

Original Research

Determining Information Literacy Competency of Faculty Members in Using Medical Information Resources

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Abstract

Introduction: Information literacy (IL) is a set of abilities requiring individuals to identify when information is needed and have the competency to retrieve, evaluate, and efficiently use the required information. The aim of this study was to recognize to what extent faculty members are able to use the variety of information resources. The study was done in Tabriz University of Medical Sciences (Iran) from October to December 2012.

Methods: This study used the cross sectional method. The participants of this study were 80 faculty members who referred to the central university library within the first two weeks of October (beginning of school year) for information seeking. All of the participants in the study were selected. Data were gathered through distribution of a standard questionnaire of information literacy. Data were analyzed through SPSS/16 and one-way ANOVA Independent *t*-test was applied, too.

Results: Information literacy competency was classified in three levels: low, moderate, and high. The majority of faculty members had moderate information literacy level and a minority of them had a high information literacy level.

Conclusion: Information literacy competency of faculty members was moderate to low. Academia had higher level of retrieving information and evaluating than ethics and rights of information resource and abilities in knowledge. There was a statically significant relationship between age and level of academia with information literacy level.

Introduction

At present, in such a complex environment, individuals are faced with a lot of information and in order to discern reliable information from the mass of information, researchers should have some skills. They can use the available data and information through information and communication technologies, especially the Internet, which is developing rapidly around the world. Consequently, such information should not be considered knowledge on its own and should undergo the processes of gathering, studying, planning, inquiry, thinking, judging, editing, integration, analysis, synthesis and evaluation prior to becoming knowledge. This process requires a special education, which is interpreted as information literacy.¹ According to the American Library Association, information literacy is a set of abilities requiring individuals to “recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information”.²

Information literacy is a key component of lifelong learning and common to all academic fields and learning

environments. “It enables learners to master content and extend their investigations, become more self-directed, and assume greater control over their own learning”.³

Government in developing countries spends high costs to subscribe to foreign publishers’ databases and journals. The optimal use of these resources is vital for departments of universities and policymakers in developing countries. In addition, it is important for universities to investigate whether or not these resources meet the needs of their academia, and also whether students and academia have the ability to optimally use the required information resources. It is a critical issue because of the following: the diversity of information resources located in different places; various technological features in storing and retrieval systems; and skills in recognizing, locating, accessing, and ethically using these resources. This perhaps provides the separate education unit in universities with reliable evidence in order to hone the essential courses and syllabuses. Thereby, the long-range goals of universities such as improving the

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quality of education, research, and lifelong learning ability will be available. However, due to changing perspectives of teaching and learning, teaching strategies have changed from traditional approaches to more modern and student-centered approaches. This method increases student motivation in learning and discovering scientific fact by engaging them in academic and research activities. As a result, teachers should help students by equipping them with computer literacy, traditional or general literacy, and communication abilities. This process falls to teachers and academy members to create such an environment to foster literacy.

Pilehrood (1987), in a study of 46 faculty members of library science and their role in production of science, concluded that the main objective of the faculty members seeking information is to have access to scientific articles and bring their information up to date.⁴

Kats stated that information without transformation is just raw data and use of the information requires mastery of cognitive skills such as critical thinking. This is dependent on location, evaluation and application of information. He asserted that information literacy involves four elements: transmission, reception, transformation and access to information, which is done during the process of reception to transmission and transmission to transformation.⁵

Therefore, academia with information literacy can determine the type, scope and range of needed information, provide effective and efficient access to the information, evaluate information and information resources critically, integrate the selected information with prior knowledge, and make effective methods of teaching them and use them to achieve specific goals.

They should know the ethical rights and social, economic and legal issues of using and accessing information and developing successful strategies to search and organize information.⁶ So research based learning, as well as inquiry-based and independent learning are different aspects of information literacy⁷ which are consistent with the goals of universities in developing countries.

There are potential reasons for learning/teaching information literacy among scholars. The vast majority of documents found on the Internet have not passed a rigorous peer-review process. The risk of using incorrect information will be particularly high for individuals with poor health information competencies.⁸

Deficient information skills may prevent members of the public from recognizing that key information is missing, from understanding the difference between biased and unbiased information, from distinguishing evidence-based claims, and from interpreting the information intended for health professionals.⁹

Physicians used a wide range of information sources, especially Google, with no awareness that Google may include some Pub Med references among its top results. Their evaluation and critical appraisal skills were not well developed. Few were able to refine their strategies, and most relied on extrinsic criteria when evaluating what they found. Despite this, nearly all felt confident in critically

appraising articles, and applying findings to patient care.¹⁰ Rapid changes in higher education through information revolution and information technology led to an obligation of IL in higher education. Since nowadays the number and variety of the data resources are increasing and the funding of universities providing them is limited, careful choice of the resources for subscription is critical. It is necessary for the educational system to guarantee high quality and systematic educational programs for optimal use of the resources.

It seems that students are more familiar than their professors with online information resources due to differences in preferences and capabilities of the two generations, but it does not necessarily mean that the capability of critical thinking and knowledge is also similar in the two generations.¹¹ The need for higher information literacy levels among academia is crucial because nowadays students have a higher information literacy level.

The main objective of this study was to determine the level of information literacy competency among medical academia in Tabriz University of Medical Science, Tabriz, Iran, as one of top five universities in Iran. It also determines the correlation between demographic features such as age, degrees, sex, and level of information literacy.

Materials and Methods

A cross sectional study was done on 80 faculty members. Data were gathered by an information literacy standardized questionnaire which was arranged in two parts: demographic and information literacy questions. The validity of this questionnaire was approved by librarians and research academics, and reliability was confirmed by a Cronbach Alpha. The validity of this questionnaire was evaluated by content validity using factorial analysis for examining construct validity. The Chronbach alpha for the prepared questionnaire was 0.8, which indicates that the reliability of the questionnaire is appropriate and desirable. The first part of the questionnaire included questions about gender, age, academic degree of teachers, and academic rank of academic members.

The second part was devoted to information literacy assessment. The questions of the second part were arranged in four parts:

- 1) recognizing the need for information, diversity of information sources and their format;
- 2) location of domain;
- 3) reassessing the extent of information literacy competency; and
- 4) introduction to intellectual property rights of using information resources.

Faculty responded to the questionnaire individually. Responses were adapted with keys. The total score of each paper was 35. The scores were then classified according to a Likert scale. Scores between 0-11 are low, 13-23 moderate, and > 24 are high. Thus, their information literacy was classified in this way and the scores of the two groups, academics, were compared with their age by one-way ANOVA.

Results

Eighty faculty members of Tabriz University of Medical Sciences responded to the questionnaire. Out of 80 faculty members who participated in this study, 12 (15%) of them were female and 68 (85%) were male. Among the faculty members who participated in this study, 16 (20%) were lecturers, 36 (45%) assistant professors, 8 (10%) associate professors, and 20 (25%) professors.

Among the faculty members who participated in this study, the information literacy level of 30 academia (37.3%) was weak, 40 were in the middle (51%), and 10 academia (11.8%) were good.

We evaluated the overall information literacy rate; moreover, we studied information literacy in four main areas including knowledge, retrieving information, evaluating information, and the rights and ethics of information use.

Academias' skills and abilities in recognizing knowledge were (3.13±1.39); retrieving information were (6.33±1.99), evaluating of information were (4.91±1.66); and in ethics and rights of information resources used by academia were (1.18±0.55).

Academia had a higher level of retrieving information and evaluating than ethics and rights of information resources and abilities in knowledge. This can be applied to the online research environment and guided searches. Therefore, we compared the relationship between information literacy and age (Table 1). According to the ANOVA test, there was a statically significant relationship between age and information literacy level ($P=0.001$).

Table 1. Relationship between information literacy and age of academia

| Age (yr) | Mean (sd) | P |
|----------|---------------|-------|
| ≤36 | 16.50(3.956) | |
| 36-41 | 13.30(3.1663) | |
| 41-46 | 11.25(3.441) | 0.001 |
| 46-54 | 11.08 (3.058) | |

There is an inverse relationship between information literacy level of academia and their age. Younger lecturers are more equipped with information literacy than older ones.

There was no significant relationship between the academic rank of faculty members and their information literacy based on the ANOVA test, but there was a significant relationship between the information literacy of assistant professors (the lower rank) and professors (the higher rank) ($P=0.007$) (Table 2).

Information literacy levels of academia who were assistant professors were higher than those who were professors. This data also represents the difference between the older generation and the new one as well as the generation gap in digital skills between them.

Table 2. Relationship between information literacy and degree of academia

| | Mean | P |
|----------------------|---------------|-------|
| Instructor | 13.62 (3.852) | |
| Assistant Professor | 14.33 (4.488) | 0.007 |
| Associated Professor | 14 (2.549) | |
| Professor | 10.78 (3.533) | |

Discussion

In this study, the information literacy competency of 80 Tabriz University of Medical Sciences faculty members in accessing and retrieving electronic information resources was investigated. Evaluation was done via questionnaire about information literacy skills. The findings were classified in three levels of low, moderate and high.

Among the participants, a minority had high information literacy levels. The findings of another study by Soleimani and Kikha revealed similar results. In a descriptive study, Soleimani evaluated the information literacy of faculty members of Maraqhe University using existing information, knowledge, and other information resources. Her study indicated that 16% of faculty members were familiar with advanced research tools and they often use databases of foreign countries.¹²

Kikhab studied the information literacy competency of the academies of Zanjan University of Medical Sciences. He found that the information literacy competency of faculty members was moderate, and that they were using information resources at a moderate level.¹³

These findings showed that education is required for attaining information literacy. According to Moqadaszadeh, the majority of respondents asserted that they had to learn required skills for performing advanced research.¹⁴

Young faculty members are equipped with information literacy more than others. Regarding technology development and the complexities of information carriers, we should equip them with information literacy skills to acquire lifelong learning, critical thinking, decision making and problem solving abilities as well as creativity and innovation.

Young faculty may appear to be more comfortable in technology-intensive environments than other professors. Perhaps this gap is due to younger academics' familiarity with electronic environments and their tendency for using these recourses.

This study revealed that there was a significant relationship between the rank of faculty members and their information literacy level. It also confirmed the relationship between age and information literacy level. Assistant professors were closer to associate professors, but lecturers tended to challenge themselves less than others.

According to Anderson, skill development has three stages: (1) the declarative knowledge stage, when knowledge of facts is built, such as facts about reputable sources of health information and general procedures for obtaining

information; (2) the knowledge compilation stage, which is characterized by proceduralization and composition; and (3) the procedural stage.¹⁵ In this study, we evaluated the academia information literacy competency level of faculty members in four areas which included knowledge, retrieval, and ethical rights of using information.

This study indicated that faculty members were more aware of retrieving information than other areas. But they were less aware of ethics and rights of information resources in conjunction with other areas. It is a major challenge to ensure that academia has enough knowledge about the rights and ethics of information resources regarding spiritual rights of information use. Habibi, in his research about promoting information literacy based on evidence-based medicine development, revealed that nurses had difficulty confronting problems. He believed that identifying recourses, using appropriate research methods, evaluating evidence or information literacy were the most problematic areas.¹⁶

In his study about needed training programs for information gathering, and as one of the main concepts of information literacy and providing guidelines for the conduct of this course among faculty members of Ahvaz-Iran, Farajpahlou indicated that most participants need training. He also showed that more than half of participants need to learn how to search and access information via the internet.¹⁷

Conclusion

It seems that it is necessary to include an information literacy course for faculty members. These courses are a way for universities to achieve their ultimate objectives, which include up-to-date, consistent scientific knowledge of faculty members.

Courses structured in such a way help to create student-centered learning environments where inquiry is the norm, problem-solving becomes the focus, and thinking critically is part of the process.

Ethical Issues

Participants' information was kept confidential.

Competing interests

There are no competing interests to be declared.

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