RESEARCH

Health sciences students' perspectives on metaverse and digital technology use: cross-sectional descriptive study

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Abstract

Background Students' attitudes towards digital technologies affect their use of innovations in digital education. In the study, it was aimed to determine undergraduate health sciences students' views about the Metaverse and digital technology.

Methods This study was a cross-sectional descriptive study. In the study sample, 289 health sciences students who voluntarily agreed to participate in the research and filled out the online data collection form were included. The Independent Samples T-Test, Multivariate ANOVA analysis of variance (MANOVA) and Pearson correlation analysis were used. P-values less than 0.05 were considered statistically significant.

Results The mean score the participants obtained from the Metaverse Scale was 53.54 ± 9.00, indicating that their levels of knowledge and awareness about the Metaverse were high. The mean score they obtained from the Attitude Scale for Digital Technology was 135.98 ± 21.28, which indicated that displayed positive attitudes towards digital technology. There was no significant difference between the mean scores the participants obtained from the Attitude Scale for Digital Technology and the Metaverse Scale according to their departments and years in school. There was a positive and weak relationship between the Metaverse Scale scores and Attitude Scale for Digital Technology scores.

Conclusions The participants' knowledge and awareness levels about the Metaverse were high and they displayed positive attitudes towards digital technology. It is recommended that digital technologies should be used in planning undergraduate education and Metaverse platforms or applications in virtual classroom settings.

Keywords Health science, Student, Metaverse, Digital technology

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Background

Innovations in digital education, artificial intelligence and Metaverse are indispensable for learning, and educational innovation in the future [1]. In today's digital world, the Metaverse, one of the new communication tools, has entered our lives as a new technological concept and gradually developed with the penetration of the internet into all areas of our lives [2]. Metaverse is also used in the field of education by providing interaction via avatars [3, 4]. Thanks to this technology, the Metaverse, which exists in many areas of our lives, has provided an innovation for the whole world in terms of switching to distance education and discussing its importance during the COVID-19 pandemic [2]. Metaverse, still a developing multidimensional technology, is expected to have a wide range of uses in the future [5]. Thus, being aware of the awareness and opinions of students who first use innovative technologies regarding these technologies enables them to use the Metaverse world most effectively and efficiently [6]. Another concept closely related to the Metaverse is digital technology [7].

Digital technology alters individuals' lifestyles and activities, influencing how they communicate and manage their time [7]. Adapting to, learning or using new technological developments helps young individuals to play an active role in society [7]. [8].

The new generation has no worries about using and adapting to digital technology [8]. However, it has been predicted that when digital technology is compatible with the daily routines of the new generation, their effort to learn this technology will increase [8]. This change and digitalization have also contributed to advances in the field of education. Thanks to digital technologies, students and educators can interact with their classmates, and access learning resources anytime and anywhere [9]. Health science students' experiencing, internalizing, and using developing digital technologies rapidly before and after graduation is of great importance. Considering that they will take place in the delivery of health services with augmented reality (AR), virtual reality (VR), extended reality (XR), artificial intelligence and Metaverse technologies, it is thought that determining their views on the use of digital technologies and the Metaverse in undergraduate education will affect their use them in the future.

The metaverse was first mentioned in a science fiction novel called "Snow Crash" written by Neal Stephenson in 1992 although it is not a new concept [10]. [10].

In the novel, the Metaverse represents a parallel universe made up of computer programs, graphics, and designs, where users can communicate using glasses and headphones [10].

Later, a Metaverse called OASIS was mentioned in Ready Player One, a recently published novel, and in a movie adapted for the cinema [11, 12]. In the novel, the author defined the concept of metaverse as a virtual universe that combines virtual reality, augmented reality and the internet [11]. The concept of Metaverse refers to the universe where the digital elements of communication tools are gathered together today [13]. The concept of the Metaverse comes from Ancient Greek words "Meta" which means after and "Verse" which means universe [14]. [14]. According to another definition, the virtual world makes it possible to interact with people and digital elements, to communicate as if the users were in the physical world using avatars, and to perform various activities [14]. Metaverse environment refers to a technology-enabled 3D space that provides interactive experiences. In this environment, technologies such as virtual reality (VR), augmented reality (AR), virtual worlds (VW), mixed reality (MR) and extended reality (XR) are used [15]. Several studies are carried out on how the Metaverse is used in the field of health sciences by students [3, 15–19]. Most of these studies were conducted with nursing students [3, 15]. In a literature review, Moro emphasized that Metaverse can be used in health science students' anatomy and physiology courses [20]. In a systematic review, Gagne et al. determined that Metaverse interventions improved students' knowledge, self-confidence, participation and satisfaction, and supported their performance [15]. Nursing students took part in Metaverse-based core nursing skill contents (CNSC) training [3], Metaverse-based career mentoring program [16], Metaverse-based schizophrenia nursing simulation program [17], and Metaverse-based cardiopulmonary resuscitation (CPR) training [18]. Metaverse-based trainings helped students develop their basic nursing skills [3], had a positive effect on their career decision-making self-efficacy [16], and improved their CPR performance [18]. Although several studies have been conducted on Metaverse applications, the number of studies conducted to determine whether students agree to use the Metaverse and whether they have positive opinions of the Metaverse is limited [21–24]. The search for studies conducted with health science students in particular revealed a gap in the literature. Users' perception of the usefulness of digital technological innovation is an important determinant of technology adoption [21].

Although examples of educational programs based on metaverse are increasingly implemented and appear in the literature, the determinant of whether the use of digital technologies in education will become widespread or not is the students. Students' attitudes towards digital technologies or their adoption of digital technologies will pave the way for educators whether they can use this technology in their educational programs. Determining health sciences students' views on the use of digital technologies and the metaverse is of great importance in

the elimination of deficiencies in the existing literature in this field. In particular, there is a need for a comprehensive understanding of the effects of digital technologies and the metaverse on educational processes, on students' adaptation processes to these innovations, and on their implications for future professional practices. Therefore, studies should be conducted to investigate health sciences students' attitudes and experiences regarding these issues. Therefore, in order to fill the gap, conducting a study in which health sciences students' views on digital technology and the use of metaverse are determined gains importance. In this context, in Turkish literature, no studies have been conducted with students of health sciences in which their views on the Metaverse and digital technology were investigated. Therefore, in the present study, the aim was to determine the views of students of health sciences about the use of metaverse and digital technology in undergraduate education.

Methods

Study design

This cross-sectional and descriptive study was conducted online using Google Forms between January 2023 and May 2023 [25].

Sampling

The population of the study comprised 1433 students attending Izmir Bakırçay University Faculty of Health Sciences. The sample size was determined as 304 students in the OpenEpi Program with a 95% confidence interval. The e-survey was conducted between January 2023 and May 2023 with 289 students who volunteered to participate in the study. The participation rate was 95.06%. The inclusion criteria of the study were as follows: being a health sciences student at the aforementioned university, and volunteering to participate in the study. The exclusion criterion was as follows: not completing the online data collection forms.

Data collection

The data were collected using the "Students' Descriptive Information Form", "Metaverse Scale" and "Attitude Scale for Digital Technology". To protect the confidentiality of the data, data was collected via "Google forms". It took respondents approximately 5 minutes to respond to the survey form.

The e-survey link was sent to WhatsApp student groups, including only health sciences students, as a reminder once a week between January 2023 and May 2023. Of the students, those who volunteered to participate in the survey were asked to fill in the online questionnaire. Each student was allowed to complete the online questionnaire only once.

Students' Descriptive Information Form: The form the researchers prepared in line with the literature includes 16 items questioning the students' sex, age, year at school, department, daily internet usage time, experience of using digital tools in classes, use of wearable technology, will to use the Metaverse, experience of the Metaverse application or platform, and social networks they use.

Metaverse Scale (MS): The MS was used to determine students' knowledge of, attitudes towards and awareness of the Metaverse. Süleymanoğulları et al. performed the validity and reliability of the MS in 2022 [12]. The MS consists of 15 items and the following 4 sub-dimensions: technology, digitalization, social and lifestyle. The internal consistency coefficient (Cronbach's alpha) of the MS was measured as 0.813 in Süleymanoğulları et al.'s study, and 0.866 in the present study. Responses given to the items are rated on a 5-point Likert type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The lowest and highest possible scores that can be obtained from the MS are 15 and 75, respectively. As the scores obtained from the MS increase, so does the level of knowledge and awareness about the Metaverse (The higher the score obtained from the MS the higher level of knowledge and awareness about the Metaverse is) [12].

Attitude Scale for Digital Technology (ASDT): Cabı E. developed the ASDT in 2016 to determine students' attitudes towards digital technology [26]. The ASDT consists of 8 sub-dimensions and 39 items whose responses are rated on a 5-point Likert scale ranging from 1 (I totally /strongly disagree) to 5 (I totally /strongly agree). The higher the score obtained from the ASDT is the more favorable the student's attitude towards digital technology is. The internal consistency coefficient (Cronbach's alpha) of the ASDT was measured as 0.90 in Cabı E.'s study, and 0.937 in the present study.

Statistical analysis

The study data were analyzed using the IBM SPSS (Statistical Package for the Social Sciences) for Windows 25.0. While numbers, percentages, arithmetic mean and standard deviation were used for the descriptive characteristics of the students, data on their daily internet use time, digital tool usage experience in courses, use of wearable technology, will to use the Metaverse, Metaverse application or platform experience, and social networks they use were used to measure their knowledge of the Metaverse. The Kolmogorov Smirnov test was used to check whether the data were normally distributed. Because the data were normally distributed, the independent samples t-test was used to compare the relationship between the independent variables and the mean scores obtained from the Metaverse Scale and Attitude Scale for Digital Technology. The Multivariate ANOVA

Table 1 Descriptive characteristics of the participating health sciences students (*n* = 289)

Characteristics	*n* (number)	%
Sex		
Women	211	73
Men	78	27
Total	289	100
Department		
Language and Speech Therapy	36	12.5
Physical therapy and rehabilitation	30	10.4
Nursing	150	51.9
Audiology	41	14.2
Healthcare Management	32	11.1
Total	289	100
Year at school		
1st year	95	32.9
2nd year	106	36.7
3rd year	38	13.1
4th year	50	17.3
Total	289	100

Table 2 Participating health sciences students' metaverse- and digital technology-related characteristics

Characteristics	Yes		No	
	n	%	*n*	%
Have you heard the concept of metaverse before?	204	70.6	85	29.4
Do you think your Metaverse knowledge level is sufficient?	32	11.1	257	88.9
Does using the Metaverse in courses increase productivity?	241	83.4	48	16.6
Does using the Metaverse make life easier?	251	86.9	38	13.1
Do you think you are ready to use the Metaverse?	135	46.7	154	53.3
Do you have experience using the Metaverse apps or platforms?	35	12.1	254	87.9
Can the Metaverse platform be used in actual classes instead of virtual classes?	210	72.7	79	27.3
Do you have experience using digital technology in courses?	182	63.0	107	37.0
Should digital technology be used in classes?	277	95.8	12	4.2
Do you think the use of digital technology in classes makes learning easier?	268	92.7	21	7.3
Do you think the use of digital technologies in courses increases efficiency?	266	92.0	23	8.0

analysis of variance (MANOVA) was used to compare the mean scores the participating students obtained from the Metaverse Scale and Attitude Scale for Digital Technology in terms of their departments and year at school. The Pearson correlation analysis was used to analyze the relationship between the mean scores the participating students obtained from the Metaverse Scale and Attitude Scale for Digital Technology. P-values less than 0.05 were considered statistically significant.

Results

The mean age of the students participating in the study was 20.75 ± 1.77 years. The mean duration of daily internet use was 6.04 ± 3.22 h. Of the students, 73% (n: 211) were women, 51.9% (n: 150) were attending the nursing department and 36.7% (n: 106) were second-year students (Table 1).

Of the students participating in the study, 70.6% (n: 204) had heard about the concept of the Metaverse, 88.9% (n: 257) perceived their level of knowledge on the Metaverse inadequate, 83.4% (n: 241) stated that the use of the Metaverse in the courses would increase the efficiency of the course, 86.9% (n: 251) thought that the Metaverse would make their lives easier, 53.3% (n: 145) did not feel ready to use the Metaverse, 87.9% (n: 254) had no experience in using the Metaverse platforms or applications, 72.7% (n: 210) stated that Metaverse platforms could be used instead of virtual classrooms, 63% (n: 182) experienced the use of digital technology in classes, 95.8% (n: 277) stated that digital technology should be used in classes, 92.7% (n: 268) stated that digital technologies facilitated learning, and 92% (n: 266) thought that the use of digital technologies in courses would increase efficiency (Table 2).

The mean score the participating students obtained from the overall Metaverse Scale and Attitude Scale for Digital Technology were 53.54 ± 9.00 and 135.98 ± 21.28, respectively. There was no significant difference between the students from different departments and grades in terms of the mean scores they obtained from the overall Metaverse Scale and Attitude Scale for Digital Technology Scale (*p* > 0.05) (Table 3).

The comparison of the participants' views on the Metaverse using the Metaverse Scale demonstrated that the mean score obtained from the overall Metaverse Scale by those who believed that using the Metaverse in classes would increase efficiency (t: 5.130, p: 0.000) was statistically significant (Table 3). The mean score obtained from the overall Metaverse Scale by those who had the view that the metaverse would make our lives easier (t: 6.412, p: 0.000) was statistically significant (Table 3). The mean scores obtained from the overall Metaverse Scale by those who felt they were ready to use Metaverse (t: 3.976, p: 0.000) and those who were experienced in using Metaverse platforms or applications (t: 2.173, p: 0.031) were statistically significant (Table 3). The mean score obtained from the overall Metaverse Scale by those who agreed that the Metaverse platform could be used instead of virtual classrooms (t: 4.531, p: 0.000) was statistically significant (Table 3). The mean score obtained from the overall Metaverse Scale by those who agreed that digital technology should be used in courses (t: 3.143, p: 0.002) was statistically significant (Table 3). The mean score obtained from the overall Metaverse Scale by those who

Table 3 Comparison of the relationship between the independent variables and the mean scores obtained from the metaverse Scale and attitude scale for digital technology

Variables	N	Attitude scale for digital technology			Metaverse Scale		
		Mean	Std. deviation	Test statistics	Mean	Std. deviation	Test statistics
Department							
Language and Speech Therapy	36	132.55	22.60	F:0.391	54.1944	7.90	F:0.596
Physical therapy and rehabilitation	30	136.46	17.87	p:0.815	52.1667	8.42	p:0.666
Nursing	150	136.14	21.30		53.1267	9.32	
Audiology	41	135.75	19.28		54.4146	9.36	
Healthcare Management	32	138.93	25.46		54.9688	8.90	
Year at school							
1st year	95	135.49	19.93	F:0.087	51.73	9.73	F:2.114
2nd year	106	136.14	19.98	p:0.967	54.59	8.12	p:0.099
3rd year	38	137.44	21.20		55.00	8.26	
4th year	50	135.48	26.50		53.66	9.56	
Sex							
Men	78	142.91	23.47	t:3.424	53.67	9.88	t:0.152
Women	211	133.42	19.87	p:**0.001***	53.49	8.68	p:0.879
Does using the Metaverse in courses increase productivity?							
Yes	241	136.36	19.86	t:0.678	54.70	8.18	t:5.130
No	48	134.08	27.50	p:0.499	47.70	10.63	p:**0.000***
Does using the Metaverse make life easier?							
Yes	251	136.60	21.36	t:1.281	54.78	8.22	t:6.412
No	38	131.86	20.54	p:0.201	45.36	9.74	p:**0.000***
Do you think you are ready to use the Metaverse?							
Yes	135	138.25	22.44	t:1.705	55.74	8.24	t:3.976
No	154	133.99	20.07	p:0.089	51.62	9.24	p:**0.000***
Do you have experience using Metaverse apps or platforms?							
Yes	35	142.00	24.05	t:1.790	56.62	9.47	t:2.173
No	254	135.15	20.79	p:0.075	53.12	8.87	p:**0.031***
Can the Metaverse platform be used in actual classes instead of virtual classes?							
Yes	210	136.49	20.49	t:0.662	54.97	8.37	t:4.531
No	79	134.63	23.32	p:0.508	49.75	9.56	p:**0.000***
Do you have experience using digital technology in courses?							
Yes	266	136.42	21.29	t:3.057	53.99	8.72	t:1.389
No	23	130.91	20.94	p:**0.002***	48.39	10.68	p:0.166
Should digital technology be used in classes?							
Yes	277	136.23	21.244	t:0.940	53.89	8.72	t:3.143
No	12	130.33	22.403	p:0.348	45.67	12.06	p:**0.002***
Do you think the use of digital technology in classes makes learning easier?							
Yes	268	136.45	21.34	t:1.329	53.87	8.81	t:2.216
No	21	130.05	20.14	p:0.185	49.38	10.61	p:**0.027***
Do you think the use of digital technologies in courses increases efficiency?							
Yes	266	136.42	21.30	t:1.192	53.99	8.73	t:2.898
No	23	130.91	20.94	p:0.234	48.39	10.68	p:**0.004***

*$p<0.005$, t: independent samples t test, F: MANOVA

There was a positive and weak relationship between the scores obtained from the Metaverse Scale and Attitude Scale for Digital Technology ($r=0.263$, $p=0.00$)

agreed with the view that the use of digital technology in courses would make learning easier (t: 2.216, p: 0.027) was statistically significant (Table 3). The mean score obtained from the overall Metaverse Scale by those who agreed with the view that the use of digital technology in courses would increase efficiency (t: 2.898, p: 0.004) was statistically significant (Table 3).

Discussion

In the present study, the aim was to determine the health sciences students' views about the use of the Metaverse and digital technology in undergraduate education.

There has been a significant increase in the use of technology in all areas of our lives in recent years [27]. Using digital technologies as an effective pedagogical tool to

improve the teaching and learning processes facilitates learning [28–30]. Therefore, it is important to know health sciences students' views of digital technologies and to develop appropriate infrastructures so that they can keep up with today's changing digital norms.

In the present study, the participating students' mean duration of daily internet use was 6.04±3.22 h. In İlk's study (2022), 44.5% of the students stated that they used the internet 3–4 h a day [29]. In another study carried out with the Z generation, young people spent 1.5–4 h on the computer by watching movies, TV series, etc., which suggests that the mean duration of daily internet use is similar in the similar age groups [30].

In the present study, of the students, more than half had heard of the concept of metaverse before, the vast majority did not perceive their knowledge of the Metaverse adequate and thought that the Metaverse could facilitate their daily life, more than half did not feel they were ready to use Metaverse, and almost all did not have experience of using the Metaverse platforms or applications. The students' perceiving their Metaverse knowledge level insufficient and not feeling ready to use metaverse platforms can be explained by the fact that they did not have any experience in using the Metaverse platforms. Similarly, in another study, 70.6% of the students had never used the Metaverse before [24]. In order for education to keep up with current digital technologies, students should be more experienced in these platforms. As the students become more experienced, the aspects of the use of digital technologies in education that should be developed or adapted will become clearer.

One of the surprising results of the present study was that although the students were not experienced in using the Metaverse platform, the majority of them stated that the Metaverse could be used instead of virtual classroom platforms. This was probably because they had heard of the concept of the Metaverse before. In another study conducted with students, it was stated that the Metaverse platform facilitated communication between students during the courses and ensured collaborative learning [31]. In the present study, the students stated that the use of Metaverse in the courses would increase the efficiency of the course although they did not perceive their knowledge of the Metaverse sufficient. As in the present study, in Al-nawaiseh et al.'s study (2023), the use of Metaverse in the classroom setting helped learning [31]. In another study, 67.6% of the students wanted to use the Metaverse in the classroom and 44.1% of them stated that the Metaverse would ensure permanent and meaningful learning in the classroom [24]. The results of the present study suggest that the students had opinions favoring the use of metaverse in classes. In a study in which higher education students' views of the Metaverse were questioned,

most of the students believed that the Metaverse would help their learning better [23].

In the present study, more than half of the students experienced the use of digital technology in the courses and almost all of them thought that digital technology should be used in classes, that digital technologies would facilitate learning and that the use of digital technologies in the classes would increase efficiency. The widespread use of digital platforms in universities [29] can be explained by the fact that students have the opportunity to experience the positive contributions of digital technology use to their learning processes. In another study conducted with health science students, 68% of the students used digital technology for learning purposes [28]. However, several problems such as understanding, adapting and designing educational systems in accordance with current technological trends have arisen in the integration of digital technologies into education [32]. While lack of experience and low digital infrastructure capacity are among institutional problems [32], the problem experienced students is their digital literacy levels [33], and problems experienced by trainers are that they lack experience and that their roles in the classroom change from being educational to being facilitators and guides [33]. However, the area where digital technologies are most effective in education is that they help create collaborative and cooperative learning environments [33].

In the present study, the mean score the students obtained from the overall Metaverse Scale was 53 out of 75 points. This result can be interpreted as the participants' knowledge and awareness levels regarding the Metaverse were high. Similarly, in another study, the sports science students' mean score for the awareness of the concept of the Metaverse was above the average [4]. In the present study, the mean score the students obtained from the Attitude Scale for Digital Technology was 135.98 out of 195 points. This finding can be interpreted as the students displayed positive attitudes towards digital technology. Workie et al. (2023), stated that 46.8% of the students displayed positive attitudes towards digital technology [28]. In another study, the students whose attitudes towards digital technology were positive were more likely to use digital technology [34]. In the current study, a weak positive correlation was determined between the students' attitudes towards digital technology and their level of knowledge and awareness about the metaverse. This finding can be interpreted as the higher the level of knowledge and awareness of the Metaverse, the more favorable the students' attitude towards digital technology.

In the present study, as in the literature [4], there was no significant difference between the students from different departments and grades in terms of the mean scores they obtained from the overall Metaverse Scale

and Attitude Scale for Digital Technology Scale ($p > 0.05$). However, the sex variable led to a significant difference between the mean scores the students obtained from the overall Attitude Scale for Digital Technology (t: 3,424, p: 0,001). As in the present study, in two other studies, the sex variable led to a significant difference between the students' attitude towards digital technology [29, 30]. According to the 2022 data released by the Turkish Statistical Institute (TÜİK), male individuals between the ages of 16–24 years displayed more favorable attitudes towards digital technology than did female individuals [35].

In the present study, those who thought that using the Metaverse and digital technology in courses would increase productivity, those who thought that the Metaverse would make our lives easier, those who felt ready to use the Metaverse, those who had experience of using the Metaverse platforms or applications, and those who agreed that the Metaverse platform could be used instead of virtual classrooms, and those who agreed that the use of digital technology in courses would facilitate learning and increase efficiency obtained higher scores from the Metaverse Scale. There was a statistically significant difference between their scores and the other students' scores ($p < 0.05$). Similarly, in Talan and Kalınkara's study (2022), the students agreed with the view that the Metaverse had pedagogical benefits [24]. The mean score obtained from the Attitude Scale for Digital Technology by the participants who had experience in using digital technology in the courses was statistically significantly higher than was that of the participants who did not have experience (t:3.057, p:0.002). Digital technology is critical for the academic performance development of students [28], and their attitudes are positively affected as they experience digital technology, which suggests that positive views on the use of Metaverse and digital technologies in education are associated with higher scores and more positive attitudes towards these technologies. It can be concluded that the integration of digital technologies and the Metaverse into education can improve students' productivity and their learning experience.

The present study has some limitations. One of the limitations is that it is a cross-sectional study. Another limitation is that the findings were obtained from a single institution. Thus, the results obtained from the present study are applicable only to the students surveyed and they cannot be generalized to all health sciences students. The other limitation is that there was no educational initiative about Metaverse in the university where the study was carried. To overcome these limitations, studies with larger samples including health sciences students studying at different institutions both in Turkey and in other countries of the world can be carried out, and action research can be conducted on this topic.

Education policies can be developed to promote the use of Metaverse and digital technologies, which are considered innovative approaches used in educational programs, and educators can be encouraged to participate in faculty development programs to use these technologies.

Conclusions

In the present study, it was aimed to determine the digital technology-related attitudes of health sciences students attending a public university about metaverse and their awareness of the Metaverse. Therefore, as the topic of the study is the first conducted with health science students, it is expected to fill the knowledge gap regarding digital technology attitudes and Metaverse awareness of those students. It was determined that health sciences students displayed positive attitudes towards digital technology and their level of awareness of the Metaverse was above the average. It is recommended that educators in the field of health sciences should provide students with appropriate technology-enriched educational environments by using the data on digital technology and Metaverse obtained in the present study.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12912-024-02309-w.

Supplementary Material 1

Data availability
The data associated with the paper are not publicly available but are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
Ethical approval was obtained from the "Noninvasive Clinical Research Ethics Committee of Izmir Bakırçay University" (date: 15/03/2023 no: 921). Participation in this research was voluntary. The students accepted to participate in the study by checking a button on the questionnaire form. The consent that was obtained from all of the nursing students was informed. Karaca et al. (2021), who had developed the scale, were consulted about the use of the scale on nursing students, and their permission was obtained via e-mail.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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