

Prevalence of Smartphone Addiction during COVID-19 Pandemic Lockdown and Its Impact on Online Learning in Kathmandu

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Abstract

The covid-19 pandemic lockdown has encouraged students to use their smartphones in online classes and stay connected increasingly. Youths are using smartphone in COVID-19 pandemic more often than before. The present study aims to find prevalence of smartphone addiction during COVID-19 pandemic and its impact on BBA students' online learning in Kathmandu district. The questionnaire with Smartphone Addiction Scale- Short Version (SAS-SV) and smartphone using pattern was circulated through emails to collect data from four hundred students of 8 different BBA colleges in Kathmandu district using a convenience sampling method. After omitting incomplete data and exclusion criteria, overall 280 responses including 123 males and 157 females were recorded at a response rate of 70%. The result found the mean score of smartphone addiction of 34.67 ± 9.29 . Nearly half participants 48.93% (n=137) were found smartphone addicted. The study further revealed that gender was not associated with smartphone addiction but the time spent on smartphone in a day and age group was significantly associated with smartphone addiction. This study found that smartphone use is a contributing element to the success of online learning during covid-19 pandemic. These results suggest the need to develop educational programme to educate the students to use smartphone effectively.

Keywords: Smartphone addiction, covid-19 pandemic, duration of use, age, gender, online learning

Introduction

Life has been very hectic along with the excessive use of smartphones in present days. Smartphones are the most amazing and fastest diffusing technology today. Nepal Telecommunications Authority (NTA) shows that there are more than 38.21 million mobile phone users in Nepal as of mid-January 2021 (Balami, 2021). The internet users in Nepal were increased by 5.5% between 2020 and 2021. It is estimated that more than 13 million people have access of social media in Nepal (Kemp, 2021). Studies have

shown that toddlers to teenagers use smartphone more than the older generation, although its ownership increases with age (Lauricella, Cingel, Blackwell, Wartella & Conway, 2014). The increasing use of smartphone by adolescents in the world today makes this convenient device an essential digital gadget. The continuous use of something for the sake of relief, comfort, or stimulation, which often causes cravings when it is absent, is defined as addiction by the WHO. Smartphone addiction has been defined as the overuse of smartphones to the extent that it disturbs users' daily lives (Soni, Upadhyay & Jain, 2017).

The COVID-19 has interrupted normal activities and emerged as the most serious health and economic concerns since 2nd World War (World Health Organization, 2021). Most of the countries prioritized self-isolation and work from home to break the chain of Covid-19 virus. This self-isolation has encouraged people to turn to their smartphones to stay connected increasingly (Ratan, Zaman, Islam & Hosseinzadeh, 2021). Most of students in Nepal were in virtual classroom in the lockdown condition due to second wave of Covid-19 pandemic. Parents provided the smartphones to their children for online class purpose. Adolescents are using smartphone in Covid-19 pandemic more often than before (Serra, Scalzo, Giuffre, Ferrara & Corsello, 2021). Students conveniently obtain essential study materials due to easy internet connectivity and user-friendly sophisticated technologies. Excessive smartphone use among students has a negative influence on everyday life disruptions, such as loss of attention at work, disruption in regular meals, decrease in output, breakdown in social relationships, and the coexistence of psychological and physical issues such as wrist pain, neck stiffness, blurred vision, and disturbances in sleeping patterns (Sohn, Rees, Wildridge, Kalk, & Carter, 2019). Smartphone addiction has been investigated among students reporting hindrance to academic activities and overall growth and performance (Karki, Singh, Paudel, Khatiwada & Timilsina, 2020). The present study is important for parents, teachers and colleges to take proactive measures in monitoring.

The present study aimed to find prevalence and the status of smartphone addiction among undergraduate students of BBA in Kathmandu district. The study focused in assessing the smartphone addiction and its association with gender, age group and smartphone using pattern. This study also attempted to evaluate the effectiveness of online learning by the use of smartphone.

Methods

An online-based cross-sectional research was conducted among the BBA students in Kathmandu district, Nepal. The structured questionnaire with consent statement was prepared in google form and distributed the link through email to collect the data from August 15 to September 15 during the second wave of Covid-19 pandemic. The population of this study were the students of Bachelor in Business Administration (BBA) studying in

odd semesters of eight colleges in Kathmandu district. Out of total approximate students (N=2500), 400 students with a view to represent students from all semesters, sections and gender in each college were randomly selected by using convenience sampling method. The google form link was circulated to 400 BBA students of odd semesters. Initially, 312 students of odd semesters filled-up data, whereas after omitting incomplete data and exclusion criteria, overall, 280 respondents (70%) with 123 males and 157 females were recorded on a web-based Google sheet form, and then analyzed.

The Smartphone Addiction Scale- Short Version (SAS-SV) with Cronbach's alpha 0.911 (Kwon et al., 2013) was used to assess the level of smartphone addiction. The SAS-SV contains 10 items, each score on a Likert scale of 1 (strongly disagree) to 6 (strongly agree). The sum of these items gives an overall SAS-SV score (range: 10-60) with higher score indicating problematic smartphone use. Participants expressed their opinion for each item over a 6-point scale, ranging from 1 (strongly disagree) to 6 (strongly agree). A different normal range is identified for males and females. Males are considered addicted if scores are higher than 31. High risk of addiction is present with scores between 22 and 31. Females are addicted if scores are higher than 33, and at high risk with scores between 22 and 33 (Kwon et al., 2013).

Data analysis was conducted using IBM SPSS Statistics (version 25) and Microsoft Excel 2019. After data collection, the data were cleaned and prepared for final analysis by Microsoft Excel 2019. Descriptive statistics such as frequencies and percentages were carried out, whereas chi square test was used to determine the relationship between the independent variables and smartphone addiction. Finally, the value of $p < 0.05$ was set as statistically significant with a 95% confidence interval for the tests.

Results and Discussion

Prevalence of smartphone during lockdown

The study included 43.93% (n=123) male and 56.07% (n=157) female students of BBA with mean age of 20.84 ± 1.74 years (range 17-29 years) in this study. Nearly half participants 48.93% (n=137) were found smartphone addicted (See Table 1). This study resulted little higher than the study by Ghogare et al. (2021) (45.1%) among undergraduate health science students during lockdown in India. The similarity in the smartphone addiction between this study and Ghogare et al.'s study could have been mainly because of similar socio-economic and lockdown conditions in Nepal and India respectively.

But this finding was 12% higher than in the study by Karki et al. (2020) and about 9% higher than in study by Thapa et al. (2020) among undergraduate medical students in Nepal. Several studies have been conducted in many countries throughout the world including Thailand, China, Korea, Turkey, Poland, Spain, Italy, Australia and India that have estimated the prevalence of smartphone addiction ranged between 5.57% to 39.6% (Gupta et al., 2013). The mean score of smartphone addiction was found 34.67 ± 9.29 in this study which is lower than the study conducted by Thapa, Lama, Pokharel, Sigdel & Rimal (2020) and higher than studies undertaken by Karki et al. (2020) and Ghogare et al. (2021). These inconsistencies could have been due to the different instruments and

classification methods used by different participants in the different studies and different time of period. Since this study was conducted during the lockdown due to second wave of COVID-19 pandemic, self-isolation has encouraged people to turn to their smartphones to attend online class and to stay connected increasingly. Furthermore, students are lonely since their social circle has been physically disrupted, resulting in them spending more time on their cellphones in their spare time (Sama & Kalvakolanu, 2020), which is one of the major factors that can lead to addictive smartphone use (Alhazmi, Alzahrani, Baig & Salawati, 2018).

Table 1

Smartphone addiction among the respondents

Category	Number of respondents (n)	Percentage of respondents (%)	Mean of Mean SA		Daily use (in hours)
			(\bar{x})	(M)	
Smartphone Addicted	137	48.93	41.02	34.67	5.44
Smartphone Non addicted	143	51.07	25.83		

Smartphone usages status

More than half participants (52.86%) used smartphone for social media like Facebook, Instagram, WhatsApp and Tiktok purposes except phone calls and to attend online classes. Twenty-two percent of the participants used for entertainment (watching movies and listening music) purpose followed by web surfing (10%), gaming (7.86%) and others (7.14%) purposes (Figure 1).

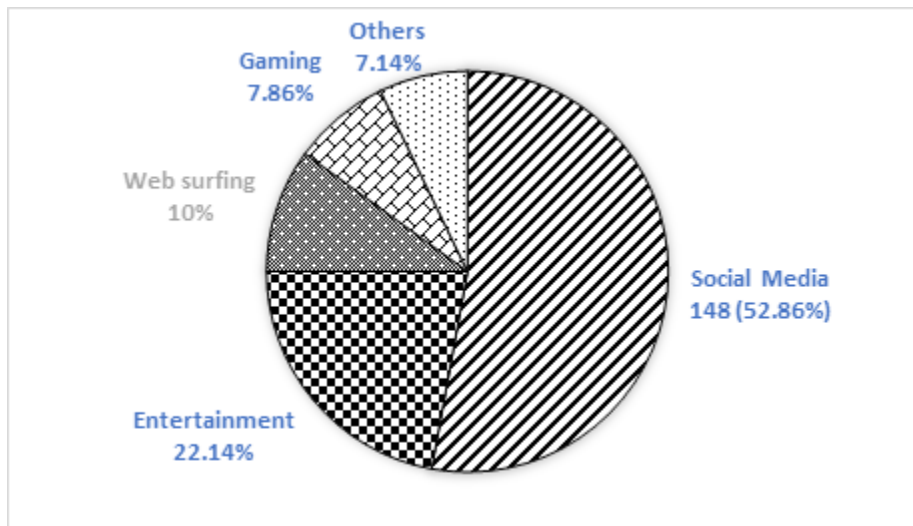


Fig. 1: Purpose of smart phone use

In addition to the other uses of smartphones, the following table shows the smartphone addiction symptoms among participants.

Table 2

Prevalence of smartphone addiction symptoms among participants

Item	n	%
Missing planned work due to smartphone use.	187	66.79
Having a hard time concentrating in class, while doing assignments, or while working due to smartphone use	178	63.57
Feeling pain in the wrists or at the back of the neck while using a smartphone.	179	63.93
Won't be able to stand not having a smartphone.	84	30.00
Feeling impatient and fretful when I am not holding.	80	28.57
Having my smartphone in my mind even when I am not using it.	83	29.64
I will never give up using my smartphone even when my daily life is already greatly affected by it	161	57.50
Constantly checking my smartphone so as not to miss conversations between other people on Facebook, Instagram, WhatsApp.	160	57.14
Using my smartphone longer than I had intended.	219	78.21
The people around me tell me that I use my smartphone too much.	149	53.21

As depicted by the above table, 57.14% participants constantly checked smartphone so as not to miss conversations between other people on social networking sites like Facebook, Instagram, WhatsApp etc. More than one third participants (78.21%) reported overuse of smartphone. They used their smartphones longer than they had intended. Indication of disturbance in daily life was reported by 66.79%. They missed their planned work due to overuse of smartphones. This may be because of scrolling down continuously in social networking sites and playing game online and may be because of unaware of time. More than sixty three participants (63.57%) reported that they had hard time concentrating in their classes only because of unnecessarily smartphone use. Physical difficulties symptoms were equal reported by about 63.93% participants. They reported pain in their wrists and at the back of their neck while using smartphone. Many variables can impact them, including the size of the smartphone display, the number of messages sent, the number of daily hours spent in front of the screen, and not physiological posture when using a smartphone. (Lee & Seo, 2014). The above table also revealed that 57.50% used smartphone persistently despite negative consequences. Moreover, 53.21% participants reported that people around them complained on their excessive use of smartphone.

Above all as regards smartphone addiction symptoms, during the Covid-19 lockdown, people have overwhelmingly turned to social networking websites and other applications for conversation with family members, relatives and friends. They used most of their time in social networking sites, entertainment sites, gaming sites and other websites for one or the other reasons.

Smartphone users based on gender

Smartphone addiction was found almost equal in both genders. The table below depicts that the mean scores of smartphone addiction in male and female is almost equal, i.e. male 34.54% and female 34.77%.

Table 3

Chi square test of smartphone addiction and gender

Variable	N	\bar{X}	Smartphone addiction by gender				χ^2	p-value
			Non addicted		Addicted			
			n	\bar{X}	n	\bar{X}		
Male	123	34.54	62	24.88	61	41.39	.039	.844
Female	157	34.77	81	26.56	76	40.73		

There is no significant differences between male and female in smartphone addiction, $\chi^2(1, 280) = .039$, $p = .844$ (Table 3). This is similar to the results obtained in some previous investigations (Kwon et al., 2013; Thapa et al., 2020; Bhandari, Pandey & Sharma, 2021; Ghogare et al., 2021). However, some studies have reported that female participants have a higher prevalence of smartphone addiction than males (Chen et al., 2017) and other studies reported higher in males (Karki et al., 2020). Male students were more likely to play games, watch movies, and listen to music, while female students preferred to utilize mobile phone communication and social networking sites. For females, the mobile phone is a method of social interaction, with messaging and social networks playing a key role, but men's usage is more diverse, with text messages, voice talks, and gaming apps. (Chen et al., 2017). It is revealed that more research is needed to figure out why males and girls have such different levels of smartphone addictions.

Smartphone users based on age

There has been a varied mean score between the users regarding smartphone addiction. Table 4 below discusses the mean score and chi square test results of different age group students.

The 20-22 years age group had higher mean score ($M=36.43$) of smartphone addiction than the 23 years and above age group ($M=27.94$) in SA. The 20-22 years age group had

higher mean score of smartphone addiction in both addicted ($n=125$, $\bar{x} = 41.54$) and non-addicted ($n=68$, $\bar{x} = 27.06$) categories. The chi square test found significant relation between age group and smartphone addiction, $\chi^2 (2, 280) = 11.992$, $p < .05$. This is similar to the findings reported by the study by Daei et al. (2019) which found that age was significantly associated with mobile phone dependence. This study found 20-22 years age group students was significantly vulnerable to SA because smartphone, the multi-functional device and internet connectivity was easily accessible to them. A one click allows them to explore more information they intend to find. Another study suggested that college students use more social networking sites to maintain existing friendships rather than to make friends (Ellison et al. 2007). On the other hand, about 69% ($n=193$) participants belongs to this age group. The older age group used smartphone significantly lesser than other age groups. They may be focused in their career or study rather than in using smartphones in their spare time.

Table 4

Chi square test of smartphone addiction and age

Variable	N	\bar{X}	Smartphone addiction by gender				χ^2	p-value
			Non addicted		Addicted			
			n	\bar{x}	n	\bar{x}		
17-19 years	52	32.65	27	25.7	25	40.16		
20-22 years	193	36.43	68	27.06	125	41.54	11.992	
23 and above	35	27.94	22	22.18	13	37.69	.002	

In contrast, Thapa et al. (2020) did not find any association between age and smartphone addiction in their study. Other studies reported higher SA in older adolescents compared to younger ones in India (Bhandari et al., 2021). However, it is in contrast to the finding from studies done in Switzerland (Haug et al., 2015) which reported a higher prevalence of SA in younger adolescents.

Smartphone using pattern

The study observed that the participants who used smartphone relatively less had scored lower than average in smartphone addiction scale. The relation between smartphone daily use duration and smartphone addiction was significant, $\chi^2 (5, 280) = 14.892$, $p < .05$. The study found that 58.21% ($N=163$) participants used smartphone till late night after bedtime and 65.35% ($N=183$) participants turned to their smartphones immediately after they wake up in the morning. The mean score of SA who used smartphone till late night and immediately after they wake up were found 36.76 and 37.10 respectively. The significant relation between smartphone addiction and smartphone usage was found in this study. Since the study reveals the $\chi^2 (1, 280) = 19.797$, $p < .01$ and $\chi^2 (1, 280) = 27.166$, $p < .01$ who used smartphone till late night and who used smartphone immediately after wake up in the morning, a significantly higher score in smartphone addiction is proved which can be clearly seen in the table 5.

The smartphone using pattern was significantly associated with SA. The chi square test revealed that the smartphone addiction was significantly associated with increasing amount of time spent on smartphone daily. The similar result was reported in other studies reported by Karki et al., (2020). The conversion of the face-to-face class into virtual class and need for social interaction during lockdown may be the cause of increasing amount of time spent on smartphone. The scrolling down the News Feed during the lockdown may increase the frequency of checking the smartphone. As frequency of mobile phone use increases, the chances of addiction get higher (Sahin, Ozdemir, Unsal & Temiz, 2013). This study also observed the significant link between smartphone addiction and immediately turning to smartphone after wake up. The reason behind it may be the built-up habit to use smartphone which in long run may develop into smartphone addiction. The easy access of Wi-Fi and ownership of smartphone may increase the time spent on smartphone. Smartphone ownership has linked with more smartphone use in night and later bedtimes and immediately after wake up in the morning (Lemola et al., 2015).

Table 5

Chi square test of smartphone addiction and smartphone usage

Variable	N	\bar{X}	Smartphone addiction by gender				χ^2	p-value
			Non addicted		Addicted			
			n	\bar{X}	n	\bar{X}		
<i>Daily Use Duration</i>								
1-2 hours	19	29.21	13	24.62	6	39.17	14.892	.011
2-4 hours	64	32.35	40	26.00	24	37.97		
4-6 hours	88	33.85	49	26.44	39	39.76		
6-8 hours	68	38.07	25	25.24	43	43.81		
8-10 hours	21	37.23	7	26.00	14	42.86		
More than 10 hours	20	36.60	9	25.57	11	42.54		
<i>Using Smartphone till late night</i>								
Yes	117	36.76	50	26.68	113	41.23	19.797	.000
No	163	31.75	67	25.19	50	40.54		
<i>Start a day with Smartphone</i>								
Yes	97	37.10	56	26.77	127	41.67	27.166	.000
No	183	30.07	61	24.97	36	38.72		

Impact on online learning of students

The above discussions reveal that most respondents support impact of smartphone on online mode of learning effectively. This research approves that smartphone use is a contributing element to the success of online learning during Covid-19 pandemic. Likewise, students' usage of smartphone plays a significant role in their learning activities. Students, for example, use smartphones to check lecture timetables and test schedules; they have group discussions, read notices, and pay college fees. They utilize smartphones in sharing notes with their classmates, recording lectures, and taking screenshots of lecture materials and assignments for future references. In comparison to traditional face-to-face teaching and learning mode, the study has indicated that smartphones dramatically boost interaction between instructors/lecturers and students, allowing instructors and students to learn while on the move. So and so, institutions should investigate including smartphones as a learning tool for course delivery.

Conclusion and Recommendations

The present study concluded that smartphone addiction was common among the BBA students in Kathmandu during the lockdown. Smartphone addiction looked significantly higher with the 20-22 age group students but there is no significant difference found between males and female. The older age group uses smartphone significantly lesser than other age groups. The reason found is that they focus in their career or study rather than in using smartphones in their spare time. However, it is revealed that smartphone use is a contributing element to the success of online learning during covid-19 pandemic. Besides, self-isolation has encouraged people to turn to their smartphones to attend online class and to stay connected increasingly. It is also approved that the easy access of Wi-Fi and ownership of smartphone increases the time spent on smartphone. Additionally, it is estimated, as regards smartphone addiction symptoms, that during the Covid-19 lockdown, people have overwhelmingly turned to social networking websites and other applications for conversation with family members, relatives and friends and the others.

Considering above all, it is highly required to consciously develop the promotion of educational programs to educate the students to use smartphone effectively. It is expected that the future studies explore the impacts of smartphone addiction on learning and academic achievements. Likewise, the study also recommends conducting research on more diverse populations including school students to discover the trends of smartphone addiction. In addition to this, more research can be expected that figure out different levels of smartphone addictions of male and female students. So and so, institutions should investigate including smartphones as a learning tool for course delivery.

References

- Alhazmi, A. A., Alzahrani, S.H., Baig, M., Salawati, E.M. (2018). Prevalence and factors associated with smartphone addiction among medical students at King Abdulaziz University, Jeddah. *Pakistan Journal of Medical Science*, 34 (4), 984–988. doi:10.12669/pjms.344.1529410.
- Balami, M. (2021, February 28). *Number of mobile phone users exceeds total population of Nepal*. Retrieved from <https://www.newbusinessage.com/Articles/view/13101>
- Bhandari, D. J., Pandya, Y. P., & Sharma, D. B. (2021). Smartphone Use and Its Addiction among Adolescents in the Age Group of 16-19 Years. *Indian Journal of Community Medicine*, 46(1), 88–92. https://doi.org/10.4103/ijcm.IJCM_263_20
- 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, 341. <https://doi.org/10.1186/s12888-017-1503-z>
- Daei, A., Ashrafi-rizi, H., & Soleymani, M. R. (2019). Nomophobia and health hazards: Smartphone use and addiction among university students. *International Journal of Preventive Medicine*, 10(1), 202. Doi: 10.4103/ijpvm.IJPVM_184_19
- Ellison, N. B., Steinfield, C. & Lampe, C. (2007). The benefits of Facebook friends: Social capital and college students' use of online social network sites. *Journal of Computer-Mediated Communication*, 12(4),1143–68. <https://doi.org/10.1111/j.1083-6101.2007.00367.x>
- Ghogare, A., Bele, A., & Ambad, R. (2021). A cross-sectional online survey of an impact of covid-19 lockdown on smartphone addiction and nomophobia among undergraduate health sciences students of a rural tertiary health-care center from Maharashtra, India. *Annals of Indian Psychiatry*, 5,1-11. https://doi.org/10.4103/aip.aip_38_21
- Gupta, N., Krishnamurthy, V., Gupta, J. (2013). Gadget Dependency among Medical College Students in Delhi. *Indian Journal of Community Health*,25(4):362–6. Retrieved from: <http://iapsmupuk.org/journal/index.php/IJCH/article/view/343>
- Haug, S., Castro, R.P., Kwon, M., Filler, A., Kowatsch, T., Schaub, M.P., et al. (2015). Smartphone use and smartphone addiction among young people in Switzerland. *Journal of Behaviour Addictions*, 4(4), 299–307. <https://doi.org/10.1556/2006.4.2015.037>

- Karki, S., Singh, J. P., Paudel, G., Khatiwada, S., & Timilsina, S. (2020). How addicted are newly admitted undergraduate medical students to smartphones?: A cross-sectional study from Chitwan medical college, Nepal. *BMC psychiatry*, 20(1), 95. <https://doi.org/10.1186/s12888-020-02507-1>
- Kemp, S. (2021). Digital 2021: Nepal. Retrieved from <https://datareportal.com/reports/digital-2021-nepal>
- Kwon, M., Lee, J. Y., Won, W. Y., Park, J. W., Min, J. A., Hahn, C., Gu, X., Choi, J. H., & Kim, D. J. (2013). Development and validation of a smartphone addiction scale (SAS). *PLoS one*, 8(2), e56936. <https://doi.org/10.1371/journal.pone.0056936>
- Lauricella, A. R., Cingel, D. P., Blackwell, C., Wartella, E., & Conway, A. (2014). The mobile generation: Youth and adolescent ownership and use of new media. *Communication Research Report*, 31(4), 357–64. <https://doi.org/10.1080/08824096.2014.963221>
- Lee, J. H., Seo, K. C. (2014). The comparison of cervical repositioning errors according to smartphone addiction grades. *Journal of Physical Therapy Science*, 26(4), 595–8. <https://doi.org/10.1589/jpts.26.595>
- Lemola, S., Perkinson-Gloor, N., Brand, S., Dewald-Kaufmann, J.F., & Grob, A. (2015). Adolescents' electronic media use at night, sleep disturbance, and depressive symptoms in the smartphone age. *Journal of Youth and Adolescence*, 44:405–18. doi: 10.1007/s10964-014-0176-x
- Ratan, Z. A., Zaman, S. B., Islam, S. M. S., & Hosseinzadeh, H. (2021). Smartphone overuse: A hidden crisis in COVID-19. *Health Policy and Technology*, 10(1), 21-22. <https://doi.org/10.1016/j.hlpt.2021.01.002>
- Sahin, S., Ozdemir, K., Unsal, A., & Temiz, N. (2013). Evaluation of mobile phone addiction level and sleep quality in university students. *Pakistan journal of medical sciences*, 29(4), 913–918. <https://doi.org/10.12669/pjms.294.3686>
- Sama, H. R., & Kalvakolanu, S. (2020). Novel hybrid approaches to measure smartphone addiction: Application of statistical and triangular fuzzy techniques. *Journal of Public Affairs*, ;e2425. doi.org/10.1002/pa.2425
- Serra, G., Lo Scalzo, L., Giuffrè, M., Ferrara, P., & Corsello, G. (2021). Smartphone use and addiction during the coronavirus disease 2019 (COVID-19) pandemic: cohort study on 184 Italian children and adolescents. *Italian Journal of Pediatrics*, 47(1), 150. <http://doi.org/10.1186/s13052-021-01102-8>

- Sohn, S. Y., Rees, P., Wildridge, B., Kalk, N. J., & Carter, B. (2019). Prevalence of problematic smartphone usage and associated mental health outcomes amongst children and young people: a systematic review, meta-analysis and GRADE of the evidence. *BMC Psychiatry*, *19*(1), 356. doi:10.1186/s12888-019-2350-x
- Soni, R., Upadhyay, R., & Jain, M. (2017). Prevalence of smart phone addiction, sleep quality and associated behaviour problems in adolescents. *International Journal of Research in Medical Sciences*, *5*(2), 515-519. <http://dx.doi.org/10.18203/2320-6012.ijrms20170142>
- Thapa, K., Lama, S., Pokharel, R., Sigdel, R., & Rimal, S. (2020). Mobile phone dependence among undergraduate students of a medical college of eastern Nepal: A descriptive cross-sectional study. *Journal of Nepal Medical Association*, *58*(224), 234-239. <https://www.jnma.com.np/jnma/index.php/jnma/article/view/4787/3137>
- World Health Organization. (2021). *Looking back at a year that changed the world: WHO's response to COVID-19*, 22 January 2021. World Health organization. <https://apps.who.int/iris/handle/10665/340321>.