

The Effect of Artificial Intelligence on Clinical Practice and Learning Processes in Nursing Education: A Qualitative Study

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Abstract

Aim: The study was planned and carried out in a qualitative (case study) type in order to determine the areas of artificial intelligence use in nursing education and its effect on the learning processes of students.

Method: Demographic Data Form including the characteristics of nursing students and Semi-structured Interview Form were used as data collection tools. The data were collected with a voice recorder and transferred to a Microsoft Word file using a transcriber. The research data were evaluated by content analysis method and three expert opinions were obtained. MAXQDA program was used in the content analysis process.

Results: According to the results of the research, students mostly stated that they benefited from artificial intelligence tools, especially chatgpt. It was stated that chatgpt made significant contributions to conducting research, learning languages, obtaining drug information and obtaining information about applications. The students emphasized that AI should be supported with more reliable and updated sources and pointed out that information pollution should be reduced. In addition, a suggestion was made that AI should only draw data from reliable academic sources.

Conclusion: It was seen that AI makes significant contributions to the learning process, but some fundamental issues such as reliability and information pollution need to be addressed. Students offered several suggestions to make AI-supported education more reliable, simple and accessible.

Keywords: Artificial intelligence, artificial intelligence tools, nursing students.

Yapay Zekanın Hemşirelik Eğitiminde Klinik Uygulama ve Öğrenme Süreçlerine Etkisi: Nitel Çalışma

Öz

Amaç: Araştırma öğrencilerin hemşirelik eğitiminde yapay zeka kullanım alanlarını ve öğrenme süreçlerine etkisini belirlemek amacıyla niteliksel (olgu bilim) tipte planlandı ve gerçekleştirildi.

Yöntem: Araştırmada veri toplama aracı olarak hemşirelik öğrencilerinin özelliklerini içeren Demografik Veri Formu ve Yarı Yapılandırılmış Görüşme Formu kullanılmıştır. Veriler, ses kayıt cihazı ile toplanmış ve Microsoft Word dosyasına transkriptör yöntemiyle aktarılmıştır. Araştırma verileri, içerik analizi yöntemiyle değerlendirilmiş olup, üç uzman görüşü alınmıştır. İçerik analizi sürecinde MAXQDA programı kullanılmıştır.

Bulgular: Araştırma sonuçlarına göre, öğrenciler çoğunlukla yapay zeka araçlarından özellikle chatgpt'den faydalandıklarını ifade etmiştir. Chatgpt'nin, araştırma yapma, dil öğrenme, ilaç bilgisi edinme ve uygulamalar hakkında bilgi edinme konularında önemli katkılar sağladığı belirtilmiştir. Öğrenciler, yapay zekanın daha güvenilir ve güncellenmiş kaynaklarla desteklenmesi gerektiğini vurgulamış, bilgi kirliliğinin

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ETHICAL STATEMENT: This study was carried out with the approval of the Ethics Committee of Istanbul Gelisim University, dated 29/11/2024 and numbered 2024-19-50.

azaltılması gerektiğine dikkat çekmişlerdir. Ayrıca, yapay zekanın yalnızca güvenilir akademik kaynaklardan veri çekmesi gerektiği yönünde bir öneri geliştirilmiştir.

Sonuç: Yapay zekanın öğrenme sürecine önemli katkılar sağladığı, ancak güvenilirlik ve bilgi kirliliği gibi bazı temel sorunların ele alınması gerektiği görüldü. Öğrenciler, yapay zeka destekli eğitimin daha güvenilir, basit ve erişilebilir olması için çeşitli öneriler sundu.

Anahtar Sözcükler: Yapay zeka, yapay zeka araçları, hemşirelik öğrencileri.

Introduction

Artificial intelligence (AI) was first defined by John McCarthy as “the science and engineering of making intelligent machines, especially intelligent computer programs”¹. According to this definition, artificial intelligence is defined as the mental activities called “intelligence” performed by humans and performed by machines. In computer science, artificial intelligence is defined as “devices containing intelligent agents that perceive their environment and take action to maximize their chances of success in a goal”², while nurses Fritz and Dermody, who have worked on artificial intelligence, define it as “a computer algorithm that acts as a rational agent that can evaluate human movement over time and make decisions about that person's movement, just as a human would”³.

It is necessary to determine the dynamics affecting the redesign of nurses' processes of organizing and managing nursing care using AI product care systems. Artificial intelligence is thought to contribute to high-quality patient care, which is the core competence of nursing⁴.

Artificial intelligence and nursing education According to the constructivist learning theory, students create their own knowledge by interpreting the information they have from what the instructor tells, what they hear, read and see. With the development of machines that can think, it is known that these skills belonging to humans can now also be done by machines⁵. In general, it is thought that artificial intelligence will play a major role in individualizing education, providing the right resources at the right time, and ensuring that human beings do not get lost in the information density that they cannot cope with⁶.

Material and Methods

The study data were collected between December 15, 2024 and February 10, 2025. The sample of the study consisted of 10 nursing students who volunteered and agreed to participate in the study based on the literature. Each interviewed student was given a code name and these code names were used instead of the students' names in the analysis process.

Data Collection Tools

The data of this qualitative study, which aims to examine the use of artificial intelligence by students in nursing education, were collected using the “Demographic Data Form” and “Semi-structured Interview Form”.

Data Evaluation

“The interviews with the participants were recorded using a voice recorder and transferred to a Microsoft Word file after obtaining their written and verbal consent. Three expert opinions were obtained and content analysis method was used in the study.

MAXQDA program was used for content analysis. The main purpose of content analysis is to find interrelated concepts that can explain the collected data. The basic process Content analysis is to collect similar data within the framework of certain concepts and themes and interpret them in a way that the reader can understand.

Ethical Aspects of the Research

Ethics committee permission was obtained from Istanbul Gelisim University Ethics Committee (Decision No: 2024-19-50) on November 29, 2024. “Informed Consent Form” was presented to all participants and their written and verbal consents were obtained.

Results

Table 1. Descriptive characteristics of the students (n:10)

Variables	n	%
Gender		
Female	3	30
Male	7	70
Place of Residence		
With Family	2	20
Dormitory	7	70
Student House	1	10
Reason for Choosing Nursing Profession		
Love for the Profession	1	10
Family Request	5	50
Job Opportunity	4	40
Purpose of Using the Internet		
Conducting Research	6	60
Communicating	4	40
Frequency of Using Artificial Intelligence Applications		
In between	3	30
2 a day	1	10
1 Hour	5	50
2 Hours	1	10

In the Table 1 the ages of the nursing students who participated in the study ranged between 21-23 years. It is seen that 70% of the students are male and 70% of them live in dormitories, while the rest live with their families or in student houses.

When the reasons for choosing a profession were examined, it was determined that 50% of the students preferred the nursing department with the guidance of their families, as well as job opportunities and love for the profession were also effective in the selection process.

When the internet usage habits of the students were evaluated, it was observed that the most common purpose of internet use was to conduct research, followed by communication and entertainment purposes. Although the duration of daily internet use varies from person to person, it is generally concentrated between 2 and 5 hours.

When the frequency of using artificial intelligence tools was evaluated, it was determined that some students used artificial intelligence supported applications on a daily basis, while others used them intermittently.

Qualitative Findings of the Participants

Theme 1: Artificial Intelligence Use Experiences

1.1. Artificial Intelligence Tools Used: Students stated that they most frequently used artificial intelligence tools such as ChatGPT and Siri. Some students also stated that they accessed different artificial intelligence applications such as Alexa and Gemini. Some students expressed their views as follows:

S2: Yes, I have used artificial intelligence opportunities. I mainly use Siri, I have it on my own device. I also use ChatGPT

S3: I generally use ChatGPT, but I also use Siri from time to time.

S8: Alexa, Siri, Gemini, ChatGPT. I use ChatGPT actively, but I do not trust ChatGPT very much.

1.2. Contribution of Artificial Intelligence Supported Educational Tools:

Students stated that artificial intelligence tools enable them to access information faster and serve as a guide. It was stated that artificial intelligence contributed especially to research, language learning, medicine and application knowledge. Some students expressed their views as follows:

S2: I have always received education in a more useful way thanks to ChatGPT. Apart from that, I learned a new language on ChatGPT. My other test studies were also useful. I made my thesis more reinforcing by using those resources.

S3: Sometimes I use it for medicine applications. For example, sometimes I don't know exactly how and in which way they are used. Or I write on ChatGPT to learn other methods. I learn in detail from there.

S6: I mean, it helped me with research. Thanks to artificial intelligence, I can access information much more easily, which makes it much easier for me, whether it is clinical training or theoretical training. It contributes to me to gain skills.

Theme 2: The Role of Artificial Intelligence in Clinical Practice

2.1. Clinical Guidance and Access to Information: Most students see artificial intelligence as a guide in clinical education and state that it helps them complete the subjects they are missing. It was stated that artificial intelligence is a guide especially in drug applications and accessing information in patient care processes. Some students expressed their opinions as follows:

S1: When we look at it for general purposes, it is a guide. In a way, it tries to help us about the subject we do not know. At the same time, we use artificial intelligence here, such as drugs we don't know or side effects and so on.

S2: I generally see it as a guide. I thought it was very useful in my internship assignments. At the same time, I had the opportunity to complete the parts I was missing in ChatGPT. I find ChatGPT useful in that way.

S4: It guided me. I learned what I should do from those applications.

S9: The fact that it guides me and presents information in a more systematic way makes my job much easier. When I go to practice in the hospital, I will care for the patients, but sometimes I may be insufficient. In this case, I immediately get support from artificial intelligence and it is very useful.

2.2. Improving Clinical Skills: Students stated that thanks to artificial intelligence, they had the opportunity to improve their clinical skills by watching videos, conducting research and analyzing cases. It was stated that artificial intelligence contributed to the integration of theoretical knowledge into clinical practice. Some students expressed their opinions as follows:

S1: It helps me when I look at new researches or videos and sample applications.

S2: I found new research opportunities in the process of developing my clinical skills. I had the opportunity to reinforce the information I saw practically in the internship in theory. I identified different resources as a result of new research and I saw that these resources benefited me very efficiently in my career. I had the opportunity to watch videos on ChatGPT. I came across more different cases and I had the opportunity to discover the treatment methods of these cases thanks to ChatGPT.

S9: The theoretical knowledge I received at school was sometimes not enough. When I think that I will have difficulties in the clinic, I apply to artificial intelligence and it can provide me with the information I need very quickly. In this way, it is very useful for me in the clinic because I can reinforce what I know.

2.3. Challenges in Clinical Practice: Information pollution, reliability issues and the fact that some AI tools contain outdated or inaccurate information are the most frequently mentioned problems by students. In addition, some students also see the fact that AI charges fees for some of its services as an obstacle. Some students expressed their opinions as follows:

S2: I found that AI sometimes makes incorrect calculations in dose calculations. I realized that this data should be checked more precisely. So it is not only calculations according to AI. At the same time, I thought that these calculations should be checked by adding my own analytical skills. I mean, it was not right for me to say that this data is correct only based on artificial intelligence.

S3: For problems such as the lack of simplicity of information, information pollution, unnecessary information being given extra space.

S6: I did not encounter any difficulties, but the fact that it is paid after a certain point can make it difficult for me financially.

S9: It may not provide reliable and accurate information. In this sense, I can not always trust it.

Theme 3: Artificial Intelligence Supported Learning Processes

3.1. Impact on the Learning Process: Students stated that artificial intelligence positively affected their learning processes as it provided quick and easy access to information. In particular, it was stated that it saves time. Some students expressed their opinions as follows:

S4: I am positively affected. I have a better process because I access information more quickly.

S6: It is both easier and there is no waste of time. I learn faster.

S9: Because we save time directly. On the other hand, it also makes our work easier. Direct lecturing, summary does everything for us.

3.2. Areas where it is most useful: While some of the students argued that artificial intelligence is more useful in theoretical education, others stated that it also has important contributions in clinical education. It was stated that artificial intelligence is effective in terms of reinforcing theoretical knowledge and completing missing information. Some students expressed their opinions as follows:

S1: Of course theoretical. In clinical practice, we can often make mistakes. For this, I think it is theoretical.

S2: The most important useful part of artificial intelligence for me was the clinical practice part. As I have already stated, I had the opportunity to further reinforce the information I had reinforced during clinical practice in artificial intelligence. By watching videos, completing the deficiencies in my internship homework, I had the opportunity to complete unknown concepts and missing information.

S6: Theoretical. I get more information in theory.

S7: It is most useful for me in theoretical education. That is to say, since we do not see laboratory education properly, it provides convenience in theoretical terms at most.

3.3. Impact on Student Achievement: There is a widespread view that artificial intelligence increases student achievement. However, some students think that although artificial intelligence provides easy access to information, it can make the learning process passive and distract students from doing research. Some students expressed their views as follows:

S2: I partially believe that using artificial intelligence increases student achievement. Because the reason I say partially is this. Artificial intelligence is sometimes something useful and sometimes something that harms us. I mean, the useful part is that we can get the information immediately in a short and clear way. But the harmful part is this. It is an application that accustoms us to more comfort. I mean, artificial intelligence, okay, it is easy for us to access everything, but people now turn this into a comfort and offer the opportunity to develop themselves only in a certain part.

S5: I believe this because the cell phone in our hands is enough to learn information. Rather than asking anyone extra, we can learn the information quickly from the cell phone by asking the artificial intelligence in the way we want.

S6: I believe that it increases if it is used correctly. If you know what you are looking for, if you give the right commands, it can offer you most of the things you are looking for quickly. And you see that this positively affects your success.

Theme 4: Advantages and Challenges in Using Artificial Intelligence

4.1. Advantages

- Fast and easy access to information
- Guidance in clinical practice
- Reinforcement of theoretical knowledge
- Saving time

Some students expressed their views as follows:

S1: The biggest advantage is that it helps with theoretical knowledge and medicines we do not know.

S5: Access to fast information, time management, efficient and active use of time.

S7: As I said, the biggest advantages are that you can access theoretical knowledge more easily, it is more useful for us by seeing many things because it acts as a helpful guide in clinical practice.

4.2. Challenges and Barriers

- Information pollution and credibility issues
- Artificial intelligence can misrepresent some information
- Existence of outdated data
- Availability of AI applications that require paid access

Some students expressed their views as follows:

S5: Information pollution in general, too much information and some question marks about the security of information.

S9: The difficulties I encounter when using artificial intelligence are, again, as I said, they are usually paid. They ask for a fee after a usage experience and then we have difficulties as students.

S10: Information pollution, long texts.

Theme 5: Suggestions for the Development of Artificial Intelligence Supported Education

5.1. Information Reliability and Sourcing: Students suggest that AI should be supported by more reliable and updated sources. It was stated that information pollution should be reduced and AI should only draw data from reliable academic sources. Some students expressed their views as follows:

S1: Of course the security of the sources.

S3: Now we trust the sources, but I think the sources need to be improved a little bit. The information needs to be concise and simplified. Information pollution needs to be removed a little bit.

S6: I think the things that need to be improved are the accuracy of the information we research, the reliability of the sources and more opportunities can be provided in clinical applications.

S8: I think artificial intelligence applications can be developed to reach the right information.

S9: I think the reliability of the sources should be improved.

5.2. Simplified and Explanatory Information: Some students suggested producing simplified content because the information provided by AI is too long and complex. Some students expressed their opinions as follows:

S1: I prefer the information to be more simple and directly explanatory. So this is my suggestion.

S5: I can suggest that information security should be increased, information should be conveyed in a simpler, shorter way, and that it should provide the opportunity to access correct information.

S8: I suggest that they should be able to research not only the information obtained from Google but also various articles and magazines and give correct answers based on them.

5.3. Development of Artificial Intelligence Supported: Robot Students think that the use of artificial intelligence supported robots in patient care can alleviate the workload and contribute to vocational training. Some students expressed their opinions as follows:

S1: Of course, we need more information and support to take a better role in nursing education.

S2: I would like to get more information and support about the role of artificial intelligence in nursing education. Of course, I would like to get support on how to use artificial intelligence applications and how to access this information in a more useful way. If I learn this, my professional knowledge and experience will increase even more.

S7: In order to reduce the workload, I would like to make a suggestion in the form of developing artificial intelligence-supported robots. Because there is too much workload in hospitals today. At least we can see this in Türkiye. I believe that artificial intelligence-supported robots should be developed to lighten the manpower, that is, to lighten the workload.

Discussion

Nursing is known as a dynamic and rapidly developing field due to new technologies and changes in healthcare delivery models⁷. Nursing educators follow and adapt to the latest developments while maintaining their commitment to providing quality care⁸. In this study, students' views on the artificial intelligence areas utilized in nursing education were examined.

Nursing educators need to understand the potential uses, benefits, challenges, disadvantages and limitations of ChatGPT in order to make informed and effective decisions about the integration of ChatGPT into nursing education⁹. It has been reported that ChatGPT can provide contributions such as providing personalized learning

experiences to nursing students, helping students learn a new language, and identifying areas where they have difficulty¹⁰. In this study, results supporting the literature were obtained. Students stated that ChatGPT especially contributed to research, language learning, and acquiring knowledge of medication and practice.

Due to the accuracy limitations of the ChatGPT, students need to be wary of misinformation and have sufficient knowledge to check outputs against outcomes⁹. ChatGPT uses the database up to 2021, which limits its capacity to provide, summarize or synthesize accurate and up-to-date information. Nursing and healthcare are rapidly evolving and therefore new information after 2021 cannot be reflected¹¹. In the study, students suggested that AI should be supported by more reliable and updated sources. They stated that information pollution should be reduced and AI should only draw data from reliable academic sources. It is thought to create information pollution for students who cannot distinguish between true and false information.

The students in our study were found to be widely supported in artificial intelligence applications in nursing education. Educators have important duties for students to access the right information from artificial intelligence tools. It is an important point that artificial intelligence-oriented course contents are delivered to students by well-equipped educators with guidance. There is also a need for studies to be carried out on the awareness or self-efficacy of educators on artificial intelligence and education.

Conclusion

In this study, how nursing students use artificial intelligence-supported educational tools, their effects on clinical and theoretical education processes and the difficulties they face were discussed. It was seen that artificial intelligence makes significant contributions to the learning process, but some basic problems such as reliability and information pollution need to be addressed. Students offered various suggestions to make AI-supported education more reliable, simple and accessible.

Limitations

Since this study is limited to nursing students studying at a university in Istanbul, the generalizability of the findings is limited.

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