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The relationship between hospital patients' ratings of quality of care and communication

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Abstract

Objective. To assess the relationship between hospital patients' quality of care ratings and their experiences with health-related information exchanges and communication during hospitalization.

Design. Cross-sectional multivariate dimensional analysis of data from a quality of care experience questionnaire of hospital patients comparing scores across three levels of reported satisfaction.

Setting and participants. Five thousand nine hundred and fifty-two patients from a Swiss University Hospital responded to the questionnaire at discharge during 2010.

Main outcome measures. Survey questions measuring patients' evaluation of quality of care, patient loyalty and overall satisfaction.

Results. Different levels of reported satisfaction are associated with differing experiences of health-related information and communication during a hospital stay.

Conclusions. Patients who report lower satisfaction appear to attribute to the hospital staff enduring negative dispositions from behaviours that may be due to specific situational contexts. Negative experiences appear to influence scores on most other communication and information domains. Patients who report higher satisfaction, in contrast, appear to differentiate negative experiences and positive experiences and they appear to relativize and compartmentalize negative experiences associated with their hospital stay.

Keywords: patient satisfaction, measurement of quality, hospital care, setting of care

Introduction

A patient's evaluation of the quality of a hospital, its staff and medical treatment is affected by a variety of factors such as health outcomes, unmet expectations and socio-demographic characteristics. Previous research has focused on indicators relating to satisfaction and quality of care, although it remains unclear whether the factors leading to satisfaction also lead to dissatisfaction. Communication is one prominent factor that is consistently linked to patient satisfaction and evaluation of quality of care.

Communication, the sharing of meaningful information between two parties in an empathetic manner, is an important antecedent to patients' experiences, satisfaction, involvement and cooperation in the health care process [1–3]. In the health context, doctors' communication style affects not only patients' involvement in health care but also experience and satisfaction with care and intentional loyalty. Communication between health-care providers and patients has three purposes: exchanging information, arriving at treatment-related decisions and establishing positive interpersonal relationships [2]. A growing body of research covers communication styles [4, 5]. This research has led to recommendations about sharing of information and concerns, establishing partnerships between patients and care providers, considering the patients' emotional state and social environment and fostering mutual participation [4]. Patient-centred communication is associated with numerous positive outcomes, including higher levels of satisfaction and ameliorated health-related symptoms [6]. Overall, empirical evidence indicates that patients report higher levels of satisfaction when they perceive being treated with dignity and when they participate in treatment decisions [7, 8]. Next to efficiency of care or access to nurses and doctors, patients also value communication and information when evaluating quality of care [9].

Researchers debate whether a patient's level of satisfaction drives his or her quality of care evaluations or whether the

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experience of high-quality care increases satisfaction levels [10, 11]. Some argue that confirmation of expectations drives the evaluation of quality and that meeting expectations determines satisfaction [9]. This is in line with research traditions in the social sciences, where satisfaction was found to be linked with both (person-related) and (situation-related) aspects [12].

Satisfaction and dissatisfaction may not be caused by the same set of factors. The two-factor theory by Herzberg [13] was the first to propose that satisfaction and dissatisfaction are caused by different factors: some predictors may lead to satisfaction, while their absence may not lead to dissatisfaction; different predictors may lead to dissatisfaction, while their absence may not lead to satisfaction. Richter *et al.* [14], applying the Kano model [15], an elaboration of the two-factor theory, found that minimum quality expectations such as physicians' medical knowledge and available infrastructure for patients are taken for granted and lead to dissatisfaction when not fulfilled, yet they do not contribute to satisfaction, if present. Criteria such as features of hospital organization are associated with satisfaction, but do not lead to dissatisfaction, if absent [14, 15].

Generally, a positive experience and satisfaction is more easily expressed and assessed than dissatisfaction, primarily due to social desirability and evaluation apprehension [16–18]. Attree [19] demonstrated that patients who evaluate the quality of care poorly find it harder to give examples that support their evaluation, compared with patients who are satisfied. Some researchers have found that patients do not complain, even if they have reasons to do so [19, 20], while others report patients to complain in several areas such as lack of emotional support, respect and inadequate physical comfort [21, 22]. It seems that patients who are generally satisfied with their health-care treatment are nevertheless able to report on experienced problems during their hospital stay [22].

We are unaware of prior studies assessing the relationship between reported satisfaction with care and reported experiences with care. The findings from Attree [19], Jenkinson *et al.* [22], the two-factor theory [13] and the empirical application of Kano's model in a hospital context [14] suggest that satisfied and dissatisfied patients might differ in their evaluation of hospitals' quality of care.

The present study investigates, first, the structure of communication and information-related experiences and, secondly, how self-reported communication and information experiences during a hospital stay are associated with overall satisfaction evaluation and loyalty. We analyse the structure of communication and information experiences between three satisfaction levels of patients: satisfied, neither satisfied nor unsatisfied, and unsatisfied.

Method

Participants

At discharge between July and December 2010, all patients from the University Hospital Basel (USB) received a questionnaire assessing their health-care experiences. Patients completed the questionnaire at home and returned it to the USB. After 4 weeks, reminders were sent to those who failed to return the questionnaires. Data were available from 5952 of the 14 826 in patients. A logistic regression analysis of non-response revealed that patients who returned the questionnaire were older ($\beta = 0.02$, $P < 0.001$), scored lower on comorbidity ($\beta = -0.09$, $P < 0.001$) and had a shorter length of stay ($\beta = 0.02$, $P < 0.05$). Of the patients who filled in the questionnaire, 3104 (52.2%) were female, and the median age was 61, ranging from 13 to 98.

Measures

Quality of care was assessed with the German-language version of the Picker Patient Experience 15-Item questionnaire (PPE-15; 24), which was chosen by hospital management to assess the hospital's quality of care. This questionnaire is also part of a national strategy to compare hospitals and to evaluate patient experience annually. PPE-15 measures patients' subjective experience of care during their hospital stay. Each question concerns a potential problem during the hospital stay. The 15 items are scaled on a three-point ordinal scale (1: yes, often; 2: yes, sometimes; 3: no). The overall score is usually calculated based on the percentage of problems reported (after dichotomizing the items by summarizing response options 1 and 2). Occasionally, 'not applicable' PPE-15 responses are recoded by researchers as if the patients did not experience the problem associated with the question item. However, this leads to an underrepresentation of experienced problems and an overestimation of satisfaction. In our study, 'not applicable' responses were coded as missing.

Good internal consistencies were reported for PPE-15 [23]; it was $\alpha = 0.80$ for our data.

Attitudinal loyalty and overall satisfaction. Patients also answered an attitudinal loyalty question by indicating if they would return to the hospital for the same problem ('Would you come again for the same disease/a birth to be treated in our hospital?'; from 1: absolutely not to 4: definitively yes). Finally, patients rated their overall evaluation of care ('How do you rate the quality of treatment you were given in general?'; from 1: poor to 4: excellent) [24].

Analogous to other researchers in the field [e.g. 22, 25], we consider both items as satisfaction indicators.

Analytic strategy

Factor analysis was used to assess differences in patient experiences of information and communication patterns between three satisfaction levels. This was achieved in three steps: first, we investigated the correlation patterns of overall quality and loyalty with PPE-15 items to explore the communication and information experiences of patients who reported different levels of satisfaction. Items 10a (experience of pain) and 6 (patient's involvement) were excluded from our analyses for two reasons: even though communicating about pain or one's involvement in treatment decisions are related to information and communication, PPE-15 assesses whether patients experienced pain or whether they felt involved. Therefore, they may be indirectly associated

with communication strategies and information practices but they are not indicators of communication and information exchange. Secondly, we defined three satisfaction levels based on patients' reports on overall satisfaction and attitudinal loyalty (satisfied, neither satisfied nor unsatisfied, and unsatisfied). Finally, we conducted a separate exploratory factor analyses (EFA) for each group in order to explore the differences in response patterns among the three satisfaction groups and to identify the factor structure associated with each satisfaction level. For each group, we conducted principal axis factoring with oblique rotation to extract factors from the Spearman's correlation matrix. We used eigenvalue-greater-than-one criterion, screeplot interpretation and interpretability of the factor structure to find the best factor solution for each satisfaction group.

Results

Correlations between PPE-15 and satisfaction

Table 1 shows means and standard deviations for PPE-15, as well as Spearman's rank correlation coefficients (r_s) between PPE-15 items and overall quality evaluation and loyalty. We found significant correlations between each of the PPE-15 items and both overall quality and loyalty. This implies that all communication and information items were meaningfully related to an overall satisfaction assessment of quality and loyalty. With the exception of item 5 (experience of being ignored by doctors), all items correlated within a range of $r_s = 0.25$ ($P < 0.001$) and $r_s = 0.46$ ($P < 0.001$) with overall satisfaction and loyalty.

Table 1 Mean, standard deviations and Spearman's correlation coefficients for PPE-15 items and overall quality of care and attitudinal loyalty, sorted for correlation coefficient rank in descending order ($n = 5916$)

	Mean	Standard deviation	Overall quality of care	Attitudinal loyalty	Rank with overall quality of care	Rank with attitudinal loyalty
9. Not easy to find someone to talk about concerns	1.51	0.68	−0.46***	−0.43***	1	1
12. Family not given information needed to help recovery	1.45	0.67	−0.41***	−0.40***	2	3
7. Not always treated with respect and dignity	1.13	0.40	−0.38***	−0.41***	5	2
11. Family did not get opportunity to talk to doctor	1.47	0.68	−0.38***	−0.37***	4	4
8. Nurses did not discuss anxieties and fears	1.49	0.64	−0.39***	−0.35***	3	7
1. Nurses' answers to questions not clear	1.17	0.40	−0.36***	−0.36***	8	5
4. Doctors did not discuss anxieties and fears	1.40	0.61	−0.37***	−0.34***	7	8
2. Doctors' answers to questions not clear	1.17	0.41	−0.35***	−0.35***	10	6
10b. Staff did not do enough to control pain	1.18	0.45	−0.35***	−0.32***	9	10
15. Not told about danger signals to look for at home	1.61	0.80	−0.33***	−0.31***	11	11
13. Purpose of medicine not explained	1.29	0.57	−0.28***	−0.28***	13	12
14. Not told about medication side effects	1.96	0.89	−0.31***	−0.28***	12	13
3. Staff gave conflicting information	2.66	0.53	0.26***	0.25***	14	14
5. Doctors sometimes talk as if I wasn't there	2.90	0.36	0.17***	0.18***	15	15

Note: overall quality of care: $M = 3.63$, SD = 0.62; Loyalty: $M = 3.47$, SD = 0.63.
***$P < 0.001$.

Ranking correlation coefficients according to their strength of association with quality and loyalty indicators, we found the strength of association for both items to be similar. This implies that most of the 15 information and communication experiences contributed similarly to an overall satisfaction assessment. Furthermore, the problems patients experienced had an effect on the evaluation of quality of care and loyalty. Concerning overall satisfaction, patients indicated that having opportunities to talk to someone (item 9), opportunities for family to obtain information (items 11 and 12) and feeling treated with dignity and respect (item 7) were the most important. However, overall satisfaction was only weakly related to feeling ignored (item 5), conflicting information given by staff (item 3) and medical information (items 13–15).

The two quality items (overall quality of care and loyalty) were significantly correlated with each other ($r_s = 0.55$, $P < 0.001$). Based on this Spearman's rank correlation coefficient and the similar order of correlation coefficients between PPE-15 items, we calculated the mean of overall satisfaction and loyalty. We then assigned patients to three groups according to their satisfaction with care, using the upper and lower tertile as cut-off values, leading to different sample sizes for the three groups. A tripartite division allowed making a clear distinction between the satisfied and the unsatisfied and to explore whether the middle group (neither satisfied nor unsatisfied), perceived health-related communication and information experiences more similar to satisfied or unsatisfied hospital patients. The three groups were labelled 'unsatisfied' ($n = 1666$), 'mid-level satisfied' ($n = 1380$) and 'satisfied' ($n = 2870$).

Table 2 displays the descriptive information of the three groups. Mean PPE-15 factor scores were associated as expected: the highest values of PPE-15 for unsatisfied and the lowest for satisfied patients. The same pattern was observed with overall quality of care and attitudinal loyalty. The median age was 60 and 61, respectively. The unsatisfied patient group consisted of slightly more females. The other two groups showed a balanced gender distribution. Medical reasons for a hospital stay were equally frequent across the three groups: most commonly, patients were at the hospital for gynaecological treatments, cardiac catheter and spine surgery.

Table 2 Means and standard deviations of PPE-15 factor score, overall quality, loyalty and descriptive variables for each group of patients separately

	Unsatisfied patients	Mid-level satisfied patients	Satisfied patients
Factor score PPE-15[a]	40.4 (24.2)	21.8 (17.4)	11.3 (12.70)
Overall quality	2.80 (0.52)	3.19 (0.39)	4.0 (0.00)
Loyalty	2.8 (0.55)	3.8 (0.39)	4.0 (0.00)
Median age (years)	60	61	60
% female	55.8%	53.7%	50.9%
Length of stay	6.71 (6.9)	6.25 (6.3)	6.00 (5.8)
Comorbidity	2.13 (2.78)	2.23 (2.9)	2.2 (3.0)

[a]Factor score PPE-15 is calculated by adding the 15 items of PPE-15.

EFA results for unsatisfied patients

According to the eigenvalue-greater-than-one criterion, the screeplot and interpretability criteria, a four factor solution represented most suitably the response structure on health-related information and communication patterns among unsatisfied hospital patients. It accounted for 62% of the total variance. Table 3 shows the rotated factor solution for unsatisfied patients. Factor loadings of the first extracted factor ('supportive communication') revealed an underlying common factor of items related to patients' opportunities to talk about anxieties, fears and concerns with medical staff. The second factor ('medical information') had high loadings on all items that explicitly involve medical aspects such as side effects of medication. The third factor ('communication with relatives') included two high factor loadings that were related to families' opportunities to talk to medical staff. For the fourth factor ('undesirable communication'), four items referred to unclear communication and feelings of disrespect. The first and the fourth factor included items with slightly lower factor loadings and with some cross loadings, while the second and third factor consisted of high factor loadings without cross loadings (see Table 4). The oblique rotation revealed correlations between factors, ranging from $r_s = -0.34$ to $r_s = -0.47$, indicating an interdependence of factors. Considering the correlations between the factors and the relatively large number of complex variables, we conclude that unsatisfied patients not only report more negative information and communication experiences, but they do not differentiate clearly between the satisfaction domains.

EFA results for mid-level satisfaction patients

According to the eigenvalue-greater-than-one criterion, screeplot interpretation and interpretability of the factor structure, the most appropriate factor structure for mid-level satisfied patients was a five-factor solution (see Table 4), accounting for 59.6% of the common variance. The first factor ('communication with relatives') consisted of two high factor loadings, both relating to patients' family communication opportunities with medical staff. Items relating to talk about concerns, anxieties and fears with hospital staff had the highest factor loadings with the second factor ('supportive communication'). The third factor ('clarity of hospital staff communication') showed high loadings with items 1 and 2. The smaller loadings on this factor concerned items related to discussing anxieties with hospital staff and feeling ignored by doctors (item 5). Four items contributed to the fourth factor ('medical information'), which mainly related to information about medical aspects. Interestingly, the perceived respectfulness of treatment was also associated with information about medical aspects. For this group, a lack of medical information such as an insufficient explanation of purpose of medication is related to a perceived lack of respect and dignity. The fifth factor consisted of two items, both relating to potentially undesirable communication.

Table 3 Rotated factor solution for unsatisfied patients ($n = 1666$), sorted by factors

	1	2	3	4
8. Nurses did not discuss anxieties and fears	**0.71**			
9. Not easy to find someone to talk about concerns	**0.63**	0.15		
1. Nurses' answers to questions not clear	**0.51**			−0.28
4. Doctor did not discuss anxieties or fears	**0.29**		−0.26	
14. Not told about medication side effects		**0.89**		
15. Not told about danger signals to look for at home		**0.62**		
13. Purpose of medicines not explained	0.17	**0.47**		
11. Family did not get opportunity to talk to doctor			**−0.82**	
12. Family not given information needed to help recovery			**−0.79**	
5. Doctors sometimes talked as if I wasn't there				**0.70**
7. Not always treated with respect and dignity	0.23			**−0.49**
3. Staff gave conflicting information				**0.48**
2. Doctors' answers to questions not clear	0.17		−0.20	**−0.28**

Note: factor labels are (1) supportive communication, (2) medical information, (3) communication with relatives, (4) potentially undesired communication.
For simplicity, only factor loadings >0.15 are shown in Table 3–5.

Table 4 Rotated factor solution for patients reporting middle-level satisfaction ($n = 1380$), sorted by factors

	1	2	3	4	5
11. Family did not get opportunity to talk to doctor	**0.97**				
12. Family not given information needed to help recovery	**0.63**				
8. Nurses did not discuss anxieties and fears		**0.82**	−0.17		
9. Not easy to find someone to talk about concerns		**0.38**			
4. Doctor did not discuss anxieties or fears		**0.31**	0.19	−0.29	0.30
2. Doctors' answers to questions not clear		−0.16	**0.69**		
1. Nurses' answers to questions not clear		0.28	**0.41**		−0.25
14. Not told about medication side effects				**−0.67**	
15. Not told about danger signals to look for at home				**−0.52**	
13. Purpose of medicines not explained				**−0.42**	
7. Not always treated with respect and dignity				**−0.17**	
5. Doctors sometimes talked as if I wasn't there			−0.15		**0.40**
3. Staff gave conflicting information					**0.28**

Note: factor labels are (1) communication with relatives, (2) supportive communication, (3) clearness of hospital staff communication (4) medical information (and treated with respect) and (5) potentially undesired communication.

It seems that, with the exception of the first factor ('communication with relatives'), all other factors had cross loadings. Especially, item 4 (doctor did not discuss anxieties or fears) and item 1 (nurses answers to questions not clear) seemed to be related to all remaining factors. Nevertheless, correlations between factors were lower in this group: we found the average strength of association between the factors to be $r_s = 0.16$ (ranging from 0.01 to −0.27), indicating an orthogonal factor structure. It appears that the mid-level satisfied patients differentiate between different communication and information domains.

EFA results for satisfied patients

A five-factor structure best described information and communication experiences for satisfied patients, accounting for 60% of the common variance. The first factor ('communication with relatives') consisted of two items relating to families opportunities to talk to hospital staff (cf. Table 5). A second factor ('obstacles in communication') consisted of items relating to unclear communication with hospital staff, conflicting information and possibilities to talk about concerns. The third factor consisted of medical information (e.g. not told about danger signs to look for at home), while the

Table 5 Rotated factor solution for satisfied patients ($n = 2870$), sorted by factors

	1	2	3	4	5
12. Family not given information needed to help recovery	**0.88**				
11. Family did not get opportunity to talk to doctor	**0.55**				
1. Nurses' answers to questions not clear		**0.93**			
2. Doctors' answers to questions not clear		**0.47**			
9. Not easy to find someone to talk about concerns		**0.21**		0.20	
3. Staff gave conflicting information		**−0.16**			0.16
14. Not told about medication side effects			**−0.78**		
13. Purpose of medicines not explained			**−0.57**		
15. Not told about danger signals to look for at home			**−0.50**		
8. Nurses did not discuss anxieties and fears				**0.61**	
4. Doctor did not discuss anxieties or fears				**0.55**	
7. Not always treated with respect and dignity				0.21	**−0.61**
5. Doctors sometimes talked as if I wasn't there					**0.38**

Note: factor labels are (1) communication with relatives, (2) obstacles in communication with hospital staff, (3) medical information, (4) supportive communication with hospital staff and (5) disrespectful communication.

fourth factor ('supportive communication') summarized two items, i.e. opportunities to discuss anxieties or fears with hospital staff. The average strength of association between the factors was $r_s = 0.21$ and therewith lower than the average strength of association between factors among unsatisfied patients, indicating an orthogonal factor structure. Satisfied patients not only report the fewest problems in relation to information and communication experiences, but they clearly differentiate between communication and information domains.

A comparison of factor solutions between the three satisfaction levels revealed that the only consistent factor across all three groups was 'communication with relatives'. Furthermore, the factor 'information about medical aspects' seemed to be a strong quality criterion. However, the remaining factors varied considerably between the three groups, indicating that the degree of satisfaction is linked to different experiences of health and hospital-related information and communication.

Discussion

According to our findings, the subjective experience of overall quality of care is strongly related to loyalty. Also, patients' perceived information and communication experiences are strongly associated with overall quality of care and loyalty. Information about medical aspects seems a strong predictor of quality of care perception and loyalty. Experiences of pain and feelings of being treated with respect and dignity are weakly related to overall satisfaction and loyalty, indicating that patients differentiate between pain and conditions of treatment.

After stratifying patients into three groups based on reported satisfaction, our results show that quality of care assessments of unsatisfied patients were lower than those of the middle group and the satisfied group. The dimensional analyses of each group revealed (i) different numbers of extracted factors between the three satisfaction groups, (ii) different factorial structures between the groups, (iii) frequent occurrences of cross loadings for unsatisfied and mid-level satisfied patients and (iv) an oblique factor structure for unsatisfied patients and an orthogonal factor structure for mid-level satisfied and satisfied patients. Among unsatisfied patients factors were clearly correlated with each other, which showed an undifferentiated response patterns compared with the other groups. For unsatisfied patients, all aspects of quality relating to communication and information during their hospital stay were a potential source of dissatisfaction.

One possible explanation for this result is attribution error [26] also treated in the literature as correspondence bias [27], in conjunction with a halo effect [28]. Correspondence bias refers to the tendency to attribute behaviours to dispositions, i.e. person-related qualities, even though they could have also been attributed to a situative context. According to a negative halo effect, negative experiences among unsatisfied patients are also associated diffusely to most other information and communication domains. Once unsatisfied, most experiences are likely to be evaluated negatively, as proposed by the halo effect, and they will be attributed to the disposition of medical staff, as proposed by the correspondence bias.

Satisfied patients, in contrast, seem to differentiate between communication and information domains. Negative experiences in one domain are not associated with reporting negative experiences in other domains. This suggests the absence of a halo effect among satisfied patients, i.e. a positive quality of care evaluation is not a spillover from a positive evaluation across all communication and information domains.

Communication with relatives is an important factor for all three groups, though it was less important for unsatisfied hospital patients. Medical information was also an important

factor across all three groups, which includes explanations of symptoms, the purpose of medication and their side effects. In line with research findings by Richter *et al.*, communication with relatives might be seen as an attractive quality requirement and medical information as a 'must-have' factor for quality [14]. Furthermore, we found a factor containing aspects of supportive communication across all groups, illustrating the importance to discuss fears and anxieties with hospital staff. Finally, we identified a factor that summarizes aspects of potentially undesirable communication and respectful treatment for all groups. These explicitly negative aspects did not consistently form one factor across the groups, which indicates that it is indeed difficult to negatively evaluate the quality of care, as previous research indicates [19].

Future research ought to explore the causal direction between care experience and ratings of care including the extent to which lack of satisfaction is dispositional, a state in which patients arrive at hospital, or whether satisfaction is indeed a function of experiences gathered during a hospital stay. Given the importance of patient judgements of quality of care, it may be useful to further explore the basis upon which medically untrained patients make judgements about competence and the quality of medical information.

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