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Original Article

Measuring the Level of Information Literacy among the Students of Hamedan University of Medical Sciences in the Academic Year 2020-2021

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Abstract

Introduction

Information literacy skills are the most important tools that, in addition to equipping students to continue their education at the graduate level, turn them into life long learners with the power of reasoning and critical thinking. Acquiring information literacy is a fundamental skill for effective learning in higher education. The main goal of the current research was to measure the level of information literacy and the skills of using web-based information resources among the students of Hamedan University of Medical Sciences in the academic year 2020-2021.

Methods

The current research was conducted by a descriptive cross-sectional survey method. The research population included students studying in the academic year 2020-2021 at the Paramedical Faculty of Hamedan University of Medical Sciences. Of 707 people, 249 were selected as a sample by stratified random sampling. A standard information literacy questionnaire taken from Bakhtiari's thesis with a reliability coefficient of 0.82 was used to collect data. In the data analysis, descriptive and inferential statistics, such as the univariate t-test and Spearman's correlation test, with SPSS software were used.

Results

The findings showed no significant difference between the students' information literacy in terms of gender, marital status, and father's level of education, and the skills of using web-based information resources, while the mother's level of education and also the age of the respondents were directly and significantly associated with their level of information literacy and skills of using information resources. The mean level of information literacy of students with a score of 7.504 indicated the unfavorable situation and the low level of information literacy and the skills of using web-based resources among the mentioned students.

Conclusion

Considering the low level of information literacy of the studied population and the importance of information skills in scientific progress and increasing the efficiency of individuals in their jobs, it seems necessary to hold workshops on research methods and databases to increase students' information literacy.

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1. Introduction

The development, implementation, and use of information and communication in almost all sectors of human activity have made related skills necessary [1]. In today's era, due to information-

oriented and knowledge-oriented issues, information and information technology are rooted in the fabric of society, and information literacy can be helpful in performing tasks [2]. In



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such a condition, cultivating individuals capable of accessing and using information has become one of the goals of educational systems [3]. Knowing how to access the required information from among the mass of available information and having information literacy are among the prominent characteristics of an information society. Therefore, information literacy becomes increasingly important in universities and higher education centers as information societies and educational-research institutions that are the basis of rapid changes in technology and the explosive proliferation of information resources [4].

In the latest definition, information literacy is “a set of effects, skills, and activities that focuses on promoting individuals’ understanding of the information space and combines with the skills of retrieving, analyzing, and applying data, information, and knowledge to be able to answer questions by relying on participation in educational-scientific societies and create new questions and knowledge” [5]. In today’s world, where the increasing growth of the digital space and computer systems has made the idea of using information without a technological platform impossible to a large extent, benefitting from the set of information literacy skills as actual information access tools seems to be an unavoidable and even vital necessity. Students need this tool more than other individuals due to the nature of work and extensive communication with information resources [6].

Based on the materials mentioned above and the importance of the information literacy issue, several studies have been conducted on its various aspects among information users, especially students. In this regard, Vahabi et al.’s study on students’ level of information literacy found that considering the students’ low level of information literacy and the importance of information skills in scientific progress and increasing individuals’ efficiency, holding workshops on research methods

and working with computers seemed necessary to increase students’ information literacy [7].

The results of Sedghi et al.’s research indicated that the information literacy of the studied population was at an average level. Paying more attention to information literacy education level through holding workshops and benefitting from information specialists to review educational policies in line with students’ lifelong learning have been emphasized [8].

The results of Zahedi Nooghabi et al.’s study showed that the level of information and computer literacy of male and female students did not differ. The students’ information literacy was at an average level. The students’ learning style was different according to their education level, gender, and age, and there was a direct and positive relationship between information literacy and computer literacy [9].

The results of Khalili et al.’s research showed that the students’ mean score of information literacy was at an unfavorable level. Their suggestion was to integrate information literacy skills into research method courses and to accompany the specialist librarian and the relevant professor in teaching these skills to students [10]. Momeni et al. found that considering the students’ level of information literacy to be lower than average, it seems that the final-year students did not have a proper understanding of information literacy skills after graduation [11].

In examining the students’ level of information literacy at Ardabil University of Medical Sciences, Amani and Tafarroji found that the students’ information literacy was at an average level. In terms of information literacy skills, the students’ knowledge and use of the facilities and resources of the university website were at an average level, indicating the attention to this issue as the main axis in education and research [12].

In examining the effect of information literacy on the self-efficacy belief of Birjand University



students, Nowkarizi and Dehghani found a positive relationship between the level of information literacy skills and self-efficacy belief. The self-efficacy belief of female students was more than male students, and that of master's level students was higher than undergraduate students. There was a significant difference in the self-efficacy resulting from students' information literacy in different fields of study [13].

The findings of Mohammadi et al.'s research on examining the level of information literacy of the clients of the National Library and Archives of the Islamic Republic of Iran showed no significant difference between the clients' gender, age, education level, and field of study and their information literacy. Researchers emphasized the necessity of holding training courses for clients [14].

The findings of Lalthlamuanpui's study on measuring the information literacy of nursing students of Mizoram University indicated that few students had the necessary skills in information search strategies and often did not have a correct understanding of the information need and how to obtain it. Researchers emphasized holding training courses for information literacy and obtaining criteria to measure students' performance [15]. The results of Alkhezzi and Hendal's research indicated the average level of individuals' information literacy skills and the lack of skills in using library services, facilities, and information resources [16].

Manthiramoothi et al. indicated the students' average level of information literacy and the lack of sufficient familiarity with information search strategies [17]. The results of Pourfeiz and Demirezen's research also showed a significant difference between the information literacy of girls and boys. Thus, the information literacy scores of boys were higher than girls [18].

The findings of Arbabisarjou and Robabi's research showed that the students' level of

familiarity with computer literacy was not satisfactory, and their level of information literacy was at an unfavorable level. The researchers of this study considered it necessary to plan to improve students' information literacy skills [19].

The review of the conducted studies and literature indicates that in today's knowledge-oriented society, where the rapid trend of information and communication technologies has made it possible to access and use information through various technological platforms (6 and 2), according to their educational and research mission, universities are required to teach information literacy skills to empower students [7, 8, 10, 12, 15, 19]. Considering that students have the greatest need for information resources, expanding the services and facilities provided in university libraries and providing required training by faculty members to improve students' information literacy skills will facilitate their lifelong learning process [16].

The necessity of learning information literacy skills for students whose nature of activity is ingrained with research and the increasing need to use web-based information and internet resources on the one hand, and the results of investigations carried out in previous studies indicating that no independent research has been conducted so far in the field of measuring the level of information literacy and the skills of using web-based information resources among the students of Hamadan University of Medical Sciences, on the other hand, motivated the researchers to conduct the present study. Therefore, the main goal of the current research is to measure the level of information literacy and the skills of using web-based information resources among the students of Hamedan University of Medical Sciences in the academic year 2020-2021 and seeks to answer the question that "How is the level of information literacy and the skills of using web-based information resources among paramedical



students of Hamedan University of Medical Sciences based on demographic variables?”

2. Methods

The current research is an applied study conducted by a descriptive cross-sectional survey method. The research population included students studying in the academic year 2020-2021 at the Paramedical Faculty of Hamedan University of Medical Sciences. The statistical sample consisted of 707 students selected as the research population by random sampling method in accordance with the population size of 249 people. The sample size was estimated at a confidence level of 95%. To collect data, a standard information literacy questionnaire taken from Bakhtiari's thesis entitled “Investigating the relationship between information literacy and mental health literacy among students of Abadan University of Medical Sciences in 2018-2019” was used [20]. Considering that not more than two years have passed since Bakhtiari's researcher-made questionnaire was designed, there was no need to re-evaluate the validity of the questionnaire in the present study. The reliability coefficient was also obtained equal to 0.82 in the present study, indicating an acceptable level of reliability. In addition to demographic characteristics, the used standard questionnaire consisted of 20 questions in 4 components (standard 1 to 4): The first component is identification and diagnosis of information need, including 5 questions; the second component is the ability to locate information, including 8 questions; the third component is evaluation, including 4 questions; the fourth component is organization and use of information, including 3 questions. For scoring the questionnaire, each correct answer was assigned a score of “one”; in case of no answer or a wrong answer, a score of “zero” was assigned to the answer to that question. Descriptive and inferential statistics, such as the univariate t-test and Spearman's correlation test

with SPSS software, were used to analyze data. Given the non-normality of the information literacy variable, a two-term non-parametric test was used to determine the level of information literacy and web usage skills among the research population. The total score for information literacy was 20, and its 50% point was 10. A score higher than 10 was considered “suitability of the situation”, and a score of 10 and lower was considered “unsuitability of the situation.”

3. Results

The subjects' demographic information is shown in Table 1.

Considering that the significance level was less than 0.05 and 185 people obtained a score lower than the considered average, it can be concluded that the status of information literacy and web usage skills among paramedical students of Hamedan University of Medical Sciences is inappropriate.

In determining the significance of the difference in the students' mean score of information literacy based on gender, marital status, and education level in accordance with the findings reported in Table 2 and according to the Mann-Whitney U test, the decision criterion for the gender and information literacy variables was obtained as 0.096. Given that it is higher than the acceptable error level of 0.05, it can be said that there is no significant difference between male and female students' information literacy. The decision criterion for the marital status and information literacy variables was 0.418, and considering that it is higher than the acceptable error level of 0.05, there is no significant difference between married and single students in terms of information literacy. Also, the comparison of the students' mean scores of information literacy according to their education level showed a difference in the mean scores of the undergraduate group (116.31) and the graduate group (214.66). The results of the Mann-Whitney



Table 1. Frequency distribution of demographic variables

	Variables	Frequency	Frequency Percentage
Gender	Female	178	71.5
	Male	71	28.5
Age	19-22	114	45.8
	23-26	118	47.4
	27-30	17	6.8
Entrance Year	1396	49	19.7
	1397	61	24.5
	1398	18	7.2
	1399	121	48.6
Field of study	Operating room	50	20.1
	Radiology	47	18.9
	Laboratory sciences	30	12
	Health information technology	43	17.3
	Medical library and information	44	17.7
Marital status	Anesthesia	35	14.1
	Married	48	19.3
Mother's education	Single	201	80.7
	Illiterate	24	11
	Under diploma	54	22
	Diploma	67	27.2
	Associate	7	2.8
Mother's job	Bachelor	77	31.3
	Master	17	6.9
	Doctorate	0	0
Father's education	Housewife	197	79.1
	Employed	52	20.9
	Illiterate	40	17.3
	Under diploma	50	20.1
Father's education	Diploma	44	17.7
	Associate	6	2.4
	Bachelor	90	36.1
	Master	16	6.4
	Doctorate	0	0

U test for two groups of undergraduate and graduate students (Sig=0.000) in Table 2 showed that the education level was effective in their level of information literacy, and there was a significant difference between the information literacy scores of these two groups.

The Kruskal-Wallis H test was used to evaluate the difference in the mean score of information literacy based on the field of study, the university entrance year, and the parents' education level. The mean rank of the operating room field of study (153.18) is in the first place, the medical library and information field of study (135.85) is in the second place, the radiology field of study (124.59) is in the third place, the laboratory sciences field of study (124.03) is in the fourth place, the health

information technology field of study (111.76) is in the fifth place, and the anesthesia field of study (88.76) is in the sixth place.

The mean ranks of incoming students were 153.18 in 2017, 124.59 in 2018, 124.03 in 2019, and 111.76 in 2020. As Table 3 shows, the significance level is less than 0.05, so the difference in the mean score of information literacy among students is significant considering their field of study. Based on the data in Table 3, the significance level of the test in examining the effect of the independent variable (year) on the dependent variable (information literacy) was greater than 0.05, indicating that the information literacy of the first-year students is not different from that of the fourth-year students.



Table 2. The result of the Mann-Whitney U test

Variables	Mann-Whitney U	Decision Criterion
Gender and information literacy	5466	0.096
Marital and information literacy status	4461	0.418
Educational level and information literacy	524.500	0.000

Comparing the difference in the students' mean score of information literacy considering their parents' education level showed the mean rank of illiterate mothers was obtained as 126.67, under diploma mothers as 105.10, diploma mothers as 128.27, associate mothers as 100.36, bachelor mothers as 123.35, and master mothers as 168.88, indicating a significant difference in the mean scores between education levels. The decision criterion for the mother's education level and information literacy variables was 0.04, which considering that it is less than the acceptable error level of 0.05, it can be said that there is a significant difference between the students' mean score of information literacy based on their mother's education level. The results of evaluating the difference in the students' mean score of information literacy based on their father's education level showed no difference between the students' mean score of information literacy based on their father's education level (Asymp. Sig=0.504).

The Spearman's test was used to determine the relationship between students' information literacy and age. Table 4 shows a positive and significant relationship between the two variables of r (0.214) and Sig (0.001). In other words, as students age, their information literacy also increases.

4. Discussion

The findings of the current research revealed that the students' mean level of information literacy, with a score of 7.504, was low, which is consistent with the results of studies 19, 15, 12, 10, and 7. No significant difference was found between students' information literacy in terms of their gender, which is consistent with research 14 but not with studies 16 and 13 in this regard.

According to the findings of the current research, the field of study affected the students' level of information literacy, and there was a significant difference between the students' information literacy scores in this field, which is consistent with the findings of studies 13 and 12

Table 3. Investigating the significant difference in the mean score of information literacy based on the field of study, university entrance year, and parents' education level

Demographic Variables	Information literacy		
	Kruskal-Wallis H	Degrees of freedom	Significance level
Field of study	19.013	5	0.002
University entrance year	3.675	3	0.299
Mother's education	11.637	5	0.04
Father's education	4.324	5	0.504



Table 4. The correlation between students' information literacy and age

Variables	Information Literacy	Age
Information Literacy	Spearman statistic	1
	Significance level	0.001
	Number	249
Age	Spearman statistic	0.214**
	Significance level	0.001
	Number	249

in this regard, but not consistent with the results of research 14. The level of information literacy of master's level students was far higher than that of undergraduate students, consistent with research 13 due to the necessity of using electronic resources to obtain up-to-date and extensive information, teaching more specialized courses, and their familiarity with electronic information retrieval tools. There was no significant difference between the students' mean scores of information literacy based on their marital status and father's education level, which these two variables have not been mentioned in other studies.

The mother's education level and the respondents' age were directly and significantly associated with the level of information literacy and the skills of using web-based information resources. The decision criterion for the mother's education level and information literacy variables is 0.04. Given that it is less than the acceptable error level of 0.05, it can be said that there was a significant difference between the students' mean scores of information literacy based on their mother's education level. According to the research findings, there was a positive and significant relationship between the two variables of students' level of information literacy and their age. In other words, with the increase in the age of the students, their information literacy has also been at a favorable level, which is consistent with research [13].

According to the results of the current research showing subjects' low level of information literacy,

it can be acknowledged that despite the recent efforts made in some fields at the undergraduate and graduate levels by including courses under the headings of medical information systems, information technology in nursing, anesthesia, and other fields of study and achieving significant changes in increasing information literacy compared to the past, the need to pay more attention to information literacy education by holding classes with richer content and in accordance with new technologies and basically the need for an integrated system in all education fields and levels, it is necessary to specifically and coherently address the category of information literacy. It is also necessary to use information specialists to review educational functions and policies to improve information literacy and advance students' research process.

5. Conclusion

The present research was conducted to measure the level of information literacy and the skills of using web-based information resources among the students of Hamedan University of Medical Sciences in the academic year 2020-2021. The results of the research indicated the unfavorable situation and the low level of information literacy and the skills of using web-based resources among the mentioned students, revealing the necessity and importance of paying attention to improving information literacy skills among the students.

Considering the results obtained from the current research that the research population



was at a low level in terms of information literacy skills and the level of knowledge and use of these resources, it is suggested to include these skills as a course for students with lower education levels and as the first step toward the dynamics of the higher education system and the creation of research space in the universities and scientific circles of the country. Also, holding a workshop for students by librarians and other specialists for practical training in searching, retrieving, and evaluating information will be the basis for getting familiar with the tools for retrieving information resources and acquiring the necessary abilities to obtain information and use these resources.

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Conflict of Interests

The authors have no conflicts of interest with individuals or organizations.

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