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Knowledge Transfer in Health and Social Sciences Research Centers Affiliated to Shahid Sadoughi University of Medical Sciences in Yazd, Iran

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ABSTRACT

Background: knowledge transfer or knowledge translation is a process which transfers knowledge to the realm of practice and application. Indeed, faculty members at research centers manage to identify barriers to knowledge transfer within their scope and provide appropriate solutions to improve the current state of knowledge exchange based on their findings. Therefore, the present study aimed to self-evaluate knowledge transfer and exchange in health and social sciences research centers affiliated to Shahid Sadoughi University of Medical Sciences in Yazd.

Methods: In this cross-sectional study, all active health and social sciences research centers of Shahid Sadoughi University of Medical Sciences in Yazd were studied in 2016 - 2017. After giving some explanations regarding how to respond to the questions of self-evaluation of knowledge transfer and exchange questionnaire, the questionnaire was voluntarily completed by the faculty members and experts (n = 68). Data were analyzed in $SPSS_{16}$ software.

Results: As the study findings revealed, the best condition related to production of knowledge was 67.3% of the total score. The score was lower in regard with question of knowledge, determination of research priorities and communication with beneficiaries attaining 61.7% of the total score.

Conclusion: It seems to be necessary for university authorities in charge of research to pay special attention to choose appropriate research topics and research priorities to obviate the problems and the beneficiaries face. The amount of receiving order**,** especially from sources outside the university and identifying their needs indicate the ability of faculty members in putting into practice the research findings of the university.

Keywords: Knowledge Transfer, Research, Self-Evaluation, University

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Introduction

Knowledge transfer or translation is a process of putting into practice the knowledge and understandings, which is not merely related to the dissemination of research findings; however; it is of great importance in all stages of research, such as dissemination of knowledge.[1, 2] Knowledge is an intellectual asset in today's society, which organizations must strive to develop knowledge management activities to turn it into a capital good.[3] Knowledge transfer process provides access to knowledge, experience and expertise, which ultimately results in improving performance as well as creating new capabilities and innovation.[4] Knowledge in the age of information technology is one of the main sources of accessing competitive advantage in the dynamic atmosphere.[5] In fact, knowledge is regarded as one of the most important advantages in the scene of global competition. The findings of different studies have demonstrated a gap between knowledge production and its implementation,[6,7] since it is difficult to turn research into action in which various factors such as discipline and intellectual framework, skill, creativity, knowledge and hard work are involved at an organizational level.[8] Accordingly, it seems to be essential for organizations to manage the existing knowledge in order to achieve human resources efficiency, employee sufficiency, reduction of the time allocated to decision-making, job satisfaction, reduction of costs, as well as increased creativity and innovation.[9]

Academic community has an important and credible human capital in the knowledge production. Furthermore, it can be considerably effective in development of services quality and knowledge generation via resorting to proper planning and being in accordance with the community needs. Faculty members at research centers are able to identify the barriers to knowledge transfer within their domain and as a result of their findings**,** offer appropriate guidelines to ameliorate the knowledge exchange.[10] Studies at research centers of medical universities are more involved in such topics as diseases, treatment and care interventions. In this regard, Graham and Logan (2004) argue that innovation and knowledge transfer are complex issues in the field of care due to the fact that it is associated with various sectors and thus, it is not surprising that innovation is challenging in practice. Although there are many theories regarding knowledge transfer and knowledge exchange, the status of their application is not clear yet.[11] It should be noted that by presenting the final report of research projects, the research is not considered terminated. However, it is at the stage that the issue of transfer and exchange of knowledge become important being taken into account in not only all stages of research but also in dissemination of knowledge.[12]

Today, such methods as the publication of papers in national and international journals, conference presentations, and presentation of the final report, demonstration of results on the web site, etc.are used to disseminate research findings.Therefore, for effective dissemination of the results; it is advantageous to utilize other methods such as transferring knowledge and providing conditions for beneficiary involvement in any research. Taking into account the amount of time spent, high expenses and energies, research officials need to pay a particular attention to the effectiveness and optimal use of the research projects results in order to increase their productivity. Knowledge transfer can be applied to make the practical results applicable and utilize the research evidence in health decision-making. The World Health Organization also puts a strong emphasis on this process.[7, 13] Ferdosi and Alavi (2011) stated that in order to determine and prioritize research topics, it seems necessary for research centers to move towards continuous communication with beneficiaries. Doing ordered research and attracting research grants specifically from sources outside of the university can lead to establishment of more effective relations with beneficiaries. Moreover, drawing attention to the issue of knowledge transfer can be effective in both disseminations of research results as well as

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the accurate and complete delivering of messages of any research to its specific audiences.[13]

In this respect, Seyed Mohseni (2003) stated that the major problem in Iran is failing to use the research results in practice, which is not exclusively related to little credibility and lack of researchers' familiarity to the modern methods of investigation. To avoid investment wasting in research, some steps should be taken towards increasing the ability to use research results and achievements.[14] In another study, Mirghafoor et al. (2010) evaluated the dimensions of knowledge management process in health centers of Yazd, who came to this conclusion that the process of knowledge management in health centers of Yazd with a mean of 2.85 has been less than average, though knowledge application with a mean of 14.3 was reported as the best performance. In regard with mean ranking, applying knowledge with the mean of 3.14 achieved the first rank, whereas knowledge evaluation with the mean of 2.59 was the final rank. Moreover, it was also proposed that except for using knowledge among health care personnel in Yazd, the dimensions of knowledge management process were not held to be desirable.[15]

As mentioned previously, within recent years, a great number of research projects have been conducted at universities, though it is not obvious whether the results of these studies can be used efficiently or not. In this regard, the issue of knowledge transfer via various approaches has been taken into consideration by the scholars. Since few studies have been carried out in this regard, universities need to present more activities in this field in order to provide a framework for implementing the understandings and appreciating the benefits of innovation. Undoubtedly, through better management of research studies, human, fiscal and instrumental resources can be more satisfactorily beneficial. Since the prerequisite for implementation of each concept in the organization involves assessment of the concept components, this study aimed to self-evaluate the knowledge transfer and exchange in health sciences research centers of Shahid Sadoughi Yazd Universityof Medical Sciences in order to propose appropriate solutions to overcome barriers to knowledge transfer and to make the research results applicable.

Methods

This cross-sectional study was conducted in 2016 - 2017. The statistical population consisted of faculty members and experts from health and social sciences research centers in Shahid Sadoughi Yazd University of Medical Sciences, among which the study sample were selected via census sampling method. In fact, active centers of the university were identified based on the reports of vice research chancellor of Shahid Sadoughi Yazd University of Medical Sciences includes following factors: the number of published papers, published books, presentations and posters at the conference, theses, workshops, conferences, publication and asking for a journal license, a memorandum of understanding with other institutions, center web site and eventually gaining the threshold level of minimum score of internal evaluation. Then, the researchers referred to the research centers and elaborated on how to respond to a questionnaire of knowledge transfer and exchange self-evaluation, which was voluntarily filled out by faculty members, experts at research centers, and the researchers.

The data were gathered using a questionnaire prepared by Nedjat et al. (2008) at Tehran University of Medical Sciences, which its validity and reliability have been determined and has been published in valid journals. The questionnaire contained 50 items, being designed in four parts: 1- Research question: Is it possible to identify research needs of decision makers and turn it to a research topic? (12 questions, 60 points), 2- Knowledge Production: Is it viable to produce evidence pieces to be used in decision-making? (9 questions and 45 points), 3- Knowledge transfer: Is there an appropriate mechanism for the dissemination of university research results to their

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particular contacts? (25 questions and 125 points), 4-Promotion of evidence and documents use: Are the decision makers aided so as to make better use of research results? (four questions and 20 points). This instrument provides an opportunity to investigate the status of knowledge transfer in research centers.[13, 16] It is worth mentioning that the names of research centers have been deleted and encoded due to confidentiality of information. Findings on continuous variables were expressed as means of standard deviation (SD) and categorical data were expressed as frequency (percent). The data were analyzed using ANOVA test in $SPSS_{16}$ software. P-values less than 0.05 were considered as statistically significant. In addition, required permission was received from relevant authorities in the research centers. All participants in the study were assured of the confidentiality of their information and absence of any constraint to participate in the study.

Results

A total of 68 researchers participated, 33 of whom were male (48.5%) and 35 (51.5%) were female. The age range was 26 to 69 years, and the mean age was 43.6 years (SD = 9.2). Regarding academic rank, 22% of researchers were non-academic members, 22% were instructors, and 30.9%, 16.2%, and 8.9% were assistant, associate, or full professors, respectively. Number of years working as a professional ranged from one to 33 years, and the mean number of years working in the university was 15.3 (8.4).

Comparing the four domains of knowledge transfer self-evaluation revealed that the best status was related to the knowledge production (67.3% of the total score), whereas, the lowest score (61.7% of the total score) was attributed to the "research question" domain or determination of research priorities and communication with the beneficiaries (Table 1).

The ANOVA results indicated no statistically significant difference (P-value = 0.921) between active research centers of Shahid Sadoughi Yazd University of Medical Sciences in each of four domains and in total. It should be noted that the names of research centers were regarded as strictly confidential, and to this end, the names have been deleted and then encoded (Table 2).

The results indicated no statistically significant difference (P-value = 0.382) between active research centers of Shahid Sadoughi Yazd University of Medical Sciences in each of four domains based on numbers of published articles by ANOVA test (Table 3).

Table 1. Mean, standard deviation and percentage of attainable scores in four domains of knowledge transfer self-evaluation in research centers of Shahid Sadoughi Yazd University of Medical Sciences

	Promotion of using knowledge	Knowledge transfer	Knowledge production	Research question	Total
Mean	12.76	81.5	30.3	37.01	161.57
Standard deviation	3.65	18.16	6.38	8.76	36.95
Percentage of attained score	63.8	65.2	67.3	61.7	64.6
Total attainable score	20	125	45	60	250

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Table 2. Mean of attained scores in four domains of knowledge transfer in research centers of Shahid Sadoughi Yazd University of Medical Sciences

Domains/ Centers	Promotion of evidence use Mean (SD)	Knowledge Transfer Mean (SD)	Knowledge production Mean (SD)	Research question Mean (SD)	Total Mean (SD)
Center A	13.14 (3.80)	85.71 (17.72)	32.14 (5.63)	37.57 (4.92)	168.57 (29.07)
Center B	11.62 (3.62)	83.12 (6.59)	28.50 (5.55)	38.75 (3.28)	162 (12.03)
Center C	14.12 (2.64)	83.12 (10.90)	30.5 (4.53)	40 (7.48)	167.75 (21.81)
Center D	13.16 (3.43)	85.5 (24.96)	32 (7.09)	41.83 (11.26)	172.5 (43.17)
Center E	13 (4.30)	77 (25.14)	29.2 (7.79)	32 (16.44)	151.2 (51.96)
Center F	11 (1.80)	76.88 (14.86)	30 (5.89)	32.88 (8.75)	150.77 (27.34)
Center G	13.16 (4.34)	82.58 (22.25)	30.58 (7.91)	37.5 (9.65)	163.83 (40.98)
Center H	14.50 (3.92)	81.62 (23.70)	30.50 (8.14)	36.37 (7.34)	163 (40.69)
Center J	10.6 (4.66)	75.6 (19.69)	29 (6.59)	35.2 (8.10)	150.4 (37.05)
P-value	0.463	0.972	0.984	0.551	0.921

Table 3. Mean of attained scores in four domains of knowledge transfer in research centers of Shahid Sadoughi Yazd University of Medical Sciences based on numbers of published articles

Domains/ numbers of published articles	Promotion of evidence use Mean (SD)	Knowledge Transfer Mean (SD)	Knowledge production Mean (SD)	Research question Mean (SD)	Total Mean (SD)
0	14.18 (3.62)	90.09 (14.11)	31.72 (5.62)	41.09 (2.70)	177.09 (22.11)
1-20	12.44 (3.83)	78.61 (17.79)	29.55 (6.42)	36.38 (9.48)	157 (34.39)
21-40	13.25 (2.66)	83.25 (13.60)	29.83 (5.81)	36.75 (8.75)	163.08 (25.36)
> 40	11.81 (3.99)	79.90 (25.43)	31.72 (7.87)	35.18 (10.15)	158.63 (45.00)
Total	12.76(3.65)	81.50 (18.16)	30.30 (6.38)	37.01 (8.76)	161.58 (33.30)
P-value	0.412	0.325	0.663	0.391	0.382

Discussion

The present study aimed to evaluate the transfer and exchange of knowledge in active research centers of Shahid Sadoughi Yazd University of Medical Sciences, assessing their strengths and weak points in order to determine the cases demanding attention in this field. The study results showed that comparing the four domains of knowledge transfer self-evaluation questionnaire, the best status was related to the knowledge production of which corresponds to the results of a study carried out in this regard at Esfahan University of Medical Sciences.[13] The knowledge production and putting it into practice constitutes the biggest investment of the government and nation.[17]

Within recent years, numerous research projects have been conducted in universities. Professors and researchers are normally engaged in the production of knowledge, though the concern is that how the results of these studies should be applied in practice.[13] As a matter of fact, the issue of conducting a research receives a considerable attention in research centers of universities. Although attaining 67.3% of the total score in the domain of knowledge production is a certainty sign of substantial progress of the University, it should be kept in mind that along with the knowledge production, other measures need to be taken, among which determining specified, updated priorities in research centers of university, giving the researchers sufficient incentives, creating databases related to researchers, attracting external resources, monitoring the projects, creating desirable atmosphere and appropriate

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facilities to carry out research and considering the users of research results, etc. can be stated.

Moreover, the part related to "research question" or determination of research priorities and communication with beneficiaries received the lowest scores in comparison with other domains demonstrating the need to pay a more and serious attention to this domain. The results are consistent with research findings of Isfahan University of Medical Sciences. Accordingly, decisions demand to be taken in order to develop opportunities to interact with beneficiaries and make the results of research projects usable outside the university.[13] It seems to strengthen the Office of Industrial Relations, development of knowledge-based companies and most importantly, carrying out systematic assessment of needs are appropriate solutions.

The process of linking "research" and "action" as well as being ensured of optimal use of the research results findings is regarded as an important distinct issue. As a matter of fact, researchers make their best attempts to identify the connections between the knowledge production and its application, which can be used in the production and application of knowledge. The use of self-assessment instruments seem to be beneficial in knowledge translation in the sense that it provides an accurate evaluation of the knowledge transfer activities.[10]

The available evidence suggests that turning "research" to "action" is considered difficult and complicated that, in addition to individual ability and desire, it requires such factors as discipline, creativity, skill, knowledge, diligence and intellectual empowerment in the context of any organization.[8] Attention to research grant can be stated as one of the most important and efficient solutions in regard with solving the problems related to knowledge transfer. Receiving orders from outside the university environment enjoys great benefits. In the first phase, it is regarded as a good indicator of communication between research centers and beneficiaries, since beneficiaries should put trust in university officials that is viable by university authorities' sufficiency in demonstrating their capabilities as well as satisfying their needs. On the other hand, the beneficiaries have already announced their needs and have incurred costs to the customers, and thus efficient utilization of research result grant can be expected.[13] Of course, these important issues are placed on Sahahid Sadoughi University agenda.

Another considerable point to remember is taking the index of knowledge transfer and exchange into account concerning assessment criterion for research centers and faculty members of universities, which has so far received a scant attention.[18, 19] Nedjat et al. (2008) proposed that appraisal of scientific productions (article publication and participation in scientific conferences) can be regarded an indicator for the academic research activities. Evaluation criteria of performance of faculty members have clearly produced a significant effect on the knowledge transfer behavior in Tehran University of Medical Sciences.[16] Furthermore; utilization of new knowledge is the essential factor that drives the national development. Therefore, universities should provide further opportunities for increasing collaborative research projects with other research centers.[20, 21]

In light of the mentioned issues, to promote knowledge transfer and exchange programs in the university, taking the following measures is recommended: prioritizing the issue of transfer and knowledge exchange in organizational strategies of the university, reinforcing the awareness of research centers members to promote optimum performance in knowledge transfer, forming a special organizational unit concerning knowledge transfer via providing fixed expert human resources, identifying a specific target audience of university research projects, informing the primary audiences of any research through public and private media to identify their needs, allocating a separate budget for the transferring knowledge and informing the research results, communication with executive agencies and optimal use of

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research results, development of relationships between domestic and foreign universities.

The findings of the present study demonstrated that health and social sciences research centers of universities privileged the part related to “knowledge production” domain. In contrary, "research question" domain can be mentioned as one of the demerits associated with active research centers of universities. As a result, it seems necessary for authorities in charge of research to specifically take the selection of appropriate research topics and research priorities into account in order to solve the problems of beneficiaries. The rate of receiving order from customers, especially in sources outside the university as well as identifying their needs indicates skill, knowledge, diligence and ability of faculty members in putting into practice the research results of universities which in turn brings important achievements for universities. Indeed, attending to the issue of knowledge transfer aids to transfer messages of any research to its specific audiences.

Conclusion

It seems to be necessary for the university authorities in charge of research to pay special attention to choose appropriate research topics and research priorities to obviate the problems and the beneficiaries face. The amount of receiving order**,** especially from sources outside the university and identifying their needs indicate the ability of faculty members in putting into practice the research findings of the university.

Conflicts of Interest

There was no conflict of interest in this study.

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Authors’ Contribution

Conceptualization, S.S.M.M. and Z.P.; Methodology, S.S.M.M. and Z.P.; Investigation, S.S.M.M., Z.P. and B.R.; Writing – Original Draft, S.S.M.M., Z.P. and B.R.; Writing – Review & Editing, S.S.M.M. and Z.P.; Funding Acquisition, S.S.M.M.; Supervision, S.S.M.M. and Z.P.

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