

## Original Article

# Investigation of Digital Burnout and Affecting Factors in University Students in Health Sciences: A Web-Based Descriptive and Cross-Sectional Study

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## Abstract

**Background:** The increasing use of digital platforms in higher education has brought challenges, including digital burnout among university students.

**Aim:** To examine digital burnout and the factors affecting it in university students in health sciences.

**Methods:** In the descriptive and cross-sectional study, data were collected from 1,287 students using the Digital Burnout Scale. Descriptive statistics, correlation analyses, and regression models were utilized to analyze the data.

**Results:** The mean age of participants was  $21.21 \pm 3.29$  years, with 79.7% being female and 53.4% enrolled in undergraduate programs. Among students, 57.5% reported feelings of digital burnout, while 58.9% acknowledged excessive use of digital tools. Regression analysis revealed that demographic and descriptive characteristics significantly impacted the Digital Burnout Scale subdimensions, explaining 21.1% to 46.1% of the variance. The findings underscore the need for targeted strategies to mitigate digital burnout among health sciences students, particularly focusing on tailored interventions for specific subgroups.

**Conclusion:** This study highlights the critical importance of managing digital tool usage in educational settings to enhance student well-being.

**Key words:** Adult learning; distance education; mobile learning; online learning; social media.

## Introduction

Digital burnout describes the state of emotional, psychological and physical exhaustion experienced by individuals due to excessive interaction with digital environments and technologies. In the literature, digital burnout is defined as individuals feeling exhausted and depleted as a result of overuse of technological tools (Smith et al., 2021). Technology addiction is directly related to digital burnout among students. Excessive exposure to technology can

lead to psychological health problems such as stress, anxiety and depression (Koivuneva & Ruokamo, 2022).

Moreover, digital burnout can affect not only individuals' mental health but also their physical health. Staying in front of a screen for long periods of time can lead to problems such as eye health problems, disruptions in sleep patterns, and physical inactivity (Lavados-Romo et al., 2023). Considering that individuals in higher education, such as health sciences students, use

digital tools more intensively and participate in new educational methods such as online courses, the risk of digital burnout increases.

Health sciences students widely use digital tools in both academic and clinical education processes. However, this intense digital interaction may cause students to experience burnout. Studies show that the rate of university students experiencing digital burnout is increasing (Goldag, 2022). While health sciences students have to use digital platforms intensively in their education, they frequently interact with technology-based devices in clinical practice. This can increase both academic and emotional burdens.

According to another study, the frequency with which health sciences students interact with digital tools is an important factor affecting their burnout levels (Slack & Priestley, 2023). Digital educational materials, online courses and digital exams lead students to spend more time with digital tools in their educational process. This increased digital interaction can increase students' stress levels and create a sense of burnout. Moreover, for these students, prolonged interaction in digital environments is particularly associated with emotional burnout and job satisfaction (Webster et al., 2020).

Therefore, examining the causes and consequences of digital burnout in detail is important for improving students' educational processes and developing psychological support mechanisms.

#### **Research questions:**

- What are the digital burnout levels of university students in health sciences?
- Is there a relationship between the digital burnout levels of university students in health sciences?
- What are the factors affecting the digital burnout levels of university students in health sciences?
- What are the predictors of digital burnout levels of university students in health sciences?

#### **Methods**

**Aim and design of study:** The aim of this descriptive and cross-sectional study was to determine digital burnout and the factors affecting it among university students in health sciences.

**Population and sample of the study:** The population of the study consisted of students studying in health-related departments in all universities in Turkey. It was aimed to reach all

students without sampling. The study was completed with a total of 1286 students who agreed to participate in the study in line with the principles of willingness and voluntariness.

**Data collection tools:** "Students Information Form" and "Digital Burnout Scale" was used for data collection.

**Student Information Form:** The form has a total of 15 questions on sociodemographic information of the students (age, gender, study program, year of study etc.) and information related to COVID-19 and digital environments.

**Digital Burnout Scale:** The scale developed by Erten and Ozdemir (2020) has three dimensions (Digital Aging, Digital Deprivation, Digital Exhaustion) and a total of 24 items. The five point likert type scale has response options as "1-Entirely agree 2-Agree 3-Do not entirely agree 4- Disagree 5-Strongly disagree". Higher scores from the scale indicate higher level of digital burnout. Validity and reliability coefficient of the original scale is 0.946. By looking into the internal consistency of the scale in this study;  $\alpha$  was detected as 0.923 for Digital Aging dimension, 0.896 for Digital Deprivation dimension, 0.909 for Digital Exhaustion dimension and 0.953 for the overall scale. It can be said that the reliability of the scale is very strong.

**Data collection:** The data of the research were converted into "Google survey" forms and sent online to the mobile phones of the students in the research group in the form of WhatsApp or MMS, and the students were enabled to fill in the relevant forms instantly by clicking the Google Survey form link on the incoming message.

**Data analyses:** NCSS (Number Cruncher Statistical System) program was used for statistical analyses. Descriptive statistical methods (mean, standard deviation, median, frequency, percentage, minimum, maximum) were used to evaluate the study data. The conformity of quantitative data to normal distribution was tested by Shapiro-Wilk test and graphical analysis. Student-t test was used for comparisons between two groups of normally distributed quantitative variables and Mann-Whitney U test was used for comparisons between two groups of non-normally distributed quantitative variables. One-way analysis of variance and Bonferroni corrected pairwise evaluations were used for comparisons of quantitative variables with normal distribution between more than two groups. Kruskal-Wallis test and Dunn-Bonferroni test were used for comparisons of quantitative variables that were

not normally distributed between more than two groups. Spearman correlation analysis was used to evaluate the relationships between quantitative variables. Linear Regression Analysis (Backward) was used to determine the factors affecting the scale scores. Statistical significance was accepted as  $p < 0.05$ .

**Ethical approval:** The study adhered to the World Medical Association Declaration of Helsinki Human Rights (World Medical Association Declaration of Helsinki, 2013) and complied with the principles of students' willingness and voluntariness to participate in the study. Written consent was obtained from the students who were willing to participate in the study by clicking on the phrase "I agree to fill out the online survey form" after opening the message sent to their mobile phones. Written permissions were obtained from the local ethics committee of a university (17/06/2021, permission no. 639) and the Ministry of Health Scientific Research Permissions Portal (2021-06-06T00\_26\_24).

## Results

The results of the study were analyzed in four sections:

### Characteristic and descriptive features

The mean age of the students was  $21.21 \pm 3.29$  years (Min.=18, Max.=51) and the majority were female ( $n=1025$ , 79.7%), undergraduate ( $n=687$ , 53.4%) and first year ( $n=581$ , 45.2%) university students. The majority of the students stated that they mostly connect to the internet from their mobile phones ( $n=1096$ , 85.2%), spend 4-6 hours daily on the internet ( $n=514$ , 40%), spend 1-3 hours daily in the digital environment for education ( $n=602$ , 46.8%) and use Microsoft Teams digital online digital platform in their education at school ( $n=678$ , 52.7%). In the study, 57.5% ( $n=740$ ) of the students stated that they felt exhausted due to the use of digital media or tools, 58.9% ( $n=758$ ) considered themselves as someone who uses digital media or tools too much, 40.4% ( $n=519$ ) did not feel fear or anxiety towards digital media, 41.5% ( $n=534$ ) did not feel under stress in digital media. Among the students, 58.9% ( $n=758$ ) stated that spending time in digital environments negatively affected their lives and 54.2% ( $n=697$ ) stated that they thought spending time in digital environments would negatively affect the future (Table 1).

### Digital burnout levels and their relationship with each other

The scores obtained from the Digital Attrition sub-dimension of the Digital Burnout Scale

ranged between 12 and 60, with a mean of  $34.42 \pm 11.09$ ; the scores obtained from the Digital Deprivation sub-dimension ranged between 6 and 60, with a mean of  $19.12 \pm 6.16$ ; the scores obtained from the Emotional Exhaustion sub-dimension ranged between 6 and 30, with a mean of  $16.45 \pm 6.40$ ; and the scores obtained from the total scale ranged between 24 and 120, with a mean of  $69.99 \pm 21.09$ . The relationship between the sub-dimensions of the Digital Burnout Scale and each other is explained in Table 2.

### Digital burnout levels according to characteristic and descriptive features

When the digital burnout levels of the students were examined according to their characteristic features, statistically significant differences were found in the emotional exhaustion sub-dimension of digital burnout according to gender; in the emotional exhaustion sub-dimension and total score of digital burnout according to the program studied; and in the emotional exhaustion sub-dimension of digital burnout according to grade level ( $p < 0.05$ ) (Table 3).

Digital burnout levels according to the descriptive characteristics related to the digital environment are explained in detail in Table 4. Detailed information on the evaluation of digital burnout levels according to students' views on digital environments is given in Table 5.

### Regression analysis results

The effect of descriptive characteristics on the digital attrition sub-dimension score of digital burnout was tested with the help of backward regression analysis and the model was found to be significant ( $F=121.011$ ;  $p < 0.01$ ) and  $R^2 = 0.461$ . The effect of descriptive characteristics on the digital attrition sub-dimension score of digital burnout was 46.1% (Table 6).

The effect of descriptive characteristics on the digital deprivation sub-dimension score of digital burnout was tested with the help of backward regression analysis and the model was found significant ( $F=56.968$ ;  $p < 0.01$ ) and  $R^2 = 0.211$ . The effect of descriptive characteristics on the digital deprivation sub-dimension score of digital exhaustion was 21.1% (Table 6).

The effect of descriptive characteristics on the emotional exhaustion sub-dimension score of digital burnout was tested with the help of backward regression analysis and the model was found to be significant ( $F=86.198$ ;  $p < 0.01$ ) and  $R^2 = 0.379$ . The effect of descriptive characteristics on the emotional exhaustion sub-

dimension score of digital exhaustion was 37.9% (Table 6).

The effect of descriptive characteristics on the total score of digital burnout was tested with the help of backward regression analysis and the

model was found to be significant ( $F=128.993$ ;  $p<0.01$ ) and  $R^2 = 0.448$ . The effect of descriptive characteristics on the total score of digital exhaustion was 44.8% (Table 6).

**Table 1. Distribution of students' opinions about digital media**

<b>Do you feel burnt out from using digital media or tools?</b>	Yes	740 (57.5)
	Undecided	321 (25.0)
	No	225 (17,5)
<b>Do you consider yourself to be a heavy user of digital media or tools?</b>	Yes	758 (58.9)
	Undecided	231 (18.0)
	No	297 (23.1)
<b>Do you have any fear or anxiety about digital environments?</b>	Yes	462 (35.9)
	Undecided	305 (23.7)
	No	519 (40.4)
<b>Do you feel stressed in digital environments?</b>	Yes	470 (36.5)
	Undecided	282 (21.9)
	No	534 (41.5)
<b>Do you think spending time in digital environments negatively affects your life?</b>	Yes	758 (58.9)
	Undecided	266 (20.7)
	No	262 (20.4)
<b>Do you think that spending time in digital environments will negatively affect your future?</b>	Yes	697 (54.2)
	Undecided	290 (22.6)
	No	299 (23.3)

**Table 2. Relationship between scale sub-dimensions**

		Digital Burnout	Digital Deprivation	Emotional Exhaustion
<b>Digital Deprivation</b>	†r	0.565		
	p	<b>0.001**</b>		
<b>Emotional Exhaustion</b>	†r	0.813	0.566	
	p	<b>0.001**</b>	<b>0.001**</b>	
<b>Total</b>	†r	0.945	0.754	0.902
	p	<b>0.001**</b>	<b>0.001**</b>	<b>0.001**</b>

†r= Spearman's Correlation Coefficient

**Table 3. Evaluation of digital burnout levels according to characteristic features**

		Digital Depreciation	Digital Deprivation	Emotional Exhaustion	Total
<b>Age</b>	r	0.041†	0.015†	0.050†	0.040†
	p	0.144	0.594	0.075	0.156
<b>Sex</b>	Mean±SD	34.24±11.01	18.96±6.15	16.25±6.35	69.45±20.96

	Female (n=1025)	Median (Min-Max)	34 (12-60)	19 (6-30)	16 (6-30)	70 (24-120)
	Male (n=261)	Mean±SD	35.1±11.41	19.78±6.14	17.25±6.53	72.13±21.51
		Median (Min-Max)	35 (12-60)	20 (6-30)	17 (6-30)	73 (24-120)
		<i>p</i>	<sup>a</sup> 0.268	<sup>b</sup> 0.093	<sup>b</sup> 0.033*	<sup>a</sup> 0.067
<b>Program</b>	Associate's degree (n=583)	Mean±SD	33.4±11.47	18.81±6.52	16.01±6.54	68.21±21.96
		Median (Min-Max)	33 (12-60)	20 (6-30)	16 (6-30)	67 (24-120)
	Undergraduate (n=687)	Mean±SD	35.23±10.73	19.37±5.79	16.8±6.28	71.39±20.23
		Median (Min-Max)	36 (12-60)	20 (6-30)	17 (6-30)	72 (24-120)
	Postgraduate (n=16)	Mean±SD	36.75±9.82	20.19±7.47	17.81±5.5	74.75±21.4
		Median (Min-Max)	38 (18-58)	21 (6-30)	19 (8-26)	78.5 (32-114)
		<i>p</i>	<sup>c</sup> 0.016*	<sup>d</sup> 0.359	<sup>d</sup> 0.057	<sup>c</sup> 0.029*
<b>Class</b>	Preparation (n=10)	Mean±SD	31.6±9.97	19.4±5.21	17.5±5.02	68.5±16.25
		Median (Min-Max)	34 (13-43)	19.5 (12-27)	19 (6-23)	69.5 (31-85)
	1.class (n=581)	Mean±SD	34.25±11.36	19.32±6.31	16.6±6.42	70.16±21.59
		Median (Min-Max)	34 (12-60)	20 (6-30)	16 (6-30)	72 (24-120)
	2.class (n=432)	Mean±SD	33.77±10.83	18.97±6.05	15.92±6.29	68.66±20.5
		Median (Min-Max)	34 (12-60)	19 (6-30)	16 (6-30)	68.5 (25-120)
	3.class (n=124)	Mean±SD	35.15±10.72	19±6.07	16.37±6.35	70.52±20.33
		Median (Min-Max)	35 (12-60)	19 (6-30)	16 (6-30)	71 (24-119)
	4.class (n=100)	Mean±SD	38.02±10.57	19.46±5.72	18.29±6.42	75.77±20.4
		Median (Min-Max)	37 (16-60)	20 (7-30)	18 (6-30)	76 (32-120)
	5.class (n=27)	Mean±SD	32.37±12.28	17±6.96	14.74±7.2	64.11±24.91
		Median (Min-Max)	33 (12-57)	17 (6-30)	15 (6-30)	65 (24-114)
	6.class (n=12)	Mean±SD	35.5±9.38	18.17±5.61	16.83±7.02	70.5±20.37
		Median (Min-Max)	36 (18-50)	21 (6-23)	14 (8-30)	72 (32-97)
		<i>p</i>	<sup>d</sup> 0.057	<sup>d</sup> 0.622	<sup>d</sup> 0.035*	<sup>d</sup> 0.177
<sup>a</sup> Student t-Test		<sup>b</sup> Mann-Whitney U Test		<sup>c</sup> One Way Anova Test		
<sup>d</sup> Kruskal Wallis Test		<sup>†</sup> r= Spearman's Correlation Coefficient		*p<0.05		

**Table 4. Evaluation of digital burnout levels according to descriptive characteristics of the digital environment**

		Digital Depreciation	Digital Deprivation	Emotional Exhaustion	Total	
<b>Which device do you connect to the Internet with most?</b>	Mobile phone (n=1096)	Mean±SD	34.32±10.89	19.03±6.09	16.44±6.3	69.79±20.7
		Median (Min-Max)	34 (12-60)	20 (6-30)	16 (6-30)	70 (24-120)
	Tablet (n=15)	Mean±SD	31±9.95	15.6±7.12	13.73±5.76	60.33±21.8
		Median (Min-Max)	31 (12-52)	14 (6-28)	12 (6-23)	63 (28-103)
	Laptop computer (n=146)	Mean±SD	35.4±12.53	20.23±6.53	16.89±7.15	72.52±23.76
		Median (Min-Max)	35.5 (12-60)	20 (6-30)	16.5 (6-30)	72 (24-120)
	Desktop computer (n=29)	Mean±SD	34.79±11.71	19.03±5.52	16.07±6.54	69.9±20.24
		Median (Min-Max)	33 (14-59)	19 (6-30)	16 (6-30)	64 (26-119)
		<i>p</i>	<sup>c</sup> 0.449	<sup>d</sup> 0.035*	<sup>d</sup> 0.360	<sup>c</sup> 0.148
	< 1 hour (n=36)	Mean±SD	33.75±13.66	21.03±6.91	16.53±7.77	71.31±26.4
		Median (Min-Max)	34 (12-59)	22.5 (6-30)	16 (6-30)	75.5 (24-119)

<b>Daily internet connection time</b>	1-3 hours (n=287)	<i>Mean±SD</i>	36.36±11.25	20.49±5.81	17.46±6.57	74.31±21.21
		<i>Median (Min-Max)</i>	36 (12-60)	21 (6-30)	18 (6-30)	77 (24-120)
	4-6 hours (n=514)	<i>Mean±SD</i>	34.94±10.81	19.41±5.99	16.69±6.27	71.04±20.37
		<i>Median (Min-Max)</i>	35 (12-60)	20 (6-30)	17 (6-30)	71 (24-120)
	7-9 hours (n=272)	<i>Mean±SD</i>	32.86±10.4	18.21±6.1	15.94±5.99	67±19.84
		<i>Median (Min-Max)</i>	33 (12-57)	19 (6-30)	16 (6-30)	67 (25-111)
≥10 hours (n=177)	<i>Mean±SD</i>	32.28±11.53	17.09±6.39	14.88±6.52	64.25±21.97	
	<i>Median (Min-Max)</i>	32 (12-60)	16 (6-30)	15 (6-30)	60 (24-120)	
		<i>p</i>	<sup>c</sup> <b>0.001**</b>	<sup>d</sup> <b>0.001**</b>	<sup>d</sup> <b>0.001**</b>	<sup>c</sup> <b>0.001**</b>
<b>Daily time spent in digital environments for education</b>	< 1 hour (n=141)	<i>Mean±SD</i>	33.53±11.03	18.69±5.92	15.6±6.29	67.82±20.29
		<i>Median (Min-Max)</i>	33 (12-60)	19 (6-30)	15 (6-30)	67 (24-117)
	1-3 hours (n=602)	<i>Mean±SD</i>	35.68±10.75	19.54±6.08	17.01±6.19	72.24±20.47
		<i>Median (Min-Max)</i>	36 (12-60)	20 (6-30)	18 (6-30)	74 (24-120)
	4-6 hours (n=391)	<i>Mean±SD</i>	33.72±11.27	18.95±6.1	16.27±6.66	68.94±21.75
		<i>Median (Min-Max)</i>	33 (12-60)	19 (6-30)	16 (6-30)	68 (24-120)
	7-9 hours (n=117)	<i>Mean±SD</i>	32.99±10.81	18.83±6.68	15.93±6.52	67.75±20.86
		<i>Median (Min-Max)</i>	33 (12-59)	20 (6-30)	15 (6-30)	67 (25-119)
	≥10 hours (n=35)	<i>Mean±SD</i>	28.71±13.08	16.66±6.73	13.97±6.15	59.34±23.44
		<i>Median (Min-Max)</i>	28 (12-52)	17 (6-30)	14 (6-27)	59 (24-99)
		<i>p</i>	<sup>c</sup> <b>0.001**</b>	<sup>d</sup> <b>0.049*</b>	<sup>d</sup> <b>0.001**</b>	<sup>c</sup> <b>0.006**</b>
<b>Digital platform used in your school for education</b>	Microsoft Teams (n=678)	<i>Mean±SD</i>	34.67±10.93	19.56±6.19	16.57±6.52	70.81±20.99
		<i>Median (Min-Max)</i>	35 (12-60)	20 (6-30)	17 (6-30)	71.5 (24-120)
	Adobe Connect (n=14)	<i>Mean±SD</i>	38.86±10.78	17.93±7.07	19±6.25	75.79±22.13
		<i>Median (Min-Max)</i>	41 (20-57)	20 (6-28)	20.5 (9-28)	82 (41-106)
	Moddle (n=12)	<i>Mean±SD</i>	38.67±8.15	17.58±5.3	19.25±4.56	75.5±15.25
		<i>Median (Min-Max)</i>	39.5 (26-51)	17 (11-26)	19 (12-29)	70.5 (54-98)
	University UZEM System (n=262)	<i>Mean±SD</i>	34.26±11.56	18.54±6.5	16.37±6.41	69.18±22.01
		<i>Median (Min-Max)</i>	35 (12-60)	19 (6-30)	16 (6-30)	70 (24-120)
	Zoom (n=280)	<i>Mean±SD</i>	33.24±10.96	18.85±5.59	15.83±6.17	67.91±20.29
		<i>Median (Min-Max)</i>	33 (12-60)	19 (6-30)	15 (6-30)	68 (24-120)
Other (n=40)	<i>Mean±SD</i>	36.5±11.88	18.38±6.62	17.53±6.14	72.4±22.9	
	<i>Median (Min-Max)</i>	38.5 (13-60)	16.5 (6-30)	18 (6-30)	74.5 (25-120)	
		<i>p</i>	<sup>d</sup> 0.088	<sup>d</sup> 0.121	<sup>d</sup> 0.078	<sup>d</sup> 0.195

<sup>c</sup>One Way Anova Test    <sup>d</sup>Kruskal Wallis Test    \**p*<0.05    \*\**p*<0.01

**Table 5. Evaluation of digital burnout levels according to students' views on digital environments**

			Digital Depreciation	Digital Deprivation	Emotional Exhaustion	Total
<b>Do you feel burnt out from using digital media or tools?</b>	Yes (n=740)	<i>Mean±SD</i>	30.1±10.18	17.69±6.38	13.9±5.72	61.69±19.49
		<i>Median (Min-Max)</i>	29 (12-60)	18 (6-30)	13 (6-30)	60 (24-120)
	Undecided (n=321)	<i>Mean±SD</i>	37.92±8.59	20±5.03	18.74±5.39	76.66±16.27
		<i>Median (Min-Max)</i>	39 (13-58)	21 (6-30)	19 (6-30)	78 (25-113)
	No (n=225)	<i>Mean±SD</i>	43.6±9.72	22.6±5.18	21.57±5.5	87.77±17.68
		<i>Median (Min-Max)</i>	44 (19-60)	23 (8-30)	22 (6-30)	89 (44-120)
		<i>p</i>	<sup>c</sup> <b>0.001**</b>	<sup>d</sup> <b>0.001**</b>	<sup>d</sup> <b>0.001**</b>	<sup>c</sup> <b>0.001**</b>
<b>Do you consider yourself to be a heavy user of digital media or tools?</b>	Yes (n=758)	<i>Mean±SD</i>	31.46±10.49	17.58±6.23	14.76±6.05	63.79±20.09
		<i>Median (Min-Max)</i>	31 (12-60)	18 (6-30)	14 (6-30)	63 (24-120)
	Undecided (n=231)	<i>Mean±SD</i>	35.8±9.42	19.96±5.05	17.67±5.73	73.42±17.14
		<i>Median (Min-Max)</i>	36 (12-59)	20 (6-30)	18 (6-30)	74 (27-118)
	No (n=297)	<i>Mean±SD</i>	40.9±10.84	22.42±5.29	19.82±6.21	83.15±19.74
		<i>Median (Min-Max)</i>	42 (12-60)	23 (6-30)	21 (6-30)	85 (24-120)
		<i>p</i>	<sup>c</sup> <b>0.001**</b>	<sup>d</sup> <b>0.001**</b>	<sup>d</sup> <b>0.001**</b>	<sup>c</sup> <b>0.001**</b>
Yes (n=462)		<i>Ort±Ss</i>	29.33±9.98	17.45±6.2	14.13±5.81	60.91±19.23

Do you have any fear or anxiety about digital environments?		Medyan (Min-Maks)	29 (12-56)	18 (6-30)	14 (6-30)	60 (24-114)
	Undecided (n=305)	Ort±Ss	33.06±9.78	18.87±5.94	15.76±5.91	67.69±19.04
		Medyan (Min-Maks)	34 (12-59)	19 (6-30)	16 (6-30)	69 (25-119)
	No (n=519)	Ort±Ss	39.74±10.38	20.77±5.82	18.92±6.31	79.43±19.9
		Medyan (Min-Maks)	41 (12-60)	22 (6-30)	19 (6-30)	82 (25-120)
	<i>p</i>		<sup>c</sup> 0.001**	<sup>d</sup> 0.001**	<sup>d</sup> 0.001**	<sup>c</sup> 0.001**
Do you feel stressed in digital environments?	Yes (n=470)	Mean±SD	27.35±9.47	16.89±6.24	13.11±5.63	57.36±18.59
		Median (Min-Max)	27 (12-58)	17 (6-30)	12 (6-30)	56 (24-118)
	Undecided (n=282)	Mean±SD	34.23±9.01	18.91±5.55	16.46±5.55	69.6±17.45
		Median (Min-Max)	34 (12-59)	19.5 (6-30)	16.5 (6-30)	69 (24-119)
	No (n=534)	Mean±SD	40.74±9.54	21.2±5.67	19.38±6.01	81.32±18.4
	Median (Min-Max)	42 (13-60)	22 (6-30)	20 (6-30)	83 (35-120)	
	<i>p</i>		<sup>c</sup> 0.001**	<sup>d</sup> 0.001**	<sup>d</sup> 0.001**	<sup>c</sup> 0.001**
Do you think spending time in digital environments negatively affects your life?	Yes (n=758)	Mean±SD	30.17±9.84	17.98±6.29	14.2±5.72	62.35±19.28
		Median (Min-Max)	30 (12-60)	18 (6-30)	14 (6-30)	62 (24-119)
	Undecided (n=266)	Mean±SD	37.55±8.54	19.76±5.5	18.2±5.44	75.5±16.7
		Median (Min-Max)	39 (15-57)	20 (6-30)	18 (6-30)	77 (27-117)
	No (n=162)	Mean±SD	43.53±10.24	21.79±5.45	21.18±6.04	86.5±18.84
	Median (Min-Max)	45.5 (13-60)	22 (7-30)	22 (6-30)	89.5 (35-120)	
	<i>p</i>		<sup>c</sup> 0.001**	<sup>d</sup> 0.001**	<sup>d</sup> 0.001**	<sup>c</sup> 0.001**
Do you think that spending time in digital environments will negatively affect your future?	Yes (n=697)	Mean±SD	30.28±9.73	17.81±6.22	14.26±5.67	62.35±18.89
		Median (Min-Max)	30 (12-59)	18 (6-30)	14 (6-30)	61 (24-119)
	Undecided (n=290)	Mean±SD	35.34±9.57	19.31±5.67	16.9±5.77	71.54±18.59
		Median (Min-Max)	36 (12-57)	20 (6-30)	17 (6-30)	73 (24-117)
	No (n=299)	Mean±SD	43.16±10.17	22±5.44	21.13±5.98	86.29±18.57
	Median (Min-Max)	45 (16-60)	22 (6-30)	22 (6-30)	89 (31-120)	
	<i>p</i>		<sup>c</sup> 0.001**	<sup>d</sup> 0.001**	<sup>d</sup> 0.001**	<sup>c</sup> 0.001**

<sup>c</sup>One Way Anova Test    <sup>d</sup>Kruskal Wallis Test    \**p*<0.05    \*\**p*<0.01

**Table 6. Regression analysis of the effect of descriptive characteristics on the sub-dimensions and total of the Digital Burnout Scale**

Model	Unstandardized Coefficients	p	95.0% Confidence Interval for B	
			Lower Bound	Upper Bound
4 Program	1.972	0.001**	1.032	2.911
Class	0.604	0.007**	0.164	1.044
Daily internet connection time	-1.058	0.001**	-1.517	-0.599
Feeling exhausted from using digital media or tools	2.438	0.001**	1.721	3.156
Do not see yourself as someone who uses too much digital media or tools	1.823	0.001**	1.218	2.429
A state of fear or anxiety towards digital environments	0.982	0.003**	0.331	1.632
Feeling stressed in digital environments	3.457	0.001**	2.782	4.133
The idea that spending time in digital environments negatively affects one's life	1.772	0.001**	0.991	2.553
The idea that spending time in digital environments will negatively affect your future	1.981	0.001**	1.262	2.700

(Constant)	10.798	<b>0.001**</b>	8.138	13.457
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Dependent Variable: Digital Depreciation Score

Model	Unstandardized Coefficients	p	95.0% Confidence Interval for B		
			Lower Bound	Upper Bound	
6	<b>The most connected device to the internet</b>	0.449	<b>0.027*</b>	0.051	0.847
	<b>Daily internet connection time</b>	-0.875	<b>0.001**</b>	-1.181	-0.568
	<b>Feeling exhausted from using digital media or tools</b>	0.954	<b>0.001**</b>	0.484	1.423
	<b>Do not see yourself as someone who uses too much digital media or tools</b>	1.391	<b>0.001*</b>	0.989	1.793
	<b>Feeling stressed in digital environments</b>	1.271	<b>0.001**</b>	0.879	1.663
	<b>The idea that spending time in digital environments will negatively affect your future</b>	0.757	<b>0.001**</b>	0.340	1.174
	(Constant)	13.650	<b>0.001**</b>	12.165	15.134

Dependent Variable: Digital Deprivation Score

Model	Unstandardized Coefficients	p	95.0% Confidence Interval for B		
			Lower Bound	Upper Bound	
5	<b>Age</b>	0.086	<b>0.049*</b>	0.000	0.172
	<b>Sex</b>	0.628	<b>0.077</b>	-0.069	1.325
	<b>Program</b>	1.148	<b>0.001**</b>	0.609	1.687
	<b>Daily internet connection time</b>	-0.589	<b>0.001**</b>	-0.874	-0.304
	<b>Feeling exhausted from using digital media or tools</b>	1.923	<b>0.001**</b>	1.478	2.369
	<b>Do not see yourself as someone who uses too much digital media or tools</b>	0.966	<b>0.001**</b>	0.592	1.340
	<b>Feeling stressed in digital environments</b>	1.366	<b>0.001**</b>	0.993	1.740
	<b>The idea that spending time in digital environments negatively affects one's life</b>	0.938	<b>0.001**</b>	0.456	1.420
	<b>The idea that spending time in digital environments will negatively affect your future</b>	1.198	<b>0.001**</b>	0.756	1.640
	(Constant)	2.969	<b>0.018*</b>	0.509	5.430

Dependent Variable: Emotional Exhaustion Score

Model	Unstandardized Coefficients	p	95.0% Confidence Interval for B		
			Lower Bound	Upper Bound	
7	<b>Program</b>	4.551	<b>0.001**</b>	2.874	6.227
	<b>Daily internet connection time</b>	-2.576	<b>0.001**</b>	-3.458	-1.694
	<b>Feeling exhausted from using digital media or tools</b>	5.388	<b>0.001**</b>	4.008	6.768

<b>Do not see yourself as someone who uses too much digital media or tools</b>	4.183	<b>0.001**</b>	3.019	5.346
<b>Presence of fear or anxiety towards digital environments</b>	1.471	<b>0.021*</b>	0.221	2.721
<b>Feeling stressed in digital environments</b>	5.933	<b>0.001**</b>	4.634	7.233
<b>The idea that spending time in digital environments negatively affects one's life</b>	2.462	<b>0.001**</b>	0.960	3.965
<b>The idea that spending time in digital environments will negatively affect your future</b>	3.922	<b>0.001**</b>	2.538	5.305
(Constant)	29.908	<b>0.001**</b>	25.074	34.742

Dependent Variable: Scale total score

## Discussion

In our study, it was determined that the majority of health sciences students felt exhausted due to the use of digital environments or tools and saw themselves as someone who used digital environments or tools too much. This finding reveals the negative effects of intensive exposure of university students to digital technologies. Some studies in the literature have also reached similar conclusions. For example, it has been reported that university students experience digital burnout due to excessive use of digital devices, which negatively affects their physical and psychological health (Kuslu & Eminoglu, 2024).

However, it is noteworthy that the majority of the students did not feel any fear, anxiety or stress towards digital environments. This suggests that students' adaptation to digital technologies may be high and that they see technology as a part of their daily lives. Indeed, some studies show that young individuals adapt to digital technologies faster and therefore their digital stress levels may be lower (Williams et al., 2021).

The fact that students think that spending time in digital environments negatively affects life and future shows that digital burnout may increase concerns about the future. This finding supports the literature that excessive use of digital technologies can reduce quality of life and create negative perceptions about the future (Lavados-Romo et al., 2023).

In our study, health sciences students were found to experience moderate digital burnout. This result is consistent with some studies in the literature. For example, it has been reported that students studying in the field of health sciences use digital tools intensively for both educational and personal purposes due to their intensive academic programs and clinical practices, and

therefore experience moderate digital burnout (Tangmunkongvorakul et al., 2019). However, some studies reported high levels of digital burnout in students (Singh et al., 2016). These differences may be explained by the characteristics of the study groups, the measurement tools used, and cultural factors.

In addition, in our study, a positive relationship was found between students' digital burnout and its sub-dimensions. This finding shows that digital burnout is a multidimensional structure and sub-dimensions affect each other. In the literature, it is stated that the sub-dimensions of digital burnout such as emotional exhaustion, decrease in personal accomplishment and depersonalization are related to each other (Zis et al., 2021). These relationships emphasize the importance of addressing digital burnout with a holistic approach.

In conclusion, our study shows that health sciences students experience digital burnout and this situation reflects negatively on their lives and perceptions of the future. These findings reveal the importance of developing educational programs that encourage the conscious and balanced use of digital technologies.

In our study, no significant relationship was found between students' age and digital burnout. This finding is consistent with some studies in the literature. For example, Fioravanti et al., (2021) found no significant relationship between the age of university students and their digital burnout levels. Similarly, Yıldız Durak and Saritepeci (2019) stated that age is not a determining factor on digital addiction. This shows that digital technologies can be used with similar intensity by students of all age groups.

However, some studies report different results between age and digital burnout. Kircaburun et al., (2020) suggested that younger students may have higher levels of digital burnout. These

differences may be due to variables such as demographic characteristics of the study groups, cultural factors, and digital technology usage habits.

In our study, it was found that graduate students experienced more digital burnout in the digital attrition sub-dimension and in general. This finding may be due to the fact that graduate students use digital platforms more intensively due to their increased academic loads and responsibilities. Demirci et al., (2015) stated that graduate students become more dependent on digital devices due to their increasing research and academic activities, which may increase digital burnout. This can be explained by factors such as students' individual coping strategies, social support levels and personal characteristics.

It was concluded that male students experienced digital burnout more than female students in the emotional exhaustion sub-dimension. Bayraktar and Gun (2006) stated that male students spend more time with digital games and online activities and therefore their emotional exhaustion levels may increase. Sagar and Kok Eren (2022) stated that female students' social media use is more intense, but male students are more engaged in competitive and stressful digital activities and this may lead to emotional exhaustion.

It was found that students in the fourth year of the university felt more digital burnout in the emotional exhaustion sub-dimension than students in other grades. This may be explained by stress factors such as increased academic pressure, internships, and career planning for students who are about to graduate. Zhai et al. (2020) stated that senior students use digital technologies more intensively due to compulsory academic requirements, which increases emotional exhaustion. Hong et al. (2020) suggested that senior students' future worries and stress of finding a job may trigger digital burnout.

These findings suggest that digital burnout is influenced by demographic factors such as students' academic level, gender, and education level. It is important for educational institutions and counselors to develop programs that encourage students to use digital technologies in a balanced and conscious way. In addition, providing awareness trainings and supportive services to reduce digital burnout will support students' academic achievement and psychological well-being.

In our study, it was determined that students who connected to the internet with a laptop computer experienced higher levels of digital burnout in the digital deprivation sub-dimension compared to the others. This finding points to the effect of laptop use on digital burnout.

In the literature, there are studies examining the relationship between the type and duration of digital device use and digital burnout. Especially recent studies suggest that students' intensive use of laptops for academic purposes may increase digital burnout. For example, Salo et al. (2022) found that university students' long-term computer use increased digital burnout and digital withdrawal symptoms. In the study, it was stated that the increase in the amount of time students spent on the computer due to online education and assignments contributed to the feeling of digital deprivation (Salo et al., 2022).

Similarly, Cao et al. (2021) showed that intensive use of laptops increased the levels of digital burnout and psychological stress in students. The study suggests that students' constant online presence and long hours in front of the screen while conducting their academic studies may trigger feelings of digital withdrawal.

On the other hand, some studies indicate that mobile devices (smartphones, tablets, etc.) may cause more digital burnout. Zhang and Leung (2020) showed that smartphone addiction increased digital burnout in students and this was related to social media use. However, these studies generally focus on different dimensions of digital burnout and do not specifically address the impact of laptop use.

Our finding suggests that laptop users' higher levels of burnout in the digital deprivation sub-dimension may be due to more intensive and prolonged use of these devices for academic and professional purposes. Frequent use of laptops for activities such as studying, researching and doing homework may limit students' social interactions and personal time. This may increase the feeling of digital deprivation.

Moreover, with the widespread use of distance education during the COVID-19 pandemic, students' laptop usage time has increased significantly. Sharma et al. (2020) reported that students' increased screen time during distance education increased their digital burnout levels and reinforced the feeling of digital deprivation.

In conclusion, the findings in our study are in line with some studies in the literature and suggest that laptop use may have a significant impact on digital deprivation and burnout. Balancing students' use of digital devices, taking regular breaks and increasing face-to-face social interactions may be beneficial in reducing digital burnout.

Students who did not feel burned out due to the use of digital environments or tools, who did not see themselves as someone who used digital tools too much, who did not feel fear, anxiety and stress towards digital environments, and who did not think that spending time in digital environments would negatively affect their life and future experienced higher levels of digital burnout.

In our study, it was found that students who spent between 1-3 hours on the internet for educational purposes on a daily basis experienced higher levels of digital burnout than other students. This finding suggests that even the use of digital technologies for educational purposes can contribute to digital burnout when it exceeds a certain period of time.

There are studies in the literature that report different results on this issue. Goldag (2022) stated that as the duration of university students' use of social networks increases, their digital burnout levels also increase. It is suggested that especially long-term online education activities may lead to cognitive fatigue and digital burnout. However, some studies suggest that internet use for educational purposes does not have a significant effect on digital burnout or may even reduce it. Lei and Zhao (2020) reported that effective use of digital learning tools improves students' academic performance and can reduce digital burnout. According to this study, students with high levels of digital literacy use digital technologies more efficiently and reduce the risk of burnout.

These differences can be explained by students' digital literacy levels, individual learning strategies, and the purposes of using digital technologies. The finding in our study suggests that students may experience difficulties in managing their internet usage time for educational purposes and this may lead to digital burnout. In particular, the lack of time management skills and the distractions of studying in a digital environment may increase the feeling of burnout.

In conclusion, the duration of students' internet use for educational purposes and the

management of this time has a significant impact on digital burnout. It is important for educational institutions to develop programs that encourage students to use digital technologies in an effective and balanced way. In addition, it would be useful to use strategies and tools to reduce students' risk of digital burnout in digital learning processes.

In our study, it was found that the digital platform used for education did not affect students' digital burnout levels. This finding is consistent with some studies in the literature, but there are also studies reporting different results.

In the literature, there are a limited number of studies examining the relationship between digital burnout and the type of digital platform used. Thompson and Mattheus (2020) reported that different digital education platforms (e.g., synchronous and asynchronous learning systems) had no significant effect on students' digital burnout levels. The researchers emphasized that digital burnout is more related to students' overall digital device usage time and personal coping strategies. The finding in our study suggests that rather than the type of digital platform used for education, students' overall digital load and their interaction with technology are more determinant of digital burnout. Students' familiarity with digital platforms, digital literacy levels, and individual coping mechanisms may be important factors influencing their experience of digital burnout. In conclusion, the fact that the digital platform used for education does not affect students' digital burnout suggests that digital burnout has a more complex and multidimensional structure. Educational institutions should focus on developing policies and programs that support students' digital health rather than platform selection. In this context, it may be useful to improve students' digital literacy skills, teach time management strategies, and encourage digital detox practices.

In our study, it was found that students who did not feel burned out due to the use of digital environments or tools, who did not see themselves as someone who used digital tools too much, who did not feel fear, anxiety and stress towards digital environments, and who did not think that spending time in digital environments would negatively affect life and the future experienced higher levels of digital burnout. This finding may seem unexpected and contradictory at first glance; however, the

complex nature of digital burnout may explain this finding.

There are limited studies in the literature that directly address this specific finding. However, some research and theoretical approaches may be helpful in interpreting this result. Individuals who do not have negative feelings towards digital technologies and use these technologies intensively may not be aware of the duration and effects of their use. This lack of awareness may lead to excessive and uncontrolled use of digital technologies, which in turn may cause digital burnout.

In addition, individuals who think about the life and negative effects of spending time in digital life can narrow down the scope of digital technologies. Ulucay and Kobak (2020) stated that digital technology will increase its negative effects and are more resistant to digital detox applications, thus protecting them from digital burnout. As a result, our study shows that those who have strong, positive attitudes towards digital technologies and whose negativities continue are at risk of digital burnout without developments. This situation emphasizes that digital awareness and self-regulation have increased. Being aware of the problems of digital life, controlling their usage time and being aware of the potential negative effects of digital technologies can be effective in preventing digital burnout.

In our study, it was found that demographic characteristics of students such as age and gender, their grade level, the program they study, the environment they connect to the internet, the time spent on the internet and some of their views on the digital environment are predictors of digital burnout. This finding shows that digital burnout has a multidimensional structure and is affected by various factors.

There are studies in the literature examining the effects of demographic characteristics and technology usage habits on digital burnout. Uz Bas et al. (2016), in their study examining the internet addiction and burnout levels of university students, stated that age and gender have a significant effect on burnout. It was determined that especially male students experienced higher levels of digital burnout.

The effects of grade level and the program they study on digital burnout have also been discussed in the literature. Tugtekin (2022) stated that senior students have higher levels of digital burnout because they face additional

stressors such as graduation and career planning.

The effect of the internet connection environment and the time spent on the internet on digital burnout is also important. İlk and Guler (2023) showed that students who connect to the internet via mobile devices may experience more burnout due to the blurring of the boundaries between work and rest times. In addition, it is frequently emphasized that digital burnout levels increase with increasing daily internet use (Belli et al., 2022). Students' views and attitudes towards the digital environment are also among the predictors of digital burnout. These findings show that digital burnout occurs as a result of the interaction of individual and environmental factors. Students' demographic characteristics, education levels, ways of interacting with technology, and personal views shape their digital burnout experiences. Therefore, it is important to design interventions to prevent digital burnout by taking these various factors into account.

Educational institutions and counselors can develop strategies to support students' digital wellness based on individual needs. For example, digital literacy training, developing time management skills, and encouraging digital detox practices can be effective in reducing digital burnout.

**Limitations:** There are some limitations to our study. The first of these is that the data of the study was collected online. The second limitation is that stratified sampling was not selected among the participants. The third limitation is that the qualitative data collection method was not used in the study.

**Conclusion:** This study examined the digital burnout levels of university students studying in the field of health sciences and the factors affecting it. According to our findings, the majority of students felt exhausted due to the intensive use of digital environments or tools and saw themselves as people who used too many digital tools. However, high levels of digital burnout were observed even in students who did not feel fear, anxiety or stress towards digital environments and who did not think that digital tools would negatively affect their lives and future. In addition, demographic and technological factors such as age, gender, grade level, program studied, internet connection environment and internet usage duration were found to be important predictors of digital burnout. It was determined that students who

connected to the internet via laptops and used the internet for 1-3 hours per day for educational purposes had higher digital burnout levels.

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