

Impact of COVID-19 Pandemic on Screen Time: Findings From a Cross-Sectional Observational Study Among College Students From India

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Abstract

In this study, we assessed the impact of the COVID-19 pandemic on the amount and pattern of screen time among college students. The relationship between increased screen time and quality of life (QoL), COVID-related stress, and personality traits were also explored. A cross-sectional online survey-based study was conducted among Indian college students who were recruited by purposive sampling. Details regarding socio-demographics, amount and pattern of screen time usage, change in screen time patterns during the COVID-19 pandemic, and COVID-related stress were collected. In addition, personality traits and QoL were assessed with validated questionnaires. A total of 731 responses (51% female, mean age 20.7 years) were analysed. Of the participants, 93.2% self-reported an increase in daily screen time during COVID-19. The predominant reasons for the increased screen time were educational screen time (89.6%), streaming or watching videos for entertainment (82.8%), use of social media for non-communication purposes (78.1%), communication with friends and/or family members (76.2%), reading or watching news (65.9%), and interactive recreational screen time (44.7%). A small but significant negative correlation between increased screen time and QoL ($r_s = -0.154$, $p < .001$) was found. Increased screen time due to the use of social media for non-communication purposes was associated with poorer QoL ($U = 32947.50$; $p = .02$) and greater COVID stress ($U = 32381.50$; $p = .01$). Educational screen time was the most

common cause for increased screen time among college students and was not associated with negative effects on QoL. The context and purpose of screen time appears to be important in ascertaining the impact of screen time on QoL.

Keywords: screen time, COVID-19, students, quality of life, personality

Introduction

India instituted a nationwide lockdown during the initial months of the COVID-19 pandemic. Studies have suggested that unhealthy lifestyle practices such as decreased physical activity and an increase in sedentary screen time activities occurred during this period (Chopra et al., 2020). Concerns have been expressed about the negative public health impact of increased screen time during the COVID-19 pandemic, especially among students, as they experienced increased accessibility and acceptability of digital and internet-enabled devices (Hamilton et al., 2020; Sultana et al., 2020). There was a significant disruption in existing educational activities due to COVID-19, with more than 90% of students estimated to have been affected by the closure of academic institutions worldwide (Jena, 2020). In India, as well, schools and college campuses were shut down in mid-March of 2020 and remained shut over the course of the year. However, academic activities gradually resumed with a shift to an online or digital mode of education starting in May 2020 (Mahapatra & Sharma, 2020). This shift in education to online platforms soon led to concerns among parents and teachers about the possible harms associated with increased screen time during COVID-19. The concern was in part grounded in the already increased exposure of students to screens following COVID-19 due to an increase in various activities that involved screen viewing (Winther & Byrne, 2020), including gaming, social media use, and watching videos over online digital platforms.

Despite these concerns and widespread media reporting on this issue, only a few studies have empirically assessed the impact of COVID-19 on screen time among students. One study conducted among U.S. college students reported that increased screen time during COVID-19 was associated with poor mental well-being (Smith et al., 2020). Concerns about the limited attention to the possible impact of increased screen time among Indian students have been reported (Singh & Balhara, 2021).

In this study, we aimed to assess the impact of the COVID-19 pandemic on the amount and pattern of screen time among Indian college students. We explored the relationship between screen time and quality of life, as well as the association of increased screen time with COVID-related stress and personality traits.

Method

Study Design and Participants

This cross-sectional, online, survey-based study was conducted among college students in India. The study protocol was approved by the Institute Ethics Committee of the All India Institute of Medical Sciences, New Delhi. Because the on-campus classes had been suspended and students had moved to their respective home towns, the target population was accessible through online channels during this time period. The study was conducted over 4 months coinciding with the period after the lockdown restrictions were gradually lifted (June 1 to September 30, 2020). Academic activities were carried out online in colleges across India during the data collection period.

The link to the online survey questionnaire was shared through the personal and social contacts of three student researchers via email and social media groups. The survey link was shared three times at 1-week intervals, along with a study invitation message specifying the intended target study population, the study purpose, and the voluntary and anonymous nature of participation. The participants were also encouraged to share the survey link with their eligible contacts to increase our reach in order to recruit college students from different parts of the India. Those enrolled as a student in an undergraduate course who were 18 years or more at the time of participation in the survey were eligible to participate in the study. Informed consent was obtained from participating volunteers at the start of the survey through the same online survey platform.

Survey Questionnaire

The survey questionnaire collected socio-demographic details, information related to the amount and pattern of screen time usage, change in screen time patterns during the COVID-19 pandemic, and COVID-related stress. Screen time was operationalized as any time spent using or viewing any digital device with a screen such as watching television, smartphone use, playing video games, or working on a computer. Five COVID-related questions were asked of the participants in order to explore their fears or worries about getting or spreading a COVID-19 infection, as well as to explore frequent information checking and reassurance-seeking behaviours related to COVID-19 over the past week. Answers to each of these questions were reported on a self-rated 5-point Likert scale. The total score ranged between 5 and 20, with higher scores corresponding to a greater degree of COVID-19-related stress. Information regarding screen time and COVID-related stress was collected by using questions designed by the study team. The questions were included on the basis of face validity and a review of the literature for existing screen time assessment measures (Sanders et al., 2019). These questions were pretested among a group of 10 undergraduate college students, and edits were made to remove ambiguous or difficult-to-understand words on the basis of student feedback. Quality of life over the past week was assessed by using the Quality of Life Enjoyment and Satisfaction

Questionnaire-Short Form (Q-LES-Q-SF; Endicott et al., 1993) and personality traits were assessed with the 10-item Big Five Inventory (BFI-10; Rammstedt & John, 2007). The Q-LES-Q-SF consists of 16 self-report-based items derived from the original 93-item general activities scale. It assesses the overall enjoyment and satisfaction that the person has with his or her physical health, mood, work, household and leisure activities, social and family relationships, daily functioning, sexual life, economic status, and overall well-being. The responses are scored on a 5-point Likert scale from *not at all or never* to *frequently or all the time*; higher scores indicate a greater degree of enjoyment and satisfaction with life or a better quality of life. Fourteen summated items provide the total Q-LES-Q-SF score, and these 14 items (possible range 14–70) were used in the present study. It is a reliable, valid, and sensitive assessment tool for measuring quality of life in routine practice.

Personality was assessed by using the BFI-10, which is arguably the most adequate instrument to measure personality across different cultures and countries. It measures the following five broad dimensions of personality: Openness to experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. These five personality traits were measured in the study participants with two questions each. Even though the effect size of the measurement for the BFI-10 is less than that for the full version (BFI-44), it is considered sufficient for research settings, considering the constraints of time.

Statistical Analysis

The data were analysed with SPSS version 23.0 (Armonk, NY, IBM Corp.). The data were checked for normality distribution by using the Kolmogorov-Smirnov and the Shapiro-Wilk tests. Descriptive statistics with mean, standard deviation (SD), frequency, and percentage were used to describe the study sample. Alternatively, the median and interquartile range (IQR) were used to describe variables with skewed distribution. The increased screen time was skewed significantly and could not be transformed into normally distributed data by logarithmic transformation. Hence, inferential statistics with the appropriate non-parametric tests were used to examine the relationships between different continuous (Spearman correlation, or Mann-Whitney *U* test) and categorical (chi-square test) study variables with increased screen time. Cramer's *V* statistic was calculated to measure the degree of correlation between two categorical variables. The level of statistical significance was set at a two-tailed *p*-value of less than 0.05 for all tests.

Results

Of the 754 responses received, 23 were excluded, as they did not meet the study inclusion criteria. The mean age of the study participants was 20.70 years (*SD* 1.97), and 51.0% (373 of 731) of them were female.

About 93.2% (681 of 731) of the participants reported an increase in their daily screen time compared with that before the COVID-19 pandemic. The median

self-reported increase in total daily screen time following the COVID-19 lockdown was 4.00 hr (IQR 3.00–5.00). The predominant reasons reported for this increased screen time during the COVID-19 pandemic period were as follows: educational screen time (655, 89.6%), streaming or watching videos for entertainment (605, 82.8%), use of social media for non-communication purposes (571, 78.1%), communication with friends and/or family members (579, 76.2%), reading or watching news (482, 65.9%), and interactive recreational screen time (327; 44.7%).

Among participants reporting an increase in screen time during the COVID-19 pandemic, the median COVID-19-related stress score was 13.00 (IQR 10.00–17.00) and the median Q-LES-Q-SF score was 45.00 (IQR 38.00–51.00). In contrast, among participants who did not report an increase in screen time during the COVID-19 pandemic, the median COVID-19-related stress score was 11.00 (IQR 7.75–15.25) and the median Q-LES-Q-SF score was 44.00 (IQR 38.50–55.00). The participants with increased screen time reported significantly higher COVID-19-related stress scores ($U = 14126.50$, $p = .04$), but no significant difference in Q-LES-Q-SF scores ($U = 16521.00$, $p = .72$), compared with the scores of the participants who did not report an increase in screen time.

There was a small but significant negative correlation between increased screen time and the Q-LES-Q-SF score among the participants ($r_s = -0.154$, $n = 681$, $p < .001$), and a significant positive correlation between increased screen time and neuroticism ($r_s = 0.131$, $n = 681$, $p = .001$). There was no significant association between increased screen time and age ($r_s = -0.013$, $n = 681$, $p = .73$) or gender ($U = 54937.50$, $n = 681$, $p = .24$) among the participants. Further, there were significant correlations between Q-LES-Q-SF scores and the extraversion ($r_s = 0.167$, $n = 681$, $p < .001$), agreeableness ($r_s = 0.196$, $n = 681$, $p < .001$), conscientiousness ($r_s = 0.239$, $n = 681$, $p < .001$), and neuroticism ($r_s = -0.299$, $n = 681$, $p < .001$) personality traits. There was a significant positive correlation between COVID-19-related stress scores and the agreeableness ($r_s = 0.129$, $n = 681$, $p = .001$) personality trait.

Table 1 shows the relationship between increased screen time during the COVID-19 pandemic and the different reasons reported for an increase in screen time among the participants. The participants who reported an increase in screen time that was predominantly interactive recreational screen time had a significantly greater increase in total daily screen time in comparison with those who did not report an increase in interactive recreational screen time ($U = 51417.00$; $p = .01$). The correlation between different types of screen time that predominantly contributed to increased total daily screen time among the study participants is shown in the Supplementary Table. There was a significant positive correlation between an increase in screen time during COVID-19 that was predominantly for educational purposes and for reading or watching news (Cramer's $V = 0.093$, $p = .01$).

The participants who reported an increase in screen time that was predominantly due to use of social media for non-communication purposes had significantly lower Q-LES-Q-SF scores ($U = 32947.50$; $p = .02$) and higher COVID stress scale scores

Table 1

Association Between Increase in Screen Time and Predominant Pattern of Screen Time Usage (n=681)

Increase in screen time predominantly due to	Increased screen time (mean rank)	Test of significance (<i>p</i> -value)
Streaming/watching entertainment videos		
Yes (1)	345.63	28052.00 ^a (.15)
No (0)	316.17	
Reading or watching news		
Yes (1)	338.37	50333.50 ^a (.61)
No (0)	346.27	
Interactive recreational screen time		
Yes (1)	360.64	51417.00 ^a (.01)*
No (0)	324.59	
Educational screen time		
Yes (1)	340.73	19577.00 ^a (.91)
No (0)	343.61	
Communication with friends/family		
Yes (1)	337.99	35625.00 ^a (.42)
No (0)	352.96	
Social media use for non-communication purposes		
Yes (1)	344.17	35748.00 ^a (.40)
No (0)	328.54	

Note. ^aMann-Whitney *U* test.

**p* < .05.

($U = 32381.50$; $p = .01$) compared with those who did not report such a pattern of increased screen time usage. The COVID stress scores were significantly higher among participants who reported an increase in screen time that was predominantly due to reading or watching news ($U = 42782.50$, $p < .001$), interactive recreational screen time ($U = 51232.00$, $p = .01$), and communication with friends and/or family members ($U = 28279.00$, $p < .001$) than among those who did not report such a pattern of increased screen time usage (Table 2).

Discussion

In this cross-sectional online survey, we aimed to understand the impact of the COVID-19 pandemic on the amount and pattern of screen time among college students. In addition, we aimed to assess the relationship of increased screen time with quality of life, COVID-related stress, and personality traits.

About 93% of the study participants reported an increase in their screen time compared with that before the COVID-19 pandemic. This result is congruent with the findings of another online survey conducted among the general adult population in India, which reported significantly increased screen time and decreased physical activity during the COVID-19 pandemic (Chopra et al., 2020). However, the

Table 2

Relationship of Increased Screen Time Usage Pattern With Quality of Life and COVID-19-Related Stress (n=681)

Increase in screen time predominantly due to	Q-LES-Q-SF scale score (mean rank)	Test of significance (<i>p</i> -value)	COVID-19 stress score (mean rank)	Test of significance (<i>p</i> -value)
Streaming/watching entertainment videos				
Yes (1)	339.04	29585.00 ^a	342.99	29568.50 ^a
No (0)	351.50	(.54)	330.34	(.54)
Reading or watching news				
Yes (1)	340.46	51282.00 ^a	360.27	42782.50 ^a
No (0)	342.09	(.91)	302.47	(<.001)*
Interactive recreational screen time				
Yes (1)	336.65	56157.00 ^a	361.24	51232.00 ^a
No (0)	344.63	(.59)	324.09	(.01)*
Educational screen time				
Yes (1)	343.56	18164.50 ^a	336.27	16823.00 ^a
No (0)	316.32	(.29)	386.64	(.05)
Communication with friends/family				
Yes (1)	345.89	34604.50 ^a	357.52	28279.00 ^a
No (0)	321.59	(.19)	275.42	(<.001)*
Social media use for non-communication purposes				
Yes (1)	332.68	32947.00 ^a	350.37	32381.50 ^a
No (0)	373.75	(.02)*	304.15	(.01)*

Note. Q-LES-Q-SF = Quality of Life Enjoyment and Satisfaction Questionnaire-Short Form.

^aMann-Whitney *U* test.

**p* < .05.

proportion of participants who reported increased screen time in our study is higher than that reported in several other studies from Western countries that assessed the impact of COVID-19 on screen time: Between 49% and 87% of the participants reported increased screen time during COVID-19 in these studies (Carroll et al., 2020; Górnicka et al., 2020; Hu et al., 2020; Pišot et al., 2020). The available literature suggests that college students are both biologically and psychologically more vulnerable to using the internet and digital technology in an excessive and/or problematic manner than others are (Dahl et al., 2018). The rates of problematic internet and social media use were also higher in our study population than those in Western countries (e.g., United Kingdom, United States, Canada, European countries) even prior to the COVID-19 pandemic (Balhara et al., 2020; Yin et al., 2019).

Our study participants self-reported a median increase of 4 hr in their total daily screen time during COVID-19 compared with the time they spent before COVID. About 90% of them reported that this increased screen time was predominantly due to educational screen time, making this the most common activity contributing to the increased total daily screen time during COVID-19. The second most commonly

reported reason for increased screen time (by about 83% participants) was streaming or watching videos for entertainment purposes. About three fourths of participants reported using social media for non-communication purposes such as viewing posts, profiles, pictures, or videos or for scrolling through different social media platforms passively as the predominant reason for their increased screen time during COVID-19. Similarly, the use of social media for communication with friends and family members was reported as the predominant reason for increased screen time by about three fourths of participants. About two thirds of participants reported reading or watching news (e.g., checking newsfeed, watching news) as the predominant reason for their increased screen time during COVID-19. Lastly, about 45% of the participants reported increased interactive recreational screen time (e.g., playing digital or video games) as the predominant reason for their increased total daily screen time during COVID-19. A previous study among college students from India also found increased gaming behaviour in around 50% of the students (Balhara et al., 2020).

The increase in duration of total daily screen time had a small but significant negative correlation with the Q-LES-Q-SF score. However, there were differential effects for various screen time usage patterns on the quality of life and COVID-related stress experienced by the participants. Participants with increased screen time during COVID-19 that was mainly due to use of social media for non-communication purposes reported poorer quality-of-life enjoyment and satisfaction than did those who did not report this increased screen time usage pattern. Interestingly, there was no similar negative effect of increased screen time during COVID-19 due to social media use for communication purposes. This is in line with the available literature, which suggests that social media use among adolescents during the COVID-19 pandemic could have both beneficial and harmful effects on their overall subjective well-being, depending on the context and purpose of social media use (Hamilton et al., 2020). Further, there was no significant change in quality of life following increased screen time for educational or other purposes (e.g., social media use for communication purposes or for reading or watching news). This result is also in line with findings emerging from the recent literature, suggesting that not all screen time activities have a similar effect on users (Winther & Byrne, 2020). A few studies have provided evidence for making a distinction between active and passive screen time, active screen time being associated with positive effects on the physical, psychological, and cognitive development of children and adolescents. A recent longitudinal study among children aged 10–11 years showed few, if any, significant associations between the total or different types of screen time and adverse outcomes in the domain of physical and psychological health, including academic achievement (all significant standardized effect sizes of < 0.07 ; Sanders et al., 2019). Passive screen time such as watching television was found to be associated with adverse outcomes, unlike educational screen time, which was associated with better academic performance measures rather than any adverse outcomes. Thus, our study findings add to the literature by providing support for the differential effect of various types of screen time, underscoring the importance of understanding the context and purpose of the increased screen time while considering its potential positive and negative effects on the overall well-being of individuals.

The increased screen time during COVID-19 in our study was associated with a greater degree of trait neuroticism in the participants' personalities. This might be because people with a high degree of neuroticism tend to experience negative emotional states and engage in maladaptive coping strategies (e.g., unhealthy pattern of internet use) during stressful situations such as the COVID-19 pandemic. A recent meta-analysis that assessed the link between neuroticism and digital media usage patterns suggested that the personality trait neuroticism was associated with an increased risk of developing both generalized and specific problematic internet use such as social media addiction or internet gaming disorder (Marciano et al., 2020). In addition, our study participants who engaged predominantly in interactive recreational screen time activities such as playing digital games had a greater increase in their total daily screen time than did those who did not report such an increase in interactive recreational screen time. This finding might be partly explained by the potentially greater addictive potential of the commonly played massively multiplayer online games among college students (Singh et al., 2019). The students possibly would have engaged in such games to socialize and alleviate feelings of boredom during the COVID-19 pandemic.

The COVID-19-related stress scores had a small positive correlation with agreeableness and no significant association with any other personality traits in the study sample. This result could be explained by other factors mediating the effect of personality on COVID-19-related psychological distress, such as resilience and predominant defence mechanisms used by people to cope with COVID-19-related stress (Gori et al., 2021; Zager Kocjan et al., 2021). Further, small positive correlations were observed between quality-of-life scores and the personality traits of extraversion, agreeableness, and conscientiousness, whereas a greater degree of trait neuroticism was associated with lower quality-of-life scores. This is in line with the available literature supporting the variable associations between different personality traits and quality of life in different population groups (Huang et al., 2017; Kentros et al., 1997; Pereira-Morales et al., 2018; Ridgewell et al., 2017; Schneider-Matyka et al., 2016). However, the findings from the literature are not directly comparable, because different frameworks and instruments were used to conceptualize and assess both personality and quality-of-life constructs across different studies (Huang et al., 2017).

There was a significant relationship between the pattern of screen time usage and COVID-related stress in college students. Participants with increased screen time during COVID-19 that was predominantly due to use of social media for either non-communication purposes or communication with friends and/or family members reported higher levels of COVID-related stress than did those who did not report such increased screen time. This association might be because people with higher levels of stress related to the pandemic were more likely to talk with their friends and family members for reassurance seeking or in order to check up on their health (Son et al., 2020). Similarly, participants with increased screen time during COVID-19 due to reading or watching news and increased interactive recreational screen time reported experiencing higher levels of COVID-19-related stress. This association

might be because excessive reading of COVID-19-related negative news online (e.g., repeatedly checking the rising number of COVID-19 cases multiple times a day) or watching news on the negative effects of the COVID-19 pandemic, such as declining financial and future job prospects, might have led to increased COVID-related stress (Pahayahay & Khalili-Mahani, 2020). Moreover, a previous study conducted among college students in India reported that increased gaming behaviour during the COVID lockdown was associated with the belief that this behaviour helps to combat stress (Balhara et al., 2020). This finding suggests that increased interactive recreational time was at least partly due to more frequent engagement in gaming among college students with higher levels of COVID-19-related stress as an attempt to cope with this increased stress.

Limitations of the Study

The findings from the present study should be interpreted in view of its limitations. The study was conducted in a convenience sample of college students via an online recruitment and survey strategy and is therefore prone to selection bias. However, closure of on-campus classes meant that the students were accessible only through an online medium for the study. We did not have the data on pre-COVID screen time and thus could not compare these data with the current screen time data. The cross-sectional study design precludes us from assessing the directionality of the effects or causality between screen time and quality of life. Lastly, the information obtained about the amount and pattern of screen time usage is based solely on the self-reports of the participants and is prone to recall and social desirability biases. Future studies with a longitudinal study design should be undertaken to address these limitations.

Conclusions

Our study findings suggest that, besides overall screen time duration, the context and purpose of screen time use is important for understanding its effect on overall quality of life and well-being. The increased educational screen time among college students that resulted from a COVID-19-related academic disruption was not found to be associated with negative effects on their quality of life. However, increased screen time that was predominantly due to use of social media for non-communication purposes was associated with lower quality of life and higher levels of COVID-related stress. Thus, students, faculty, parents, and other stakeholders should be mindful about the variable effects of the different types of screen time when guidelines or recommendations are being developed to regulate total screen time among adolescents and young adult students.

References

Balhara, Y. P. S., Kattula, D., Singh, S., Chukkali, S., & Bhargava, R. (2020). Impact of lockdown following COVID-19 on the gaming behavior of college students. *Indian Journal of Public Health*, 64(6), 172–176. https://doi.org/10.4103/ijph.IJPH_465_20

Carroll, N., Sadowski, A., Laila, A., Hruska, V., Nixon, M., Ma, D. W. L., & Haines, J. (2020). The Impact of COVID-19 on health behavior, stress, financial and food security among middle to high income Canadian families with young children. *Nutrients*, *12*(8), 2352. <https://doi.org/10.3390/nu12082352>

Chopra, S., Ranjan, P., Singh, V., Kumar, S., Arora, M., Hasan, M. S., Kasiraj, R., Suryansh, Kaur, D., Vikram, N. K., Malhotra, A., Kumari, A., Klanidhi, K. B., & Baitha, U. (2020). Impact of COVID-19 on lifestyle-related behaviours: A cross-sectional audit of responses from nine hundred and ninety-five participants from India. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, *14*(6), 2021–2030. <https://doi.org/10.1016/j.dsx.2020.09.034>

Dahl, R. E., Allen, N. B., Wilbrecht, L., & Suleiman, A. B. (2018). Importance of investing in adolescence from a developmental science perspective. *Nature*, *554*, 441–450. <https://doi.org/10.1038/nature25770>

Endicott, J., Nee, J., Harrison, W., & Blumenthal, R. (1993). Quality of Life Enjoyment and Satisfaction Questionnaire: A new measure. *Psychopharmacology Bulletin*, *29*(2), 321–326.

Gori, A., Topino, E., Palazzeschi, L., & Di Fabio, A. (2021). Which personality traits can mitigate the impact of the pandemic? Assessment of the relationship between personality traits and traumatic events in the COVID-19 pandemic as mediated by defense mechanisms. *PLoS One*, *16*(5), Article e0251984. <https://doi.org/10.1371/journal.pone.0251984>

Górnicka, M., Drywień, M. E., Zielinska, M. A., & Hamułka, J. (2020). Dietary and lifestyle changes during COVID-19 and the subsequent lockdowns among Polish adults: A cross-sectional online survey PLifeCOVID-19 study. *Nutrients*, *12*(8), 2324. <https://doi.org/10.3390/nu12082324>

Hamilton, J. L., Nesi, J., & Choukas-Bradley, S. (2020). *Teens and social media during the COVID-19 pandemic: Staying socially connected while physically distant*. PsyArXiv. <https://doi.org/10.31234/osf.io/5stx4>

Hu, Z., Lin, X., Chiwanda Kaminga, A., & Xu, H. (2020). Impact of the COVID-19 epidemic on lifestyle behaviors and their association with subjective well-being among the general population in Mainland China: Cross-sectional study. *Journal of Medical Internet Research*, *22*(8), Article e21176. <https://doi.org/10.2196/21176>

Huang, I. C., Lee, J. L., Ketheeswaran, P., Jones, C. M., Revicki, D. A., & Wu, A. W. (2017). Does personality affect health-related quality of life? A systematic review. *PLoS one*, *12*(3), Article e0173806. <https://doi.org/10.1371/journal.pone.0173806>

- Jena, P. K. (2020). Impact of pandemic COVID-19 on education in India. *International Journal of Current Research*, 12(7), 12582–12586. Social Science Research Network (SSRN Scholarly Paper ID 3691506). <https://papers.ssrn.com/abstract=3691506>
- Kentros, M. K., Terkelsen, K., Hull, J., Smith, T. E., & Goodman, M. (1997). The relationship between personality and quality of life in persons with schizoaffective disorder and schizophrenia. *Quality of Life Research*, 6, 118–122. <https://doi.org/10.1023/a:1026433932142>
- Mahapatra, A., & Sharma, P. (2020). Education in times of COVID-19 pandemic: Academic stress and its psychosocial impact on children and adolescents in India. *International Journal of Social Psychiatry*, 67(4), 397–399. <https://doi.org/10.1177/0020764020961801>
- Marciano, L., Camerini, A.-L., & Schulz, P. J. (2020). Neuroticism in the digital age: A meta-analysis. *Computers in Human Behavior Reports*, 2, Article 100026. <https://doi.org/10.1016/j.chbr.2020.100026>
- Pahayahay, A., & Khalili-Mahani, N. (2020). What media helps, what media hurts: A mixed methods survey study of coping with COVID-19 using the media repertoire framework and the appraisal theory of stress. *Journal of Medical Internet Research*, 22(8), Article e20186. <https://doi.org/10.2196/20186>
- Pereira-Morales, A. J., Adan, A., Lopez-Leon, S., & Forero, D. A. (2018). Personality traits and health-related quality of life: The mediator role of coping strategies and psychological distress. *Annals of General Psychiatry*, 17, 25. <https://doi.org/10.1186/s12991-018-0196-0>
- Pišot, S., Milovanović, I., Šimunič, B., Gentile, A., Bosnar, K., Prot, F., Bianco, A., Lo Coco, G., Bartoluci, S., Katović, D., Bakalár, P., Kovalik Slančová, T., Tlučáková, L., Casals, C., Feka, K., Christogianni, A., & Drid, P. (2020). Maintaining everyday life praxis in the time of COVID-19 pandemic measures (ELP-COVID-19 survey). *European Journal of Public Health*, 30(6), 1181–1186. <https://doi.org/10.1093/eurpub/ckaa157>
- Rammstedt, B., & John, O. P. (2007). Measuring personality in one minute or less: A 10-item short version of the Big Five Inventory in English and German. *Journal of Research in Personality*, 41(1), 203–212. <https://doi.org/10.1016/j.jrp.2006.02.001>
- Ridgewell, C., Blackford, J. U., McHugo, M., & Heckers, S. (2017). Personality traits predicting quality of life and overall functioning in schizophrenia. *Schizophrenia Research*, 182, 19–23. <https://doi.org/10.1016/j.schres.2016.10.007>
- Sanders, T., Parker, P. D., del Pozo-Cruz, B., Noetel, M., & Lonsdale, C. (2019). Type of screen time moderates effects on outcomes in 4013 children: Evidence from the

- Longitudinal Study of Australian Children. *International Journal of Behavioral Nutrition and Physical Activity*, 16(1), 117. <https://doi.org/10.1186/s12966-019-0881-7>
- Schneider-Matyka, D., Jurczak, A., Samochowiec, A., Karakiewicz, B., Szkup, M., Grzywacz, A., & Grochans, E. (2016). Analysis of personality traits and their influence on the quality of life of postmenopausal women with regard to genetic factors. *Annals of General Psychiatry*, 15(1), 25. <https://doi.org/10.1186/s12991-016-0110-6>
- Singh, S., & Balhara, Y. P. S. (2021). “Screen-time” for children and adolescents in COVID-19 times: Need to have the contextually informed perspective. *Indian Journal of Psychiatry*, 63(2), 192–195. https://doi.org/10.4103/psychiatry_646_20
- Singh, S., Dahiya, N., Singh, A., Kumar, R., & Balhara, Y. P. S. (2019). Gaming disorder among medical college students from India: Exploring the pattern and correlates. *Industrial Psychiatry Journal*, 28(1), 107–114. https://doi.org/10.4103/ipj.ipj_96_18
- Smith, L., Jacob, L., Trott, M., Yakkundi, A., Butler, L., Barnett, Y., Armstrong, N. C., McDermott, D., Schuch, F., Meyer, J., López-Bueno, R., Sánchez, G. F. L., Bradley, D., & Tully, M. A. (2020). The association between screen time and mental health during COVID-19: A cross sectional study. *Psychiatry Research*, 292, Article 113333. <https://doi.org/10.1016/j.psychres.2020.113333>
- Son, C., Hegde, S., Smith, A., Wang, X., & Sasangohar, F. (2020). Effects of COVID-19 on college students’ mental health in the United States: Interview survey study. *Journal of Medical Internet Research*, 22(9), Article e21279. <https://doi.org/10.2196/21279>
- Sultana, A., Tasnim, S., Bhattacharya, S., Hossain, M. M., & Purohit, N. (2020). *Digital screen time during COVID-19 pandemic: A public health concern*. SocArXiv. <https://doi.org/10.31235/osf.io/e8sg7>
- Winther, D. K., & Byrne, J. (2020, April 7). *Rethinking screen-time in the time of COVID-19*. UNICEF, Office of Global Insight & Policy. <https://www.unicef.org/globalinsight/stories/rethinking-screen-time-time-covid-19>
- Yin, X.-Q., de Vries, D. A., Gentile, D. A., & Wang, J.-L. (2019). Cultural background and measurement of usage moderate the association between social networking sites (SNSs) usage and mental health: A meta-analysis. *Social Science Computer Review*, 37(5), 631–648. <https://doi.org/10.1177/0894439318784908>
- Zager Kocjan, G., Kavčič, T., & Avsec, A. (2021). Resilience matters: Explaining the association between personality and psychological functioning during the COVID-19 pandemic. *International Journal of Clinical and Health Psychology*, 21(1), Article 100198. <https://doi.org/10.1016/j.ijchp.2020.08.002>

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