Is there an association between hospital accreditation and patient satisfaction with hospital care? A survey of 37,000 patients treated by 73 hospitals

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Abstract

Objective. In many countries hospitals are undergoing accreditation as mandatory or voluntary measures. It is believed that accreditation positively influences quality of care and patient satisfaction. This survey aims at assessing the relationship between patient satisfaction and accreditation status.

Design. Between January and May 2007, 4 weeks after their discharge, 78,508 patients from 328 departments in 73 hospitals received a validated questionnaire. Data from 36,777 patients (response rate 55%) were available for analyses.

Main Outcome Measures. Recommendation rate was used as primary endpoint, which was available from 35,945 patients. To address the clustering of patients within hospitals, we applied univariate and multivariable generalized estimating equations. As covariates we used ‘gender’ and ‘age’ at the patient level and the ‘number of beds’ and ‘hospital teaching status’ at the hospital level.

Results. Overall and not addressing the clustering, 66.3% of all the patients recommend their hospital to others. This recommendation, however, was not related to the accreditation status in the univariate analyses (odds ratio (OR) for accreditation (‘yes’) and recommendation (‘yes’) 0.99, 95% confidence interval (CI) 0.85–1.16, \( P = 0.92 \)). This result was similar in the multivariable regression model adjusted for clustering (OR = 0.98, 95% CI 0.84–1.13, \( P = 0.74 \)).

Conclusions. Our results support the notion that accreditation is not linked to measurable better quality of care as perceived by the patient. Hospital accreditation may represent a step towards total quality management, but may not be a key factor to quality of care measured by the patient’s willingness to recommend.

Keywords: patient satisfaction, healthcare system research, resource allocation

Background

A key parameter that is believed to reflect quality of care in a hospital setting is patient satisfaction [1–3]. Thus, patient satisfaction takes a position alongside traditional outcome parameters such as mortality or functional status. As a result, patient satisfaction is gaining increasingly interest and healthcare organizations perceive patient satisfaction as a factor that plays an important role in a competitive healthcare market [4, 5].

Patient satisfaction can be measured utilizing standardized questionnaires or interviews [6]. Numerous factors are believed to influence patient satisfaction, including variables of staffing level, infrastructure or the characteristics of patients [7–9]. In recent decades there is the emerging trend that accreditation is a feasible measure to improve the quality of care and patient safety [10]. Many hospitals have their own internal quality assurance like internal peer review or systematization of processes, but also aim to meet specific external standards with regard to the standardization of clinical measures and clinical pathways. In this context, accreditation is believed to be at least an indicator for reasonable quality (or even superior quality of care if accreditation is voluntary) that can be easily identified by patients and referring doctors. If an organization does not go through an accreditation process, it may indicate that the facility is not open to external evaluation.
of its performance and may lead to competitive disadvantage [11, 12]. In many countries external evaluation by independent assessors resulting in accreditation are measures that are believed to improve quality of care [13]. This accreditation is voluntary in some [11, 14] or part of legal requirements in other countries [15]. In Germany accreditation is voluntary while quality assurance (comparison of key outcome data) is mandatory in many disciplines.

All accreditation efforts require resources and under the aspect of evidence-based management the rational for allocation of resources and the return of investment should be measured. While the costs of an accreditation process can be determined by simple accounting principles, so far no data are available that actually have compared key outcome parameters such as patient satisfaction between organizations with or without formal accreditation.

Satisfaction ratings contain information about the structure, process and outcomes of care. Also, results from patient satisfaction surveys are important because they are useful in forecasting how patients will behave in the future. Satisfied patients have a high willingness to return and to recommend the hospital to relatives and friends. Therefore, patient satisfaction also has financial implications for a hospital. For these reasons, patient satisfaction is supposed to be considered in accreditation processes.

Patient orientation is one of six main categories in the most popular accreditation system in Germany (KTQ/ Cooperation for Transparency and Quality in Hospitals). But whether accreditation of hospitals truly ensures superior quality of healthcare service delivery from patients’ point of view has not been studied systematically even though costs for accreditation are substantial.

We hypothesized that accredited hospitals have higher patient satisfaction when compared with non-accredited hospitals. Their recommendation rate would be better in accredited departments than in non-accredited hospitals.

Methods

There are several accreditation systems for hospitals. In the USA and other countries, the Joint Commission (JI, formerly Joint Commission for the Accreditation of Health Organisation (JCAHO)) has developed an accreditation standard that aims at an organization-wide accreditation. A widely accepted accreditation system in Germany designed for hospitals is KTQ (Cooperation for Transparency and Quality in Hospitals) [11]. An alternative model is proCum Cert (pCC). Both models are very similar to the JCAHO standards focusing on organization-wide accreditation. The KTQ- and pCC-accreditation processes consists of a self-assessment followed by an external assessment. Both procedures are based on very similar criteria catalogues [11]. The main categories in the accreditation process are patient orientation, staff orientation, safety, information system, leadership and quality management. As these categories show a focus lies on patient orientation.

In order to compare patient satisfaction with hospital care, a regional patient survey was conducted involving 75 hospitals in the Ruhr area. Participation of hospitals was voluntary. However, more than 50% of all hospitals in this densely populated area with more than 6 million inhabitants participated. Four weeks after discharge from one of the participating hospital, 78 508 patients received the validated Picker questionnaire [16] by mail. Using a prepaid return envelope, completed questionnaires were mailed to a central data processing department. Reminder letters were mailed twice—after 2 and 4 weeks. In total, 44 418 (57%) of patients responded. For this analysis we focused on patients discharged from 328 departments in 17 different medical specialties out of 73 different hospitals. Patients discharged from obstetrics or pediatrics were excluded because a different questionnaire was used resulting in a sample size of 36 777 patients to be analyzed (Fig. 1). Based upon the study sample, 23 out of the 73 hospitals were accredited according to KTQ, 14 according to KTQ and pCC and two according to pCC only. Four hospitals are accredited according to DIN ISO. The remaining 30 hospitals were not accredited. In total, 21 221 patients were treated in an accredited hospital, 15 556 patients in non-accredited hospitals.

The Picker Inpatient Questionnaire [17] assesses 10 dimensions of patient satisfaction. However, an item that reflects overall satisfaction is the recommendation rate of a specific healthcare provider [18]. This is the proportion of patients that answered the question if they would recommend the hospital to others with ‘yes’ among all patients who responded. Similar to Jenkinson et al. [18], we focus on this item as primary study outcome.

We used descriptive statistics (means and standard-deviations or percentages) to summarize key patient and hospital characteristics. These variables were further explored with regard to accredited and non-accredited hospitals using Pearson’s χ² test and Fisher’s exact test for count data and

![Figure 1 Patient sample.](https://example.com/figure1.png)
the Mann–Whitney–Wilcoxon U-test for quantitative data. For the primary outcome variable which we tested confirmatively, however, we used simple logistic regression analyses (Model I—univariate analysis). To address the clustering of patients within hospitals, we applied generalized estimating equations (GEEs) as well as generalized linear mixed models in the univariate (Model II) and the multivariable analyses (Model III) as sensitivity analyses [19]. In the multivariable analyses, we used ‘gender’ and ‘age’ as covariates at the patient level and the ‘number of beds’ and the information whether the hospital is a ‘teaching hospital’ at the hospital level. In addition, we derived point estimates and 95% confidence intervals (CIs) for the estimator. A significance level of 5% was applied due to the fact that only one primary hypothesis was investigated confirmatively. All P-values calculated were two-tailed and determined using Statistical Analysis System (SAS), Version 9.2.

### Results

The key characteristics of accredited and non-accredited hospitals are depicted in Table 1. On an explorative level there were no significant differences with regard to variables such as length of stay, gender, age or the proportion of foreign patients and with regard to hospital characteristics (Table 1). Regarding the primary outcome, 66.3% of all the patients recommended the hospital they had recently received care from to others (Fig. 2). However, there was no evidence to support the idea that the recommendation rate was related to the accreditation status of the hospital in the univariate analyses (Fig. 2 and Table 2; Model II GEE: odds ratio (OR) for accreditation (‘yes’) and recommendation (‘yes’) 0.99, 95% CI 0.85–1.16, \( P = 0.92 \). The same held true in the multivariable regression GEE model with age and gender as

### Table 1

<table>
<thead>
<tr>
<th>Observational unit</th>
<th>Variable (unit)</th>
<th>Accredited hospital</th>
<th>Not accredited hospital</th>
<th>( P )-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital</td>
<td>Teaching hospital</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>19</td>
<td>16</td>
<td>0.482*</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>24</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Owner status</td>
<td>Public</td>
<td>6</td>
<td>4</td>
<td>1.000*</td>
</tr>
<tr>
<td></td>
<td>Non-profit</td>
<td>37</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>No of beds</td>
<td></td>
<td>392.5 (148.4)</td>
<td>446.9 (340.4)</td>
<td>0.549*</td>
</tr>
<tr>
<td>Patient</td>
<td>Age (years)</td>
<td>20 341 (62.3 (15.7)</td>
<td>15 003 (61.7 (15.6))</td>
<td>0.0001*</td>
</tr>
<tr>
<td></td>
<td>Length of stay (days)</td>
<td>19 543 (11.0 (10.8)</td>
<td>14 302 (11.1 (11.1))</td>
<td>0.251*</td>
</tr>
<tr>
<td>Gender</td>
<td>Female</td>
<td>11 304 (54.9%)</td>
<td>8124 (53.7%)</td>
<td>0.022*</td>
</tr>
<tr>
<td></td>
<td>Migrants</td>
<td>18 890 (95.4%)</td>
<td>14 212 (95.0%)</td>
<td>0.538*</td>
</tr>
</tbody>
</table>

\*Fisher’s exact test.
\*Mann–Whitney–Wilcoxon U-test ignoring hospital level clustering effects.
\*Pearson’s \( \chi^2 \) test ignoring hospital level clustering effects.
of other studies [18, 20]. However, there is substantial variability between hospitals. This indicates that at least for a large number of hospitals there is substantial room for improvement. In addition, it cannot be argued that a ceiling effect was responsible for the lack of a difference between accredited and non-accredited hospital [21].

There are many publications on the benefits of accreditation of healthcare providers [22–25]. The majority mirrors the standards of American or Australian accreditation. Some researchers point out that the accreditation improves their operations and performance in terms of effectiveness and efficiency [22]. Interestingly, data quantifying the economical and quality effect are widely lacking. As emphasized by Greenfield and Braithwaite [26] there are limited data on the influence of accreditation of healthcare providers on patient satisfaction. Though these studies [27, 28] have limitations (e.g. small sample sizes or the failure not to use properly validated instruments to assess patient satisfaction) their findings are nevertheless in line with our observation.

Accreditation may be advantageous with regard to standardization of procedures, cost containment or even marketing when accreditation is perceived by the public as a quality indicator. However, our data may at least cast doubt that accreditation is a suitable instrument for quality improvements that are relevant for patient satisfaction. Hospitals are accredited for their compliance with standards [29, 30]. Indeed, accreditation programs focus primarily on structures and processes in patient care, e.g. the patient and his way from access to post-discharge in a hospital [31]. The

Table 2 Results of the regression analyses for the binary outcome recommendation; the analysis is performed for the probability to recommend such that estimates larger than one indicate a tendency to more likely recommendation with the factor value

<table>
<thead>
<tr>
<th>Observational unit</th>
<th>Variable</th>
<th>Model I, Univariate model unadjusted for clustering</th>
<th>Model II, Univariate model adjusted for clustering by GEE</th>
<th>Model III, Multivariable models adjusted for clustering by GEE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OR (95% CI)</td>
<td>P-value</td>
<td>OR (95% CI)</td>
</tr>
<tr>
<td>Hospital</td>
<td>Accredited hospital</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1.06 (1.01–1.11)</td>
<td>0.013</td>
<td>0.99 (0.85–1.16)</td>
<td>0.916</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Teaching hospital</td>
<td>Yes</td>
<td>0.85 (0.81–0.88)</td>
<td>&lt;0.0001</td>
<td>0.80 (0.69–0.94)</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>No of beds &gt;350b</td>
<td>Yes</td>
<td>0.87 (0.83–0.91)</td>
<td>&lt;0.0001</td>
<td>0.91 (0.77–1.07)</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Patient</td>
<td>Age &gt; 60 yearsc</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1.43 (1.36–1.49)</td>
<td>&lt;0.0001</td>
<td>1.43 (1.36–1.50)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Female</td>
<td>0.90 (0.86–0.94)</td>
<td>&lt;0.0001</td>
<td>0.88 (0.83–0.92)</td>
</tr>
<tr>
<td>Male</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

*aFor the generalized linear mixed models the effect size estimator was 0.99 (0.83–1.19) with a P-value of 0.950.

*bThe median of all hospitals was 356 beds.

*cThe median age of all patients was 65 years.

covariables (Model III GEE: OR = 0.98, 95% CI 0.84–1.13, P = .74). The results were very similar for the generalized mixed effects model (data not shown).

Discussion

Accreditation of hospitals or accreditation of specific areas or procedures is widely accepted as measures to ensure or improve quality of hospital services. Besides more traditional quality indicators such as nosocomial infections or morbidity adjusted in hospital mortality, patient satisfaction is now also an important measure for quality of care [1, 18]. Our study aimed to assess the relation between accreditation and patient satisfaction with services as reflected by the recommendation rate. This multicenter study included data from 36,777 randomly selected patients treated as inpatients by 73 different hospitals. Thus, to the best of our knowledge this is the largest study ever done in this field.

Probably surprising for many, there was no significant difference for the recommendation rate between accredited and non-accredited hospitals. Given the large study sample (and reflected by the small CI between 0.84 and 1.13 in the multivariable regression GEE model) any relevant link between accreditation status and patient satisfaction can be excluded. Based upon this it is highly unlikely that the somehow surprising result is due to insufficient sample size.

In this context it is important that the overall recommendation rate was slightly above 60%, which is within the range of other studies [18, 20].
underlying assumption is that if hospital pathways and processes are properly regulated and controlled, patient outcomes and patient satisfaction are likely to be improved. To increase outcome orientation in the accreditation process, there is a need for overarching quality indicators such as morbidity adjusted mortality and patient satisfaction. But until now, there are only few examples of performance measures in the accreditation process standards [31].

While cost containment in hospitals is an issue in many countries, there is an obvious need to properly establish costs and benefits of accreditation. The process of accreditation requires resources and time [22, 32]. Staines [32] describes the process of an ISO accreditation of a small Swiss hospital. For this accreditation 3 years work of three full time staff members was required. Most likely this figure reflects only a small proportion of the true costs of an accreditation process because the implementation also requires substantial input from a large number of other stakeholders such as physicians and nursing staff. For an accreditation program to be cost-effective, the gain needs to be measurable. Considering this, it is surprising that until now there is limited data to quantify the influence of accreditation on patient satisfaction.

While our data are based upon a very large sample, some potential arguments that may explain the observed absence of an effect of accreditation on patient satisfaction need to be addressed. First, it might be argued that the effects of accreditation are difficult to properly assess because accreditation is an ongoing and dynamic quality improvement process. For this reason, it is hard to define when and how to measure the outcome of accreditation so that changes in process and outcome measures over time will be adequately represented. Some hospitals in our study completed accreditation or re-accreditation recently. Thus, they have already taken significant steps within the accreditation process, but the full benefits may emerge at a later time point. To measure these effects a longitudinal study would be reasonable. Hence in our study non-accredited hospitals were numerically even better for the primary endpoint, it is unlikely that the time effect will change the results. Second, it is possible that some hospitals were given provisional accreditation with recommendations for improvement. If so, hospitals were accredited despite their existing deficiencies in specific areas and it would be astonishing if they performed better nevertheless. Third, accreditation programs slightly vary with respect to scope and standards. We did not consider differences between the three accreditation programs, since it is well-accepted that two accreditation standards within our study (KTO and PCC) are very similar to each other and largely overlap with JC standards while the third accreditation program DIN ISO was present in only 4 out of 43 accredited hospitals. Thus, it is reasonable to assume that the effect of accreditation program on the result of our study can be neglected. We also did not consider differences in the hospital departments we compared. It might be possible that the department is another covariate that should be examined. Therefore, we examined the relationship between patient satisfaction and hospital accreditation in specific areas like gastroenterology or cardiology. Again, we could not find any advantage for accredited hospitals with regard to patient satisfaction compared with non-accredited hospitals.

In summary, this study including 36 777 patients treated as inpatients at 73 different hospitals does not find any significant association between accreditation status of the hospital and patient satisfaction. As stated above, many accreditation systems focus on patient orientation. Despite this, this large study fails to demonstrate an effect of accreditation on patient satisfaction. Important to note that the accreditation systems used by these hospitals are very similar to accreditations used in the USA or Australia. The lack of an influence of accreditation on patient satisfaction can be considered an important issue and further research is needed to identify the modifiable factors that really influence patient satisfaction.

While accreditation is now widely accepted as an essential tool to improve quality of hospital care, our results support the notion that—at least in this study—successful accreditation is not linked with measurable better quality of care as perceived by the patient and reflected by the recommendation rate of a given institution. It might be argued that accreditation itself may require evaluation. It appears reasonable that the principles of evidence-based medicine and decision-making should be used before accreditations systems are implemented. Also, accreditation and patient surveys might be useful complements to one another and the process of accreditation should include outcome parameter such as patient satisfaction.

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