

Investigating the Correlation of Access to the Internet/Computer System and Information Literacy

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Abstract

Background: Formerly in societies, literacy only implied reading and writing skills. Gradually, the industrial 20th century turned into the information era of the 21st century. Accordingly, to survive in the present world, we need to have information literacy. Acquiring information technology (IT) is an indispensable part of literacy. The current research aims to investigate the correlation of access to computer/internet system and paramedical students' information literacy at Hormozgan University of Medical Sciences, in 2015. **Materials and Methods:** In the present descriptive, cross-sectional research conducted in 2015, 229 paramedical students who entered university during 2012-2014 were selected through a clustered sampling method. The data collection instrument was a questionnaire already developed and used in the previous research (11). It was comprised of two sections: a demographic and an information literacy section. The data were analyzed using descriptive statistics, Pearson test, as well as independent-sample t-test, were applied via SPSS (version 16). **Result:** Totally, 86.9% and 85.2% of participants had access to computer and internet systems, respectively. A significant difference was found between access to computers and information literacy as well as between information literacy and academic degree ($P < 0.05$). Among the domains investigated, the health-related IT group was found to have the highest literacy level. **Conclusion:** The results of the research indicated a correlation between access to net and information literacy. Therefore, providing for IT infrastructures is suggested for promoting information literacy. **Keywords:** Information Literacy, Access to Information, Computer, Internet

Introduction

The term 'literacy' is a concept inclusive of a wide range of meanings. It enjoys a long background. Today, skills have been defined by authorities in accordance with the updated needs. Defining different types of literacy and their capabilities by experts emphasize that the main cause of stability in every circumstance is a literacy, knowledge, and skill fitted for that particular circumstance (1). In the past, literacy meant two primary skills of reading and writing. However, through the passage of time, the industrial world of the 20th century tuned into the information technology (IT)-oriented world of the 21st century. Therefore, to live in the current information world, we need to have such a literacy, which is called information literacy (2). Information literacy is a set of capabilities of accessing scientific

information, the power of accessing valuable information, awareness of structuring knowledge and information, different methods of searching and identifying the most effective information for problem-solving and decision-making (3). It is essential for researchers to be familiar with information retrieval and use of scientific sources as a key dimension of modern IT-based information literacy such as using databases, digital libraries and information retrieval software (4). Today, literacy has gone beyond reading and writing and has got new dimensions one of which is internet/computer-based capabilities as an indispensable aspect of literacy (5). Previous studies show that having a personal computer (PC) significantly affects university students' attitude towards using the internet (6). A body of investigations conducted on adult students showed that those having access to PCs at home had a more positive attitude to-

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wards and also felt more self-efficacious (7). Today, emerging modern IT and the challenges of information communities have changed the traditional role of libraries and added such new functions as education and development of skills involved in information literacy (8). Due to their nature of work and close contacts with data sources as well as the rapid development of information technology, students need this tool. Information literacy is the key to life-long learning. To access their required information in the shortest time possible, students need to know search and data retrieval tools well. Inadequate information literacy on the part of students leads to the failed use of sources (9,10). In the Iranian context, the level of information literacy is generally low in society. Even among students of higher education who need it for their academic progress, this literacy is lacking. This can begin from the education system of the country (school-level), to bear fruit at higher education. According to research, there is no trace of information literacy in students' course-books. Therefore, the way should be paved for the inclusion of such learning both for students and academics who need to keep updated with scientific knowledge in the shortest time. It is of great importance especially to researchers in developing countries since the internet system fills the information gap (12). In the digital era of the 21st century, knowing how to use computers and the internet is essential. Computer technology can help students with accessing, organizing, manipulating and displaying information (13). On the one hand, today working with computer and the internet plays a leading role in universities worldwide, especially in medical sciences and dentistry. On the other hand, the internet system is the fastest way of accessing the latest academic and scientific publications. Therefore, people involved including university students, professors, specialist assistants are required to be fully aware of these instruments and keep up-to-date with the latest methods of benefiting from these technologies (14). IT is a tool for informing its users and aims to provide their convenience. Using information technology not only facilitates problem-solving concerning time and space but also enhances its users' overall information literacy (15). Considering the large amounts of information and the many capabilities of the internet including its global access and high speed, extensive information required by university students is made available through the internet. As a result, there is a need for evaluation, education, and promotion of information literacy (16). The present research was designed to delve into how internet access relates to Medical students' information literacy at Hormozgan University of Medical Sciences in 20th the 15.

Materials and Methods

This cross-sectional research was conducted in 2015 with the aim of determining the association of access

to computer/internet and nursing, midwifery, and paramedicine university students' information literacy. Participants were those students who had entered university during 2012-2014 since they had passed the research and proposal writing course. Anyone not meeting this criterion was excluded from the study. Morgan's table was used to estimate sample size. Accordingly, the sample consisted of 229 subjects. The sample selection method was clustered and stratified. Each of the nursing, midwifery and paramedicine faculties was considered as one cluster. Paramedicine faculty was in turn, comprised of health IT (HIT), operation room, radiology, lab sciences, and anesthesia departments was stratified accordingly. Subsequently, students who had entered university in 2014, 2015 and 2016 in each major were divided into strata. From each stratum, a number of subjects were selected systematically. Then, they received the questionnaires and after completion, returned them to the researchers. The topic of the research was made known to all participants. The instrument used to collect the required data was a questionnaire already developed and used by Habibi et al. in their research (11). To make sure of its content validity, the questionnaire was reviewed by ten professors of the nursing-midwifery and paramedicine faculties. The reliability of the instrument was estimated through Cronbach alpha and was found to be 0.87. This questionnaire was comprised of two sections, the first of which included such information as age, gender, access to the internet/computer and average academic score. The second part was comprised of 30 items some of which had only one correct response, and some others had more than one. There were multiple choices available. Once assessed, each filled-out questionnaire could obtain a score between 2 and 30. Sample items are: To which statistical package does Excel belong? While sending a message to a group of recipients via email, what issues do you take into consideration? To find valid information, which websites do you usually visit? Data were analyzed via SPSS (version 16) using descriptive statistics, Pearson test as well as the independent-sample t-test.

Result

In the present research, 197 female (86%) and 32 male (41%) participated in this study. The mean score in the female group was 13.59 ± 3.61 , while in the male group was 11.67 ± 3.58 . Findings revealed a significant difference between the two groups ($P=0.007$). In other words, women's information literacy was higher than men. The reason why there was an unequal number of subjects in male and female groups was that in reality, this was the case. Those who had access to the internet were 195 (85.2%) and those who did not were 34 (14.8%). The average age of all participants was 21.83 ± 2.19 years. The oldest participant aged 40 and the youngest one was 18 years. There was a positive

linear correlation between information literacy and age ($r=0.199$). According to the findings, the correlation between these two variables was statistically significant ($P=0.003$). It can be concluded that older students had a higher information literacy. Regarding familiarity with a computer, the results showed that 25% of the participants who were below 21 years of age and 75% of those older than 23 were familiar with computer. In the present research, the number of participants who had access to the internet was 192. To address this research question, t-test was used to check the difference of means. Such a divergence was observed ($P=0.003$). This means that participants who had more access to the computer had a higher information literacy. The mean score for familiarity with a computer was estimated to be 7.72 ± 4.32 . Also, 75% of the participants who were above ten years and 25% of those younger than four years were familiar with computer use. The mean score of access to the internet was 13.45 ± 3.57 , and the same score for those with no access was 12.62 ± 4.12 . Mann-Whitney U-test was used to determine the difference between the groups, which reported no statistically significant difference ($P=0.365$). This shows that one's information literacy was independent of access to the internet. A negative correlation was found between overall average score and information literacy ($r=0.043$). This implies that an increase in one's awareness is accompanied by a decrease in information literacy. In other words, there exists no significant correlation between information literacy and one's overall average score ($P=0.541$). HIT students with a total average score of 15.78 ± 3.53 had the highest level of information literacy. Ranking second and third were lab sciences and radiology students whose average scores were 13.4 ± 3.49 and 13.32 ± 3.39 , respectively (Figure-1). Moreover, one-way ANOVA found a significant difference between each domain and information literacy ($P<0.0001$). A significant differ-

ence was found between the two groups of HIT and radiology students ($P<0.007$). Among the other domains, no significant difference was observed. The overall average score was found to be 16.22 ± 1.23 . The lowest average score was 12.5, and the highest was 19. 75% of the participants had an average score above 17.09. 25% had an average score below 15.42. Pearson correlation coefficient was used to test the correlations between information literacy and the average score in each semester which was estimated to -0.061 . This shows that they are negatively correlated. The correlation of information literacy and semester average score was estimated to 0.365, which indicates a positive correlation between the two variables.

Discussion

In the present research, the two variables of information literacy and access to computer/internet were investigated among nursing, midwifery, and paramedicine students at Hormozgan University of Medical Sciences. The results of this research indicated that those having access to the internet were 86.5%, while those lacking this access were 13.1%. Previous research including Kumar et al. found a 59.9% access, and Walmsley et al. found 72% of access. The same rate (70%) was found 70% by Rajab et al. study. In Maleki et al. investigation, 60% of the participants had access to the internet (23-26). According to mentioned above of research, it can be concluded that people's access to computer leads to higher information literacy. The results obtained from the present research show no significant correlation between access to the internet and information literacy. Findings of Shanahan and Rastgoo study revealed that internet skills helped to grow information literacy (28, 29). In their research, Habibi et al. concluded that internet-access facilities along with information literacy were positively correlated with stu-

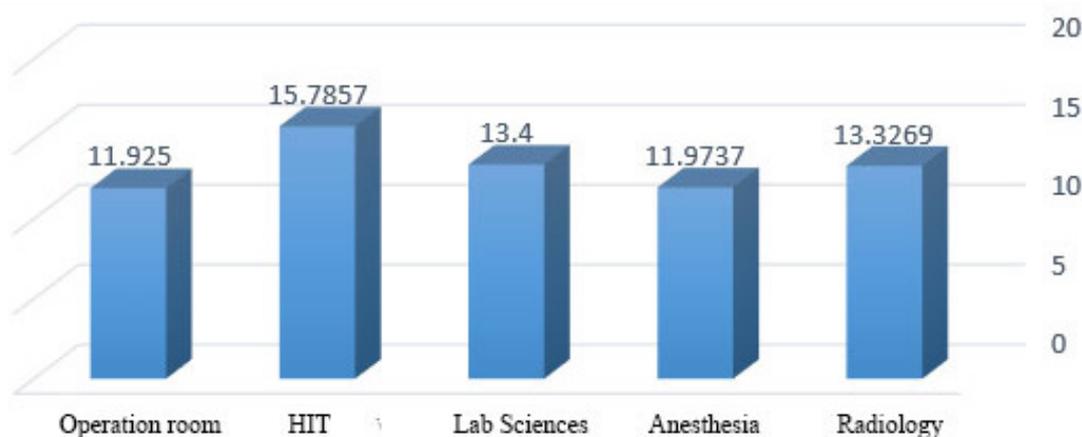


Figure 1: Mean information literacy score regarding different domains of study

dents' attitude towards e-learning. This report was not consistent with the finding of the present research (11). Similarly, Komerik found that 32% of university students used the internet for educational purposes. As reported by Wahmsley, students used only 38% of the internet for dentistry purposes. In an investigation conducted in Jordan, Rajab and Bagain observed that all university students had access to the internet; 54% had access to the internet at home and concluded that they mostly used the internet for personal purposes rather than educational purposes. This finding is similar to that of the present research (24, 25, 30). According to the body of previous research and the results of the present study, it can be concluded that university students use the internet more for personal purposes than educational purposes. Findings of a recent research revealed a significant correlation between different fields of study (operation room, anesthesia, lab sciences, HIT, and radiology). Among these domains, the information literacy of HIT, lab sciences and radiology faculties members was the highest, respectively. Moreover, a significant correlation was found between HIT and radiology students. One reason could be passing the research-oriented university courses such as project, seminar, research methodology and computer-related credits, which are more prevalent in HIT and radiology domains. These findings are not consistent with the body of previous research (10, 18, 31-35). In their study, Ghasemi et al. found a significant correlation between humanity and non-humanity domains at the university level (36). One reason for this contradiction in results can be the difference between the domains covered in different universities since each field of study has a different set of courses involved. Another reason could be different research populations involved. As for the comparison made between age and information literacy, findings revealed a significant correlation between the two variables. This finding was not consistent with those of Ashrafi Rizi and Darian (6, 37). However, it was in agreement with the results obtained by Abbasi et al. (27). The comparison of information literacy and gender revealed a significant correlation between the two variables and a significant difference between the two groups. According to the results obtained, information literacy was higher among women than men, which were consistent with similar research conducted by Ashraf Rizi and Siamak (6, 18, 34, 38). This contradiction can be due to different research populations. According to the findings of the present research, no significant correlation existed between information literacy and average score. This finding was consistent the results of previous research (27, 31, 35). In his study, the mean score of information literacy is divided into four intervals: 2-8.9 (weak), 9-15.9 (moderate), 16-22.9 (good) and 23-30 (very good). The mean score obtained in the present study was estimated to be 13.32 ± 3.6 interpreted as moderate. Since today a major portion of

information literacy skills has to do with online sources, the present study suggests holding workshops and providing content on the acquisition of information literacy skills in any particular domain. Therefore, due to the high efficacy of skills on information literacy and also the moderate level of students' information literacy estimated in this research, there is a need for incorporating these skills within academic courses.

Conclusion

Findings were indicative of a positive correlation between access to computer and information literacy. Moreover, the level of students' information literacy was estimated to be moderate. Therefore the following suggestions are made to achieve the goal of this research: University authorities are advised to hold conventions and workshops to familiarize students with the different aspects of this concept. Investments should be made in the research domain especially defining the topic of research and evaluation of published and online sources. Expert human forces should be intensified in libraries to optimize students' use of academic research findings. Plans should be made for a continuous and dynamic familiarization of students with online or published data sources and their use. Attention should be paid to develop information literacy skills in students at different levels, as future professors and knowledge producers and due to students' limited time and work overload in other sections, their working hours in the computer section of the faculty should be increased so that they can fill their after-class time working with computer and internet systems.

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Conflict of interest

None

References

1. Poorsalehi N. "Librarian" Comparative study of the effects of information literacy education To promote information literacy skills of students, "teacher" and Intelligent high school girls in Tehran. [Dissertation]. Faculty of Economics and Management: Faculty of Economics and Management; 2010.
2. Soleimandehkordi S. Check information literacy

- and pre-university centers in Isfahan. To provide guidelines for improving. [Dissertation]. Al-Zahra university: Faculty of Education and Psychology; 2011.
3. Sharifi A, Eslamieh F. Evaluation of the Students' Information Literacy and its Relation with their Tendency to E-Learning. *Inform Commun Technol Educ Sci*. 2012;2(6):35-53.
 4. Mahdiyan M, Shahbazi S, Niknejhad M. Evaluation of skills using electronic databases and digital libraries as one of the graduate students' information literacy. *Q J Knowl Stud*. 2013;5(17):61-9.
 5. Brown G. Information literacy curriculum and assessment: implications for schools from New Zealand. *The Information Literate School Community*. Centre for Information Studies: In Henri, J. and Bonano; 1999: 57-77.
 6. Naimi A, PezeshkiRad G, Sedighi H. Attitude of Students of Zanjan Jihad-e Zaman Scientific-Applied Science Education Center on the Application of Internet Learning. *Agric Ext Educ Res*. 2009;2(3):73-93.
 7. Atarodi M, Rezvani M. Factors affecting computers among students Mashhad Ferdowsi University. *J Inform Comm Tech Educ*. 2012;2(1):41-58.
 8. Rezvan A, Kokabi M, Bigdeli Z. Investigating the Information Literacy among Librarians of Public Libraries in Khuzestan Province in order to identify their potential Strengths or Weaknesses in this Field. *Q J Inform Res Publ Libr*. 2010;15(3):9-37.
 9. Faraji Khiavi F, Zahiri M, Ahmadi Angali K, Mirzaei B, Veisi M, Arab Rahmatipour M. Information Literacy Among Undergraduate Students Of Health Services Administration In Ahvaz Jundishapur University Of Medical Sciences Based On SCONUL Seven Pillars Model: 2013. *Payavard Salamat*. 2014;8(2):101-12.
 10. Seifori V, GHafari S. Information literacy of students senior Razi University of Kermanshah. *J Inform Syst Serv*. 2012;1(1):95-108.
 11. Habibi H, KHodayarishoti S. Contact information literacy and access to facilities with a view to E learning Urmia University of Medical Sciences. *Iran J Med Educ*. 2016;15(1):1-8.
 12. Abtahi M, Feali M. Evaluation of Skill and Use of Information Technology and Internet among Professors, Postgraduate and Undergraduate Students in Mashhad Dental School in Iran in 2007-2008. *J Mashhad Dent Sch*. 2009;32(4):257-62.
 13. Esfandiari E, Bahramian H, Mardani M, Javanmardi S. Effective factors in learning to work with computer sciences students and paramedical Health Mashhad. *Iran J Med Educ*. 2007;6(1):141-2.
 14. Sajadi F, Shokoohi M, Kakoei S, Sheikhi F. Evaluation of Skills and Use of Computer and Internet among Professors, Postgraduate and Undergraduate Students in Kerman, Iran. *Strides Dev Med Educ*. 2014;10(2):47-55.
 15. Esfandiyarimoghadam A, KashiNahanji V. Impact of IT on information literacy A case study of high school students in the city of Hamedan. *J Inform Syst Serv*. 2012;1(1):25-38.
 16. Naderi M, Shahrabadi E, Rezaeian M, Hadavi M. Evaluation of the Information Literacy of the Students at Rafsanjan University of Medical Sciences in Year 2010. *J Rafsanjan Univ Med Sci*. 2013;12(8):631-40.
 17. Amani F, Tafarroji R. Information literacy level and Access to information resources under web skills in Ardabil University of medical sciences students in 2012-13. *J Med Educ Dev*. 2014;7(14):1-10.
 18. Siamak M, Alipour Nodoushan K, Khaleghi N. Measurement of the Information Literacy Level in the Students of Qom University of Medical Sciences, 2010 –2011. *Qom Univ Med Sci J*. 2013;7(2):23-30.
 19. Biranvand A, Seif M, Mousachamani A. Search and examine ways and retrieval of electronic resources Graduate students of Payam Noor University Shiraz. *J Inform Syst Serv*. 2013;1(3):29-38.
 20. Maughan PD. Assessing information literacy among undergraduates: A discussion of the literature and the University of California-Berkeley assessment experience. *Coll Res Libr*. 2001;62(1):71-85.
 21. Eisenberg MB. Information Literacy: Essential Skills for the Information Age. *DESIDOC J Libr Inform Tech*. 2008;28(2):39-47.
 22. Kapitzke C. Information literacy: The changing library. *J Adolesc Adult Literacy*. 2001;44(5):450-6.
 23. Kumar S, Tadakamadla J, Tibdewal H, Duraiswamy P, Kulkarni S. Internet usage among undergraduate dental students in India. *Revista Odonto Ciência*. 2010;25(3):261-5.
 24. Walmsley AD, White DA, Eynon R, Somerfield L. The use of the Internet within a dental school. *Eur J Dent Educ*. 2003;7(1):27-33.
 25. Rajab LD, Baqain ZH. Use of Information and Communication Technology Among Dental Students at the University of Jordan. *J Dent Educ*. 2005;69(3):387-98.
 26. Maleki Z, Goudarzi M, Mohtashami L, Faghihi B. Knowledge and attitudes of dental students and academic staffs towards internet usage in dental training in Shahid Beheshti University of Medical Sciences. *Shahid Beheshti Univ Dent J*.

- 2010;28(1):40-7.
27. Abbasi E, Najafloo P. Agriculture Graduate Students' Information Literacy Tarbiat Modarres University. *J Agr Educ Admin Res*. 2015;7(34):89-103.
 28. Shanahan MC. Information literacy skills of undergraduate medical radiation students. *Radiography*. 2007;13(3):187-96.
 29. Rastgo A, Naderi E, Shariatmadari A, Sifnaraghi M. The Impact of Internet Information Literacy Training on University Student's Problem Solving Skills. *Sci J Manag Syst*. 2010;1(4):1-22.
 30. Komerik N. Use of the Internet among dental students in Turkey. *J Dent Educ*. 2005;69(4):470-5.
 31. Niazazari K, Barimani A, Jokar A, Rastegar Amree A. The Relationship between Information Literacy and Academic Performance of University Students. *J Inform Comm Tech Educ*. 2015;6(1(21)):5-17.
 32. GHalambaz S, Moarefzadeh A. Evaluate the literacy level senior students of Payam Noor University of Dezful in the 85-86 academic year and provide solutions to improve the present situation *Studies Library and Information Science*. *Sci J Manag Syst*. 2009;1(4):167-98.
 33. Bakhtiarzadeh A, Survey information literacy of Alzahra University. [Dissertation]. Alzahra University. 2002.
 34. Nokarizi M , Dehghani K. The effect on self-efficacy information literacy skills Birjand University student. *J Libr Inform Sci*. 2013;3(2):153-72.
 35. Kalantari H. The level of information literacy among university students in Malayer. *National Conference on Management and Training: Publisher specialized conferences in the country*; 2015.
 36. Ghasemi AH. Survey of Graduate students and information literacy and adaptation with ACRL information literacy standards and four national documents. [Dissertation]. Ferdowsi of University; 2007
 37. Dariyan S , Mohamadi F , SHakeri S. Measurement of Information Literacy clients according to the National Library and Archives of the Islamic Republic of Iran. *J Inform Syst Serv*. 2012;1(2):85-96.
 38. Zahed Babelan A, Rajabi S. Evaluation of Information Literacy in University Students. *J Technol Educ*. 2011;5(4):309-17.