

Patient characteristics and quality dimensions related to patient satisfaction

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Abstract

Objective. To examine the relation of respondents' characteristics, and perceived quality dimensions of health care to overall patient satisfaction in out-patient hospital care.

Design. A questionnaire concerning the perceived quality of health care sent to patients in out-patient medical care.

Setting. All medical centres in Östergötland County, Sweden, during a period in 2007.

Participants. Seven thousand two hundred and forty-five patients aged 20 or older responded to the survey and provided their own ratings of the care.

Main outcome measure. Global patient satisfaction as the overall rating of the encounter at the medical centre. The relation between respondent characteristics, quality dimensions and global satisfaction was examined using linear regression.

Results. Younger patients in emergency care were the least satisfied group (54%) and older patients with excellent health status were the most satisfied group (90%). Patients with perceived better health status and those with less education were more satisfied than those with more education or poorer health status. The two dimensions most strongly positively associated with global satisfaction were receiving the expected medical help and being treated well by the doctor. To wait at the reception without getting information correlated negatively to patient satisfaction, and participation in the medical decision-making correlated positively.

Conclusions. By using a complete patient population, including all types of medical specialities, we have identified a set of common respondent characteristics and quality dimensions that are related to global satisfaction in out-patient hospital care.

Keywords: quality measurement, quality management, patient satisfaction, measurement of quality, hospital care, setting of care, determinants, quality dimensions

Introduction

The patient's perspective is becoming more and more integrated in the process of improving health-care systems. Standard questionnaires and analysis tools such as Quality from the Patient's Perspective (QPP) and Quality, Satisfaction and Performance (QSP) [1] are regularly incorporated in patient surveys, while surveys provided by independent companies or institutes have become routine for many Swedish health-care organizations and centres.

However, indicators of good health care from the patient's perspective are still lacking in the nationwide evaluation of health care in Sweden. Therefore, recent discussions and actions have moved towards the implementation of a national standard for patient satisfaction surveys in health care [2]. The expectation is that such surveys will serve a purpose on two levels; at the micro level, as a useful tool for improving

quality at each health-care unit, and at the macro level, allowing comparison between different County Councils.

In the County of Östergötland, the QSP model has been used for regular patient satisfaction studies since the late 1990s, and there is a good amount of experience in using this model among the units in each health-care area. However, when we present results from these studies to the medical centres at the hospitals and in primary care, staff frequently ask how the results are influenced by the various respondent's characteristics. This is an important question, because different units and hospitals may have a different mix of patients. It has previously been shown that a significant part of the variation in global patient satisfaction can be related to age and health status [3]. Usually, older patients are more satisfied [4–11] and highly educated people are less satisfied with their health-care services compared with their counterparts [12]. In contrast, a review of 139 articles showed that findings

regarding the influence of gender on global satisfaction are mostly inconsistent [6]. Health status is another factor of importance; in general, a higher level of satisfaction is found in patients with better overall health [5, 7, 8, 13], with the exception being certain groups of chronically ill patients [6].

Waiting time, real or perceived, is often found to influence satisfaction of the patients [14–16]. Another aspect of quality is patient centeredness; inclusion of patients in the decision-making process, as well as the degree of such participation, has been found to be strongly associated with overall satisfaction [10, 15, 17]. Patient perception of the time spent with their physician is also strongly associated with overall satisfaction [18]. Overall patient satisfaction is also influenced by receiving information [6, 19–21] or clear answers/information from medical staff [15], or conversely poor explanation of the problems and/or the test results [4].

One of our previous studies showed a steady increase in using the Internet as an additional source of information to complement that received from the physician about the patient's specific health problem or disease [22]. Here, the use of the Internet or of another person or patient as an information source about a specific disease or ailment defines what we call 'informed patients'.

Building on existing evidence from the literature and using an extensive data set, our study examines the influence of the respondent's characteristics and, on the other hand, the influence of the quality aspects on global satisfaction in the different areas of health care. In addition, we investigated whether informed patients differ in their overall satisfaction when respondent's characteristics such as age, gender and educational level are controlled in the analysis. On the basis of the results of some previous patient surveys in the county, we expect to find that age is closely related to the patient satisfaction outcome, with older patients being most satisfied. Health status has also been strongly associated with patient satisfaction outcome, thus we expect a positive relation between good health and high patient satisfaction rating. However, with reference to the same study, we do not think that there are differences between men and women when other characteristics are controlled for [3].

Prior survey results suggest a high positive partial correlation between the doctors friendly behaviour [Treated well] and patient satisfaction. Thus, we expect that this factor to be one of the most significant factors related to the outcome in global patient satisfaction. Waiting at the reception also had a highly negative correlation with global patient satisfaction in patient surveys. In this study, we distinguish between patients who had to wait and who got informed of the delay while waiting and those who did not get any information. Therefore, we expect that the patients who waited without information would report lower satisfaction than those receiving some information from the reception.

Material

During 3 weeks in February 2007, a total selection was made of patients aged 1 year or older who had visited a doctor in

out-patient care at a surgery in 1 of 11 medical centres located across three hospitals in Östergötland County, Sweden. Questionnaires were sent out 1 week after the selection period, to adult patients and to the parents of the children. Two weeks after the first dispatch, a combined reminder and a 'Thank you for participating' card was sent to all patients, and a new questionnaire was sent to those patients who did not reply within a month. Checks were made to ensure that no patient received more than one questionnaire, and that questionnaires were not sent to patients who became deceased after the encounter at the hospital. A total of 18 627 patients were included in the study. For units that had more than 400 patients during the inclusion period, a sample of patients were selected with the aim of limiting the total number of participants; this is not adjusted for since each centre is represented in the equation as a dummy variable. A separate adjustment was made within the two age groups in the χ^2 tables to compensate for the lower response rate among the younger patients. Younger patients were assigned a greater weight than older patients within the age groups. The age adjustment was done with the 'weight cases' option in SPSS.

A few units were excluded from the study, i.e. laboratories, radiology units, rehabilitation units and venereology surgeries. The selection was extended for psychiatric patients who had seen therapists other than physicians. All doctors, in all specialities, were invited to provide a list of patients who should be excluded from the study, but this option was rarely used. Patients from other counties who had visited any of the participating units during the study period were also included in the study, and comprised 3% of the total selection.

The total response rate was 55%; it varied across the centres, ranging from 37% in psychiatry to 68% in surgery and oncology. This low response rate from psychiatric patients was also seen in our earlier studies.

For the following analyses, the material was restricted to patients aged 20 and older, and only includes patients who answered the questionnaire without help from another person. The respondent had to answer whether he or she was the patient or not.

Approximately 20% of the patients did not fill in the questionnaire completely on their own and that lead to an exclusion of 2049 cases (Table 1). Including only adult patients 20 years old or over decreases the number of cases with 652. Another 178 cases were excluded because of missing data regarding essential variables, leaving 7245 quite complete cases for the χ^2 analysis. Inclusion criteria for the analyses in Table 2 were that the patient and the respondent were the same person, aged 20 years or older, with available information on their sex, health status and education level, and also with a complete global satisfaction score.

In the regression solution, the 'List-wise deletion' option was used, which lead to 5565 complete cases in final regression for quality dimensions towards global satisfaction (Table 1). The greatest loss of respondents had the question about 'Participation in the decision' were 478 cases had missing or invalid data.

Table 1 Patients included in the study

Group	Number of cases
Total dispatch	18 730
Undelivered	− 290
Total responses	10 124
Patients with help to respond 1–19 years	− 1166
Patients with help to respond ≥ 20 years	− 883
Total where the respondent was equal to the patient	8075
Patients equal to respondent ≥ 20 years	7423
Patients equal to respondent ≥ 20 years that responded to vital questions (as sex, health status and GS)	7245
Patients/respondents as above that met the inclusion criteria for the regression in Table 5 ^a	6764
List-wise deleted respondents from the regression in Table 5 ^a	− 1199
Complete cases in the regression in Table 5	5565

^aList-wise deletion because of missing data, or that data were not relevant to obtain, concerned a total of 1199 cases.

Variables in the equations and statistical methods

This survey, and the other similar patient surveys since 1997 in the county, follows the QSP model. The questionnaire has been developed to fit the correlation matrix that builds the two-dimensional outcome in the QSP model: ‘Importance’ (to satisfaction) and ‘Quality’ (grade of satisfaction) [1]. In the original QSP model, there is usually only one question for each dimension, and two questions for building the global satisfaction outcome. The questionnaire included about 50 questions. The background questions were restricted in number to those presented here. Patients who had made a planned visit were asked 23 questions concerning quality aspects of the encounter. Other patient groups, such as those in emergency care or open surgery, also received additional specific questions.

The independent variables are listed in Tables 1 and 2; they cover type of encounter, personal characteristics, habitation status and use of information sources concerning the specific disease or health problem.

The quality dimensions that all respondents were asked to answer independently of the type of encounter or speciality were as follows:

- (i) ‘I was treated very well by the doctor/therapist?’ [Treated well by the doctor, 1–5.]
- (ii) ‘I got enough time talking with the doctor/therapist?’ [Enough time with the doctor, 1–5.]
- (iii) ‘I felt that I participated in the decisions regarding my care and treatment?’ [Participation in the decision, 1–5.]

Table 2 Response rate in 2007 and average patient satisfaction score (PSI)

Medical centre	Response rate (%)		Average	
	2007	2005	PSI 2007	N 2007
C1 Surgery and oncology centre	68	69	8.59	1050
C2 Anaesthesia centre	67	NA	8.92	98
C3 Heart centre	65	70	8.90	302
C4 Reconstruction centre	61	64	8.64	871
C5 Orthopaedics centre	60	66	8.13	374
C6 Pain and rehabilitation centre	54	54	8.22	46
C7 Women and children centre	52	53	8.31	605
C8 Local health—Central district	49	54	8.13	1214
C9 Local health—East district	49	52	8.02	636
C10 Local health—West district	46	48	7.97	205
C11 Local health—Psychiatry ^a	37	43	7.64	778
Not available (NA) ^b	—	—	8.22	585
Total			8.27	6764

^aPsychiatry contains patients from all of the three centres for local health. ^bAll cases were not assigned to a centre because of missing data.

- (iv) ‘The doctor/therapist informed me in a clear way?’ [Clear medical information, 1–5.]
- (v) ‘I got the help that I expected for my disease or health problem?’ [Expected help, 1–5.]

These questions were answered on a scale of 1 to 5, with 1 corresponding to ‘I do not agree at all’ and 5 corresponding to ‘I strongly agree’.

The dimension waiting time at the reception was split into two dummy variables; one for those who had to wait but were given information about the delay [Waiting with information why, 1 or 0] and another for those who were kept waiting with no explanation or information about why there was a delay [Waiting without information why, 1 or 0]. The dependent variable patient satisfaction index (PSI) that constitutes our measurement of global satisfaction was constructed from two questions about overall satisfaction with the latest encounter at a hospital surgery for out-patient care:

- (i) ‘How did you feel about the visit at the surgery as a whole?’ (placed at the beginning of the questionnaire).
- (ii) ‘Imagine a visit at the surgery that is perfect in every respect. How close or far away from this ideal do you think your last visit was?’ (placed at the end of the questionnaire).

Both questions were answered on a scale of 1 to 5, with 1 corresponding to the lowest mark and 5 to the highest. The regression analysis used the full range of the summed satisfaction variable, while in the cross-tables, a satisfied patient was defined as the one scoring 8, 9 or 10 of the 10 possible points, and a less satisfied patient as the one scoring between 2 and 7 (where 2 is the lowest possible score). This divide between satisfied and not satisfied patients has been used in the feedback to the hospital centres when presenting levels of global patient satisfaction.

The outcome in the χ^2 analysis was divided by age, with one group representing the working-age population (20–64 years) and the other representing the retired population (≥ 65 years). The younger age group included an additional variable for identifying patients on long-term sick leave (3 months or more) or on disability pension. This variable was not used in the regression analyses because it was not applicable to all patients. Each variable was first tested separately with χ^2 -statistics (or Fisher's exact test in the case of the dichotomized variables), and then included in two ordinary linear regression analysis.

Results

We found that centres with higher response rate had higher grade of patient satisfaction and vice versa. For 11 centres presented in Table 2, the Pearson correlation coefficient between response rate and global satisfaction was 0.90 ($P < 0.001$).

Most respondent's characteristics were associated with satisfaction for both age groups, and these associations were statistically significant (Table 3). Non-significant respondent characteristics were: gender, living alone or living with others, and whether another patient or person was used by the respondent as an additional source for information about the respondent's disease. Patients on disability pension or long-term sick leave had lower patient satisfaction, but the difference was not statistically significant. Living in a rural or urban area was significantly associated with satisfaction for younger, but not older patients.

In both age groups, satisfaction was lowest among patients who had undergone emergency care. Moreover, the patients who had undergone day surgery at their visit were more satisfied than those who had no surgery (Table 3). Older patients were in general more satisfied than younger patients, and the highest proportion of satisfied patients was found in the older patients who reported a very good or excellent health status or who had undergone day surgery. Men and women generally had the same levels of patient satisfaction, though there was a tendency for men to be slightly more satisfied. People with better self-reported health or short education had a higher PSI score compared with the groups with poorer health or longer education. The use of the Internet as a complementary information source was a significant variable for the PSI outcome in both age groups; informed patients were less

satisfied. Foreign-born patients were less satisfied than native Swedes.

The respondent factors explained $\sim 13\%$ of the variance in PSI (Table 4). Age and health status were the two personal factors that had the strongest association with satisfaction showing that older or healthier patients were more satisfied than younger or patients with poorer health status. Patients in emergency care were much less satisfied also when respondent characteristics and medical centre was controlled for. These three variables had a partial correlation in the range between 0.15 and 0.20 whereas for the rest of the variables, there was no partial correlation above 0.07. Whether the patient lived alone or not had no significance related to patient satisfaction, and there were also no difference between men and women regarding the level of patient satisfaction in this regression. Besides sex and living conditions, in the regression model, all other characteristics were associated with partial correlations in the range from 0.034 to 0.066.

The associations between respondent characteristics and satisfaction changed when the quality variables were entered into the regression (Table 5). Age, educational level, health status and origin of birth remained significantly associated with patient satisfaction. The quality factors increased to 64%, the percentage of variation in the PSI explained by the model. However, the greatest observed change among the variables in the two equations was related to the outcome for emergency care, whereas this variable had a relatively high partial correlation to PSI in the first regression (-0.16), it had no correlation at all in the second regression.

The dimension expected help had the strongest correlation to PSI, followed (in order) by how well the patient considered they had been treated by the physician/therapist, whether they had been kept waiting at the reception without any information about the delay, and the extent to which they were satisfied with their participation in making decisions about their treatment. The rest of the dimensions were also statistically significantly associated with PSI. The partial correlation coefficient for the significant variables varies in the range from 0.03 to 0.30.

In the first regression with quality dimensions excluded, 5 centres out of 11 have a significant better result than average regarding patient satisfaction, despite all the variables that were controlled for. When the quality dimensions are included in the regression, only one centre remain significant above the average regarding the patient satisfaction.

Discussion

The results of our analyses confirmed the findings of other studies that patient satisfaction is associated with the respondent characteristics such as age, education level and health status. The finding that patients who underwent surgery were more satisfied than those who did not is also in line with the results of another study carried out in Magdeburg, Germany [21]. Age was highly significantly related to patient satisfaction. Many other studies have found that younger patients are less satisfied than older almost regardless of culture, country

Table 3 Relationship between satisfaction and patient characteristics stratified by age group

	Age 20–64 years			Age 65 years and older		
	Total cases per alternative	Satisfied patients (%)	<i>P</i> -value* for difference in PS	Total cases per alternative	Satisfied patients (%)	<i>P</i> -value* for difference in PS
Emergency care or not ^a						
No (0)	3802	71.4		1665	85.5	
Yes (1)	992	53.8	<0.001	522	72.9	<0.001
Surgery operation or not						
No (0)	4254	66.1		1914	81.4	
Yes (1)	652	77.6	<0.001	425	88.0	0.002
Sex						
Women (0)	3118	66.9		1187	82.0	
Men (1)	1788	68.8	0.124	1152	83.4	0.339
Origin of birth ^b						
Sweden (0)	4457	68.5		2211	83.2	
Other country (1)	433	57.5	<0.001	121	73.3	0.002
Educational level						
<12 years (1)	1052	74.3		1257	85.2	
At least 12 years (2)	2207	65.3		611	79.9	
15 years or more (3)	1647	66.4	<0.001	471	79.5	<0.001
Health status						
Fair or poor (0)	1775	61.8		1161	78.3	
Good (1)	1443	68.3		800	85.4	
Very good or excellent (2)	1688	72.8	<0.001	378	89.7	<0.001
Living area						
Rural (0)	1889	71.9		932	83.6	
Urban (1)	3017	65.0	<0.001	1407	82.1	0.326
Living condition (alone or not) ^c						
Not alone (0)	3694	68.5		1556	83.2	
Alone (1)	1123	64.7	0.011	727	82.5	0.637
Sick-leave/disability pension ^d						
No (0)	3665	68.1		—	—	
Yes (1)	1227	66.0	0.148	—	—	Not relevant
Internet as a source of information						
No (0)	2932	70.0		2087	83.4	
Yes (1)	1974	63.9	<0.001	252	76.2	0.002
Other patients/persons as source of information						
No (0)	4394	68.0		2154	82.8	
Yes (1)	512	63.8	0.123	185	81.1	0.162

^{a,b,c}Missing values for 264, 23 and 145 patients, respectively. ^dThere were 14 missing values in the younger age group. Satisfied patients score 8–10 on the GS scale that range from 2 to 10. **P*-value based on χ^2 test.

or the type of health-care organization; for example, in Saudi Arabia [11], Norway [10], Sweden [9] or the USA [4, 5, 8].

In the present study, men and women tended to have similar levels of global satisfaction, and all gender differences vanished when we controlled for the other factors, a result that is confirmed by other studies. Our findings also show that patients who retrieved health information via the Internet were less satisfied than those who did not seek such information. The seeking behaviour is to some extent related to global satisfaction and not only a result of that the use of the Internet is more common among younger people

compared with older, although this relation diminished when the quality factors were entered into the regression.

Global patient satisfaction is influenced by several quality dimensions. Most previous articles have taken into account only one or two quality aspects, while this study focuses on several quality aspects with the aim of obtaining a broader perspective and discriminating between the influences of the different factors. Interesting to note is, for instance, that emergency care *per se* was not a significant predictor for (lower) patient satisfaction in the final regression, even though the initial analysis showed that patients in emergency

Table 4 Linear regression solutions and partial correlation coefficients for respondent and patient characteristics among patients 20 years or older

Variable	B	t-value	Prob.	Partial corr.
Age (continuous)	0.03	16.65	<0.001	0.204
Emergency care (1) or not (0)	-0.74	-13.00	<0.001	-0.161
Health status	0.35	12.12	<0.001	0.150
Educational level	-0.16	-5.25	<0.001	-0.066
Internet as a source of information	-0.22	-4.18	<0.001	-0.052
Origin of birth	-0.30	-3.56	<0.001	-0.045
Other patients/ persons as a source	-0.22	-2.91	0.004	-0.036
Living area	-0.13	-2.75	0.006	-0.034
Surgery operation (1) or not (0)	0.15	2.37	0.018	0.030
Sex	-0.03	-0.56	0.575	-0.007
Living condition (alone 1, or not 0)	-0.03	-0.56	0.578	-0.007
C1	0.20	2.05	0.040	0.026
C2	0.41	2.06	0.039	0.026
C3	0.50	3.86	<0.001	0.048
C4	0.22	2.14	0.032	0.027
C5	-0.21	-1.70	0.089	-0.021
C6	0.32	1.16	0.245	0.015
C7	0.34	2.97	0.003	0.037
C8	0.11	1.18	0.238	0.015
C9	0.06	0.61	0.545	0.008
C10	0.06	0.42	0.673	0.005
C11	0.01	0.07	0.946	0.001

Adjusted R²: 0.135

The dependent variable is the global PSI score.

Care had the lowest ratings on global satisfaction among both young and old patients. Instead, the dissatisfaction among patients in emergency care can in many cases be explained by long waiting times at the reception combined with little or no personal information from the staff about what, or when, something will happen. Improving the provision of information to the patients thus becomes a suitable quality target for emergency units.

There are at least two interpretations of the association between global satisfaction and the response rate. First, there is a larger response rate from older patients and they tend to give higher global satisfaction scores than younger patients. There was also a correlation between the average global satisfaction score for each medical centres and the response rate from their patients in the same direction, with a larger proportion of satisfied patients at centres with high response rates and vice versa. A great variation in response rates from patients from different medical units has also been noted in another study [16]. According to our results, it appears that

Table 5 Linear regression solutions and partial correlation coefficients for respondent/patient characteristics and quality dimensions

Variable	B	t-value	Prob.	Partial corr.
Age (continuous)	0.01	7.31	<0.001	0.099
Education	-0.08	-3.62	<0.001	-0.049
Health status	0.07	3.57	<0.001	0.048
Surgery operation (1) or not (0)	0.14	3.17	0.002	0.043
Origin of birth	-0.14	-2.31	0.021	-0.031
Other patients/ persons as a source	-0.07	-1.37	0.171	-0.019
Internet as a source of information	-0.05	-1.31	0.190	-0.018
Living condition (alone or not)	0.05	1.31	0.191	0.018
Living area	-0.04	-1.30	0.194	-0.018
Sex	0.01	0.44	0.658	0.006
Emergency care (1) or not (0)	0.00	0.03	0.977	<0.001
Expected help (1-5)	0.47	23.58	<0.001	0.305
Treated well by the doctor (1-5)	0.50	18.89	<0.001	0.248
Waiting without information why (1)	-0.69	-13.86	<0.001	-0.185
Participation in the decision (1-5)	0.24	13.80	<0.001	0.184
Enough time with the doctor (1-5)	0.19	9.23	<0.001	0.124
Clear medical information (1-5)	0.14	5.46	<0.001	0.074
Waiting with information why (1)	-0.13	-2.47	0.014	-0.034
C1	0.05	0.71	0.478	0.010
C2	0.22	1.60	0.109	0.022
C3	0.21	2.03	0.043	0.028
C4	0.10	1.42	0.155	0.019
C5	-0.05	-0.54	0.592	-0.007
C6	0.24	1.30	0.193	0.018
C7	0.07	0.84	0.399	0.011
C8	0.01	0.21	0.832	0.003
C9	-0.02	-0.23	0.821	-0.003
C10	0.17	1.56	0.118	0.021
C11	-0.08	-1.12	0.262	-0.015

Adjusted R²: 0.643

The dependent variable is the global PSI score.

the non-respondents are overrepresented in groups with lower patient satisfaction than average. This suspected underrepresentation of less satisfied patients bias the outcome of average global satisfaction in a positive direction but do not necessarily bias the outcome in the regression analyses.

Secondly, the pattern of response rates regarding age groups has been stable in all previous patient studies in the

county done in the last decade, and the pattern of response rates regarding the medical centres appear also to be quite stable over the years. This means that further studies with similar design may show a similar pattern regarding respondents and non-respondents.

In the literature, most studies of the association between patient satisfaction and quality dimensions have been on specific specialities/wards. This micro approach is valuable for targeting policy measures locally, or addressing particular issues, but we believe that a broader perspective on the common determinants of patient satisfaction is necessary if patient surveys are to become an efficient policy tool on the national level. Our results provide an overall and generalized picture of the patient satisfaction in a complete Swedish hospital setting, including all specialities, and we have thus been able to identify a set of common respondent characteristics and quality factors that are associated with global patient satisfaction in out-patient hospital care. Further scientific studies including larger data sets or even national data from Sweden or other countries may shed more light on this topic.

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