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ABSTRACT

Background: One of the greatest managerial challenges is how to generate intelligent organizations that can quickly adopt themselves according to environmental changes to guarantee their success and survival in a turbulent external environment.

Objectives: Study objective was to assess the relationship between organizational intelligence and performance indicators of teaching hospitals affiliated by Shahid Sadoughi University of Medical Sciences (YUMS) in 2015.

Design: This was a descriptive, cross-sectional study conducted in three teaching hospitals affiliated by YUMS in 2015. Data were collected using a standard questionnaire developed by Albrecht and analyzed by SPSS 16 using descriptive and correlation statistical tests.

Setting of the study: Hospitals affiliated by Shahid Sadoughi University of Medical Sciences in Yazd, Iran.

Subjects/ participants: A sample of 300 personnel working in under study hospitals who've been selected through stratified random sampling method.

Results: Results confirmed that scores of organizational intelligence in understudy hospitals were in the optimum status. Conditions of three performance indicators including average length of stay, bed turnover and bed occupancy rate were analyzed to be appropriate. A significant statistical correlation between organizational intelligence and bed occupancy rate, total number of admitted and discharged patients and finally number of patients' death was seen ($p < 0.05$).

Conclusion: Having an appropriate plan or decision strategies to strengthen organizational intelligence can play an effective role in hospital performance improvement.

INTRODUCTION

Today, organizations face with vast and rapid political, cultural, social, technological and economic changes. In fact, one of the greatest managerial challenges in recent years is to generate intelligent organizations, ready to adopt themselves according to environmental changes in order to guarantee their success and

survival in a turbulent environment (1). This concept becomes more important when we accept the role of an intelligent mechanical device in organizations' performance besides relying on a source of great intellectual and creative human resources. Therefore, in today's complex organizations, managers have to take advantage of these two intelligent

flows in order to maintain the dynamic nature of organizations and increase their efficiency (2). In fact organizational intelligence is proposed to be a necessity for achieving more efficacy in organizations. Such an intelligence is one of the factors affecting hospitals' performance indicators (Kohansal Hajar). Organizational intelligence results from personnel intelligence and smart technologies applied in organizations' processes. Such organizations have the ability to establish constructive interactions among members, processes, culture and technology. Through constructive environmental interactions, the complexity of environment and workplace can be run intelligently.

Organizational intelligence provides information from external environment to decrease uncertainty in decision making and improves organizational performance (3). Through the assessment of such an intelligence also detection of potential strengths and weaknesses, necessary solutions to improve organizational performance can be proposed (4).

Achievement of deep knowledge about various factors including customers, competitors, economic environment and processes through organizational intelligence acts as an open window to the world of business that identifies organizational performance, improves efficiency and reveals unknown opportunities (5).

Albrecht defined organizational intelligence as "the capacity to mobilize all organization's brain power to achieve a determined mission". Level of intelligence can be described in terms of seven key dimensions: strategic vision, shared fate, change, heart, alignment, knowledge and performance (6). Another definition was offered by Simic in 2005: "organizational intelligence is intellectual ability of an organization to solve organizational problems for information processing and computer knowledge" (7). Several studies have been conducted on

organizational intelligence among which one of the most prominent model was proposed by Albrecht (Alberkht). According to the model, such intelligence could be increased through improving its dimensions that would result in more precise analysis of environmental factors and usefully be applied for appropriate decision making by managers and policy makers (Gholami Shahram).

Based on scientific theories, organizational intelligence is directly related to performance (6). Hamidi et al (2014) found a significant positive relation between organizational intelligence and Yazd high school principals' performance (8). In connection with familiarity with the concept of organizational intelligence, Lefter et al declared that only 13% of personnel working in large or medium size companies were familiar the concept (9). Hospitals as one of the most important healthcare centers play an important role in the national health network of the country (10).

To assess hospitals' performance success and measure their achievement of desired goals, statistics on information and performance indicators are used (10). Hospital indicators are the most important measures of performance that are regularly evaluated. Bed occupancy rate, bed turnover, average length of stay, admission rate per fixed or active bed, hospital mortality rate and bed turnover are among the main important performance measures (10).

Factors affecting hospital indicators can be examined to increase hospital services efficiency; additionally, as organizational intelligence is regarded as a necessity to achieve greater efficiency in organizations, this study was conducted to assess relationships between organizational intelligence and performance indicators of teaching hospitals affiliated by Shahid Sadoughi University of Medical Sciences in 2015.

MATERIALS AND METHODS

This was a descriptive, cross-sectional study conducted in three teaching hospitals affiliated by YUMS in 2015. Research population was consisted of all personnel working in under study hospitals.

Sample size was estimated to be 300 according to Morgan Jersey and Kejsi table who've been selected by stratified random sampling method. Given the different proportion of staff in each hospital, number of selected samples was no equal. In total 138 individuals

from Shahid Sadoughi hospital, 80 from Afshar and 82 from Shahid Rahnamoon hospital were selected. Gathering data was done using the standard Albrecht questionnaire consisting of 49 questions in seven subscales of strategic vision, shared fate, change, heart, alignment, knowledge and performance in which responses were ranked in 5-point Likert scale from 1 "totally disagree" to 5 "strongly agree" (6). Table 1 depicts number of questions distributed in each main headings of the questionnaire.

Table 1.
Headings of Organizational Intelligence

Topics	Number of Questions
strategic vision	1-7
shared fate	8-14
change	15-22
Heart	23-29
Alignment	30-36
knowledge	37-44
performance	45-51

Questionnaire

The questionnaire reliability was approved in a similar research conducted in Iran ($\alpha=0.96$) (11). Content and face validity of the questionnaire were also checked in a panel of experts. Data on performance indicators for the first six months of 2015 were obtained from each information and statistics department of hospitals. Then the current status of hospitals' performance

regarding to defined indicators was assessed through the standards offered by Ministry of Health. Collected data were analyzed by SPSS 16 using descriptive and analytical statistical tests. For descriptive statistics frequency tables, means and standard deviations were considered. To test the normality of variables Kolmogorov-Smirnov test was used. In case of normality, correlation coefficient was applied to identify the relationship between organizational intelligence components and hospital performance indicators. In the field of ethical considerations, necessary explanations about the purpose and importance of the study were presented to study participants and assurance were given to them about confidentiality of data.

RESULTS

Most of the study participants were female (63.7%) with an average age of 32.5 years old and 9 years work experience who were mainly belonged to the BS educational level (table 1).

Participants
Table 1

*Demographic
Characteristics of Study*

Qualitative Variables		Frequency	%Frequency
Sex	Female	202	67.3
	Male	97	32.5
Educational level	Under associate diploma	43	14.3
	BS	217	72.3
	MS or higher	39	13
Type of employment	Officially employed	73	24.3
	Contractually employed	92	30.7
	Temporary employees	135	45
Quantitative Variables		Mean	Range
Age		32.5	32
Work experience		9.2	26.5

On the basis of Albrecht rating scale, it can be argued that organizational intelligence in all hospitals are in an acceptable condition (table 2).

Table 2.

Comparisons of Hospitals in terms of Average Intelligence Scores

Hospital	Mean \pm SD	P-value
Shahid Sadoughi	152.52 \pm 25.4	<0.05
Afshar	157.54 \pm 27.2	<0.05
Shahid Rahnamoon	160.39 \pm 24.8	<0.05

Table 3

shows an image of hospitals' performance indicators.

Results obtained in relation to the comparison of performance indicators in the first six months of 2015 with standards determined by Ministry of Health revealed a desirable status for some measures such as bed turnover rate

(<2 days), average length stay (<3.5 days) and bed occupancy rate (>70%) in study hospitals.

Table 3.

The Status of Hospital Performance Indicators in Study Hospitals in the Six Months of 2015

Hospital	Bed turnover rate	Performance turnover rate	Length of stay	Bed occupancy factor	Occupied bed days	Number of Admissions	Number of discharged	Number of deaths
Shahid Sadoughi	1.14	7.39	73.88	56096	18336	18124	231	1.27
Afshar	0.52	8.53	2.85	87.22	18765	6603	10240	74
Shahid Rahnamoon	0.1	7.4	3.38	81.1	22788	6754	5798	70

The results of Pearson correlation between the average scores of organizational intelligence and hospital performance indicators confirmed a significant positive relation between average score of organizational intelligence and bed occupancy rate. Furthermore, findings

indicated a correlation but in a negative direction between organizational intelligence and measures of total number of admitted or discharged patients also number of deaths (table 4).

Table 4.

Statistical Relationship between Organizational Intelligence and Performance Indicators

Performance Indicators	Organizational Intelligence	
	r	p-value
Bed performance turnover interval		
Bed performance turnover rate	-0.5	0.66
Average length of stay	0.5	0.66
Bed occupancy factor	0.5	0.66
Total number of admissions	1	<0.001
Total number of discharge	-0.5	0.66
Number of deaths	-1	<0.001
Mortality	-1	<0.001
Net mortality	-1	<0.001

DISCUSSION

In this study the relationship between organizational intelligence and performance indicators were analyzed in selected hospitals. Findings showed that under study hospitals had an acceptable condition regarding to Albrecht rating scale. This is not completely in consistent with results obtained from Gholami et al study which reported poor status of such an intelligence among heads of educational departments in Garmsar (11). Shirazi et al also

assessed the status of organizational intelligence in a weak level regarding to Telecommunication Company of Khuzestan province (12). In other study, the average score of intelligence was assessed in a moderate level (2). Alavi et al got similar findings to our research and evaluated organizational intelligence score in an optimal level (13). Study results confirmed a desirable status for some performance indicators of bed turnover

interval, average length of stay and bed occupancy rate compared with Ministry of Health Standards. This was consistent with Nafchy et al findings which mentioned a desirable condition for performance indicators of hospitals affiliated by Shahrekord University of Medical Sciences (14).

Similarly, Toroski found a desirable status regarding to performance measures of bed occupancy rate, bed turnover and average length of stay (15). Unlike our findings, Joneidi indicated that bed turnover rate and average length of stay were in an undesirable condition compared with the standards (16).

Finally study revealed a significant statistical relation between organizational intelligence and number of admitted or discharged patients also mortality rate; while Barati et al could not find any significant relation among study variables (10). More similar to our research, Tabatabaee concluded that there was a correlation between organizational intelligence with almost all performance indicators except for bed occupancy rate and proportion of surgical operations to the number of hospital beds (1). Literature confirms that there are different indicators to measure hospital efficiency; among which the most important and useful ones were mentioned to be bed occupancy rate, bed turnover and average length of stay (17). Our findings indicated that there was no significant relation between organizational intelligence and average length of stay or bed turnover ($p > 0.05$). Karami et al confirmed the results and stated no significant relation between such indices and hospital performance (18).

Study results also confirmed a significant correlation between organizational intelligence and bed occupancy rate ($p < 0.05$) which was similar to Nasiripour et al findings who concluded that a significant correlation existed between hospital branding in hoteling services and bed occupancy and bed turnover rate (19).

CONCLUSION

As organizational intelligence has a positive significant impact on hospitals' performance through provision of comprehensive information on environmental factors, thus paying special attention to empower such an issue in healthcare organizations can play a significant role in improvement of organizational performance and quality of rendered services.

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