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'Patient Satisfaction' in Hospitalized Cancer Patients

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Predictors of 'patient satisfaction' with hospitalization at a specialized cancer hospital in Norway are examined in this study. Two weeks after their last hospitalization, 2021 consecutive cancer patients were invited to rate their satisfaction with hospitalization, quality of life, anxiety and depression. Compliance rate was 72% (n = 1453). Cut-off levels separating dissatisfied from satisfied patients were defined. It was found that 92% of the patients were satisfied with their stay in hospital, independent of cancer type and number of previous admissions. Performance of nurses and physicians, level of information perceived, outcome of health status, reception at the hospital and anxiety independently predicted 'patient satisfaction'. The model explained 35% of the variance with an area under the curve of 0.76 of the Receiver Operator Curve. Cancer patients' satisfaction with their hospital stay was high, and predicted by four independently predictive variables related to the performance of caregivers. These suggest areas for further improvement in the healthcare service.

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During the past decade the issue 'patient satisfaction' has gained increased attention in oncology (1–7). This development coincides with the recognition that having cancer not only influences physical aspects, but also many other aspects of the patients' existence. Furthermore, owing to more intensive treatment modalities, many patients will enjoy long-term survival, which means that severe side effects and persistent long-term sequelae after treatment will challenge 'patient satisfaction' (8–10). Focusing on 'satisfaction with care' is important, as satisfied patients are more likely to comply with treatment, continue their use of medical services, and to maintain a good relationship with their physician (11). Dissatisfaction with care can compromise compliance with treatment-beneficial recommendations, and thereby undermine therapeutic effectiveness (12). These trends explain why, recently, there has been increasing attention directed to 'patient satisfaction' with oncological treatment and care.

The instruments used in 'satisfaction with care' studies of cancer patients vary considerably, and present several methodological problems (13–17). Typically, the instruments developed so far contain questions from the general 'satisfaction' literature, combined with cancer-specific questions, and one or two *ad hoc*-designed items, depending on the goal of the study. Since no 'gold standard' of such instruments has been established, comparisons of findings across studies are problematic. Some groups have nevertheless sought to identify dimensions that were important for 'patient satisfaction' in order to improve the quality of hospital care. Brédart et al. (4, 5) identified several dimensions as important components of 'patients' satisfaction'; For example, perceived extent of doctors' and nurses' availability; coordination between doctors; doctors' technical skills; information given during hospitalization; perceived organization of the care and its accessibility, and comfort. Each of these dimensions expresses aspects of overall satisfaction, and they are not necessarily independent predictors. Hospital administration and staff may want to estimate the influence of such dimensions on overall patient satisfaction.

A number of psychosocial variables (such as psychosocial well-being, coping, health-related quality of life, depression and anxiety) have also been suggested to affect cancer patients' satisfaction with healthcare (8, 11, 18). Jones et al. (11) found that three of their outcome measures for 'patient satisfaction' were associated with anxiety and depression, and they emphasized the need for further studies of the relation between anxiety, depression, information and 'patient satisfaction' with care.

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The achievement and the maintenance of quality of life (QoL) of the patients have become major aims of cancer treatment. QoL is a multidimensional concept comprising at least social, emotional, physical and role-functioning (occupational) aspects, in addition to major physical and mental symptoms. So far, no studies have been undertaken to analyse the relation between 'patient satisfaction' and major dimensions of QoL.

In the present study 'patient satisfaction' with hospital care is examined as perceived by cancer patients seen at a Norwegian cancer centre. Two research questions were investigated:

- What proportion of cancer patients express satisfaction with the healthcare they perceived during hospitalization?
- What are the predictors of 'patient satisfaction', considering previously established factors as well as measures of patients' mental health and QoL?

MATERIAL AND METHODS

Patients

The Norwegian Radium Hospital (NRH) is a referral hospital, specialized in cancer care with emphasis on radiotherapy, complex chemotherapy and surgery. The present analysis is based on data from a survey of consecutively hospitalized patients, which was conducted between May 1997 and February 1998.

A questionnaire was mailed to the patients 2–3 weeks after they had been discharged from NRH ('Index hospitalization'). To be eligible for the study, patients had to be between 18 and 80 years and discharged to their homes. Owing to the variable sizes of the hospital departments, the patients were distributed between the oncological, gynaecological, and surgical departments in the ratio 2:1:0.5. A reminder was sent to patients who had not returned the questionnaire within 4 weeks.

The questionnaire

The questionnaire consisted of two parts. Part 1 included 71 questions, which assessed the patients' demographics (age, civil status, educational level, etc.), perception of the hospital's organization of services during their 'index hospitalization', and their satisfaction with the professional, interpersonal, and communicative skills of physicians and nursing staff. In addition, the patients were asked whether the index hospitalization had led to improved health. Part 1 also included 32 questions from a 'patient satisfaction' questionnaire developed by the Foundation for Health Services Research (HELTEF, Norway). These questions had been tested and validated by Guldvog (19) in previous studies of patient satisfaction in several general hospitals. Seven questions were removed from the original questionnaire, as they were irrelevant for cancer patients. A few questions designed *ad hoc* were added to cover aspects of special interest for the NRH. Responses to the questions in Part 1 were categorized by alternatives or by Likert scales.

Part 2 of the questionnaire included the official Norwegian translations of the European Organization for Research and Treatment in Cancer Quality of Life Questionnaire (EORTC QLQ-C 30, version 2) and The Hospital Anxiety and Depression Scale (HADS). The QLQ-C 30 was chosen as a multidimensional and cancer-specific QoL questionnaire assessing functional dimensions and specific symptoms (20–22). The scores on QLQ-C 30 were analysed according to the published recommendations by Aaronsen et al. (22). The scales used in our study were: emotional, physical, social and role functioning. HADS, developed by Zigmond & Snaith (23), was chosen as a well-validated and widely used questionnaire designed to measure anxiety and depression in somatically ill patients (23–25). HADS includes two separate subscales, one for anxiety (HADS-A) and one for depression (HADS-D).

The following information was included from the general hospital database: cancer type, summarized into 10 diagnostic groups based on ICD-7 (Table 3), date of discharge, number of previous hospitalizations, and survivor status (concentrating on short-time survival identifying terminally ill patients).

Statistics

Descriptive analysis. Based on clinical experience and recommendations (5), the items of Part 1 were grouped into six scales (Table 1) with 'patient satisfaction' as the principal outcome parameter (Tables 2a and b).

The internal consistency of each scale, based on Cronbach's coefficient alpha, was acceptable, with the exception of the 'reception' parameter, which did not quite reach the minimum value of 0.6, frequently considered as appropriate.

During this descriptive step of the analysis each of the six items of the satisfaction scale (Table 2a) were arbitrarily dichotomized. An item response score of 1 or 2 indicated item satisfaction (positive item response), whereas scores 3 or higher indicated item dissatisfaction (negative item response). A patient was categorized as 'satisfied with the index hospitalization' if the satisfaction scale displayed 4 or more item responses indicating satisfaction (positive responses) (Table 2b).

Analogous dichotomization was performed for the other scales of Table 1. Overall scale satisfaction was compatible with 0–2 item responses indicating dissatisfaction (negative responses). The scores of the selected QLQ-C 30 items were transformed to scales ranging from 0 to 100 according to the published guidelines (22). The scales were subsequently dichotomized with the median value as cut-off between negative and positive responses. The HADS-A and HADS-D subscale scores were calculated after substitution for missing items. Patients who had answered 1–4

Table 1

Scale construction (Part 1 of the questionnaire) and internal consistency

Scales	No. of items	No. of patients with valid answers*	Cronbach's α
Reception (Attitude of staff at reception department, reception at treatment unit)	2	1 447	0.5516
Information given during hospitalization (About investigations, results, treatment, prognosis, overall information)	4	1 428	0.7466
Performance of the nursing staff (Availability, communication skills, enough time)	6	1 436	0.8460
Performance of physicians (Responsibility, availability, personal skills, engagement)	4	1 418	0.7413
Intra-hospital logistics/coordination (Within-treatment unit, between-treatment unit and others)	2	1 391	0.5134
Outcome of hospitalization on health status (Better way of living, reducing symptoms, better physical function and expectations)	3	1 312	0.8672
Patient satisfaction (see Table 2)	6	1 432	0.7831

*After substitution.

of the 7 items on either HADS-A or HADS-D had missing items substituted with the mean of their total scores. Anxiety disorder or depression in a patient was defined either by a HADS-A score ≥ 11 or a HADS-D score ≥ 11 (23).

Exploratory data analyses. The PC-based statistical program SPSS version 9 was used for descriptive analysis (median range, mean, standard deviation and calculation of Cronbach's coefficient alpha). Cross-tables were evaluated using the χ^2 test. A p-value < 0.05 was considered as statistically significant.

Further statistical analyses were done using the statistical program SPLUS 2000 (MathSoft, Seattle, USA). 'Patient satisfaction' was modelled using logistic regression. This is a well-established modelling framework for uncertain outcomes, in which one attempts to model underlying probabilities of occurrence as a function of a set of explanatory variables. The underlying assumption is that a patient has a certain probability of being satisfied, assessed by the patients' positive answers to the selected covariates. The logit of this probability was modelled as a linear function of the potential covariates (the logit of a proba-

Table 2

The patient satisfaction scale

2 (a)

The six items

Q1: How is your total satisfaction with the medical treatment you received at NRH?
Q2: How is your total satisfaction with the care you received at NRH?
Q3: Did NRH fulfil the expectations you had to the medical treatment?
Q4: How is your confidence to the NRH based on your last hospital stay?
Q5: To what degree would you say that the hospital stay and treatment given at NRH were in accordance with the information given at the time of admission?
Q6: To what degree are you satisfied with the care and the medical treatment given at NRH?

2 (b)

Response rate and item dichotomization

Item	Greatly satisfied		Greatly dissatisfied		
	1 n (%)	2 n (%)	3 n (%)	4 n (%)	5 n (%)
Q1	966 (67)	333 (23)	124 (9)	22 (2)	8 (1)
Q2	1047 (72)	302 (21)	87 (6)	14 (1)	3 (0)
Q3	882 (61)	329 (23)	175 (12)	27 (2)	40 (3)
Q4	1098 (76)	255 (18)	79 (5)	17 (1)	4 (0)
Q5	646 (45)	641 (44)	72 (5)	19 (1)	72 (5)
Q6	980 (67)	415 (29)	51 (4)	5 (0)	2 (0)

bility p is defined as the natural logarithm of p divided by its complement, or logit (p) = ln(p/(1 − p)). The covariates were first considered as univariate factors and tested as such at different levels of item aggregation. The best performance of covariates and the outcome parameter ('patient satisfaction') was observed on the aggregation level that described the number of questions answered positively within a scale. The variables thus identified were entered into a stepwise forward multivariate model. A binomial response model then described the distribution of the total number of items answered positively. Linear covariates were entered as either the number of items answered positively (for scales of Part 1), as dichotomized QLQ-30 scales, or as variables defined on an integer scale (age, HADS score). In the final model, all covariates were tested, but only statistically significant covariates were retained.

Ethics

The NRH Research Committee and the Board of Research Ethics Region II of Norway approved the investigation, with the possibility of patient identification.

RESULTS

Attendance

The questionnaire was sent to 2021 hospitalized patients. A total of 1453 patients returned the questionnaire (response rate 72%) (Table 3). According to demographic and medical variables there were no statistically significant differences between responders and non-responders, with one exception: 19% of the responders had died by September 1998, as compared with 32% in the non-responder group ($p < 0.0001$) (Table 3).

'Satisfaction' findings

Based on our definition of satisfaction, 92% of the patients were satisfied with the 'index hospitalization'. On question 3 (Q3) of the satisfaction scale (Table 2b), 17% reported dissatisfaction. The 'index hospitalization' did not fulfil their expectations about the treatment outcome. In respect of satisfaction, we found no differences between men and women, number of admissions and level of education (Table 4). Younger patients (< 40 years) were more often dissatisfied (12%) than patients in the 40–65 years age group (7%) and those above 65 years (8%) ($p = 0.047$).

The results of the univariate analyses with the scales of the questionnaire and demographics as independent variables are presented in Table 5 ($p < 0.0001$), 'patient satisfaction' being the outcome parameter. The scales that contributed the most significantly to 'patients satisfaction' were: nurses' performance, physicians' performance, information during hospitalization, perception of improved health status as a result of the hospital stay, the reception at the hospital, internal communication during hospitalization, HADS-A score and the emotional scale of the QLQ-

Table 3

Patient characteristics

	Responders	Non-responders	Total
	n (%)	n (%)	n (%)
Total	1453 (100)	568 (100)	2021 (100)
Gender			
Men	540 (37)	206 (36)	746 (37)
Women	913 (63)	362 (64)	1275 (63)
Median age (range)	58 (18–80)	58 (18–80)	
Median number of admissions[1] (range)	2 (1–38)	2 (1–52)	
1	594 (41)	237 (42)	831 (41)
2–5	570 (39)	230 (41)	800 (40)
6–10	161 (11)	62 (11)	223 (11)
> 10	128 (9)	39 (7)	167 (8)
Tumour type			
Head and neck	17 (1)	14 (2)	31 (2)
Gastrointestinal	126 (8)	56 (10)	182 (9)
Lung	50 (3)	30 (5)	80 (4)
Breast (women)	210 (15)	74 (14)	287 (14)
Gynaecological	416 (28)	154 (37)	570 (28)
Urological	236 (16)	72 (13)	308 (15)
Skin	68 (5)	20 (5)	88 (4)
Haematological	164 (11)	67 (11)	231 (11)
Sarcoma	28 (2)	13 (2)	41 (2)
Other	138 (10)	68 (12)	203 (10)
Death by 1 Sept. 1998	269 (19)	181 (32)	450 (100)

[1]Incl. index hospitalization.

Table 4

Patient characteristics and patient satisfaction[1]

	Satisfied		Dissatisfied	
	N	%	N	%
Total	1343	92	110	8
Gender				
Men	499	92	41	8
Women	844	92	69	8
Age				
<40	162	88	22	12
40–65	761	93	54	7
>65	420	92	34	7
Admissions				
1	558	94	36	6
2–5	520	91	24	8
>5	265	92	24	8
Education				
Low	470	94	31	6
Medium	548	93	43	7
High	290	90	30	9

[1]Total number of patients may be <1 343 owing to missing information.

C30. No association was observed between 'patient satisfaction' and gender, age or survivor status by September 1998. Nor were the data from the hospital's patient database (cancer type, number of admissions) significant in the univariate analyses.

The statistically significant variables from the univariate analysis were entered into a stepwise forward multivariate model. Nurses' performance, physicians' performance, outcome of index hospitalization on health status, and information during hospital stay were the four most significant scales (Table 6).

This model explained 35% of the variation in the data set, and provided a receiver-operating curve (ROC curve) with an Area Under the Curve (AUC) of 0.76 (see Fig. 1). Our model thereby displayed acceptable sensitivity and specificity in identifying over half of the dissatisfied patients without mislabelling any of the satisfied ones.

DISCUSSION

Studies of cancer patients' evaluation of their stay in hospital generally conclude with high satisfaction rates (5, 6, 12), which is in agreement with our findings. The published rate varies between 75% and 95%, and the variability is probably due to methodological differences. The distinction between satisfied and dissatisfied patients is defined differently in these studies, which render comparison of the results somewhat problematic. Our 'patient satisfaction' rate of 92% is within the above range of published results, but the per-item analyses reveal considerable inter-item variability. In particular, our finding of 17% dissatisfaction in Q3 indicates that dissatisfaction in cancer patients is mostly related to unrealistic treatment expectations.

Compared to other investigations of 'satisfaction', our study has a large sample size. This allows us to generalize our results more and to analyse a larger number of variables and scales. Furthermore, the high internal consistency of most of our scales supports the reliability of our results.

The present study was conducted as a patient identifiable survey, in which the patients gave their permission to link their questionnaires to their records. Theoretically, this may have reduced the compliance rate and inflated the rate of positive responses. However, other surveys from our hospital (1, 10) do not support this suggestion, since

Table 5

Results of the univariate analysis

Factor	Value of coefficients	Variable span	p-value
Performance of nurses	−0.6	6	<0.0001
Performance of physicians	−0.5	5	<0.0001
Information during stay	−0.68	5	<0.0001
Outcome of patients' health status	0.57	3	<0.0001
Reception at admission	−0.85	2	<0.0001
Intra-hospital logistics/coordination	−0.79	2	<0.0001
HADS—A	−0.1	19	<0.0001
EORTC—emotional	1.6	1	<0.0001
HADS—D	0.083	19	0.0005
EORTC—pain	−1	1	0.0007
EORTC—social	0.89	1	0.004
EORTC—physical	0.32	1	0.028
Death by Nov. 1998	−0.18	1	0.11
Age	0.009	62	0.168
Gender	0.048	1	0.8

Abbreviations: HADS = Hospital Anxiety and Depression Scale; EORTC = European Organization for Research and Treatment in Cancer.

Table 6

Results of the multivariate analysis

Factor	Value of coefficients	Aggregation level[1]	p-value
Performance of physicians	−0.24	A	0.001
Performance of nurses	−0.26	A	0.001
Information during index hospitalization	−0.31	A	0.003
Outcome of patients' health status	−0.37	A	0.002
Reception at admission	−0.42	A	0.005
HADS—A	−0.05	B	0.036

[1]A: Number of positively answered items within a scale.
B: The HADS—A scores (range 0 to 21).
Abbreviation: HADS = Hospital Anxiety and Depression Scale.

these studies also show a compliance rate between 70% and 80%. 'Pleasing the physician' may be a particularly important factor in patient identifiable surveys. Patient identifiable studies may be skewed towards favourable results, as the 'pleasing the physician' factor may be operating. The most dissatisfied patients may choose not to respond. We are aware of these limitations, though most of the available demographics and medical parameters are comparable for responders and non-responders. However, significantly more non-responders had died within September 1998, a parameter that apparently was closely related to the parameter 'perceived outcome on health status'. This may have slightly skewed our results in a negative direction.

Clinical experiences in oncology as well as theoretical considerations suggest that 'patient satisfaction' vary with age, gender, education and the type and severity of cancer (5, 12). We found similar trends, but our final multivariate model did not identify any statistically significant differences. Nor did we find any significant correlation between satisfaction and the hospital's administrative data on the medical history. To our knowledge, no other study has focused on this issue, and we must conclude that such data do not contribute significantly to 'patient satisfaction'.

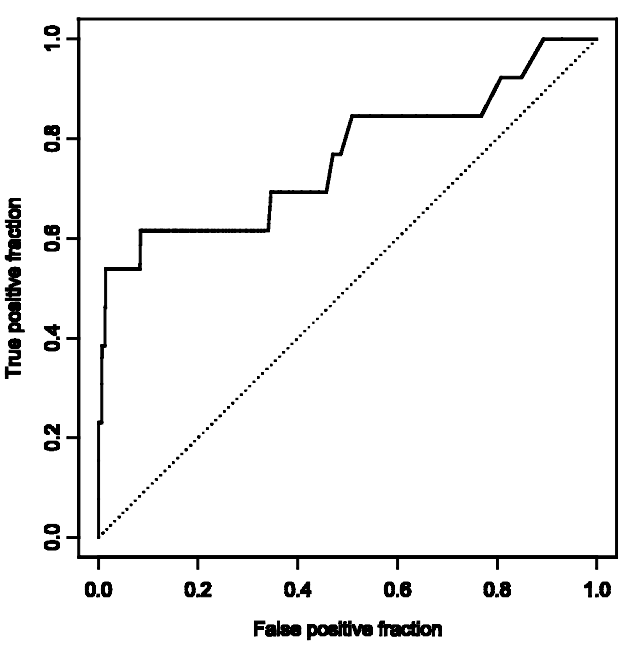

Fig. 1. Receiver operator curve (ROC) curve: The area under the uurve (AUC) is 0.76, showing good sensitivity and specificity in discriminating between satisfied and dissatisfied patients.

Some studies such as those by Burton & Parker (6), Ibbotson et al. (8), Jones et al. (11) have suggested that 'patient satisfaction' with hospitalization is correlated with the levels of psychological distress and QoL. Our study confirmed a correlation between HADS-A and 'patient satisfaction'. Unexpectedly, depression did not turn out to be an independent predictor. We suggest the following explanation: Even in most patients who return to a cancer hospital for continuous curative or palliative treatment, anxiety seems to be a greater problem than depression. When referred to a specialized cancer hospital, most patients expect, realistically or unrealistically, to receive treatment that is likely to improve their health status considerably. In this situation their psychological distress might be characterized more by anxiety than by depressive symptoms.

As expected, the evaluated dimensions of QoL were associated with 'patient satisfaction' in the univariate analysis. The high correlation between pain and emotional function with 'patient satisfaction' offers the possibility of some improvement in hospital routines. More attention should be paid to improvement of analgesic treatment, and/or treatment of psychological symptoms.

Though statistically significant in the univariate analysis, the final model did not reveal significant correlations between the satisfaction scale and the psychosocial dimensions of QoL as measured by the QLQ-C30. This may be related to our method of dichotomization of the scales with the median as a cut-off value. The multivariate analysis identified scales that influenced 'patients' satisfaction' with cancer care beyond the aim of obtaining the best achievable health status, namely the patients' perception of nurses' and of physicians' performance, information given

during hospitalization, and the attitude of the reception staff of the hospital. The importance of physicians' and nurses' availability, their cooperative skills and human qualities as well as their technical competence are emphasized also in other studies (3–5). Like Bredart et al. (4, 5), we found that adequate information given to the patients was highly related to 'patient satisfaction'. 'Adequate' information also includes the disclosure of an unfavourable prognosis, thus lowering 'unrealistic expectations'. If health professionals experienced in clinical oncology were to give such information, this would probably increase overall 'patient satisfaction'.

Our model explained 35% of the variance in the data set, and we were able to construct a ROC curve to explore the sensitivity and the specificity of the model used. With an AUC of 0.76, our model seems to be reasonably adequate in discriminating between satisfied and dissatisfied patients. However, a 35% explained variance tells us that other issues relevant to 'patient satisfaction' have not been covered by our questionnaire. These issues should be identified and investigated by future research.

In conclusion, 92% of our patients expressed satisfaction with their last hospitalization at a large cancer hospital. Four independent healthcare dimensions were identified that influenced 'patient satisfaction': physicians' and nurses' performance, the level of information given to the patients, and the hospital staff's attitude at admission. The identification of these dimensions and particularly the importance of the reception at admission to the hospital are new contributions to the field of 'patient satisfaction' in cancer patients.

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