Assessment of Mobil Device Usage Duration and Lifelong Learning Tendencies Among Medical Students

Tıp Fakültesi Öğrencilerinin Mobil Cihaz Kullanım Süreleri ve Yaşam Boyu Öğrenme Eğilimlerinin Değerlendirilmesi

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Abstract

Background: In the present day, where scientific knowledge in the field of healthcare accumulates progressively, it is essential for healthcare professionals to regularly update their knowledge and skills. Despite our awareness of the need for continuous professional development, less is known about how medical students experience and perceive lifelong learning. The aim of this study was to determine the smarthphones as a mobile device usage duration and lifelong learning tendencies of medical students and evaluate the relationship between them.

Methods: Within the scope of the research, data were collected from 751 students who were studying at the Çanakkale Onsekiz Mart Universty, Faculty of Medicine and voluntarily participated in the study. The data collection instruments included the lifelong learning tendencies scale and survey questions related to demographic variables, such as the time participants spend on personal development in social networks, online/offline gaming, and social media. SPSS version 25 software was used for data analysis. Descriptive analyses were conducted to provide information about the general characteristics of the groups. Differences between scale score and sub-dimensions were compared with Kruskal-Wallis and Mann-Whitney U tests in terms of other variables.

Results: In the research, the average score for lifelong learning tendencies of medical students

Anahtar Sözcükler: Tıp Eğitimi, Yaşam Boyu Öğrenme, Mobil Cihaz Kullanım Süreleri

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was calculated as 96.88 ± 18.09. Based on the obtained average scores, it was observed that the lifelong learning tendency levels of medical students were at a moderate level. In terms of motivation and perseverance dimensions, it was determined that females had higher scores compared to males and this was statistically significant. According to the research, findings the participating students spend an average of 3.76±2.19 hours per day on social media, an average of 1.12±1.71 hours on online/ offline games and an average of 2.46±0.90 hours on web pages and mobile networks for personal development. It was seen that female students spent more time on social networks compared to males ($p < 0.001$, Z: 4.250), and male students spent more time on online/offline games compared to females ($p < 0.001$, Z: 9.761). There was no significant difference ($p > 0.005$) found between the time spent on websites for personal development and the variables of gender and term. However, it was understood that those who spent no time on web pages for personal development had lower scores compared to those who spent other times in terms of their lifelong learning tendencies.

Conclusion: The data obtained regarding the lifelong learning and mobil device usage duration of medical students can provide a foundation for enhancing medical students' lifelong learning orientations and planning more effectively. Medical students should be given the opportunity to take responsibility for keeping up with the rapidly changing technological and scientific knowledge in the field of medicine. Their learning motivations should be increased, and they should be guided on how to learn, especially on how to access current scientific sources online.

Özet

Amaç: Sağlık alanında bilimsel bilginin kümülatif olarak giderek arttığı günümüzde sağlık profesyonellerinin bilgi ve becerilerini düzenli olarak güncellemeleri gerekir. Bu açıdan sürekli mesleki gelişime olan ihtiyacı bilmemize rağmen, tıp fakültesi öğrencilerinin sürekli mesleki eğitimin bir parçası olan yaşam boyu öğrenmeyi nasıl deneyimledikleri ve algıladıkları hakkında daha az şey bilinmektedir. Yapılan çalışmada, Tıp Fakültesi öğrencilerinin mobil cihaz kullanım süreleri ve yaşam boyu öğrenme eğilimlerinin belirlenmesi ve aralarındaki ilişkinin değerlendirilmesi amaçlanmıştır.

Yöntem: Araştırma kapsamında Çanakkale Onsekiz Mart Üniversitesi, Tıp fakültesinde öğrenim gören ve araştırmaya katılımda gönüllü olan 751 öğrenciden veri toplanmıştır. Veri toplama aracında, yaşam boyu öğrenme eğilimleri ölçeği, öğrencilerin gün içerisinde sosyal medya, çevrimiçi / çevrimdışı oyunlar ve kişisel gelişim için mobil ağlarda geçirdikleri ortalama süreler gibi demografik değişkenler anketi yer almıştır. Elde edilen verilerin analizinde SPSS versiyon 25 programı kullanıldı. Grupların genel özellikleri hakkında bilgi vermek amacı ile tanımlayıcı analizler yapıldı. Ölçek toplam skoru ve alt boyutlarına ait toplam puanlar arasındaki farklılıklar ile diğer özellikler açısından birbirleriyle Kruskal Wallis ve Mann-Whitney U testi ile karşılaştırıldı.

Bulgular: Araştırmada tıp fakültesi öğrencilerinin yaşam boyu öğrenme eğilim puan ortalaması 96.88±18.09 olarak hesaplanmıştır. Elde edilen puan ortalamalarına göre tıp fakültesi öğrencilerinin yaşam boyu öğrenme eğilimi düzeylerinin orta düzeyde olduğu görülmüştür. Motivasyon ve sebat alt boyutlarında kadınların erkeklere göre daha yüksek puana sahip olduğu ve istatistiksel olarak anlamlı olduğu tespit edilmiştir. Katılımcı öğrenciler günde ortalama 3,76±2,19 saatini sosyal medyada, ortalama 1,12±1,71 saatini çevrimiçi/çevrimdışı oyunlarda ve ortalama 2,46±0,90 saatini kişisel amaçlı web sayfalarında geçirmektedir. Kadın öğrencilerin erkeklere göre daha fazla sosyal ağlarda zaman geçirdiği ($p<0.001$, Z: 4.250) ve erkek öğrencilerin kadınlara göre çevrim içi/dışı oyunlar için daha fazla zaman geçirdikleri ($p<0.001$, Z: 9.761) belirlenmiştir. Kişisel gelişim için web sayfalarında geçirilen zaman ile cinsiyet ve dönem değişkenleri

arasında anlamlı farklılık olmadığı (p>0.005) belirlenmiştir. Kişisel gelişimleri için web sayfalarında geçirdikleri zaman grupları ile yaşam boyu öğrenme eğilimleri arasında ise hiç zaman geçirmeyenlerin diğer zaman geçirenlere göre daha düşük puana sahip olduğu tespit edilmiştir.

Sonuç: Tıp fakültesi öğrencilerinin yaşam boyu öğrenme eğilimleri ve mobil cihaz kullanımları ile ilgili elde edilen veriler tıp fakültesi öğrencilerinin yaşam boyu öğrenme yönelimlerini arttırabilmek ve daha etkili bir şekilde planlamak için bir temel sağlayabilir. Tıp fakültesi öğrencilerinin hızla gelişen tıp alanındaki teknolojik ve bilimsel bilgi değişikliklerinin takibinde sorumluluk almalarına fırsat vermeli, öğrenme motivasyonları arttırılmalı ve öğrencilere nasıl öğrenecekleri konusunda, özellikle güncel bilimsel kaynaklara internet üzerinden nasıl ulaşacaklarına dair rehberlik edilmesi gerektiği ortaya çıkmaktadır.

INTRODUCTION

Continuous medical education (CME) is a broadly defined educational process that assists physicians in completing their professional responsibilities in a more effective and efficient manner. According to the American College of Graduate Medical Education's competency definition, the sustainability of the medical profession after certification has four components. One of these components is lifelong learning and self-assessment (1). Additionally, lifelong learning is also defined as one of the "Professional and Personal Development" competencies of medical students in the "National Core Education Program" (UCEP-2020) published by the Council of Higher Education (YÖK) in Turkey in 2020 and regularly reviewed by medical school deans. The medical profession, which is achieved as a result of the education given in medical school, requires taking a role as a lifelong learner (2).

Lifelong learning is a continuous process where learners gain knowledge and skills through peer support to be applied to their practice (3). Lifelong learning is different from the learning of undergraduate students, medical students, and residents. As opposed to the short time spent in formal education, physicians spend multiple decades as practicing physicians, making lifelong learning crucial for safe patient care (4,5). The physician's motivation plays a significant role in lifelong learning. According to the self-determination theory of motivation, there are two types of motivation sources: autonomous motivation (AM) and controlled motivation (CM) (6). AM is associated with intrinsic motivating factors and is typically a longer-lasting, positive type of motivation. CM is associated with extrinsic sources of motivation, such as an incentivized reward or punishment avoidance. With CM, motivating factors are shorter-lasting and more negative (6). In a 2018 study in the Netherlands, physicians were surveyed to identify their motivational profiles (7). The study found that female physicians were more likely to have a high degree of AM than their male counterparts. Physicians in surgical specialties were more likely to have a high degree of AM. Interestingly, the age of the physician and length of practice negatively correlated with motivation, and these groups were more likely to have less AM and more CM factors. Since it is well known that motivation for lifelong learning is associated with more AM, program developers for medical schools should understand the underlying motivations of their target audience and try to develop environments that stimulate each learner (7). Examples of lifelong learning include simulation, coaching, and communities of practice.

Continuous medical education and continuous professional development are essential components of lifelong learning. They can be considered as important, if not more so, as basic medical education and postgraduate medical education (8). In today's world where scientific knowledge in the healthcare field is cumulatively increasing, healthcare professionals must regularly update their skills even after graduation. While basic medical education and postgraduate medical education are more structured and have a defined duration,

continuous professional development in a medical career is a less structured process that continues throughout one's professional life and lasts much longer. Hence, continuous professional education and lifelong learning are not only a professional requirement for every physician but also a prerequisite for improving the quality of healthcare services (9). Additionally, the continuous professional development and lifelong learning of healthcare service providers are of paramount importance for ensuring patient safety and societal trust in the healthcare system (10,11).

The teaching and learning techniques applied in basic medical education should be of such a nature and variety that they empower, encourage, and support students in taking responsibility for their learning. Students should be instilled with the idea that keeping their knowledge and skills up-to-date is their professional responsibility both during basic medical education and after graduation. To achieve this, medical students should develop lifelong learning skills and use them to practice evidence-based medicine and continuously improve within the framework of continuous professional development, allowing them to meet changing healthcare needs of individuals, communities, and the healthcare delivery system over time (12,13). Although we recognize the need for continuous professional development, less is known about how medical students experience and perceive lifelong learning as a part of continuous professional education.

As known, technology plays a paramount role in creating opportunities in various aspects of life, including the field of education. The use of these technologies in continuous education will provide many benefits and contributions. These contributions can be summarized as creating education opportunities that are independent of location, time, and duration, at its most basic level (20). Smartphones as a mobile device, with their constant internet access and accessible availability, can be perceived as the most easily accessible source of information in today's world. In addition to the benefits they offer to users, it has been reported that their excessive and frequent use poses a risk of dependency (21, 22). Excessive use of these devices has also been associated, with various negative social and health issues, such as low academic and job performance, decreased social interaction, traffic accidents, and mental health problems (depression and anxiety, decrease in psychological well-being) (22).

Tolunay Oflu and Bükülmez (21) determined in their study with medical students that the rate of smartphone addiction (dependent or potential dependent) was 23.5%. Additionally, the average daily smartphone usage time (hours) was found to be 4.7±2.3 (14). On the other hand students utilize smartphones as learning aids for various reasons, including ease of use, portability, providing comprehensive learning experiences, offering multiple sources, enabling multitasking (23, 24). In this regard, the importance of developing educational applications for smartphones is increasing, and it is crucial to plan for directing students' smartphone as a mobile device usage to contribute to educational processes and lifelong learning.

The data obtained regarding the lifelong learning and mobil device usage duration of medical students can provide a foundation for enhancing medical students' lifelong learning orientations and planning more effectively. In this regard, the study aims to determine the lifelong learning tendencies and mobil device usage duration of medical students and assess the relationship between them.

MATERIAL and METHOD

The study a cross-sectional research that involves comparative analyses of lifelong learning tendencies among students enrolled in a medical faculty, with a focus on academic term, gender, and duration of smart device usage. The research population consists of 1082 students studying at the Çanakkale Onsekiz Mart University, Faculty of Medicine. The intention of the study is to encompass the entire population and collect data from all participants. The research is conducted on a voluntary participation basis within the framework of ethical committee approval. Consequently, the

sample of the study comprises 751 students who voluntarily agreed to participate. The research data were collected by creating an online form during the 2023 academic term. This online form included the following demographic data of the students; gender, academic term, and the average time spent on mobile smart devices, social media networks, online/offline gaming, and personal development throughout the day (hours) and graduated high school type and LLT scale. Ethical approval was Çanakkale Onsekiz Mart University, Scientific Research Ethics Committee to conduct the study (Decision number / Decision Date: 21-29 / 01.12.2022).

The Lifelong Learning Tendencies (LLT) Scale used in the research was developed by Coşkun and Demirel (25) and adapted to the field of medicine by Arslan et al. (26). A low score obtained from the LLT scale, which consists of 25 items (min. 25 – max. 150), indicates a high level of LLT. High scores in the sub-dimensions of the scale, Motivation and Perseverance, indicate high motivation and perseverance, while high scores in the sub-dimensions of Learning Arrangement Deficiency and Curiosity Deficiency indicate low deficiency in learning arrangement and curiosity (26). In our research, internal consistency was assessed using the data collected from 751 participants, and the Cronbach's alpha value for the Lifelong Learning Tendencies Scale was determined to be 0.910. When separate internal consistency analyses were conducted for each sub-dimension of the lifelong learning tendencies scale, the values were calculated as follows: 0.925 for the Motivation sub-dimension, 0.950 for the Perseverance sub-dimension, 0.941 for the Learning Arrangement Deficiency sub-dimension, and 0.950 for the Curiosity Deficiency sub-dimension.

In the dataset, survey questions related to demographic variables were included, where participants specified their gender, academic term, and the average time spent on mobile smart devices, social media networks, online/offline gaming, personal development throughout the day (hours), and graduated high school type. The average time (hour) spent on mobile smart devices on social media networks, online/offline gaming, and personal development throughout the day has been categorized into five groups. These categories are as follows: those who spend no time, those who spend less than 1 hour, those who spend 1-2 hours, those who spend 3-5 hours, and those who spend more than 5 hours. The time spent by the students was collected as a continuous variable, but it was transformed into a categorical variable by the researchers in order to analyse it appropriately.

In the analysis of the data obtained in the research, the SPSS version 25 program (Statistical Packages for the Social Sciences, IBM Corp.; Armonk, NY, USA) was used. Descriptive analyses were performed to provide information about the general characteristics of the groups. Data for continuous variables were summarized as Mean ± Standard Deviation, and data for categorical variables were presented as numbers and percentages. Numerical variables were checked for normality using the Kolmogorov-Smirnov test and examined for their skewness and kurtosis values. Differences between the total scores for the scale and its sub-dimensions were compared with Kruskal-Wallis and Mann-Whitney U tests concerning other characteristics. Pairwise comparisons were applied for multiple comparison tests. Values with $p < 0.05$ were considered statistically significant.

FINDINGS

Out of 751 students who participated in the research, 56.6% are female, 28.9% volunteered for the research in term I, and those who joined the research in term VI make up 6% of the participants. Social Media represents the entirety of applications where users interact using network technologies. With the age of technology, access times to mobile communication tools, online/offline games, social media, and online educational resources have steadily increased. According to the research, the participating students spend an average of 3.76±2.19 hours (min: 0 - max: 12) per day on social media, an average of 1.12±1.71 hours (min: 0 - max: 10) on online/offline

Table 1. Distribution of Demographic Variables of Participants and Average Time Spent on the Mobil Device During the Day (n=751)

Variables	Groups	n	%
Gender	Female	425	56.6
	Male	326	43.4
Term	Term I	217	28.9
	Term II	159	21.2
	Term III	131	17.4
	Term IV	103	13.7
	Term V	96	12.8
	Term VI	45	6.0
Mobil Device Usage Duration (Average time spent per day / hour)	**Groups**		
	X̄ ±ss	**Min**	**Max**
Time Spent on Social Networks	3.76±2.19	0	12
Time spent on the Internet for Personal Development	2.46±0.90	0	12
Time Spent on the Internet for Gaming	1.12±1.71	0	10

For numerical variables, descriptive statistics are given in the form of mean (X̄) ± standard deviation (ss), and for categorical variables, they are presented as counts and percentages (%). (Min: Minimum - Max: Maximum)

games, and an average of 2.46±0.90 hours (min: 0 - max: 12) on web pages and mobile networks for personal development (Table 1).

In the comparative analysis conducted based on the duration of internet usage and the gender variable, it was determined that female participants spent more time on social networks compared to males ($p<0.001$, Z: 4.250), there was no significant difference in time spent on web pages for personal development based on gender ($p>0.005$), and males spent more time on online/offline games compared to female participants ($p<0.001$, Z: 9.761).

When the time spent on the internet based on the academic term of medical students was compared, a significant difference in time spent on online/offline games was found according to the median scores ($p=0.029$, X: 12.250). This difference was determined to be due to V-term students spending more time compared to I and II-term students. However, there was no significant difference between the time spent on web pages for personal development and time spent on social networks concerning the academic terms ($p>0.005$).

In the research, the mean total scale score for medical faculty students' lifelong learning was found to be 96.88±18.09 (min. 44, max. 150) points. It can be said that the LLT of medical students is at a moderate level. High scores in the sub-dimensions of the scale, motivation, and perseverance, indicate high levels of motivation and perseverance. In contrast, high scores in the sub-dimensions of lack of regulation and lack of curiosity suggest that there is a low level of lack of regulation and lack of curiosity in learning. Within the scope of the research, medical students' motivation score averages were found to be 18.71±3.80 (min. 4, max. 24), perseverance score averages were 35.68±7.43 (min. 8, max. 48), lack of regulation scores in learning organization were 16.68±6.82 (min. 5, max. 30), and in the sub-dimension of lack of curiosity, the score was 25.81±9.78 (min. 8, max. 48). According to the calculated scores, it indicates that medical students have high motivation and perseverance, and their lack of regulation and lack of curiosity in learning are at a moderate level.

When the sub-dimensions of the Lifelong Learning Tendency Scale were compared by gender, it was determined that there was a statistically significant difference in the participants' motivations, perseverance (for each, $p<0.005$). These differences were found to be attributed to women having higher scores than men in the Motivation and Perseverance dimensions (Table 2).

Table 2. Comparison of Lifelong Learning Tendency Scale and Sub-dimensions by Gender. (n=751)

Scale Total and Sub-dimension Scores	Gender				Z	P
	Female		Male			
	$\bar{X}$ ±ss	Median (Q_1-Q_3)	$\bar{X}$ ±ss	Median (Q_1-Q_3)		
Lifelong Learning Tendency Scores	102.98±20.6	98(86-109)	102.81±20.3	95(86-97)	1.184	0.070
Motivation	19.04±3.8	19(16-21)	18.29±3.8	18(16-20)	3.016	**0.003**
Perseverance	36.14±7.5	36(32-40)	35.09±7.4	35(32-40)	2.224	**0.025**
Deficiency in Learning Organization	17.02±7.18	17(10-24)	16.25±6.3	16(10-20)	1.146	0.252
Curiosity Deficiency	26.18±10.1	26(16-35)	25.32±9.4	25(16-32)	1.041	0.298

The comparison of the median score of the total and sub-dimensions of the scales with the time groups spent on social networks, games, and personal development with mobil devices and the internet was examined according to Table 3. Based on the time spent on social networks, it was determined that the group spending an average of two hours and below on the Lifelong Learning Tendency Scale total and Lack of Learning Organization dimension had higher scores than the group spending two hours and above.

When the total and sub-dimension median scores of the scale were compared with the time groups that the students participating in the study spent on the internet for their personal development, the Lifelong Learning Tendency Scale total showed a statistically significant difference in the Motivation and Persistence dimensions. The reason for this difference is that in the Motivation and Perseverance sub-dimensions, those who did not spend any time had lower scores compared to those spending two hours or more, and those spending one hour or less had lower scores compared to those spending five hours or more. In the Lifelong Learning Tendency Scale total, it was determined that only those who spent no time had lower scores compared to those who spent other amounts of time.

When the time spent on playing games is compared with the total and sub-dimension median scores of the Lifelong Learning Tendency Scale, a statistically significant difference was determined in the Motivation and Curiosity Deficiency dimensions. In the Motivation dimension, those who did not spend any time on the internet had higher scores compared to the groups spending two to five hours. In the Curiosity Deficiency dimension, those who did not spend any time had higher scores compared to those spending five hours or more. Additionally, in the Lifelong Learning Tendency Scale total score, those who did not spend any time had higher scores compared to those spending two hours.

DISCUSSION

In the scope of the research, the average scores obtained indicate that medical students have a moderate level of lifelong learning tendencies (96.88±18.09), with high levels of motivation (18.71±3.80) and perseverance (35.68±7.43) in terms of the sub-dimensions of the scale. They also exhibit a moderate level of deficiencies in learning regulation (16.68±6.82) and curiosity deficits (25.81±9.78). Similarly to our research, studies conducted using the scale developed by Coşkun and Demirel (25) and adapted to the field of medicine by Arslan et al. (26) were examined. Different lifelong learning tendency scores were identified among various student groups in these studies (29,30,31,32,33,34). This contrasts with the findings of Dikmen et al. (29) who conducted a study on the students of Sakarya University Medical Faculty and reported that students scored 56.41±17.1 points on the LLT scale, indicating that the students

Table 3. Comparison of Participants' Time Spent on Mobile Devices with Lifelong Learning Tendency Scale and Sub-dimensions (n=751)

Groups and Daily Allocated Time (hours)		LLT		LLT - CD		LLT - DLO		LLT - P		LLT- M	
		Median [Q_1-Q_3]	**X̄ ±ss**	**Median [Q1-Q3]**	**X̄ ±ss**	**Median [Q1-Q3]**	**X̄ ±ss**	**Median [Q1-Q3]**	**X̄ ±ss**	**Median [Q1-Q3]**	**X̄ ±ss**
Time Spent on Social Networks	None	96(86-98)[ab]	108,8±20.0	24(16-32)[ab]	23.67±10.4	15(10-18)[ab]	15.47±7.6	38(32-43)	38.27±6.5	19(16-21)	18,67±**3.8**
	<1	97(86-99)[ab]	99.92±23.1	27(16-37)[ab]	27.35±10.2	17(10-23)[ab]	16.74±6.8	35(32-40)	35.03±8.6	18(16-21)	17.98±**4.5**
	1-2	103(87-120)[a]	99.84±19.9	28(18-37)[a]	28.13±10.5	19(12-26)[a]	18.80±7.3	37(32-40)	36.51±7.5	19(16-22)	19.26±**3.8**
	3-5	96(86-102)[b]	103.8±20.3	25(16-32)[ab]	25.38±9.5	16(10-22)[b]	16.30±6.7	36(32-40)	35.73±7.2	19(16-20)	18.79±**3.6**
	5<	92(86-94)[b]	104.2±20.1	24(16-29)[b]	23.90±8.9	16(10-19)[b]	15.62±6.1	35(32-40)	34.56±7.4	18(16-20)	18.2±**3.8**
	X^2/Z	20.769		14.086		15.207		6.369		8.849	
	p	**<0.001**		**0.007**		**0.004**		0.173		0.065	
Time spent on the Internet for Personal Development	None	89(86-88)[a]	102.10±23.1	24(16-28)	23.61±9.1	15(10-19)	15.45±6.0	33(27-40)[a]	32.88±8.9	17(16-20)[a]	17,27±**4.0**
	<1	95(86-99)[b]	103.59±19.4	25(16-31)	24.99±8.8	16(10-20)	16.10±6.2	35(32-40)[ab]	35.18±7.0	18(16-20)[ab]	18.49±**3.6**
	1-2	100(86-117)[b]	102.26±19.1	27(17-35)	26.92±10.0	17(10-25)	17.37±7.3	36(32-40)[bc]	36.48±6.5	19(16-21)[bc]	19.07±**3.5**
	3-5	98(86-104)[b]	102.19±22.3	26(16-34)	26.42±10.4	17(10-24)	16.99±7.1	36(32-40)[bc]	35.88±8.1	19(16-21)[bc]	18.71±**4.1**
	5<	99(86-113)[b]	106.68±18.5	25(16-35)	24.89±10.6	17(10-22,5)	16.77±7.0	37(33,5-41)[c]	37.30±7.0	20(20-22)[c]	20.05±**3.5**
	X^2/Z	18.393		7.993		3.925		11.068		20.687	
	p	**0.001**		0.092		0.416		**0.026**		**<0.001**	
Time Spent on the Internet for Gaming	None	100(86-115)[a]	102.04±20.7	27(16-35.5)[a]	26.84±10.3	17(10-25)	17.40±7.2	36(32-40)	36.19±7.5	19(16-22)[a]	19.09±3.9
	<1	95(86-98)[ab]	103.43±20.4	25(16-32)[ab]	25.13±9.3	16(10-21)	16.29±6.7	35(32-40)	35.22±7.6	19(16-20)[ab]	18.63±3.6
	1-2	92(86-89)[b]	104.80±20.1	24(16-26)[ab]	23.65±8.4	15(10-18)	15.32±5.8	35(32-40)	34.86±6.8	18(16-20)[b]	17.91±3.5
	3-5	94(86-96)[ab]	102.95±20.2	25(16-31)[ab]	25.07±9.2	16(10-19)	15.85±5.9	35(32-40)	34.92±7.1	18(16-20)[b]	17.96±3.8
	5<	92(86-87.5)[ab]	110.06±20.4	22(16-26)[b]	21.87±8.2	15(10-18.5)	14.69±5.9	37(32-41)	36.94±7.0	19(16-22.5)[ab]	18.69±4.2
	X^2/Z	15.044		10.155		7.786		5.947		17.464	
	p	**0.005**		**0.038**		0.100		0.203		**0.002**	

Descriptive statistics were provided in the format of mean ± standard deviation and median [Q1-Q3]. The p-values that are indicated in bold were considered statistically significant ($p<0.05$). X̄: Mean, ss: Standard deviation, a-c: No difference between variables with the same letter. LLT: Lifelong Learning Tendency, CD: Curiosity Deficiency, DLO: Deficiency in Learning Organization, S: Perseverance, M: Motivation.

had a high level of LLT. Arslan (30), in their research on nursing students, also reached the conclusion that students had high total scores on the LLT scale. Similarly, Güçlü et al. (31) conducted a study on the lifelong learning tendencies of students in the Faculty of Health Sciences and found that these students had a good level of LLT.

The study found no significant difference between academic term levels and LLT scores. Consistent with the research findings, Arslan (30), in his study on nursing students, also found that students' LLT total scores did not show significant differences based on their academic term levels. On the other hand, Dikmen et al. (29) mentioned in their research that third and IV-term students had significantly higher lifelong learning tendency scores compared to first and II-term students. In contrast to our research findings, Gayef and Alptürk (32) found in their study that the lifelong learning tendency total scores of fourth and fifth-year students were significantly higher than those of first-year students. It's noteworthy that in these two studies conducted with medical students, it was reported that lifelong learning tendencies increased as the academic year increased (29, 32).

In our research findings, no significant difference was observed between the gender variable and LLT scores. Similarly, Arslan (30) found in his study that female students had higher lifelong learning tendencies than male students. In another study, Dikmen et al. (29) reported that male students had higher lifelong learning tendencies compared to female students. Similarly, Gayef and Alptürk (32), in their research on medical students, found that male students had significantly higher average lifelong learning tendency scores compared to female students. Öz (33) conducted a meta-analysis study examining the lifelong learning tendencies of university students in Turkey between 2012 and 2021, utilizing the lifelong learning tendencies scale developed by Coşkun and Demirel (25). The study benefited from 51 quantitative studies, and inconsistencies among studies on the gender factor were identified. It was determined that gender differences in lifelong learning tendencies were significant, positively correlated, and in favor of females. Analyses examining the relationship between the gender variable and lifelong learning tendencies in studies conducted in different departments and with various samples have yielded different results in the literature. However, in our research, no significant relationship was found between the gender variable and lifelong learning tendencies.

In our research findings, it was determined that students who do not spend any time on the internet for their personal development have higher LLT scores compared to those who spend time on the internet. In contrast to our research findings, Ayçiçek and Karafil (34) found in their study that students who do not follow developments in information and communication technologies have higher lifelong learning tendencies compared to students who follow them. While some professionals may prefer traditional learning formats that involve more face-to-face communication, e-learning offers the advantage of allowing healthcare professionals to determine their own learning pace, review content as needed, and personalize their learning experiences (35, 36).

Internet technology can assist healthcare professionals in finding answers to clinical questions even while they are attending to patients. Despite studies showing that interdisciplinary collaboration, teamwork, and advanced systems are key to high-quality care, there is a suggestion that ways to promote the use of internet technology in e-learning should be found, even though accreditation bodies do not recommend it (37). The number of studies on internet addiction and problematic internet use among medical students is steadily increasing. In a study involving different medical students in Croatia, Nigeria, and India, the average daily internet usage was determined to be 3.06 (2.45) hours (median 2, range 0-18) (38). Tolunay Oflu and Bükülmez (21) determined in their study with medical students that the rate of smartphone addiction (dependent or potential dependent) was 23.5%. Additionally, the average daily

smartphone usage time (hours) was found to be 4.7±2.3 (14). In the medical students in Turkey where our study was conducted, it was determined that they spend an average of 3.76±2.19 hours (min.: 0 – max.: 12) on social media during the day, an average of 1.12±1.71 hours (min.:0 – max: 10) for online/offline games, and an average of 2.46±0.90 hours (min.: 0 – max.: 12) on web pages and mobile networks for personal development. Balhara et al. (38) found that problematic internet use was associated with male students and medical students who spend more time on the internet (38). A study conducted with medical students in Turkey has also indicated that internet addiction and social media addiction are common among them (39). In our study, although no scale related to internet addiction was used, it was found that there was a significant difference in the median scores of lifelong learning tendencies among medical students between the group that does not play games and the group that plays games for an average of two hours per day, with the former having higher scores. According to the study, when grouped by the time spent on social networks, it was determined that the group spending two hours or less had higher average scores in lifelong learning tendencies compared to the group spending two hours or more. Additionally, in the study, statistically significant differences were found between the time spent on the internet for personal development and lifelong learning tendencies among medical students. It was found that lifelong learning tendencies were lower in the group that did not spend any time on the internet compared to other time-spending groups. A low score on the lifelong learning tendency scale indicates a high inclination toward lifelong learning. In this context, it was found that as the time spent on the internet decreased among medical students, their lifelong learning tendencies increased.

Sayili et al. (39) stated in their study with medical students that there was no significant difference between genders in terms of internet addiction and social media addiction. However, Yang et all. (40) reported in their study that male medical students had a higher prevalence of internet addiction. A study conducted on medical students in India reported a significant relationship between internet addiction and the use of the internet for social networks, online videos, and viewing adult content websites (41). The study also found that female students spent more time on social networks than males ($p<0.001$, Z: 4.250), while male students spent more time on online/offline games than females ($p<0.001$, Z: 9.761). Furthermore, in our study, it was determined that there was no significant difference ($p>0.005$) between the time spent on web pages for personal development and gender and term variables.

According to Babenko et al. (42), when medical students approach their studies with a growth-oriented mindset and fulfill their psychological needs in their program, they tend to choose more adaptive achievement goals. As a result, they experience fewer psychological distress and show greater commitment to lifelong learning.

The results of this cross-sectional study may not be generalizable to all medical students. Among the students who volunteered to participate in the research, there may be students who experienced remote education during the COVID-19 pandemic period and earthquake disasters in our country. It should be considered that this situation may have an impact on the findings.

Within the context of the voluntary participation in the cross-sectional research, it was observed that the lifelong learning tendencies of medical students were at a moderate level. In terms of the sub-dimensions of the lifelong learning tendency scale, it was seen that their motivations and perseverance were at a high level. In today's world, where scientific knowledge in the field of healthcare is cumulatively increasing, healthcare professionals should regularly update their skills even after graduation. In this regard, increasing the motivation of students with high motivation and perseverance can enhance their lifelong learning tendencies. Students utilize smartphones as learning aids for various reasons, including ease of use, portability, providing comprehensive learning experiences, offering multiple sources, enabling multitasking (23,

24). In this regard, the importance of developing educational applications for smartphones is increasing, and it is crucial to plan for directing students' smartphone as a mobile device usage to contribute to educational processes and lifelong learning.

The research findings indicate that medical students exhibit a moderate level of lifelong learning tendencies. It has been observed that these students spend an average of 3.76 ± 2.19 hours per day on social media, 1.12 ± 1.71 hours on online/offline games, and 2.46 ± 0.90 hours on web pages and mobile networks for personal development using their mobile divices. Furthermore, those who do not spend any time on personal development applications, which support learning, have been found to have lower levels of lifelong learning tendencies compared to those who do engage with such applications. Similarly, Aktay et al. (2021) found that students using educational smartphone applications achieved better academic outcomes compared to those who did not use such applications (43). Shaw and Tan (2015) demonstrated in their study that the UF Surgery application, which sends notifications to general surgery residents and serves as a tool for asking questions in weekly intervals, can engage residents in active learning through simple exercises by employing adult learning methods (44). Other studies in the literature have also identified that smartphone applications, by providing specific content, support student learning (45, 46). Therefore, the development and provision of smartphone applications that support learning for medical students could enhance the time they spend on personal development through their smartphones and contribute to an increase in their lifelong learning tendencies.

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