

Full Length Research Paper

Bushehr University of Medical Sciences physicians: Role of individual, organizational and technical factors affecting knowledge sharing

**Abdolrasool Khosravi¹, Nahid Safari^{1*}, Atefeh Esfandiari¹, Saeed Keshmiri¹
and Farshid Danesh²**

¹Department of Medical Library and Information Science, Faculty of Medicine, Bushehr University of Medical Science, Bushehr, Iran.

²Information Management Research Group. Regional Information Center for Science and Technology (RICeST). Shiraz. Iran.

Received 7 January, 2019; Accepted 3 May, 2019

The main purpose of sharing knowledge is to provide the necessary ground for realization of knowledge management, and then, a transformation of organization knowledge into an effective organizational source. The purpose of this study was to determine the role of individual and organizational technical and cultural factors affecting knowledge sharing among physicians of BUMS, in 2017. This is a descriptive-analytical survey where a self-administered questionnaire is used as a research tool. The research population is constituted of 30 general practitioners, 124 specialists and sub-specialist, and 30 fellowships. Sampling is performed by proportional stratified random method. The results are analyzed SPSS software, version 19. The findings of this study indicated that, in respective order, individual factors, with mean value of 3.54, and cultural factors, with mean value of 3.47, have the highest and lowest effect on knowledge sharing of physicians of BUMS in 2017. In the meanwhile, credit gain index in the organization with mean value of 3.88, and the loss of individual power with mean value of 2.88 have the highest and the lowest impact on knowledge sharing of this group, respectively. According to the findings of this study and positive attitude of physicians of BUMS toward knowledge sharing and its role in obtaining academic authority, it is worthwhile for health and medical educators to pay more attention to this issue and ask medical informants and librarians' help to promote knowledge sharing. This article assessed the role of knowledge sharing among BUMS' physicians which is based on their viewpoints and the role of medical informants in 2017, whose data have been collected using a quantitative and descriptive-analytic method.

Key words: Medical informants, knowledge sharing, knowledge management, cultural factors, academic authority, BUMS.

INTRODUCTION

In today's world where competition is a principle, gaining competitive advantage and value added is one of the major concerns of managers. Human resource is one of

the most important assets to creating competitive advantage, and employees who have more knowledge are of more value to the organizations that invest more

on them (Akhavan and Rahimi, 2013). In fact, to gain competitive advantage, knowledge should be considered as an important organizational resource, and it is imperative for the employees to pay attention to it because, it is regarded as foundation of a dynamic economy and superiority of organizations. Most new organizations have come to realize that, in order to gain value added, there should be a knowledge flow, and in this way, knowledge management can manage all changes in the business area through measures such as effective attracting, storing, and knowledge sharing in a variety of ways. Knowledge sharing is a fundamental tool through which employees can advance knowledge, innovation and competitive advantage programs of the organization (Salavati et al., 2014; Wang and Noe, 2010).

Nowadays, knowledge management can be defined as a systematic approach for gaining, consolidating and distributing knowledge across an organization in order to speed up doing things, use best practices and avoid redundancies and knowledge management; and according to this definition, it can capture all knowledge processes (Hadizade et al., 2013). In order to succeed against other rivals, organizations need to deploy knowledge management so as to achieve a learning organization that constantly updates knowledge. To be useful, knowledge management has to be compatible with existing organizational culture and structure; because, each organization has its own culture and organizational structure, and poor organizational culture results in inefficient organization. Thus, only changing and creating an appropriate and flexible organizational culture prepares the ground for interaction of individuals in the organization and deployment of knowledge management. Added to this, it can be argued that organizational structure also plays a part in knowledge management process and determines the flow of information which, in turn, leads to decision making and, in the absence of knowledge management, will disrupt the structure and all organizational activities (Jafari et al., 2011). One of the key factors in knowledge management is the organization ability in transferring and sharing knowledge; because, in today's growing world, only dynamic and knowledge-based organizations that can overcome growing changes of the day and flourish. To this end, the only way for employees is to use new and up-to-date knowledge and effective sharing of it among themselves. Since knowledge first develops in the minds of individuals, knowledge sharing is the only way of turning individual knowledge to organizational knowledge (Taheri, 2012; Rafva, 2011). In addition to developing creativity in the organization, purposeful sharing of

knowledge is important because it leads to faster individual and organizational learning, and ultimately, it improves the performance of individual and organization. That is why organizations should not only develop knowledge sharing in their organization, but also institutionalize and empower it among their employees and encourage them to use it (Shimazu H, Koike, 2007).

Like other organizations, hospitals have specific culture and organizational structure that suits their needs to achieve their goals. Their structural and cultural dimensions are similar to those of industrial and non-industrial organizations; however, given the differences in goals and responsibilities of hospitals, the model used in them differs from other organizations. The structure that management scholars currently agreed upon for hospitals is the one that provides the necessary stability within the hospital and community and can establish a balance between hospital management and its medical staff. Currently, the government is specially focused on science and knowledge systems in Iranian vision document in 1404 (Entezari and Mahjub, 2014). In the meanwhile, medical informants can also be considered as an effective factor in creating this value and trust among members of health organizations for knowledge sharing. That is, being aware of new publications in the field of medicine and new sources of information and new findings in the field of medicine, and familiarity with social networks, in addition to meeting the users' information needs, medical informants encourage them to participate in knowledge sharing so as to create trust and confidence in each other; besides that, they also play a role in promoting the level of specialized knowledge and increasing user interactions, and in sum, facilitate knowledge sharing (Dokht and Zarei, 2014).

During the course of service in health centers and hospitals, doctors deal with various patients and experience different therapies and specialties, each of which is a valuable asset to them.

Physicians working at the Persian Gulf Martyrs hospital have diverse internal, surgical, gynecological and pediatric expertise. If the knowledge and skills acquired by each of them are not transferred to their colleagues, after losing each doctor for any reason, that medical center loses a precious asset, and given the complex competitive environment at the current treatment centers, this issue may bring about irreparable damages. Therefore, with respect to research gap in this area, the current study attempts to investigate knowledge sharing and factors affecting it among general practitioners (21), specialists (84), sub-specialists (15) and fellowships (5) of BUMS and reviews applicable suggestions to improve

*Corresponding author. E-mail: nahidsafari.1371@gmail.com.

knowledge sharing among this group.

LITERATURE REVIEW

A review of various views of knowledge management experts suggests that knowledge sharing is the basis of knowledge management from different conceptual aspects. Generally, in literature reviews, knowledge sharing has been discussed by various groups, which is important in considering the society's need to share knowledge and experiences in all areas (Li and Lowe, 2016). It was also stated that interpersonal trust plays an important role in knowledge sharing, because, until this trust is established, employees are by no means willing to share their experiences (Wu et al., 2009). In addition to the trust factor which is the most important one, other factors such as cognitive factors, motivation that include mental attitudes and norms, beliefs about knowledge ownership, perceived benefits and costs, and the perception of justice also affect knowledge sharing (Wu et al., 2009). People's attitude toward a particular behavior, such as knowledge sharing, can affect their intent to do that, and, moreover, can have a great effect on any individual's actual performance. In case people feel that through knowledge sharing they have lost their position in society, they will refuse to do so (Wang and Noe, 2010; Seonghee and Boryung, 2008).

Despite many studies that have been carried out on knowledge managing and sharing in various organizations and businesses, research evidence points to the importance of sharing and transferring knowledge in healthcare organizations, especially among physicians and their impact on individuals' health and survival. According to the literature, limited researches are observed in this field. Many studies are available in this field, but there are limited numbers of researches done in knowledge sharing among physicians. Tables 1 and 2 list a review of these papers. These tables describe studies that examine the factors affecting knowledge sharing in national and international level.

In the literature, willingness of different groups of different organizations for knowledge sharing was discussed. Considering the social need to share knowledge and experiences in all areas, it is worth reflecting on. Also, organizational learning and organizational culture play a significant role in knowledge sharing. Beside these issues, organizational learning is significantly associated with knowledge sharing and organizational culture and consequently, supports organizational learning. In fact, among the factors affecting organizational learning, knowledge sharing and common culture play an important role and improve organizational learning (Nugroho, 2018).

Furthermore, shared viewpoint was introduced as the most influential factor in physicians' view to knowledge

sharing, and it was argued that subjective norms have strong effects on behavioral intentions for knowledge sharing of physicians (Smit et al., 2014). Attitude was also an important factor in knowledge sharing of physicians (Ryu et al., 2003). Perceived behavioral control also affects the intention to share knowledge (Wang and Noe, 2010). Individuals' attitude toward a particular behavior such as knowledge sharing, can affect their intention for doing it. In addition, the variables of organizational culture, education and information technology have significant and positive effects on knowledge management function (Smit et al., 2014; Dargahi and Dastafkan, 2017; Rajaei et al., 2015).

RESEARCH METHODOLOGY AND DESIGN

This is a descriptive-analytical survey which is also classified as an applied research in term of research purpose. This research is conducted quantitatively using questionnaire as a tool, library resources, and valid articles in reputable scientific journals and databases as well as existing thesis on knowledge management. The research populations of this study are physicians of BUMS in 2017 who were serving in Shohada-ye Khalij-e Fars hospital during the second half of 2017. 184 physicians constitute the research population. The sample size, as determined by Cochran's formula is 125. Sampling is performed by proportional stratified random method. First, a list of general practitioners, specialist, sub-specialist and fellowships, which determines the sampling framework, is taken from the hospital. The research population is categorized in three groups of general practitioners (n=30), specialists (n=124) and fellowships (n=30), then, from each category, the samples are randomly selected in proportion to the initial list. The questionnaires are distributed among selected individuals and they are collected after one month to analyze the results. The results were analyzed by SPSS version 19. The subjects of this study were physicians working at Bushehr Persian Gulf martyrs' educational center in 2017 who were at work in the second half of the year. This center is affiliated with Bushehr University of Medical Sciences and is the only tertiary referral hospital in Bushehr which has internal, surgical, gynecological and pediatric expertise.

Validity and reliability of questionnaire

Questionnaire validity was evaluated by 10 LIS faculty members besides Shohada-ye Khalij-e Fars hospital physicians. Their opinions were included in the questionnaire, and the questionnaire reliability was verified by two methods of test-retest in pilot study and also by Cronbach's alpha method. The pilot study structure was designed as a test-retest questionnaire designed to determine the reliability of 30 Persian Gulf martyrs' educational center physicians. After two weeks, the questionnaire was redistributed to the same 30 people and then re-evaluated as illustrated in Tables 3 and 4).

Demographic profile of research populations

Out of 150 distributed questionnaires, 125 of the physicians of the Persian Gulf Martyrs affiliated to Bushehr University of Medical Sciences and Health Services are studied and then completed the questionnaire (83% response rate). On the basis of information

Table 1. Literature review in national level.

Author	Title	Publication Year	Citations
Rahnavard and Sadr	Relationship between Employees' Perceptions of Knowledge Sharing Culture and Organizational Factors	2009	(Rahnavard and Sadr, 2009)
Beikzad and Doudmani	The Effect of Organizational factors on Performance of Knowledge Management (KM) in Education (Case Study: Ministry of Education, Malekan City Office)	2012	(Beikzad and Doudmani Maleki, 2012)
Syaf	Knowledge Sharing Affecting Factors and its Relationship with Employee Satisfaction in Ahwaz Industrial Towns	2011	(Syaf, 2011)
Alipourdarvish and Dolatabadi	Offering a model on factors affecting physicians' knowledge-sharing intention based on the theory of planned behavior in teaching hospitals affiliated to Tehran University of Medical Sciences	2013	(Alipourdarvish and Dolatabadi, 2013)
Akhavan and Rahimi	The Identification and Prioritization of Motivational Factors Affecting Knowledge-sharing in an Industrial-Research Organization	2013	(Akhavan and Rahimi, 2013)
Soleimani, Pourzaman and Taheri	Investigating the Relationship between Individual Factors of Information Technology and Employees' Knowledge Sharing (From the Perspectives of Employees and Managers of Islamic Azad University)	2013	(Soleimani et al., 2013)
Nemati Anaraki and Nooshin Fard	Intra-organizational Knowledge Sharing Model among Faculty Members based on Individual	2014	(Nemati Anaraki and Nooshin Fard, 2014)
Esmaeil Pour, Kashani and Nekukar	Sharing knowledge: Analyzing role of effective factors on it and ranking factors	2014	(Esmaeil et al., 2014)
Rajaei Azarkhavarani A, Rajaeepour S, Hoveida R, Movahedi F	The Relationship between Knowledge Sharing and Academic Quality Improvement from the Viewpoints of Faculty Members at Isfahan Selected Universities	2015	Rajaei Azarkhavarani et al. (2015)
Rezaei., Faraj Pahloo and Heidari	Cultural Factors Affecting the Participation of Organizational Knowledge	2015	(Rezaei. et al., 2015)
Seif, Sabet Maharlouei, Rastegar and Talebi	Factors Influencing the Willingness to Share Knowledge among Faculty Members of Shiraz University of Medical Sciences	2015	(Seif et al., 2015)
Fahimeh and Kermani	The Analysis of Individual Factors on Knowledge Sharing Behavior of library and Information Science Faculties	2016	(Fahimeh and Kermani, 2011)
Nadiarpar, Rashkie GhaleNo and Safaei Moghadam	The Effect of Technical and Social Facilitation of Knowledge on Customer Relationship Management in Municipality of Zahedan	2016	(Nadiarpar, Rashkie Ghale No & Safaei, 2016)
Dargahi and Dastafkan	A study of the relationship between organizational culture and individual knowledge hiding among clinical laboratories of the hospitals in Tehran University of Medical Sciences	2017	(Dargahi & Dastafkan, 2017)

Table 2. Literature review in international level.

Author	Title	Publication year	Citation
Ryua, Ho and Han	Knowledge sharing behavior of physicians in hospitals	2003	Ryua, et al. (2003)
Bock, Zmud, Kim and Lee	Behavioral intention formation in knowledge sharing: Examining the roles of extrinsic motivators, social-psychological forces, and organizational climate	2005	Bock et al. (2005)
Kim and Ju	An analysis of faculty perceptions: Attitudes toward knowledge sharing and collaboration an academic institution	2008	Kim and Ju (2008)
Hooff and Huysman	Managing knowledge sharing: Engineering approaches	2009	Hooff and Huysman (2009)
Wu, Lin, Hsu and Yeh	Interpersonal trust and knowledge sharing: Moderating effects of individual altruism and a social interaction environment	2009	Wu et al. (2009)
Wang and Noe	Knowledge sharing: A review and directions for future research	2010	Wang and Noe (2010)
Smit, Lelkens Dolgova and Mulders	Knowledge sharing in a Dutch hospital: An empirical study	2014	Smit et al. (2014)
Li and Lowe	Knowledge sharing in a physician practice group: An exploratory case study	2016	Li and Lowe (2016)
Lin, Lai and Yang	Factors influencing physicians' knowledge sharing on web medical forums	2016	Lin et al. (2016)
Adhi Nugroho	The effects of collaborative cultures and knowledge sharing on organizational learning	2018	Adhi (2018)

Table 3. Reliability of the questionnaire using Cronbach's alpha coefficient.

Variable	Cronbach's alpha coefficient
Individual factors	0.77
Organizational factors	0.7
Technical factors	0.71
Cultural factors	0.76

Table 4. Reliability of the questionnaire using test-retest reliability method.

Variable	Pearson correlation coefficient	Sig.
Individual factors	0.001	0.001>
Organizational factors	0.977	1>
Technical factors	0.976	1>
Cultural factors	0.001	0.001>

gathering tool (questionnaire), seven questions were considered for demographic information examination of subjects. This section includes; age, gender, the degree in medical sciences, work experience, faculty members, teaching experience and type of they taught as depicted in Table 5.

FINDINGS

In this section, based on analysis of the obtained data, the current status of knowledge sharing among physicians of Bushehr University of Medical Sciences in 2017 is described and factors affecting knowledge sharing are determined; description of individual, organizational, technical, and cultural factors affecting the knowledge sharing of physicians.

Answer to the research question

RQ1. What are the most important factors affecting knowledge sharing among physicians of Bushehr University of Medical Sciences?

In order to achieve the main research goal, that is, study of the role of individual, organizational, technical and cultural factors affecting knowledge sharing among physicians of Bushehr University of Medical Sciences, a questionnaire consisting of 4 main factors with 11 indicators in 5 scales is developed ranging from completely agree to completely disagree. The 4 main factors include individual factors, organizational factors, technical factors and cultural factors. To answer the main research question, a table of mean values of these factors is presented in Table 6.

According to mean values in Table 6, individual factors and cultural factors are the most and least effective factors affecting knowledge sharing of physicians. Thus, individual factors with $SD \pm$ mean value equal to 3.54 ± 0.52 are most significant in knowledge sharing among physicians of Bushehr University of Medical Sciences on the other hand; cultural factors with $SD \pm$ mean value equal to 3.47 ± 0.48 are the least significant.

RQ2. What are the effects of individual factors on knowledge sharing among physicians of Bushehr University of Medical Sciences?

The purpose of this question is to investigate the role of individual factors affecting knowledge sharing among physicians of Bushehr University of Medical Sciences. In order to achieve this goal, 3 main indicators are considered, and the results are presented in Table 7.

Based on the results of Table 7, the research subjects identified *earning credibility in the organization* (mean value \pm SD = 3.88 ± 0.71) as the most important factor

affecting knowledge sharing of physicians in the organization. After that, *enjoying helping others and solving their problems* (mean value \pm SD = 3.70 ± 0.79) is recognized as the second important factor affecting knowledge sharing of physicians. Finally, the least important factor is *losing of individual power* (mean value \pm SD = 2.88 ± 0.95).

RQ3. What are the effects of organizational factors on knowledge sharing among physicians of Bushehr University of Medical Sciences?

The purpose of this question is to investigate the role of organizational factors affecting knowledge sharing among physicians of Bushehr University of Medical Sciences. In order to achieve this goal, 3 main indicators are considered, and the results are presented in Table 8.

Based on the results of Table 8, the research subjects identified *solidarity and empathy* (mean value \pm SD = 3.61 ± 0.67) as the most important factor affecting knowledge sharing of physicians in the organization. After that, *organizational motivators* (mean value \pm SD = 3.45 ± 0.75) is recognized as the second important factor affecting knowledge sharing of physicians. Finally, the least important factor among organizational factors is *innovation* (mean value \pm SD = 3.33 ± 0.79).

RQ4. What are the effects of technical factors on knowledge sharing among physicians of Bushehr University of Medical Sciences?

The purpose of this question is to investigate the role of technical factors affecting knowledge sharing among physicians of Bushehr University of Medical Sciences. In order to achieve this goal, 2 main indicators are considered, and the results are presented in Table 9.

Based on the results of Table 9, the research subjects identified *medical informants* (mean value \pm SD = 3.73 ± 0.59) as the most important technical factor affecting knowledge sharing of physicians in the organization. And, the least important factor among technical factor is *tools and technologies* (mean value \pm SD = 3.29 ± 0.50).

RQ5. What are the effects of cultural factors on knowledge sharing among physicians of Bushehr University of Medical Sciences?

The purpose of this question is to investigate the role of cultural factors affecting knowledge sharing among physicians of Bushehr University of Medical Sciences. In order to achieve this goal, 3 main indicators are considered, and the results are presented in Table 10.

Table 5. Frequency distribution of research populations' demographic and social data.

Variable	Range	Frequency	Percent
Age	20-30	11	8.8
	31-40	19	15.2
	41-50	80	64
	More than 50	15	12
	Total	125	100
Sex	Male	62	49.6
	Female	63	50.4
	Total	125	100
Type of medical degree	General practitioner	21	16.8
	Specialist	84	67.2
	Sub-specialist	15	12
	Fellowship	5	4
	Total	125	100
Work experience (years)	1-5	11	8.8
	6-10	19	15.2
	11-15	77	61.6
	16-20	17	13.6
	More than 20 years	1	0.8
	Total	125	100
Attend	Yes	39	31.2
	No	86	68.8
	Total	125	100
Teaching experience as attend (years)	1-5	8	6.4
	6-10	23	18.4
	11-15	8	6.4
	Not attend and with any teaching experience	86	68.8
	Total	125	100
Types of teaching	Theory	-	-
	Practical and internship	-	-
	Both of them	39	31.2
	Without teaching experience	86	68.8
	Total	125	100

Based on the results of Table 10, the research subjects identified *involvement* (mean value \pm SD = 3.67 \pm 0.68) as the most important cultural factor affecting knowledge sharing of physicians in the organization. *Confidence* (mean value \pm SD = 3.41 \pm 0.59) and *support* (mean value \pm SD = 3.41 \pm 0.75) are also reported as the least important cultural factors affecting knowledge sharing of the physician, respectively.

Discussion and conclusion

Today, organizations have found that they could not continue to work unless they have a strategy to manage and value their organizational knowledge. Organizational culture relies on creativity, and innovation is among the leading elements of knowledge management. Dargahi et al. (2018) was conducted to determine the relationship

Table 6. Frequency of individual, organizational, technical and cultural factors affecting knowledge sharing among physicians of Bushehr University of Medical Sciences.

Factor	SD \pm Mean value	Max.	Min.
Individual	3.54 \pm 0.52	5	2
Organizational	3.48 \pm 0.47	4.57	2.29
Technical	3.51 \pm 0.41	4.80	2.40
Cultural	3.47 \pm 0.48	4.50	1.75

Table 7. Frequency of individual factors affecting knowledge sharing among physicians of Bushehr University of Medical Sciences.

Individual factor	SD \pm mean value	Max.	Min.
Earning credibility in the organization	3.88 \pm 0.71	5	1.67
Enjoying helping others and solving their problems	3.70 \pm 0.79	5	1.50
Losing individual power	2.88 \pm 0.95	5	1

Table 8. Frequency of organizational factors affecting knowledge sharing among physicians of Bushehr University of Medical Sciences.

Organizational factor	SD \pm mean value	Max.	Min.
Organizational motivators	3.45 \pm 0.75	5	1/50
Innovation	3.33 \pm 0.79	4/50	1
Solidarity and empathy	3.61 \pm 0.67	5	1/33

Table 9. Frequency of technical factors affecting knowledge sharing among physicians of Bushehr University of Medical Sciences.

Technical factor	SD \pm mean value	Max.	Min.
Medical informants	3.73 \pm 0.59	5	2/20
Tools and technologies	3.29 \pm 0.50	4/60	2

between knowledge management and creativity and organizational innovation in hospitals affiliated to Tehran University of Medical Sciences. This descriptive-analytic and cross-sectional study was carried out on 120 employees of Tehran University of Medical Sciences in 2012-2013. The results show that the more the knowledge management improves, the more enhanced is the creativity and organizational innovation, and so all policy makers and hospital managers should strive to establish a knowledge management system in order to improve the creativity and innovation in the organization and ultimately, the effectiveness of the hospital performance (Dargahi et al., 2018). In another study aimed to investigate the relationship between knowledge management institutionalization with the job performance

of Maskan Bank's employees, research has shown that knowledge management has an impact on their job performance enhancement and improvement. This is an applied research and in terms of implementation, it is a descriptive correlation type. The statistical population consisted of Maskan Bank employees working in Tehran in 2016. The findings of this study showed that the status of knowledge management, empowerment and job performance variables in Maskan Bank was higher than the average. Also, there is a positive and significant relationship between the establishment of KM with the dimensions of empowerment and job performance in Maskan Bank (Davoudi and Damgarzai, 2018).

In the work of Falah (2018) the author provides a model for assessing the impact of KM on empowerment. This

Table 10. Frequency of cultural factors affecting knowledge sharing among physicians of Bushehr University of Medical Sciences.

Cultural factors	SD ± mean value	Max.	Min.
Confidence	3.41±0.59	5	2
Involvement	3.67±0.68	5	1/50
Support	3.41±0.75	5	1

research was an applied one with a practical point of view, and in terms of method, descriptive-survey method. Thematically, it designs a conceptual model and using structural equations, it uses Amos software to explain and examine the role of knowledge management as a mediator. In the exploratory interview phase, the statistical population consisted of 16 experts in human resources and in model analysis, the statistical community was composed of employees and managers of the agricultural bank, and 46 samples were selected through a judicious and purposeful method. The results indicate that the intermediary variable of KM plays an important role in that organization to empower employees through a combination of cultural factors and capacity building (Falah, 2018).

One of the approaches of recent studies is to examine the issue of knowledge sharing among healthcare staff. Needless to say, those health organizations face similar issues as other organizations and there is a lot of information and knowledge in their staff's minds. Knowledge stored in their heads and protection of intellectual property by individuals and groups within the organization is so common; however, they rarely use it for learning or organizational decision making. In this organization, people try to hide their knowledge, as well; because they think that keeping knowledge and experience and not transferring it to others will guarantee their superiority while it is important to recognize importance of factors that lead to knowledge sharing among health practitioners. Physicians and paramedics, as corps that play a key role in community's health, are required to transfer their experiences to one another to help promoting the health level. Therefore, the current research approach is to think of ways that help identifying these factors and planning for the effective sharing of knowledge among this group.

Based on the results of this study, the most affective factors contributing to knowledge sharing among physicians of Bushehr University of Medical Sciences, in respective order, are; individual factors, technical factors, organizational factors and cultural factors. Lin et al. (2016) conducted a research based on theory of social exchange and considering external and subjective motives to identify factors affecting doctors' willingness to share professional knowledge in online medical associations and create a research model to explore the

motivations that encourage them to share knowledge. The results of this research indicated that shared view is the most important factor affecting physicians' attitude toward knowledge sharing (Lin et al., 2016). In another research, Van den Hooff and Huysman (2009) investigated knowledge sharing management in six different government agencies. They concluded that having a flexible organizational structure, encouraging organizational culture and widespread use of information technology can positively have effect on individuals and cognitive social relationships which is consistent with the result of this research (Van den Hooff and Huysman, 2009). Seonghee and Boryung (2008) examined faculty members and their associates' attitudes toward knowledge sharing. Factors of trust between members, open social relations, cooperation among individuals and existence of systems for promoting knowledge sharing in the university are introduced as positive to knowledge sharing by the faculty members. Also, there was a positive and significant relationship between trust, cooperation of the members and existence of incentive systems in university with the members' attitude toward knowledge sharing, which is in line with the results of this study (Seonghee and Boryung, 2008). Bock et al. (2005) examined the factors affecting the willingness of managers of several organizations for sharing knowledge in South Korea. They considered the effect of factors such as expected external rewards, expected mutual relationships, and sense of self-worth on attitude toward knowledge sharing as well as the effect of organizational atmosphere and sense of self-worth for subjective norms. According to their findings, there is a significant and positive relationship among the aforementioned factors and it is in line with the current research findings (Bock et al., 2005). Besides, this study is also consistent with the studies conducted by Wang and Noe (2010), Syaf (2011), Alipourdarvish and Dolatabadi (2013), and Akhavan and Rahimi (2013). According to findings of this research, the role of trust, though not ineffective, is less evident than other factors which are not consistent with the findings of Seif et al. (2015).

According to findings of this research, individual factors have affected the physicians' knowledge. From the viewpoint of the participants in the research, *gaining credibility in organization*, with the highest mean value, is the most important factor among other indicators of

individual factors that affect knowledge of physicians. The second important individual factor that affects knowledge sharing of physicians is *enjoying helping and others solving their problems*. Among all, the lowest effective individual factor is *losing individual power*. These results are consistent with those of Soleimani et al. (2013), Fahimeh and Kermani (2011) and Rajaei et al. (2015). In order to achieve the investigation of the role of organizational factors affecting knowledge sharing among physicians of Bushehr University of Medical Sciences, 3 main indicators are considered; in respective order, they are solidarity and empathy, organizational motivators and the least important factor which is innovation; and is in line with the findings of Beikzad and Doudmani (2012) and Asmaeipour et al. (2014).

Technical factors play an important role in the process of knowledge sharing among physicians of Bushehr University of Medical Sciences and every attempt should be made in order to improve the role of these factors. In order to achieve this goal, two main indicators are considered, between which, the role and position of medical informants is more important, as shown in this study. The second factor is attention to the role of tools and technologies in knowledge sharing, which is in accordance with the research of Nazari et al. (2016). Cultural factors also play an important role in the process of knowledge sharing. In order to achieve this goal, three main indicators are considered; based on the current research findings, the most important cultural factor affecting the knowledge of physicians is involvement, after which two factors of trust and support with the same mean value are in the second place. This is in line with the researches of Rezaei et al. (2015), Smit et al. (2014), Wu et al. (2009) and Nemati-Anaraki and Nooshinfard (2013).

Therefore, considering the importance of access to health indicators by health systems and the role of knowledge management in achieving it, it is necessary to take into account the factors affecting knowledge sharing based on the current research findings. What is more, given the health system's approach to access scientific authority, in order to reach, remain and be effective as a scientific authority, universities need to be internationally prominent and leading in the area of knowledge management. To reach and fix their position as a scientific authority, universities have to actively promote its appropriate culture by considering such a role and a place for themselves. As knowledge sharing has a special place in knowledge management, it should be considered in development of scientific authority, as well. According to the findings of this study and positive attitude of physicians toward knowledge sharing, it is worthwhile for health and medical educators to pay more attention to this issue and ask medical informants and librarians' help to promote knowledge sharing.

Considering the unwillingness of physicians to share

their knowledge and experiences, measures have to be taken by holding appropriate educational and training courses in order to make this group interested in knowledge sharing. In addition, a unit should be considered for knowledge management in hospitals whose mission is to provide up-to-date and reliable information for health practitioners in hospitals. With respect to dominance of medical librarians in search for information resources and their familiarity with databases, lack of sufficient knowledge regarding databases and correct way of searching for updated and correct sources among physicians and doubtful information on the Internet, it is suggested that a medical librarian be available to the hospital's physicians.

In general, the factors affecting physicians' knowledge sharing (from the highest to the lowest level), including individual factors, technical factors, organizational factors and cultural factors, and their indicators (from the highest to the lowest), including credit in the organization, medical informants, enjoyment in helping others and solving their problems, participation, solidarity and empathy, organizational stimuli, supporting, innovation, tools and technologies, and the loss of individual power. The results of this study can help physicians to effectively share their experiences with their colleagues, which have a wide range of implications. Through knowledge transfer among physicians, many re-actions are not carried out. In this way, medical errors are also reduced. In addition, physicians can continuously learn their experiences by using the up-to-date resources provided by medical informants. Therefore, this study will also help medical informants understand their position and mission, and take steps in this direction. Knowledge sharing is essential for providing services to improve the quality and reduce the cost of health, addressing clients' needs, and also institutionalizing knowledge sharing culture that makes organizations work better; the excellence of organizations provides better services and therefore leads to people's satisfaction.

RESEARCH LIMITATION

Physicians being busy, lack of some physicians' proper cooperation that came forward with multiple referrals and consultations through academic contacts.

Suggestions for future researches

- i. Reviewing educational hospital managers' viewpoints about the factors affecting knowledge sharing.
- ii. Reviewing educational hospitals managers' viewpoints on the factors affecting knowledge sharing.
- iii. Reviewing medical librarians' viewpoints on the factors affecting knowledge sharing in medical universities of the

country.

- iv. Assessing the infrastructures needed by knowledge management systems in educational hospitals in Iran.
- v. Assessing the role of knowledge management in scientific authority acquisition.
- vi. Assessing the role of knowledge management in acquiring scientific authority.
- vii. Comparative study of knowledge management systems in hospitals in other countries.
- viii. Studying the status of knowledge management structure in health system.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

ACKNOWLEDGEMENT

Thanks to the research management of Bushehr University of Medical Sciences and the superintendence of Bushehr University of Medical Sciences and Clinical research center of the Persian Gulf Hospital, which collaborated on the implementation of this study, and the doctors working at this center and all those who helped us in this study.

REFERENCES

- Akhavan P, Rahimi A (2013). Identification and prioritization of motivational factors affecting on knowledge sharing behavior in an industrial organization. *Innovation Management Journal* 1(2):107-135.
- Alipourdarvish Z, Dolatabadi R (2013). Offering a model on factors affecting physicians' knowledge-sharing intention based on the theory of planned behavior in teaching hospitals affiliated to Tehran University of Medical Sciences. *Journal of Hospital* 11(4):35-44.
- Asmaeipour R, Kashani SH, Nikokar H (2014). Sharing knowledge: Analyzing role of effective factors on it and ranking factors. *Efficacy Management* 8(31):51-74.
- Beikzad J, Doudmani MH(2012). The effect of organizational factors on performance of knowledge management (Km) in education. Available at: <https://www.sid.ir/en/journal/ViewPaper.aspx?id=244962>
- Bock GW, Zmud RW, Kim YG, Lee JN (2005). Behavioral intention formation in knowledge sharing: Examining the roles of extrinsic motivators, social-psychological factors, and organizational climate. *MIS Quarterly* 29(1):87-111.
- Dargahi H, Asadi S, Ahmadi B, Mahmoudi M (2018). Survey of the Relationship of Knowledge Management and Organizational Creativity and Innovation among the Employees of Tehran University of Medical Sciences. *Journal of Hospital* 17(1):97-108.
- Dargahi H, Dastafkan A (2017). A study of the relationship between organizational culture and individual knowledge hiding among clinical laboratories of the hospitals in Tehran University of Medical Sciences. *Journal of Laboratory and Diagnosis* 9(35):24-39.
- Dokht EM, Zarei H (2014). Study of knowledge sharing and university libraries website management in Tehran City. *Iranian Journal of Processing and Management* 28(4):945-969.
- Entezari Y, Mahjub H (2014). An Analysis of Development of Iran's Knowledge Economy on the Basis of 1404 Vision. *Journal of Cultural Strategy* 6(24):65-97.
- Falah M (2018). Identify and explain the advances of human resource empowerment with the knowledge management approach. Unpublished.
- Fahimeh B, Kermani ZJ (2011). Knowledge sharing behaviour influences: a case of Library and Information Science faculties in Iran. *Malaysian Journal of Library and Information Science* 16(1):1-14.
- Hadizade MA, Mohebi P, Ghlichlee B (2013). Relationship between Knowledge Sharing and Innovation in Financial Service Organizations: Case Study: Refah Kargaran Bank. *Management Research in Iran* 17(1):201-220.
- Shimazu H, Koike S (2007). KM2. 0: Business knowledge sharing in the Web 2.0 age. *NEC Technical Journal* 2(2):50-54.
- Jafari M, Abolghasem HG, Salehi M, Mehr BR (2011). The relationship between cultural and structural factors of organizations with knowledge management strategy in public teaching hospitals affiliated to Tehran University of Medical Sciences: 2011. *Journal of Health Administration* 14(45):87-94.
- Leikens A (2014). Knowledge sharing in a Dutch hospital. Master Thesis. Tilburg University. Available at: <http://arno.uvt.nl/show.cgi?fid=136223>
- Li Y, Lowe J (2016). Knowledge sharing in a physician practice group: an exploratory case study. *International Journal of Knowledge Management Studies* 7(1-2):87-101.
- Lin TC, Lai MC, Yang SC (2016). Factors influencing physicians' knowledge sharing on web medical forums. *Health Informatics Journal* 22(3):594-607.
- Nazari E, Sarafraz A, Amini SN (2016). The Effect of Key Factors of Knowledge Management Success on improving Customer Relationship Management (Case study: financial and credit institutions of Parsabad). *International Journal of Humanities and Cultural Studies* 2016:915-923.
- Nemati-Anaraki L, Nooshinfard F (2013). Intra-organizational knowledge sharing model among faculty members based on individual, organizational, and technological factors. *Journal of Health Administration* 16(54):56-70.
- Nugroho MA (2018). The effects of collaborative cultures and knowledge sharing on organizational learning. *Journal of Organizational Change Management* 31(5):1138-1152.
- Rafva Sh (2011). Measurement of compliance with knowledge sharing subsystem components in Iran's insurance industry. Master Thesis. Faculty of Education and Psychology, Alzahra University.
- Rahnnavard F, Sadr F (2009). Relationship between Employees' Perceptions of Knowledge Sharing Culture and Organizational Factors. *Productivity Management* 2(8):51-74.
- Rajaei AA, Rajaeipour S, Hoveyda R, Movahedi F (2015). The Relationship between Knowledge Sharing and Improving the Quality of Science from the Perspectives of the Faculty Members in Isfahan Selected Universities. *Health Information Management* 40(6):760-769. Available at: <https://www.sid.ir/en/journal/ViewPaper.aspx?id=436111>
- Rezaei B, Faraj Pahlou A, Heidari G (2015). Cultural Factors Affecting the Participation of Organizational Knowledge. 7th National Conference and 1st International Knowledge Management Conference, Oil, Gas and Petrochemical Institute. 17 & 18 Feb. Tehran, Iran.
- Ryu S, Ho H, Han I (2003). Knowledge sharing behavior of physicians in hospitals. *Expert Systems with Applications* 25(1):113-122.
- Salavati A, Zandi R, Amani S (2014). A Survey on the Relationship between Organizational Cynicism with Knowledge Sharing (Case Study: Islamic Azad University). Available at: <https://www.sid.ir/En/Journal/ViewPaper.aspx?ID=414480>
- Seif M, Sabet Maharlouei A, Rastegar A, Talebi S (2015). Factors Influencing the Willingness to Share Knowledge among Faculty Members of Shiraz University of Medical Sciences. *Iranian Journal of Medical Education* 15:41-50.
- Seonghee K, Boryung J (2008). An analysis of faculty perceptions: Attitudes toward knowledge sharing and collaboration in an academic institution. *Library and Information Science Research* 30(4):282-290.
- Smit S, Leikens A, Dolgova E, Mulders MJC (2014). Knowledge sharing in a Dutch hospital: An empirical study. Master Thesis. Tilburg

- University. Available at: <http://arno.uvt.nl/show.cgi?fid=136223>
- Soleimani M, Pourzaman J, Taheri MM (2013). Investigating the Relationship between Individual Factors of Information Technology and Employees' Knowledge Sharing (From the Perspectives of Employees and Managers of Islamic Azad University Orumieh Branch). The 2nd National Conference on Modern Management Sciences. 5th Sept. Gorgan. Iran.
- Syaf L (2011). Knowledge Sharing Affecting Factors and its Relationship with Employee Satisfaction in Ahwaz Industrial Towns. Faculty of Social and Economic Sciences. Master Thesis. Ahvaz: Payamnoor University.
- Taheri M (2012). Investigating the Effect of Organizational Structure and Culture on Knowledge Sharing (Case Study of Lahijan Food Industries). Master Thesis. University of Guilan International Campus Unit.
- Van den Hooff B, Huysman M (2009). Managing knowledge sharing: Emergent and engineering approaches. *Information and Management* 46(1):1-8.
- Wang S, Noe RA (2010). Knowledge sharing: A review and directions for future research. *Human Resource Management Review* 20(2):115-131.
- Wu W, Lin C, Hsu B, Yeh R (2009). Interpersonal trust and knowledge sharing: Moderating effects of individual altruism and a social interaction environment. *Social Behavior and Personality: An International Journal* 37(1):83-94.