Patient Satisfaction in Urology: Effects of Hospital Characteristics, Demographic Data and Patients' Perceptions of Received Care

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Purpose: To identify factors that are significantly associated with patient satisfaction in urology and to assess the extent to which satisfaction ratings might be related to hospital and patient characteristics.

Materials and Methods: Data used in this study were obtained from 1040 randomly selected urology patients discharged from nine hospitals who responded to a mailed survey. Bivariate and multivariate techniques were used to reveal relations between patient assessments of received care, hospital and patient characteristics.

Results: Bivariate analysis showed a strong association between satisfaction scores and length of stay, provider status, work load of nurses and hospital size, with weaker findings pertaining to type of hospital (teaching versus non-teaching) and patient demographics. The multivariate analysis identified nine variables which are associated with overall satisfaction. Strong factors were treatment outcome, the interpersonal manner of medical practitioners and nurses, as well as hotel aspects like accommodation and quality of food. Variables reflecting information receiving about the undergoing treatment were not found to have a significant influence on patient satisfaction.

Conclusion: This study identified variables that are related to satisfaction in a urological setting and delivers information about aspects of the hospital stay that are not perceived as relevant by patients. These findings support healthcare professionals with valuable information to meet needs and preferences of patients in urology.

Keywords: hospitals; standards; professional-patient relations; quality improvement; medical staff; patient care team; patient satisfaction; hospital costs.

INTRODUCTION

The assessment of patient satisfaction as a complement to other health care quality measures has gained increased recognition in a variety of settings and is viewed as a quality indicator for many health problems.[1,2] Patients provide a unique opportunity to supply healthcare professionals with valuable information about specific areas in which care could be improved and in which care excelled that cannot be obtained from any other source.[1,3]

In urology, patient satisfaction data is particularly salient since only a minority of urology patients, for a variety of reasons, seek medical attention,[4] which may negatively affect health-related quality of life and psychological wellbeing.[5,6] However, studies conducted in urology and other healthcare contexts point to a significant association between patients' treatment-seeking behavior and positive or negative experiences with their illness and satisfaction with received care.[4,7] Therefore, information about which aspects of health services contribute most to increase satisfaction can be helpful to improve the quality of care.

Patient satisfaction is a multidimensional concept which is not yet fully defined.[8] Part of that concept are patients' perceptions of health service quality and aspects which are not under the control of healthcare professionals such as various hospital characteristics like teaching status and size[9,10] as well as patient demographics.[11] Study results further indicate that factors associated with satisfaction also vary according to setting,[12,13] which implies results cannot easily be generalized to urology.

However, in an increasingly competitive market environment with many choices for patients, it is important for healthcare professionals in urology to understand whether factors associated with patient satisfaction are alterable by allocation of resources or whether variables that are outside the control of healthcare organizations are the most influential determinants. This information can be used to adjust for such factors when comparing the performance of individual physicians or hospitals based on patient satisfaction data. Therefore, the objective of this study was to identify factors that are significantly associated with patient satisfaction in urology and to assess the extent to which satisfaction ratings might be related to hospital and patient characteristics.

MATERIALS AND METHODS

Patients and Setting

The study population consisted of randomly selected urology patients aged 21 years and older discharged in 2009 from 22 hospitals of a metropolitan area in Germany with a total population of approximately 1.65 million (2009). The study data was obtained through a self-administered, post-visit questionnaire. Survey participants were policy holders of four statutory health insurances, which together have a market share of approximately 80% of the area's total population (2009). Contact to participants was established by their health insurance rather than by the hospitals which rendered the services in order to avoid a selection of patients. Participation was completely anonymous and voluntary. The study has been performed in accordance with the ethical standards laid down in the Declaration of Helsinki. Surveys were accompanied by a cover letter informing the participants about the purpose, voluntary nature and anonymity of the study and their consent to participation when sending back the questionnaire.

A total number of 3200 post-paid surveys were distributed; 1240 were finally completed, resulting in an initial response rate of approximately 39%. Hospitals were excluded from the data set if number of respondents fell below 30; patients were excluded if they did not answer the question concerning overall satisfaction and failed to answer more than 25% of the items. In total, 1040 questionnaires from patients of nine hospitals were analyzed, resulting in a net response rate of approximately 33%.

Measures

Patient satisfaction, socio-demographic data and visit characteristics were assessed using a previously validated survey comprising of 37 items.[14] Patient satisfaction concerning medical and service aspects of care were collected through 15 items using a six-point ordinal rating (very poor, poor, acceptable, fair, good and excellent). One item collected information concerning overall satisfaction with the hospital stay in general using the same six response category. Additional data collected included patients' age (categories with ten year intervals from 21 to > 80), gender, occurrence of post-discharge complications (in terms of physical complaints, pain, infections), perceived length of stay (LOS), number of prior hospitalizations and source of admission (e.g., specialist, self-admission and emergency). Hospital characteristics were abstracted from quality assessment reports hospitals are obliged to publish in Germany biennially. Characteristics included hospital size as the number of beds (< 400, 400-799 and ≥ 800), teaching status (teaching versus non-teaching), provider status (public, non-profit, for-profit), and work load as the number of patients per medical practitioner and per nurse (full-time), per year.

Statistical Analysis

Descriptive statistics and frequencies were computed. For data analyses, the highest ratings were coded with '6' and the lowest with '1'. The level of significance was set at $P \leq .05$ throughout the study. Data was analyzed using the statistical package for the social science (SPSS Inc, Chicago, Illinois, USA) version 19.0.

Bivariate Analyses

The distribution of the satisfaction scores was skewed toward higher satisfaction, which is why non-parametric tests were performed. General associations between overall satisfaction and hospital and patie characteristics were investigated with X^2-tests, Fisher's exact test in case cell counts were small, and Kruskal-Wallis tests with bonferroni adjustments in case of multiple comparisons. For the purpose of data analysis, the work load per medical practitioner and per nurse was categorized into the two groups high and low work load ('high' ≙ above median of analyzed hospitals and 'low' ≙ below median), respectively. Mann-Whitney *U* tests were used for all patient perceptions variables. For that purpose, variables were dichotomized (median split). Since

patients may report greater satisfaction than they actually feel,[7] the two highest ratings ('excellent' and 'good') were considered satisfied, whereas ratings of 'fair' to 'very poor' were considered dissatisfied.

Multivariate Analysis

For the multivariate analysis, stepwise backward logistic regression was performed using all variables significant at $P \leq .05$ level in bivariate analyses as predictors of patients' overall satisfaction. The bivariate screening was performed due to the limited sample size in order to create sparse models with a small number of degrees of freedom. As for the bivariate analyses, the dependent variable was dichotomized into 'fair/acceptable/poor/very poor' versus 'excellent/good'. For the purpose of the logistic regression, missing data of the performance of care measures were substituted with the average rating of the respective item in the questionnaire in order to have the largest possible set of data.

RESULTS

The majority of the study sample was male, aged 71-80, and reported 1-2 hospitalizations within the prior five years. About 78.7% of all subjects were admitted by a specialist, approximately 10.3% were sent to hospital by their general practitioner, and 7.6% because of emergency. Approximately 75% of the sample assessed LOS to be appropriate, about 8% perceived their hospital stay to be too short and 4.5% to be too long. A minority of respondents (14.1%) reported post-discharge complications. Most of the institutions were teaching hospitals with public providers and a capacity of 400-799 beds (**Table 1**).

In total, 905 (85%) patients rated their complete hospital stay either 'excellent' or 'good' (grouped median: 5.13). Patients were most satisfied with kindness of the hospitals' nurses (5.46) and medical practitioners (5.43), followed by 'cleanliness' (5.36). The lowest scores related to 'discharge procedures and instructions' (4.82) and 'clear information about medication' (4.92) (**Table 2**).

All 15 performance of care measures were statistically significantly ($P < .001$) related to patients' overall satisfaction in the bivariate analyses (**Table 2**). The patient characteristics perceived LOS and occurrence of complications as well as the hospital characteristics provider status, work load per nurse, and hospital size were also associated with the dependent variable ($P < .001$) (**Table 1**). Service users who perceived their hospital stay as appropriate were more satisfied (5.25) than patients who judged their hospital stay as too short (4.71), too long (4.58), or could not judge (4.72). Patients reporting post-discharge complications were less satisfied (4.68) than patients without (5.19). For-profit providers received slightly higher scores (5.35) than non-profit (5.28) or public (5.06) hospitals. Patients hospitalized in clinics with a lower work load per nurse were more satisfied (5.17) than patients in hospitals with a higher work load per nurse (5.03). The most satisfied patients were those hospitalized in clinics with less than 400 beds (5.28) and 400 to 799 beds (5.21), while study participants treated in hospitals with more than 800 beds were least satisfied (4.98). Hospital teaching status, work load per medical practitioner, source of admission, number of prior hospitalizations, age, and gender were not statistically significantly related to patients' overall satisfaction rating (**Table 1**).

The multivariate analysis identified nine variables which are associated with overall satisfaction (**Table 3**). The strongest factors were: the degree to which the patient was satisfied with treatment outcome [odds ratio (OR): 5.13], kindness of nurses (OR: 3.46) and medical practitioners (OR: 3.33), followed by individualized medical care (OR: 1.95), accommodation (OR: 1.90) and quality of food (OR: 1.87). Variables reflecting information receiving such as the quality of instructions given to the patient (e.g., clear information about medication or undergoing operations) were not included in the regression model. The patient (perceived LOS, complications) and hospital characteristics (provider status, work load per nurse and hospital size), statistically significantly related to the dependent variable in the bivariate analyses, were also excluded.

DISCUSSION

This study identified nine predictors of overall satisfaction of the hospitalization in urology, which partially differ from other settings. Findings indicate that variables which are under the control of healthcare organizations have greater impact on satisfaction than patient demographic data and hospital characteristics.

Effects of Patient Assessments

Findings of prior studies highlighted the essential role of communication between hospital staff and patients in various settings and its contribution to satisfaction.[7,15,16] The results of the present study concur with these findings. The interaction between medical practitioners, nurses and patients had highly positive effects on overall satisfaction with the hospital stay. The results of this study also highlight the importance of providing comprehensible information at home after discharge. Yet, the intensity of the relation was rather small in comparison to the other variables in the regression model as also found by other studies.[15,17] Organization of the admitting procedure formed another predictor. A smoothly running admission by which the patient feels guided through the initial stages apparently has positive effects on satisfaction. Study findings show that some hotel aspects of care are influential attributes on patients' overall satisfaction in urology. A potential explanation for the relevance of quality of food and accommodation could be that patients look for surrogate indicators of treatment they are able to judge to measure their own satisfaction.[18] Authors underlined that patients want to feel informed about tests, procedures and operative processes.[16,19] However, results of this study only partly agree on these findings. Although patients were highly satisfied with information about anesthesia and operations, the analysis shows a rather weak association with overall satisfaction. However, these findings do not necessarily indicate that the feeling of being well informed is not an essential aspect of satisfaction, but perhaps patients were not able or did not feel qualified to judge whether the received information was appropriate. For example, prior studies revealed a

Table 1. Relation between patient and hospital characteristics of the study sample and overall patient satisfaction (n = 1040).

Variable	Patients no. (%)	Satisfaction Ratings*	*P* Value
Gender	714 (100)		.105[a]
Male	616 (86.3)	5.12	
Female	98 (13.7)	5.10	
Missing cases	326	-----	
Age (year)	1040	-----	.066[b]
21-30	36 (3.5)	4.79	
31-40	27 (2.6)	5.10	
41-50	59 (5.7)	5.13	
51-60	125 (12.0)	5.07	
61-70	348 (33.5)	5.10	
71-80	370 (35.6)	5.19	
> 80	75 (7.2)	5.22	
Missing cases	0	-----	
Quantity of hospitalizations**	1014 (100)	-----	.267[b]
1-2	627 (61.8)	5.14	
3-5	286 (28.2)	5.09	
> 5	101 (10)	5.16	
Missing cases	26	-----	
Source of admission	1040 (100)	-----	.822[c]
Specialist	819 (78.8)	5.11	
General practitioner	107 (10.3)	5.13	
Emergency	79 (7.6)	5.17	
Self-admission	25 (2.4)	5.26	
Transfer from another clinic	10 (1)	5.56	
Missing cases	0	-----	
Perceived length of stay	1026 (100)	-----	< .001[c]
Appropriate	768 (74.9)	5.25	
Too short	82 (8.0)	4.71	
Too long	46 (4.5)	4.58	
Do not know	130 (12.7)	4.72	
Missing cases	14	-----	
Occurrence of complications	1019 (100)	-----	< .001[c]
Yes	144 (14.1)	4.68	
No	875 (85.9)	5.19	
Missing cases	21	-----	
Number of Beds	1040 (100)	-----	< .001[b]
< 400	183 (17.6)	5.28	
400-799	392 (38.0)	5.21	
≥ 800	462 (44.4)	4.98	
Provider status	1040 (100)	-----	< .001[c]
For-profit	87 (8.4)	5.35	
Non-profit	183 (17.6)	5.28	
Public	770 (74.0)	5.06	
Teaching status	1040 (100)	-----	.061[c]
Teaching	903 (86.8)	5.11	
Non-teaching	137 (13.2)	5.22	
Work load per nurse	1040 (100)	-----	
High	396 (38.1)	5.03	< .001[a]
Low	644 (61.9)	5.17	
Median (range)	101 (55-132)	-----	
Work load per medical practitioner	1040 (100)	-----	.321[a]
High	721 (69.3)	5.11	
Low	319 (30.7)	5.13	
Median (range)	244 (180-327)	-----	

[a] Mann-Whitney *U* test. b Kruskal-Wallis test. c Chi-squared test. * Grouped median.
** Within the prior five years.

considerable lack of knowledge on the part of the patient (e.g., relating to the operation or anesthetic).[20,21] Therefore, healthcare professionals should attach importance to the provision of comprehensible information about the different aspects of treatment.

Effects of Patient Characteristics

Study findings regarding the magnitude and direction of patient characteristics on assessment scores are often equivocal and sometimes contradictory; prior research also implies setting-related differences. In the investigated sample, demographic variables were found to be unrelated to patients' overall satisfaction, which is consonant with other studies in urology.[22,23] Occurrence of complications and LOS showed relations with overall satisfaction in the bivariate analysis.

Table 2. Satisfaction ratings of single items.

Satisfaction Measure*	All Patients**	Satisfied Patients†	Dissatisfied Patients‡
Organization of admitting procedure	5.23	5.32 (544)	4.50 (289)
Medical practitioner's knowledge of patient anamnesis and pathogenesis	5.21	5.28 (473)	4.53 (257)
Clear reply of inquiries by medical practitioners	5.23	5.33 (543)	4.52 (266)
Individualized medical care	5.19	5.33 (559)	4.02 (203)
Clear information about undergoing operations	5.36	5.46 (513)	4.59 (250)
Clear information about anesthesia	5.40	5.47 (486)	4.89 (299)
Clear information about medication	4.92	5.04 (432)	4.14 (227)
Organization of procedures and operations	5.09	5.21 (527)	4.13 (229)
Discharge procedures and instructions	4.82	4.98 (525)	3.45 (195)
Kindness of the nurses	5.46	5.55 (551)	4.79 (228)
Kindness of the medical practitioners	5.43	5.54 (559)	4.52 (212)
Accommodation	5.15	5.25 (548)	4.44 (290)
Cleanliness	5.36	5.42 (543)	4.82 (313)
Quality of food	5.03	5.12 (543)	4.38 (315)
Treatment outcome	5.27	5.41 (562)	4.06 (192)

* Differences between satisfied and dissatisfied patients were significant. $P < .001$ Mann-Whitney U test.
** Grouped Median.
† Overall satisfaction of excellent and good; Grouped Median (Mean Rank).
‡ Overall satisfaction of fair, acceptable, poor and very poor; Grouped Median (Mean Rank).

Patients reporting complications (e.g., physical complaints, pain and infections) and those perceiving their hospital stay as too long were significantly less satisfied. While other studies also show that patients experiencing a longer visit length have a tendency to be more dissatisfied than patients with shorter visits.[13,24] Borghans and colleagues found no evidence that LOS affects patient satisfaction ratings.[25]

Effects of Hospital Characteristics

The conducted study found a rather weak influence of hospital characteristics on overall satisfaction ratings in comparison to performance of care measures. Although hospital size, work load per nurse and provider status were statistically significantly associated with patient perceptions in bivariate analyses, this association faded when performing the multivariate logistic regression. Study findings indicate that patients staying in for-profit hospitals with less than 400 beds tend to yield slightly better overall satisfaction ratings. As regards the effect of hospital size several studies found patients to be more dissatisfied in larger hospitals.[10,26] Prior research suggests that work load has only

Table 3. Factors associated with overall satisfaction of the hospital stay (logistic regression).

Variables	Odds Ratio (95% CI)	*P* Value
Treatment outcome	5.13 (3.39-7.79)	< .001
Kindness of the nurses	3.46 (2.05-5.84)	< .00
Kindness of the medical practitioners	3.33 (2.01-5.51)	< .001
Individualized medical care	1.95 (1.35-2.80)	< .001
Accommodation	1.90 (1.31-2.76)	< .001
Quality of food	1.87 (1.35-2.60)	< .001
Discharge procedures and instructions	1.53 (1.12-2.59)	.008
Organization of procedures and operations	1.72 (1.16-2.56)	.007
Organization of admitting procedure	.46 (1.05-2.03)	.024

Abbreviation: CI, confidence interval.
Statistics model: Nagelkerke-R^2 = 0.74; X^2 Hosmer-Lemeshow Goodness-of-fit-statistic = 3.858,8 df, P = .87; 94.6% of cases were correctly classified.

a minor effect on patient assessments.[12,28] The conducted study mainly corresponds to those findings. Teaching status was not related to overall satisfaction which is consonant with findings of other research.[10,26] Conversely, Finkelstein and colleagues examining data of gynecology patients and Brédart and colleagues examining data of hospitalized cancer patients reported higher satisfaction scores among patients in non-teaching hospitals.[9,26]

Study Limitations

In interpreting the study findings, several methodic limitations must be acknowledged. First, as the baseline characteristics of non-respondents were not available, it is not possible to evaluate differences between respondents and non-respondents and its potential impact on patient assessments of received care and services. Relating to this, literature reports inconsistent findings. While a study conducted by Rubin suggest that respondents might evaluate care better than non-respondents,[29] Ware and Davies reported that those who were satisfied with the quality of care were more likely to not respond.[30] However, Lasek and colleagues found that the impact of non-response bias on satisfaction surveys of hospitalized patients might be relatively small.[31] Due to these ambiguous results, a limitation of the study findings caused by response bias due to the net response rate of 33% cannot be excluded. Second, a sample of patients from nine hospitals of one geographical area in Germany was analyzed. The number of institutions might limit the study results according to the effect of hospital characteristics. The generalizability of the findings to other regions or areas outside Germany, particularly those that differ according to hospital characteristics, remains to be established. Third, due to the fact that the majority of participants were satisfied, as in most patient satisfaction studies, the cell sizes for dissatisfied patients for some variables were very small. These unbalanced cell sizes may have negatively influenced the statistical analysis. However, the R^2 statistic indicates that the regression model is useful in predicting patient satisfaction and the Hosmer-Lemeshow test shows that the model adequately fits the data.

CONCLUSION

Findings indicate that subjective experiences of received care and services of patients have greater impact on overall satisfaction than hospital and demographic characteristics, variables which cannot be substantially influenced by health care professionals. Specifically the patients' evaluation of treatment outcome, assessment of communication with hospital staff, organizational aspects such as the organization of operations, and the perception of hotel aspects has strong predictive utility for overall satisfaction. Variables predicting satisfaction found in this study can be altered through optimization of service processes and, therefore, should be focused on to increase patients' evaluation of received care in urology.

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CONFLICT OF INTEREST

None declared.

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