eISSN 2255-0569

ORIGINAL

Screen Addiction among nursing students during confinement in Morocco

Adicción a las pantallas entre los estudiantes de enfermería durante el confinamiento en Marruecos

Soukaina Stati[1,5,6], Mohamed Amine Baba[2,4], Ahmed Kharbach[2,3], Abderrahmane Achbani[7,8], Mohamed Fougnar[1], Aouatef Khallouk[1,6], Ismail Hanine[1,6], Maria Sabir[1,5], Fatima el Omari[1,5]

1. ArRazi Psychiatric Hospital in Salé, Ibn sina University Hospital Rabat, Morocco 2. Higher Institute of Nursing Professions and Health Techniques, Agadir, Morocco 3. Laboratory of Biostatistics, Clinical Research and Epidemiology (LBRCE), Faculty of Medicine and Pharmacy of Rabat, Mohamed V University, Rabat, Morocco 4. Laboratory of Health Sciences Research, Faculty of Medicine and Pharmacy of Agadir, Ibn Zohr University, Agadir, Morocco 5. Laboratory of Social Medicine Public Health, Hygiene and Preventive Medicine, Faculty of Medicine and Pharmacy of Rabat, Mohamed V University, Morocco 5 Psychiatry, Medical Psychology and History of Medicine Research Team, Faculty of Medicine and Pharmacy of Rabat, Mohamed V University, Rabat, Morocco 6. Faculty of Medicine and Pharmacy of Rabat, Mohamed V University, Rabat, Morocco 7. Department of Biology, Faculty of Sciences, Laboratory of Cell Biology and Molecular Genetics, University Ibn Zohr, Agadir, Morocco 8. Higher Institute of Nursing Professions and Health Techniques, Marrakech, Morocco

Corresponding author
Ahmed Kharbach
E-mail: kharbach.a.lbrce@gmail.com

Received: 29 - IX - 2022
Accepted: 26 - X - 2022

doi: 10.3306/AJHS.2023.38.01.92

Abstract

Aim: The objective of this study is to evaluate the psychological experience during confinement by psychological scales of student nurses and health technicians.
Material and Methods: To explore this topic, we used an anonymous questionnaire based on, in addition to status and individual conditions, scales assessing depression (Beck) and internet addiction (IAT).
Results: We were able to collect after a rigorous sorting 98 answers, of which 87.8% are women with an average age of 20 years. Beck, 18.36% according to the IAT scale are problematic Internet users with possible life consequences. The function of the mother, the place of residence and the domain of internet use such as social networks, TV and electronic entertainment are the variables that show a statistically significant difference with a P <0.05, and the use of social networks is a risk factor for problematic internet use (OR=2.21e+10, and p <0.001).
Discussion: The exploration of depression and the problematic use of the Internet has concluded that there is an undeniable impact of confinement on young students.

Key words: Depression, problematic internet use, confinement, covid-19, young student, Morocco.

Resumen

Objetivo: El objetivo de este estudio es evaluar la experiencia psicológica durante el encierro mediante escalas psicológicas a estudiantes de enfermería y técnicos sanitarios.
Material y métodos: Para explorar este tema, se utilizó un cuestionario anónimo basado, además de en el estado y las condiciones individuales, en escalas que evalúan la depresión (Beck) y la adicción a Internet (IAT).
Resultados: Pudimos recoger tras una rigurosa clasificación 98 respuestas, de las cuales el 87,8% son mujeres con una edad media de 20 años. Beck, el 18,36% según la escala IAT son usuarios problemáticos de Internet con posibles consecuencias en la vida. La función de la madre, el lugar de residencia y el dominio de uso de Internet como las redes sociales, la televisión y el entretenimiento electrónico son las variables que muestran una diferencia estadísticamente significativa con una P <0,05, y el uso de las redes sociales es un factor de riesgo para el uso problemático de Internet (OR=2,21e+10, y p <0,001).
Discusión: La exploración de la depresión y el uso problemático de Internet ha concluido que existe un innegable impacto del encierro en los jóvenes estudiantes.

Palabras clave: Depresión, uso problemático de Internet, encierro, covid-19, joven estudiante, Marruecos.

Introduction

The advent of the global COVID-19 pandemic and the need to mitigate the spread and transmission of the coronavirus, many countries, including Morocco, had to issue lockdown advisories and impose lockdown restrictions and social distancing protocols[1,2]. Consequently the pandemic has disrupted lives, societies and economies around the world[3,4].

A large number of studies show varying degrees of psychological distress and neuropsychiatric problems in individuals as adverse consequences of these events. However, certain groups of individuals experienced lower levels of stress and reported a greater sense of well-being[5].

These results could be attributed to a variety of factors such as greater control over life, flexible working arrangements, time spent with family, social support and above all resilience. For many others, stress and maladjustment during the pandemic have led to various health risk behaviors (poor diet, sedentary behaviors, alcohol use, drug use, sleep problems, use excessive media and technology, etc.)[6].

Technology and the internet have been implicated in many maladaptive patterns or unhealthy responses to stressors. Prolonged school closures have prompted educational institutions to adopt online teaching-learning models for students which has increased the use of varied screens[7].

Multiple investigators have explored internet overuse, online gaming, virtual gambling, social media addiction, electronic device use disorders, and excessive screen time during the COVID pandemic -19[7-10], these studies, mainly conducted in Asia and Europe, show that these behaviors were linked to poor physical or mental health. other studies have highlighted the emergence of these new psychological disorders, according to Griffiths, excessive use should not be equated with problematic use. However, there are several theories associated with the research context[11,12]. Intends to make sense of internet use and assumes that individuals spend a lot of time on the internet in order to alleviate life stress and negative feelings and Social cognitive theory states that human behavior can be explained by the triad of personal, behavioral and environmental factors, and their mutual causation. Individual factors, the individual's behavior and the environment mutually affect each person's current and future behavior[13].

In the present study, the objective is to begin an evaluation of the psychological experience during confinement by evaluating depression and Internet addiction among students of the Higher Institute of Nursing Professions and health techniques of Rabat (ISPITS) Morocco, in order to verify if there are variables that can determine the probability of these disorders.

Materials and methods

Type of study

A cross-sectional, descriptive and analytical study was conducted between May 1, 2021 and June 1, 2021, using an anonymous questionnaire, which explores the three main axes of this work, firstly the socio-demographic conditions, including age, sex, level of education, marital status, second religious, economic data and data related to schooling and third the evaluation of the psychological experience during confinement by psychological scales; the BECK to assess depression, and IAT to assess Internet addiction.

Evaluation scales of psychological experience

BECK scale is a 13-item scale rated from 0-3 with a maximum score of 39. This instrument can be useful for evaluating depressive symptoms, or screening for major depressive disorders in target populations, its interpretation in favor of depression s 'it is greater than three, with an identification of 3 intensities of depression, mild for a score of 4 to 7, moderate for a score of 8 to 15 and severe if the score is greater than 16[14].

Scale AIT is a scale with 20 items noted from 0-5 with a maximum score of 100, the total score with the questionnaire is obtained by the sum of the points with the various items. Score from 20 to 49; no excessive use of the internet, Score from 50 to 79; problematic internet use with possible consequences on your life, Score from 80 to 100; problematic internet use with severe repercussions on your life[15].

Data management and statistical analysis

The qualitative variables were presented in the form of frequencies and percentages, the quantitative variables were presented in mean standard deviation (SD) or median (interquartile range, IQR). The Chi-square (x2) test or Fisher's exact test were carried out according to their specific application conditions, to identify the differences in the proportions of categorical variables between three groups (group 1: normal score less than 20, group 2: score between 20 and 49 which does not present excessive use of the Internet and group 3: score between 50 to 79 which presents a problematic use of the Internet with possible consequences on life). In addition, multivariate logistic regression analyzes are used to identify risk factors for problematic screen use. All independent variables presenting a statistically significant value with $P < 0.05$ between the three groups were taken into account in the multivariate logistic regression. Data management and statistical analysis were performed using JAMOVI software for Windows.

Results

Participant characteristics

A total of 98 participants meeting the study criteria were included. The predominant sex was female (87.8%), with an average age of 20 years. More than half (60.2%) live with the family and of which 69.4% have mothers without professions. 55% of the participants were scholarship students. The most used educational platform for distance learning courses was google Meets (48%). Compared to Internet use on schooling, the results revealed that 66.7% report a decrease in academic performance, 92% mainly use social networks, 38.7% pay 200 Drh per month for the Internet (**Table I**).

BECK and AIT characteristics

The majority of students with no medical and surgical history, 59.2% present depression (mild 28.6%, medium 26.5%, severe 4.1%) according to the Beck scale.

Table I: Participants characteristics.

Variable	N (%) (N=98)	Normal	No excessive internet use	Problematic internet use with possible consequences on your life	P
Age (M ± SD)	20 (1.04)	20+ /-0.805	20+/-1.09	20.2+/-1.04	0.739
Gender					
Women	86 (87.8 %)	19 (22.4%)	49 (57.6%)	17 (20%)	0.630
Man	12 (12.2 %)	2 (16.7%)	9 (75%)	1 (8.3%)	
Place of residence					
With the family	59 (60.2 %)	10 (17.2%)	40 (69%)	8 (13.8%)	0.043
With the friends	30 (30.6 %)	7 (23.3%)	116 (53.3%)	7 (23.3%)	
Boarding school	9 (9.2 %)	2 (28.6%)	2 (28.6%)	3 (42.9%)	
Father's function					
Employee	18 (18.4%)	3 (17.6%)	13 (76.5%)	1 (5.9%)	0.317
Official	23 (23.5%)	6 (26.1%)	9 (39.1%)	8 (34.8%)	
Free profession	27 (27.6%)	7 (25.9%)	15 (55.6%)	5 (18.5%)	
Retirement	24 (24.5%)	4 (16.7%)	16 (66.7%)	4 (16.7%)	
No occupation	6 (6.1)	1 (16.7%)	5 (83.3%)	0 (0%)	
Mother's role					
Employee	9 (9.2%)	1 (11.1%)	7 (77.8%)	1 (11%)	0.005
Official	10 (10.2%)	2 (20%)	1 (10%)	7 (70%)	
Free profession	7 (7.1%)	1 (14.3%)	4 (57.1%)	2 (28.6%)	
Retirement	4 (4.1%)	1 (25%)	3 (75%)	0 (0%)	
No occupation	68 (69.4)	16 (23.9%)	43 (64.2%)	8 (11.9%)	
School year					
First year	15 (16.3 %)	3 (20%)	9 (60%)	3 (20%)	0.443
Second year	42 (42.9 %)	12 (28.6%)	25 (59.5%)	5 (11.9%)	
Third year	40 (40.8 %)	6 (15%)	24 (60%)	10 (25%)	
Repeating					
Yes	4 (4.1 %)	1 (25%)	3 (75%)	0 (0%)	1.000
No	94 (95.9 %)	20 (21.5%)	55 (59.1%)	18 (19.4%)	
The Scholarship					
Yes	55 (56.1 %)	15 (27.3%)	32 (58.2%)	8 (14.5%)	0.222
No	43 (43.9 %)	6 (14.3%)	26 (61.9%)	10 (23.8%)	
Use of platform to study remotely					
CLASSROOM	6 (8. %)	3 (50%)	2 (33.3%)	1 (16.7%)	0.160
MEETS	35 (48%)	5 (14.3%)	26 (74.3%)	4 (11.4%)	
ZOOM	33 (44%)	10 (30.3%)	18 (54.5%)	5 (15.2%)	
Internet and Academic Performance					
Yield increase	25 (33.3 %)	6 (24%)	13 (52%)	6 (24%)	0.157
Decreased yield	50 (66.7%)	12 (24.5%)	33 (67.3%)	4 (8.2%)	
Average number of study hours spent in the institute per week	18 (10 ;28)	16 (10 ;25)	18 (10.5; 28.8)	17 (10 ;24.8)	0.612
Use of the Internet					
Social Networks	69 (92 %)	18 (26.5%)	44 (64.7%)	6 (8.8%)	0.004
TV and Entertainment	6 (8 %)	0 (0%)	2 (33.3%)	4 (66.7%)	
Login Mode					
4G	27 (36 %)	4 (14.8%)	17 (63%)	6 (22.2%)	0.158
WIRELESS	48 (64 %)	14 (29.8%)	29 (61.7%)	4 (8.5%)	
Amount paid for internet					
50DH	7 (9.3 %)	2 (28.6%)	5 (71.4%)	0 (0%)	0.566
100DH	23 (32 %)	3 (13%)	15 (65.2%)	5 (21.7%)	
200DH	29 (38.7 %)	10 (34.5%)	16 (55.2%)	3 (10.3%)	
>200DH	15 (20 %)	3 (20%)	10 (66.7%)	2 (13.3%)	

According to the interpretation of the AIT scale, we were able to classify the participants into 3 groups, group 1 (normal 21.6%), group 2 (no excessive use 59.8%), group 3 (problematic use with possible consequences on life 18.36%). By comparing the 3 groups and using the Chi-square (x2) test or Fisher's exact test, we find that there is a statistically significant difference with a P <0.05 of the function of the mother, the place of residence and the domain of internet use such as social networks, television and electronic entertainment. (**Table II**).

Regarding the results of the multivariate logistic regression and adjusting for confounding factors, we find that the use of social networks is a risk factor for problematic Internet use (OR=2.21e+10, CI [6.91e+ 9–7.08e+10], and p <0.001) (**Table III**).

Discussion

According to the results of this study, the participants were mainly women, single with an average age of 20, more than half lived with the family and whose mothers were without professions, the majority had no history, 59.2% present depression according to the Beck scale, 18.36% are problematic Internet users with possible consequences on life according to the IAT scale, therefore depression and problematic use with possible consequences on life are negative consequences of the covid 19 pandemic on ISPIST students.

The function of the mother, the place of residence and the domain of internet use such as social networks, TV and electronic entertainment are variables that present a

Table II: Medico-surgical-psychiatric characteristics of the participants.

Variable	N (%) (N=98)	Normal	No excessive internet use	Problematic internet use with possible consequences on your life	P
Taking Medication					
No	83 (84.7%)	17 (20.5%)	51 (61.4%)	15 (18.1%)	0.660
Yes	15 (15.3%)	4 (28.6%)	7 (50%)	3 (21%)	
Medical-Surgical-Psychiatric history					
Medical	14 (14.3%)	4 (30.8%)	6 (46.2%)	3 (23.1%)	0.255
Psychiatric	4 (4.1%)	2 (50%)	1 (25%)	1 (25%)	
RAS	80 (81.6%)	15 (18.8%)	51 (63.7%)	14 (17.5%)	
Family history of problematic substance use					
Yes	80 (81.6%)	18 (22.8%)	45 (57%)	16 (20.3%)	0.582
No	18 (18.4%)	3 (16.7%)	13 (72.2%)	2 (11.1%)	
Beck scale					
No depression	40 (40.8%)	9 (22.5%)	26 (65%)	5 (12.5%)	0.294
Mild depression	28 (28.6%)	8 (29.6%)	14 (51.9%)	5 (18.5%)	
Average depression	26 (26.5%)	3 (11.5%)	17 (65.4%)	6 (23.1%)	
Severe depression	4 (4.1%)	1 (25%)	1 (25%)	2 (50%)	
Internet Addiction Scale (IAT)					
Normal	21 (21.6 %)				
No excessive internet uses	58 (59.8 %)	—	—	—	—
Problematic internet use with possible consequences on your life.	18 (18.36 %)				

Table III: Multivariate Analysis.

	Model 1 Multivariate Analysis			Model 2 Multivariate Analysis		
	OR	CI 95%	p	OR	CI 95%	p
Mother's role						
Employee	*					
Official	0.98	[0.09–10.05]	0.989	2.10e0-6	[0.00–inf]	0.993
Free profession	0.17	[0.01–2.32]	0.185	8.64	[0.85–87.95]	0.068
Retirement	1.91	[0.05–64.22]	0.717	3.34	[0.079–140.98]	0.527
No occupation	1.59e0+7	[0.00–inf]	0.971	2.15e0-5	[0.00–inf]	0.986
Place of residence						
With the family	*					
With the friends	0.5	[0.13– 1.88]	0.3	1.08	[0.12–9.52]	0.940
Boarding school	1.92e–14	[0.0000–inf]	0.94	0.614	[0.03–12.58]	0.752
Use of the Internet						
Social Networks	*					
TV and Entertainment	1.66e0+9	[5.20e+8– 5.32e+9]	<0.001	2.21e+10	[6.91e+9–7.08e+10]	<0.001

statistically significant difference with a P <0.05 between the 3 groups and the use of social networks is a risk factor for problematic screen and internet use (OR=2.21e+10, IC[6.91e+9–7.08e+10], p <0.001).

Parallel to these results, Wheaton examined the relationship between media use, susceptibility to emotional contagion, and emotional responses to the COVID-19 outbreak among 603 university students with an average age of 22.92; the results revealed that media consumption during the pandemic significantly predicted the degree of anxiety related to COVID-19[16].

Moreover, another large-scale Chinese cross-sectional study, conducted on a sample of 512 college students with an average age of 22, found that social media use was significantly associated with depressive symptoms and mental illness symptoms. anxiety, this finding suggests that COVID-19-related stress explains the relationship between social media use and depression[17].

Similar conclusions were drawn by Li and colleagues indicating that social media was associated with negative mental health consequences. Investigators analyzed data from 68,685 university students at two stages of the pandemic; shortly after the start of the pandemic (T1) and 1 month later (T2). Comparing T1 and T2, social media usage was significantly higher at the start of the pandemic. Heavy social media use (>3 h/day) at T1 was found to be a significant predictor of acute stress and anxiety symptoms, but not depressive symptoms. The authors concluded that the use of social media can exert a negative influence on mental health in the short and long term[18]. Moreover, the results obtained from an online survey and published by Shoa and his colleagues point in the same direction. The authors assessed individuals' emotional state, regulation and coping strategies during the COVID-19 outbreak among 528 Chinese citizens with an average age of 35 years. They reported that coping strategies (based on social media), such as disclosing and sharing negative emotions, generate stressful effects. Additionally, stress and anxiety can cause digital emotions to contagion[19].

In a population-based study carried out in Hong Kong, a telephone survey was administered to 1070 adults (658 social media users and 412 non-users) between May and June 2020. The results showed that the relationship between social media use and mental health may be influenced by age. In fact, the young participants got a lot of information from social media that could easily trigger stress[20].

Additionally, time spent on social media has been associated with symptoms of depression during the COVID-19 pandemic, possibly because spending more time on social media involves greater exposure to information about COVID-19. 19 and a greater likelihood of experiencing infodemic and emotional contagion[21]. These data are substantially consistent with those of a study conducted on 185 young adults with an average age of 21 years, from several countries[28] showing that an increase in the use by young people of social media sites and services streaming during the pandemic period resulted in increased internet use and gaming addiction that significantly predicted high scores for depression, loneliness, escape, poor sleep quality, and related anxiety to the pandemic[13].

Moreover, according to several surveys, the increased use of Internet games is linked to poor psychological adjustment. In fact, gambling has been used by adolescents and young adults as a coping mechanism to deal with the psychological distress of the pandemic[22-25]. Other studies have reported contrasting results. As the survey conducted by David and Roberts suggests, the use of smartphones can mitigate the negative impact of confinement on social connection and well-being. The authors tested 400 undergraduate students from a major American university, 52% of the participants were women with an average age of 20, and they reported that confinement is associated with social connection and well-being. subjectively lower and at higher levels of stress and depression. They also found that smartphone use improves social relationships, as more smartphone use improves social connection and is associated with better psychological well-being[26]. This appears to be consistent with a study carried out in Italy to explore the relationships between anxiety, perceived vulnerability to illness, and smartphone use during the COVID-19 pandemic. For the 194 university students surveyed with an average age of 21, the use of smartphones seems to mitigate the negative impact of the covid 19 pandemic on social relations[27]. Another study to verify the effect of social media on mental health during COVID-19 was carried out among 248 international university students in the Netherlands[28]. The authors found that social media use had a positive impact on mental health outcomes during the COVID-19 pandemic in terms of improvement in depressive symptoms. Another study to verify the effect of social media on mental health during COVID-19 was carried out among 248 international university students in the Netherlands[28]. The authors found that social media use had a positive impact on mental health outcomes during the COVID-19 pandemic in terms of improvement in depressive symptoms[28]. These results were confirmed by Sewall et al. who conducted a four-wave panel study of 384 young American adults with a mean age of 24.5 years to examine the association between mental health, objective use of digital technology, and stressors related to the pandemic. They reported that the use of digital technology did not contribute to increases in depression, anxiety, or suicidal ideation[29].

Conclusion

Technology in the context of the covid 19 pandemic has played two opposing roles: on the one hand, it is a tool for communication, sharing, education and remote care, thus helping young people to preserve their mental health during the period of confinement, on the other hand it is responsible for a disorder of problematic use of the internet screen and social networks, this problematic use can have the negative consequence on life of poor academic performance, and a psychological distress, so attention must be paid by professionals, psychologists and psychiatrists to detect the suffering and loss of young people during the pandemic.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

Funding

None.

Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

References

1. Patel A, Agarwal R, Rudramurthy SM, Shevkani M, Xess I, Sharma R, et al. Early Release-Multicenter Epidemiologic Study of COVID-19–Associated Mucormycosis, India.

2. Gupta R, Kesavadev J, Krishnan G, Agarwal S, Saboo B, Shah M, et al. COVID-19 associated mucormycosis: a descriptive multisite study from India. 2021;15(6):102322.

3. Király O, Potenza M, Stein D, King D, Hodgins D, Saunders JJ, et al. Preventing problematic internet use during the COVID-19 pandemic: Consensus guidance 2020.100:152180.

4. Király O, Potenza MN, Stein DJ, King DL, Hodgins DC, Saunders JB, et al. Preventing problematic internet use during the COVID-19 pandemic: Consensus guidance. 2020;100:152180.

5. Maarefvand M, Hosseinzadeh S, Farmani O, Safarabadi Farahani A, Khubchandani J. Coronavirus Outbreak and Stress in Iranians. Int J Environ Res Public Health. 2020 Jun 20;17(12):4441. doi: 10.3390/ijerph17124441.

6. Ruggles DR, Freyman RL, Oxenham AJ. Influence of musical training on understanding voiced and whispered speech in noise. PLoS One. 2014 Jan 28;9(1):e86980. doi: 10.1371/journal.pone.0086980.

7. Singh S, Dixit A, Joshi G. "Is compulsive social media use amid COVID-19 pandemic addictive behavior or coping mechanism? Asian J Psychiatr. 2020 Dec;54:102290. doi: 10.1016/j.ajp.2020.102290.

8. Stănculescu, E., Griffiths, M.D. Anxious Attachment and Facebook Addiction: The Mediating Role of Need to Belong, Self-esteem, and Facebook Use to Meet Romantic Partners. Int J Ment Health Addiction (2021). https://doi.org/10.1007/s11469-021-00598-9

9. Stănculescu E. The Bergen Social Media Addiction Scale Validity in a Romanian Sample Using Item Response Theory and Network Analysis. Int J Ment Health Addict. 2022 Jan 15:1-18. doi: 10.1007/s11469-021-00732-7.

10. Perrin A, Kumar M. About three-in-ten US adults say they are 'almost constantly'online. 2019. Available at: About three-in-ten U.S. adults say they are 'almost constantly' online - (latamoptical.com)

11.Kardefelt-Winther. A conceptual and methodological critique of internet addiction research: Towards a model of compensatory internet use. Computers in Human Behavior. 2014;31:351-4

12. Bandura AJ. The assessment and predictive generality of self-percepts of efficacy. Journal of Behavior Therapy and Experimental Psychiatry 1982;13(3):195-9.

13. Fernandes B, Uzun B, Aydin C, Tan-Mansukhani R, Vallejo A, Saliña-Gutierrez A, et al. Internet use during COVID-19 lockdown among young people in low- and middle-income countries: Role of psychological wellbeing. Addict Behav Rep. 2021 Dec;14:100379. doi: 10.1016/j.abrep.2021.100379.

14. Bouvard M, Charles S, Guérin J, Aimard G. Étude de l'échelle de désespoir de Beck (Hopelessness Scale). Validation et analyse factorielle. L'Encéphale: Revue de psychiatrie clinique biologique et thérapeutique 1992; 18(3):237-40.

15. Khazaal Y, Billieux J, Thorens G, Khan R, Louati Y, Scarlatti E, et al. French validation of the internet addiction test. Cyberpsychol Behav. 2008 Dec;11(6):703-6. doi: 10.1089/cpb.2007.0249.

16. Wheaton MG, Prikhidko A, Messner GR. Is Fear of COVID-19 Contagious? The Effects of Emotion Contagion and Social Media Use on Anxiety in Response to the Coronavirus Pandemic. Front Psychol. 2021 Jan 5;11:567379. doi: 10.3389/fpsyg.2020.567379.

17. Zhao N, Zhou G. Social Media Use and Mental Health during the COVID-19 Pandemic: Moderator Role of Disaster Stressor and Mediator Role of Negative Affect. Appl Psychol Health Well Being. 2020 Dec;12(4):1019-1038. doi: 10.1111/aphw.12226.

18. Li Y, Zhao J, Ma Z, McReynolds LS, Lin D, Chen Z, et al. Mental Health Among College Students During the COVID-19 Pandemic in China: A 2-Wave Longitudinal Survey. J Affect Disord. 2021 Feb 15;281:597-604. doi: 10.1016/j.jad.2020.11.109

19. Shao R, Shi Z, Zhang D. Social Media and Emotional Burnout Regulation During the COVID-19 Pandemic: Multilevel Approach. J Med Internet Res. 2021 Mar 16;23(3):e27015. doi: 10.2196/27015.

20. Yang X, Yip BHK, Mak ADP, Zhang D, Lee EKP, Wong SYS. The Differential Effects of Social Media on Depressive Symptoms and Suicidal Ideation Among the Younger and Older Adult Population in Hong Kong During the COVID-19 Pandemic: Population-Based Cross-sectional Survey Study. JMIR Public Health Surveill. 2021 May 25;7(5):e24623. doi: 10.2196/24623.

21. Brasso C, Bellino S, Blua C, Bozzatello P, Rocca P. The Impact of SARS-CoV-2 Infection on Youth Mental Health: A Narrative Review. Biomedicines. 2022 Mar 25;10(4):772. doi: 10.3390/biomedicines10040772.

22. Wong A, Ho S, Olusanya O, Antonini MV, Lyness D. The use of social media and online communications in times of pandemic COVID-19. J Intensive Care Soc. 2021 Aug;22(3):255-260. doi: 10.1177/1751143720966280.

23. Ko CH, Yen JY. Impact of COVID-19 on gaming disorder: Monitoring and prevention. J Behav Addict. 2020 Jun 6;9(2):187-189. doi: 10.1556/2006.2020.00040.

24. Balhara YPS, Kattula D, Singh S, Chukkali S, Bhargava R. Impact of lockdown following COVID-19 on the gaming behavior of college students. Indian J Public Health. 2020 Jun;64(Supplement):S172-S176. doi: 10.4103/ijph.IJPH_465_20.

25. King DL, Delfabbro PH, Billieux J, Potenza MN. Problematic online gaming and the COVID-19 pandemic. J Behav Addict. 2020 Apr 29;9(2):184-186. doi: 10.1556/2006.2020.00016.

26. David ME, Roberts JA. Smartphone Use during the COVID-19 Pandemic: Social Versus Physical Distancing. Int J Environ Res Public Health. 2021 Jan 25;18(3):1034. doi: 10.3390/ijerph18031034.

27. De Pasquale C, Pistorio ML, Sciacca F, Hichy Z. Relationships Between Anxiety, Perceived Vulnerability to Disease, and Smartphone Use During Coronavirus Disease 2019 Pandemic in a Sample of Italian College Students. Front Psychol. 2021 Jul 14;12:692503. doi: 10.3389/fpsyg.2021.692503.

28. Misirlis N, Zwaan MH, Weber D. International students' loneliness, depression and stress levels in COVID-19 crisis. The role of social media and the host university. 2020.
https://doi.org/10.48550/arXiv.2005.12806

29. Sewall CJR, Goldstein TR, Rosen D. Objectively measured digital technology use during the COVID-19 pandemic: Impact on depression, anxiety, and suicidal ideation among young adults. J Affect Disord. 2021 Jun 1;288:145-147. doi: 10.1016/j.jad.2021.04.008.