# Relationship Between Nurses and Physicians in Terms of Organizational Culture: Who Is Responsible for Subordination of Nurses?

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**Aim** To investigate how nurses and physicians perceive organizational culture, their integration into the organizational processes, and relations within a health care team.

**Methods** We performed a cross-sectional study that included 106 physicians and 558 nurses from 14 Slovenian hospitals in December 2005. The hospitals were randomly selected. We distributed the questionnaires on the same day to physicians and nurses during a morning shift. The total number of distributed questionnaires represented a 20% of each personnel category at each hospital. The following variables were studied: organizational culture, integration of nurses and physicians in hospital processes, and subordination of nurses to physicians.

**Results** Physicians and nurses favored a culture of internal focus, stability, and control. Both groups estimated that they had a low level of personal involvement in their organizations and indicated insufficient involvement in work teams, while nurses also thought that they were subordinated to physicians (mean ± standard deviation, $3.6 \pm 0.9$ on a scale from 1 to 5) more than physicians thought so ($2.7 \pm 1.0$; $P<0.001$).. Control orientation correlated positively with the subordination of nurses ($P<0.005$) and negatively with personal integration in an organization ($P<0.005$).

**Conclusion** We found out that subordination of nurses can be explained by market culture, level of personal involvement, and the level of education. Our research showed that the professional growth of nurses was mainly threatened by organizational factors such as hierarchy, control orientation, a lack of cooperation and team building between physicians and nurses, as well as insufficient inclusion of both physicians and nurses into change implementation activities.

In Schein's words: "Organizational culture refers to a shared value system derived over time that guides members as they solve problems, adapt to the external environment, and manage relationships" (1). Many authors agree that Schein's is the most complete definition of organizational culture. Schein (1) defines it as follows: "Organizational culture is the pattern of shared basic assumptions – invented, discovered, or developed by a given group as it learns to cope with its problems of external adaptation and internal integration – that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems."

Organizational culture is a factor leading to a successful implementation of changes in health care organizations and fostering learning through work processes (2). The culture should encourage change implementation and at the same time establish work quality as a value. Shortell et al (2) describe different health care subcultures, such as physicians – managers, physicians – nurses, employees – leaders, unit cultures, team cultures, and professional group cultures. Subcultures are one of the major obstacles in achieving the common goals of an organization, because the broad differentiation of work leads to a differentiation of tasks and, consequently, to a differentiation of goals within the various departments/units (2). There is a body of research devoted to the improvement of collaboration between health care workers, with a significant portion of it suggesting shared learning as an important means of increasing collaboration (3). Shortell et al (4) believe that physicians should be aware of the fact that they cannot be the only ones responsible for a patient. They must work in a team and collaborate with all health care professionals and patients. Degeling et al (5) claim that medicine has historically had patronizing relationship toward

nursing. Nursing is usually depicted as practical, female, moral, and subsidiary, as compared with the scientific, male, instrumental, and superordinate orientations of medicine. These elements have provided justification for the claimed centrality in the internal organization of nursing, whose operation, in turn, has tended to privilege medicine's claimed diagnostic and curative role and relegate nursing to that of subservience and support. Degeling et al (5) also claim that conventional models of nursing depict nurses as disciplined, altruistic auxiliaries, who support medicine in applying its knowledge and expertise.

The cooperation between nursing and medicine is of strategic importance for high-quality patient care and for creating a positive work environment for both groups of health care professionals. The cooperation should not be created only on a personal level, but also on a professional level, while achieving health care goals.

This study focuses on the ways nurses and physicians perceive organizational culture, their integration into the organizational processes, and perception of relations within a health care team.

## Methods

### Sample and study design

The study sample included 558 registered and assistant nurses and 106 physicians from 14 Slovenian hospitals, which represent 42% of the total bed capacity of Slovenian 26 hospitals. The hospitals were selected by random sampling from the hospital list.

The consent for conducting the study was obtained from hospitals' managers, who then appointed a research coordinator in each hospital. The coordinators were either responsible for quality implementation at the hospital or for the health care sector at the primary or secondary management levels. In each hospital, a

research coordinator distributed questionnaires on the same day to 20% of physicians and 20% of nurses present during the morning shift. We used a rational subgroups method (6).

The respondents had a minimum of seven days to fill out the questionnaires and place them in a folder at their department. The research was conducted in December of 2005. We did not need the approval of an ethics committee. The research was supported by the Ministry of Health of Slovenia.

### Instrument

The following variables were studied: organizational culture, integration of nurses and physicians in hospital processes, and subordination of nurses to physicians.

*Organizational culture.* We used the validated questionnaire by Cameron and Quinn (7). This questionnaire was proved suitable for assessment of the organizational culture in health care (2,8-11). The type of organizational culture depends on whether an organization has a predominantly internal or external focus and whether it strives for flexibility and individuality or stability and control. There are several types of organizational culture as follows: 1) clan – an organization that concentrates on internal maintenance with flexibility, concern for people, and sensitivity for customers; 2) hierarchy – an organization that concentrates on internal maintenance with a need for stability and control; 3) adhocracy – an organization that concentrates on external positioning with a high degree of flexibility and individuality; and 4) market – an organization that concentrates on external maintenance with a need for stability and control.

Participants were asked to respond to 24 statements on organizational culture. These were divided into six dimensions with four descriptive statements each. The dimensions included dominant characteristics, organi-

zational leadership, management of employees, organizational glue, strategic emphases, and criteria of success. The respondents distributed 100 points across each dimension, to show the degree of their agreement with each of the statements. Mean point spread for each of the four dominant culture types was calculated, as well as the coefficient of internal consistency of the questionnaire, with the following α coefficients: clan – 0.822, adhocracy – 0.717, market – 0.839, and hierarchy – 0.829.

*Personal involvement in an organization.* Nurses' and physicians' personal involvement in hospital health care teams was established with 6 statements, which were formed in accordance with previous studies (12-21). We made a derived variable "personal involvement," with the α coefficient of 0.782. Respondents were asked to rate the statements on a 5-point Likert-type scale, where 1 stands for "strongly disagree" and 5 stands for "strongly agree."

*Subordination of nurses.* Perception of nurses' subordination was investigated with 4 statements, which were formed in accordance with previous studies (4,22-27).

We made a derived variable "subordination of nursing" with the α coefficient of 0.689. Respondents were asked to rate the statements on a 5-point Likert-type scale, where 1 stands for "strongly disagree" and 5 stands for "strongly agree."

### Statistical analysis

The data was processed with SPSS software, version 15.0 (SPSS Inc., Chicago, IL, USA). The following statistical methods were used for all variables: descriptive statistics, reliability analysis, one-way ANOVA, *t* test for independent samples, paired samples test, regression analysis and bivariate correlations. In correlations analysis, we used all variables and

demographic data. The level of statistical significance was set at *P*<0.05.

**Results**

The total response rate was 44.3%, with 664 returned questionnaires; 558 for nurses (51.3% response rate) and 106 for physicians (25.9% response rate). Mean ± standard deviation length of employment was 15.8 ± 9.3 years for nurses and 18.0 ± 9.5 years for physicians. The average age was 37.5 ± 8.7 years for nurses and 46.3 ± 9.0 for physicians. There were 94.9% of women among nurses and 51.4% among physicians. The level of education differed; 50.4% (n = 281) of nurses had completed secondary education (assistant nurses), 13.6% (n = 76) had a two-year college degree, 34.6% (n = 193) had a higher education degree (registered nurses), and 1.4% (n = 8) had a university degree. All of the physicians in the sample had at least a university degree.

*Organizational culture*

Physicians and nurses had significantly different scores on current culture type (*P*<0.001) for all types of culture except for market culture (Table 1). The most frequent type of organizational culture was reported to be hierarchy, both by physicians and nurses, followed by market, clan culture, and adhocracy (Table 1).

There were no significant differences between physicians' and nurses' scores on preferred culture type. Both physicians and nurses preferred clan culture and least preferred hierarchy and market culture (Table 1).

The choice of hierarchy (F = 1.208, *P* = 0.306), market (F = 1.048, *P* = 0.371), and clan (F = 1.015, *P* = 0.386) as the current culture type was not significantly connected with the level of nurses' education. However, nurses with a lower level of education (assistant nurses) found the adhocracy culture significantly more present (F = 3.188, *P* = 0.023).

Physicians preferred control organization (60.44 ± 17.2) over flexible organization (39.54 ± 10.4; *t* = 6.661, *P*<0.001). In case of nurses, the difference in preferences between control organization (54.03 ± 10.1) and flexible organization (45.81 ± 8.6) was less pronounced, but still significant (t = 7.311, *P*<0.001). There were significant differences between nurses and physicians in flexible organization and control organization, with nurses favoring flexible organization (F = 17.368, *P*<0.001) and physicians favoring control organization (F = 18.614, *P*<0.001).

There were significant differences between men and women in perception of adhocracy culture (18.67 ± 7.17 for men; 20.93 ± 6.80 for women; *t* = -2.915, *P* = 0.004) as the current culture type. As for the preferred culture, men preferred market culture (16.98 ± 7.58 for men vs 14.25 ± 8.01 for women, t = 3.095, P = 0.002), whereas women preferred hierarchy culture (23.10 ± 8.96 for men vs 26.32 ± 10.88 for women, t = -2.523, P = 0.012).

*Personal involvement*

Respondents were partially satisfied with their personal involvement in hospital work. There were no differences between the personnel groups, except that nurses believed that they

**Table 1.** Total organizational culture scores and scores according to the personnel categories for the current and preferred situations

| Organizational culture | Score (mean ± standard deviation)* | | Occupational differences | |
|---|---|---|---|---|
| | physicians | nurses | F† | P |
| Clan: | | | | |
| current | 21.47 ± 12.86 | 24.69 ± 10.73 | 6.813 | 0.009 |
| preferred | 35.71 ± 11.11 | 37.26 ± 11.95 | 1.393 | 0.238 |
| Adhocracy: | | | | |
| current | 18.07 ± 7.92 | 21.12 ± 6.55 | 16.340 | <0.001 |
| preferred | 22.08 ± 10.43 | 22.33 ± 7.14 | 0.111 | 0.739 |
| Market: | | | | |
| current | 27.42 ± 16.41 | 25.19 ± 10.93 | 2.819 | 0.094 |
| preferred | 15.29 ± 7.87 | 14.51 ± 8.03 | 0.775 | 0.379 |
| Hierarchy: | | | | |
| current | 33.02 ± 17.90 | 28.84 ± 11.02 | 9.269 | 0.002 |
| preferred | 26.41 ± 12.49 | 25.83 ± 10.31 | 0.241 | 0.623 |

*Mean on a scale from 1 to 100.
†One-way ANOVA.

**Table 2.** Physicians' and nurses' scores on the derived variable personal involvement

| Statement | Score (mean ± standard deviation)* | | Differences between categories | |
|---|---|---|---|---|
| | physicians | nurses | F† | P |
| Derived variable personal involvement | 3.1 ± 0.8 | 3.1 ± 0.8 | 0.612 | 0.434 |
| 1. The hospital provides me with opportunities to propose improvements on the key projects being introduced into practice. | 3.1 ± 1.1 | 2.9 ± 1.1 | 4.480 | 0.035 |
| 2. I am able to contribute to change implementation in my work environment through well-organized groups for work process improvement. | 3.2 ± 1.2 | 3.1 ± 1.1 | 0.940 | 0.333 |
| 3. I am happy with my status and role at the hospital. My suggestions and wishes regarding my development are taken into account. | 3.2 ± 1.1 | 3.0 ± 1.1 | 1.979 | 0.160 |
| 4. A sense of hierarchy does not exist in work groups/teams; we all work together toward common goals and contribute our knowledge and experience. | 3.0 ± 1.0 | 2.9 ± 1.1 | 1.589 | 0.208 |
| 5. The change implementation team always includes employees with different knowledge and experience, so that members can complement each other. | 3.1 ± 0.9 | 3.2 ± 1.1 | 0.785 | 0.376 |
| 6. Cooperation and teamwork are values of our hospital. | 3.2 ± 1.2 | 3.4 ± 1.1 | 3.458 | 0.063 |

*Mean on a scale from 1 to 5.
†One-way ANOVA.

had less possibility than physicians to propose improvements for the projects being introduced (Table 2). Nurses were also only partially satisfied with their involvement in implementation processes and teamwork.

The level of education was significantly associated with personal involvement in the organization (F = 3.693, P = 0.003). The mean value of personal involvement was 2.94 ± 0.69 for nursing technicians, 3.16 ± 0.85 for nurses with a two-year college degree, 3.17 ± 0.79 for registered nurses, 3.11 ± 0.70 for physicians, 3.21 ± 0.74 for physicians with a master's degree, and 3.58 ± 0.65 for physicians with a PhD.

Sex was not significantly associated with personal involvement (F = 2.897, P = 0.089). The age was not significantly associated with personal involvement in nurses (F = 1.224, P = 0.176), as it was in physicians (F = 1.664, P = 0.042). The opposite was true for the period of employment (F = 1.538, P = 0.023 for nurses vs F = 0.993, P = 0.495 for physicians).

### Subordination of nurses

There were significant differences between physicians and nurses in their perception of (P < 0.001). The nurses agreed that they were subordinated significantly more than physicians. The nurses' score was significantly higher than physicians' for three of the four statements (Table 3).

The level of education was significantly associated with physicians' opinion on nurses' subordination (F = 4.782, P = 0.001), but not on nurses' opinion (F = 2.353, P = 0.071). In contrast, the age was significantly associated with the opinion of nurses on their subordination (F = 1.471, P = 0.039), but not the opinion of physicians (F = 1.213, P = 0.251). The period of employment was significantly associated with physicians' opinion on the subordination of nurses (F = 1.492, P = 0.092), but not nurses' opinion (F = 1.203, P = 0.192).

Men (n = 79; mainly physicians) estimated the subordination of nurses as significantly lower than women (F = 5.478, P = 0.020; 3.19 ± 0.89 for men; 3.45 ± 0.90 for women). However, the differences among personnel categories according to sex were not significant either for physicians (F = 1.777, P = 0.186) or for nurses (F = 1.741, P = 0.188).

### Correlation analysis

The correlation analysis showed the associations between personnel categories and derived variable subordination of nurses. For nurses, there were significant associations between the organizational cultures clan (r = -0.221, P < 0.001), adhocracy (r = -0.093, P = 0.042), market (r = 0.256, P < 0.001), control organization (r = 0.169, P < 0.001), flexible

**Table 3.** Physicians' and nurses' scores on the derived variable subordination of nurses

| Statement | Score (mean ± standard deviation)* | | Differences between categories | |
|---|---|---|---|---|
| | physicians | nurses | F† | P |
| Derived variable subordination of nurses | 2.7 ± 1.0 | 3.6 ± 0.8 | 80.754 | <0.001 |
| 1. Nurses in the hospital are in a subordinate position, because they mainly act as assistants to physicians. Their area of expertise is not well recognized. | 2.5 ± 1.3 | 3.6 ± 1.3 | 65.258 | <0.001 |
| 2. Physicians in our hospital perceive nurses and other colleagues as their subordinates, therefore creating a sense of hierarchy. | 2.6 ± 1.2 | 3.8 ± 1.1 | 93.528 | <0.001 |
| 3. It is mainly the physicians who wish to stand out in work groups/teams in our hospital, creating a sense of hierarchy between the members. | 2.9 ± 1.2 | 3.7 ± 1.2 | 42.180 | <0.001 |
| 4. It is mainly the leaders who wish to stand out in work groups/teams in our hospital, creating a sense of hierarchy between the members. | 3.0 ± 1.1 | 3.2 ± 1.1 | 3.098 | 0.079 |

*Mean on a scale from 1 to 5.
†One-way ANOVA.

organization (r = -0.172, $P<0.001$), and the derived variable personal involvement (r = -0.264, $P<0.001$). Only one significant association was found for physicians – the organizational culture market (r = 0.245, $P = 0.020$). There was a positive correlation between flexible organization and personal involvement for both nurses (r = 0.399, $P < 0.001$) and physicians (r = 0.400, $P<0.001$). An additional negative correlation between flexible organization and subordination of nurses (r = -0.172, $P<0.001$) was demonstrated only for nurses. The correlation analysis showed in both groups that personal involvement variable was significantly negatively correlated with control organization (physicians: r = -0.400, $P<0.001$; nurses: r = -0.385, $P<0.001$) and positively correlated with the flexible organization of the hospital (physicians: r = 0.400, $P<0.001$; nurses: r = 0.399, $P<0.001$).

### Regression analysis

Finally, we decided to build a regression model in order to find the significant predictors for the subordination of nurses as a dependent variable. The following independent variables were included as potential predictors: organizational culture (clan, adhocracy, market, and hierarchy), derived variable "personal involvement," and demographic data (age, years of employment, and level of education). Sex was not included as a derived variable because the majority of respondents were women (88%).

Regression analysis results showed that the dependent variable subordination of nurses could be explained with three independent variables in 35.4% of cases: personal involvement (8.1%), organizational culture market (10.6%), and level of education (12%) (Table 4).

**Table 4.** Linear regression analysis results for prediction of subordination of nurses variable (F = 21.247; $P<0.001$)

| Model | $R^2$ | $\Delta R^2$ | Change $R^2$ | B | B (β) | P |
|---|---|---|---|---|---|---|
| Constant | | | | 3.530 | | <0.001 |
| Personal involvement | 0.083 | 0.081 | 0.083 | -0.244 | -0.287 | <0.001 |
| Organizational culture market | 0.110 | 0.106 | 0.027 | 0.013 | 0.178 | <0.001 |
| Level of education | 0.126 | 0.120 | 0.016 | 0.112 | 0.129 | 0.005 |

### Discussion

Our study examined the relationship between nurses and physicians in terms of their perception of organizational culture. Our special interest was the phenomenon of subordination of nurses in health care teams. We found out that that physicians and nurses comprehend the subordination of nurses differently. Nurses felt subordinated by physicians and perceived them as a group responsible for creating hierarchical relationships between team members. Our regression model showed that subordination of nurses variance was predominately explained by the independent variables, such as personal involvement, market culture, and level of education.

This study showed that physicians and nurses in Slovenian hospitals favored the cul-

ture of internal focus, stability, and control. This culture does not encourage personal involvement and flexibility, as it is predominately marked by the need for stability, reliability, efficiency, and low costs (7). Market culture was the second most dominant culture type for both personnel categories. It is characterized by external focus, but still stems from control, efficiency, and productivity, and is being marked with a tense atmosphere, central decision making, competitiveness, and results orientation. Apparently, physicians and nurses in Slovenian hospitals tend not to favor clan and adhocracy cultures, which are essential for future development, teamwork, and innovation (7). The current organizational culture in the Slovenian hospitals does not advocate ability of individuals to develop and integrate. We can, therefore, claim that such an organizational culture lacks external focus in terms of integration, comparability, competitiveness, innovation, and communication. Hierarchy and market culture are the two cultures that will not improve the quality of work on the individual, team, organizational, and system levels. Market and hierarchy cultures have been shown to correlate with resistance to change and personal involvement (8,13). Similarly, our study found a negative correlation between market culture and control orientation of the organization and personal involvement in the organization. Results of our study are not entirely comparable to the research from developed countries (5,8,10,24,28). The results for physicians are comparable with similar research (24), but not the results for nurses – nurses in Slovenian hospitals found hierarchy to be the dominant current organizational culture, whereas nurses from other countries were mainly focused on flexibility and teamwork (24). Hierarchical organizational culture and perceived subordination of nursing by physicians found in our study could be explained by inappropriate leadership both in nursing and in medicine.

The results for the derived variable personal involvement and the results for the statements used to establish this variable are not encouraging. Both physicians and nurses estimated their level of personal involvement as low and indicated insufficient involvement in work teams. This means that hospitals are not taking full advantage of the intellectual capital and experience of their employees. The satisfaction of employees with their status and role in the hospital were also poor for both physicians and nurses. This means that the wishes and suggestions of employees regarding their development at work are not being sufficiently considered.

The results of organizational culture and personal involvement indicate that hospitals may act as stressors for individuals, since Slovenian hospitals were shown to favor the culture of internal focus, stability, and control. Furthermore, there is a lack of support for individual work and teamwork, employee growth, participation in decision making, and trust in the employees and their respective tasks. Gollan (29) discovered that high quality communication and consultation between management and employees at the workplace was essential for achieving high involvement management and improved organizational performance and sustainable outcomes for organizations and employees. Our research showed that control-oriented organizational culture did not create conditions in which employees can receive social support from leaders regarding their professional work. The research on successful leadership in Slovenian hospitals found that leaders from the field of medicine are the worst at carrying out their leadership role, when compared with other personnel categories included in the study (physicians, nurses, non-health care workers) (30).

Our regression model showed us that we must make improvements in the area of personal involvement, transform market culture into flexible organizational culture, and foster continuing education of nurses and allow them to employ their knowledge. Corley (31) showed that nurses who work in health care organizations that encourage collaboration with physicians and the development of trust with them experienced less moral distress in ethically complex situations. Tschudin (32) found that people in the position of influence affected everyone with whom they work. Hierarchy culture, which was reported by nurses in Slovenian hospitals in this study, does not promotes communication between physicians and nurses, because physicians tend to control nurses and patronize them. In practice, this kind of behavior is reflected in the fact that physicians are the only ones responsible for patients. This can be very frustrating for nurses, especially when nurses and physicians have opposing views on patients' status and nurses' suggestions are disregarded (33).

The issue of nurse subordination in Slovenia was investigated ten years ago among health education students (34). The study demonstrated that nurses with a two-year college degree normally served as physicians' assistants. This is a direct reflection of the dominant role of physicians in Slovenian health care. Similarly, an extensive study among physicians and nursing professionals estimated that only 12% of nursing technicians and 4% of nurses felt that physicians respected the nursing profession (35). Comparable results were demonstrated by Yazbeck (36), who found that physicians expressed a tendency toward hierarchy and individualism, as well as a dislike for systematic organization of clinical work. This means that there have been no significant changes in this aspect in the Slovenian health care over the ten-year period and

indicates that these values and approaches are deeply rooted.

As opposed to other studies (8,28), we did not find a significant negative correlation between the dominant culture of hierarchy and personal involvement, nor a positive correlation between hierarchy and the derived variable subordination of nurses, but we did find that subordination of nurses could be explained by market culture, level of personal involvement, and level of education. However, both correlations were significant for the organizational culture market, which, together with the hierarchy culture, forms the control organization in Slovenian hospitals. Moreover, both correlations seem to be present for the control organization and flexible organization, which clearly demonstrates the fact that the control orientation of Slovenian hospitals correlates positively with the variable subordination of nurses and negatively with the variable personal involvement. These findings support the earlier research in organizational culture and personal involvement in an organization (17). Other correlations were expected and confirmed previous findings in this field of research (5,8-12,14,19,24,28,30,33,35-37).

A limitation of the study is that response rate in physicians was lower than in nurses. The results for physicians are comparable with the results of other studies in this area.

According to Krogstad et al (14), the only domain of work that significantly predicts high job satisfaction as important for all groups is a positive evaluation of local leadership.

Our study showed that the professional growth of nurses was mainly threatened by organizational factors such as hierarchy, control and market orientation, a lack of cooperation and team building between physicians and nurses, and insufficient inclusion of both physicians and nurses into change implementation activities, which is in accordance with Corley's findings (31). Firth-Cozens and Payne (37),

have demonstrated that those who work in a poorly defined team (pseudo-team), or do not work in a team are significantly more likely to report higher levels of psychological distress and lower job satisfaction than those who work in a clearly defined team. Meta-analysis of studies dealing with stress at the workplace has shown that the principle cause of stress for employees is the boss, which is why the foremost goals of any organization should be modern leadership and effective teams, both of which contribute to a higher standard of patient care (37). Our research showed that leaders only partially perform their duties pertaining to the establishment of teamwork in hospitals, leaving employees with few opportunities for personal involvement, and that nursing leaders allow the subordination by physicians. From the point of view of organizational culture, the leaders promote hierarchy. We can conclude that nurses in Slovenian hospitals are under strong pressure in their work environment. This result poses a challenge for managers and leaders in nursing and medicine, who are able to change the current trend of hierarchy and internal focus in health care organizations by promoting teamwork culture, innovation, integration, and personal involvement of all health care professions. Only by encouraging these values will hospitals be successful in change implementation, because the quality of services, teamwork, patient-orientation, and an ever-improving organization will become the dominant culture of all health care personnel categories.

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## References

1 Schein E. The corporate culture. Sense and nonsense about cultural change. San Francisco (CA): Jossey-Bass Publishing; 1992.

2 Shortell SM, Zazzali JL, Burns LR, Alexander JA, Gillies RR, Budetti PP, et al. Implementing evidence-based medicine: the role of market pressures, compensation incentives, and culture in physician organizations. Med Care. 2001;39(7 Suppl 1):I62-78. Medline:11488265

3 Hanson S. Teaching health care ethics: why we should teach nursing and medical students together. Nurs Ethics. 2005;12:167-76. Medline:15791786 doi:10.1191/0969733005ne773oa

4 Shortell SM, Waters TM, Clarke KW, Budetti PP. Physicians as double agents: maintaining trust in an era of multiple accountabilities. JAMA. 1998;280:1102-8. Medline:9757863 doi:10.1001/jama.280.12.1102

5 Degeling P, Hill M, Kennedy J, Coyle B, Maxwell S. A cross-national study of differences in the identities of nursing in England and Australia and how this has affected nurses' capacity to respond to hospital reform. Nurs Inq. 2000;7:120-35. Medline:11075109 doi:10.1046/j.1440-1800.2000.00056.x

6 Montgomery DC. Introduction to statistical quality control. 2nd edition. New York (NY): John Wiley&Sons; 1991.

7 Cameron KS, Quinn RE. Diagnosing and changing organizational culture based on the competing values framework. Reading (MA): Addison-Wesley; 1999.

8 Jones KR, Redman RW. Organizational culture and work redesign: experiences in three organizations. J Nurs Adm. 2000;30:604-10. Medline:11132349 doi:10.1097/00005110-200012000-00012

9 Marshall MN, Mannion R, Nelson E, Davies HT. Managing change in the culture of general practice: qualitative case studies in primary care trusts. BMJ. 2003;327:599-602. Medline:12969929 doi:10.1136/bmj.327.7415.599

10 Scott-Cawiezell J, Jones K, Moore L, Vojir C. Nursing home culture: a critical component in sustained improvement. J Nurs Care Qual. 2005;20:341-8. Medline:16177586

11 Lyth DM, Mallak LA, Olson SD, Ulshafer SM, Sardone FJ. Culture, the built environment and healthcare organizational performance. Managing Service Quality. 2003;13:27-38. doi:10.1108/09604520310456690

12 Firth-Cozens J, Mowbray D. Leadership and the quality of care. Qual Health Care. 2001;10 Suppl 2:ii3-7. Medline:11700372 doi:10.1136/qhc.10.2.65

13 Ferlie EB, Shortell SM. Improving the quality of health care in the United Kingdom and the United States: a framework for change. Milbank Q. 2001;79:281-315. Medline:11439467 doi:10.1111/1468-0009.00206

14 Krogstad U, Hofoss D, Veenstra M, Hjortdahl P. Predictors of job satisfaction among physicians, nurses and auxiliaries in Norwegian hospitals: relevance for micro unit culture. Hum Resour Health. 2006;4:3. Medline:16483384 doi:10.1186/1478-4491-4-3

15 Joss R, Kogan M. Advancing quality: total quality management in the NHS. Buckingham (UK): Open University Press; 1995.

16 Pointer DD, Sanchez JP. Leadership: a framework for thinking and acting. In: Shortell SM, Kaluzny AD, editors. Health care management: organization design and behavior. 4th ed. Albany (NY): Delmar; 2000. p. 106-29.

17 Fried B, Rundall Topping S. Groups and teams in health services organizations. In: Shortell SM, Kaluzny AD, editors. Health Care management: organization design and behavior. 4th ed. Albany (NY): Delmar; 2000. p. 154-90.

18 Charns M, Gittel JH. Work design. In: Shortell SM, Kaluzny AD, editors. Health Care management: organization design

and behavior. 4th ed. Albany (NY): Delmar; 2000. p. 191-209.

19  Shortell SM, Bennett CL, Byck GR. Assessing the impact of continuous quality improvement on clinical practice: what it will take to accelerate progress. Milbank Q. 1998;76:593-624, 510. Medline:9879304 doi:10.1111/1468-0009.00107

20  Plsek PE. Complexity and the adoption of innovation in health care. National Committee for Quality Health Care. Available from: *http://www.nihcm.org/~nihcmor/pdf/Plsek.pdf.* Accessed: May 28, 2008.

21  Pettigrew AM, Ferlie E, McKee L. Shaping strategic change. The case of the National Health Service. London: Sage; 1992.

22  Shortell SM, Kaluzny AD. Health care management: organizational design and behavior. 4th ed. Albany (NY): Delmar; 2000.

23  Appelbaum SH. Organizational deflection or who owns the real problems? Debunking the nurse-physician conflict by team building. Leadership & Organization Development Journal. 1992;13:21-6. doi:10.1108/EUM0000000001172

24  Degeling P, Maxwell S, Kennedy J, Coyle B. Medicine, management, and modernisation: a "danse macabre"? BMJ. 2003;326:649-52. Medline:12649244 doi:10.1136/bmj.326.7390.64

25  Davies C. Gender and the professional predicament in nursing. Buckingham (UK): Open University Press; 1995.

26  Witz A. Professions and patriarchy. London: Routledge; 1992.

27  Witz A. Patriarchy and professions: the gendered politics of occupational closure. Sociology. 1990;24:675-90. doi:10.1177/0038038590024004007

28  Jones RA, Jimmieson NL, Griffiths AB. The impact of organizational culture and reshaping capabilities on change implementation success: the mediating role of readiness for change. Journal of Management Studies. 2005;42:361-86. doi:10.1111/j.1467-6486.2005.00500.x

29  Gollan PJ. High involvement management and human resource line sustainability. Handbook of Business Strategy. 2006;7:279-86.

30  Skela Savič B, Pagon M, Lobnikar B. Analysis of leadership in Slovene hospitals: who are successful leaders? Journal of Management. Informatics and Human Resources. 2004;37:5-15.

31  Corley MC. Nurse moral distress: A proposed theory and research agenda. Nurs Ethics. 2002;9:636-50. Medline:12450000 doi:10.1191/0969733002ne557oa

32  Tschudin V. Professional, ethical and legal accountability: the wider perspective. In: Klemenc, Kvas, Pahor, Šmitek, editors. Nursing care in ethics perspective [in Slovenian]. Ljubljana: Association of Nurses, Midwifes and Nurse Technicians; 2003. p. 20-6.

33  Skela Savic B, Pagon M. Individual involvement in health care organizations: differences between professional groups, leaders and employees. Stress Health. 2008;24:71-84. doi:10.1002/smi.1164

34  Pahor M. Reasons for the transition of the education in nursing care to the university level and its characteristics [in Slovenian]. Obzornik zdravstvene nege. 1998;32:185-97.

35  Ovijač D, Škrabl N, Kobilšek P, Cevc M, Pahor M. Collaboration in health care in Slovenia: an overview of the results of a survey study [in Slovenian]. In: Kvas A, Pahor M, Klemenc D, Šmitek J, editors. Collaboration between nurses and physicians in health care team: opportunites for quality improvement [in Slovenian]. Ljubljana: Association of Nurses, Midwifes and Nurse Technicians; 2006. p. 218-35.

36  Yazbeck A. Introducing clinical pathways in the Slovene hospital (clinical) setting: professional cultures and changes in organizational behavior [master's thesis]. Ljubljana: University of Ljubljana, Faculty of Economics; 2004.

37  Firth-Cozens J, Payne R, editors. Stress in health professionals: psychological and organizational causes and interventions. London: Wiley; 1999.