Research Article

Evaluating the Impact of Social Media News on the Level of Students' Fear and Anxiety During the COVID-19 Pandemic

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Abstract

Background: The spread of false and inaccurate news on social networks has increased during the COVID-19 pandemic, leading to fear and panic among users globally and posing a threat to their mental well-being.

Aim: This study aims to investigate the impact of social networks on inducing fear and panic among students amidst the COVID-19 outbreak.

Methods: This cross-sectional study was conducted at Varastegan Institute for Medical Sciences in December 2020, involving a sample of 261 students selected through the available sampling method. The data collection tool utilized was a questionnaire, subjected to content analysis for validation. The questionnaire's reliability, determined through the test-retest method, yielded a score of 0.825.

Results: Survey results revealed that virtual social networks such as Telegram (73.9%) and Instagram (65.9%) were the primary platforms for receiving COVID-19 news during the pandemic. Furthermore, 62% of students reported using these networks to access health and COVID-19-related information. Moreover, 36% of respondents indicated experiencing psychological distress due to the dissemination of COVID-19 news.

Conclusion: The spread of false information on social media significantly contributes to heightened anxiety and fear among students, leading to increased psychological distress. In order to mitigate the adverse effects

of misinformation on social media, it is crucial to educate students on discerning between accurate and inaccurate news. Empowering students with skills to navigate reliable sources can enhance their knowledge and help them avoid unnecessary psychological distress.

Keywords: social networks, mental health, COVID-19 pandemic, fear, panic

1 INTRODUCTION

The World Health Organization (WHO) classifies causes of death and disability into three groups: communicable diseases, non-communicable diseases, and injuries, with infectious diseases falling under the Communicable diseases category[1]. In communities, newly emerging infectious diseases can rapidly spread, extending their reach across wider geographical regions[2]. The emergence of COVID-19, a highly infectious disease caused by the SARS-CoV-2 virus, was initially identified in Wuhan, China, in December 2019 and has since swiftly disseminated globally. Recognized as a public health emergency of international concern in January 2020 and later declared a pandemic in March 2020 by the WHO[3,4], SARS-CoV-2 primarily transmits through respiratory droplets released during coughing, sneezing, or talking. Manifesting with varying symptoms or even remaining asymptomatic[5], COVID-19 recorded 171 deaths within a month of its outbreak on January 30, 2020. However, by December 31, 2020, approximately a year later, this figure had surged significantly to 1,813,188 people, with the potential for further increase[6].

The escalation of the pandemic has instilled widespread concerns about individuals' health and that of their loved ones. Studies, such as that conducted by Mertens[7] and colleagues, found that 46.2% of participants expressed concern about the health risks posed by the pandemic to their families and loved ones. Beyond health concerns, the pandemic has ushered in significant changes to social activities, leisure time, and learning styles, imposing hardships on individuals and adversely affecting their mental health[8]. The COVID-19 pandemic has compelled individuals to self-isolate at home for the sake of their health and to curb the spread of the virus, resulting in decreased physical activity. Additionally, with in-person socializing no longer an option, people are increasingly relying on social media platforms and dedicating a significant portion of their time to them[9,10]. These platforms, serving as communication hubs and information-sharing channels[11], have seen heightened utilization by students, particularly given the widespread use of the Internet in academic settings such as universities[12].

As a result of the pandemic, educational institutions have undergone a paradigm shift, transitioning from in-person to virtual classes[13]. Research by Moghanibashi-Mansourieh[14] indicates that over 94% of individuals regularly or occasionally stay informed about COVID-19 news.

The significance of social media in enhancing public awareness cannot be overstated. By disseminating information about a pandemic like COVID-19, individuals can take necessary precautions to safeguard their health and mitigate the spread of the disease[15]. Social networks have the potential to influence the thoughts and emotions of users. Regrettably, misinformation propagated through these platforms may lead to confusion and anxiety among individuals unable to discern between factual and fictitious news[16].

In the study by Ahmad and Murad[17], 67.5% of participants aged between 18 and 35 reported following health-related news more than other news, and a significant proportion (40.2%) within this age group experienced heightened fear and mental anxiety. Similarly, Radwan et al.[18] found that 56.2% of participants in their study were actively monitoring health-related news. The natural responses to uncertain conditions and the unfamiliar nature of the disease may contribute to heightened fears, concerns, and anxieties during the COVID-19 pandemic. Altered circumstances, such as remote work and schooling and limited social interactions, may elicit significant apprehension among individuals[19]. According to Ahmad and Murad's findings[17], 64% of participants reported experiencing fear and anxiety during the COVID-19 era. Hence, prioritizing mental and physical well-being is crucial[19]. The prevalence of misleading information and fabricated news on social media platforms poses a potential threat to students who dedicate a substantial portion of their time to these networks[18]. The objective of this research was to investigate the contribution of social media platforms to instilling anxiety and fear in students amidst the COVID-19 outbreak.

2 MATERIALS AND METHODS

This descriptive cross-sectional study was performed at Varastegan Institute for Medical Sciences in Mashhad in December 2020, targeting the entire student population of the university. The research sample consisted of 261

Table 1. Demographic Information of the Study Participants

Variable		*n* (%)
Gender	Female	205 (78.5)
	Male	56 (21.5)
Age	Mean±SD	20±2.11
Field of study	Laboratory sciences	152 (58.2)
	Nutrition sciences	37 (14.2)
	Health information technology	72 (27.6)

Table 3. Social Networks Used to Receive News about COVID-19

Social Network	*n* (%)
Telegram	193 (73.9)
Instagram	172 (65.9)
WhatsApp	17 (6.5)
Twitter	13 (5)
YouTube	9 (3.4)
Skype	0
LinkedIn	0
SnapChat	0
TickTalk	0
Facebook	0

Table 2. The Amount of Time Spent Using Social Networks to Follow Health and COVID-19 Related News

Time (h)	*n* (%)
Less than 1h	164 (62.8)
1 to 2h	49 (18.8)
2 to 3h	21 (8.1)
3 to 4h	9 (3.4)
More than 4h	18 (6.9)

3 RESULTS

In this study, 78.5% of participants were female, while 21.5% were male, with a mean age of 20 years. Also, 58.2% of students were pursuing studies in laboratory sciences. Table 1 shows the demographic information of the study participants. Table 2 displays the time spent on using social networks to track health and COVID-19 news. The data reveals that 62.8% (164 participants) dedicated less than an hour to this activity using virtual social networks, as demonstrated in Table 2.

The majority of individuals involved in this research was the widespread use of virtual social media platforms, with the majority of participants indicating reliance on Telegram (73.9%) and Instagram (65.9%) for obtaining information related to COVID-19. As depicted in Table 3, students did not heavily depend on other virtual social networks such as TikTok, Snapchat, Facebook, LinkedIn, and Skype to stay informed about COVID-19. Figure 1 indicates that 74% of female participants favored Telegram, while 68% used Instagram for staying updated on COVID-19 news. Among male participants, 73% utilized Telegram and 59% turned to Instagram for the same purpose.

The use of Telegram and Instagram for staying updated on COVID-19 news was significantly associated with gender ($P<0.001$). Figure 2 illustrates that a substantial majority of laboratory science students (72%) used Telegram, and 64% relied on Instagram for staying informed about COVID-19 news. Similarly, among nutrition science students, 73% used Telegram and 84% used Instagram, while health information technology students showed preferences with 79% using Telegram and 61% using Instagram for this purpose. The field of study was identified as a significant factor impacting the utilization of Telegram and Instagram for staying informed about COVID-19 ($P<0.001$).

Table 4 shows that 62% of students actively sought news related to health and COVID-19 on virtual social networks during the pandemic. Figure 3 indicates that health news emerged as the most frequently read among female participants, with a substantial percentage of 95%,
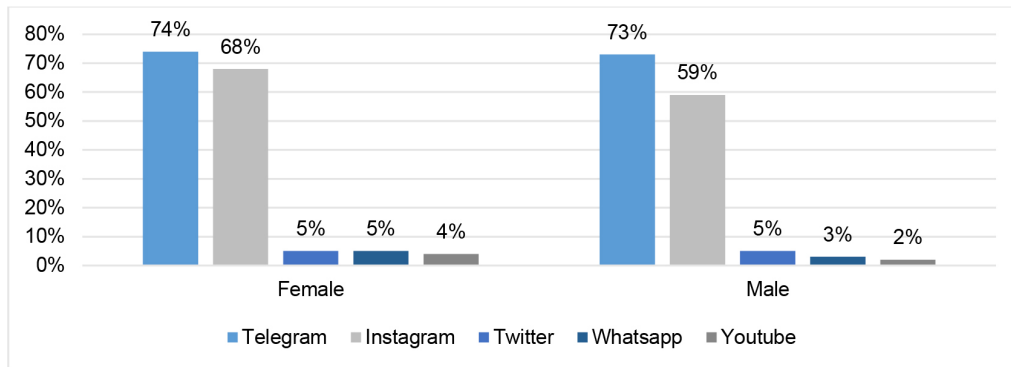
students selected by the available sampling method. Inclusion criteria encompassed university enrollment, access to social networks, and a willingness to participate, while exclusion criteria involved incomplete questionnaire responses or changes in student status (transfers, dropouts, expulsions, or guest student status) during the study period.

The data collection tool employed was a questionnaire developed by Ahmad and Murad[17], this questionnaire aimed to determine the impact of social media on the spread of panic related to COVID-19 and its impact on individuals' mental health and the global health crisis. Comprising two sections, the first section captured demographic information such as age, gender, and field of study. The second section had 8 questions, with the initial two focusing on the platforms used by participants to access COVID-19 news. The remaining 6 questions employed a yes-no-neutral. Cronbach alpha was used to determine the reliability of the questionnaire; its value was 0.825 and the validity was 0.753, indicating that the study questionnaire is highly reliable. To ensure the well-being of students during the pandemic, an electronic version of the questionnaire was created and distributed via email. Data analysis was conducted using SPSS21, utilizing descriptive statistical methods including mean, standard deviation, frequency, and frequency percentage. Additionally, the relationship between variables was explored using the Chi-square test.

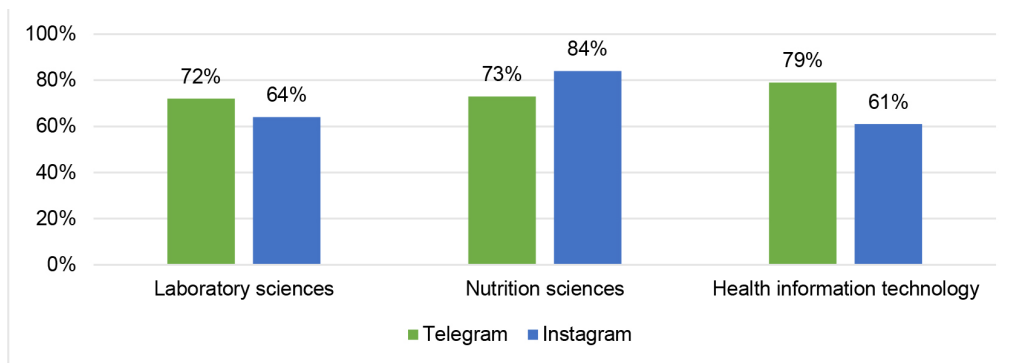**Figure 1. Social networks used by male and female students.**

Figure 2. Social networks used by students in the three fields of study.
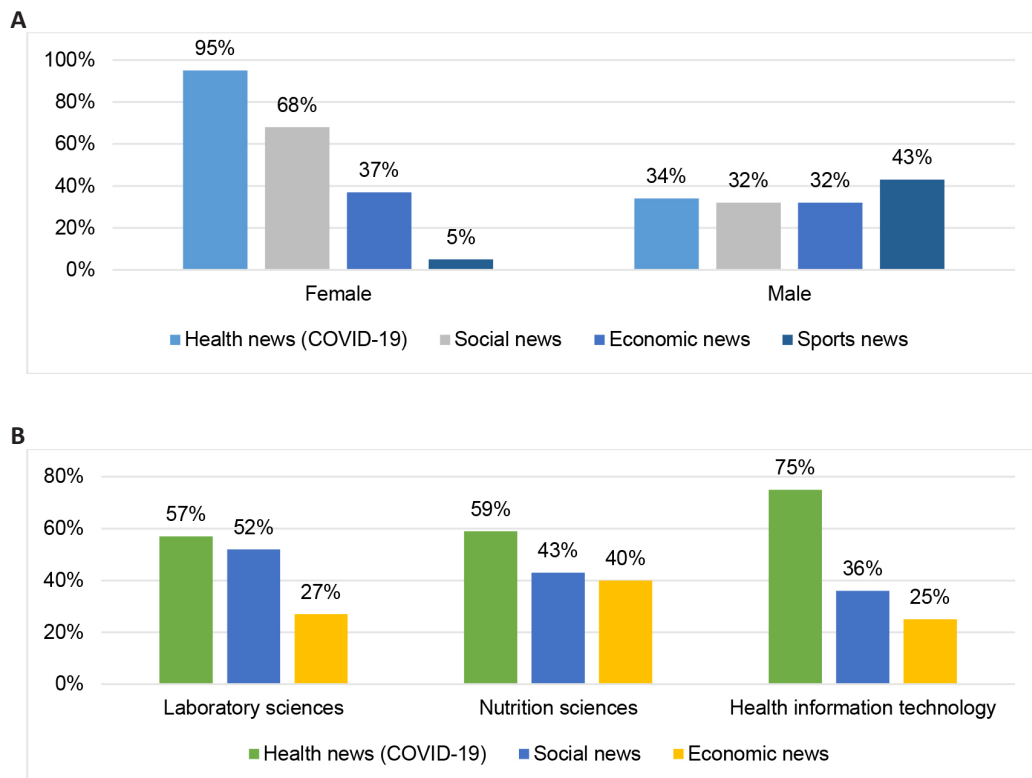

Figure 3. News followed on social networks. A: News followed on social networks by male and female students; B: News followed on social networks by students in the three fields of study.

Table 4. The Most Commonly Read News during the COVID-19 Outbreak

News	n (%)
Health news (COVID-19)	163 (62.45)
Social news	122 (46.74)
Economic news	74 (28.35)
Political news	61 (23.37)
Culture news	39 (14.94)
Technology news	34 (13.02)
Sports news	31 (11.87)

Table 6. Effects of Fear on Participants

Variable	n (%)
I was not afraid	140 (53.64)
Physical	2 (0.76)
Psychological	96 (36.78)
Physical-psychological	23 (8.81)

Table 5. Categorization of Information Shared on Social Networks and Involved in Creating Fear among Students

Category	n (%)
Spread of false information and fake news about COVID-19 disease	153 (58.6)
Spread of information about the number of deaths due to COVID-19 disease	134 (51.3)
Spread of information about fear of COVID-19 disease	52 (19.9)
Spread of information about the number of people infected with COVID-19	47 (18)
Spread of photos and videos of cities and countries with high incidence rates of the disease	29 (11.1)

while sports news ranked as the least popular at only 5%. On the other hand, among male participants, sports news was the most popular with 43%, followed by health news at 34%. Gender was found to have a notable correlation with the reading of health news ($P<0.001$). Further exploration by field of study indicated that health news was followed by 57% of laboratory science students, 59% of nutrition science students, and 75% of health information technology students. A significant relationship was observed between reading health news and the field of study ($P=0.034$). The study participants, as outlined in Table 5, held the belief that false information and fake news regarding COVID-19 (58.6%) and information about COVID-19-related deaths (51.3%) spread on social media had the most significant impact on instilling fear and panic among them.

Additionally, the fear of contracting COVID-19 (19.9%), the dissemination of data regarding the number of individuals affected by the virus (18%), and the sharing of photos and videos depicting areas with high rates of infection (11.1%) were all topics of information.

Table 6 shows that 36% of the respondents reported experiencing psychological fear due to the spread of news about COVID-19. According to Figure 4, a higher percentage of female participants (51%) reported experiencing fear and panic during the COVID-19 outbreak compared to male participants (28%). There was also a significant relationship between gender and fear ($P<0.001$). Fear and panic during the COVID-19 outbreak were experienced by 42% of laboratory science students, 49% of nutrition science students, and 52% of health information technology students. There was also a significant relationship between field of study and fear ($P<0.001$).

4 DISCUSSION

The focus of this study was to investigate the contribution of social networks to the development of fear and panic among students during the COVID-19 pandemic. According to Rosen et al.'s study[20], when used properly, social media can positively impact people's mental health. However, during the COVID-19 pandemic, it was unsurprising that students' fear of COVID-19 increased, given the high incidence of the disease and the dissemination of misinformation on social media. Rocha et al.'s study[21] suggests that social network users place trust in the information available on these platforms, influencing their perspectives.

The study results indicated that Telegram and Instagram were the most commonly used social media platforms by participants to obtain COVID-19-related news. Consistent with these findings, social media platforms have been observed to create an environment where individuals are inclined to spend extended periods of time[22]. In contrast, a study conducted in Palestine revealed that Facebook was the most prevalent platform among participants, potentially attributed to cultural variances. Notably, Telegram and Instagram emerged as the preferred social media platforms for communication among Iranians, with research indicating a higher usage rate among females compared to males[17,18].

Based on the findings of this study, health and COVID-19 related news were the most frequently accessed during the pandemic, aligning with prior research[17,18]. It appears that amid the COVID-19 pandemic, students are more inclined to seek knowledge and enhance their understanding of COVID-19. Notably, females were found to be more attuned to health news regarding COVID-19 than males, suggesting a potentially heightened responsiveness to the disease among female participants.

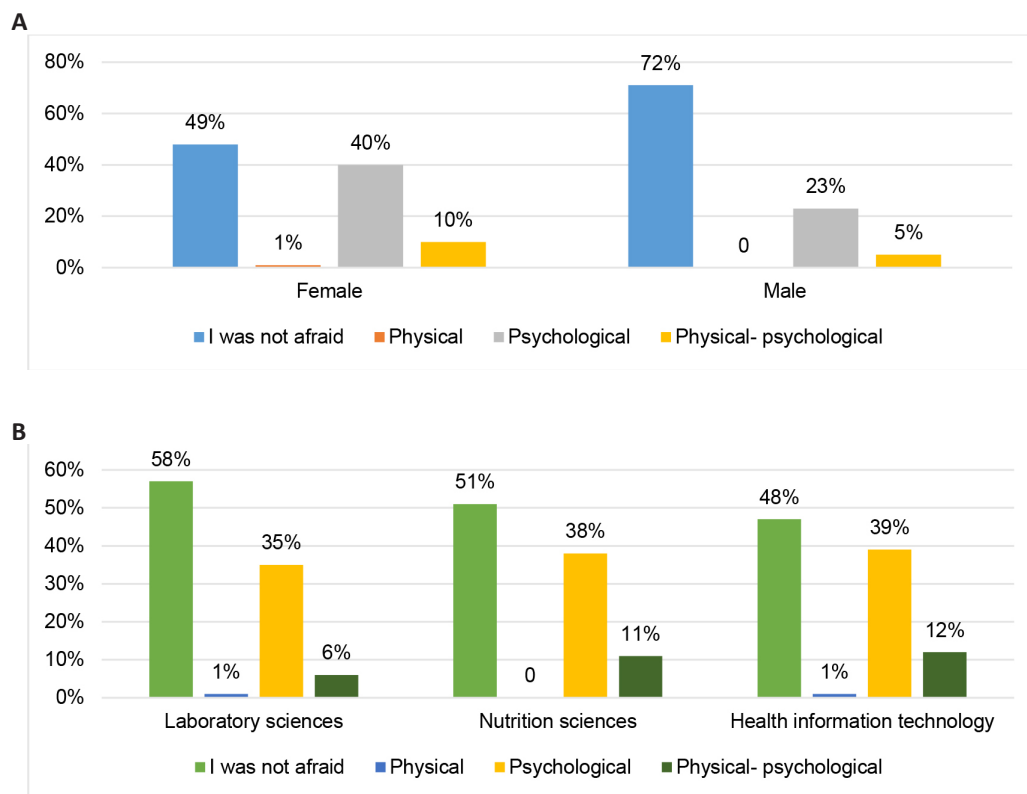During the pandemic, social media emerged as a platform for the dissemination of false information[23]. Participants

Figure 4. Effects of fear. A: Effects of fear on male and female students; B: Effects of fear on students in the three fields of study.

in the study believed that false information and fake news about COVID-19 had the most significant impact on inducing fear and panic among them[17,18]. This is attributed to the repetition and spread of false information in social networks, intensifying the impact of fake news on users[24]. These findings are consistent with previous research conducted by Apuke and Omar[22]. According to their study, the most significant factor in inducing fear and panic among individuals regarding COVID-19 is the dissemination of inaccurate information and fake news. This aligns with the notion that sharing unconfirmed safety recommendations on social media contributes to the spread of fake news, potentially causing public alarm and anxiety.

Considering prior findings that highlight the increased role of social media in people's lives, particularly among students, during the pandemic[23].

In the current study, the primary influence of social media on students was observed to be of a psychological nature. The heightened utilization of social media, particularly during quarantine, greater consumption of health-related news, and concerns about personal and familial well-being may contribute to the prevalent psychological impact on students. Previous research has underscored the significant psychological effects of social media on individuals, as evidenced by studies[17,18].

The dissemination of inaccurate information can result

in stress, anxiety, and depression among users, potentially leading to the development of mental health disorders over time[21].

The study's results suggest that individuals who use social media more frequently and follow health-related news are more susceptible to experiencing psychological anxiety related to the outbreak of COVID-19. There is a positive correlation between the frequency of social media use and following health-related news with the level of psychological anxiety towards the COVID-19 outbreak. The study suggests that women may be more prone to developing psychological fear of the COVID-19 outbreak due to their higher usage of social networks and consumption of health news. This observation aligns with the research conducted by Thibaut and van Wijngaarden-Cremers[25], who found in their study on women's mental health during the COVID-19 crisis that women were more impacted by the outbreak than men, consistent with the aforementioned study's results. The dissemination of news on social media, particularly false and unreliable information, appears to have a negative impact on students, leading to feelings of fear, anxiety, and potential issues with their academic performance and mental well-being. Thus, raising students' awareness about differentiating between true and false news is crucial to alleviate their stress and anxiety levels.

Mindfulness-based stress reduction is a reference-oriented, experiential, and educational intervention. The

core of this program lies in providing targeted training in mindfulness meditation, emphasizing its practical application in daily life to cope with stress, pain, and illness. The primary goals include fostering compassion without judgment towards one's experiences, cultivating present-moment awareness instead of succumbing to automatic reactions, and acquiring skills to respond effectively to new situations. Recognizing the significance of students' mental well-being and acknowledging the nuanced dynamics of virtual environments, it is recommended that future research endeavors encompass more extensive and diverse student samples. This approach should ensure equal representation across genders and diverse educational backgrounds, spanning multiple universities.

4.1 Limitation

The present study has several limitations, including unequal distribution of students across the three fields of study at the university, non-cooperation of some students, and being conducted in a single university. Another limitation of our study was the potential presence of mental or cognitive bias among the study participants. Understanding cognitive bias in decision-making is of great importance. This type of bias is a repetitive pattern of behavior that individuals encounter many times in life. However, due to a lack of knowledge and correct decision-making, wrong judgments may occur. These judgments may result from incorrect experiences and beliefs.

5 CONCLUSION

Paying more attention to the heightened usage of social networks among young people in comparison to other community members, it is imperative to place a greater emphasis on their mental health. The psychological impact of fake news spread on social networks is particularly significant for students, leading to heightened levels of fear and panic. The COVID-19 crisis further exacerbates concerns, potentially jeopardizing the health and education of students due to increased levels of fear and anxiety. To mitigate the potential negative impact of the COVID-19 pandemic on students' mental well-being and education, it is essential to provide them with guidance. This includes educating them on how to discern between accurate and inaccurate information, encouraging the use of reliable sources to enhance their knowledge, and promoting resilience against the influence of false information.

Ethical Approval Statement

This study was approved by the Ethical Committee of Mashhad University of Medical Sciences (approval number IR.MUMS.REC.1401.266). All methods were carried out in accordance with relevant guidelines and regulations or Declaration of Helsinki. Participation was voluntary and the informed consent was verbal. All participant's information was used confidentiality and without revealing names.

Conflicts of Interest

The authors declared no conflict of interest.

Author Contribution

Amini F contributed to the acquisition, analysis, and interpretation of data and was involved in drafting the work. Yazdipour AB, Rashki A, Sheibani R, and Habibi MRM were all responsible for drafting the work and providing critical revisions for important intellectual content. All authors contributed to the manuscript and approved the final version.

Abbreviation List

WHO, World Health Organization

References

[1] Global health estimates: Leading causes of death. Accessed 22 April 2023. Available at:[Web]

[2] NIAID Emerging Infectious Diseases/Pathogens. Accessed 22 April 2023. Available at:[Web]

[3] Zhao X, Fan J, Basnyat I et al. Online Health Information Seeking Using "#COVID-19 Patient Seeking Help" on Weibo in Wuhan, China: Descriptive Study. *J Med Internet Res*, 2020; 22: e22910.[DOI]

[4] Wahbeh A, Nasralah T, Al-Ramahi M et al. Mining Physicians' Opinions on Social Media to Obtain Insights Into COVID-19: Mixed Methods Analysis. *JMIR Public Hlth Sur*, 2020; 6: e19276.[DOI]

[5] Centers for Disease Control and Prevention. Coronavirus Disease 2019. Accessed 17 August 2021. Available at:[Web]

[6] The true death toll of COVID-19. Accessed 22 April 2023. Available at:[Web]

[7] Mertens G, Gerritsen L, Duijndam S et al. Fear of the coronavirus (COVID-19): Predictors in an online study conducted in March 2020. *J Anxiety Disord*, 2020; 74: 102258. [DOI]

[8] Park KH, Kim AR, Yang MA et al. Impact of the COVID-19 pandemic on the lifestyle, mental health, and quality of life of adults in South Korea. *PLoS One*, 2021; 16: e0247970.[DOI]

[9] Lin CY, Broström A, Griffiths MD et al. Investigating mediated effects of fear of COVID-19 and COVID-19 misunderstanding in the association between problematic social media use, psychological distress, and insomnia. *Internet Interv*, 2020; 21: 100345.[DOI]

[10] Pahayahay A, Khalili-Mahani N. 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. *J Med Internet Res*, 2020; 22: e20186.[DOI]

[11] HussainZ, Griffiths MD. The Associations between Problematic Social Networking Site Use and Sleep Quality, Attention-Deficit Hyperactivity Disorder, Depression, Anxiety and Stress. *Int J*

Ment Health Ad, 2021; 19: 686-700.[DOI]

[12] Kawyannejad R, Mirzaei M, Valinejadi A et al. General health of students of medical sciences and its relation to sleep quality, cell phone overuse, social networks and internet addiction. *Biopsychosoc Med*, 2019; 13: 1-7.[DOI]

[13] Alonso-García M, Garrido-Letrán TM, Sánchez-Alzola A. Impact of COVID-19 on Educational Sustainability. Initial Perceptions of the University Community of the University of Cádiz. *Sustainability*, 2021; 13: 5938.[DOI]

[14] Moghanibashi-Mansourieh A. Assessing the anxiety level of Iranian general population during COVID-19 outbreak. *Asian J Psychiatr*, 2020; 51: 102076.[DOI]

[15] Li X, Liu Q. Social Media Use, eHealth Literacy, Disease Knowledge, and Preventive Behaviors in the COVID-19 Pandemic: Cross-Sectional Study on Chinese Netizens. *J Med Internet Res*, 2020, 22: e19684.[DOI]

[16] Liu H, Liu W, Yoganathan V et al. COVID-19 information overload and generation Z's social media discontinuance intention during the pandemic lockdown. *Technol Forecast Soc*, 2021; 166: 120600.[DOI]

[17] Ahmad AR, Murad HR. The impact of social media on panic during the COVID-19 pandemic in Iraqi Kurdistan: online questionnaire study. *J Med Internet Res*, 2020; 22: e19556.[DOI]

[18] Radwan E, Radwan A, Radwan W. The role of social media in spreading panic among primary and secondary school students during the COVID-19 pandemic: An online questionnaire study from the Gaza Strip, Palestine. *Heliyon*, 2020; 12.[DOI]

[19] World Health Organization. Healthy At Home - Mental health and COVID-19. Accessed 15 August 2021. Available at:[Web]

[20] Rosen AO , Holmes AL , Balluerka N et al. Is Social Media a New Type of Social Support? Social Media Use in Spain during the COVID-19 Pandemic: A Mixed Methods Study. *Int J Env Res Public Health*, 2022; 19: 3952.[DOI]

[21] Rocha YM, de Moura GA, Desidério GA et al. The impact of fake news on social media and its influence on health during the COVID-19 pandemic: a systematic review. *J Public Health*, 2023; 31: 1007-1016.[DOI]

[22] Apuke OD, Omar B. Fake news and COVID-19: modelling the predictors of fake news sharing among social media users. *Telemat Inform*, 2021; 56: 101475.[DOI]

[23] Jiang Y. Problematic Social Media Usage and Anxiety Among University Students During the COVID-19 Pandemic: The Mediating Role of Psychological Capital and the Moderating Role of Academic Burnout. *Front Psychol*, 2021; 76.[DOI]

[24] Moscadelli A, Albora G, Biamonte MA et al. Fake News and COVID-19 in Italy: Results of a Quantitative Observational Study. *Int J Env Res Public Health*, 2020; 17: 5850.[DOI]

[25] Thibaut F, van Wijngaarden-Cremers PJM. Women's Mental Health in the Time of COVID-19 Pandemic. *Front Glob Womens Health*, 2020; 1: 588372.[DOI]