

The Relationship between Information Literacy with the Scientific Products of Faculty Members of Kermanshah University of Medical Sciences during the Years of 2005 to 2010

Shirin Iran-Far, PhD¹; Lida Memar-Eftekhari, MSc^{1*}; Ramin Homayooni-Zand, MD²,
Mansoor Rezaei, PhD³; Mahmood Kazemi, MSc¹

¹ Medical Education Development Center, Kermanshah University of Medical Sciences, Kermanshah, Iran

² Medical Education Development Center, Shahid Beheshti University of Medical Sciences, Iran

³ Department of Biostatistics, Social Development and Health Promotion Research Center, Kermanshah University of Medical Sciences, Kermanshah, Iran

Abstract

Background and purpose: Faculty members are the most important assets and resources of each country and information literacy refers to a set of capabilities that enable people to recognize the need for information and after placement and access to information needed, they evaluate and effectively use them, and since scientific production is one of the important indicators of faculty members' performance, a study that would determine the role of information literacy in scientific products using its results is necessary to create development and prosperity in scientific production. The aim of this study is to determine the relationship between information literacy and scientific products of faculty members of KUMS during the years of 2005 to 2010.

Methods: This study was a cross-sectional study. The study population was all full-time faculty members of KUMS in the census. A valid and reliable questionnaire was used to collect data which had two parts, the first part had 21 sections and included demographic information and scientific products and the second part was the information literacy questionnaire and consisted of 87 questions and 100 sections. In this study, the independent variable was information literacy and the dependent variable was scientific products and data was analyzed using descriptive and analytical statistics and SPSS software version 19.

Results: The total mean of information literacy of KUMS faculty members was above average and 50% had information literacy and there was a significant relationship between information literacy and scientific products of KUMS faculty members.

Conclusions: The findings indicate the relationship between information literacy and scientific production, and since only half of the faculty members had information literacy, the necessity of planning to enhance information literacy is justified.

Keywords: INFORMATION LITERACY, SCIENTIFIC PRODUCT, FACULTY MEMBERS

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Introduction

Education and research are two main missions of universities. Without experienced and specialized faculties in different fields of

sciences, we cannot speak of development and without research in various fields you cannot have a claim in today's hurried society in the world, and education and research are as two wings to fly in this field (1). Moreover, 21st century society is a learning society and the need to survive in such a society is equipping with learning tools and the organizer core of this society is information literacy (2). In an era when huge volumes of publications and information

***Corresponding author:** Lida Memar-Eftekhari, MSc of Medical Education, Medical Education Development Center, Kermanshah University of Medical Sciences, Kermanshah, Iran.
Email: mhokazemi@yahoo.com

destroyed our opportunity to study all of them, having information literacy is very important. Information literacy is a mean for individual ability that leads a person skilled in the analysis, making scholarly decisions or his independency in search of the truth (3).

The main factor in determining a country's capacity to compete at the international level and global markets is technical and research development of the country (4). Evaluation of scientific products through science survey studies is used as one of the criteria in ranking universities (5). Mastery of information literacy can contribute to better planning for the management of the research process and access to relevant information for each stage of the task and finally new knowledge production. Motivation and courage to handling research activities are among other benefits of information literacy (6).

Given the link between the quality of education and research quality and quantity, scientific information production is one of the main tasks of the faculty members of each university. To determine the balance and recognition of differences in research field and scientific production of university faculty members, serious and ongoing research is necessary (7).

Information literacy includes skills that are prerequisite for effective participation in the information society. Scientific products are considered as one of the important signs of information literacy (8). Since there is a lack of research that examines the relationship between information literacy and scientific products of faculty members, this study was performed with the aim to determine the relationship between information literacy and scientific products of faculty members of KUMS during the years of 2005 to 2010.

Methods

This study is a cross-sectional study in which the study population consisted of all faculty members and instructors (tenure or non-tenure) of Kermanshah University of

Medical Sciences who were working in six schools of Medicine (n=165), Nursing and Midwifery (n=27), Public Health (n=20), Pharmacy (n=14), Allied Medical Sciences (n=10) and Dentistry (n=2) with a total number of 238 staff. Data were collected using a questionnaire. Faculty members with a history of less than two years of work experience, and those who were studying in fellowship courses were excluded respondents.

The first questionnaire included 21 sections, and contained demographic data (age, gender, place of birth, place of receiving the last degree, field of study, the last study degree, educational group, work experience, type of employment or academic ranking) and scientific products (writing books, translation of books, published articles in journals, presenting paper at domestic and foreign/national and international conferences, approved research project, patent, referring to the article, thesis supervisor, thesis advisor) from 2005 to 2010. The second questionnaire was related to information literacy skills measurement based on Information Literacy Competency Standards for Higher Education (adopted by the ECRL) which consisted of 87 questions with respect to the subgroups of some of the questions, totally included 100 questions. The questionnaire asked respondents to score each item based on a Likert type five-value spectrum about the methods they consider doing the research.

The first questionnaire was prepared to determine the scientific products of faculty members and for its content validity was reviewed by a panel of ten faculty members of KUMS and for its reliability a pilot study was used.

The second questionnaire measured information literacy skills that were extracted from a study by Dr. Ali Hossein Ghasemi (9). Information literacy is a set of capabilities and requires that people recognize when they need information and

have the ability to locate, evaluate and use effectively the needed information (3). In this study, information literate refers to a person whose score which was acquired from information literacy measurement questionnaire is higher than the average of all faculty members. Information literacy measurement questionnaire included 100 items and was in the form of 22 indicators that these indicators were arranged, in turn of following 5 standards: nature identification, efficient achieving, critical evaluation, effective use and understanding; any of the standards assesses a general feature and each of the indicators measures a limited scope of the general feature. The results that explain the role of standards and indicators are placed following the performance indicator. According to this hierarchy, the question is related to an outcome (outcome of the standard) that illustrates the desired standard and its special function. After collecting the questionnaires, using information literacy questionnaire, faculty members divided into two groups of having information literacy and without information literacy that this division criterion was the average score of all members. The score above the average had information literacy and lower than it had no information literacy. A Likert type five-value spectrum were used for scoring each item, (1=strongly disagree 5=strongly agree). Then the overall average was calculated that in fact indicated the level of information literacy of faculty members and in the next step the relationship between information literacy and scientific products was determined (such as writing and translation of books, publishing articles, presenting paper in congresses, thesis supervisions, approved research projects, reference to articles and patents). To determine the relationship between information literacy and scientific products, Spearman correlation coefficient and Chi-square test was used. To compare scientific products based on other variables, independent t-test and ANOVA (Analyze of

Variance) was used and the SPSS software version 19 was used for the analysis.

In this study, the following respondents' ethical issues were observed: 1) written permission and introduction letter of Vice-Chancellor of Research and Technology of KUMS was received to gather information 2) Written permission from the security office of KUMS was received 3) Participation of faculty members in responding to the questionnaires was on voluntary basis 4) Members' secrets were preserved with full precision and delicacy and no one but the researchers had the access to studied subjects' information. 5) All information was investigated without the name of the members and through coding.

Results

From 238 questionnaires that were distributed, by frequent follow-up, 125 questionnaires were filled and returned, 11 questionnaires were partially filled and 4 were filled by faculty members who had less than two years work experience so these 15 questionnaires were excluded and finally 110 questionnaires were analyzed. Of the total 110 people who completed the questionnaires, 70.9 % were men and their mean age was 46.3 ± 7.3 years. 79.1% of respondents were born in Kermanshah (native). Most faculties (64.5%) obtained the last study degree from the University of Tehran. KUMS distribution of respondents based on the schools showed that 55.5% of members were working in the medical school. The average work experience of the participating faculty members of KUMS was $17/6 \pm 7/3$ with a range of 2 to 30 years. 60% of participating faculty members of KUMS was tenure, 25.4% were instructors who had temporally contract and 14.5% were in assessment process for tenure tract. Most (58.2%) of participating faculty members of KUMS were Assistant Professor in terms of academic status.

Table 1. Comparison of the mean scientific products by the year of KUMS participating faculty members from 2005 to 2010 in two groups of with and without information literacy.

Year	Having information literacy	Having no information literacy	P value
2005	5.3±8.4	2.2±2.6	0.01
2006	4.9±8.1	2.2±2.9	0.02
2007	5.6±9.1	2.6±3.1	0.02
2008	5±7.2	2.4±2.5	0.01
2009	6±7.3	3±2.9	0.005
2010	6.6±6	4±3.8	0.009

Participating faculty members of KUMS during the years of 2005 to 2010, 20% wrote one book, 0.9% wrote two books and 3.6% wrote three books over this period. Also, 10.9% translated one book, 3.6% translated two books and 4.5% translated three books over these years.

40.9% has published one to three articles, 26.4% four to ten articles and 2.7% eleven articles and more in local journals. Of participating faculty members of KUMS during the years of 2005 to 2010, 25.5% has published one to two articles, 3.6% three to four articles and 5.4% more than five articles in indexed foreign journals. 3.6% has published one to two articles, 3.6% three to four articles and 0.9% more than five articles in foreign journals which they were not indexed.

Participating faculty members of KUMS during the years of 2005 to 2010, 49.1% has presented one to ten articles, 9.9% eleven to twenty articles, 8.1% twenty-one to forty articles, and 2.7% more than forty-one articles in domestic/local conferences as posters. Also 50.8% lectured one to ten articles 8.1% eleven to twenty and 1.8% more than twenty-one articles at local/domestic conferences. 24.5% has presented one to five articles, 2.7% six to ten articles and 1.8% eleven to fifteen articles as posters at foreign conferences. 10% has lectured one to three articles, 2.7% four to six papers and 1.8%

more than seven papers in international conferences.

51.8% did one to five approved plans, 7.2% six to ten and 0.9% eleven to fifteen as plan executive.

Participating faculty members of KUMS had 1.8% patents during the years of 2005 to 2010. Participating faculty members of KUMS during the years of 2005 to 2010, 2.7% had one reference, 0.9% had two references and 0.9% had three references to their articles in reference books. 2.7% had one to two references, 2.7% had three to four references and 1.8% had more than five references to their articles in other articles.

The mean score of participating faculty members' information literacy was 414±34. The mean score of information literacy in both genders of participating faculty members of KUMS had no significant differences (P=0.582).

There was no significant statistical relationship between information literacy and study degree, age and work experience of participating faculty members of KUMS and information literacy.

The highest number of scientific products (6.6±6) was related to faculty members with information literacy in 2010 and the lowest (2.2±2/9) was in those with no information literacy in 2006. There was a significant difference between the average of scientific products KUMS respondents with

Table 2. Comparison of the number of scientific products of KUMS participating faculty members from 2005 to 2010 in two groups of with and without information literacy.

Scientific Products	Having information literacy	Having no information literacy	P value
Writing book	0.3±0.6	0.3±0.6	0.7
Translating book	0.4±0.8	0.2±0.5	0.1
Publishing paper in national publications	3.3±6.7	2.4±2.7	0.3
Publishing paper in indexed foreign publications	1.3±3.5	0.6±1.1	0.1
Publishing paper in not indexed foreign publications	0.5±2.3	0.1±0.4	0.1
Presenting paper in national conferences- poster	8.1±9.6	4.8±9.7	0.07
Presenting paper in national conferences – lecture	5±6.8	1.8±3	0.002
Presenting paper in international conferences – poster	1.5±3	0.2±0.7	0.003
Presenting paper in international conferences – lecture	1.5±3	2.2±0.7	
Approved research plan (plan executive)	2.4±2.3	1.4±2.2	0.02
Patent	0.0±0.0	0.05±0.2	0.1
Referring to the paper in reference books	0.3±0.09	0.05±0.4	0.6
Referring to the paper in other papers	5.5±0.9	0.1±0.5	0.2
Thesis supervisor of general medical	1.9±3.5	1.4±2.1	0.2
Thesis supervisor of specialty	2.4±1.1	0.5±1.4	0.1
Thesis supervisor of super specialty	0.07±0.3	0.0±0.0	0.1
Thesis supervisor of master	0.4±1.2	0.9±0.2	0.3
Thesis advisor of general medical	11.9±2.5	0.7±1.6	0.2
Thesis advisor of specialty	6.6±1.3	1.4±2.1	0.2
Thesis supervisor of specialty	1.1±2.4	0.5±1.4	0.1
Thesis advisor of master	0.8±3.1	0.3±1.3	0.3

information literacy and without information literacy (Table 1).

Faculty members with information literacy had more article presentation on domestic conferences in the form of lecture ($0.003 > P$) and article presenting at the international conferences in the form of poster ($0.0004 > P$) and approved research plan as plan executive ($0.03 > P$) than those without information literacy (Table 2).

There was a significant relationship between information literacy and scientific products of faculty members of KUMS during the years of 2005 to 2010 ($0.03 > P$).

Discussion

Our findings showed that there was a significant association between information literacy and scientific products of faculty members of KUMS during the years of 2005 to 2010. In a study by Hasumi, while stating that computer skills is one of the aspects of information literacy skills, its relationship with faculty members products of Roudehen Islamic Azad University was examined. In this study, she concluded that faculty members with higher levels of familiarity with ICDL skills have more scientific products (10). Habibi also stated a direct relationship between writing according to ISI (information sciences institute) and information literacy and said that one of the reasons for rejection of Iranian authors' articles in high ranking magazines of ISI is weak information literacy of Iranian researchers. (11). Alizadeh concluded that librarians with high information literacy can have more scientific products (8). Soleimani said that information and communication skills are effective on faculty members' scientific products (12). Ganji in his study referred to the relationship between information literacy and the production of science. He expressed research works as the main incentive and objective of information literacy that is one of the aspects of information literacy (one of scientific products) (13). Azami considered weaknesses

of information literacy and use of resources skills as one of the reasons for reduction of scientific productivity (the number of articles published in ISI) (14). Aminpour in a research at Isfahan University of Medical Sciences concluded that teaching information literacy skills was effective on increasing scientific products of Isfahan University of medical sciences faculty members (15).

Conclusion

Having the skill for faculty members who are the main pillars of universities is an essential matter and according to the findings of the present study that there is a statistically significant relationship between information literacy and scientific products of faculty members (faculty members have more information literacy, they have more scientific products) accordingly by increasing information literacy of faculty members can help increasing scientific products in universities and country development in international and global field.

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