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ARAŞTIRMA MAKALESİ

INVESTIGATION OF NURSING STUDENTS' KNOWLEDGE AND ATTITUDES REGARDING THE METAVERSE

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Abstract

Considering the use of Metaverse technologies in healthcare applications today, there is a need to synthesize the perspectives of nursing students towards the use of metaverse in nursing education. This research was conducted in a descriptive manner to examine nursing students' knowledge and attitudes regarding the metaverse. This study was conducted for nursing students at the faculty of health sciences of a state university in Turkey between December 1, 2022, and January 15, 2023. Research data were collected using a questionnaire and metaverse scale. The data was analyzed with the SPSS 25.0 program. 71.2% of the students participating in the study were female, 28.8% were male. It was determined that 43.8% did not know the metaverse and 57.8% thought that the metaverse would have an important place in nursing education and patient care in the future. The total score of the Metaverse scale was determined as 50.94±12.12 (minimum 15-maximum 75 points). It was determined that the metaverse scale average score of nursing students was high.The place where students live, their classroom, the high school they attend, the technological tools they use and the time they spend on the internet were determined as factors affecting their level of knowledge about the metaverse.

Keywords: Nursing, Student, Metaverse, Knowledge Level, Attitude

HEMŞİRELİK ÖĞRENCİLERİNİN METAVERSE İLE İLGİLİ BİLGİ VE TUTUMLARININ İNCELENMESİ

Öz

Bu araştırma hemşirelik öğrencilerinin metaverse ile ilgili bilgi ve tutumlarının incelenmesi incelemek amacıyla tanımlayıcı nitelikte yapıldı. Bu çalışma 1 Aralık 2022 -15 Ocak 2023 tarihleri arasında Türkiye'de bir devlet bir üniversitesinin sağlık bilimleri fakültesindeki hemşirelik öğrencilerine tanımlayıcı nitelikte yapıldı. Araştırma verileri soru formu ve metaverse ölçeği kullanılarak toplandı. Veriler SPSS 25,0 programı ile verilerin analizi yapıldı.Çalışmaya katılan öğrencilerin %71,2'sinin kadın, %28,8'inin erkek, %81,4'ünün ders çalışırken teknolojik araç olarak cep telefonu kullandığı, %54.0'nün interneti günde 3-4 saat kullandığı, %56,2'sinin metaversin ne olduğunu bildiğini, %43,8'nin metaverse bilmediği ve %57.8'nin gelecekte metaversin hemşirelik eğitiminde ve hasta bakımında önemli yeri olacağını düşündüğü saptanmıştır. Metaverse ölçeği toplam puanı 50,94±12,12 (minimum 15-maksimum 75 puan) olarak saptanmıştır. Hemşirelik öğrencilerinin metaverse ölçeği puan ortalamasının yüksek düzeyde olduğu, belirlenmiştir. Öğrencilerin yaşadığı yer, sınıf, okuduğu lise, kullandığı teknolojik araçlar ve internette geçirdiği süre metaverse ile ilgili bilgi düzeyini etkileyen faktörler olarak belirlenmiştir.

Anahtar Kelimeler: Hemşirelik, Öğrenci, Metaverse, Bilgi Düzeyi, Tutum

1.INTRODUCTION

Today, developments in the field of science and technology greatly affect both our individual and professional lives. These developments in the field of science along with technology make it necessary for nurses, who constitute an important part of the health system, to use technology effectively and follow the developments in this field in nursing care and practices, in providing effective and quality care in the treatment of patients(1,2).

Nursing students, who are health professionals of the near future, are expected to have knowledge, skills, and critical thinking skills regarding computer and information technologies and to integrate these skills with traditional and contemporary nursing roles (3).Providing quality care by combining the traditional and modern roles of the nursing profession is possible today with more knowledge about technology and scientific developments (4). Innovation is generally accepted as a fundamental element and the most effective way of development, change, differentiation, and creativity. Especially with the COVID-19 pandemic, digital technology-based virtual applications have begun to be widely used in many areas such as education, health and commerce (5).With the transition to digital technology, the concept of Metaverse emerged, which allows tasks that cannot be performed in the real world to be performed in virtual environments. The importance of the virtual world is increasing day by day and it is no longer possible for many sectors not to participate in this World (6). Avatars that represent their "real" or imagined lives are used by users to carry out daily activities in the metaverse, an online three-dimensional virtual environment (7).Avatars are digital representations of actual people in the virtual world that can be used by the metaverse to accomplish a wide range of tasks. With the use of metaverse technology, people can create a better physical world while also creating a digital one (8).Today, it is reported that there are applications of metaverse in the medical areain surgeries, radiological imaging, pain treatment, and mental health disciplines. In addition, in health education, the metaverse offers a wide range of freedom in the fields of production, sharing and communication (9,10,11).

When metaverse applications in health education are presented in simulation environments together with augmented reality and virtual reality, it is possible to achieve the current educational purpose (12). Although nursing education is not yet sufficient, training in nursing practices is provided in simulation laboratories. It is stated that with the use of virtual reality in simulation rooms, nursing students gain cognitive and skill mastery, while at the same time, the harm and risk to the patient will be minimized as they receive training in a realistic environment (13).Nursing staff education about remote patient monitoring can be greatly enhanced by the use of metaverse technology. Through the successful utilization of virtual reality simulations and scenarios, nurses can refine their skills in monitoring patients in a variety of conditions prior to encountering real-life scenarios. Their skill and confidence in remote patient monitoring, which is crucial for providing high-quality care to patients who are not physically present, can be increased with this training. Additionally, metaverse training can help nurses communicate and work together in a virtual setting, which can improve their ability to operate as a team and make decisions (14).

Having knowledge about metaverse applications, which are very important for nursing education and profession, will ensure the successful implementation of contemporary professional initiatives in patient care in clinics. In this regard, this research was conducted to examine the knowledge and attitude levels of nursing students, who are the health professionals of the future, about the metaverse.This research was conducted in a descriptive manner to examine nursing students' knowledge and attitudes regarding the metaverse. The questions of the research are:1.Do nurse students know about the metaverse?2.What do nursing students think about the metaverse in terms of nursing education?

2. MATERIAL AND METHODS

2.1. Type of research: This research was conducted in a descriptive manner to examine nursing students' knowledge and attitudes regarding the metaverse

2.2. Participants: This descriptive study was conducted with nursing students studying in the nursing program at the faculty of health sciences at a state university between 01 December 2022 and 15 January 2023. The population of the study consisted of 800 students studying in the nursing program. The G *Power (G Power 3.1, Kiel, Germany) analysis was performed to determine the sample size of the study. In this power analysis, it was determined that at least 260 people should be reached to reach 95% power at a significance alpha level of 0.05. The study was completed with 500 students participating.No sampling was used and all students using smartphones were included in the study. Students were informed about the study and survey forms were sent to their phones via WhatsApp in the classroom environment and they were asked to participate in the survey on a voluntary basis.

2.3.İnclusion Criteria: Criteria for inclusion in the study; It includes students who are students in the nursing department, do not have communication problems, use smartphones and the internet, and are willing to participate in the study.

2.4. Data Collection Tools

Research data were collected online via WhatsApp with a questionnaire and a metaverse scale survey containing the students' socio-demographic characteristics and their approaches to technological developments.

Questionnaire: It includes questions about the socio-demographic characteristics of nursing students and their approaches to technological developments.

*Metaverse Scale:*Metaverse scale Süleymanoğulları et al. It is a 5-point Likert type developed by (2022). The minimum total score that can be obtained from this scale is 15 points and the maximum total score is 75 points. The scale consists of 15 items and 4 sub-dimensions. These; It is called technology, social, digital and lifestyle. The Cronbach alpha value for the entire scale is expressed as 0.81. A high score on the scale indicates a high level of metaverse knowledge (6). In this study, the Cronbach alpha value of the scale was found to be 0.81.

2.5. Statistical Analysis

Analyzes were carried out with the help of the SPSS 25.0 program. While evaluating the research data, the Kolmogorov-Smirnov distribution test was used to test whether it was suitable for normal distribution, and it was seen that the data was normally distributed. In evaluating research data; Numbers, percentages and averages were used to evaluate the data regarding descriptive characteristics. In the relationship between scale scores and descriptive variables, the student'st-test was used for two groups, One-Way Analysis of Variance (ANOVA) was used for more than two groups, and Tukey's post hoc tests were used. The relationship between the scale score averages was evaluated with the Pearson correlation test. The significance level was accepted as $p<0.05$, within the 95% confidence interval.

2.6. Ethical Dimension of the Research

The research was completed in accordance with the principles of the Declaration of Helsinki. Before starting the research, it was conducted with permission from the clinical research ethics committee of a state university (Date: 28.09.2022 / Decision no: 234), the relevant institution,from the author who developed the scale used and the participants.

3. RESULTS

The average age of the students participating in the study was 20.60±1.93 years. 71.2% of the students are female, 28.8% are male, 32,6% are first grade, 22.6% are second grade, 24.6% are third

grade, 20.2% are fourth grade, and 54,0%'s income is equal to their expenses. 69.8% live in the province, 79.6% graduated from Anatolian high school, 74.2% chose nursing school due to family wishes and work situation, 81.4% use mobile phones as a technological tool while studying and, 54.0% have internet access. They use the internet 3-4 hours a day, 30.4% use it for entertainment, 26.6% use it for communication, 20.6% use it for socialization, 56.2% know what metaverse is, 43.8% do not know metaverse, and 57.8% do not want metaverse in the future. It was determined that she thought it would have an important place in nursing education and patient care (Table 1).

Table 1.Individual Characteristics of Nursing Students' (N=500)

Descriptive features	Age (X±SD): 20,60±1,93		
		N	%
Gender	Women	356	71.2
	Men	144	28.8
Class	1.Grade	163	32.6
	2.Grade	113	22.6
	3. Grade	123	24.6
	4.Grade	101	20.2
Income rate	Income is less than expenses	205	41.0
	Income equals expenses	270	54.0
	Income exceeds expenses	25	5.0
Place of Residence	City	349	69.8
	District	107	21.4
	Village	44	8.8
HighSchool Graduated from	Health vocational high School	33	6.6
	Anatolian High School	395	79.0
	Science high school	72	14.4
Reason for Choosing Nursing	It ıs an ideal job for me	129	25.8
	Not to be unemployed in the future/family wish	371	74.2
What technological device do you use while studying?	Computer	69	13.8
	Tablet	24	4.8
	Cellphone	407	81.4
Daily internet usage hours	1-2 hours	81	16.2
	3-4 hours	270	54.0
	5 hours and above	149	29.8
Purpose of frequent internet use	Research	74	14.8
	Entertainment	152	30.4
	Communication	133	26.6
	Socialization	103	20.6
	Other	38	7.6
Do you know Metaverse?	Yes	281	56.2
	No	219	43.8
Do you think metaverse will be included in nursing education and patient care in the future?	Yes	289	57.8
	No	211	42.2

It was determined that the difference between the gender status of the students participating in the study, their income level, their reasons for choosing nursing, the technological tools they used for course purposes, the purpose of using the internet, the idea that metaverse would take part in nursing education and patient care in the future, and the metaverse scale sub-dimensions and total score was not statistically significant (p >0.05).It was determined that the difference between the class of the students participating in the study and the average score of the metaverse scale socialization subscale was statistically significant (p <0.05). In the advanced analysis, it was determined that there was a significant difference between the first and fourth-grade groups (p<0.026). It was determined that the difference between the place where the students lived and the average score of the Metaverse Scale technology sub-dimension was statistically significant (p<0.030), and the total scores of the Metaverse Scale and Sub-dimension were higher for those living in the district (Table 2).

Table 2. Distribution of Metaverse Scale (MS) Sub-Dimensions and Total Score Means According to Nursing Students' Individual Characteristics (N=500)

		Technology	Digitalization	Social	Lifestyle	Total MS
		X ±SD	X ±SD	X ±SD	X ±SD	X ±SD
Gender	Women	3.41±0.86	3.45±0.87	3.08±1.09	3.56±0.94	51.14±11.97
	Men	3.34±0.98	3.48±0.90	3.03±1.21	3.50±0.93	50.44±12.52
	t/p	0.819/0.055	-0.350/0.331	0.375/0.079	0.709/0.516	0.585/0.494
Class	1.Grade	3.24±0.84	3.33±0.82	2.85±1.03	3.53±0.93	49.06±11.07
	2.Grade	3.49±0.86	3.50±0.79	3.14±1.20	3.61±0.88	52.12±11.09
	3. Grade	3.44±0.90	3.48±0.93	3.14±1.06	3.49±0.94	51.32±12.58
	4.Grade	3.45±1.01	3.61±0.98	3.23±1.21	3.56±1.01	52.18±13.96
	F/p	2.154/0.093	2.197/0.088	**3.111/0.026**	0.328/0.805	2.066/0.104
Income rate	Income is less than expenses	3,31±0,89	3,41±0,87	3.09±1.13	3.59±0.92	50.40±12.10
	Income equals expenses	3,43±0,91	3,48±0,88	3.03±1.10	3.48±0.93	51.03±12.16
	Income exceeds expenses	3,61±0,78	3,73±0,91	3.14±1.37	3.86±1.08	54.40±11.76
	F/p	1.904/0.150	1.509/0.222	0.210/0.810	2.212/0.111	1.226/0.294
Place of Residence	City	3.34±0.94	3.41±0.91	3.01±1.14	3.52±0.97	50.26±12.64
	District	3.59±0.71	3.62±0.69	3.16±1.07	3.67±0.78	53.42±9.12
	Village	3.29±0.93	3.47±1.01	3.25±1.07	3.43±1.00	50.27±13.68
	F/p	**3.527/0.030**	2.326/0.099	1.92/0.250	1.423/0.242	2.860/0.058
HighSchool Graduated from	Health vocational high School	3.42±0.97	3.69±0.89	3.46±1.18	3.77±0.88	53.33±13.31
	Anatolian High School	3.39±0.92	3.41±0.90	3.04±1.12	3.49±0.96	50.55±12.38
	Science high school	3.38±0.71	3.67±0.73	3.02±1.10	3.73±0.71	51.95±9.88
	F/p	0.021/0.979	**3.910/0.021**	2.263/0.105	2.941/0.054	1.091/0.337
	It ıs an ideal job for me	3.41±0.87	3.41±0.84	3.06±0.07	3.45±0.90	50.64±11.49

Reason for Choosing Nursing	Not to be unemployed in the future/family wish	3.38±0.91	3.48±0.89	3.06±1.14	3.58±0.95	51.04±12.35
	t/p	0.258/0.824	-0.756/0.329	0.021/0.220	-1.287/0.544	-0.327/0.545
What technological device do you use while studying?	Computer	3.21±1.19	3.32±0.96	2.79±1.28	3.44±1.07	48.42±14.06
	Tablet	3.62±0.73	3.87±0.67	3.31±1.06	4.08±0.66	55.87±8.99
	Cellphone	3.41±0.85	3.46±0.87	3.09±1.09	3.53±0.92	51.08±11.85
	F/p	2.185/0.114	**3.505/0.031**	2.730/0.066	**4.376/0.013**	**3.540/0.030**
Daily internet usage hours	1-2 hours	3.36±0.82	3.41±0.76	2.84±1.10	3.44±0.79	49.55±10.72
	3-4 hours	3.27±0.95	3.35±0.90	2.96±1.14	3.53±1.01	49.51±12.68
	5 hours and above	3.62±0.80	3.68±0.86	3.37-1.05	3.64±0.87	54.12±11.25
	F/p	**7.594/0.001**	**6.901/0.001**	**8.325/0.000**	1.315/0.269	**7.497/0.001**
Purpose of frequent internet use	Research	3.38±0.83	3.50±0.78	2.83±1.16	3.73±0.90	51.05±10.80
	Entertainment	3.48±0.91	3.53±0.89	3.14±1.08	3.54±0.94	51.88±12.10
	Communication	3.32±0.83	3.39±0.79	3.06±1.11	3.40±0.84	49.76±11.00
	Socialization	3.47±0.96	3.53±0.97	3.16±1.16	3.70±0.98	52.38±13.39
	Other	3.10±0.99	3.19±1.00	2.96±1.11	3.29±1.11	47.15±14.09
	F/p	1.743/0.139	1.591/0.175	1.268/0.282	**2.970/0.019**	1.849/0.118
Do you know Metaverse?	Yes	3.54±0.94	3.65±0.87	3.10±1.24	3.80±0.93	53.41±12.29
	No	3.19±0.81	3.22±0.83	3.01±0.96	3.22±0.85	47.76±11.15
	t/p	**4.407/0.006**	**5.556/0.068**	**0.870/0.000**	**7.076/0.009**	**5.311/0.004**
Do you think metaverse will be included in nursing education and patient care in the future?	Yes	3.71±0.74	3.75±0.78	3.37±1.11	3.74±0.85	55.25±10.40
	No	2.95±0.91	3.06±0.85	2.64±1.01	3.28±0.99	45.04±11.84
	t/p	10.204/0.641	9.344/0.158	7.517/0.193	5.490/0.395	10.216/0.257

X ±SD: Mean±Standard Deviation.F: ANOVA.t: Student's t Test. $p<0.05$

The difference between the high school completed by the students participating in the study and the average score of the digitalization sub-dimension of the Metaverse Scale was found to be statistically significant ($p<0.021$). and the total scores of the Metaverse Scale and sub-dimension of those who completed the health vocational high school were higher. It was found that the difference between the technological tools students use while studying and the average score of the metaverse scale. digitalization sub-dimension and lifestyle sub-dimension is statistically significant ($p<0.031$. $p<0.013$. $p<0.030$). The difference between the metaverse knowing status of the students participating in the study and the total score average of the metaverse scale and sub-dimensions was statistically significant ($p<0.006$. $p<0.068$. $p<0.000$. $p<0.009$. $p<0.004$) and the difference between the metaverse

knowledge and sub-dimensions of the students who knew metaverse was statistically significant. Total scores were found to be higher. The difference between the students' thinking that metaverse will take part in nursing education and patient care in the future and the mean total score of the metaverse scale and sub-dimensions was not statistically significant (p>0.05).but the metaverse scale and sub-dimension total scores of those who thought that metaverse would take part in nursing education and patient care in the future were found to be high (Table 2).

Table 3. Metaverse Scale Item Total Score Means (N=500)

SCALE ITEMS	X±SD	Min.-Mak.
1- Metaverse is an investment tool	3.18±1.12	1-5
2-Metaverse is the future of the internet	3.48±1.14	1-5
3-Metaverse contains new things that will make our lives easier	3.50±1.14	1-5
4-Metaverse has a secure infrastructure.	3.02±1.07	1-5
5- Metaverse is the most important product of developing technology.	3.27±1.10	1-5
6-Metaverse will change our living standards and routines.	3.55±1.11	1-5
7- A virtual living environment is built through Metaverse.	**3.74±1.11**	1-5
8- Thanks to Metaverse. the transition from the physical world to the virtual world will accelerate.	**3.68±1.08**	1-5
9- In the metaverse. I take part in the metaverse world by designing my own avatar.	3.13±1.15	1-5
10- Metaverse is a product of marketing strategy.	3.58±1.03	1-5
11- I do virtual shopping in the Metaverse environment.	3.03±1.18	1-5
12- I participate in events (concerts. sports activities. trips. meetings. training. etc.) to be held in the Metaverse world.	3.09±1.23	1-5
13-Metaverse will affect people's virtual communication and interaction levels	**3.68±1.07**	1-5
14-Metaverse will negatively affect family ties	3.44±1.13	1-5
15-Metaverse will negatively affect my health (sleep. nutrition. active life. depression. etc.).	3.51±1.11	1-5
Scale Average Score	50.94±12.12	15-75

X ±SD: Mean±Standard Deviation

When the Metaverse scale item total scores of the students participating in the study were examined; While the scale items "A virtual living environment is being built through Metaverse".and "Thanks to Metaverse. the transition from the physical world to the virtual world will accelerate" and "Metaverse will affect people's virtual communication and interaction levels" had the highest mean scores. "Metaverse provides a safe environment". The scale items "has the infrastructure". "I do virtual shopping in the Metaverse environment" and "I participate in events (concerts. sporting activities. trips. meetings. training. etc.) to be held in the Metaverse world" were found to have the lowest average scores (Table 3).

Table 4. Metaverse Scale and Subscale Total Score Averages

	N	Minimum	Maximum	X±SD
Technology	500	1.00	5.00	3.39±0.90
Digitalization	500	1.00	5.00	3.46±0.88
Social	500	1.00	5.00	3.06±1.12
Life Style	500	1.00	5.00	3.54±0.94
Scale total	500	15.00	75.00	50.94±12.12

X ±SD: Mean±Standard Deviation

When the Metaverse Scale and sub-dimension total score averages of the students participating in the study are examined; The technology sub-dimension mean score was found to be 3.39±0.90. the digitalization sub-dimension mean score was 3.46±0.88. the social sub-dimension mean score was 3.06±1.12. the lifestyle sub-dimension mean score was 3.54±0.94. and the metaverse scale total score was 50.94±12.12 (Table 4).

Table 5. Relationship between Metaverse Scale Sub-dimensions

		1	2	3	4	5
Technology (1)	r					
	p					
Digitalization (2)	r	0.818**				
	p	0.000				
Social (3)	r	0.657**	0.660**			
	p	0.000	0.000			
Life style(4)	r	0.522**	0.627**	0.386**		
	p	0.000	0.000	0.000		
Metaverse scale total(5)	r	0.944	0.914	0.763	0.714	
	p	0.000	0.000	0.000	0.000	

**r=correlation coefficient.p<0.05

When the relationship between the Metaverse scale sub-dimensions is examined; A high and positive significant relationship was determined between the dimensions of technology and digitalization (r=0.818, p<0.000). technology and social (r=0.657, p<0.000). A moderate and positive significant relationship was found between technology and lifestyle (r=0.522, p<0.000) dimensions. A high and positive significant relationship was found between digitalization and social (r=0.660, p<.000). digitalization and lifestyle (r=0627, p<0.000) dimensions. A low and positive significant relationship was found between social and lifestyle (r=0.386, p<0.000) dimensions (Table 5).

4. DISCUSSION

Today. technology is changing the way individuals interact with the world. and Metaverse has attracted great attention worldwide and has become one of the most discussed topics in the technology community. In recent years; Various technologies such as artificial intelligence. big data. cloud computing. telemedicine. blockchain. virtual reality. and augmented reality have affected the field of health. and the field of health continues to be an area where technological development is intense (9,15). Nursing education. which has both practical and theoretical content.has the feature that its effectiveness can be increased with technological opportunities. For this reason. the use of information technology increases the effectiveness of nursing education and plays an important role in the development of the nursing profession (2). This study was conducted to evaluate nursing students' knowledge and attitudes regarding the metaverse.

It was determined that the difference between the gender status of the students participating in the study and the metaverse scale sub-dimensions and the total score was not statistically significant (p>.05). This situation can be interpreted as the fact that today's rapidly developing technological developments concern the whole society. regardless of gender. and the need for technology has become mandatory. and students constantly use social media such as WhatsApp. which is an important element of digital life. Turan et al. in their study on teachers' metaverse knowledge levels. found that there was no significant difference between gender and metaverse scale sub-dimensions and total score (16). However. there are some studies reporting that there is a difference between technology use and gender (5,17,18).

In comparing students' grades and metaverse knowledge levels in sub-dimensions and total scores; The difference between the mean scores of the socialization subscale was found to be statistically significant (p<.05). This can be explained by the fact that students acquire a social environment over time at school and socialize more as they move up to upper grades. Savas et al. in their study of prospective teachers.no significant relationship was found between the level of metaverse knowledge and their classes.[5] In their study on students' use of the metaverse. Suh and Seongjin found that sixth-grade students were more willing to use the metaverse than lower-grade students (19).

Smartphones and mobile applications are tools that enable healthcare professionals to directly communicate with colleagues and patients. instant access to medical information. education. remote patient management. research and digital diagnosis. The widespread adoption and use of smartphones in medical practices affects the quality of care (20). In the study. the majority of nursing students (81.4%) use mobile phones as a technological tool to access information while studying. all of the students use the internet and most of them (54.0%) spend 3-4 hours a day on the internet. students use the internet mostly for entertainment. communication and socializing. It was determined that they were used for this purpose. It was determined that the difference between the technological tools used by the students the total score of the metaverse scale and the average score of the digitalizationand lifestyle subscale was statistically significant. (p<0.031. p<0.013. p<0.030). In the study conducted by Tatlı et al.with nurses and nursing students. 91.2% of the participants used smartphones. Abolfotouh et al. in their study with healthcare professionals. 96.6% used smartphones and 42.3% of those who use phones used them for health applications. Dost et al. In their study with nurse students. Akman Yılmaz et al. found that the majority of students use the internet for 3-5 hours and use the internet more frequently for socializing. gaming. and shopping.Akman Yılmaz et al.conducted with nurses.it was determined that nurses generally use it for personal entertainment, leisure activities, and professional development (2,21,22,23). Similar studies in the literature support our results.

The difference between the metaverse science status of the students participating in the study and the total score average of the metaverse scale and its sub-dimensions was statistically significant (p<0.006. p<0.068. p<0.000. p<0.009. p<0.004) and yes. I know metaverse (56.2%). The metaverse scale and sub-dimension total scores of the students who said "were determined to be higher." This situation can be explained by the fact that.in parallel with technological developments. the digital and virtual world has become a way of life of the society and the students growing up in this environment follow these developments closely. Savas et al. in theirstudy. Turan et al. found that 45% of the students had heard of the concept of metaverse. In their study on teachers' metaverse knowledge levels. 68.2% of teachers heard about metaverse. Uygur et al. in their study on teacher candidates. found that 50.9% of the participants were aware of augmented reality applications (5.16,24).

Most of the students participating in the study (57.8%) thought that metaverse would take part in nursing education and patient care in the future. and the metaverse scale and subscale total scores of the students who thought this way were found to be high. In their study Talan and Kalınkara examined the opinions of students studying computer engineering regarding the use of metaverse in education; It was found that they thought "Metaverse can make the course content much more entertaining. I believe metaverse can increase my knowledge on this subject" (25). This situation can be explained by the fact that students follow the metaverse and are more willing to receive education that can take place through the metaverse.

In the study.in the correlation between the sub-dimensions of the metaverse scale.a high and positive significant relationship was found between technology and digitalization and social dimensions. and a moderate and positive significant relationship was found between technology and lifestyle dimensions. A high and positive significant relationship was found between digitalization and social and lifestyle dimensions. A low and positive significant relationship was found between social and lifestyle dimensions. Savas et al.and Turan et al.in their studies on the metaverse. similar

results were obtained regarding the relationship between the metaverse scale sub-dimensions (5,16). The fact that there is a positive relationship between the sub-dimensions of the Metaverse scale can be interpreted as students following technological and digital developments closely, and especially with the use of metaverse in many areas students are positively affected by these developments.

Limitations and strengths

It is a limitation that the study was conducted in a single center and cannot be generalized to all nursing students in the country. However. the strength of the study is that it has a high number of participants and is conducted for the first time with nursing students. providing a conceptual framework for future studies.

5. CONCLUSION AND RECOMMENDATIONS

According to the results obtained in the study.it was determined that nursing students follow today's technology and spend a long time on the internet. frequently using the internet for entertainment. communication and socialization. most of them are knowledgeable about the concept of metaverse and think that metaverse will take part in nursing education and patient care in the future. Nursing students' metavarse scale items; It has been determined that there are high rates of thoughts that a virtual living environment will be built through the metaverse. the transition from the physical world to the virtual world will be accelerated. and the metaverse will affect people's virtual communication and interaction levels.

Metaverse is one of the most advanced technological methods for simulation education.but making metaverse available in nursing education will only be possible with the availability of appropriate technological infrastructures. For this reason.it is recommended to increase the knowledge level of nursing students about the metaverse and raise awareness. to prepare fast and reliable technological environments. to develop methods that can be used in nursing education by evaluating the difficulties and advantages of the metaverse. and to carry out the necessary studies and training that will contribute to patient care.

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