

Staff perception of the impact of health care transformation on quality of care

BENGT B. ARNETZ

Department of Public Health Sciences, Karolinska Institute and the Department of Care Processes and Health, National Institute for Psychosocial Factors and Health, Stockholm, Sweden

Abstract

Objectives. To study how medical professionals perceived recent organizational changes and financial cut-backs in terms of organizational and health care quality.

Design. A cross-sectional questionnaire survey.

Setting. County council of Stockholm.

Participants. A random sample ($n=936$; 70% response rate) of physicians and nurses employed by the county council of Stockholm.

Main outcome measures. Staff perception of how recent changes impacted on staff-perceived quality of care, staffs' skills development, management, and perceived organizational efficacy.

Results. Over 60% of the respondents rated that patients' access to health care had diminished as a result of ongoing changes. A similar percentage also perceived a decline in the quality of health care delivered in general. However, fewer staff rated a decline during the last year in the quality of care provided by their own department (44%). Staff rating that quality of care in their own department had worsened during the last year also scored substantially lower on all counts of organizational well-being. The most important determinants of staff-perceived quality of care were staff access to pertinent information concerning their daily work and organizational changes, participatory management, performance management, and job commitment. Job satisfaction was more strongly associated with organizational well-being than staff-perceived quality of care.

Conclusion. Staff perception should be used as an additional indicator of quality of care. To improve quality of care further, management should encourage staff involvement in everyday management issues, including up-to-date information about organizational goals and mission.

Keywords: quality of care, staff perception, organizational change, workload

Organizations worldwide are undergoing a rapid transformation aimed at increasing the quality of services provided at the same time as efficacy is increased and costs reduced [1–3]. Health care is not immune to these changes. Possible effects on staff well-being and job satisfaction from the transformation of organizations have been the focus of numerous articles [4–8]. A major concern has been whether current changes might impact on the quality of care provided [9–15]. Studies by Aiken and *et al.* link lower job satisfaction, a common consequence of organizational change and staff reduction, to higher mortality [14,15]. A sample of so-called magnet hospitals, known for attracting nurses, had lower mortality than a matched sample of non-magnet hospitals

[15]. It has been suggested that organizational attributes, e.g. greater nurses' autonomy and control over everyday work decisions, contribute to these differences [15]. Mortality and professional clinical outcome data, however, are only one facet of quality; staff perception of the quality of the care they provide is another important aspect, especially because work satisfaction correlates with staff rating of quality of care [16]. Weisman and Nathanson [17] reported a correlation between staff satisfaction ratings and patient satisfaction. However, to the best of the author's knowledge, there is no publication reporting a statistically significant correlation between staff-rated quality of care and mortality outcome data [14].

Address correspondence to Bengt B. Arnetz, Department of Public Health Sciences, Karolinska Institute and the Department of Care Processes and Health, National Institute for Psychosocial Factors and Health, P.O Box 230, SE-171 77 Stockholm, Sweden. Tel: +11 46 8 7286939. Fax: +11 46 8 33 43 96. E-mail: bengt.ametz@medhs.ki.se

As numerous reports show a correlation between organizational changes and lower job satisfaction, it is hypothesized that lower job satisfaction will impact unfavourably on quality of care as determined not only by patients and hard outcome data but also as perceived by staff themselves.

This paper is based on theoretical concepts and models by Hinshaw and Attwood [18], Price and Mueller [19], and Arnetz [20]. The models describe different determinants of job satisfaction, e.g. organizational structure, enjoyment, work load, management style, job commitment, and quality of services.

Objectives

The current paper is part of a multi-disciplinary assessment of the impact of major organizational changes and financial cut-backs on the health care system for the 2 million inhabitants of the greater Stockholm area. The paper focuses on how staff members perceive these changes in terms of quality of care provided, and on possible relationships of the changes to professional and management issues.

Material and methods

Design

A cross-sectional questionnaire survey, using a validated and frequently used survey instrument to assess staff perception of their organization, work environment and quality of care.

Setting

A random sample of health care employees of the county council of greater Stockholm, Sweden.

Study participants

A random sample of 1400 health care employees of the county council of Stockholm, with a total of 22 000 permanent health care staff, were selected from a computerized central employee listing. Physicians and nurses, representing managerial and non-managerial staff, were the focus of the study. However, nurse assistants and nurses' aides were also included in the sample. The overall response rate was 68%, following adjustment, as far as possible, for employees on long-term administrative and educational leave and incorrect addresses, estimated at 1–2%. The response rate for physicians was 280 out of 439 (64%), nurses 410 out of 629 (65%), and for other health care professionals it was 241 out of 400 (60%). The sample was representative with regard to profession, age and sex for the total population of health care staff in the greater Stockholm area. The respondents represented medical and surgical in-patient hospital disciplines (455 respondents or 49% of total responses), psychiatry (128; 14%), geriatric and long-term medicine (80; 8%), primary health care (147; 16%), and 'other', such as laboratory medicine, radiology etc. (120; 13%). Eight out of 10 respondents were women (751).

The age distribution was as follow: 7% 30 years of age or younger, 42% aged 31–44 years, and 51% aged 45 years and older.

Of the respondents, 73% reported having no managerial position and 27% reported having some kind of management position.

Main outcome measures

Personnel selected in the random sample were mailed an anonymous questionnaire addressed to their home address. A signed letter from the author, in addition to one from the senior management of the county council of Stockholm, were mailed together with the questionnaire. These letters provided instructions as to how to fill out the questionnaire, the reasons for the study, and how the results would be used. The anonymous nature of the questionnaire was stressed, such as, all questionnaires and analyses would be handled by the independent research group. Two weeks after the initial mailing, a reminder was mailed to all participants encouraging the filling out of the questionnaire, should they not have already done so. All addressees were promised, and later received, a short report of the study results.

Questionnaire content

The quality work competence (QWC) questionnaire was based on a validated and published version that had been designed for the assessment of organizational and staff well-being using staff ratings of the following 10 key enhancement areas/indices: mental energy, work climate, work tempo, performance management, participatory management, skills development, quality of the internal communication process, clarity of organizational goals, organizational efficacy, and leadership. Each enhancement index consists of three to seven multi-point questions with standard Likert check-off scales. Response alternatives were typically: disagree strongly, disagree somewhat, partly agree to agree strongly or no, never, no, rarely, yes, sometimes, yes, most of the time. The multi-item factors were confirmed using principal component analysis with varimax rotation. Cronbach's α values were 0.7 or higher with individual factor loadings of 0.5 or higher. The percentage scores on the enhancement indices ranged from a possible low of 0% to a high of 100%. The only revision from the originally published scales was the introduction of two new enhancement indices or scales measuring work tempo and quality of the internal communication process. These scales have been developed in a series of studies, based on samples totalling approximately 100 000 employees. Table 1 lists individual questions making up the various scales. For further details, please refer to Arnetz [1,20,21].

In the present study, an overall score of organizational and staff well-being was calculated based on the sum of the weighted score on each of the previously listed 10 enhancement indices, with the exception of quality of the internal communication process, and converted into per cent values. Based on current psychosocial practice and research these 10 enhancement areas are major determinants of staff well-being and job satisfaction [1,17,18,20,21]. The weighting

Table 1 Areas covered by specific questions included in the organizational enhancement indices (QWC)

Mental energy	Employee-ratings of: feelings of restlessness, irritability, worry, feeling low, moodiness, difficulty concentrating during the last month (4-point scale ¹⁻³) The fewer of these symptoms, the higher the score
Work climate	Atmosphere at work, cohesion among co-workers, supportive atmosphere among co-workers ^{1,2,4}
Work tempo	Time for planning work duties in advance, sufficient time to execute tasks, time to reflect upon/consider how tasks had been carried out, time to consider how work processes could be improved in one's department ^{1,5}
Performance feedback	Clear work directives from immediate supervisor, feedback from supervisor when task has been done well and poorly, respectively ^{1,2,5}
Skills development	Professional skills development in one's work, immediate supervisor provides employee with opportunities for skills development, opportunities for a more advanced position within health care, one's skills are utilized in current position, current job tasks offer professional development ^{1,2,5}
Goal clarity	Workplace goals are: well-defined, realistic, influenceable, assessable ^{1,2,6}
Participatory management	Opportunity to influence workplace decisions, actual influence over workplace decisions in relationship to desire ⁷ , latitude for deciding how work should be done, latitude for deciding what tasks should be done, sufficient influence in relationship to responsibilities, access to adequate information to carry out work duties efficiently, information from immediate supervisor sufficiently concrete to be useful in one's work ^{1,2,5}
Efficacy	Planning of work duties, employees strive toward the same goals, resources used optimally at work, the decision making process is functional ^{1,2,5}
Leadership	Immediate supervisor: clear in his/her communication, acts consequently, has described how to achieve departmental goals, provide opportunities to develop employee's professional skills, open for change in workplace organization and work habits ^{1,2,5}
Internal communication	Adequate information to carry out work duties efficiently, information from immediate supervisor sufficiently concrete to be useful in one's work, immediate supervisor is clear in his/her communication style, employee opportunity to comment information from immediate supervisor ^{1,2,5}

¹All such multiple-point questions used standard Likert check-off scales. ²Positive scores, that is, higher percentage more desirable, converted to percentage. ³Response alternatives: No; yes, sometimes; yes, multiple times; yes, daily; ⁴Response alternatives: Disagree strongly; disagree somewhat; agree somewhat; agree strongly; ⁵Response alternatives: No, never; no, rarely; yes, sometimes; yes, always; ⁶Not at all, not really, to a certain degree, yes, to a high degree. ⁷3-Point scale: if less influenced than desired (1 point), if influence = desire (4 points), if influence larger than desired (2 points).

of individual enhancement indices was based on Pearson's correlation between each individual enhancement index and the total non-weighted summed score of all nine enhancement indices based on statistical analysis in this and other studies, including more than 140 000 employees. In addition, linear regression was used to determine the relative weight for each enhancement index. The overall weighted organizational percentage score was called the Focus score enhancement index, range 0–100%. Cronbach's α of the Focus score enhancement index was 0.89 with individual factor loadings of 0.5 or higher. In short, mental energy (weighting factor used 2 ×; regression coefficient 0.015), work climate (2 ×; 0.028), and work tempo (2 ×; 0.014) were weighted the lowest in the final Focus score enhancement index. Performance management (5 ×; 0.03), skill development (5 ×; 0.01), and clarity of goals (5 ×; 0.01) received mid-level weightings. Participatory management (10 ×; 0.02), organizational efficacy (10 ×; 0.02), and leadership (10 ×; 0.03), proved to be the three most important predictors in the final regression model, explaining 15%, 4%, and 76%, respectively, of the

explained variance. Performance management contributed an additional 1.5%. The other factors contributed less than 1% to the model.

In addition to the above enhancement areas, an index was created summarizing the staff ratings of the quality of care offered in various areas by their department – the total quality enhancement index. The multi-point questions forming the Quality-of-care index, used Likert check-off scales: the questions covered areas previously validated against department-specific ratings by patients and found to correlate with patients' ratings, although at a lower absolute level [21]. In addition to 4-point response alternatives, respondents could choose to check off 'unable to assess' and 'not relevant'. The latter two response alternatives were not included in tallying the overall Quality-of-care enhancement score, which was subsequently converted into percentage points also. Cronbach's α of this scale was 0.9 with factor loadings of 0.6 or higher. Questions included in the scale were staff's perception of the quality of care their department offered in terms of: information to patients concerning the disease, work-ups and

treatment; information about hospital routines; accessibility to care and professional resources, e.g. access by phone to nurses and physicians and waiting time; staff attitude; patient involvement in decision making processes; quality of medical care and treatment; and nursing care.

In the statistical analysis, one-way analysis of variance (ANOVA) or χ^2 statistics were used to assess the statistical significance of continuous and discrete variables, respectively, such as quality of care and organizational well-being, as a function of various classifying variables e.g. medical discipline, profession, managerial position, age, and sex. Person's r^2 was used to look at bivariate correlations for continuous variables.

Multiple linear forward-stepping regressions were used to test the theoretical models for the two outcome measures of interest: Organizational Focus score enhancement and Quality-of-care enhance indices, respectively. Only classifying background variables (medical discipline, professional category, managerial level, age category, and sex) and variables found to be univariately significantly related to one or both of the two dependent variables of interest were included in the regression model.

Statistical significance was set to a *P*-value of < 0.05 .

Results

Staff ratings of current quality of care

Of the staff, 12% were very satisfied with the care they personally offered their patients and an additional 60% were rather satisfied; 21% were not particularly satisfied and 7% were not at all satisfied with the care offered. There was a significant association between higher ratings of organizational and employee well-being, as measured by the overall organizational Focus score enhancement index, and staff ratings of the quality of care they provided to their patients (r^2 , 0.30; $P < 0.001$).

Of the respondents, 50% stated that there was a great need to improve the overall quality of care offered to patients, while 48% said there was somewhat of a need. Less than 3% saw no need to develop the quality of care further.

With regard to what the staff believed patients themselves thought of the present quality of care offered, 15% thought the patients were very satisfied with the care offered, 70% thought they were rather satisfied and 13% thought that they were not very satisfied; 3% of the staff thought the patients were not satisfied at all.

Changes in staff ratings of quality of care offered as compared to the previous year

Sixteen per cent of the respondents answered that the quality of care furnished by their own department was much lower today than it had been 1 year ago. An additional 28% stated that it was somewhat lower, 38% rated the quality as unchanged, 12% rated the quality as somewhat higher and 2% rated it as much improved; only 4% of the respondents were unable to rate current quality of care as compared with 1 year earlier. There was a significant and positive association

between higher organizational Focus enhancement index scores and improved quality of care ratings during the last year (r^2 , 0.4; $P < 0.001$).

Sixty per cent of the staff felt that the overall quality of health care offered by health care institutions in general had decreased during the last year, 33% rated it as unchanged and 7% rated it as improved.

Almost 62% of the staff thought that patient access to health care had declined during the last year, 32% rated it as unchanged, and 6% rated it as improved. Higher organizational Focus enhancement index scores were positively associated with more positive outcome with regard to access to health care (response alternatives: access – worsened, similar, and improved, $F_{2, 652}$, 10.6; $P < 0.0001$).

Fewer staff members believed that the information to patients had worsened during the last year (20%) as compared with 63% who rated it as unchanged and 17% rating it as improved.

Organizational and employee well-being (Focus score) as a function of key classifying variables

The weighted overall Focus score enhancement index did not differ significantly across disciplines, managerial levels, age or sex. However, physicians rated significantly ($F_{2, 662}$, 6.9; $P < 0.01$) lower on the overall weighted organizational Focus score enhancement index (56.7, SEM 1.3) than did nurses (61.7, 0.8) and all 'other' health care professionals (61.8, 1.2).

The weighted organizational Focus score enhancement index was used as the dependent variable in multiple linear regression analyses. Independent factors entered were the standard set of background variables and univariately significant variables. Results from the best model are presented in Table 2.

Association between organizational well-being (Focus score) and quality of care.

Pearson's correlation between the percentage scores on the weighted organizational Focus score enhancement index and the total Quality-of-care enhancement index was 0.3 ($P < 0.001$).

Using the total Quality-of-care enhancement index as the dependent variable, and the previously listed background variables (in addition to the weighted organizational Focus score enhancement index) as predictor variables, it was found that the Focus score enhancement index was the only significant predictor, explaining 9% of the explained variance in the Quality-of-care enhancement index. The most important determinants of staff-rated quality of care, using the same model as that shown in Table 2, were job commitment, (r^2 , 6%), followed by ability to influence work place decisions (2%), and opportunity to comment on supervisor's information (1%).

Job satisfaction, organizational well-being, and quality of care

There was a strong correlation between job satisfaction and the weighted organizational Focus score enhancement index

Table 2 Multiple linear regression model using weighted organizational Focus score enhancement index as the dependent variable

Predictor ¹	Step no	Adjusted r^2	F to enter
Concrete information from immediate supervisor	1	56	833
Ability to comment on supervisor's information	2	12	260
Ability to influence workplace decisions	3	6	154
Clear work directives from supervisor	4	4	114
No immediate plans to quit present work	5	2	74
Access to sufficient information to carry out work	6	2	62
Total variance explained by model		82	

¹All multiple-point questions used 4-point Likert check-off scales; see footnotes to Table 1.

(r^2 , 0.5; P = 0.001). The correlation between job satisfaction and the total quality of care index was weaker (r^2 , 3; P <0.01).

Discussion

A major overhaul of the financing and structure of the entire health care system of the greater Stockholm region, with a catchment area of approximately 2 million people, offered an opportunity to assess the perceived impact on organizational well-being and quality of care from the professional medical staff perspective.

The target of the study was primarily physicians and registered nurses, representing all major inpatient and outpatient disciplines. The overall response rate was 70%, allowing a reasonable generalization of the findings.

Overall, surveyed health care staff members believed that patients were rather satisfied with the care provided. This is in agreement with previous Swedish patient surveys [21]. Nevertheless, a majority of staff believed there was a great need to enhance further the quality of care offered by the health care system in general. Almost 40% of the staff were dissatisfied with the quality of care furnished by their own department. These data suggest that even though patients, from their vantage point, might be satisfied with the care provided, medical professionals express a great need for further improvements. It is reasonable to believe that staff in general have better knowledge of the quality of care provided and a wider frame of reference of what the optimum quality could be like; they are therefore more likely to identify improvement opportunities. Previous research also suggests that patients and staff do not always focus on the same areas when they rate quality of care [21] and so it may be beneficial for the total quality management process to integrate staff and patient ratings in quality of care assessments and enhancement processes. A consequence of such widening of the assessment of quality of care might be a stronger and more active commitment to total quality by staff. One concern with the present approaches to the continuous improvement process is the difficulty of sustaining staff focus on the quality process in the midst of other demands made upon their limited time.

Regarding the job impact from ongoing organizational, structural and financial changes in the Stockholm region's health care system, 87% of the staff reported that their workload had increased during the last year; 11% stated that it was unchanged and only 2% perceived the workload to be decreased. Employees in departments where the overall organizational Focus score enhancement index was lower were more likely to report increased workload as a consequence of recent changes and cut-backs. This finding indicates that changes in workload during the last year are not necessarily related only to specific financial cut-backs and organizational changes but also to the overall quality of the management-staff interaction and the way new challenges are faced and managed. There was also an association between job satisfaction and the organizational Focus score enhancement index. As job satisfaction has been linked to patient compliance and satisfaction [18], improvement in overall organizational well-being should impact favourably on both personnel and patients [21,22].

As many as 60% of the staff believed that the overall quality of the health care system had decreased during the last year. More specifically, 62% rated patient access to medical care as decreased and 20% believed that the information provided to patients had worsened during ongoing changes. With regard to their own department, 44% rated the quality of work done as worse than 1 year earlier. How reliable an indicator is staff perception of quality of care? The Stockholm county council's Patient's Advocacy Committee reported that complaints from patients increased from 3100 reports in 1997 to 4100 in 1998. This is the very time period covered in our retrospective question concerning staff-perception of changes in quality of care during the last year (personnel communication, Ms Åsa Rundquist, Head of the Patient's Advocacy Committee). Furthermore, incidence reports from the surgical department of one of the major Stockholm hospitals reveal an increase from 18 incidents with potentially dangerous consequences for the patient in 1996 to 39 such incidents in 1997. Reports to the Patient's Advocacy Committee from patients of the same department increased from six in 1997 to 22 in 1998. Thus, independent aggregate data from patient complaints as well as incidence reports support the conclusion that there has been an actual worsening in at

least those aspects of quality perceived by patients, hospital personnel, and management.

The general picture provided by staff is one of worsening quality of care that is somewhat more accentuated for health care organizations in general as compared to staff's own departments. It is possible that the ongoing media focus on the present health care 'crisis' has tainted staff's perceptions somewhat. This conclusion is supported by the findings that staff rate health care quality in general to have decreased more than is actually the case for one's own department. It is also possible that personnel are less likely to criticize worsening quality in their own department out of loyalty and/or fear of retribution, even though the questionnaire was completely anonymous. After all, the staff themselves are part of the overall quality process and thus an important component in determining the overall quality level. However, independent data concerning patient complaints for the last 2 years show the same trend toward a worsening of perceived quality of care.

Because there were measurable differences as to how respondents rated present changes in the medical system in terms of organizational well-being, job satisfaction, and quality of care it is of interest to identify predictors of organizational well-being and, ultimately, quality of care. By identifying underlying factors susceptible to management interventions, focused enhancement initiatives should be able to improve overall quality.

In the present study, a significant association was found between the weighted overall organizational Focus score enhancement index and the Quality-of-care enhancement index. This association indicates that quality of care, at least from the staff perspective, is closely linked to organizational factors. This is in line with cross-sectional studies by Aiken *et al.* [14,15] linking organizational measures, nurse autonomy, and ward atmosphere to actual mortality. In order to identify organizational factors of importance, a few selected factors, previously found to be of relevance to job satisfaction, were regressed on the organizational Focus score enhancement index [18–21]. The most important predictor of organizational health was that the immediate supervisor provided the staff with pertinent information to carry out everyday work duties, followed by staff opportunities to comment on information presented by management. The third most important factor was staff's ability to influence and contribute to workplace management decisions. In addition, clear work directives from one's immediate supervisor were also of importance as was organizational commitment by staff. Access to information needed to carry out assigned work duties also played some part. Following the accounting of these five predictors, other factors such as discipline, profession, sex, and managerial level did not add significantly to explain the overall variance in the best-fitted model of organizational well-being. These findings support those of Aiken *et al.* [14,15] suggesting an association between nurse autonomy, influence over daily work routines and lower mortality. In the current study, there was also an association between job satisfaction and overall organizational well-being as well as staff-perceived quality of care. In summary, it appears that

determinants of job satisfaction, such as autonomy, influence over daily decisions, participatory management and skill development impact favourably on perceived quality of care, either directly or via job satisfaction.

In a study by Davidson *et al.* [7], downsizing resulted in lower job satisfaction among nurses. The present study links lower job satisfaction to lower quality of care as perceived by the staff. In the present study, 85% of the respondents reported that work load had increased during the last year as a consequence of cut-backs. Increased workload relates to decreased job satisfaction. As lower job satisfaction impacts unfavourably on staff as well as patient perceived quality of care, the present data indicate that quality of care measures might actually decrease in the future in the greater Stockholm area, assuming that all other things remain unchanged. Job satisfaction was more strongly associated with organizational well-being than with staff-perceived quality of care; job satisfaction has been associated with both staff and patient-perceived quality of care in previous studies as well as staff turnover [7,18]. Clearly, high turnover will impact unfavourably on quality of care and will probably weaken social cohesion in the work group.

There is a shortage of studies addressing how professional health care staff perceive that current transformations of health care impact on the quality of care offered [13,15]. Previous cross-sectional studies have linked staff job satisfaction with patient compliance [18] as well as actual mortality [12–14]. Shortell *et al.* reported a significant association between the psychosocial climate ('the culture, leadership, coordination, communication, and conflict management abilities of' [22, p. 508]) of intensive care units and lower risk-adjusted length of stay among intensive care patients, lower nurse turn-over, and higher staff-rated quality of care provided; however, they were not able to demonstrate a significant association between staff-rated quality of care and actual mortality. A study by Chen *et al.* [23] reported that 'America's best hospitals', published yearly by U.S. News and World Report, had lower 30-day mortality among elderly patients with acute myocardial infarction than other hospitals; however, after accounting for factors such as use of aspirin and beta-blockers, the differences decreased. In another study Arnetz and Arnetz [21] reported that departments receiving high scores from patients also receive high scores from personnel, both in terms of quality of care as well as perceived ward atmosphere. However, in absolute points, the personnel appear to rate the overall quality lower than do patients. Thus, the personnel's view of the quality of care provided appears to be a relevant factor in determining total quality of care independently of other outcome measures. Because organizational change impacts on factors such as job satisfaction, psychosocial climate and staff turnover, it is relevant to study possible effects on staff-rated quality of care. Early indications of staff-perceived quality of care changes might signal more severe problems further down the line.

These findings are based on a large cross-sectional sample that limits the ability to discuss cause-effect relationships. However, based on the analytical model used and our working hypotheses, it appears that management issues, related to

how staff are kept informed and engaged in every-day decision making, are of significant importance in order to create top quality care environments. Future research might benefit by the inclusion of employee satisfaction ratings in studies of determinants of overall quality of care. By engaging the staff in quality of care ratings, the force and sustainability of total quality management initiatives are likely to be increased.

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