

Relationships of hospital-based emergency department culture to work satisfaction and intent to leave of emergency physicians and nurses

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Summary

Given the limited studies on emergency care management, this study aimed to explore the relationships of emergency department (ED) culture values to certain dimensions of ED physicians' and nurses' work satisfaction and intent to leave. Four hundred and forty-two emergency medical professionals completed the employee satisfaction questionnaire across 119 hospital-based EDs, which had culture value evaluations filed, were used as unit of analysis in this study. Adjusting the personal and employment backgrounds, and the surrounded EDs' unit characteristics and environmental factors, multiple regression analyses revealed that clan and market cultures were related to emergency physicians' work satisfaction and intent to leave. On the other hand, adhocracy, market and hierarchical cultures were related to emergency nurses' work satisfaction. There do exist different patterns among various culture types on various work satisfaction dimensions and intent to leave of emergency physicians and nurses. The findings could offer hospital and ED leaders insights for changes or for building a better atmosphere to enhance the work life of emergency physicians and nurses.

Introduction

Organizational culture refers to a system of assumptions, values and beliefs that can guide the behaviour of members of an organization,¹ or the collective programming and understanding of an organization's members.² It has been demonstrated that various culture types are related to such factors as quality implementation,^{3,4} service quality,⁵⁻⁷ physician satisfaction,⁸ professional growth of nurses,⁹ group cohesion¹⁰ and patient safety.¹¹

Organizational culture can be measured in different ways. It was found that the quantitative instruments of organizational culture in health care varied considerably in terms of their theory, format, length, scope and scientific properties.³ Among these, the competing value framework (CVF) was developed initially from the researches conducted on the major indicators of effective organizations. CVF specifies two major dimensions to different effectiveness criteria (see Figure 1): (1) the extent to which an organizational culture shows flexibility, discretion and dynamism, or stability, order and control; and (2) the extent to which an organizational culture shows internal

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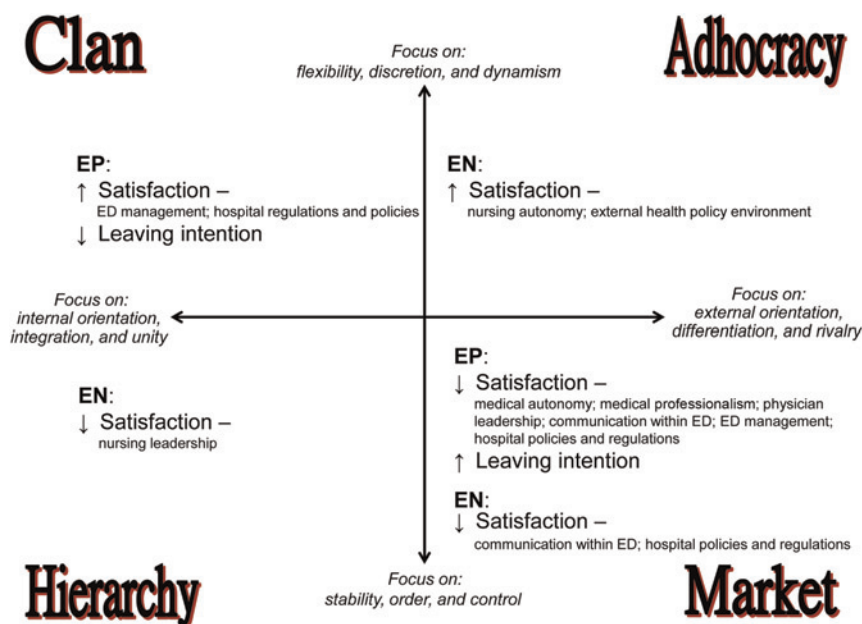


Figure 1 Culture in competing value framework and summary of key findings in this study. EP, emergency physicians; EN, emergency nurses; ↑satisfaction, increased satisfaction; ↓satisfaction, decreased satisfaction; ↑leaving intention, increased leaving intention; ↓leaving intention, decreased leaving intention

orientation, integration and unity, or external orientation, differentiation and rivalry,¹² which develop four types of cultures: clan, adhocracy, market and hierarchy cultures.¹³

Clan culture is characterized by a friendly workplace functioning as an extended family, emphasizing success in terms of leaders as mentors, high cohesion and the morale of employees, and an internal climate with concern for people. Adhocracy culture is characterized as a dynamic, entrepreneurial and creative workplace, emphasizing leaders as innovative and visionary, and success in terms of rapid growth and acquiring new resources. Market culture is characterized as a result-oriented workplace, emphasizing leaders as hard-driving producers and competitors, and success as competitive actions and achieving stretch goals and targets. Hierarchy culture is characterized as a formal and structured workplace, using formal policies and rules to control an organization for stability, predictability and efficiency.¹² The CVF culture classification was most applicable to the circumstances of competitive and changing environment, constrained and scarce resources, and organizational bureaucracy and teamwork/multidiscipline characteristics in health care.

Work satisfaction has been viewed as a key indicator of wellbeing for employees, which has been found to be related to employees' psychological states such as burnout,¹⁴ to employees' behaviour such as absenteeism, turnover and performance,¹⁵ as well as to the quality of care^{16,17} and patients' behaviours.^{18,19} Previous studies in culture effects on employee work life have been conducted. It was found that the organizational cultures differ in terms of employee satisfaction and organizational commitments in US hospital settings,²⁰ on various aspects of individual

physician satisfaction in US group practices⁸ and on employee satisfaction in one Pakistani hospital.⁵

The emergency department (ED), an ever-changing, high-velocity and critical care environment, involves complex interactions between staff members in providing and organizing patient care.²¹ The researchers and practitioners have been devoted to explore unique characteristics and quality of work life for employees working at the EDs. It included emergency nurses' job satisfaction during triage²² and various aspects of emergency physicians' and nurses' work satisfaction in the hospital-based ED.²³ Work satisfaction or dissatisfaction has been an important issue and found as being associated with physicians leaving emergency medicine.^{24–27} Another study revealed that lower overall job satisfaction among emergency physicians is associated with their report of burnout/impairment and with plans to discontinue practising emergency medicine.^{14,28}

Rationale

Although these studies uncovered emergency physicians' and nurses' work satisfaction and their associated unflavored outcomes, limited studies have been done to identify the possible predictors to drive better work satisfaction from the unit culture perspective for employees in EDs. This study, therefore, aims to examine how four culture types in CVF might be related to employee satisfactions in hospital-based EDs. Moreover, some organizational behaviour studies have revealed that different patterns or outcomes in the workplace might exist for physicians and nurses. For example, one study found different patterns of the satisfied factors of emergency physicians from those

of emergency nurses.²³ In a similar vein, another study found different preferred leader behavioural styles on emergency physicians' and nurses' work satisfaction.²⁹ Therefore, this study explored the various culture effects on work satisfaction and intent to leave for emergency physicians and nurses, respectively. Based on CVF, it was expected that the findings might lead to managerial implications to launch unit changes¹³ specified for emergency physicians and nurses.

Methods

Study design and participants

Hospital-based EDs, listed on the Taiwan Hospital Accreditation List 2002 and operating 24/7 were the study population, amounting to 385 hospital-based EDs. This was a cross-sectional survey study, as part of a three-year (2003–2005) national project of social and organizational research on hospital-based EDs, including their culture, conflict management, coordination, communication, leadership, power dynamics, patient safety, employee satisfaction and department performance, measured by multiple questionnaires, funded by Taiwan National Health Research Institute (NHRI) and with compliance with the Institutional Review Board of the research executing organization. Since the required numbers of emergency physicians and nurses vary across the hospital-based EDs according to the estimation of the volume of emergency visits, regulated by Taiwan Hospital Accreditation Association and National Emergency Medicine Association, within each participating ED, two licensed physicians and two licensed nurses practising in the hospital-based EDs were selected for each questionnaire.²⁹

For the assignment of the survey respondents, we had directors in each ED stratify their subordinates into two pools by emergency physician or nurse occupation first. For each pool, this process was used: the ED directors chose as survey respondents, for the first questionnaire, those with the next and second next birthdays. The same logic was used to choose the respondents for the other questionnaire: that is, the respondents with the third and fourth next birthdays received the second questionnaire. This rule avoids the possibility of ED directors picking the respondents they prefer and reduces selection bias. If a selected staff member declined to participate, the staff member with the next birthday was selected, using the same logic as mentioned before.

Depending on the number of the emergency physicians and nurses in the individual EDs, each selected emergency physician or nurse filled only one questionnaire (brochure) when the emergency physician and nurse pools were large enough; otherwise, each selected emergency physician or nurse might fill one or more questionnaires when the emergency personnel pools were small or some of the selected ones turned down our survey. No matter how many questionnaires (brochures) the selected emergency physician or nurse fill, he/she filled the focused questionnaires (brochures) at the different time points.

After completing the questionnaires, the surveyed emergency physicians and nurses returned them to their ED directors in sealed envelopes to preserve respondent confidentiality. Then the ED directors mailed the returned questionnaires back to the research team.²⁹

In this study, data collected from two questionnaires: ED unit culture and ED employee satisfaction were used. It deserves mention that the culture and employee satisfaction questionnaires for independent variables and dependent variables, respectively, were designed on the different brochures and would avoid the respondents making implicitly causal linkage across themes and causing the common method bias.³⁰

Survey content and administration

ED employee satisfaction questionnaire

The ED employee satisfaction questionnaire comprised sections on: work satisfaction, intent to leave and personal characteristics and employment status. The work satisfaction items were 66 item questions for emergency physicians and 60 item questions for emergency nurses, respectively, covering eight dimensions with unique or specified items for their work lives in EDs: medical or nursing autonomy, professional growth and accomplishment, physician or nursing leadership, communication within the ED, communication with other hospital departments, ED management, hospital policies and regulations, and external health policy environments relevant to emergency medicine in Taiwan.²³ The ED employee satisfaction questionnaire was developed based on the literature on emergency management and on input from the preinterviews of two academic professors, 12 emergency practising physicians and three emergency practising nurses. The employee satisfaction question items were validated by content validity and construct validity by factor analyzes and the Cronbach α values had a range of 0.952–0.806 for the ED physician satisfaction questionnaire, and a range of 0.950–0.708 for the ED nurse satisfaction questionnaire.²³ All questions of work satisfaction were measured by a 5-point Likert scale. The intent to leave of each medical professional was measured as 0–100 points, with a higher score indicating greater intent to leave.

Also, the following data on the responding emergency physician' and nurses' personal and employment background were collected for adjusting their work satisfaction and intent to leave EDs: gender, age, education level, employment relationship (coded as permanent or contracted), full-time or part-time employment status in EDs, holding managerial status or not, clinical and ED working years, and perceived extent of busyness.²³ Also, official secondary data were collected in this study on the following hospital-based ED organizational characteristics and environmental factors for adjusting their work satisfaction and intent to leave EDs:³¹ the departmentalization of an ED apart from its hospital, the service lines the ED provided, whether the ED was a member of a regional emergency network, and its hospital accreditation level (i.e., medical centre, regional hospital, or district hospital) as

ED organizational characteristics; and geographical location, area population, area urbanization, and area medical density and dispersion as ED environmental factors.²³

ED unit culture questionnaire

The Organizational Culture Assessment Instrument (OCAI) was used in this study to measure the cultures of the individual hospital-based EDs, as cultures of clan, adhocracy, market and hierarchy.¹² OCAI, which is self-administered and based on a theoretical model of 'CVF', covers 24 items comprising six dimensions: dominant characteristics, leadership, management of employees, organization glue, strategic emphases and criteria of success. We modified the OCAI by adding the words 'your emergency department' in the six dimensions for the ED culture diagnosis to remind the ED respondents to assign the culture values based on the situation solely of the ED, not the whole hospital. The respondents distributed 100 points across four culture types for each of the six dimensions, according to how closely they thought their EDs' values were aligned to each. The Chronbach's reliability coefficients for the culture scales were ranging from 0.77 for clan culture, 0.55 for adhocracy culture, 0.50 for market culture, to 0.59 for hierarchy culture. After the scores were distributed for the six dimensions by individual respondents, four culture types were calculated by averaging the individual response options across the six dimensions.¹² Then, to justify the appropriateness of aggregating the individual responses (raters) to single, group-level variables, we calculated rwg coefficients to estimate inter-rater reliability. The values for group, adhocracy, market and hierarchy culture, respectively, were 0.73, 0.77, 0.77 and 0.69, which were above or close to the acceptable threshold of 0.70, indicating high levels of within-group agreement.^{32,33} Therefore, the responses to the questionnaires in the culture survey were aggregated by the mean method to the individual ED unit level to identify four culture values in each studied ED, on the presumption that all the ED emergency physicians and nurses in an ED unit would share the same atmosphere of culture values.

Data analysis

As mentioned above, the responses to the questionnaires in the culture survey were aggregated by the mean method to the individual ED unit level to identify four culture values in each studied ED, on the presumption that all the emergency physicians and nurses in an ED unit would share the same atmosphere of culture values. On the other hand, the individual emergency physicians' and nurses' eight work satisfaction dimension scores were calculated by using the mean method to develop a composite score for each dimension,²³ plus one measurement of intent to leave, yielding nine dependent variables for each emergency physician and nurse.

With the individual emergency physicians and nurses, respectively, as the unit of analysis, all models of culture effects (one type at a time) on work satisfaction and intent to leave were adjusted for emergency physicians'

and nurses' personal and employment characteristics, respectively, and their surrounded ED facility characteristics and external environments in the individual levels. It is worth mentioning that the data in this study could have been analyzed by multilevel analysis if the hospital-based ED settings had notable demographic, organizational and contextual differences. However, we checked the intraclass correlation coefficient (ICC) index for the dependent variables: individual medical professionals' satisfaction dimensions (all ICCs < 0.002) and intent to leave (both ICC < 0.001). All the ICC values were less than 0.05, which is the minimum cut-off for performing multilevel analysis, suggesting that the multilevel effects could be ignored in this data-set.³⁴ Therefore, the regression equation was simply expressed as follows (Figure 2):

$$Y_{\text{each work satisfaction dimension or intent to leave}} = \beta_0 + \beta_1 X_{\text{one specified ED culture}} + \beta_{2 \sim n} X_{2 \sim n(\text{adjusting factors})}$$

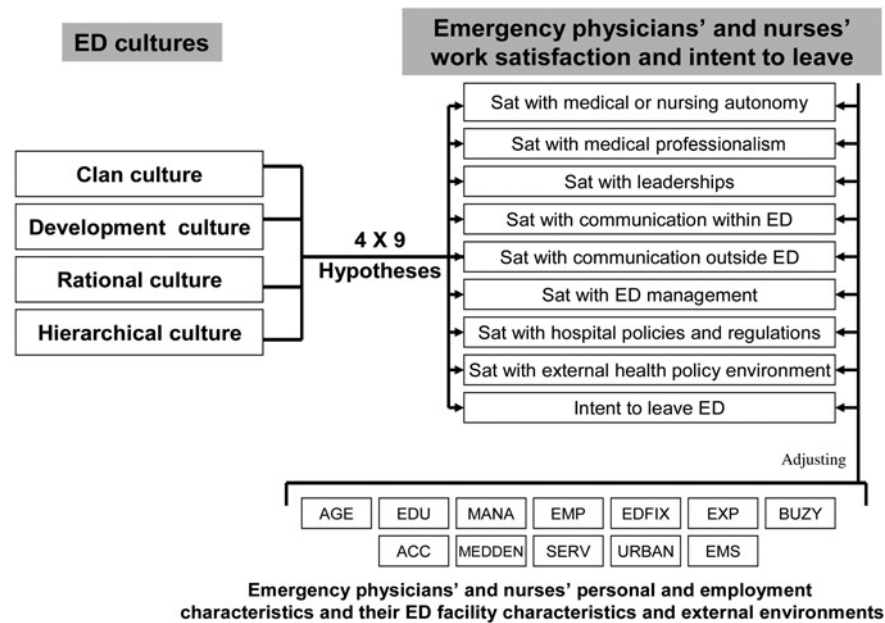
To avoid the multicollinearity among the medical professionals' personal and employment characteristics and ED facility characteristics (adjusting factors), correlation analysis test was performed, the variables: medical experience, ED experience and medical dispersion, which exceeded certain correlation threshold, 0.60, with several other variables, were excluded in the final regression modelling.

All statistical analyses were performed using SPSS 15.0 software (SPSS Inc., Chicago, USA).

Findings

Four hundred and forty-two emergency medical professionals completed the employee satisfaction questionnaire across 119 hospital-based EDs, which had culture value evaluations filed, and were used as unit of analysis in this study. Around half were physicians (208) and half were nurses (234) (Table 1). Overall, the responding physicians' personal and employment status differed from those of nurses. The EDs' facility characteristics and surrounding ED culture values were not statistically different between emergency physicians and nurses, because the sample sizes of the two groups were almost the same in each ED, and when nested in their EDs they would share the same facility characteristics and surrounding ED culture values.

In terms of ED employees' work satisfaction across eight dimensions and intent to leave, emergency physicians reported higher work satisfaction with medical autonomy, medical professionalism, leadership, ED management, and hospital policies and regulations than did emergency nurses ($P < 0.05$). However, emergency nurses reported higher work satisfaction with external health policy environments than did emergency physicians ($P < 0.05$). No statistical difference in rankings of intent to leave was found between the responding emergency physicians (mean 51.90) and nurses (mean 55.97).



UOA: individual emergency physicians and nurses

Figure 2 Conceptual framework of effects of hospital-based emergency departments' (EDs) cultures on emergency physicians' and nurses' work satisfaction and intent to leave. AGE, emergency physicians' or nurses' age (years); EDU, emergency physicians' or nurses' educations as technical, undergraduate, master or PhD; MANA, emergency physicians' or nurses' managerial positions as yes or no; EMP, emergency physicians' or nurses' employment status as permanent or fixed terms; EDFIX, emergency physicians' or nurses' ED employment as full-time or part-time; EXP, emergency physicians' or nurses' ED experience in the surveyed EDs, by years; BUZY, emergency physicians' or nurses' busyness extent; ACC, EDs' hospital types as medical centres, regional hospitals and district hospitals; MEDDEN, medical density measured as the number of health-care organizations per 10,000 population; SERV, the number of service lines provided by the individual EDs; URBAN, ED locations' urbanization as rural, sub-urban or urban; EMS, EDs' belonging to their regional emergency medical system networks as yes or no

Relationship of ED culture to dimensions of emergency physicians' and nurses' work satisfaction and intent to leave

This study examined four types of cultures and their respective relationships to aspects of work satisfaction and to intent to leave of emergency physicians and nurses. Thirty-six multiple regressions were performed, respectively, for the responding emergency physicians and nurses (Table 2). In terms of the culture effects on emergency physicians, it was found that clan culture is positively related to work satisfaction with ED management and hospital policies and regulations, and with less intent to leave EDs. Market culture, however, is negatively related to all dimensions of emergency physicians' satisfaction, except for satisfactions with communication outside EDs and external health policy environments; and is related to higher intent to leave EDs.

In terms of the culture effects on emergency nurses, it was found that adhocracy culture is related to higher work satisfaction with nursing autonomy and external health policy environments. Market culture is negatively related to emergency nurses' satisfaction with communication within EDs and hospital policies and regulations.

Furthermore, hierarchy culture is negatively related to emergency nurses' satisfaction with their nursing leadership. No culture effects were found to be related to emergency nurses' intent to leave EDs.

Discussion

Given the limited studies on emergency care management, this study explored the various culture effects on work satisfaction and intent to leave for emergency physicians and nurses, respectively. The findings have managerial implications specified for a range of stakeholders, including emergency physicians, emergency nurses, hospital-based ED medical directors and hospital administrators.

Key findings

Our data indicate that different patterns for various ED culture types as related to various dimensions of work satisfaction and intent to leave for emergency physicians and nurses. Clan culture was found to be positively related to emergency physicians' satisfaction on ED management and hospital regulations and policies, and with the reduced intent to leave. In contrast to clan culture,

Table 1 Emergency physicians' and nurses' personal and employment characteristics, surrounded ED facility characteristics and work satisfaction and intent to leave ($n = 442$)

Variables	Scale	Total ($n = 442$)		Physicians ($n = 208$)		Nurses ($n = 234$)	
		Freq. (mean)	% (SD)	Freq. (mean)	% (SD)	Freq. (mean)	% (SD)
Personal and employment characteristics							
Gender*	Male	200	45	191	92	9	4
	Female	236	53	13	6	223	95
Age*		(36.23)	(9.62)	(42.26)	(8.82)	(30.82)	(6.63)
Education*	Nursing college	154	35	0	0	154	66
	Nursing university	259	59	183	88	76	32
	Masters degree	15	3	13	6	2	1
	PhD degree	7	2	7	3	0	0
Managerial position*	Yes	94	21	68	33	26	11
	No	331	75	136	65	195	83
Employment status*	Permanent	347	79	147	71	200	85
	Fixed-term	85	19	52	25	33	14
ED employment*	Full time in ED [†]	234	53	71	34	163	70
	Part time in ED	190	43	128	62	62	26
Medical experience (years)*		(10.39)	(7.29)	(12.72)	(7.98)	(8.35)	(5.94)
ED experience (years)*		(6.10)	(4.82)	(7.24)	(5.06)	(5.12)	(4.37)
ED experience in the surveyed unit (years)		(4.33)	(3.98)	(4.31)	(4.26)	(4.35)	(3.74)
Busyness extent [‡] (0–100)*		(75.74)	(15.82)	(73.69)	(16.63)	(77.54)	(14.87)
ED's facility characteristics							
Hospital accreditation	Medical centre	42	10	20	10	22	9
	Regional hospital	114	26	54	26	60	26
	District hospital	286	65	134	64	152	65
ED service lines provided		(5.06)	(2.13)	(4.99)	(2.15)	(5.13)	(2.12)
Membership of regional emergency management system	Yes	389	88	181	87	208	89
	No	53	12	27	13	26	11
Urbanization	Rural	62	14	29	14	33	14
	Suburban	113	26	54	26	59	25
	Urban	267	60	125	60	142	61
Medical density [§]		(10.63)	(1.37)	(10.63)	(1.36)	(10.62)	(1.38)
Medical dispersion**		(0.78)	(0.39)	(0.77)	(0.39)	(0.78)	(0.39)
Surrounding ED culture types	Clan	(31.44)	(7.88)	(31.78)	(7.50)	(31.15)	(8.20)
	Adhocracy	(19.96)	(4.43)	(19.88)	(4.39)	(20.03)	(4.46)
	Market	(22.31)	(4.30)	(22.35)	(4.31)	(22.28)	(4.31)
	Hierarchy	(26.24)	(5.90)	(25.96)	(5.56)	(26.50)	(6.18)
Work satisfaction^{††}							
1. Medical or nursing autonomy*		(3.54)	(0.65)	(3.75)	(0.63)	(3.35)	(0.61)
2. Medical professionalism*		(3.68)	(0.54)	(3.77)	(0.53)	(3.60)	(0.54)
3. ED leadership*		(3.42)	(0.72)	(3.63)	(0.70)	(3.27)	(0.69)
4. Communication within ED		(3.68)	(0.54)	(3.69)	(0.53)	(3.68)	(0.55)
5. communication outside ED		(3.38)	(0.66)	(3.44)	(0.64)	(3.33)	(0.67)
6. ED management*		(3.23)	(0.61)	(3.29)	(0.63)	(3.17)	(0.59)
7. Hospital policies and regulations*		(3.03)	(0.65)	(3.14)	(0.62)	(2.94)	(0.66)
8. External health policy environment*		(2.92)	(0.63)	(2.80)	(0.62)	(3.02)	(0.61)
Intent to leave ED^{‡‡}							
		(54.06)	(26.76)	(51.90)	(25.22)	(55.97)	(27.97)

ED, emergency department

In each cell, the number without parentheses () refer to frequency or percentage (%) and the number with parentheses () refers to 'mean' or 'SD: standard deviation' in the specified variables

*Means that there existed statistical differences between the responding emergency physicians and nurses, with P values smaller than 0.05[†]Full-time in EDs means that medical professionals did not provide backup or making rounds in other medical departments[‡]Busyness extent refers to how emergency physicians and nurses perceived degree of clinical workloads in their surveyed hospital-based EDs, measured on a scale of 0–100. Higher the score, the higher perceived busyness[§]Number of health-care organizations in area (county/city) per 10,000 population

**Number of health-care organizations in area (county/city) (per square kilometer)

^{††}Work satisfaction was measured by Likert scale with 1 as least satisfied, 3 as moderately satisfied and 5 as most satisfied^{‡‡}Intent to leave was measured as 0–100 points with higher score indicating higher intent to leave

Table 2 Regression modeling for culture types related to emergency physicians' and nurses' work satisfaction and intent to leave in the hospital-based EDs

Culture types	Work satisfaction dimensions									
	Medical or nursing autonomy	Medical professionalism	Leadership	Communication within ED	Communication outside ED	ED management	Hospital policies and regulations	External health policy environment	Intent to leave	
For emergency physicians (n = 208)										
Clan	0.12	0.14	0.18	0.17	0.09	0.22**	0.28***	0.04	-0.28***	
Adjusted R ²	0.06	0.02	0.01	0.01	0.13	0.07	0.11	0.09	0.02	
Adhocracy	0.06	0.06	0.10	0.06	-0.03	0.01	-0.06	-0.11	0.07	
Adjusted R ²	0.05	0.01	0.01	0.01	0.12	0.03	0.04	0.10	0.01	
Market	-0.17*	-0.19*	-0.24**	-0.19*	-0.08	-0.21**	-0.34***	-0.11	0.27***	
Adjusted R ²	0.08	0.04	0.01	0.01	0.12	0.07	0.15	0.10	0.03	
Hierarchy	-0.04	-0.04	-0.07	-0.07	-0.01	-0.06	-0.01	0.13	0.04	
Adjusted R ²	0.05	0.01	0.01	0.01	0.12	0.03	0.04	0.10	0.01	
For emergency nurses (n = 234)										
Clan	0.07	-0.03	0.09	0.12	0.07	0.06	0.13	0.06	-0.12	
Adjusted R ²	0.02	0.02	0.01	0.01	0.04	0.04	0.02	0.01	0.02	
Adhocracy	0.16*	0.07	0.14	0.10	0.14	0.11	0.02	0.17*	-0.03	
Adjusted R ²	0.04	0.02	0.03	0.01	0.05	0.04	0.01	0.01	0.10	
Market	-0.13	0.02	-0.04	-0.16*	-0.11	-0.08	-0.16*	-0.12	0.13	
Adjusted R ²	0.03	0.02	0.01	0.01	0.05	0.04	0.03	0.01	0.03	
Hierarchy	-0.11	-0.04	-0.18*	-0.09	-0.11	-0.08	-0.08	-0.13	0.08	
Adjusted R ²	0.03	0.02	0.04	0.01	0.05	0.04	0.02	0.01	0.02	

ED, emergency department

1. With each satisfaction dimension and intent to leave as a dependent variable, individual culture types were included into the multiple regressions one type at a time, adjusting with emergency physicians' or nurses' personal and employment characteristics, ED facility characteristics and external environments. The regression equation was simply expressed as follows. For each cell in Table 2:

$$\text{Formula: } Y_{\text{each work satisfaction dimension or intent to leave}} = \beta_0 + \beta_1 X_{\text{one specified ED culture}} + \beta_{2 \sim n} X_{2 \sim n} (\text{adjusting factors})$$

where, the adjusting variables were age, education, managerial position, employment status, ED employment, surveyed ED experience, busyness extent, ED service lines, hospital accreditation, regional EMS, urbanization and medical density

2. The adjusted R² values were referred as the full modelling shown in note 1

3. * P < 0.05, ** P < 0.01, *** P < 0.001

however, market culture was shown to be negatively related to almost all dimensions of emergency physicians' work satisfaction and to be related to increased intent to leave. Market culture was also negatively related to emergency nurses' satisfactions on communication within ED and hospital policies and regulations. In addition, this study found that adhocracy culture was positively related to emergency nurses' satisfaction on nursing autonomy and the external health policy environment and hierarchy culture negatively related to emergency nurses' satisfaction on nursing leadership. See Figure 1 for the summary of findings.

Implications

This study had several managerial implications for the design and effectiveness of hospital-based EDs for emergency physicians and nurses, respectively. For emergency physicians, we might argue that the market culture had the most negative effect related to emergency physicians' work satisfaction and intent to stay. Market culture is characterized as relying on rewards for the individual organization members' goal achievements and is oriented mainly towards productivity and efficiency.³⁵ In a relatively mature health-care market, health-care facilities have often emphasized production and goal achievement in response to cost containment. It has been demonstrated to lead to negative effects on hospital physicians' perceptions of their careers with regard to value conflicts, increased pressures, changes in behaviour and the quality of personal life.³⁶ Furthermore, it was pointed out that severe institutional resource constraints such as the availability of emergency physicians, access to hospital technology and emergency beds, and stability financial (investment) resources, from the hospital authority were the major contributors to emergency physicians' job dissatisfaction.³⁷ It suggests that under the demands from hospital administrators, government entities, payers and potential patients, hospital-based ED's leaders have to run their units in a way that requires a thorough analysis of data from multi-sources, the ability to reach consensus among department stakeholders about the short-term and long-term goals and with the ability to develop specific business plans to reach the stated goals; abandoning the clinician's case-based focus for a population-based one to make emergency services as more predictable events.³⁸

On the other hand, we might also suggest that empowerment and participation could relieve the tensions of emergency physicians, since it was found that clan culture was positively related to emergency physicians' better perception on their ED management and hospital policies and regulations; and reduced intent to leave ED. Also, improving the work processes through collaboration, multidisciplinary teamwork, and the development of team training programmes and ward design to facilitate teamwork might enhance the cooperation and efficiency, and simultaneously lessen demands for emergency physicians and prevent the premature departures of emergency physicians.³⁹

For emergency nurses, the results revealed that emergency nurses might prefer their workplace to be more flexible and change oriented (i.e. adhocracy culture) instead of control oriented (i.e. market and hierarchy cultures). It could be argued that, given the limited medical autonomy for emergency nurses as compared with emergency physicians, the nursing autonomy should be enlarged to deal with a degree of chaos and uncertain situations. We might suggest that the ED climates might be changed in such a way as to enhance communication and autonomy, and convey work expectations and considerations from rigid hospital policies and regulations so as to improve the emergency nurses' perceptions about their work and leadership.

It also deserved notice that the culture types surrounded the studied emergency personnel were major by clan culture, followed by hierarchy culture, market culture and adhocracy culture (see Table 1). As evidenced in our study findings, the clan culture was good for emergency physicians. Nevertheless, more efforts could be made in the future for emergency nurses, since the adhocracy culture they preferred seems to be less pervaded in the hospital-based EDs and hierarchy, and market cultures that they less-preferred are those they were being faced with. The hospital or ED leaders could identify the ways to modify or change the cultures to better meet their personnel's needs,⁵ especially when there exist the larger or various extents of leaving ED intentions for emergency physicians and nurses (Table 1).

Although the findings were more applicable to the ED context in this study, several previous studies using CVF revealed some similar results in the health-care organizations. For example, it revealed that group (clan) culture was positive, but hierarchical and rational (market) culture were negatively associated with both job satisfaction and perceived effectiveness in pediatric primary care practices.⁴ Also, it was found that group (clan) culture was positive, and rational (market) culture was negatively associated with staff satisfaction and human resources and price competition, and hierarchical culture was negatively associated with satisfaction concerning managerial decision-making, practice-level competitiveness, price competition and financial capabilities in physician group practices.⁸ Even though several studies (including ours) revealed that the positive effects of clan culture and negative effects of market and hierarchical cultures, Mannion *et al.*⁴⁰ conducted a longitudinal study to explore the changes of culture in English NHS hospitals between 2001 and 2008, and revealed that clan culture, which was the most dominant type between 2001–2002 and 2006–2007, has been replaced by rational (market) culture as the most frequently reported dominant culture in 2007–2008. It might result from the policy contexts such as payment by result, practice-based commissioning and competitions,⁴⁰ which might be consistent with the situations in the international political economy. Under the circumstances that the health-care organizations seek for more competitive strategies, we might suggest that the health-care managers should make trade-offs between

the organizational efficiency and competition pressures, and employee work satisfaction. It will become one of the most important challenges that health-care managers face in the health system reforms.⁴¹

Limitations

Several limitations of the study can be pointed out. Firstly, the 119 hospital-based EDs were included in this study reflecting a 31% response rate for the study population of 385 hospital-based EDs, though it might have been the relatively large sample size of EDs in the ED managerial studies. Also, the study findings could be generalized only to hospital-based EDs, not freestanding EDs. Likewise, with regard to the use of the CVF as culture dimensions, we could apply only the limited culture definitions from CVF to examine the relationships between the specified cultures and employee satisfaction and intent to leave. Finally, the lack of longitudinal data in this study is a limitation of the analytical design. A cross-sectional study can only establish relationships among the constructs or variables, not causal links. Lastly, the other important ED personnel such as physician assistants, technicians or clerical staff were not included to evaluate the department cultures and the work satisfaction for the limits of generalizability. Larger sample size might be used to better represent department culture and employee work satisfaction in the future.

Conclusion

In summary, the findings suggest that emergency physicians surrounded by clan culture, characterized as flexible and internal focus, were more beneficial to their work satisfaction. On the other hand, emergency nurses surrounded by adhocracy culture, characterized as flexible and external focus, were more beneficial to their work satisfaction. Market and/or hierarchy cultures characterized as control/stability oriented were not beneficial to the emergency physicians and nurses. The culture types surrounded the studied emergency personnel were major factors of clan culture, followed by hierarchy culture, market culture and adhocracy culture. The hospital or ED leaders could identify the ways to modify or change the cultures to better meet their personnel's needs. Also, the hospital leaders, physician leaders or nurse leaders might need to recognize the potential differences when they collaborate or lead the multidisciplinary teams which carry the different occupations, common happening in the health-care organizations.

Declarations

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