Smartphone Addiction and Sleep Quality Associated with Depression in University Students in Japan

Satoko Ezoe, Shimane University, Shimane, Japan
Tadayuki Iida, Prefectural University of Hiroshima, Hiroshima, Japan
Ken Inoue, Kochi University, Kochi, Japan
Masahiro Toda, Notre Dame Seishin University, Okayama, Japan

ABSTRACT

Smartphones have developed rapidly in recent years, with their use becoming widespread and an established part of daily life. Along with the development of various applications, smartphone addiction or dependence has been routinely reported, and indicated to be associated with such conditions as sleep problems and depression. In order to examine the relationships of smartphone use, sleep quality, chronotype, and physical exercise, with a depressive state, the authors administered a self-reporting questionnaire survey, which included the Japanese version of the Smartphone Dependence Scale (J-SDS), the Pittsburg Sleep Quality Index (PSQI), the Morningness-Eveningness Questionnaire (MEQ), and the Beck Depression Inventory (BDI), to 119 university students in Japan. Results of multivariate logistic regression analysis indicated that scores for the J-SDS and PSQI were significantly related to BDI score. These findings suggest that smartphone addiction and poor sleep quality are associated with the depressive state in students in Japan.

KEYWORDS

BDI, Chronotype, Depression, Japanese Version Of The Smartphone Dependence Scale (J-SDS), MEQ, PSQI, Sleep, Smartphone Addiction

INTRODUCTION

The smartphone has rapidly developed over recent years, with use becoming widespread and an established part of daily life throughout the world. According to the Ministry of Internal Affairs and Communications of Japan, 94.5% of individuals in their 20s in 2017 were smartphone owners (Ministry of Internal Affairs and Communications, 2018). In conjunction with this rapidly growing popularity, various applications, including those associated with social networking services (SNS) and online gaming, have been developed for use with smartphones, thus allowing the Internet to become more accessible. At the same time, problematic smartphone use and patterns of addiction are routinely reported.

The term addiction is not only applied to abuse of drugs or substances, but also gambling, gaming, Internet access, mobile phone usage, and other behavioral addictions (Kwon, Lee, Won et al., 2013). Griffiths reported elements related to Internet addiction, such as tolerance, withdrawal symptoms, and recurrence (Griffiths, 1998), and smartphone addiction has been found to be similar in many aspects to Internet addiction (Kim, 2013; Demirci, Akgönül, & Akpınar, 2015). On the other

DOI: 10.4018/IJCBPL.2019100102

Copyright © 2019, IGI Global. Copying or distributing in print or electronic forms without written permission of IGI Global is prohibited.
hand, there are also some important differences, such as easy portability, real-time Internet access, and direct communication features, offered by smartphones (Kim, Jang, Lee, Lee, & Kim, 2018). Although official diagnostic criteria for smartphone addiction have not been presented, it is generally defined as overuse of a smartphone to the extent that it disturbs the daily life of the user (Demirci, Akgonul, & Akpinar, 2015). In reference to previous studies of Internet and smartphone addictions, the present authors defined smartphone addiction in terms of the following aspects: overuse, tolerance, withdrawal, cyber life orientation, difficulty with performing study or work, and physical symptoms caused by smartphone use (Ezoe, Iida, Inoue, & Toda, 2016).

Smartphone addiction, particularly among adolescents, has become an important problem in Japanese society. The Cabinet Office in Japan recently reported that 39.4% of high school students were accessing the Internet by means of a smartphone for more than 4 hours each day in 2018 (Cabinet Office, 2019). Although scant findings concerning hours of smartphone use by Japanese university students have been presented, we previously reported that the mean daily smartphone use on weekdays by that population was $3.1 \pm 1.8$ hours, while that during holidays was $4.1 \pm 2.1$ hours (Ezoe, Iida, Inoue, & Toda, 2016).

Psychiatric symptoms, particularly depression, have been reported to be associated with smartphone addiction in many countries. The term depression, which refers to a spectrum of disorders, implies progression from a temporary depressed mood induced by undesirable events in daily life to a serious major depressive disorder (Rubin & Carroll, 2010). According to the American Psychiatric Association (American Psychiatric Association, 2013), a common feature of all depressive disorders including major depressive disorder is “the presence of a sad, empty, or irritable mood, accompanied by somatic and cognitive changes that significantly affect the individual’s capacity to function”. Some related symptoms can be observed by a trained clinician, while others are felt only by the subject, though can be assessed by use of a self-rating questionnaire. In the present study, depression in healthy university students in Japan was examined along with its association with smartphone usage.

Positive associations of Internet and smartphone addiction, along with depression and anxiety have been reported in studies conducted in several countries (Kim, Jang, Lee, Lee, & Kim, 2018; Ko, Yen, Yen, Chen, & Chen, 2012; Demirci, Akgonul, & Akpinar, 2015; Alhassan et al., 2018; Boumosleh and Jaalouk, 2017). To reduce sampling bias, Kim et al. (2018) applied a propensity score matching method in a study of Korean adults, and reported that both the Internet and smartphone addiction groups had increased risk of depression and anxiety compared to the normal smartphone use group, while smartphone addiction showed a stronger relationship with depression and anxiety than Internet addiction. Alhassan et al. (2018) also investigated the prevalence of and factors associated with smartphone addiction and depression in a Middle Eastern population, and found that those associated with depression were high school completion as compared to university completion and smartphone addiction. Furthermore, a study conducted in Turkey reported that a higher level of smartphone use can lead to depression and/or anxiety in university students, which in return may result in sleep problems (Demirci, Akgonul, & Akpinar, 2015). Meanwhile, in their analysis of university students in Lebanon, Boumosleh, and Jaalouk (2017) reported that depression and anxiety emerged as independent positive predictors of smartphone addiction, after adjustment for confounders. Kitazawa et al. (2018) found associations between problematic Internet use (PIU) and psychiatric symptoms including depression and anxiety in university students in Japan, and reported that the PIU group had higher scores for depressive state as compared to the non-PIU group. However, few reports regarding associations of smartphone addiction with depression in university students in Japan have been presented.

Strong associations between sleep problems and depression have also been reported. Sleep disturbance is one of the main symptoms of depression (American Psychiatric Association, 2013) and can sometimes emerge as a predictor of that psychological condition (Hertenstein, Feige, Gmeiner, et al., 2018; Boland, Goldschmied, Kelly, et al., 2019; Asarnow, & Manber, 2019). Furthermore, according to a review of relationships between chronotype and psychiatric disorders (Kivelä, Papadopoulos, & Antypa, 2018), an association of evening type with depression has been well.
Networked Knowledge Workers on the Web: An Examination of US Trends, 2008-2010
www.igi-global.com/chapter/networked-knowledge-workers-on-the-web/107819?camid=4v1a

Internet Crimes against Children
www.igi-global.com/chapter/internet-crimes-against-children/64803?camid=4v1a