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Information Literacy Levels of Nursing Students and Affecting Factors

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ABSTRACT

Purpose: This study aims to assess the information literacy levels of nursing students and identify the factors influencing them.

Methods: A descriptive, cross-sectional design was used, with 489 nursing students participating. Data were collected using a "Sociodemographic Information Form" and the "Information Literacy Scale."

Results: The average information literacy score was 3.87±0.54. The highest sub-dimension score was for ethical and legal regulations (4.03±0.60), and the lowest was for defining the need for information (3.77±0.63). The internet was the primary source of information for 56.0% of students. Computer use proficiency was the only factor significantly affecting information literacy.

Conclusion: Improving access to information resources like the internet and computers in universities could enhance nursing education. Strengthening students' computer skills is necessary to increase information literacy awareness. Nursing educators should focus on integrating evidence-based practice into the curriculum and providing relevant practical experiences.

Keywords: Nursing, nursing student, information literacy, literacy

ÖZET

Amaç: Bu çalışma hemşirelik öğrencilerinin bilgi okuryazarlığı düzeylerini değerlendirmeyi ve etkileyen faktörleri belirlemeyi amaçlamaktadır.

Yöntemler: Tanımlayıcı, kesitsel bir tasarım kullanılmış ve çalışmaya 489 hemşirelik öğrencisi katılmıştır. Veriler "Sosyodemografik Bilgi Formu" ve "Bilgi Okuryazarlığı Ölçeği" kullanılarak toplanmıştır.

Sonuçlar: Ortalama bilgi okuryazarlığı puanı 3.87±0.54'tür. En yüksek alt boyut puanı etik ve yasal düzenlemeler (4.03±0.60), en düşük puan ise bilgi ihtiyacını tanımlama (3.77±0.63) alt boyutuna aittir. Öğrencilerin %56,0'sı için internet birincil bilgi kaynağıdır. Bilgisayar kullanım yeterliliği bilgi okuryazarlığını anlamlı olarak etkileyen tek faktördü.

Sonuç: Üniversitelerde internet ve bilgisayar gibi bilgi kaynaklarına erişimin artırılması hemşirelik eğitimini geliştirebilir. Bilgi okuryazarlığı farkındalığını artırmak için öğrencilerin bilgisayar becerilerini güçlendirmek gereklidir. Hemşirelik eğitimcileri kanıta dayalı uygulamaları müfredata entegre etmeye ve ilgili pratik deneyimler sağlamaya odaklanmalıdır.

Anahtar Kelimeler: Hemşirelik, hemşirelik öğrencisi, bilgi okuryazarlığı, okuryazarlık

Nursing is a profession that undertakes the care of patients as a part of health services manages treatment processes, and aims to improve the general health and well-being of patients. In order to provide effective services in today's complex health environment, nurses need to be equipped with 21st century competencies (1). The report of the UNESCO World Summit on the Information Society proposes a literacy framework titled "21st Century Competencies", which includes 12 core competencies that will be needed in the society of the future (2). Information literacy is defined as a core competency among the practical competencies within the framework of 21st century competencies. The Institute of Medicine has identified five core competencies required for health professionals. These are: providing patient-centered care, working with interdisciplinary teams, using evidence-based practices, implementing quality improvement, and using informatics (3). Information literacy of nurses is recognized as one of the core competencies of nurses in this profession due to the increasing use of research findings and updating of information in health care (4). Nurses need a high level of information literacy to evaluate information retrieved from databases and combine it with evidence-based practice, therefore nurses and nursing students should acquire information literacy skills resulting in effective retrieval of records from high-quality clinical research articles (5). Lack of information literacy prevents nurses from accessing reliable evidence (5).

Information literacy is defined by the American Library Association (ALA) as "recognizing the need for information, accessing, evaluating, and using information effectively" (6). Based on this definition, information literacy skills include many steps such as asking clinical questions, developing search strategies, searching using databases and digital tools, finding the necessary information, critically evaluating the information found, referencing and applying it in the clinical field. Published by the Royal College of Nursing (RCN) in 2011, "RCN Competencies: Finding, Using and Managing Information" defines nursing information literacy competency as a comprehensive concept that includes determining why and what information is needed, searching for information, evaluating how the information meets the identified need, managing information, using information inclusively, legally, and ethically, and creating new information (7).

In modern society, where information sources are rapidly increasing, selecting the right information is more important than ever (8). Nurses use information literacy skills to provide the best patient care by assessing the accuracy, reliability and appropriateness of health-related information. Nursing students need information literacy skills for activities such as literature review, writing research projects, and actively participating in class discussions throughout their undergraduate education. Considering the rapid development of information today, providing information literacy skills to pre-nursing students is important for the development of lifelong learning and the use of evidence-based approaches (9). Evidence-based practice is the basis of problem-solving in nursing and students can transfer these skills into clinical settings to practice after accessing the right information (10). Therefore, it is necessary for students to effectively search for information, critically evaluate it, and acquire clinical decision-making skills (11).

Healthcare settings expect nurses to solve complex patient problems, be innovative and use the best evidence as information literate professionals. A recent systemic review highlighted the need for nursing education to develop information literacy competencies (12). Nursing students may experience some difficulties in the transition from university to professional life in terms of demonstrating knowledge, accessing information and combining it with the practice environment. Failure to acquire professional competencies during undergraduate years may cause problems in nursing practices during the transition to work (13). Developing information literacy skills of nursing students before the start of the profession can help them adapt effectively (14). In the literature, learning styles, motivation and attitudes, technology use, and education levels are reported as factors affecting nursing students' information literacy (14-16). Assessing nursing students' information literacy skills is critical for developing these skills. Resources that increase information literacy to support the nursing student's ability to provide safe and effective care are recommended to be routinely integrated into the nursing curriculum (17). However, there is no curriculum to develop information literacy in the nursing undergraduate curriculum of the university where the study was conducted.

The integration of information literacy education into nursing education has mostly been achieved using the standards of nursing education associations. Understanding these standards and how faculty members' perceptions of the importance of IL skills vary with their level of education will guide the development of a companion document that librarians, in collaboration with nurse educators, can use to integrate IL education into nursing curricula at the course and program levels.

Some recent studies have shown that training nurses in information literacy is beneficial (18). There are a limited number of studies evaluating nursing students' information literacy in the literature (15). The Chinese study showed that most nursing students have a low level of information literacy, lack information awareness, and are not good at using scientific and technological developments, so they are unable to keep up with the latest research results in this professional field in a timely manner (19). The literature examining the information literacy levels of nursing students in Turkey and the factors affecting information literacy is quite limited (20). Because of this in this study, it was aimed to determine the information literacy levels of nursing students and the factors affecting them.

Materials and Methods

This study is descriptive and cross-sectional study. It was conducted face-to-face with students studying at the Nursing Department of the Faculty of Health Sciences of a university in Turkey between May 2023 and November 2023.

Sample

A total of 601 students are enrolled in the nursing program, and 489 students were selected by a random sampling method. The completion rate of the data collection form was determined as 81.36%. Eleven incomplete and incorrectly completed questionnaires were excluded from the evaluation. Inclusion criteria were nursing students in all grades who voluntarily agreed to participate in the study. Students who interrupted their education due to illness or any other reason and did not agree to participate in the study were excluded. The school where the study was conducted has a classical education model. All students participating in the study received the basic nursing education curriculum. There is no information literacy course in this curriculum. Knowledge of information literacy is partially provided in basic information technologies, research methods, evidence-based nursing and biostatistics course content.

Ethical considerations

Before starting the study, permission to use the scales was obtained via e-mail. Institutional permission from the university and ethics committee permission (dated 11.05.2023 and numbered 2023/06) from the Non-Interventional Clinical Research Ethics Committee of the university was obtained for the study. Written permission was obtained from student nurses who agreed to participate in the study.

Data collection tools

Data collection tools consist of two parts. The first part includes the Sociodemographic Information Form and the second part includes the Information Literacy Scale.

Sociodemographic Information Form: In the form consisting of 17 questions about sociodemographic characteristics, the researchers included questions about the students' gender, age, academic average, grade, employment status, place of residence, English level, basic statistics education, personal computer ownership, computer usage level, use of ways of obtaining information, training on literature search and use, the most used method of obtaining information, whether they have received training on information literacy before and whether they want to receive training, defining information literacy and determining their goals after graduation. At the university where the study was conducted, students can receive a maximum academic score of 4.00.

Information Literacy Scale: The information literacy scale developed by Adıgüzel (21) used in this study consists of 29 items and 4 factors. Defining the need for information, accessing information, using information, and ethical and legal regulations in using information. There are no reverse items in the scale. The scale questions are 5-point Likert scale ranging from very difficult (1), difficult (2), undecided (3), not difficult (4), and not difficult at all (5). The mean score equivalents of the options in the scale are: 4-5 "I have no difficulty at all", 3-3.99 "I have no difficulty", 2-2.99 "I am undecided", 1-1.99 "I have difficulty", 0-0.99 "I have great difficulty". As the score obtained from the scale increases, the level of information literacy increases. The overall Cronbach Alpha reliability coefficient of the original scale was found to be 0.928 (34) and 0.940 in the current study.

Statistical Analysis

Statistical Package for Social Sciences (SPSS), version 21.0 (SPSS Inc., Chicago, IL) was used for data analysis. Data were presented as mean, percentage, standard deviation and frequency counts. Compliance with normal distribution was evaluated by Shapiro-Wilk and Kolmogorov-Smirnov tests. Multiple regression analysis was used to determine the factors affecting the information literacy score. A significance level of 0.05 was accepted.

Results

The mean age of the students who participated in the study was 21.01±2.1 and the mean academic average was 3.29±0.262. 73% of the students were female, 95.5% were not working and 61.3% lived in the city center. The English level of 51.1% of the students was intermediate, 70% did not receive basic statistics education, and 60.9% received information about literature review in the course. It was determined that 25.2% of the students did not have a computer and 64.6% of them had an intermediate level of computer use. Among the ways of obtaining information, the internet ranked first with a rate of 56% (Table 1).

Table 1: Sociodemographic datas of the nursing students (n=489)

	mean±standart deviation		
Age (year)	21,01±2,1		
Academic achievement score	3,29±0,26		
		n	%
Gender	Female	357	73.00
	Male	132	27.00
Grade	First	116	23.70
	Second	131	26.80
	Third	125	25.60
	Forth	117	23.90
Working status	No	467	95.50
	Yes	22	4.50
Residence	Provience	300	61.30
	Town	153	31.30
	Village	36	7.40
English language level	Low	250	51.10
	Moderate	225	46.00
	High	14	2,90
Basic statistics training	No	343	70.10
	Yes	146	29.90
Student activity experience status	I attended the student congress as a listener	178	36.40
	I attended in the student congress with a paper	9	1.80
	I received student project acceptance	3	0.60
	I presented at a student event	45	9.20
	Other	34	7.00
	None	220	45.00
Computer ownership status	No	123	25.20
	Yes	366	74.80
Level of computer usage	Beginner	60	12.30
	Moderate	316	64.60
	Good	113	23.10
Way to obtain information	Library/online databases	48	9.80
	Websites	274	56.00
	Expert contacts	5	1.00
	Social media	11	2.20
	Other (books, journals, articles, etc.)	151	31.00
Literature review and utilization	I was informed about this in the lesson	298	60.90
	I received online paid training outside of class	9	1.80
	I found out about it on the internet myself	62	12.70
	No training received	120	24.60
Information literacy	No	413	84.50
	Yes	76	15.50
Information literacy training willingness to receive	No	149	30.50
	Yes	340	69.50
Their goals after graduation	Working as a nurse	245	50.10
	Working in a field other than nursing	28	5.70
	Master's degree and then academia	62	12.70
	Working abroad	58	11.90
	Other (Working in another field, etc.)	96	19.60

Data are given as mean±standard deviation or n(%)

While 44.13% of the students defined information literacy as finding the information needed and 5.47% as recognizing the need for knowledge, 29.76% could not or did not want to define information literacy. (Figure 1).

The students' total average score of information literacy was 3.87±0.54. When the sub-dimensions of the information literacy scale were examined, the dimension of ethical and legal regulations in using information was the highest (4.03±0.60) and the dimension of defining the need for information was the lowest (3.77±0.63) (Table 2).

In the logistic regression analysis of the factors affecting the information literacy score, only the level of computer use was found to be a predictor of information literacy (Table 3).

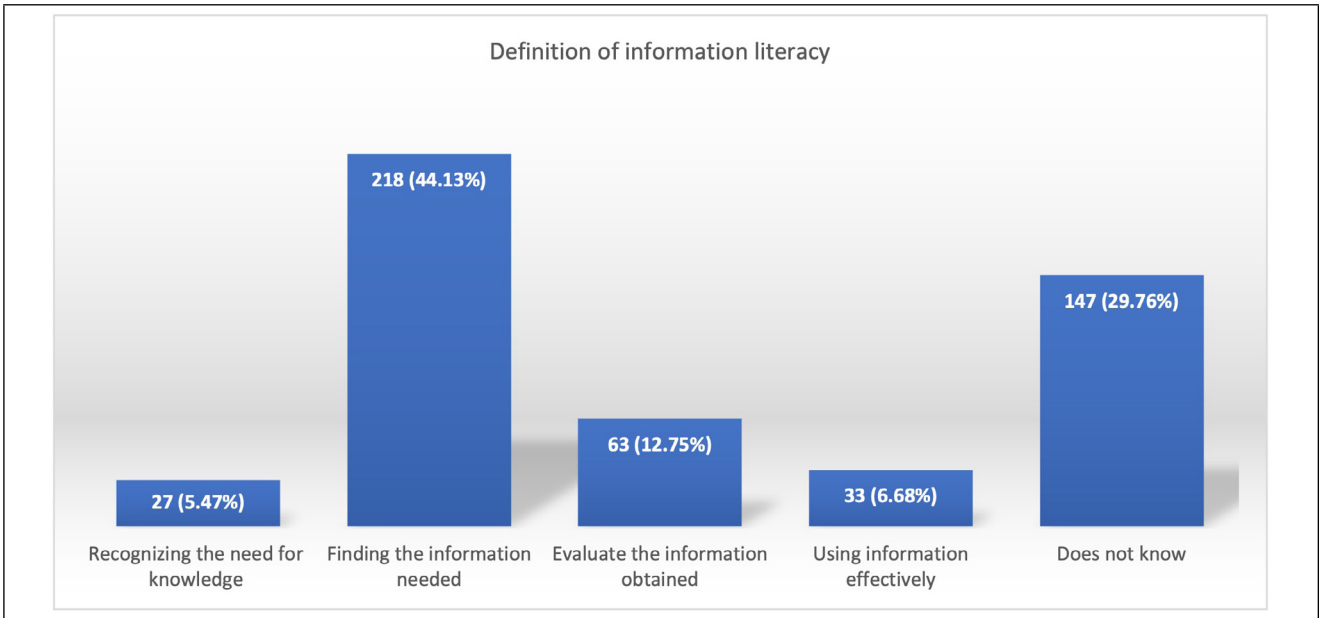

Figure 1: Nursing Students' Definitions of Information Literacy

Table 2: Information Literacy Scale Score Averages of Nursing Students (n=489)

	Mean±SD
Information literacy average score	3,87±0,54
Defining the information need	3,77±0,63
Accessing information	3,86±0,57
Using knowledge	3,82±0,64
Ethical and legal regulations in using information	4,03±0,60
Data are given as mean±standard	

Table 3: Factors Affecting Nursing Students' Information Literacy (n=489)

	UNIVARIATE		**MULTIVARIATE***	
Variables	**Coefficients (95%CI)**	**p value**	**Coefficients (95%CI)**	**p value**
Age	0.034(0.010-0.058)	0.006	0.027(-0.004-0.058)	0.089
Gender	0.055(-0.053-0.163)0.320	0.320	0.025(-0.087-0.137)	0.661
Class	0.044(-0.142-0.231)	0.641	0.020(-0.035-0.074)	0.478
Working status	0.062(-0.170-0.294)	0.601	(0.064(-0.303-0.176)	0.601
Residence	-0.036(-0.012-0.041)	0.359	0.016(-0.062-0.094)	0.685
English language level	0.064(-0.023-0.151)	0.148	0.052(-0.036-0.139)	0.244
Basic statistics education receiving status	0.124(0.019-0.228)	0.021	0.071(-0.038-0.181)	0.202
Computer ownership status	0.090(-0.021-0.201)	0.110	0.016(-0.099-0.130)	0.789
Level of computer usage	0.154(0.073-0.236)	<0.0001	0.138(0.049-0.226)	0.002
On information literacy education status	0.116(-0.017-0.248)	0.087	0.100(-0.036-0.237)	0.148
Information literacy training willingness to receive	0.077(-0.027-0.182)	0.146	0.104(-0.001-0.210)	0.052
Multiple regression analysis				

Discussion

In this study in which we investigated the level of information literacy among nursing students, only the level of computer use was found to be an important determinant among the factors affecting the information literacy score. To increase information literacy, it may be important to focus on developing students' skills in using computers effectively. The findings of this study draw attention to the fact that 44.13% of nursing students defined information literacy only as accessing or finding information, 5.47% were uncertain about recognizing the need for information, and 29.76% could not or did not want to define information literacy. These results show that the majority of students need a clear definition of what information literacy is and is not. Considering the rapid spread of information and similar rapid change in today's world, this result also shows that students need to strengthen their awareness of information literacy. Another important finding of the study is that among the sub-dimensions of the scale, the dimension of defining students' information needs was the lowest (3.77±0.63). This shows that students have difficulty in identifying their information needs. In the study conducted by Li et al. in a 2022 study involving nursing students in China, the highest score among the sub-dimensions of information literacy was reported in the information awareness dimension (15). Considering the necessity to follow continuously updated evidence in the field of clinical practice today, it is critical for students to be informed about this issue. However, in this study, 84.5% of the students did not receive information literacy training and 51.1% evaluated their language proficiency as low. These results put students at risk of not being able to adequately develop their skills in identifying, researching, analyzing and evaluating problems in the field of nursing. In order to fully benefit from the opportunities offered through universities such as library services, free databases and trainings, students need to be aware of these opportunities. However, according to the results of this study, it is seen that the majority of students are not aware of these resources or encouragement practices are not common. Nursing students' unfamiliarity with the processes of feeling, finding, analyzing and evaluating the need for information may prevent the understanding and use of evidence-based practice in clinical skills. Research shows that nurses do not use electronic resources such as online databases frequently enough, even in a period of increased access to electronic resources. Therefore, it is important not only to access information but also to critically evaluate and apply the information (9). In this context, the gradual and continuous provision of information literacy training during undergraduate education should aim to strengthen students' ability to access and evaluate information, as well as to gain the ability to use information effectively in clinical practice.

In this study, only the level of computer use was found to predict information literacy. Soroya et al. reported that training in statistics, literature access and use, and place of birth were associated with information literacy scores (14). They evaluated medical students and reported that English language proficiency, participation in information literacy trainings, and high emotional intelligence had positive effects on information literacy. On the other hand, in Dolnicar and Podgornik's (16) study on the COVID pandemic period, it was stated that having information and communication technology devices and information and communication technology courses were not related to information literacy competence. However, in the same study, it was found that there was a significant relationship between the level of personal confidence in internet use and the level of information literacy. Similarly, in Duncan and Holtslander's study (13), it was found that there was a relationship between students' ability to use computers and lack of confidence. In this context, this study evaluated the relationship between information literacy and computer use, and it is thought that students' motivation to seek information will increase with the improvement of their computer use skills. Özkul and Kaya evaluated that 32.1% of nursing students evaluated themselves as competent in computer use (22). In the study, 64.6% of the students had moderate computer skills. In Ozkul and Kaya's study, the fact that students' proficiency in computer use was low may be related to the fact that their study was conducted 15 years ago (22). Improvement in computer skills can positively affect students' motivation to seek information by increasing their self-confidence levels. It can enable students to be more active in accessing information and learning processes. Considering that most of the students in this study used the internet and computers as a way of obtaining information, the importance of these technologies in educational processes becomes even more evident. Especially with the development of the internet and new technologies, students are becoming more digitalized and tend to self-directed learning rather than traditional learning approaches (23).

In the literature, it is emphasized that nurses' effective use of computers is a prerequisite for information literacy (24). In this context, it is important to use internet and computer

facilities more effectively in nursing education to enhance students' digital skills and information literacy. The Iranian study suggests that combining traditional learning methods with e-learning methods such as the application of educational website and interactive online resources in teaching the fundamentals of nursing course can be an effective complement to the development of nursing students' clinical skills (25). Considering that the defining the information need sub-dimension was the lowest in this study, we think that it may be useful to add trainings on the use of electronic resources to the nursing curriculum. In a study conducted in Türkiye, Problem-Based Learning method was shown to have positive effects on information literacy (20). In addition to the classical education methods in the university where the study was conducted, the application of methods in which the student participates more actively in the learning process may have positive effects on issues such as access to information, evaluation of information, use and definition of information. Even digital literacy could be a useful addition to the nursing education curriculum (26).

In this study, it was determined that only 15.5% of the students received information literacy training and 60.9% were informed about literature search and its use in the courses. Although evidence-based practices are very important for nursing practice, it has been shown that a significant proportion of nurses are not ready to implement evidence-based practice due to their lack of information literacy skills in seeking and receiving information (27). This situation reveals the lack of information literacy education in nursing undergraduate programs (17). The American Association of Colleges of Nursing recommends integrating information literacy education into undergraduate and graduate education (18). The Association of College and Research Libraries (ACRL) has developed the Information Literacy Competency Standards for Nursing and encourages the integration of these standards into the curricula of nursing programs (11, 28). Individuals can obtain this information in different ways when they encounter various information and resources in their academic studies, while practicing their profession and in their personal lives (6). It is known that nursing students obtain information about clinical skills by consulting their colleagues and peers when they transition to the profession (29). Therefore, it is considered important to develop students' information literacy competencies in their professional development. Educators need to promote information literacy, which is a core nursing competency necessary to support excellence in nursing in the digital age (30). Nursing educators should clearly identify how to support students in information literacy. To ensure that nursing education institutions educate graduates with high information literacy, they should conduct supportive curriculum update studies that raise awareness on this issue. In addition, practices such as projects, homework, and group work should be included.

Conclusions

In an environment where information sources are diversified with technology, the importance of information literacy is constantly increasing. In this study, internet and computer ranked first among the ways of obtaining information by nursing students. Only the level of computer use was found to affect information literacy. Improving computer usage skills can help improve information literacy by making it easier for nursing students to access, evaluate, synthesize and share information. In light of these findings, it is important to increase the level of information literacy awareness, and effective and safe computer use as basic competencies for the 21st century. Universities should increase access to information literacy resources such as the internet and computers, which students use most frequently to access information. In order to increase the information literacy awareness of nursing students, there is a need to strengthen their ability to access effective and safe information in computer use. Nursing educators should develop course contents that are compatible with evidence-based practice and research roles and provide practices that will enable students to practice these roles.

Declarations

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Conflict of interest statement

The authors declared that they have no competing interests.

Ethics statement

This study has been reviewed for ethics approval (dated 11.05.2023 and numbered 2023/06).

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