rather, it is about the connections between processes, such as coordination and continuity. Therefore, the model assists in shifting from the overall satisfaction score to a more meaningful diagnosis score. The model does not just give feedback about whether patients are satisfied or dissatisfied but also identifies where along the hospital process better measurement has been done and where more organizational focus is needed. Indeed, such an application fits well within scholarly evidence indicating that patient experience could help improve quality of care when appropriately measured (Doyle et al., 2013; Manary et al., 2013). Such an interpretation is relevant to the Moroccan context of public hospitals in particular. Earlier Moroccan research had addressed patient satisfaction in

particular hospital departments, including acute medicine and emergency care (Damghi et al., 2013; Soufi et al., 2010). This paper considers patient satisfaction during a more extensive process, namely from hospital admission through discharge. Thus, it offers a wider measurement framework for assessing patient satisfaction. Nonetheless, caution needs to be taken when interpreting this analysis. This is because the model is just a structure for measurements and diagnostics, not a causation model. The research does not seek to determine the causal effects of each construct on global satisfaction. The selected constructs may guide managers on what to improve, but they are not necessarily causal variables.

4.7. Constraints and future research

The findings should be analyzed in the light of several constraints. Firstly, the study took place at a single public hospital, that is, the Provincial Hospital of Tetouan. Although the model might represent general characteristics of public hospitals in Morocco, it may also represent local factors, organizational aspects, and patient profiles from this particular hospital. Further research should be done in other hospitals for more generalized findings. Second, the entire database consisted of 1,200 adult patients, while the EFA and CFA were performed using a dataset of 857 respondents who had complete data. This was essential for the measurement model estimation. Nonetheless, this implies that the psychometric findings have been established solely based on observations that could still be used after data cleaning and other processes. Thirdly, the research did not examine the validity of the instrument in terms of its temporal stability, predictive validity, and measurement invariance among different samples of patients. There is also need for refinement of the expectations construct. This is due to its poor reliability and absence from the overall exploratory structure.

Future research could apply the scale to various public hospitals in Morocco as well as different care settings. Multiple administrations could determine if the structural consistency of the scale is sustainable over time. Future analysis could also focus on determining if there are any differences between the use of this scale for various age ranges, genders, education levels, routes of admission, health statuses, or trajectories of care. The scale could be administered before and after intervention improvements. Collectively, these findings justify the validity of using this scale as a diagnosis tool, subject to the constraints imposed by the study methodology. These dimensions can best be understood as entry points into comprehending the process of decision-making by patients rather than an empirical explanation of causality. The importance of these dimensions is that they help make feedback provided by patients more actionable for hospital management, rather than providing just one overall satisfaction figure.

5. Conclusion

The current study developed an operational scale for measuring the degree of satisfaction of the patients with the hospitals in Morocco. It is important to mention that data collection occurred at the Provincial Hospital of Tetouan, Morocco during the period of time from September to December 2023. In total, 1,200 adult patients have been surveyed upon their discharge from the hospitals after they completed their hospitalization procedure. Psychometric evaluation was conducted for 857 valid samples. It can be seen from the results that patient satisfaction cannot be described by a single general perception but rather a multidimensional perception based on several aspects of the hospital stay. This finding supports earlier research stating that patient satisfaction is a multidimensional retrospective evaluation of care (Batbaatar et al., 2015, 2017; Cleary & McNeil, 1988; Pascoe, 1983; Sitzia & Wood, 1997; Ware et al., 1983). Clinical competency and explanation clarity, doctor-

patient interaction, nurse/care aide-patient interaction, reception/administrative process, access, physical setting, and discharge planning were found to be the dimensions with the highest weight. These dimensions are considered important since they pertain to direct aspects of care experienced by patients.

This study also indicates that patient feedback is important for evaluating the quality of the hospital. This is in line with Donabedian's model, where the quality of health care services is described according to three dimensions, which are structure, process, and outcome (Donabedian, 1988). With respect to this study, the validated scale allows understanding what components of the hospital experience are most noticeable from the patient's perspective, including reception, access, communication, relational quality, professionalism, coordination, continuity, physical environment, and discharge information. From the point of view of hospital managers, this can help diagnose the patient pathway more precisely than just using one satisfaction score. Nevertheless, some findings require careful consideration. For example, perceived fairness, coordination, continuity of care, and expectations demonstrated lower psychometric characteristics. In particular, the expectations subscale was particularly weak. It is not to say that expectations do not play an important role in healthcare satisfaction. There is a well-grounded Confirmation/Disconfirmation Theory that can explain why patients compare their expectations with actual outcomes (Oliver, 1980). However, in this study, expectations did not prove to be a stable construct. Further iterations of the questionnaire should address these issues and identify different types of expectations.

There are various limitations of the study. First, it was carried out in only one public hospital; therefore, the findings cannot be generalized to all public hospitals in Morocco without further validation studies. Second, the factor analyses used 857 valid data sets rather than the entire data set containing responses from 1,200 patients. Third, the study did not validate the temporal consistency, predictive validity, or measurement invariance of the scales across different patient subgroups and services offered in the hospital. Moreover, there is no evidence of causality between the selected dimensions and overall satisfaction. Subsequent research can explore the applicability of the scale in other hospitals in Morocco, other geographical regions, and other clinical services. Repetitive use of the scale can explore its temporal stability, and further research can also explore its measurement equivalence across gender, age, educational background, health condition, admission mode, and care pathways. Within these limitations, the scale provides a good foundation for improving patient feedback in Moroccan government hospitals. The primary importance of the scale is that it links psychometric validation to hospital diagnosis within a practical context.

References

- Batbaatar, E., Dorjdagva, J., Luvsannyam, A., & Amenta, P. (2015). Conceptualisation of patient satisfaction: A systematic narrative literature review. *Perspectives in Public Health*, 135(5), 243–250. <https://doi.org/10.1177/1757913915594196>
- Batbaatar, E., Dorjdagva, J., Luvsannyam, A., Savino, M. M., & Amenta, P. (2017). Determinants of patient satisfaction: A systematic review. *Perspectives in Public Health*, 137(2), 89–101. <https://doi.org/10.1177/1757913916634136>
- Beattie, M., Murphy, D. J., Atherton, I., & Lauder, W. (2015). Instruments to measure patient experience of healthcare quality in hospitals: A systematic review. *Systematic Reviews*, 4, Article 97. <https://doi.org/10.1186/s13643-015-0089-0>

- Benchekroun, S., Taouab, O., & Abdelbaki, N. (2023a). Déterminants de la satisfaction des bénéficiaires des services de soins de santé : Une revue de la littérature systématique. *Revue Internationale des Sciences de Gestion*, 6(3), 806–834. <https://revue-isg.com/index.php/home/article/view/1376>
- Benchekroun, S., Taouab, O., & Abdelbaki, N. (2023b). Génération d'items d'une échelle de mesure de la satisfaction des bénéficiaires des services de soins de santé au Maroc : Une étude qualitative. *Moroccan Journal of Research in Management and Marketing*, 15(2), 68–90. <https://doi.org/10.48376/IMIST.PRSM/remarem-v15i2.48041>
- Boateng, G. O., Neilands, T. B., Frongillo, E. A., Melgar-Quinonez, H. R., & Young, S. L. (2018). Best practices for developing and validating scales for health, social, and behavioral research: A primer. *Frontiers in Public Health*, 6, Article 149. <https://doi.org/10.3389/fpubh.2018.00149>
- Brown, T. A. (2015). *Confirmatory factor analysis for applied research* (2nd ed.). The Guilford Press
- Churchill, G. A., Jr. (1979). A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research*, 16(1), 64–73. <https://doi.org/10.1177/002224377901600110>
- Cleary, P. D., & McNeil, B. J. (1988). Patient satisfaction as an indicator of quality care. *Inquiry*, 25(1), 25–36
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297–334. <https://doi.org/10.1007/BF02310555>
- Damghi, N., Belayachi, J., Armel, B., Zekraoui, A., Madani, N., Abidi, K., Belabes Benchekroun, A., Zeggwagh, A. A., & Abouqal, R. (2013). Patient satisfaction in a Moroccan emergency department. *International Archives of Medicine*, 6, Article 20. <https://doi.org/10.1186/1755-7682-6-20>
- Donabedian, A. (1988). The quality of care: How can it be assessed? *JAMA*, 260(12), 1743–1748. <https://doi.org/10.1001/jama.1988.03410120089033>
- Doyle, C., Lennox, L., & Bell, D. (2013). A systematic review of evidence on the links between patient experience and clinical safety and effectiveness. *BMJ Open*, 3(1), Article e001570. <https://doi.org/10.1136/bmjopen-2012-001570>
- Enders, C. K. (2010). *Applied missing data analysis*. The Guilford Press
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.1177/002224378101800104>
- Gill, L., & White, L. (2009). A critical review of patient satisfaction. *Leadership in Health Services*, 22(1), 8–19. <https://doi.org/10.1108/17511870910927994>

- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Hu, L.-T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). The Guilford Press
- Little, R. J. A., & Rubin, D. B. (2002). *Statistical analysis with missing data* (2nd ed.). Wiley
- Manary, M. P., Boulding, W., Staelin, R., & Glickman, S. W. (2013). The patient experience and health outcomes. *The New England Journal of Medicine*, 368(3), 201–203. <https://doi.org/10.1056/NEJMp1211775>
- Naidu, A. (2009). Factors affecting patient satisfaction and healthcare quality. *International Journal of Health Care Quality Assurance*, 22(4), 366–381. <https://doi.org/10.1108/09526860910964834>
- Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, 17(4), 460–469. <https://doi.org/10.1177/002224378001700405>
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), 12–40
- Pascoe, G. C. (1983). Patient satisfaction in primary health care: A literature review and analysis. *Evaluation and Program Planning*, 6(3–4), 185–210. [https://doi.org/10.1016/0149-7189\(83\)90002-2](https://doi.org/10.1016/0149-7189(83)90002-2)
- Sitzia, J., & Wood, N. (1997). Patient satisfaction: A review of issues and concepts. *Social Science & Medicine*, 45(12), 1829–1843. [https://doi.org/10.1016/S0277-9536\(97\)00128-7](https://doi.org/10.1016/S0277-9536(97)00128-7)
- Sixma, H. J., Kerssens, J. J., van Campen, C., & Peters, L. (1998). Quality of care from the patients' perspective: From theoretical concept to a new measuring instrument. *Health Expectations*, 1(2), 82–95. <https://doi.org/10.1046/j.1369-6513.1998.00004.x>
- Soufi, G., Belayachi, J., Himmich, S., Ahid, S., Soufi, M., Zekraoui, A., & Abouqal, R. (2010). Patient satisfaction in an acute medicine department in Morocco. *BMC Health Services Research*, 10, Article 149. <https://doi.org/10.1186/1472-6963-10-149>
- Ware, J. E., Jr., Snyder, M. K., Wright, W. R., & Davies, A. R. (1983). Defining and measuring patient satisfaction with medical care. *Evaluation and Program Planning*, 6(3–4), 247–263. [https://doi.org/10.1016/0149-7189\(83\)90005-8](https://doi.org/10.1016/0149-7189(83)90005-8)

Wong, E. L. Y., Coulter, A., Cheung, A. W. L., Yam, C. H. K., Yeoh, E. K., & Griffiths, S. (2013). Validation of inpatient experience questionnaire. *International Journal for Quality in Health Care*, 25(4), 443–451. <https://doi.org/10.1093/intqhc/mzt034>