

Health staff perception regarding quality of delivered information to inpatients

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Abstract

Background. Accreditation usually requires that healthcare staff assess the quality of care delivered to patients in their own hospitals. It is unknown whether this assessment depends on the workplace rather than on the professional category of health personnel.

Objective. We aimed to identify major determinants of the perception of various categories of healthcare professionals concerning the quality of delivered information to inpatients in their ward, with a perspective to help the development of recommendations on how to compose self-assessment teams for the accreditation process.

Method. A self-administered questionnaire survey was conducted in nine wards from five short-stay hospitals in Paris, France. Three hundred and fifteen healthcare professionals (physicians, nurses and nursing assistants) were included. The views of various categories of healthcare professionals regarding the compliance with a set of quality standards were compared by nonparametric statistical analyses. Determinants of the self-assessment of quality of care, including ward effect, were identified by fitting the data to a hierarchical model.

Results. The participation rate was 86%, with 272 respondents (58 physicians, 149 nurses and 65 nursing assistants). Overall perceptions of various categories of healthcare professionals were not different. The final hierarchical model showed a strong ward effect (intracluster correlation coefficient=0.06, $P<0.01$) and a significant relationship between age of professionals and their opinion about quality of care.

Conclusion. We observed a ward cluster effect on healthcare staff perception of quality, but the category of healthcare professional was not a determinant. A satisfactory representativeness on age of professionals selected into the teams in charge of self-assessment during hospital accreditation is recommended.

Keywords: accreditation, health personnel, quality of health care, questionnaires, self-assessment

Improving the quality of hospital care by reducing differences in medical practices is a core element of public health policies. Accreditation is one of the proposed strategies for an improvement of hospital quality. It systematically compares national standards with local practices [1]. Accreditation programs began in the USA more than 50 years ago and are now implemented worldwide [2], especially in Europe [3]. These programs aim to help hospitals to identify how well they are doing and how they may improve quality. Accreditation usually combines internal self assessment by multidisciplinary teams of healthcare professionals and a survey by external experts [1].

It has been stressed that research findings have little influence on healthcare policies and that decisions in health

policy should be made with an approach similar to evidence-based medicine [4]. Despite the substantial cost to hospitals for completion of a full accreditation cycle [5], accreditation has not been proven to impact quality of inpatient care [2, 6]. In particular, the appropriateness of self assessment by healthcare professionals should be questioned. This step is beneficial for development of new ties among healthcare professionals [7]. However, involving physicians in accreditation is difficult [8] and physicians have been shown to inaccurately assess their own competence [9]. This raises questions about the relevance of their perceptions of the overall quality of care in their workplaces.

Previous studies have compared physicians' perceptions about the quality of outpatient care with those of patients

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[10–13]. Physicians tended to have a more negative perception of the quality of care that they provided than their patients did; the main difference concerned the provision of health-related information. Considering that the quality of interactions between physicians and nurses is relatively poor [14], it is also possible that physicians' perceptions about quality of care are not similar to those of non-medical healthcare workers. Sometimes these groups have conflicting ideologies and perceptions of role definition [15]. To our knowledge, no studies have investigated how various categories of professionals making up the healthcare staff assess the conformity of their facility to a set of quality standards.

We have previously explored the validity of self-assessment process in accreditation by ensuring that views of healthcare staff correlated with those of patients, regarding overall quality of information given to inpatients [16]. We used the same dataset in this study to identify major determinants of the perception of healthcare staff about compliance to a set of quality standards in their ward. We hypothesized that a valid self-assessment step during hospital accreditation depends mainly on the workplace, not on the category of health personnel in charge of self assessment. Identifying these determinants could help the development of recommendations on valid composition of self-assessment teams for the accreditation process.

Methods

Study site and population

A multicenter study was conducted during year 2001, in nine wards of five-short stay hospitals (three teaching hospitals, one public general hospital and one private hospital), located in the Paris area (France). These wards were selected because they represented various medical specialities (hematology, chest diseases, internal medicine, gynecology, cardiology, hypertension and general surgery), different types of activities (seven wards located in teaching hospital, one in a community hospital and one in a for profit hospital) and were implemented in hospitals serving different types of socio-economic populations. In each of these wards, a physician interested in evaluation in medicine was present to ensure a good participation rate. The quality of inpatient care was assessed by three categories of healthcare professionals: physicians, nurses and nursing assistants.

Designed questionnaire

A self-administered questionnaire was designed so that it included items from the French accreditation manual [17] and items from a validated scale measuring inpatient opinion on quality of care [18]. Thirty-one items about patient information were retained by expert analysis [16] and categorized into six groups corresponding to quality standards for various aspects of care: general functioning of the hospital or the ward (Group I), information concerning the health status and care of the patient (Group II), information given to the

family circle (Group III), physical or moral well-being of the patient (Group IV), relationship with the staff (Group V) and information concerning the discharge of the patient (Group VI). Similarly to the accreditation procedure, healthcare professionals were asked to score the level of compliance of care in their ward to a quality standard for each item on the basis of a 5-point scale: 1, always or very often; 2, often; 3, sometimes; 4, very rarely or never and 5, not concerned.

To ensure an individual score (based on the mean of the items answered on the questionnaire) performed a good idea of the perceived quality, we previously examined the construct validity of the questionnaire with principal components analysis [19]. Three questions from the initial questionnaire were excluded since they were weakly correlated with other items. The level of internal consistency for the entire questionnaire restricted to the 28 questions retained from the precedent step was high (Cronbach's $\alpha = 0.87$).

Comparison of the views of various categories of healthcare professionals

Before analyzing the specific views of healthcare professionals about each dimension of the questionnaire (groups of questions), we first studied their overall perception of quality of care. The responses of various categories of professionals were compared for the entire questionnaire. Mean scores for each question were ranked from best to worst within each professional category (descending rank order). Then, the scores' classifications attributed to each category were compared using the Spearman's rank correlation test (two-paired comparisons) [20]. This analysis was supplemented by comparing mean score obtained for the entire questionnaire among the various professional categories. This score was calculated as the simple sum of the items values (from 1 to 4, excluding the responses of 'not concerned') divided by the number of items answered, for all respondents within the same professional category. Items were reverse-scored and scores were linearly transformed to a 0–100 scale, so that higher mean scores indicated stronger perceived qualities. A Kruskal–Wallis test was used to compare mean scores between the three professional categories and a Wilcoxon rank-sum test for the two-paired comparisons [20].

Analysis was then focussed on specific aspects of care. As for the study of the entire questionnaire, we compared mean scores for each group of questions between the various categories of healthcare professionals. In a last step, we sought differences at the item level. For each question, a Fisher's exact test [20] was used to compare response distributions between the professional categories.

Determinants of quality of care self assessment

Our data were fitted to a mixed model to determine variables significantly contributing to the self-assessment score given by a professional about quality of inpatient care (individual score on the entire questionnaire). The ward effect was

ascertained by multilevel regression analysis: two-level modeling of the individual score was used because the healthcare professionals (level 1) are nested in the wards (level 2). The exploratory procedure suggested by Hox [21] was selected to design this analysis.

We first used an ‘intercept-only model’ step, analyzing the variance components (within the ward and between wards) and estimating the intra-class correlation coefficient. The significance of variance between wards was tested by comparing the deviance of the model with that of an ordinary linear regression (likelihood ratio chi-square test) [22].

It is possible that characteristics of the healthcare professionals lead to substantial variation between wards; thus, level 1 covariates were introduced into a second model and the significance of the ward variance component was tested again. All explanatory variables (sex, age, professional category, length of service in the ward and type of activity) were tested as fixed effects. The linearity assumption between the score and the continuous variable age was verified using local polynomial regression, and age was centered on its ward mean. We also examined the specialty (surgery or medical) and healthcare sector (public or private hospital) of the ward (level 2 covariates).

Parameters of the model were estimated by a full maximum likelihood method. Main effects were included in

the final model if they were statistically significant (Wald test). The random slope variation for potential explanatory variables was tested. As recommended, the goodness of fit of the model was evaluated by looking at changes in the deviance ($-2 \log$ likelihood), as with the variance components, for each step of its building process [21].

The SAS statistical software package, release 8.02 (SAS Inc., Cary, NC, USA) was used for all analyses.

Results

Study population

The participation rate was 86%, with 272 respondents (58 physicians, 149 nurses and 65 nursing assistants). The median participation rate among wards was 87% (range from 20 to 100%). The main characteristics of the study sample and sites are reported in Tables 1 and 2.

Comparison of the views of various categories of healthcare professionals

Item classification according to the corresponding mean score was strongly correlated between health personnel

Table 1 Characteristics of the respondents

Characteristics	Physicians ($n = 58$)	Nurses ($n = 149$)	Nursing assistants ($n = 65$)	Total ($n = 307$)
Women (%)	41.1	91.3	73.4	78.6
Median age (range)	44 (24–65)	33 (22–60)	36.5 (19–56)	37 (19–65)
Length of service in the ward (% > 2 years)	70.2	57.1	71.4	63.6
Full-time activity (%)	75.9	89.1	89.2	86.8

Table 2 Characteristics of the participating wards

Hospital	Healthcare sector	Ward specialty	Number of respondents	Participation rate (%)	Overall mean score ^a (SD)
H1	Public	Cardiology	7	20	80.0 (7.4)
		Hypertension	12	75	85.0 (8.8)
H2	Public	Gynecology	23	79	81.6 (6.8)
		Gynecology	26	96	81.1 (9.4)
H3	Public	Internal medicine	36	100	77.1 (9.2)
		Chest diseases	27	87	76.4 (11.3)
H4	Public	Hematology	36	36	85.7 (7.7)
		Chest diseases	39	100	80.8 (12.2)
H5	Private	General surgery	66	100	81.7 (11.1)

^aUnadjusted mean score is presented. The overall mean score was calculated as the simple sum of the items’ values (1, always or very often; 2, often; 3, sometimes; 4, very rarely or never) for the entire questionnaire divided by the number of items answered, for all respondents within the same ward. Responses ‘not concerned’ were excluded. A higher score according to a 0–100 scale indicates a better perceived quality by professional category.

Table 3 Comparisons of the views of categories of professionals about the quality of aspects of care

Groups of questions—aspects of care	Mean scores by professional category ^a (SD)			Categories with significant mean score differences ^b
	Physicians	Nurses	Nursing assistants	
I—General functioning of the hospital or the ward	75.4 (20.2)	76.2 (16.1)	74.5 (14.0)	—
II—Information concerning the health status and care of the patient	85.8 (11.4)	81.1 (13.5)	80.6 (12.8)	Physicians vs. Nurses Physicians vs. Nursing assistants
III—Information given to the family circle of the patient	86.2 (15.6)	83.3 (19.7)	83.5 (18.9)	—
IV—Physical or moral well-being of the patient	71.6 (20.6)	77.5 (17.7)	79.8 (17.0)	Physicians vs. Nursing assistants
V—Relationship with the staff	88.9 (12.0)	87.8 (13.0)	91.5 (11.2)	Nurses vs. Nursing assistants
VI—Information concerning the discharge of the patient	76.2 (16.1)	84.5 (12.4)	85.1 (11.3)	Physicians vs. Nurses Physicians vs. Nursing assistants

^aA higher score according to a 0–100 scale indicates a better perceived quality by professional category.

^bP-value < 0.05 according to the two-paired comparisons with Wilcoxon rank-sum test.

categories: between physicians and nurses (Spearman's rank correlation coefficient $\rho = 0.77$, $P < 0.001$), between physicians and nursing assistants ($\rho = 0.71$, $P < 0.001$) and between nurses and nursing assistants ($\rho = 0.92$, $P < 0.001$). Mean scores by professional category for the entire questionnaire were 81.0 for physicians, 80.9 for nurses and 81.2 for nursing assistants. These scores were not significantly different.

For each aspect of care, mean score comparisons among professional categories highlighted significant differences in quality perception for question groups II ('Information concerning the health status and care of the patient', $P = 0.03$) and VI ('Information concerning the discharge of the patient', $P = 0.002$). Two-paired comparisons for each group of questions (Table 3) confirmed differences between physicians and other professional categories for Groups II and VI, whereas views of nurses and nursing assistants were different for Group V questions ('Relationship with the staff'). As shown in Table 4, physicians gave better scores for questions 6 ('Patients are informed about the existence of a conciliation board in the hospital'), 7 ('Patients are informed about medical procedures planned for their care') and 10 ('Patients are informed about results of diagnostic tests or procedures') than other categories of professionals did, but gave worse scores for questions 3 ('Members of staff know they are not entitled to reveal the patient's presence in the hospital without his consent') 18 ('Patients are asked about their need for psychological help') and 24 ('We provide the patient with the opportunity to say whether he is satisfied with the care received').

Determinants of quality of care self assessment

The intercept-only model (i.e. empty model, Table 5) indicated that the mean quality scores were significantly different

between wards, with an inter-cluster variance involving 5% of the total variance in model 1 (likelihood ratio test, $P = 0.03$). The ward effect was thus considered in the multi-level model.

There was a positive association between age of professionals and their perceptions about the quality of inpatient care: older healthcare professionals perceived quality of care to be better than younger professionals did. The score was associated with a 1.8 unit increase ($P < 0.001$) for each additional 10 years of age. The gender, the professional category, the length of service in the ward and the type of activity exercised by healthcare professionals were not associated with their quality perceptions. The inclusion of age as a predictor of quality score significantly improved the goodness of fit of model 2 (124.2 reduction in deviance, $P < 0.001$).

In model 3, none of the tested ward characteristics (specialty and healthcare sector) significantly affected the quality scoring of inpatient care.

Consequently, the final hierarchical model 4 only included age. The score for a healthcare professional middle-aged in a ward was 80.77 (SD ± 1.11). We observed a ward effect in the final model (likelihood ratio test, $P < 0.01$) reflecting a persisting variability between wards despite adjustment on age.

Discussion

This study shows that various categories of healthcare professionals have similar views about the overall quality of information provided to patients in their ward. The multilevel model confirmed existence of strong ward cluster effect and highlighted that professional category is not a determinant of the perceptions of the healthcare staff. Moreover, age is the only personal characteristic of healthcare professionals

Table 4 Comparison between responses given by each professional category for 28 quality standards

Groups of questions-aspects of care No. of questions	Percentages of answers 'always or very often'				P-value*
	Physicians (n = 58)	Nurses (n = 149)	Nursing assistants (n = 65)	Total (n = 272)	
<i>Group I—General hospital or ward functioning</i>					
1. A general information booklet is delivered to patient and/or to patient's family	76.9	63.0	66.7	66.2	0.71
2. Patients are informed that their personal data are computerized and can be accessed by them	22.2	16.7	10.6	16.2	0.14
3. Members of staff know they are not entitled to reveal the patient's presence in the hospital without his consent	58.2	88.5	84.1	81.2	<0.001
4. Patients are informed about the possibilities to practice their religion	40.9	39.7	28.3	37.1	0.007
5. Patients are informed about the presence of a person responsible for claims	51.0	41.0	44.3	43.4	0.051
6. Patients are informed about the existence of a conciliation board in the hospital	37.5	23.4	4.5	22.0	0.005
<i>Group II—Information concerning the health status and care of the patient</i>					
7. Patients are informed about medical procedures planned for their care	63.2	40.9	31.2	43.3	0.01
8. Patients are informed about reasons for the tests or procedures performed	53.4	34.9	31.7	38.2	0.09
9. Patients are informed about advantages and risks of the medical procedures or tests performed	32.8	30.6	37.0	32.4	0.16
10. Patients are informed about results of diagnostic tests or procedures	72.4	34.0	32.8	42.2	<0.001
11. Patients are informed about objectives of treatments	65.5	44.4	39.3	47.9	0.09
12. Patients are informed about advantages and risks of treatments	39.7	37.1	32.1	36.6	0.94
13. Patient's consent is requested for a surgical procedure	85.2	80.7	86.7	83.0	0.52
14. Patient's consent is requested for anesthesia	85.2	77.5	79.3	79.5	0.51
15. Patients receive health education appropriate for their needs	21.6	25.4	33.9	26.6	0.74
<i>Group III—Information given to the family circle of the patient</i>					
16. Patients specify the attending physician(s) they want to inform about their hospital stay	67.9	59.7	58.6	61.3	0.36
17. Patients specify the person(s) they want to inform about their health status and care received	50.0	56.2	57.4	55.6	0.68
<i>Group IV—Physical or moral well-being of the patient</i>					
18. Patients are asked about their need for psychological help	22.2	36.1	44.8	35.1	0.02
19. Patients are asked about their need for social assistance	50.0	48.6	45.8	48.2	0.89
20. Patients are asked about their pain during hospitalization	25.9	28.3	35.1	29.3	0.13
<i>Group V—Relationship with the staff</i>					
21. Staff members knock on the door before entering the patients' rooms	54.5	53.8	60.0	55.5	0.82
22. When a doctor enters a patient's room he asks visitors to leave the room before examining the patient	71.4	70.9	84.4	74.2	0.17

(continued)

Table 4 Continued

Groups of questions-aspects of care No. of questions	Percentages of answers 'always or very often'				P-value*
	Physicians (n = 58)	Nurses (n = 149)	Nursing assistants (n = 65)	Total (n = 272)	
<i>Group VI—Information concerning the discharge of the patient</i>					
23. Discharge is arranged jointly with the patient	76.5	58.8	57.4	62.1	0.14
24. We provide the patient with the opportunity to say whether he is satisfied with the care received	22.0	50.4	34.4	40.6	<0.001
25. Patient receives clear explanations concerning the symptoms that should alert him/her in the future	37.3	52.2	56.9	50.0	0.18
26. Patient receives clear explanations concerning the activities he/she will be able to undertake after the discharge	46.0	62.5	57.7	58.0	0.13
27. A satisfaction questionnaire is distributed to the patient	52.6	69.9	31.2	69.1	0.09
28. A letter for the attending physician is given on discharge of the patients	34.0	42.6	31.7	42.4	0.09

*P-value according to Fisher's exact test to compare response distributions for each item between the professional categories (Possible responses were 'always or very often', 'often', 'sometimes', or 'very rarely or never'. Responses 'not concerned' were excluded).

associated with their perceptions of the quality of inpatient care: professionals were more lenient in scoring quality when they were older.

There were few differences in perception for 28 standards related to inpatient information. These differences were mostly between physicians and other categories of professionals. The main disagreements were about missions usually dedicated to a particular professional category. Physicians appear to have a more favorable opinion about the quality of work that they are responsible for (i.e. 'information concerning the health status and care of the patient') [23]. Conversely, they are more skeptical about the 'information concerning the discharge of the patients', which reflects the quality of work usually done by nursing staff. Nurses describing difficulties involving announcement of bad news and explanation of treatment plans [24] usually appear more comfortable informing patients about home care and follow-up [25]. The differences we observed among professional categories correspond to the aspects of care for which we had previously reported differences among patients and healthcare professionals: 'patients generally evaluated questions related to the care they received more positively and questions related to discharge more negatively than healthcare professionals' [16].

Self assessment according to published standards requires the involvement of representatives from various professional specialties (including physicians, nurses and nursing assistants) that help organizations identify, understand and resolve their own problems. A major limitation of this approach is its reliability of measurement. Contrary to our findings, previous studies evaluating self assessment of quality of care observed poor reproducibility in judgments of various

categories of healthcare professionals. A survey measuring compliance with hand hygiene recommendations has shown that, unlike nurses, physicians and nursing assistants tended to overevaluate their conformity to these guidelines [26]. Other studies, in the field of intensive care, have shown substantial differences between nurses and physicians regarding perception of quality of dying [27], the appropriateness of medical interventions [28] and decisions to limit life-sustaining treatment [29]. These studies targeted a particular field of care in a limited setting instead of using a generic questionnaire related to inpatient information, whatever the medical specialty.

Another approach to monitor quality of hospital care involves critical review of selected medical records. However, such an assessment may not identify substandard quality of care [30]. Factors other than the appropriateness of care may influence a reviewer's judgment, including perceived quality outcome [31]. Weingart *et al.* found that nurse and physician reviewers were in moderate agreement about detection of care complications and that many discrepancies remained in their evaluations of quality in individual cases. An explanation was that they appeared to be interested in different phenomena: nurses categorized events according to objectively defined criteria (explicit review), but physicians assessed the overall management of care (implicit review) [32]. In our study, nurses and physicians used the same assessment tool based on explicit standards of care, potentially leading to higher inter-rater reliability than the implicit method [33].

Our study has limitations. First, the modality of filling out the self-administered individual questionnaire does not correspond rigorously to that used for the accreditation procedure, requiring that a team of healthcare professionals collegially

Table 5 Hierarchical regression analysis of predictors of quality scoring by the healthcare professional

Successive models tested ^a	Model 1 (Empty model) Estimate (SD)	Model 2 (Level 1 effects) Estimate (SD)	Model 3 (Level 2 effects) Estimate (SD)	Model 4 (Final model) Estimate (SD)
Intercept	80.98 (1.00)	81.22 (2.24)***	80.64 (3.90)***	80.77 (1.11)***
Level 1: Healthcare professional				
<i>Fixed effects</i>				
Age ^b		0.25 (0.07)***	0.18 (0.06)**	0.18 (0.06)**
Gender ^c :				
Female		2.60 (1.74)		
Professional category ^c :				
Nursing assistants		0.14 (2.07)		
Nurses		-0.94 (1.91)		
Length of service in the ward ^c :				
1–2 years		-1.87 (1.82)		
>2 years		-2.00 (2.13)		
Type of activity ^c :				
Half-time		-3.08 (1.95)		
Inter-subject Variance	100.75 (8.77)	96.84 (8.79)	98.31 (8.84)	98.3 (8.83)
Level 2: Ward of exercise				
<i>Fixed effects</i>				
Specialty ^c :				
Surgery			0.84 (2.68)	
Healthcare sector ^c :				
Public			-0.22 (3.65)	
Inter-cluster variance	5.05 (4.11)*	6.49 (4.94)*	6.47 (4.86)*	6.71 (4.96)**
Deviance ^d	2034.4	1910.2	1910.2	1910.2

^aModel 1: The empty model estimates the mean score of the overall sample (intercept) and determines if the mean scores by ward are significantly different. The inter-subject variance represents the scoring variation among the professionals within wards. The inter-cluster variance represents the mean score variation between wards. The significance of inter-cluster variance is tested according to the likelihood ratio chi-square test.

Model 2: This model tests a possible difference in scoring among the professionals, while adjusting on their individual covariates (age, gender, professional category, length of service in the ward, type of activity). The only significant fixed effect we identified in this model was age. To analyze if this relationship between age and score varied across the wards, age was tested as a random effect. This hypothesis was rejected (non-significant random effect), indicating that association between individual score and age of the professional was similar, whatever its ward of exercise.

Model 3: This model includes the effect of ward covariates (specialty, healthcare sector) on the individual score. None of these tested characteristics was significant in the model.

Model 4: According to the final model, quality scoring is determined by ward of exercise and age of the professional.

^bContinuous variable (unity): age (years, centered on its ward mean).

^cCategorical variables (reference group): gender (male); professional category (physicians); length of service in the ward (<1 year); type of activity (full-time); specialty (medical); healthcare sector (private).

^dDeviance (-2 log likelihood) is presented after removing non-significant terms at the end of a step (according to the Wald test). The goodness of fit is measured by the reduction in deviance between the current model and the model obtained at the previous step using a chi-square test.

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

scores a set of standards [34]. However, it is possible that the participants in each studied ward exchanged information before responding to the questionnaire.

Secondly, various national accreditation programs are not very similar to the French procedure and we do not know if our results can be extrapolated to another context or health system. One can nevertheless expect that concerns involving

informing patients and their relationships with the care staff are the same in all developed countries.

Thirdly, investigated facilities and wards were not randomly selected but were included for reasons of convenience, what may limit the sample representativeness.

Fourthly, most of the variance observed in the hierarchical model was explained by the differences of scoring among

healthcare professionals. Although we observed a substantial ward effect on perception of quality, we do not know which particular attributes of the ward explain such an effect. The wards' characteristics tested in the model (medical specialty and healthcare sector) were not significant. Attributes that are not easily measured, e.g. the culture of team work or other organizational factors, are possible determinants [35].

As we had supposed, findings suggest that perceptions of healthcare staff concerning the quality of information delivered to patients strongly depend on workplace that may reflect existence of a 'ward culture'. In addition, a special attention to representativeness of age groups is needed in establishing teams charged with self assessment of quality of care.

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