Original Article

A Study of Health Literacy and Social Media Use of the Students on Vaccine Preferences during COVID-19 Pandemic in Turkey

Güzel Nur Yildiz[1], Abdulsamed Kaya[1], Bahar Çiftçi[2], Özgür Yildiz[3], Hanifi Körkoca[4]

[1]Lecturer, Department of Medical Services and Techniques, Vocational School of Health Services, Mus Alparslan University, [2]Assistant Professor, Faculty of Nursing, Atatürk University, Erzurum, [3]Nurse, Department of Nursing, Mus Alparslan University, Mus, [4]Associate Professor, Department of Medical Microbiology, Faculty of Medicine, Nigde Ömer Halisdemir University, Nigde, Turkey

Abstract

Background: It is unknown if health-care literacy and social media use of the students affect vaccine preferences during the COVID-19 pandemic. **Objectives:** The aim of the present research was to detect whether health-care literacy and social media use of the students affect vaccine preferences during the COVID-19 pandemic. **Materials and Methods:** The universe of the sample consisted of the students of a university in Mus Alparslan University. The sample of the research included students whose last digit of the school number is an odd number. Four hundred and twenty students participated into the study. The data of the study were collected through the "Sociodemographic Characteristics Questionnaire," "Health Literacy Scale (HLS)," and "Social Media Usage Scale (SMUS)." **Results:** The total score average of the students on the "HLS" was 42.74 ± 13.85 and the "SMUS" was 21.30 ± 7.38. It was determined that those who have preferred the "Sinovac" vaccine had higher score averages on the "Information Understanding Subdimension" and "HLS" than those who have preferred the Türkovac vaccine. Furthermore, it was determined that the score average of "Continuity Subdimension," "Competency Subdimension" and "Social Media Use Scale" were higher, and these differences were statistically significant. **Conclusion:** It was detected that the health literacy (HL) levels of the students were lower and they do not use social media competently. On the other hand, it was determined that social media use and HL affect the vaccine preferences.

Key words: COVID-19 vaccines, health literacy, social media, vaccination refusal, vaccines

Introduction

The concept of health literacy (HL) was first introduced by Simond in 1974. It has been promoted by the international organizations in the 2000s as a concept that has gained further prominence during the pandemic.[1-3] The World Health Organization has defined HL as "the cognitive-social skills and motivation levels of individuals to access, understand and use information to protect and improve their health."[1] It affects both health-related environments and the capacity to make critical health decisions, understand and act on messages.[4] HL provides benefits in many areas such as home, work, society and culture.[5] Furthermore, it is an important tool to prevent noninfectious diseases.[6] The studies on HL have unpacked several negative health outcomes such as not taking medications on time, taking the wrong dose, not complying with regimens, risk of hospitalization and death.[7,8]

All individuals experience the situations including referring to the appropriate health-care center, understanding the information given by the health personnel, analyzing the risks that may occur during the treatment, obtaining information and making treatment decisions such as the health and care of mothers and their children, the elderly, the use of prescription drugs, employees, health hazards in the work environment.[9] As the level of HL increases, the participation of individuals in activities related to health problems may be increased.[10,11]

Access this article online

Quick Response Code:

Website: https://journals.lww.com/IJPH

DOI: 10.4103/ijph.ijph_1641_22

Address for correspondence: Dr. Abdulsamed Kaya, Department of Medical Services and Techniques, Vocational School of Health Services, Mus Alparslan University, Mus, Turkey.
E-mail: kaya.abdulsamed@gmail.com

Submitted: 05-Dec-2022 **Revised:** 16-Jul-2023
Accepted: 08-Aug-2023 **Published:** 05-Oct-2023

How to cite this article: Yildiz GN, Kaya A, Çiftçi B, Yildiz Ö, Körkoca H. A study of health literacy and social media use of the students on vaccine preferences during COVID-19 pandemic in Turkey. Indian J Public Health 2023;67:387-92.

Akbal and Gökler reported that there is a lack of hygiene and information in societies with lower HL and this situation changes the course of infectious diseases; they also stated that it affects adherence to treatment, hospitalization rate, and death rates. They stated that HL is an important factor for overcoming COVID-19 and studies on this issue are needed in our country.[3]

After the first death due to COVID-19 occurred in Turkey on March 15, 2020, a pandemic was declared on March 16, 2020.[12] The people who experienced compulsory restrictions in their daily life after that date have turned to social media more in terms of accessing information about both social life and COVID-19. Earlier research point to the phenomenon that social media is one of the platforms that affect HL and is used as an information tool in times of crisis such as COVID-19.[13-15] However, determination of the level of information about this situation, especially about the COVID-19 crisis, requires research.

The literature review indicates limited research on vaccine preferences. It needs to be examined whether HL and social media use of the students affected vaccine preferences during the pandemic.

The purpose of this research is to determine whether "HL" and "social media use," two very important concepts in public health, affect students' vaccine preferences, which is an important issue in terms of public health during the COVID-19 pandemic in Turkey.

Materials and Methods

The present descriptive and relationship-seeking research was conducted at Muş Alpraslan University between August 2021 and December 2021.

The universe and sample of the research

The universe of the sample consisted of the students of Mus Alpraslan University. The sample of the research included students whose last digit of the school number is an odd number. The sufficient sample size was calculated for one-way analysis of variance in the G Power 3.1.9.7 Package Program prior to the research. Since no similar study was found in the literature, *a priori* power analysis was performed based on the medium effect size (0.25). It was determined that the sample number should be 348 in the power analysis based on $\alpha = 0.05$, Power 0.99, and by taking the number of groups as 3. When the Power was accepted as 0.80 with the same method, it was determined that the sample number should be 159. The link of the research was sent to the students whose last digit of the school number is an odd number through their advisors. The present research was completed with 420 students.

Research method and data collection tools

The research data were uploaded to Google Forms in the form of survey questions; a link was created and delivered to the students through advisors. Online education were used to be performed to the students during data collection process. The research data were collected with Google Forms, an EXCEL file was created via Google Forms and the data was transferred to the SPSS (Statistical Package for the Social Sciences; Armonk, NY: IBM Corp). The data of the study were collected through the "Sociodemographic Characteristics Questionnaire," "HL Scale (HLS)," and "Social Media Usage Scale (SMUS)."

Sociodemographic characteristics questionnaire

The form consists of questions that examine the introductory characteristics of the participant students and some issues related to their vaccine preferences. Three vaccines were popular during data collection process. Since these are BioNTech, Sinovac, and Turkovac, the research questions were structured accordingly.

Health Literacy Scale

The 47-item HLS Survey in Europe form developed by Sorensen was then reworked by Toçi *et al*. to test the validity and reliability of the HL Index.[16,17] The validity and reliability of the scale in Turkish language were performed by Aras and Temel Bayık.[18] The scale consists of 25 items. There are four subdimensions in the scale including access to information, comprehension of information, appraisal/evaluation, and application/use. The minimum score for all scale is 25 whereas the maximum score is 125. The Cronbach Alpha of the original scale was 0.95, and the internal consistency coefficients (Cronbach's alpha) determined for the subscales ranged from 0.90 to 0.94. The Cronbach's alpha values of the scale in this study ranged between 0.800 and 0.934. The higher the score is along with the higher the individual's HL level.

Social Media Usage Scale

SMUS consists of Continuity and Competence subdimension. Continuity subdimension includes being busy with social media activities, being constantly present in social media, and Competence subdimension includes being sufficient to perform various daily life activities that can be performed in social media. There is no inverted item in the "SMUS" and a higher score reveals that the person is more engaged in social media and competent in terms of use. The scale consists of eight items. The research conducted by Deniz and Tutgun-Ünal states that the Cronbach's alpha value varies between 0.721 and 0.824.[19] The Cronbach's alpha values of the scale in this study was found between 0.835 and 0.899.

Statistical evaluation of the data

Data analysis was performed through SPSS 20(Statistical Package for the Social Sciences; Armonk, NY: IBM Corp) . Cronbach's alpha, Skewness-Kurtosis, frequency, percentage, minimum and maximum scores, standard deviation scores, one-way ANOVA test, and post hoc (least significant difference) analyzes were used in the analysis of the data.

Research question

Is there any difference between preferences of the students on vaccination and refusal of the vaccination, and HL and social media use?

Ethical issues

Confidentiality was maintained throughout the study. This study received August 16, 2021 dated and 16.08.2021-20029-9-6 numbered approval was taken from Mus Alparslan University Ethical Board. Informed consent was obtained from the participants prior to data collection.

Results

Among students who have participated into the research, 69.3% were women; 46% obtained information about health from health professionals. Moreover, 34% of them use social media between 0 and 60 min in a day [Table 1].

It was determined that 71.2% of the students preferred the "BioNTech" vaccine when they needed to be vaccinated, 33.6% of the students refused to be vaccinated with the "Sinovac" vaccine, 77.1% of the students used "WhatsApp" the most as social media, and 56% of them were between the ages of 20 and 21 [Table 1].

When the mean scores of the "HLS and subdimensions" were reviewed, it was found that "Access to information" was 9.04 ± 3.70, "Comprehension of information" was 11.37 ± 4.10, "Appraisal/Evaluation" was 13.60 ± 5.04, "Application/Use" was 8.73 ± 3.38, and the total score average of HLS was 42.74 ± 13.85 [Table 2].

It was determined when the score averages of the students for SMUS were examined that it was 10.66 ± 3.97 in "Continuity," 10.64 ± 3.98 in "Competence," and 21.30 ± 7.38 in total score of SMUS [Table 2].

The review of comparison of "HLS and Subdimensions" score averages according to the variables of vaccine preference and refusal of the students revealed that those who preferred the "Sinovac" vaccine if they needed to be vaccinated had higher mean scores for the "Comprehension of Information Subdimension" than those who preferred the Turkovac vaccine, and these differences were statistically significant [Table 3]. It was determined that those who preferred the "Sinovac" vaccine, if they needed to be vaccinated, had a higher mean score on HLS than those who preferred the Turkovac vaccine, and these differences were statistically significant [Table 3].

It was detected in the comparison of the mean scores of the "SMUS and Subdimensions" according to the vaccine preferences of the students that those who preferred the Sinovac vaccine had higher mean scores for the "Continuity Subdimension" than those who preferred the Turkovac vaccine, and these differences were statistically significant [Table 3]. It was detected in the comparison of the mean scores of the "SMUS and Subdimensions" according to the vaccine preferences of the students that those who preferred the Sinovac vaccine had higher mean scores for the "Competence Subdimension" than those who preferred the Turkovac vaccine, and these differences were statistically significant [Table 3].

Table 1: Sociodemographic distribution of the students (*n*=420)

Characteristics	Variables	*n* (%)
Gender	Female	291 (69.3)
	Male	129 (30.7)
Where does she/he obtain health-related information?	Family	56 (13.3)
	Health-care workers	193 (46)
	Internet and television	151 (36)
	Social media	20 (4.7)
How many minutes is social media used in a day?	0–60	143 (34)
	61–120	123 (29.3)
	121–180	71 (16.9)
	181 and over	83 (19.8)
Which vaccine would you like to have if you have to get vaccinated?	I do not get vaccinated	57 (13.6)
	BioNTech	299 (71.2)
	Sinovac	30 (7.1)
	Turkovac	34 (8.1)
Which vaccine would you reject to have?	I get vaccinated	167 (40)
	BioNTech	39 (9.3)
	Sinovac	141 (33.6)
	Turkovac	73 (17.1)
What is the most common social media that you use?	Twitter	63 (15)
	Whatsapp	324 (77.1)
	Other	33 (7.9)
Age	18–19	65 (15.5)
	20–21	235 (56)
	22 and older	120 (28.6)

Table 2: "Health Literacy Scale," and "Social Media Usage Scale" subscale score averages of the students

	$\bar{x}$±SD	Minimum	Maximum
HSL			
Access to information	9.04±3.70	5	24
Comprehension of information	11.37±4.10	7	28
Apraisal/evaluation	13.60±5.04	8	32
Aplication/usage	8.73±3.38	5	22
Total HLS	42.74±13.85	25	100
SMUS			
Continuity	10.66±3.97	4	20
Competence	10.64±3.98	4	20
Total SMUS	21.30±7.38	8	40

HLS: Health Literacy Scale, SMUS: Social Media Usage Scale, SD: Standard deviation

It was detected in the comparison of the mean scores of the "SMUS and Subdimensions" according to the vaccine preferences of the students that those who preferred the Sinovac vaccine had higher SMUS score average than those who preferred the Turkovac vaccine, and these differences were statistically significant [Table 3]. When the comparison of the mean scores of the subdimensions of the HLS and SMUS and their subdimensions was reviewed according to the preferences of refusing the vaccine, it was determined that there was not any statistically significant difference between the mean scores of the dimension [Table 3].

Table 3: Comparison of the mean scores of the Health Literacy Scale and Social Media Usage Scale subdimensions according to the vaccine preference and vaccine rejection variable of the students

Dimensions	BioNTech[1]	Sinovac[2]	Turkovac[3]	*F* and *P*	Difference	Effect size
Comparison of HLS and Social Media Usage Scale as well as subdimensions according to vaccination preferences						
HLS						
Access to information	8.90±3.53	9.94±4.39	8.85±3.78	2.635 (0.073)	None	0.288
Comprehension of information	11.40±3.84	12.63±5.71	10.44±3.80	3.283 (0.040)	2>3	0.459
Apraisal/evaluation	13.59±4.95	15.66±6.43	13.53±4.38	2.802 (0.062)	None	0.571
Aplication/usage	8.70±3.23	9.69±4.11	8.50±3.35	2.347 (0.097)	None	0.284
Total HLS	42.59±13.22	47.91±18.82	41.32±11.88	3.318 (0.037)	2>3	1.545
SMUS						
Continuity	10.90±4.04	11.66±4.05	8.53±3.47	4.991 (0.002)	2>3	0.740
Competence	10.84±3.91	11.34±3.89	8.94±3.92	3.028 (0.029)	2>3	0.583
Total SMUS	21.74±7.34	23.00±7.44	17.47±6.54	4.599 (0.004)	2>3	1.323
Comparison of HLS and SMUS as well as subdimensions according to vaccination rejection preferences						
HLS						
Access to information	9.59±4.63	9.26±3.64	9.27±3.85	1.517 (0.209)	None	0.118
Comprehension of information	11.41±5.59	11.24±3.89	11.85±4.36	0.453 (0.715)	None	0.266
Apraisal/evaluation	13.36±6.24	13.89±5.10	13.71±5.37	0.339 (0.797)	None	0.186
Aplication/usage	13.36±6.24	13.89±5.10	13.71±5.37	2.199 (0.088)	None	0.186
Total HLS	42.64±18.24	43.44±13.90	44.04±14.99	0.839 (0.478)	None	0.447
SMUS						
Continuity	10.18±4.03	10.23±3.68	10.95±4.08	1.447 (0.229)	None	0.331
Competence	9.98±4.06	10.37±3.91	10.50±3.86	1.615 (0.185)	None	0.167
Total SMUS	20.16±7.66	20.60±6.87	21.45±7.37	1.643 (0.179)	None	0.455

HLS: Health Literacy Scale, SMUS: Social Media Usage Scale

The *post hoc* power analysis of the present research was calculated through G*Power 3.1.9.7 program. The effect size obtained from each data was used in order to determine our chance of accepting the research data as correct. For one-way analysis of variance, the power of the study ($1-\beta$) was calculated as 0.99, with a 5% margin of error ($\alpha = 0.05$).

Discussion

The COVID-19 pandemic triggered an information epidemic with inaccurate and misleading information. There are inaccurate or contradictory information about the outbreak on the internet, social media, news, and platforms used daily. Differentiation of true information and false information becomes difficult during this process. This situation causes individuals to question their social media usage and HL levels. Since there was no study examining the effects of HL and social media use on vaccine preferences during the COVID-19 pandemic, the research findings were discussed through studies examining the HL and social media use.

The review of HL averages of the students reveals that the students have lower HL levels. It was determined in the present research that there was a difference between vaccination preferences of the students since there was not any difference between HL levels and vaccine rejection preferences of the students. It was determined that individuals who preferred the vaccine, "Sinovac" when they needed to be vaccinated had higher levels of understanding information and HL levels than those who preferred the vaccine, "Turkovac." The studies on HL were reviewed in order to understand this difference better. A previous study on the association between HL and attitudes toward the COVID-19 vaccine in adults suggested that as the level of HL increases, there is an improvement in vaccination attitude; therefore, it is recommended to carry out activities to increase HL in general population. Furthermore, it was stated that increasing the level of vaccination in the community could be possible by increasing the HL.[20] One of the most important reasons for this situation may be due to the fact that the first vaccine developed against Coronavirus was Sinovac and the last vaccine was Turkovac.

It was determined in a study conducted on students that awareness of COVID-19 and protective behaviors increased positively as the level of HL of the students increased indicating that the students with higher HL were more conscious about COVID-19.[21] A previous study determined that hesitancy toward the COVID-19 vaccine increased in individuals with lower HL.[22] It was detected in a study conducted with patients with systemic autoimmune disease in Spain that the level of HL and quality of life of the patients were lower, and this poses a risk for vaccination.[23] When individuals with lower HL levels encounter limited or contradictory information about vaccines on the internet, this may affect their preferences.[24]

Lower HL levels of the students are quite interesting. Because the lower HL score may make students hesitate about which vaccine they would prefer. Moreover, this might

have affected correct implementation of the measures to be taken for prevention of infectious diseases. However, it is detected that the students who prefer the Sinovac vaccine have higher levels of HL and understanding the information than those who prefer the Turkovac vaccine. It is considered that this is affected by some variables including social media accounts, news, etc. used by the students during the process. Furthermore, another reason for this situation may be that the vaccines "BioNTech" and "Sinovac" are actively used in the data collection process and the vaccine "Turkovac" is a newer vaccine when compared to the other two. It is known that the first administered COVID-19 vaccine in Turkey was "Sinovac." This was followed by "BioNTech" and "Turkovac." Furthermore, health workers and students were given priority to be vaccinated in the country. All these variables may have caused the students to prefer the vaccine "Turkovac" less.

Another study noted that inaccurate information on social media may cause false information about the COVID-19 vaccine; therefore, it may be effective in the failure to evaluate the decisions that can be made regarding the vaccine. When individuals with lower HL levels encounter limited or contradictory information about vaccines on the internet, this may affect their preferences.[24] Therefore, social media use of the students should be examined as well as their HL levels. A study conducted on 764 people detected that 75.8% of the participants thought that social media was needed and 75.4% of them were informed about the COVID-19 crisis from social media.[25] It was determined in the same study that 32.5% of them learned about the COVID-19 epidemic from television and 28% from social media.[25] This finding reveals the importance of social media in the pandemic process.

The use of social media has increased in all groups during the COVID-19 process, and this increase has been more especially in younger population.[26,27] The COVID-19 pandemic has caused an increase in use of social media by the students.[28,29] This finding is an important finding in terms of examining the effects of social media use on vaccine preferences of the students. When the SMUS score averages of the participant students are examined, it can be said that their score averages are lower. A higher score from this scale reveals that the person is more engaged in social media and competent in terms of use. It can be suggested when score averages of our students were investigated that they do not use social media competently. It can be said that this situation makes it difficult for students to distinguish true and false information during the information outbreak caused by the pandemic and thereby affects the vaccine preferences of individuals. However, it was determined in the present research that those who preferred the vaccine "Sinovac" had higher mean scores of "Continuity," "Competence" and "SMUS" when compared to those who preferred the vaccine "Turkovac." In other words, students who use social media competently and appropriately mostly preferred the vaccine, "Sinovac." This finding is quite striking. Furthermore, since the vaccines "BioNTech" and "Sinovac" are actively used in the data collection process and the vaccine "Turkovac" is a newer vaccine when compared to the other two, and vaccination priority of the students may have caused preferring vaccine "Turkovac" less by the students.

Conclusion

It was determined that the HL levels of the students were lower, and they did not use social media competently. It was detected that those who preferred the vaccine "Sinovac" had higher HL levels and used social media more and more competently than those who preferred the vaccine "Turkovac." There is a difference between the social media usage levels and HL levels of those who prefer the "BioNTech" vaccine compared to those who prefer the "Sinovac" and "Turcovac" vaccines. For a future that allows to take more accurate steps in health-care-related decisions, it is necessary to provide students with relevant training. The ability of the students to distinguish between true and false information is related to their ability to use the social media. Therefore, conscious social media use should be taught to the students.

It is observed that students with higher HL level and students who use social media competently prefer the vaccine, "Sinovac." It was determined that social media use and the HL levels affect the vaccine preferences. The preference of this vaccine by the individuals with a higher level of HL indicates the effect of social media use and HL on vaccine preferences. This research will guide further researches on possible infectious diseases, preventive measures and vaccines.

Acknowledgments

We would like to thank our nurse students for his/her role in the completion of this study.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Apfel F, Tsouros AD. Health Literacy: The Solid Facts. Copenhagen: World Health Organization; 2013.
2. World Health Organization. Promoting Health in the SDGs: Report on the 9th Global Conference for Health Promotion, Shanghai, China, 21-24 November 2016: All for health, Health for all. World Health Organization; 2017.
3. Akbal EN, Gökler ME. A fact discovered to be inadequate during the COVID-19 outbreak process: Health literacy. ESTUDAM Public Health J 2020;5:148-55.
4. Peerson A, Saunders M. Health literacy revisited: What do we mean and why does it matter? Health Promot Int 2009;24:285-96.
5. Bayazit T, Sümer H. Investigation of the level of health literacy and related factors in the undergraduate students of Cumhuriyet University. J Health Sci Inst 2019;4:34-47.
6. Nutbeam D. Discussion Paper on Promoting, Measuring and Implementing Health Literacy-Implications for Policy and Practice in Non-Communicable Disease Prevention and Control. World Health Organization; 2017. p. 1-29.
7. Neter E, Brainin E. Association between health literacy, ehealth literacy, and health outcomes among patients with long-term conditions. Eur Psychol 2019;24:68-81.

8. Paakkari L, Okan O. COVID-19: Health literacy is an underestimated problem. Lancet Public Health 2020;5:e249-50.
9. Kindig DA, Panzer AM, Nielsen-Bohlman L. Health Literacy: A Prescription to End Confusion. Washington: National Academies Press; 2004.
10. Deml MJ, Jafflin K, Merten S, Huber B, Buhl A, Frau E, *et al*. Determinants of vaccine hesitancy in Switzerland: Study protocol of a mixed-methods national research programme. BMJ Open 2019;9:e032218.
11. Meppelink CS, Smit EG, Fransen ML, Diviani N. "I was right about vaccination": Confirmation bias and health literacy in online health information seeking. J Health Commun 2019;24:129-40.
12. Ministry of Health, Republic of Turkey. COVID-19 (SARS-CoV-2 enfeksiyonu) RehberCOVID-19 (SARS-CoV-2 infection) Guidelinesi. In: COVID-19 (SARS-CoV-2 Infection) Guidelines. Ankara: Ministry of Health, Republic of Turkey; 2020.
13. Cheng Y. How social media is changing crisis communication strategies: Evidence from the updated literature. J Contingencies crisis Manage 2018;26:58-68.
14. Freberg K, Palenchar MJ, Veil SR. Managing and sharing H1N1 crisis information using social media bookmarking services. Public Relat Rev 2013;39:178-84.
15. Kaya A, Seren Harmanci AK. Using media by nurses: A case of novel coronavirus disease. J Health Nurs Manage 2021;8:132-8.
16. Sørensen K, Pelikan JM, Röthlin F, Ganahl K, Slonska Z, Doyle G, *et al*. Health literacy in Europe: Comparative results of the European health literacy survey (HLS-EU). Eur J Public Health 2015;25:1053-8.
17. Toçi E, Burazeri G, Sorensen K, Jerliu N, Ramadani N, Roshi E, *et al*. Health literacy and socioeconomic characteristics among older people in transitional Kosovo. J Adv Med Med Res 2013;3:1646-58.
18. Aras Z, Temel Bayık A. Evaluation of validity and reliability of the Turkish version of Health Literacy Scale. Florence Nightingale J Nurs Hemşirelik Derg 2017;25:85-94.
19. Deniz L, Tutgun-Ünal A. Development of a set of scales toward the use of social media and values of generations in social media age. OPUS Int J Soc Res 2019;11:1025-7.
20. Doğan U. Determination of the Relationship between health literacy and attitudes towards COVID-19 vaccine in adult individuals. Int J Acad Med Pharm 2022;4:51-6.
21. Naveed MA, Shaukat R. Health literacy predicts COVID-19 awareness and protective behaviours of university students. Health Info Libr J 2022;39:46-58.
22. Turhan Z, Dilcen HY, Dolu İ. The mediating role of health literacy on the relationship between health care system distrust and vaccine hesitancy during COVID-19 pandemic. Curr Psychol 2022;41:8147-56.
23. Correa-Rodríguez M, Rueda-Medina B, Callejas-Rubio JL, Ríos-Fernández R, de la Hera-Fernández J, Ortego-Centeno N. The relationship between health literacy and quality of life, attitudes and perceptions of COVID-19 and vaccination among patients with systemic autoimmune diseases. Clin Nurs Res 2022;31:981-90.
24. Biasio LR, Bonaccorsi G, Lorini C, Pecorelli S. Assessing COVID-19 vaccine literacy: A preliminary online survey. Hum Vaccin Immunother 2021;17:1304-12.
25. Çerçi ÜÖ, Canöz N, Canöz K. The use of social media as a means of information in the COVID19 crisis period. J Selcuk Univ Soc Sci Inst 2020;44:184-98.
26. Elhai JD, Yang H, McKay D, Asmundson GJG. COVID-19 anxiety symptoms associated with problematic smartphone use severity in Chinese adults. J Affect Disord 2020;274:576-82.
27. Stieger S, Lewetz D, Swami V. Emotional well-being under conditions of lockdown: An experience sampling study in Austria during the COVID-19 pandemic. J Happiness Stud 2021;22:2703-20.
28. Gómez-Galán J, Martínez-López JÁ, Lázaro-Pérez C, Sarasola Sánchez-Serrano JL. Social networks consumption and addiction in college students during the COVID-19 pandemic: Educational approach to responsible use. Sustainability 2020;12:7737.
29. Majumdar P, Biswas A, Sahu S. COVID-19 pandemic and lockdown: Cause of sleep disruption, depression, somatic pain, and increased screen exposure of office workers and students of India. Chronobiol Int 2020;37:1191-200.