Quality evaluation of knowledge management in a military hospital based on the *Baldrige* excellence model

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Abstract

Aims: Recently many models have been introduced for organizational excellence. Among these models, *Baldrige* model improves the principles of Total Quality Management for healthcare organizations. The enhancement of organizational knowledge and improvement of knowledge management quality is one of the important criteria of the *Baldrige* model. The aim of this study was to evaluate the quality of knowledge management in one of Tehran military hospitals based on the *Malcolm Baldrige* Excellence model.

Methods: This qualitative and cross-sectional descriptive-analytical study was performed in 2010. The statistical population was managers, employees, documents and processes of a military hospital in Tehran. Data were collected by the standard checklist of *Baldrige* excellence model (the version of 2009-2010). Data were analyzed based on the *Baldrige* scoring matrix. The results were plotted and analyzed by Excel 2007 Software based on the obtained scores in the matrix.

Results: The studied hospital gained 43.67 (48.52%) scores out of 90 points of the "Knowledge Management" criterion. In addition, the hospital gained 67.5% of the score of "Performance Measurement", 52.5% of the score of "Performance Analysis and Review", 55% of the score of "Performance Improvement", 40% of the score of "Data, Information and Knowledge Management" and 37.5% of the score of "Management of Information Resources and Technology".

Conclusion: The studied hospital has taken appropriate measure in infrastructure development by the establishment of Health Information System, but promotion in education and human resources and efficient use of Health Information System capacities is needed.

Keywords: Quality, *Baldrige* Model, Knowledge Management

Introduction

Today organizations employ strategies to improve quality so as to increase productivity because of the emergence of diverse transformations including modern technologies, the raise consumer's awareness and the trend of globalization and investment [1, 2]. This approach to health and treatment is of high standing due to organizational sophistication and also the importance of services' efficiency and effectiveness [3, 4]. In this course, organizational excellence models by getting inspiration from the philosophy of Total Quality Management have paved the way for assessing the function and improving the quality of organizations because these models have included in themselves many of strategies and methods relevant to managerial and quality issues comprehensively and massively [5, 6].

One of proposed models in health and treatment organizations is *Malcolm Baldrige* excellence model. The hospitals competing for *Baldrige* model's quality prize are assessed in six criteria of "ability-making" with 550 scores and the criteria of "function's outcome" with 450 scores, which include 1000 scores in total. The ability-making criteria include the organization's leadership (120 scores), strategic planning (85 scores), concentration on costumer (85 scores), testing, the analysis and management of knowledge (90 scores), concentration on staff (85 scores) and process management (85 scores). "Testing, analysis and knowledge management" criterion has received the most scores after the criterion of "organizational leadership", among the ability-making criteria and plays a vital role in enabling the hospitals to increase "function's outcomes" [7, 8].

In general, the approach of excellent organizations in the present age is planning, designing structures and organizational business processes while basing itself on knowledge. In such organizations, knowledge is seriously counted as valuable resource of strategic planning and this is exactly the point where the organizations are separated from each other. All the same, many organizations have not still taken seriously the management of knowledge and its effects as a competitive advantage [9, 10].

Abbasi in his research known as "overview of implementing models of the knowledge management in the organization" indicates that the use of

knowledge management in organizations reduces the cost, improves the quality, productivity, and efficiency of the organization [11].

Experts divide the organizational knowledge into two main categories, overt and covert knowledge. Overt knowledge is a kind of knowledge that could be expressed formally and verbally and is transferrable among people easily. Covert knowledge is a kind of knowledge which is difficult to express by formal language and is a kind of personal knowledge which is embedded in individual's experience. This knowledge includes insensible and intangible factors including skill, experience, value systems, etc. which are derived usually by practice and steadfastness [12, 13]. On this basis, knowledge management helps organizations to recognize, select, organize and publish information, and vital skills which are regarded as organizational memory, and normally exist as disorganized. In the past, management knowledge was only considered from technological dimension and was interpreted as information management. But gradually organizations found out that the human factor is what makes a difference between knowledge management and similar concepts like information management. In fact, knowledge management is based on the premises that in order to create a knowledge-based organization, staff, organization and technology should cooperate with each other [14, 15].

As the recognition of organizational knowledge and the implementation of knowledge management are regarded as competitive advantage for organizations, in particular health and medical institutions, therefore, we can help to improve the quality of organization's function by establishing and assessing knowledge management.

The aim of this study is to assess the quality of knowledge management in one of Tehran's military hospitals based on the standard indexes of "test, analysis and knowledge management" of *Malcolm Baldridge* excellence model.

Methods

The present study is a qualitative–descriptive–analytical research which was done in 2010 synchronically. The society under investigation included managers, staff, documentaries and processes of one of technical and over-technical military hospitals in Tehran. The instrument to collect data was the standard checklist of *Malcolm Baldridge* excellence model (version 2010-2009). The criterion of "testing, analysis and knowledge management" in the checklist of *Baldridge* model with the total of 90

scores included two sub-criteria of "testing, analysis and improvement of organization's function" (with 3 indexes of function testing, analysis and revision of function, and improvement in function) with the total of 45 scores and the sub-criterion of "information management, knowledge and information technology" (with 2 indexes of "data, information and knowledge management" and "technological management and information resources") with 45 scores.

To gather data from three methods of interview, documents investigation, and the researcher's observation were used in the form of model's checklist. In the interview, the purposeful sampling was used among 20 people as the hospital's managers and staff, who were in job relation with the study's variables. In investigating the documents via census, all existing documents and deeds relevant to *Baldrige* model indexes including work reports, diagrams, statistics and data were employed. In the observation method, accessible sampling was used, which is a method of non-probabilistic sampling. This means that the researched embarked on the concrete observance of the way of implementing existing processes in the automation, HIS system (the system of health information) and other prevalent and accessible work processes.

The data received through fiche-making was gathered and analyzed, using content analysis, on the basis of indexes of *Baldridge* model checklist in an entirely confidential way. In each one of the above mentioned indexes, scoring was done in the form of scoring matrix. The matrix of *Baldridge* model includes 4 levels: Approach, induction, learning, and organization's unity which is categorized into 6 groups from zero to 100% (0 to 5, 10 to 25, 30 to 45, 50 to 65, 70 to 85 and 90 to 100).

Scoring was done on the basis of the extent of adaptation between current status of knowledge management in hospital (results derived from interviewees' responses, provided documentaries and observance of processes) and the matrix requirements. The criterion and sub-criterion's quality, and each of knowledge management's indexes was calculated and analyzed in the intended hospital on the basis of the scores acquired from the matrix, using Excel 2007 software in terms of the mean and percentage.

Results

All in all, the intended hospital could achieve from 90 scores of this criterion, 43.67 scores, implementing 48.52% of criterion indexes of "testing, analysis and knowledge management" in harmony with approach

levels, induction, learning and the organization of scoring matrix of *Baldridge* model.

Also, the hospital under investigation achieved 26.24 scores (58.33%), under the criterion of "testing, analysis and the improvement in organizational function", implementing 67.5% index of "function testing", 52.5% index of "analysis and revision of function", and 55% index of "improvement in function", in harmony with the scoring matrix levels of *Baldridge* model. It achieved under the criterion of "information management, knowledge and information technology" 17.43 scores (38.75%), implementing 40% index of "data, information and knowledge management" and 37.5% index of "technological management and information resources" in harmony with the scoring matrix levels of *Baldrige* model. In this assessment, the sub-criterion of "testing, analysis and improvement in organizational function" was stronger than the sub-criterion of "information management, knowledge and information technology" and also the index of "testing the function" was the best and the index of "technological and information resources management" was the weakest index of this criterion.

Discussion

Knowledge management in the intended hospital was assessed at intermediate level while achieving near half of scores of *Baldridge* model. This intermediate level was mostly derived from scores of the sub-criterion indexes of "testing, analysis and improvement in organizational function" and the sub-criterion indexes of "information management, knowledge and information technology" led to the decrease the mean of scores to less than 50%. This shows that although a rather appropriate attempt is made to collect data, the management of collected data and their transformation into organizational knowledge is not so effective.

The hospital under investigation has enabled the organization to assess and increase relatively staff's office and financial efficiency through appropriate investment in equipping software and hardware including HIS, the united system of staff's information, automation, etc. and also teaching hospital standards to the staff and the contribution of different sectors to collecting and giving feedback to the hospital committees via computer systems. But the latent potential in collected data is so high that if they are to be used only to improve relatively staff's function and sectors, it is regarded as a kind of inefficiency, considering the costs expended on collecting data.

The findings of current research show that although "test of function" is relatively satisfying, this "test of function" does not necessarily lead to "function improvement" of the organization, due to the weakness in the index of "analysis and revision of the function". It seems that the main challenge related to "knowledge management" in the intended hospital is the efficient management of information so as to transform "data and information" into "organizational knowledge". In this field, the need for intelligent thinking room is evident in order to define and execute planning and an extensive scheme to collect and analyze information and to use the results to improve the hospital's function.

Rafati and et al. indicated in their study in 2008, while assessing the knowledge management in the same hospital based on *Nonaka & Takochi*'s model, that the above hospital is in need of implementing knowledge infrastructure in terms of human resources and technological facilities [14]. The present study shows that this hospital has done appropriate actions to improve infrastructure such as information technology during the years of 2008 to 2010 but still needs improvement in the efficient use of information system and also needs improvement in the quality of knowledge management. *Ajay* et al., in their study known as "the keys in relation to success in knowledge management", emphasized on the relation between organizational culture, organizational learning, contribution, creativity and knowledge management and earmarked these elements as an appropriate operational guide to increase the organization's knowledge culture [16]. *Abrahimzade* also maintains that to increase organizational learning capacity, the knowledge management should be reinforced [17]. According to the results of above studies and that the education of standards and organizational learning is one of this hospital's priorities, the reinforcement of knowledge management process deems necessary in this center.

The present study is rather in harmony with similar studies such as *Fateh Panah*'s research in 2007 in Tehran's Hashemi Nezhad hospital, scoring 47% and with *Tabibi*'s research in 2005 in Tehran's Ayatollah Kashani, scoring 56.6% derived from the criterion of "knowledge management" of *Baldridge* model [3.1]. But it is not in harmony with *Maleki*'s research in 2007 in the emergency section of Rasool Akram hospital, scoring 30.61% [15]. Since *Baldrige* excellence model is designed to assess all the hospital and that a section cannot possess all structures and intended processes of the model, *Maleki*'s research,

which has been done only in emergency section, has weaker results. In general, he believes that the process of knowledge management and its assessment in order to reach excellence should be done constantly [15].

In conclusion, it could be said, with respect to the point that the obtained scores mainly relate to the existence of approach in facilitating hospital with software infrastructure of information technology and the positioning of HIS software, therefore, the need for thinking room, which manages the produced information in the information bank of health information system and transforms them into organizational knowledge in order to improve guideline levels. Since collecting information without preliminary and distinct plan and scheme makes the analysis of the information difficult in addition to wasting time and resources, therefore, it is proposed to be emphasized on collecting information which is pertinent to the needs for organizational development.

Conclusion

The intended hospital has done an appropriate action in developing infrastructures of knowledge management through the establishment of health information system (HIS) but it appears to be still in need of improvement in educating human resources and efficient use of all HIS capacities.

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