

Investigating the Effects of Social Media on Mental Health and Well-Being Amongst Undergraduate Students of University of Ilorin.

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Abstract

Social media is a versatile platform that facilitates connection, communication, knowledge sharing, and business activities among people. Despite its benefits, it has notable downsides, especially prevalent among the youth. Hence, this study focuses on investigating the effects of social media on undergraduate students at the University of Ilorin. Furthermore, the research investigated the relationship between social media use and mental health well-being, examining diverse digital behaviours across students within the different faculties. It highlights the mental health challenges linked to social media, such as stress, anxiety, and depression, while identifying specific platforms with significant impacts on mental well-being. The study also acknowledged the positive aspects of online interactions, emphasizing the support and sense of belonging they offer. This study advocates for improved focus on student mental health while evaluating mental health resources provided by the University of Ilorin, aiming to enhance support for digital natives and recommend strategies for a comprehensive understanding of this intricate relationship.

Keywords: Communication, Knowledge sharing, Mental health, Undergraduate students, Social media.

INTRODUCTION

Social media is among the pioneering innovations that has transformed the way humans communicate (Lin, 2022). It serves to strengthen relationships, disseminate vital information, facilitate learning and expand knowledge horizons. It provides a platform to network and connect with people from all over the world, regardless of race, location, beliefs, or perceptions. It allows individuals to enjoy memorable moments and experiences from the

comfort of their location, all through an internet connection and devices like mobile phones, laptops, computers, and other digital communication tools. (Aichner et al., 2021).

Gritsenko et al., (2020) expatiated social media about students in their study that; in the grand theatre of academia, social media has emerged as an unexpected stagehand, deftly setting the scene for enriched collaboration and discourse. No longer confined to lecture halls or library study groups, students now find themselves in the midst of virtual think tanks, where academic resources are but a click away and brainstorming sessions span continents.

These platforms transform learning from a solitary endeavour to a communal one, where knowledge isn't just consumed but is shared, discussed, and evolved. Every shared link, every collaborative document, and every online discussion isn't just a nod to modernity; rather it is a testament to how interconnection can breathe new life into the learning process (Chatterjee & Correia, 2020). By harnessing the power of social media, students aren't just passively absorbing information; they are actively shaping their educational journeys, and gaining perspectives that traditional classroom settings might miss (Alhumaid, 2020).

In the vast digital landscape of social media, amidst the clamor of trending hashtags and viral videos, lies an oasis of support and understanding mental health organizations. With the rise of these organizations on platforms frequented by students, the conversation around mental health has found a louder and more resonant voice (Mehmet, Roberts, & Nayeem, 2020). Students, grappled with the pressure of academia and the intricacies of young adulthood, can stumble upon these digital havens and find solace (Naslund et al., 2020).

These organizations echo the significance of mental well-being; and actively provide resources, tools, and guidance tailored for the younger generation (Lehtimaki et al., 2021). For students who might be battling silent struggles or those who are wary of seeking help in traditional settings, these platforms become an unobtrusive bridge. A simple scroll can lead them to a plethora of information, from understanding the early signs of mental distress to finding coping mechanisms and even professional help (Borghouts et al., 2021).

In recent times, social media is predominantly perceived as a conduit for disseminating ideas and information across a virtual network. Renowned platforms such as Facebook, Instagram, Twitter, and YouTube epitomize this realm, granting users the latitude to share content, engage online, and cultivate virtual communities. A testament to its omnipresence, it is staggering to note that an estimated 4.7 billion individuals engage with social media, encapsulating roughly 60% of the global populace (Dollarhide, 2023).

Furthermore, these online interactions can cultivate a sense of belonging and community. For those who may feel isolated in their immediate environment, social media offers a realm where they can connect with others. It establishes a platform where individuals can find people with similar hobbies, interests, or beliefs, fostering a sense of identity and self-worth (Liverpool et al., 2020). Social media platforms, in addition to fostering connections, often serve as hubs for social support. Numerous groups, forums, and communities on these platforms address specific needs such as mental health, parenting, hobbies, and professional interests. Within these virtual communities, users often find understanding and compassion that may sometimes be elusive offline. (Kross et al., 2021).

Social media has also catalyzed the emergence of movements and advocacy groups championing mental health, equality, and various social causes. This has nurtured a sense of

solidarity, allowing individuals to connect with those facing similar challenges. The presence of mental health professionals on social media has been a boon as they provide support, therapeutic interventions, and resources for self-care (Chen & Wang, 2021). The growth of online therapy and mental wellness apps has also added a crucial support layer for those lacking access to conventional mental health services. These digital interventions can offer invaluable assistance and guidance in critical moments. (Pianese & Belfiore, 2021).

Academically, social media serves as more than just a communication tool. It has evolved into an educational reservoir where students tap into diverse resources, engage in spirited online discussions, and foster collaborations on academic projects (Ansari & Khan, 2020). The year 2023 saw educators like Maher (2023) highlighting the ever-evolving role of teachers on these platforms, who are not just passively sharing course materials but actively enhancing the learning journey through regular announcements and interactive sessions. The professional realm has not remained untouched by this digital revolution either. Social media platforms, notably LinkedIn, Fiverr, and Upwork, have become indispensable tools in a student's arsenal for professional development (McDonald et al., 2022). These platforms not only introduce students to job prospects but also offer networking avenues, keep them abreast with industry trends, and even allow them a space to flaunt their professional acumen.

Given the immersive role social media plays in these students' lives, it becomes imperative especially based on their mental health. With undergraduate students identified as some of the most avid users, their reliance on these platforms extends beyond mere communication. It encompasses academic collaborations, leisure activities, and more. This dependence, as Adil et al. (2020) suggest, renders them vulnerable to a spectrum of effects, both uplifting and detrimental. It's this dichotomy of effects that makes studies on the impact of social media on their mental well-being not just relevant, but crucial.

Different research has been carried out to explore the effects of social media on the mental health and well-being of undergraduate students. In (Luo & Hancock, 2020), the authors explained how social media is a vast reservoir of information on social media. Luo & Hancock (2020) further described social media as a canvas for self-expression. Whether it is showcasing art, voicing opinions, or participating in discussions, users can showcase their identities, core values, and beliefs. For those grappling with social anxiety or other mental challenges, expressing oneself digitally can be less daunting than face-to-face interactions. The platform fosters creativity without immediate judgment, emboldening more individuals to articulate their feelings and ideas, and offering a profound sense of affirmation.

The digital landscape has seen the rise of cyberbullying as a major issue. Anonymity on some platforms can embolden users to indulge in harmful behaviours without facing immediate repercussions. Such bullying can result in emotional scars and lead to enduring mental health challenges, such as depression, anxiety, and diminished self-esteem. (Giumetti & Kowalski, 2022). In some tragic cases, social media has been implicated in suicides, especially among the youth. Exposure to distressing content or communities that glamorize self-harm can dangerously influence vulnerable minds, emphasizing the importance of vigilance and intervention. (Macrynikola et al., 2021).

The swift circulation of unverified information can foster confusion and panic. Whether it's deceptive health advice or skewed news narratives, misinformation can sow seeds of anxiety and erode trust in authoritative entities. (Chen et al., 2023).

Acknowledging these perils, it is paramount that we discern effective interventions aimed at fostering a responsible approach to social media use. This could entail everything from nurturing digital literacy to ushering mental health support mechanisms within academic precincts, as suggested by Keles et al., (2020). When we zoom out and scrutinize the repercussions of social media on undergraduates' mental health, we are educators, researchers, and mental health aficionados with insights pivotal for crafting strategies tailored to buttress this demographic. Thus, the aim is to strike a harmonious equilibrium in the way these platforms are leveraged.

Lastly, at its core, these platforms offer an uninhibited canvas, a space where individual expression, whether through words, art, or music, finds its voice. They provide a stage where feelings, musings, and creativity break free from their internal confines to dance in the digital spotlight (Azzaakiyyah, 2023).

RESEARCH METHODOLOGY

Data Collection

This study employed the survey research method as its approach. This enables the researcher to get relevant information and to describe facts suitable for this study. The data was collected through the use of questionnaires, where the questions are structured to allow respondents to answer questions to achieve the research objectives of the study. Descriptive analysis was done using relevant percentages, as reflected in the tables and charts.

The study's total population consists of 15,000 students from 5 selected faculties in the University of Ilorin. The selected faculties are the faculty of Communication and Information Sciences, Faculty of Law, Faculty of Engineering, Faculty of Management Sciences and Faculty of Social Sciences. Although it is technically possible to use the entire population of the study, it may not be the best option given the cost of time and resources in handling such a population. Therefore, we employed a population sample for the study.

Sampling Procedure and Sampling Selection

The sampling size for this study comprises 375 respondents from a population of 15,000 students of 5 faculties at the University of Ilorin.

RESULTS

This section deals with the analysis and interpretation of data obtained in the course of the study. The data was collected through the use of open-ended and close-ended questionnaires. Respondents have been asked questions that lead to achieving the research objectives of this study. Descriptive analyses were done using relevant percentages, as reflected in the tables and charts.

Demographic Data of Respondents

a. Age of the respondents

Table 2 shows the age distribution of the respondents. The majority of the respondents fall within the 20-23 age group which accounted for 51.3% of the total respondents. This is followed by 24-27 age group with 27.0% of the total respondents, 16-19 age group accounted for 18%, age group that are 28 and above accounted for 3.7% total respondents respectively.

Table 2: Age distribution of the respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	16-19	68	18.0	18.0	18.0
	20-23	194	51.3	51.3	69.3
	24-27	102	27.0	27.0	96.3
	28 and above	14	3.7	3.7	100.0
	Total	378	100.0	100.0	

b. Gender of respondents

This has been grouped into the 2 accepted gender in Nigeria. As seen in Table 3, male respondents accounted for 64.8% of the total response while the remaining 35.2% are females.

Table 3: Gender of respondents

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	133	35.2	35.2	35.2
	Male	245	64.8	64.8	100.0
	Total	378	100.0	100.0	

c. Faculty of the Respondents

Figure 1 shows the faculty of the respondents at the University of Ilorin. 29.4% of the respondents are from the faculty of Communication and Information Sciences which accounts for 111 respondents, followed by the faculty of Engineering which accounts for 24.9%, faculty of Law 22.2%, the faculty of Social Sciences 13.8% and the faculty of Management Sciences 9.8%.

Figure 1: Faculty of the respondent

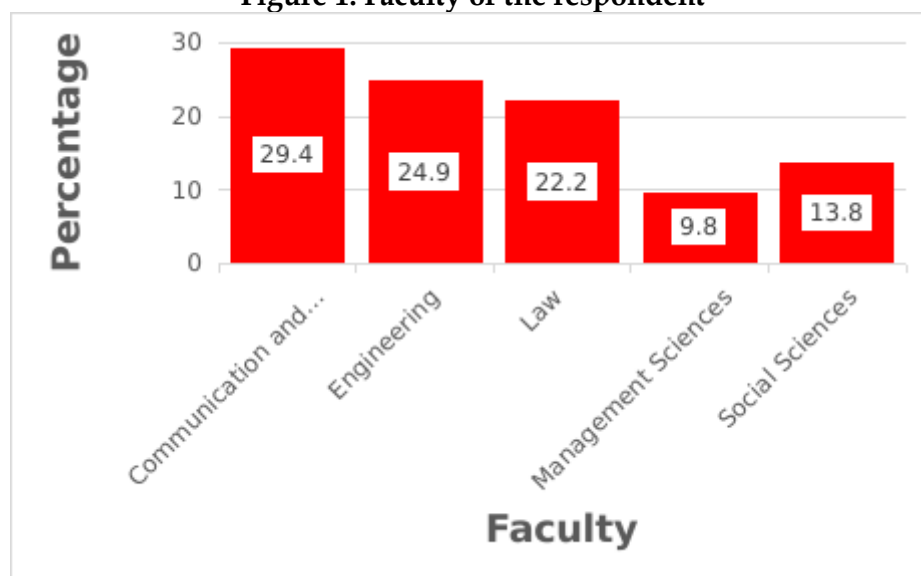


Figure 1. Faculty of Respondents

d. Most used social media platforms

The table 4 provides insights into the social media platforms that respondents use regularly. It highlights a variety of usage patterns among the surveyed individuals. The data reflected a diverse range of social media platform preferences among respondents, with multiple combinations and a mix of messaging, visual, and multimedia platforms playing various roles in their regular usage patterns.

The table below shows the social media platform preferences of respondents. Many respondents, 56.9%, reported using WhatsApp as their primary social media platform. X was the next most popular platform, with 22.2% of respondents using it. Additionally, 10.1% of respondents chose Instagram. Snapchat followed with 8.7% usage. Facebook had the lowest usage among the listed platforms, with 2.1% of respondents using it.

Table 4: Social media platforms used MOST.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Facebook	8	2.1	2.1	2.1
	Instagram	38	10.1	10.1	12.2
	Snapchat	33	8.7	8.7	20.9
	WhatsApp	215	56.9	56.9	77.8
	X	84	22.2	22.2	100.0
	Total	378	100.0	100.0	

e. Hours spent on social media per day

The majority of respondents as shown in table 5 below, 36.2%, reported spending 7 hours or more per day on social media. Additionally, 28.6% of respondents spend 5-6 hours per day on social media, while another 28.0% spend 3-4 hours per day. A smaller percentage, 5.0%, reported spending 1-2 hours per day on social media. Only a small minority, 2.1%, spend less than 1 hour per day on social media.

Table 5: Hours spent on social media per day

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-2 hours	19	5.0	5.0	5.0
	3-4 hours	106	28.0	28.0	33.1
	5-6 hours	108	28.6	28.6	61.6
	7 hours or more	137	36.2	36.2	97.9
	Less than 1 hour	8	2.1	2.1	100.0
	Total	378	100.0	100.0	

f. Students taking break from social media for mental well-being

Table 6 presents data on whether the respondents have ever taken a break from social media for their mental well-being. Approximately, 11.4% of respondents have not considered taking a break, 30.7% have contemplated it but not acted on it, 30.7% have done so once or

twice in the past while 27.2% of respondents have taken frequent breaks for their mental wellbeing.

Table 6: Have you ever taken a break from social media for your mental well-being

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No, and I've never considered it	43	11.4	11.4	11.4
	No, but I've considered it	116	30.7	30.7	42.1
	Yes, frequently	103	27.2	27.2	69.3
	Yes, once or twice	116	30.7	30.7	100.0
	Total	378	100.0	100.0	

g. Awareness about misleading information or content on social media

The table 7 below reveals how often respondents encounter information or content on social media that they perceive as misleading or untrue. A significant portion, 42.3% of respondents, frequently come across such content. About 30.7% of respondents occasionally encounter it, while a smaller percentage, 7.9%, rarely finds misleading or untrue information on social media. Additionally, for 19.0% of respondents, encountering such content is a very frequent occurrence.

Table 7: Awareness about misleading information or content on social media

How often do you find information or content on social media that you believe is misleading or untrue?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Frequently	160	42.3	42.3	42.3
	Occasionally	116	30.7	30.7	73.0
	Rarely	30	7.9	7.9	81.0
	Very frequently	72	19.0	19.0	100.0
	Total	378	100.0	100.0	

h. Social media effect on the mental health of undergraduate students

Table 8: Effect of social media

What are the effects of social media on the mental of the undergraduate students at the University of Ilorin	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Social media often makes me feel anxious or stressed	9	2.4	113	29.9	108	28.6	90	23.6	58	15.3
I've felt symptoms of depression as a result of my social media use	12	3.2	118	31.2	79	20.9	101	26.7	68	18.0
Certain platforms make me feel more negative than others	13	3.4	172	45.5	77	20.4	60	15.9	56	14.8
I feel a decrease in my self-worth when comparing myself to others on social media	16	4.2	110	29.1	95	25.1	83	22.0	74	19.6

Many students in this survey appear to have mixed feelings about the impact of social media on their mental health as shown in Table 8. A substantial percentage, about 29.9%, agree that social media often makes them feel anxious or stressed, while a similar proportion, 28.6%, remains neutral on this matter. Additionally, a significant portion of 23.6% disagrees with the statement, indicating that not everyone feels anxiety or stress due to social media. However, a noteworthy 15.3% strongly disagree, suggesting that some students have a more positive experience regarding stress and anxiety on these platforms. Regarding symptoms of depression attributed to social media use, a considerable number of respondents, approximately 31.2%, agree that they have felt such symptoms. A similar number, 26.7%, disagree, while 20.9% remain neutral on this issue. However, 3.2% strongly agree, indicating that a small but significant subset of students strongly associates social media use with depression symptoms. Furthermore, the data indicates that a substantial proportion of respondents, around 45.5%, agree that certain social media platforms make them feel more negative than others, suggesting a differential impact across platforms. Meanwhile, 15.9% remain neutral, and 14.8% disagree with this notion. However, 3.4% strongly agree, highlighting that a minority of students strongly perceive certain platforms as more negative in their effect. Lastly, when it comes to comparing oneself to others on social media, about 29.1% of respondents agree that they experience a decrease in self-worth. A similar proportion, 25.1%, remains neutral, while 22.0% disagree with this statement. Interestingly, 4.2% strongly agree, indicating that some students have a strong sense of decreased self-worth when making such comparisons, while 19.6% strongly disagree.

DISCUSSION

The study has provided valuable insights into the intricate and multifaceted relationship between social media usage and the mental well-being of students in the digital age. The study has noted a majority of the student population has at one point considered taking a break from social media due to their mental health. This shows the overwhelming consequence social media has had on their mental health (Naslund et al., 2020). Currently, it would be hasty

to view the benefits of social media as outweighing the possible harms, when it is clear from the studies summarized here that social media use can have negative effects on students' mental health. Irrespective of the negative effects on students' mental health, there will be a continuous rise in the adoption of social media tools in the university community due to their numerous benefits. Therefore, it may be ideal to raise awareness about these possible risks so that students can implement precautions while enjoying the numerous benefits. Being aware of the risks is an essential first step, before then recognizing that the use of these popular platforms could contribute to some benefits like research and class communication (Ansari & Khan, 2020).

Furthermore, misinformation on social media is a global crisis as a majority of the students also indicated they frequently find misleading information on social media. The acknowledgement of this issue underlines the growing recognition of misinformation on social media platforms (Muhammed & Matthew, 2022). Students are daily exposed to lots of information, some of which may be misleading or fake news. While ongoing research in the field of internet information is targeted towards automated tools like fact-checkers, we cannot undermine the importance of humans in reducing misinformation, especially in an institution of knowledge like the University of Ilorin.

CONCLUSION

Social media has become an integral part of the daily lives of students and that is evident in the lives of students at the University of Ilorin. Many of these students use it as a vital communication platform, a source of information, for academic purposes and other generic social media usage. As the usage of social media tools is on the increase, there also is the prevalence of mental health-related symptoms like stress and anxiety. Thus, an improvement in mental health support services within the university community and fostering the creation of positive and inclusive online communities within the university. As we navigate the digital age, it is imperative to foster a supportive and digitally responsible environment that enhances our students' overall well-being and academic success. To achieve this, social media should be integrated into the university's academic activities, offering professional development opportunities for faculties and the student body to stay informed about emerging digital trends and implications for student well-being. These recommendations will help prioritise the mental health and well-being of undergraduate students in an era heavily influenced by social media.

REFERENCES

- Adil, A. H, Siddhartha, S., Mulla, M., Mulla. M., Sayed, F. R., Singh, K. S., Tripathi. S, Ramakrishnappa, S., & Eusufzai, S. Z. (2020). Usage of Social Media among Undergraduate University Students. *European Journal of Molecular and Clinical Medicine*, 7:8
https://www.researchgate.net/publication/347399224_Usage_of_Social_Media_among_Undergraduate_University_Students
- Aichner, T., Grünfelder, M., Maurer, O., & Jegeni, D. (2021). Twenty-Five Years of Social Media: A Review of Social Media Applications and Definitions from 1994 to 2019," *Cyberpsychology, Behavior, and Social Networking*, vol. 24, no. 4, pp. 215–222, Apr. 2021, doi: 10.1089/cyber.2020.0134.

- Alhumaid, N. F. (2020) Qualitative Evaluation: Effectiveness of Utilizing Digital and Social Media in Education. *Utopía y Praxis Latinoamericana*, 25(6), <https://doi.org/10.5281/zenodo.3987663>
- Ansari, J.A.N., Khan, N.A. Exploring the role of social media in collaborative learning the new domain of learning. *Smart Learn. Environ.* 7, 9 (2020). <https://doi.org/10.1186/s40561-020-00118-7>
- Azzaakiyyah, H. K. (2023). The Impact of Social Media Use on Social Interaction in Contemporary Society. *Technology and Society Perspectives (TACIT)*, 1(1), 1–9. <https://doi.org/10.61100/tacit.v1i1.33>
- Borghouts, J., Eikey, E., Mark, G., De Leon, C., Schueller, S. M., ... & Sorkin, D. H. (2021). Barriers to and Facilitators of User Engagement With Digital Mental Health Interventions: Systematic Review. *Journal of Medical Internet Research*, 23(3). <https://www.jmir.org/2021/3/e24387/>
- Chatterjee, R. & Correia, A. (2020). Online Students' Attitudes Toward Collaborative Learning and Sense of Community. *American Journal of Distance Education*, 34(1), 53-68, <https://doi.org/10.1080/08923647.2020.1703479>
- Chen, J. & Wang, Y. (2021). Social Media Use for Health Purposes: Systematic Review. *Journal of Medical Internet Research*, 23(5). <https://www.jmir.org/2021/5/e17917/>
- Chen, S., Xiao, L., & Kumar, A. (2023) Spread of misinformation on social media: What contributes to it and how to combat it. *Computers in Human Behavior*. 141, 107643. <https://doi.org/10.1016/j.chb.2022.107643>
- Dollarhide, M. (2023) Social Media: Definition, Effects, and List of Top Apps. <https://www.investopedia.com/terms/s/social-media.asp>
- Giumetti, G. W. & Kowalski, R. M. (2022). Cyberbullying via social media and well-being. *Current Opinion in Psychology* 45, 101314 <https://doi.org/10.1016/j.copsyc.2022.101314>
- Gritsenko, V., Skugarevsky, O., Konstantinov, V., Khamenka, N., & Marinova, T. (2020). COVID 19 fear, stress, anxiety, and substance use among Russian and Belarusian university students. *International Journal of Mental Health and Addiction*. <https://doi.org/10.1007/s11469-020-00330-z>
- Keles, B., McCrae, N., & Grealish, A. (2020). A systematic review: The influence of social media on depression, anxiety and psychological distress in adolescents. *International Journal of Adolescence and Youth*, 25(1), 79-93. <https://doi.org/10.1080/02673843.2019.1590851>
- Kross, E., Verduyn, P., Costellos, G., Sheppes, C., Jonides, J., & Ybarra, O. (2021) Social Media and Well-Being: Pitfalls, Progress, and Next Steps. *Trends in Cognitive Science*, 25(1), 55-66. <https://doi.org/10.1016/j.tics.2020.10.005>
- Lehtimäki, S., Martic, J., Wahl, B., Foster, K. T., & Schwalbe, N. (2021) Evidence on Digital Mental Health Interventions for Adolescents and Young People: Systematic Overview. *JMIR Mental Health*, 8(4). <https://mental.jmir.org/2021/4/e25847/>
- Lin, Y. (2022) Social media for collaborative planning: A typology of support functions and challenges. *Cities*, 125(103641). <https://doi.org/10.1016/j.cities.2022.103641>
- Liverpool, S., Mota, C. P., Sales, C. M. D., Čuš, A., Carletto, S., ... & Edbrooke-Childs, J. (2020). Engaging Children and Young People in Digital Mental Health Interventions: Systematic Review of Modes of Delivery, Facilitators, and Barriers. *Journal of Medical Internet Research*, 22(6). <https://www.jmir.org/2020/6/e16317/>
- Luo, M., & Hancock, J., T. (2020) Self-disclosure and social media: motivations, mechanisms and psychological well-being. *Current Opinion in Psychology*, 31, 110-115. <https://doi.org/10.1016/j.copsyc.2019.08.019>

- Macrynikola, N., Auad, E., Menjivar, J., & Miranda, R., (2021). Computers in Human Behavior Reports. *Computers in Human Behavior Reports*, 3, 100094. <https://doi.org/10.1016/j.chbr.2021.100094>
- Maher, D. (2023) Collaborative Learning in Schools With Social Media: A Social Constructivist View. *Handbook of Research on Facilitating Collaborative Learning Through Digital Content and Learning Technologies*, 44-61, 2023
- Mcdonald, S., Damarin, A. K., & Membrez-Weiler, N. J. (2022). Organizational perspectives on digital labor market intermediaries. *Sociology Compass*, 17(4). <https://doi.org/10.1111/soc4.13061>
- Mehmet, M., Roberts, R., & Nayeem. T. (2020) Using digital and social media for health promotion: A social marketing approach for addressing co-morbid physical and mental health. *Australian Journal of Rural Health*, 28(2), 149-158. <https://doi.org/10.1111/ajr.12589>
- Muhammed T, S., & Mathew, S. K. (2022). The disaster of misinformation: a review of research in social media. *International journal of data science and analytics*, 13(4), 271-285. <https://doi.org/10.1007/s41060-022-00311-6>
- Naslund, J. A., Bondre, A., Torous, J., & Aschbrenner, K. A.(2020) Social Media and Mental Health: Benefits, Risks, and Opportunities for Research and Practice. *Journal of Technology in Behavioral Science*, 5, 245-257. <https://doi.org/10.1007/s41347-020-00134-x>