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ASSESSMENT OF BURNOUT SYNDROME AND SMARTPHONE ADDICTION IN HEALTHCARE WORKERS ACTIVELY WORKING DURING THE COVID-19 PANDEMIC

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ABSTRACT

Burnout is a syndrome that is more common in healthcare professionals. People who have burnout syndrome tend to spend inordinate and unhealthy amounts of time on smartphones. While smartphones offer many conveniences in life, they can turn into an addiction if overused. This study aimed to investigate burnout syndrome and smartphone addiction in healthcare workers, including doctors, nurses, medical secretaries, security guards, and cleaning staff, who have been actively working since the beginning of the COVID-19 pandemic. The target population included 1190 healthcare workers, from which a total of 183 agreed to participate in the study and met the inclusion criteria for participation. A sociodemographic data form, the Maslach Burnout Inventory, and the Smartphone Addiction Scale-Short Version were used as the data collection tools. Significant differences in burnout syndrome were found in doctors and nurses. A relationship was observed between emotional burnout (EB), desensitization, and smartphone addiction, as well as between higher education levels, doctors and nurses groups, and smartphone addiction. According to the linear regression analysis, it was determined that 17% of the change in the smartphone addiction score was related to age and 16% to education status. Doctors and nurses experience the highest rate of burnout syndrome and smartphone addiction. The healthcare workers who suffered EB and desensitization were more likely to have a smartphone addiction. A correlation may exist between healthcare professionals with higher education levels and the rate of EB, desensitization, and smartphone addiction. Age affects the addiction score.

Keywords: *Burnout syndrome, COVID-19, Healthcare workers, Smartphone addiction.*

INTRODUCTION

In response to the COVID-19 pandemic, which started in China and spread rapidly across the world, governments and health institutions imposed numerous restrictions and protective measures, such as mandatory isolation, quarantine, and temporary lockdowns. While these restrictions and measures were certainly necessary to prevent the spread of the pandemic and reduce its effects on healthcare systems, they increased pandemic-related anxiety (Tükel, 2020; Yapici Eser, 2020). Numerous factors have contributed to the poor coping mechanisms and burnout seen in frontline professionals, especially healthcare workers, fighting against the pandemic. In regards to healthcare workers, these factors include the uncertainty over the duration of the pandemic and symptoms of the virus, the high transmission and increasing

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mortality rates, the fear of infecting their children and family members, the persistent nature of the pandemic with its different waves of infection, the long hours of working, the fatigue, the public stigmatization of healthcare professionals as the potential source and spreaders of the coronavirus, the continuous efforts healthcare professionals must maintain against the coronavirus in the face of the normalization steps taken in society, and the constant stress and anxiety experienced due to the feelings of abandonment and loneliness and social and economic inadequacies (Aslan *et al.*, 2005; Bilge & Bilge, 2020; Çakır Kardeş, 2020; Işıklı, 2020; Karatas, 2021). Burnout was originally described as a state of exhaustion resulting from failure, weariness, loss of energy and strength, or unmet desires (Dolgun, 2015). Recent studies have indicated that burnout is characterized by emotional exhaustion, desensitization, and inadequacy in personal achievement such as in the physical, professional, and psychological dimensions resulting from ongoing stress and anxiety (Aslan *et al.*, 2005; Saravi *et al.*, 2014; Salvagioni *et al.*, 2017).

The physical aspects related to burnout include cardiovascular disorders, respiratory disorders, gastrointestinal disorders, musculoskeletal pain, and deaths under the age of 45; the professional aspects include job dissatisfaction, absenteeism, low productivity, want of disability status, and new job search; and lastly, the psychiatric aspects include social isolation, feelings of inadequacy, lack of energy, fatigue, sleep disorders, depression, and substance use and related disorders (Aslan *et al.*, 2005; Salvagioni *et al.*, 2017; Çakır Kardeş, 2020; Işıklı, 2020).

Burnout syndrome is more common in healthcare professionals than in other occupational groups (Aslan *et al.*, 2005; Dolgun, 2015). In particular, the level of burnout is higher in females, middle-aged individuals (35-44), single people, those with a higher education level, and those who have worked much longer in the profession (Dolgun, 2015; Salvagioni *et al.*, 2017).

Studies have shown that people who sometimes have difficulty coping with anxiety, chronic stressor factors, and accompanying burnout syndrome tend to spend inordinate, unhealthy amounts of time on the internet and smartphones alongside their continuous use of substances like alcohol and cigarettes (Lee *et al.*, 2014; Bal & Balcı, 2020; Işıklı, 2020; Karatas, 2021; Molodynski *et al.*, 2021; Toth *et al.*, 2021). In the 21st century, smartphones and the internet have improved many aspects of life and are now an important part of our daily routine in work, private life, and social functioning. In addition to their use for communication purposes, smartphones include numerous other features and functions, like games, access to the internet and social networks, videos, multimedia, and navigation tools (Lee *et al.*, 2014; Ma *et al.*, 2021). It has been reported that outside of their communication features, smartphones can impair daily functioning by the craving impulses they generate just before use, the loss of behavioral control they bring about, and their repetitive use (Kwon *et al.*, 2013). While smartphones offer many conveniences in life, they can turn into an addiction if overused. The ease of carrying and connecting smartphones, compared to other communication devices contributes to strengthening this addiction (Kwon *et al.*, 2013; Bal & Balci, 2020).

Sociodemographic data analyses related to smartphone addiction have largely been performed on the child and adolescent groups, with the results showing that smartphone addiction tends to cause burnout in adolescents later down the line of their schooling life (Lee *et al.*, 2014). It has been observed that there are only a limited number of studies investigating the frequency of internet addiction in adults (Toth *et al.*, 2021). There is no data on whether there is a relationship

between smartphone addiction and situations involving ongoing stressors and anxiety, like the COVID-19 pandemic. The literature review performed as part of this study showed that while the relationship between smartphone addiction and stress, depression, academic performance, loneliness, perceived social support, and personal characteristics has been frequently studied (Bal & Balci, 2020), only a limited amount of data was found on whether a relationship exists between smartphone addiction and burnout (Ma *et al.*, 2021). To fill this gap in the literature, this study sought to investigate the relationship between smartphone addiction and burnout in healthcare workers who have been at the forefront of the fight against the COVID-19 pandemic. Under the hypothesis that healthcare workers with burnout syndrome are more likely to have smartphone addiction, this study specifically examined the burnout syndrome and smartphone addiction in healthcare workers who have been actively working from the beginning of the COVID-19 pandemic and the relationship between these two variables according to the healthcare workers' sociodemographic characteristics. It is believed that this study, being the first of its kind, can serve as a guide to future studies on this subject.

MATERIALS AND METHODS

Study Sample and Data Collection

Face-to-face interviews were conducted with 1190 healthcare workers who were actively working at the Recep Tayyip Erdogan University Research and Training Hospital as of 03.11.2020. The healthcare workers were informed that the interviews were being conducted to determine their burnout levels and smartphone use during the pandemic. A total of 183 healthcare workers agreed to participate in the study. The interviews conducted with the participants lasted 30 to 45 minutes. A sociodemographic data form, the Maslach Burnout Inventory, and the Smartphone Addiction Scale-Short Version were used as the data collection tools. After the results were correlated, they were analyzed based on the sociodemographic data collected.

Inclusion Criteria

1. Being older than 18 years of age
2. Working as medical staff
3. Having no systemic or psychiatric disorders
4. No psychotropic substances use
5. No alcohol or substance use

Data Collection Tools

Sociodemographic data form: This form was prepared by the researchers and included questions regarding the participants' sociodemographic characteristics, such as age, gender, marital status, working status, education level, and whether they suffered from insomnia.

Maslach Burnout Inventory (MBI): This tool was developed by Maslach and Jackson (1981), and the validity and reliability study of its Turkish version was conducted by Ergin (1992). The inventory has 22 items, which are scored on a 5-point Likert-type scale with anchors of 0 (never) and 4 (always). The MBI has three subscales: emotional burnout (9 items), desensitization (5 items), and low personal success (8 items (Maslach & Jackson, 1981).

Smartphone Addiction Scale-Short Form (SAS-SF): This 6-point Likert-type scale was developed by Kwon *et al.* to assess the risk of smartphone addiction. Total scale scores range from 10 to 60, with higher scores indicating a higher risk of addiction. This is a single factor scale, and it has no subscales. The Cronbach's alpha coefficient of internal consistency and concurrent validity was 0.91 for the original scale (Noyan *et al.*, 2015).

Statistical Analysis

The frequencies of the continuous data are shown as means ± standard deviations. The Shapiro-Wilk test and the Kolmogorov-Smirnov test were used to examine the distribution-related characteristics of the continuous variables. The Mann-Whitney-U test and the Kruskal-Wallis test were applied to evaluate the relationship between the variables. Pearson's correlation analysis was used to examine the relationship between two continuous variables. Statistical significance was accepted as $p<0.05$.

Ethics committee approval was obtained from the Recep Tayyip Erdogan University, Faculty of Medicine Non-invasive Clinical Research Ethics Committee. All practices in this study were performed in compliance with the ethical standards of the institutional and/or national research committee and the 1964 Declaration of Helsinki and its subsequent revisions or comparable ethical standards.

RESULTS AND DISCUSSION

Examination of the participants' sociodemographic characteristics showed that 65.6% were female, 61.2% were married, 32.2% were nurses, 20.2% were doctors, 27.9% were cleaning staff, 13.7% were medical secretaries, and 6% were security guards **(Figure 1)**.

The mean age of the participants was 33.07±6.92 years.

Table 1. Sociodemographic characteristics of the participants

	Number	Percentage
Gender		
Male	63	34.4
Female	120	65.6
Marital status		
Single	71	38.8
Married	112	61.2
Education level		
Literate	1	0.5
Primary school	23	12.6
High school	39	21.3
Bachelor's degree	100	54.6
Master's degree	20	10.9
Profession		
Doctor	37	20.2
Nurse	59	32.2
Medical secretary	25	13.7
Security guard	11	6.0

Cleaning staff	51	27.9
Insomnia		
Yes	34	18.6
No	149	81.4

Their mean emotional burnout rate was 24.15±7.79%, and 23.22±11.52% had smartphone addiction **(Table 2)**.

Table 2. Means and standard deviations of the scale scores

Scale	Mean	Standard deviation	Minimum	Maximum
Emotional burnout	24.15	7.79	9	44
Desensitization	10.89	4.25	5	23
Personal success	27.72	6.92	6	44
Smartphone addiction	23.22	11.52	10	58

A significant relationship was found between the participants who experienced emotional burnout and desensitization, and smartphone addiction ($p<0.001$, $p<0.001$) **(Table 3)**. The correlation distribution of the individuals' smartphone addiction score and depersonalization score is shown in **Figure 1**, and the correlation distribution of the emotional exhaustion score is shown in **Figure 2**.

Table 3. Comparison of smartphone addiction and emotional burnout

	Smartphone addiction	
	r	p
Emotional burnout	0.360	<0.001
Desensitization	0.378	0.001
Personal success	0.029	0.712

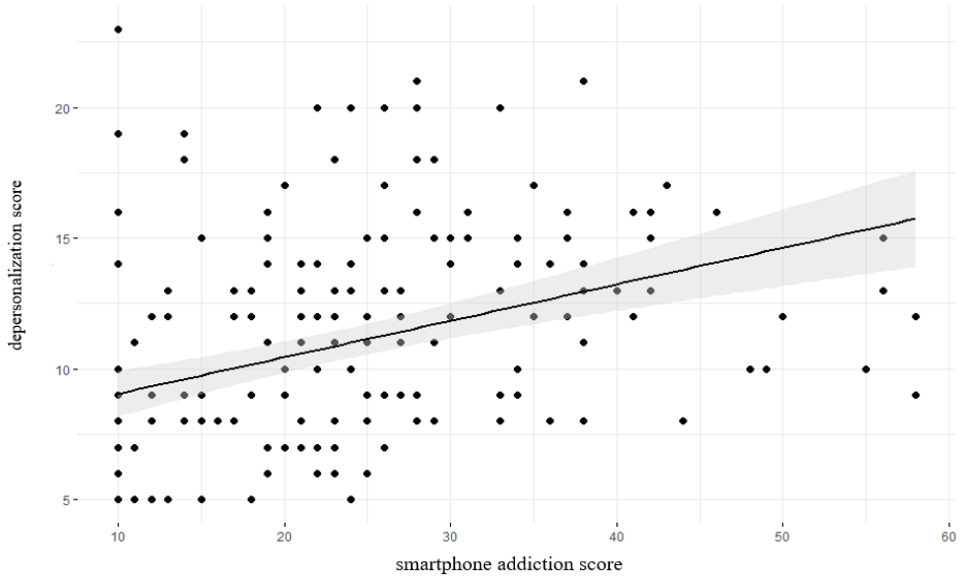

Figure 1. Correlation distribution of smartphone addiction score and depersonalization score

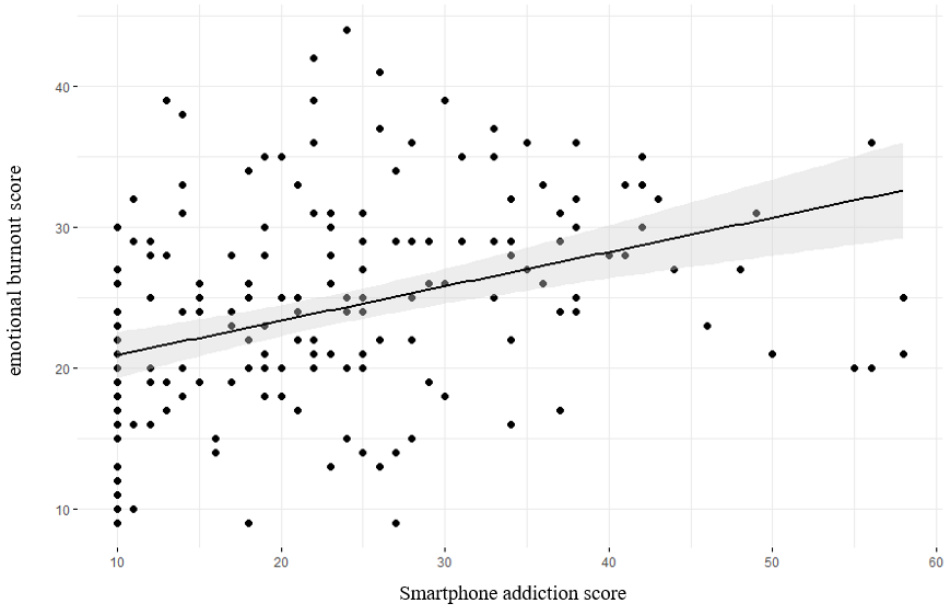

Figure 2. Correlation distribution of smartphone addiction score and emotional burnout score

Age was shown to be negatively correlated with emotional burnout and personal success (r=-0.320 and p<0.001) (r=-0.274 and p<0.001).

It was determined that a significant relationship existed between emotional burnout and being female, single, having higher education levels, working as a doctor or nurse, and suffering from insomnia (p=0.001, p=0.002, p=0.000, p=0.000, p=0.050) **(Table 4)**.

Table 4. Comparison of the scale scores and other variables

	Emotional burnout		Desensitization		Personal success		Smartphone addiction	
	Mean±SD	p	Mean±SD	p	Mean±SD	p	Mean±SD	p
Gender		0.001		0.039		0.075		0.78
Male	21.56±8.02		10±4.09		26.46±8.16		22.89±12.27	
Female	25.51±7.34		11.36±4.27		28.38±6.12		23.39±11.15	
Marital status		0.002		0.110		0.048		0.098
Single	26.35±7.73		11.52±4.05		28.99±6.2		24.99±10.75	
Married	22.75±7.53		10.49±4.34		26.91±7.26		22.1±11.89	
Education level		0.000		0.043		0.000		0.019
Literate	9±19.3		5±9.04		28±22.43		10±17.57	
Primary school	19.3±8.85		9.04±4.12		22.43±8.91		17.57±9.05	
High school	21.72±8.43		10.46±4.31		26.03±8.29		21.46±11.97	
Bachelor's degree	25.5±6.4		11.25±4.15		29.14±5.46		24.51±11.31	
Master's degree	28.45±7.29		12.35±4.11		29.95±4.39		27.35±11.88	
Profession		0.000		0.001		0.002		0.000
Secretary	24.2±7.48		11.4±4.34		27.28±6.12		24.8±11.76	

Security guard	19.82±7.41	9.64±3.67	25.55±7.85	21.27±9.87
Cleaning staff	19.55±8.03	8.92±4.18	24.92±9.21	16.22±9.73
Nurse	27.08±6.09	11.97±3.78	29.56±5.08	26.68±11.02
Doctor	27.05±6.81	11.92±4.29	29.57±4.36	26.86±10.89
Insomnia	0.050	0.032	0.757	0.144
Yes	26.5±7.54	12.29±4.27	27.38±8.14	25.82±12.58
No	23.61±7.77	10.57±4.19	27.79±6.65	22.62±11.22

The Mann-Whitney-U test and the Kruskal-Wallis test were used for this table.

There was a negative correlation between age and emotional burnout (r=-0.320 and p<0.001). Of the participants with smartphone addiction, 22.8% were male, 23.3% were female, 24.9% were single, 22.1% were married, 27.3% had a master's degree, 26.8% were doctors, 25.8% were suffering from insomnia **(Table 4).**

A significant relationship was observed between higher education levels, profession, and smartphone addiction (p= 0.019, p=0.000) **(Table 4)**.

In assessing the significant results using linear regression analysis, it was found that the professional variable lost its significance on addiction and it was determined that 17% of the change in the addiction score could be due to age and 16% to educational status **(Table 5)**.

Table 5. Linear regression analysis of the variables affecting smartphone addiction

	Unstandardized B	Std. Error	Standardized Beta	t	p	95.0% CI
(Constant)	24.2	6.69		3.62	<0,001	11,00-37.39
Age	-0.28	0.13	-0.17	-2.25	0.025	-0.53--0.04
Education level	2.18	1.07	0.16	2.04	0.043	0.07-4.29
Profession	0.33	0.7	0.04	0.47	0.637	-1.06-1.72

This study found that burnout was higher in the participants who were nurses or doctors working on the frontline, female, single, had higher education levels, and/or was suffering from insomnia. A relationship was found between emotional burnout, desensitization, and smartphone addiction, as well as between higher education levels, being in the healthcare professionals group (doctors and nurses), and smartphone addiction. We found that emotional burnout and smartphone addiction are less at later ages and education level affects the addiction score by 16% and age by 17%.

Previous studies have shown that burnout is more common in occupational groups that require one-to-one contact with people, such as healthcare professionals (Aslan *et al.*, 2005; Dolgun, 2015; Salvagioni *et al.*, 2017; Işıklı, 2020; Sahay & Wei, 2022). In more recent studies, the burnout levels associated with these professionals who are at the forefront in the fight against the COVID-19 pandemic have started to be a topic of renewed interest (Ruotsalainen *et al.*, 2006; Krystal *et al.*, 2020). These studies have highlighted the potential that the COVID-19 pandemic will generate higher incidences of burnout syndrome as a result of the increase in the responsibilities required by healthcare professionals to maintain functionalities both in their private and social life during the pandemic, changing job definitions, uncertainty over the ever-

changing nature of the virus, difficulties in managing the disease, and the continuity and chronicity of stressor factors (Dolgun, 2015; Savagioni *et al.*, 2017).

Although studies have shown that females and single individuals experience burnout more than males and married individuals, respectively, (Aslan *et al.*, 2005; Maslach & Leiter, 2008; Savagioni *et al.*, 2017; Wu *et al.*, 2020), more recent studies have found that burnout syndrome was not associated with gender or marital status (Shanafelt & Noseworthy, 2017; Wu *et al.*, 2020). Some studies have indicated that emotional burnout increases with age (Maslach & Leiter, 2008; Toth *et al.*, 2021), while in other studies and meta-analysis evaluations, it is stated that burnout decreases with the effect of increasing experience, and making appropriate decisions with advancing age (Akkus *et al.*, 2010; Gomez-Urquiza *et al.*, 2017). However, other studies have found there to be a significant relationship between burnout syndrome and the daily working hours, long years in the profession, and higher education level of healthcare professionals fighting on the frontlines against the COVID-19 pandemic (Shanafelt *et al.*, 2015; Krystal & McNeil, 2020; Wu *et al.*, 2020; Zhang *et al.*, 2020).

One study conducted in Turkey indicated that the higher levels of emotional burnout seen in healthcare professionals were attributed to the factors of work hours exceeding 17 hours a day, higher levels of academic education, and higher number of years in the profession (Aslan *et al.*, 2005; Maslach & Leiter, 2008).

Despite the discrepant results reported in the studies on the subject in question, the present study, along with most of the other studies, support the idea that females, unmarried individuals, healthcare professionals (doctors and nurses) fighting on the front line, and individuals with higher education levels are more likely to experience burnout syndrome, and with older age, it was found to decrease.

The fact that the health personnel working in the foreground in our country is composed of experienced people who have spent many years in the profession due to the critical decisions they can make in the face of cases, and trying to ensure the continuity of this situation as much as possible during the COVID-19 pandemic process may have had an impact on the reduction of burnout. The present study, as well as related previous studies, suggest that personal success increases when healthcare professionals on the frontline feel that they have a greater sense of control over the virus and in their working field, are able to access the most recent information more quickly, and can make important decisions regarding the patients and directly see the results of these decisions. In these difficult times, when social support is so important, it is believed that healthcare personnel who live with their family and receive sufficient social support will be less likely to suffer from burnout syndrome compared to those who live alone. Under today's social conditions, it could be argued that the burnout experienced by women stems from the role that Turkish culture, as well as other cultures, imposes on women, particularly insofar as they are expected to maintain the domestic responsibilities of childcare and other family tasks while still fulfilling the same duties that their male counterparts fulfill in their business life. In addition, all frontline healthcare workers are vulnerable to burnout syndrome due to having to take overtime shifts unrelated to their area of expertise, problems in the distributions of the tasks, increasing workload arising from the changes in the job descriptions related to the provided healthcare service, changing operating policies in the work, difficulties in adapting to these policies, patients showing only partial recovery over a long period of time or not being able to recover at all, increasing death rates, and the possibility of

infecting other healthcare professionals, relatives, and other patients suffering from another disease.

Studies have highlighted that sleep disorders and burnout symptoms are associated with chronic stressor factors in study groups of doctors. It has been reported that more than half of doctors show burnout symptoms when they have undiagnosed or untreated sleep disorders, such as insomnia, obstructive sleep apnea syndrome, and restless leg syndrome, from shift work (Armon *et al.*, 2008; Karatas *et al.*, 2021). In our previous study, it was found that insomnia was most common in healthcare professionals who were actively working during the pandemic and did not have a psychiatric disorder (Karatas *et al.*, 2021). A similar study reported that there was a reciprocal relationship between insomnia and burnout syndrome, with both conditions potentially being risk factors for each other (Tıraş & Öztemel, 2019). One study conducted in China identified a relationship between insomnia, and burnout in healthcare professionals (Chen *et al.*, 2017). The present study also found that healthcare professionals who had insomnia and were smokers were more likely to have burnout syndrome. The diagnosis of sleep disorders, such as insomnia, and proper intervention constitute critical steps in the fight against burnout syndrome.

Early diagnosis of burnout syndrome and intervention can prevent physical problems, like cardiovascular disorders, respiratory disorders, and gastrointestinal disorders, which can lead to premature death, professional problems, like low productivity and absenteeism, and psychiatric problems, like lack of energy, fatigue, insomnia, and substance use. With early diagnosis and intervention, individuals' performance and functionality in social, private, and work-life would improve, and they would be better able to contribute to fulfilling the roles societies and governments need during the COVID-19 pandemic. It is critically important that the systematic programs created by institutions, hospitals, and the Ministry of Health under the leadership of psychiatrists are equipped with a proper definition of burnout syndrome and its related symptoms so that they can take the necessary precautionary measures to deal with it.

Studies have shown that smartphone addiction, which can be considered a behavioral addiction, and substance use, such as cigarettes or alcohol, reduce the effects of anxiety and chronic stressor factors on burnout syndrome (Lee *et al.*, 2014; Salvagioni *et al.*, 2017; Xia *et al.*, 2020). Smartphones are reported to have a supportive effect in coping with chronic stressor factors on account of the various features and functions they offer outside of simple communication, such as access to the internet and social networks, messaging, videos, and multimedia, as well as their ease of carrying. However, smartphones can also disrupt daily functioning and functionality (Lee *et al.*, 2014; Bavli *et al.*, 2018; Bal & Balci, 2020; Zwilling, 2022). In a meta-analysis study, smartphone addiction was evaluated as a compulsive impulsive spectrum disorder (Toth *et al.*, 2021). Most of the studies on this subject have been conducted with adolescents and university students (Kwon *et al.*, 2013; Lee *et al.*, 2014; Wolniewicz *et al.*, 2018; Bal & Balci, 2020; Ma *et al.*, 2021; Molodynski *et al.*, 2021; Basri *et al.*, 2022). Research shows that there is a relationship between smartphone addiction and age, with smartphone addiction being observed in young adults the most, and that internet usage increases with age (Sözbilir, 2018; Wolniewicz *et al.*, 2018; Toth *et al.*, 2021). It is also stated that the use of mature defense mechanisms with increasing age and the mechanisms of coping with stressor factors are more functional (Bal & Balci, 2020).

Although studies have largely found that there are to be no significant differences between smartphone addiction in gender (Demirci *et al.*, 2015; Tang *et al.*, 2016), there are some that have reported smartphone addiction to be more dominant in females (Ibrahim *et al.*, 2018; Sağıroğlu & Akkanat, 2019; Krystal & McNeil, 2020) while others reported it to be more dominant in males (Yang *et al.*, 2018). While the present study found that smartphone addiction was more prevalent in adulthood (mean age was 33.07±6.92) and decreases with increasing age, there were no significant differences in smartphone addiction in terms of gender. Considering that studies on behavioral addictions, such as smartphone addiction, have mostly been conducted with children and adolescents, the fact that the present study was conducted with adults can be seen as one of its core strengths. Few studies were found in the literature that investigates smartphone addiction in healthcare professionals, and there were no studies found on smartphone addiction in healthcare professionals during the COVID-19 pandemic. This study analyzed smartphone addiction in all healthcare workers actively working during the COVID-19 pandemic and found that healthcare professionals, particularly doctors and nurses working on the front line, were more likely to have a smartphone addiction. The fact that this is the first study to investigate smartphone addiction during the COVID-19 pandemic is considered to be another of the study's main strengths.

Most of the studies highlight that the most determinant factors in smartphone addiction, outside of gender, are anxiety, chronic stress, and poor sleep quality in both men and women (Demirci *et al.*, 2015; Tang *et al.*, 2016; Zhang & Wu, 2020; Ma *et al.*, 2021; Molodynski *et al.*, 2021; Toth *et al.*, 2021). Studies have further shown that chronic stressor factors and desensitization increase the possibility of burnout syndrome, results that support those from the present study showing that smartphone addiction increased with the disruption of these parameters. Another strength of this study is that it is the first to investigate the relationship between burnout syndrome and smartphone addiction. The present study also examined the relationship between burnout syndrome and smartphone addiction in people who were suffering from insomnia but who did not experience chronic stressor factors or have other medical or psychiatric disorders. This study can serve as a guide for future studies specifically investigating the features and functions of smartphones, such as access to the internet and social networks, messaging, videos, and multimedia, and their impact on burnout syndrome.

CONCLUSION

1. Frontline doctors and nurses in the fight against the COVID-19 pandemic, a factor that can be considered a chronic stressor, were most likely to have burnout syndrome and smartphone addiction.
2. Healthcare workers who were single, female, and suffering from insomnia were more likely to have burnout syndrome in older age.
3. It is important to investigate smartphone addiction in adults.
4. There is a relationship between higher levels of education and emotional burnout, desensitization, and smartphone addiction.
5. Healthcare professionals who were experiencing emotional burnout and desensitization were more likely to have a smartphone addiction.

Limitations

1. Other sleep disorders, such as working in shifts and circadian rhythm disorders, were not investigated in the present study.
2. The presence of insomnia was not investigated using a specific scale but instead was determined through several questions on the sociodemographic data form.
3. The features of smartphones, such as access to the internet and social networks, messaging, videos, and multimedia and their frequency of use, were not addressed separately in terms of smartphone addiction.

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References

Akkuş, Y., Karacan, Y., Göker, H., & Aksu, S. (2010). Determination of burnout levels of nurses working in stem cell transplantation units in Turkey. *Nursing & Health Sciences*, *12*(4), 444-449.

Armon, G., Shirom, A., Shapira, I., & Melamed, S. (2008). On the nature of burnout–insomnia relationships: A prospective study of employed adults. *Journal of Psychosomatic Research*, *65*(1), 5-12.

Aslan, D., Kiper, N., Karaağaoğlu, E., Topal, F., Güdük, M., & Cengiz, Ö. (2005). *Burnout Syndrome and Affecting Factors in a Group of Physicians Registered with Medical Chambers in Turkey*. 1 st Ed. Turkish Medical Association Publications.

Bal, E., & Balci, Ş. (2020). Smartphone addiction: A study on efficacy of personality traits and usage patterns. *Journal of Erciyes Communication*, *7*(1), 369-394.

Basri, S., Hawaldar, I. T., Nayak, R., & Rahiman, H. U. (2022). Do Academic Stress, Burnout and Problematic Internet Use Affect Perceived Learning? Evidence from India during the COVID-19 Pandemic. *Sustainability*, *14*(3), 1409.

Bavli, Ö., Katra, H., & Günar, B. B. (2018). Investigation of smartphone addiction levels among university students. *Uluslararası Kültürel ve Sosyal Araştırmalar Dergisi (UKSAD)*, *4*(1), 326-333.

Bilge, Y., & Bilge, Y. (2020). Investigation of the effects of corona virus pandemic and social isolation on psychological symptoms in terms of psychological resilience and coping styles (tur). *Journal of Clinical Psychiatry*, *23*(Supp: 1), 38-51.

Çakır Kardeş, V. (2020). *Anxiety Disorders and Depression During Pandemics with the Updates on COVID-19*. 1 st Ed. Türkiye Klinikleri.

Chen, B., Liu, F., Ding, S., Ying, X., Wang, L., & Wen, Y. (2017). Gender differences in factors associated with smartphone addiction: a cross-sectional study among medical college students. *BMC Psychiatry*, *17*(1), 1-9.

Demirci, K., Akgönül, M., & Akpinar, A. (2015). Relationship of smartphone use severity with sleep quality, depression, and anxiety in university students. *Journal of Behavioral Addictions*, *4*(2), 85-92.

Dolgun, U. (2015). *Current Issues in Organizational Behavior, Burnout Syndrome*. 3 rd Ed. Ekin Basın Yayın Dağıtım.

Gómez-Urquiza, J. L., Vargas, C., De la Fuente, E. I., Fernández-Castillo, R., & Cañadas-De la Fuente, G. A. (2017). Age as a risk factor for burnout syndrome in nursing professionals: a meta-analytic study. *Research in Nursing & Health*, *40*(2), 99-110.

Ibrahim, N. K., Baharoon, B. S., Banjar, W. F., Jar, A. A., Ashor, R. M., Aman, A. A., & Al-Ahmadi, J. R. (2018). Mobile phone addiction and its relationship to sleep quality and academic achievement of medical students at King Abdulaziz University, Jeddah, Saudi Arabia. *Journal of Research in Health Sciences*, *18*(3), e00420.

Işıklı, S. (2020). *Psychological effects of the COVID-19 epidemic and effective coping methods*. 1 st Ed. Hacettepe Üniversitesi Fen Edebiyat Fakültesi.

Karatas, K. S., Karatas, Y., Telatar, T. G., & Colak, S. (2021). Evaluation of sleep-wakefulness disorders in healthcare professionals working at a university hospital during COVID-19. *Psychiatria*, *18*(4), 255-264.

Karataş, K. S. (2021). *Overview of the effects of the COVID-19 pandemic in medicine, ethics and social fields, Psychiatric Diseases and COVID-19*. 1 st Ed. Ege Üniversitesi Rektörlüğü Kütüphane ve Dokümantasyon Daire Başkanlığı.

Krystal, J. H. (2020). Responding to the hidden pandemic for healthcare workers: stress. *Nature Medicine*, *26*(5), 639-639.

Kwon, M., Kim, D. J., Cho, H., & Yang, S. (2013). The smartphone addiction scale: development and validation of a short version for adolescents. *PloS one*, *8*(12), e83558.

Lee, H., Ahn, H., Choi, S., & Choi, W. (2014). The SAMS: Smartphone addiction management system and verification. *Journal of Medical Systems*, *38*(1), 1-10.

Ma, H., He, J. Q., Zou, J. M., & Zhong, Y. (2021). Mobile phone addiction and its association with burnout in Chinese novice nurses: A cross-sectional survey. *Nursing Open*, *8*(2), 688-694.

Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Organizational Behavior*, *2*(2), 99-113.

Maslach, C., & Leiter, M. P. (2008). *The truth about burnout: How organizations cause personal stress and what to do about it*. John Wiley & Sons.

Molodynski, A., Lewis, T., Kadhum, M., Farrell, S. M., Lemtiri Chelieh, M., Falcão De Almeida, T., Masri, R., Kar, A., Volpe, U., Moir, F., et al. (2021). Cultural variations in wellbeing, burnout and substance use amongst medical students in twelve countries. *International Review of Psychiatry*, *33*(1-2), 37-42.

Noyan, C. O., Darcin, A. E., Nurmedov, S., Yilmaz, O., & Dilbaz, N. (2015). Validity and reliability of the Turkish version of the Smartphone Addiction Scale-Short version among university students/Akilli Telefon Bagimliligi Olceginin Kisa Formunun universite ogrencilerinde Turkce gecerlilik ve guvenilirlik calismasi. *Anadolu Psikiyatri Dergisi*, *16*(S1), 73-82.

Ruotsalainen, J. H., Verbeek, J. H., Mariné, A., & Serra, C. (2006). Preventing occupational stress in healthcare workers. *Cochrane Database of Systematic Reviews*, *18*(4), CD002892.

Sağiroğlu, K. E., & Akkanat, Ç. (2019). Lise Öğrencilerinin Akıllı Telefon Bağımlılıklarının İncelenmesi. *Online Journal of Technology Addiction and Cyberbullying*, *6*(2), 1-16.

Sahay, S., & Wei, W. (2022). "Everything Is Changing, but I Am Not Alone": Nurses' Perceptions of Social Support during COVID-19. *Sustainability*, *14*(6), 3262.

Salvagioni, D. A. J., Melanda, F. N., Mesas, A. E., González, A. D., Gabani, F. L., & Andrade, S. M. D. (2017). Physical, psychological and occupational consequences of job burnout: A systematic review of prospective studies. *PloS one*, *12*(10), e0185781.

Saravi, M. M., Dilamghany, S., Dadrasan, M., & Borjinia, F. (2014). The relationship between quality of work life with job burnout and mental physical health of staff in Iran. *World Journal of Environmental Biosciences*, *6*, 21-28.

Shanafelt, T. D., & Noseworthy, J. H. (2017, January). Executive leadership and physician well-being: nine organizational strategies to promote engagement and reduce burnout. In *Mayo Clinic Proceedings*, *92*(1), 129-146.

Shanafelt, T. D., Gorringe, G., Menaker, R., Storz, K. A., Reeves, D., Buskirk, S. J., Sloan, J. A., & Swensen, S. J. (2015, April). Impact of organizational leadership on physician burnout and satisfaction. In *Mayo Clinic Proceedings*, *90*(4), 432-440.

Sözbillir, F. (2018). The Impact of social media usage and smartphone addiction on youngs'/adolescents' career futures: a study at high schools. *Business & Management Studies: An International Journal*, *6*(2), 466-487.

Tang, J. H., Chen, M. C., Yang, C. Y., Chung, T. Y., & Lee, Y. A. (2016). Personality traits, interpersonal relationships, online social support, and Facebook addiction. *Telematics and Informatics*, *33*(1), 102-108.

Toth, G., Kapus, K., Hesszenberger, D., Pohl, M., Kosa, G., Kiss, J., Pusch, G., Fejes, E., Tibold, A., & Feher, G. (2021). Internet addiction and burnout in a single hospital: Is there any association?. *International Journal of Environmental Research and Public Health*, *18*(2), 615.

Traş, Z., & Öztemel, K. (2019). Examining the relationships between Facebook intensity, fear of missing out, and smartphone addiction. *Addicta*, *6*, 91-113.

Tükel, R. (2020). *Mental health during the COVID-19 pandemic* (Report No. 6). Turkish Medical Association.

Wolniewicz, C. A., Tiamiyu, M. F., Weeks, J. W., & Elhai, J. D. (2018). Problematic smartphone use and relations with negative affect, fear of missing out, and fear of negative and positive evaluation. *Psychiatry Research*, *262*, 618-623.

Wu, Y., Wang, J., Luo, C., Hu, S., Lin, X., Anderson, A. E., Bruera, E., Yang, X., Wei, S., & Qian, Y. (2020). A comparison of burnout frequency among oncology physicians and nurses working on the frontline and usual wards during the COVID-19 epidemic in Wuhan, China. *Journal of Pain and Symptom Management*, *60*(1), e60-e65.

Xia, L., Jiang, F., Rakofsky, J., Zhang, Y., Zhang, K., Liu, T., Liu, Y., Liu, H., & Tang, Y. L. (2020). Cigarette smoking, health-related behaviors, and burnout among mental health professionals in China: a nationwide survey. *Frontiers in Psychiatry*, 706.

Yang, S. Y., Lin, C. Y., Huang, Y. C., & Chang, J. H. (2018). Gender differences in the association of smartphone use with the vitality and mental health of adolescent students. *Journal of American College Health*, *66*(7), 693-701.

Yapıcı Eser, H. (2020). *Stress, Adaptation and Psychiatric Effects in COVID-19 Period*. 1 st Ed. Türkiye Klinikleri.

Zhang, C., Yang, L., Liu, S., Ma, S., Wang, Y., Cai, Z., Du, H., Li, R., Kang, L., Su, M., et al. (2020). Survey of insomnia and related social psychological factors among medical staff involved in the 2019 novel coronavirus disease outbreak. *Frontiers in Psychiatry*, *11*, 306.

Zhang, M. X., & Wu, A. M. (2020). Effects of smartphone addiction on sleep quality among Chinese university students: The mediating role of self-regulation and bedtime procrastination. *Addictive Behaviors*, *111*, 106552.

Zwilling, M. (2022). The Impact of Nomophobia, Stress, and Loneliness on Smartphone Addiction among Young Adults during and after the COVID-19 Pandemic: An Israeli Case Analysis. *Sustainability*, *14*(6), 3229.