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# The Smartphone Addiction Levels and the Association With Communication Skills in Nursing and Medical School Students

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## ABSTRACT

**Background:** The use of smartphones among young people is quite common. However, smartphones are associated with negative effects when used excessively. It has been reported that smartphone use may adversely affect learning in the classroom, cause safety issues, and negatively affect interpersonal communications.

**Purpose:** The aims of this study were to determine the level of smartphone addiction among nursing and medical school students and to examine the effect of smartphone addiction level on communication skills.

**Methods:** This cross-sectional study was conducted with medical school and nursing students at a public university (502 participants). Data were collected using a personal information form, the Smartphone Addiction Scale–Short Version (SAS-SV), and the Communication Skills Assessment Scale.

**Results:** All of the participants in the study owned smartphones. Most (70.9%) were female, and 58.2% were in the nursing program. The participants used smartphones for a mean time of 5.07 ± 3.32 hours a day, primarily for messaging. The mean total SAS-SV score for the participants was 31.89 ± 9.90, and a significant difference in SAS-SV mean scores was found with regard to the variables of department, gender, daily smartphone use duration, academic success, status regarding smartphone use in the classroom, participation in sports, easy communication with patients and relatives, preferred mode of communication, health problems tied to phone use, and injury status ($p < .05$). In addition, a positive weak-to-moderate relationship was found between SAS-SV mean scores and the variables of daily smartphone use duration and years of smartphone use, whereas a negative weak relationship was found between SAS-SV mean scores and Communication Skills Assessment Scale scores. Daily smartphone use duration was found to be the most important predictor of smartphone addiction.

**Conclusions/Implications for Practice:** Higher SAS-SV scores have a negative impact on interpersonal communication and social life and reduce learning efficacy in students. Therefore, students and lecturers should be better informed regarding the benefits and risks of smartphone use in education, with precautions provided against excessive and needless use.

**KEY WORDS:**
academic, communication, smartphone addiction, students, university.

## Introduction

Smartphones, with many applications spanning communication, information, and entertainment (Haug et al., 2015), are a ubiquitous and indispensable part of modern life (Cho & Lee, 2015). Tasks such as making phone calls, messaging, entering social networks, taking photographs and videos, sharing images and messages on social media, playing games, and surfing the Internet may be performed anywhere and anytime via smartphones (Lepp, Li, Barkley, & Salehi-Esfahani, 2015; Samaha & Hawi, 2016). In addition, smartphones have other qualities that make life easier such as making video calls and finding directions using navigation programs (Samaha & Hawi, 2016; Şata, Çelik, Ertürk, & Taş, 2016). Smartphones are very beneficial when not used excessively (Kim, Lee, Lee, Nam, & Chung, 2014). However, the recent increase in smartphone use has necessitated examinations of its negative effects (Choi et al., 2015; Mok et al., 2014; Samaha & Hawi, 2016).

A general point of concurrence in studies on smartphones is the prevalence of smartphone use among younger people and its association with addictive behavior (Davey & Davey, 2014; Kim et al., 2014; Süt, Kurt, Uzal, & Özdilek, 2016). As smartphone use is more prevalent among younger people, they are generally more exposed to the negative effects of excessive use, and smartphone addiction is seen as a particularly high risk factor for younger people (Kim et al., 2014). Smartphone addiction is defined as a condition that affects the daily life of users, inducing clinical characteristics such as loss of attention, tolerance, and control; mood disorders; and withdrawal symptoms (Lee, Chang, Lin, & Cheng, 2014). In a meta-analysis study on Indian adolescents, smartphone addiction prevalence was reported to vary between 39% and 44%, with this addiction

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potentially associated with psychologically negative health outcomes (Davey & Davey, 2014). Smartphone addiction has reportedly reached a prevalence of 11.4% among younger people in South Korea, with 2.2% facing smartphone-addiction-related difficulties in their daily lives (Kim et al., 2014). In a report published in the United States, 15% of 18- to 29-year-olds were identified as heavily addicted to smartphones (Smith, 2017a), with 92% of the current younger generation owning smartphones (Smith, 2017b). According to the results of the 2015 Household Information Technologies Use Survey by the Turkish Institute of Statistics, the rate of mobile phone use in Turkey is 96.9% (Turkish Statistical Institute, 2017).

In recent years, interpersonal forms of communication have been reshaped and changed because of the development and use of smartphone technologies. Time spent on social network sites and growing membership numbers on these sites are important indicators that a new form of communication has been established and that new communication habits have arisen (Aydın, 2016). A qualitative study by Çizmeci conducted on university students in Turkey found smartphones to be an essential part of relationships among today's youth, helping in both the initiation and advancement of emotional relationships. On the other hand, smartphones have been found to create trust issues in interpersonal relationships, creating behaviors related to attachment anxiety and increasing relationship fragility (Çizmeci, 2017). Similarly, a study conducted in India found that excessive telephone use has a net negative impact on the interpersonal relationships of adolescents (Davey & Davey, 2014). Using a smartphone and being online is seen as a popular activity among youth (Şata et al., 2016). However, whereas individuals "socialize" using smartphones in theory, a trend toward individualization has been noted in real (offline) life. Thus, smartphones change family and interpersonal relationships, routine daily life, habits, and even behaviors (King et al., 2013; Samaha & Hawi, 2016). This may cause problems such as loneliness, isolation, anxiety, depression, stress, sleep disorders, decreased physical activity, musculoskeletal system disorders, and academic failure (Kim, 2013; Samaha & Hawi, 2016). Concurrently, increased smartphone use by the younger generation has been shown to promote phobic behaviors such as continuously checking for messages and calls, feeling worry or anxiety in places without network coverage or with limited access, leaving the phone on constantly, and sleeping with the phone by the user's side (Bragazzi & Del Puente, 2014).

As the problems associated with smartphone and Internet addiction in current university students threaten both the present and future of society, examining the situation and determining the resultant problems are important. The smartphone addiction behaviors of students negatively affect their communication abilities, social lives, and academic performance (Cho & Lee, 2015; Davey & Davey, 2014).

In occupations such as medicine and nursing, which are concerned with human health, this type of behavioral addiction is thought to cause problems in terms of both patient safety and employee safety. Nursing and medicine students, who focus an important part of their education on clinical issues, have responsibilities regarding patient and employee safety. The excessive use of smartphones in work environments may affect the clinical performance of students. For this reason, smartphone addiction in healthcare students is an important issue to examine. Only a few studies in Turkey have examined smartphone and Internet addiction in students in healthcare-related fields (Süt et al., 2016; Yılmaz, Çınar, & Özyazıcıoğlu, 2017). Because smartphone addiction may be viewed as a new behavioral addiction, this study was conducted to determine the frequency of smartphone use among a population of students studying in medicine and nursing departments to assess their levels of addiction and examine the effect of this addiction on their communication skills.

# Methods

## Sample

This descriptive and cross-sectional study was conducted on a population of students studying at the medical school and nursing department of a public university between September and December 2017. Seven hundred eighty-two students were enrolled in the medical school and the nursing department of the university in the fall semester of the 2017–2018 academic year.

All of the students in the targeted medical school and nursing department were recruited as participants. Two hundred ten of the 364 students registered in the medical school and 292 of the 418 students registered in the nursing department volunteered to participate in this study, a total of 502 participants. The criteria for participation in this study included being a student in the targeted medical school or nursing department, having a smart phone, regularly attending classes, volunteering to participate, and filling in the required forms completely. The curriculum for each class was acquired from the school administration, and researchers scheduled periods when students did not have classes and were not scheduled to be in clinical practicums to conduct interviews and complete questionnaires. The researchers explained the purpose and requirements of this study to the students and obtained their verbal consent. The questionnaires were filled out by participants under direct observation and collected immediately. The completion of the data forms took approximately 10–15 minutes.

## Data Collection Tools

The personal information form was prepared by the researchers based on the literature and included 20 items on age, gender, income level, academic performance, social activities, and smartphone usage characteristics.

The Smartphone Addiction Scale–Short Version (SAS-SV) is a 33-item scale designed to evaluate smartphone addiction (Kwon, Kim, Cho, & Yang, 2013). Because of the length of the scale and the lack of definitive cutoff points, 10 of the 33 items were used to create a short form that could be completed more easily and in a shorter period and that could facilitate diagnoses

using cutoff points (Kwon, Lee, et al., 2013). Noyan, Darçın, Nurmedov, Yılmaz, and Dilbaz (2015) translated the 10-item SAS-SV into Turkish in 2015 and tested the validity and reliability of the translated version (Noyan et al., 2015). The scale is a 10-item, 6-point Likert-type scale with one factor and no subdimensions. The items of the scale are scored from 1 to 6, giving a possible total score range for the scale of 10–60, with higher scores indicating a higher risk of addiction. In the Korean sample, the cutoff point was determined as 31 for men and 33 for women. The internal consistency and concurrent validity Cronbach's alpha score for the original form was .91. In this study, the Cronbach's alpha value for the scale was .87. The interitem correlation matrix of SAS-SV was examined, and each item was found to correlate positively with the others. The correlation coefficient of each item was found to be medium or high. Moreover, the internal consistency coefficient did not change when the item was removed from the scale during the item analysis, and each item was in accordance with the scale.

The Communication Skills Assessment Scale (CSAS) was developed by Korkut in 1996. The CSAS was first designed to be used with high school students and later tested for validity and reliability for use with university students and adults. The CSAS is a 25-item, 5-point Likert-type scale that aims to determine how adolescents evaluate their communication skills. In the reliability study for the scale performed with university students, the reliability coefficient was found to be .78 and the internal consistency coefficient was found to be .86. Each item in the scale is scored from 1 to 5, with 1 = *never* and 5 = *always*. Because the scale includes no reverse-scored items, higher scores indicate a higher self-evaluation of personal communication skills (Korkut Owen & Bugay, 2014). In this study, the Cronbach's alpha coefficient for this scale was .93.

## Data Analysis

Statistical evaluations were performed using IBM SPSS Statistics Version 21 (IBM, Armonk, NY, USA). Descriptive analyses (numbers, mean values, medians, standard deviations), the independent sample $t$ test for the comparison of numeric variables among groups, one-way variance analysis, and correlation analysis were used to determine the relationship between students' smartphone addiction and communication skills, whereas linear regression analysis was used to determine the effect of smartphone addiction on communication skills. A $p$ value of < .05 was considered statistically significant.

## Ethical Considerations

Before the study, written permission from the institutions where the study was conducted and ethical approval from the Namık Kemal University School of Medicine Non-Invasive Clinical Studies Board of Ethics were received (2017/44/04/04). In addition, each student who stated interest to participate in the study was informed about the study, given an explanation regarding the aims and procedures, informed of their responsibilities, and asked to provide formal consent.

## Results

The mean age of the participants was $21.20 \pm 1.86$ years. Nearly three quarters (70.9%) were female, 58.2% were studying nursing, and 41.8% were studying medicine. The participants self-reported using smartphones for a mean of $5.26 \pm 2.83$ years and a mean of $5.07 \pm 3.32$ hours a day, changing a mean of $2.58 \pm 1.63$ (median = 2) phones in the process. Furthermore, the participants self-reported using their smartphones mostly for messaging, followed by social media and Internet surfing, respectively.

The participants reported using smartphones in many environments and during many other activities. Phone use was especially high in classrooms and buses. More than half of the participants (55.2%) reported using smartphones during class regardless of course type, 39% reported having difficulties following courses because of smartphone use, and 13.9% had related decreases in their academic performance. A significant number (16.1%) of participants reported experiencing at least one accident or injury (falling, slipping) because of smartphone use, whereas 39.1% had at least one smartphone-related health problem (burning and dryness of eyes, sleeplessness, musculoskeletal system disorders). More than one third (39.2%) of the participants engaged regularly in sports activities (Table 1).

One quarter (27.9%) of the participants reported preferring to use their phones or social media to initiate communications. Three quarters of the participants (76.9%) stated that they communicated easily with patients and next of kin during clinical applications. The mean total CSAS score for the participants was calculated as $97.99 \pm 13.17$ (Table 1).

The mean total SAS-SV score of the participants was $31.89 \pm 9.90$. When evaluated with regard to the scores they took from each item of the Smartphone Addiction Scale, the highest mean score was for the item "I cannot stand being separated from my smartphone" ($3.70 \pm 1.34$), whereas the lowest mean score was for the item "I feel pain in my wrist or neck because of using my smartphone" ($2.78 \pm 1.47$; Table 2).

When the SAS-SV mean scores of the students were compared with demographic characteristics, a significant difference in SAS-SV mean score was found for the variables of department, gender, daily smartphone use duration, academic performance, smartphone use in the classroom, participation in sports, easy communication with patients and relatives, preferred mode of communication, health problems tied to phone use, and injury status ($p < .05$; Table 3).

A correlation analysis was conducted to assess whether the participants' smartphone addiction was significantly related to their communication skill level, with results showing a negative, significant, and very weak relationship ($r = -.13, p < .001$).

The results of linear regression analysis, conducted to determine the effect of participants' smartphone addiction on their communication skills, showed smartphone addiction to affect communication skills significantly ($\beta = -.130, p = .004$). Thus, smartphone addiction was found to negatively affect communication skills.

## TABLE 1.
### Participant Characteristics (N = 502)

| Characteristic | M | SD |
| --- | --- | --- |
| Age (years) | 21.20 | 1.86 |
| CSAS | 97.99 | 13.17 |
| Year of using smartphone | 5.26 | 2.83 |
| Smartphone usage time (hours/day) | 5.07 | 3.32 |
| Number of phone exchanges | 2.58 | 1.63 |
| Purpose and time spent using a smartphone (hours/day) | | |
| Messaging | 1.83 | 2.57 |
| Social networking (Facebook, Twitter, Instagram, other) | 1.81 | 2.38 |
| Surfing on the Internet | 1.51 | 0.94 |
| | n | % |
| Gender | | |
| Female | 356 | 70.9 |
| Male | 146 | 29.1 |
| Program | | |
| Nursing department | 292 | 58.2 |
| Medical school | 210 | 41.8 |
| Smartphone use in the classroom | | |
| Yes | 277 | 55.2 |
| No | 225 | 44.8 |
| Failure to follow course topics | | |
| Yes | 196 | 39.0 |
| No | 306 | 61.0 |
| Situations where you use your smartphone | | |
| While walking | 34 | 6.8 |
| During the conversation | 10 | 2.0 |
| On the bus | 209 | 41.6 |
| Eating | 17 | 3.4 |
| During sporting activities | 5 | 1.0 |
| Many situations | 227 | 45.2 |
| Injury while using the phone (falling, bumping, hanging, etc.) | | |
| Yes | 81 | 16.1 |
| No | 421 | 83.9 |
| Health problems because of phone use (eye problems, pain, etc.) | | |
| Yes | 196 | 39.1 |
| No | 259 | 51.5 |
| Unanswered | 7 | 1.4 |
| Regular sports participation | | |
| Yes | 197 | 39.2 |
| No | 305 | 60.8 |
| Preferred communication type | | |
| Face to face | 362 | 72.1 |
| Via phone or social media | 140 | 27.9 |
| Communicating with patients and patient relatives | | |
| Yes | 386 | 76.9 |
| No | 21 | 4.2 |
| Some | 95 | 18.9 |

Note. CSAS = Communication Skills Assessment Scale.

# Discussion

In the 21st century, a large and growing number of young people and adolescents spend a significant amount of their time using and enjoying mobile phones. However, it has been highlighted in recent studies that the overuse of smartphones may result in smartphone addiction (Davey & Davey, 2014) and may already be a public health problem on par with alcohol, smoking, and drug addiction (Kuyucu, 2017).

No cutoff point was determined in the Turkish version of the SAS-SV scale used in this study. In the Korean sample, the cutoff point was determined as 31 for men and 33 for women. Overall, 26.6% of women and 16.6% of men earned scores above the cutoff point in the Korean sample (Kwon, Lee, et al., 2013). Because in large part of technological and cultural differences, the cutoff points obtained in the Korean sample may not be appropriate for Turkish settings. However, when the participants in this study were evaluated based on the cutoff points used in the Korean sample, 48.6% of women and 42.8% of men were identified as being at risk of smartphone addiction. Samaha and Hawi (2016), using the same scale in their study of 293 university students, identified a high risk of smartphone addiction in 44.6% (female: 49.1%, male: 40.7%) of students (Samaha & Hawi, 2016). These results concur with a meta-analysis study of Indian adolescents (Davey & Davey, 2014). In a study conducted in Turkey by Noyan et al. (2015), smartphone addiction was detected in 23.0% of the women and 20.5% of the men participants (Noyan et al., 2015). The difference between the studies is thought to stem from the different years in which the studies were conducted, as the prevalence of smartphone use continues to rise sharply. In Table 2, the highest mean score for the item "I cannot stand being separated from my smartphone" supports the idea of higher smartphone addiction rates. These results are important, as they show the high risk of smartphone addiction among students and the necessity of taking preventive measures to protect younger people.

In this study, the mean smartphone addiction score for the women participants was significantly higher. In the literature, gender differences have been reported in the context of smartphone addiction, usually in terms of how users of different genders use their smartphones (Choi et al., 2015; Mok et al., 2014). In a study that performed regression analysis, smartphone addiction was found to be significantly related to being female, whereas Internet addiction was found to be significantly related to being male (Choi et al., 2015). According to a study performed on South Korean adolescents, whereas women used the Internet mostly for chatting, sending messages, writing blogs, and updating their personal homepages, men used the Internet mostly for going online, searching information, and playing games (Heo, Oh, Subramanian, Kim, & Kowachi, 2014). The smartphone addiction scores for nursing students were found to be significantly higher than for medical students in this study. This difference may stem from gender as well, as most of the participants from the nursing department were women.

**TABLE 2.**
*Smartphone Addiction Scale–Short Version Item Mean Scores (N = 502)*

| Item | M | SD |
|---|---|---|
| 1. Missing planned work because of smartphone use | 2.84 | 1.36 |
| 2. Having a hard time concentrating in class, while doing assignments, or while working because of smartphone use | 3.08 | 1.42 |
| 3. Feeling pain in the wrists or at the back of the neck while using a smartphone | 2.78 | 1.47 |
| 4. Won't be able to bear not having a smartphone | 3.70 | 1.34 |
| 5. Feeling impatient and fretful when I am not holding my smartphone | 3.04 | 1.48 |
| 6. Having my smartphone in my mind even when I am not using it | 3.26 | 1.41 |
| 7. I will never give up using my smartphone even when my daily life is already greatly affected by it. | 3.22 | 1.46 |
| 8. Constantly checking my smartphone so as not to miss conversations between other people on Twitter or Facebook | 2.80 | 1.38 |
| 9. Using my smartphone longer than I had intended | 3.46 | 1.34 |
| 10. The people around me tell me that I use my smartphone too much. | 2.92 | 1.36 |

*Note.* Cronbach alpha = .87; scale mean = 31.89, *SD* = 9.90.

In this study, the participants were found to use smartphones mostly for messaging and connecting to social network services. These results are congruent with the motivations for smartphone use by women, as two thirds of the participants in this study were women. Choi et al. (2015) reported that smartphones were used mostly for messaging services, with the rationale behind this showing that messaging enables the use of other applications such as phone calls, blogging, and social network chatting (Choi et al., 2015). Contrary to those findings, other studies have found that smartphones are used solely as communication devices (Kwon, Kim, et al., 2013).

In this study, the result that best spotlights the excessive use of smartphones is that daily smartphone use among the participants totaled about 5 hours, which is quite high. Erdem, Kalkin, Türen, and Deniz (2016) reported daily smartphone use by students as 6.43 hours, whereas Süt et al. (2016) reported that approximately half of the students used their smartphones for over 4 hours per day on average (Süt et al., 2016). These findings concur with the findings of Haug et al.'s (2015) study of Swiss youth.

Excessive smartphone use has been associated in the literature with lower academic performance. Moreover, multiple studies have found using phones in the classroom environment to be unacceptable, distracting both to the user and to others sharing the same environment, and a cause of complaints (Choi et al., 2015; Cho & Lee, 2015; Erdem et al., 2016). This study found similar results. The SAS-SV scores, class note deficiencies, and academic scores of the participants in this study who continued to use smartphones during class were found to be significantly lowest. In Subba et al. (2013), a great majority of the Indian students reportedly used smartphones in class, laboratories, and libraries and with time limits. In Cho and Lee (2015), smartphone use was shown to affect classroom learning negatively and it was recommended that rules and policies to control smartphone use in clinical applications be developed. Furthermore, another study identified smartphone use as affecting classroom performance, obstructing studies, and causing psychological problems (Davey & Davey, 2014). Yıldırım, Yaşar, and Duru (2016) examined smartphone use in educational environments under a different light, concluding that the educational functions of smartphones were being ignored and that smartphones could support teaching and learning if an appropriate technical and contextual substructure were developed (Yıldırım et al., 2016).

In the literature, the effects of smartphones on daily life, habits, and behaviors have been emphasized (Samaha & Hawi, 2016). Of special interest is the consistent controlling behavior of constantly using and checking smartphone applications. This causes problems in users such as anxiety, stress, sleep disorders, decreased physical activity, decreased academic performance, and disrupted well-being (Haug et al., 2015; Samaha & Hawi, 2016). In this study, dovetailing with the literature, the SAS-SV scores of those who reported health problems related to smartphone use faced a significantly higher risk of experiencing falling and slipping accidents during smartphone use and participated in sports less than their non-smartphone-using peers (Haug et al., 2015). These results are important in terms of showing the effects on behavior, especially among those addicted to smartphone use.

In this study, participants were shown to have good communication skills. Although several studies have reported student communication skills similar to this study (Abdrbo, 2017; Cerit, Çıtak Bilgin, & Ak, 2018), other studies have found that students had an unacceptably low level of communication skills (Acar & Buldukoglu, 2016). Communication skills facilitate interpersonal relationships in all areas of life, especially in the professional field. Communication is a high-priority competency for healthcare professionals who work in human-centered environments. Communication is a basic tool that is necessary to determine the needs of healthy individuals as well as patients and to plan the provision of appropriate care. Thus, it is important to establish effective

**TABLE 3.**

**Comparison of Smartphone Addiction Scale–Short Version Mean Scores by Characteristics of Students (N = 502)**

| Characteristic | Smartphone Addiction Scale–Short Version | | | |
| --- | --- | --- | --- | --- |
| | M | SD | t/F | p |
| Program | | | 3.864 | < .001 |
|   Medical school | 29.32 | 9.93 | | |
|   Nursing department | 33.32 | 9.54 | | |
| Gender | | | 3.033 | .002 |
|   Female | 32.74 | 9.89 | | |
|   Male | 29.81 | 9.66 | | |
| Daily use (hours/day) | | | F = 41.284 | < .001 |
|   0–2 | 26.07 | 8.66 | | |
|   3–5 | 30.38 | 8.86 | | |
|   6–8 | 36.91 | 9.94 | | |
| Smartphone use in the classroom | | | 3.826 | < .001 |
|   Yes | 33.39 | 9.78 | | |
|   No | 30.04 | 9.77 | | |
| Failure to follow course topics | | | 6.070 | < .001 |
|   Yes | 35.13 | 10.13 | | |
|   No | 29.81 | 9.19 | | |
| Course performance | | | F = 28.310 | < .001 |
|   Successful | 30.84 | 1.02 | | |
|   Partially successful | 32.27 | 9.36 | | |
|   Unsuccessful | 35.26 | 1.09 | | |
| Regular sports participation | | | 4.677 | < .001 |
|   Yes | 29.37 | 9.67 | | |
|   No | 33.52 | 9.73 | | |
| Health problems because of phone use (eye problems, pain, etc.) | | | 4.276 | .001 |
|   Yes | 34.11 | 9.69 | | |
|   No | 30.12 | 9.98 | | |
| Injury when using the phone (falling, bumping, hanging, etc.) | | | 3.021 | .003 |
|   Yes | 34.91 | 11.16 | | |
|   No | 31.31 | 9.55 | | |
| Preferred communication type | | | −2.857 | .004 |
|   Face to face | 31.06 | 9.14 | | |
|   Via phone or social media | 33.79 | 11.28 | | |
| Communicating with patients and patient relatives | | | −1.798 | .043 |
|   Yes | 31.44 | 9.65 | | |
|   No/some | 33.30 | 10.59 | | |

communication to understand the patient, build mutual trust, and improve quality of care and thus improve the condition of patients. Therefore, good communication skills may be considered a positive outcome.

Because smartphones enable people to communicate at any place and time, they are a highly favored tool for communication (Davey & Davey, 2014). However, studies indicate that excessive use of smartphones affects social relations negatively (Choi et al., 2015; Samaha & Hawi, 2016; Süt et al., 2016). Choi et al. (2015) reported that smartphone addiction affected interpersonal relationships and mental health negatively. Smartphones, which have an important

place in the lives of university students, also affect their ability to communicate. In this study, approximately one third of the participants preferred communicating via smartphones or social media in the communication initiation process, with the SAS-SV scores of these students significantly higher. Moreover, a negative relationship was found between the SAS-SV mean scores of the participants and CSAS mean scores. Thus, the communication skill scores of the participants decreased as their addiction scores increased. Moreover, the result of the regression analysis revealed that smartphone addiction negatively and significantly predicted the communication skills of the participants.

Another important result supporting this finding was the higher SAS-SV scores of the students who stated that they could not communicate comfortably with patients and next of kin. Other studies indicate that the young generation and the medical and nursing students who are part of this generation are at risk of smartphone addiction. One of the most important consequences of this risk is the negative effects on interpersonal communication. The few previous studies of students enrolled in health programs yielded results that are similar to this study, finding that increased levels of smartphone addiction reduced communication skills (Cerit et al., 2018; Cho & Kim, 2014; Süt et al., 2016). These skills play a key role in the ability of students to express their emotions and thoughts and to use listening and body language skills effectively. Students are required to be able to show appropriate skills to communicate effectively with their peers, educators, families, healthcare professionals, and the group that they are serving. One of the most important skills of health workers, whose job is centered on the care of humans, is effective and therapeutic communication skills. It should not be forgotten that effective communication is a key element in correct treatment and good care. Thus, addictions such as smartphone addiction are thought to cause problems in professional life. According to the results of this study, regulating the smartphone usage and reducing the smartphone addiction levels of students are critical to improving their communication skills.

## Limitations

The results of this study may not represent all nursing and medical students because the study was conducted at a single center in Turkey. In addition, the results presume that participants self-reported in an honest manner on the questionnaire. Finally, as the cutoff point of the Turkish version of the SAS-SV scale was not previously determined, the researchers in this study were unable to determine the addiction status of the students in this study group.

## Conclusions

The participants in this study self-reported spending a significant amount of time using smartphones, indicating a high level of smartphone addiction. The increase in the SAS-SV scores of the participants negatively affected communication skills, academic performance, and social life. The interest of younger people in novel technologies is important for Turkey, which is evolving into an information-based society. However, it should not be ignored that excessive smartphone use forms a basis for the development of various health, education, and social problems. Thus, it is necessary to control the smartphone usage behavior of students to avoid negatively affecting communication skills to ensure better service to patients and a better understanding of the language of care.

It has been reported in the literature that the clinical learning, problem-solving skills, and skill development of students

may be made easier by incorporating technology into the learning environment (Doyle, Garret, & Currie, 2014; Strandell-Laine, Stolt, Leino-Kilpi, & Saarikoski, 2015). Thus, student and lecturer awareness of the benefits of smartphones to education should be increased, while balanced by precautions against excessive and needless use. These precautions could include increasing sporting and artistic activities on campus, referring students with a high addiction risk to counseling services, and promoting awareness of the potential harms of inappropriate smartphone use.

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## Author Contributions

Study conception and design: All authors
Data collection: All authors
Data analysis and interpretation: UC, MT, GV
Drafting of the article: UC, SB, MT
Critical revision of the article: UC, SB, MT

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