

The Effects of Social Media on Spreading Panic during COVID-19 Pandemic in Bangladesh: A Study

Sauda Mubarak¹, Indrani Sarker², Nahid Salma^{3*}, Sumaiya Shafayet Supti⁴, Mizanur Rahman Zihad⁵, Farhana Afrin Duti⁶

Department of Statistics, Jahangirnagar University, Savar, Dhaka-1342, Bangladesh.

¹Email author: sauda.mubarak.9@gmail.com

²Email author: indranisarker512@gmail.com

^{3*}Email Corresponding author: nahid.salma@juniv.edu

⁴Email author: supti.ju01@gmail.com

⁵Email author: mizanzihad26@gmail.com

⁶Email author: farhana_duti@juniv.edu

ABSTRACT

Now-a-days, people are linked to social media from the moment they wake up till going to bed. Social media attempt to disseminate the information as quickly as possible. Since the first identified Covid-19 patient in Bangladesh, there has always been a sense of dread among the people. This influence people's mental health conditions miserably. The study is aimed to observe the fact that social media influences people's mental condition and the transmission of COVID-19 fear in Bangladesh. Using an online questionnaire, 385 social media users were selected through convenient sampling. Significant variables were found out through ordinal logistic regression. The study shows, most of the participants were aged 15 to 25 years (n= 294, 76.4%), lived in urban (n=263, 68.3%) and 75.3% (n=290) of them used "Facebook" for gathering news related to COVID-19. Most of them had psychological effects (42.9%) due to the panic created by misinformation on social media and 82.6% (n= 318) felt the necessity of setting up filters for social media. The results show, using social media every day during COVID-19, having physical psyche effects of social media, reading mostly health news (COVID-19), spreading fear causing information about COVID-19 had higher significant effect on spreading fear among people. Social media had an impact on spreading fear and a significant negative influence on people's mental health during Covid-19. Filters need to be set up and people should verify before sharing any news in this pandemic.

Keywords: COVID-19, Social media, Panic, Misinformation, Bangladesh.

Mathematics Subject Classification: 97K80

Journal of Economic Literature (JEL) Classification : I12

1. INTRODUCTION

The coronavirus disease (COVID-19) is an infectious disease which has been recently identified but ruling over whole world; taking life of so many people within a shortest period of time. COVID-19 cases initially surfaced in December 2019, when an unexplained disease was exposed in Wuhan,

China, which became a pandemic. Social media is the most suitable place from where people have gathered so many knowledge related to this pandemic.

Now a days, social media has been playing an important role in one's life from morning to night, from shopping to electronic mails, school to university education, e-commerce to business tools in case of sharing ideas, thoughts, and information. People are using social media like Facebook, Twitter, WhatsApp, YouTube, Instagram, TikTok, etc so that they are easily connected with the world. During this pandemic situation online classes are taken by the institutions to keep the students into studies, thus children also are now connected to the social media (Yasmin et. al, 2021). In January 2020, Bangladesh had 66.44 million people using internet and 36 million people using social media. In Bangladesh, internet users increased by 9.5% from 2019 to 2020 whereas social media users increased by 9.1% from April 2019 to January 2020. As a result, internet data, particularly data from Facebook, is being excessively used to know about various infectious diseases specially for being alert about the pandemic from past 20 years, a topic known as infodemiology.

According to statement of government, Health Ministry or WHO, are qualified to authenticate COVID-19 instances in Bangladesh. But people are spreading misinformation on and on which is creating panic among general people a lot and hampering their mental condition. Catherine Belling told ABC News in an interview "Anxiety spreads faster than the virus,"(Muwahed, 2020). Social media users are experiencing anxiety and terror (Rothschild & Fischer, 2020). Furthermore, it is underlined that posting erroneous information regarding the spread of illnesses on social media networks would have a harmful influence on both physical and mental health (Gold, 2020).

Social awareness is being created about the consequences of misinformation arranging different types of seminars, programs etc. But several nations failed to educate people about this pandemic or couldn't offer the information required; as a result, individuals depended on information found on social media (La et. al, 2020). In today's digital era, Chinese civilians couldn't acquire enough information on COVID-19, so they turned to social media and published their knowledge, images, and videos freely, though sometimes incorrectly (Victor, 2020). In India, the government is trying to take steps about prominent social media sites so that people can't share any fake news since it causes panic among the people. Media of Russia raised a campaign named "major misinformation campaign" regarding the COVID-19 epidemic to raise concern for mass in Western nations .The principal objective of this study is to find out the link between the spread of panic among general people and the misinformation posted on social media during this pandemic. This study also tried to find out the solution to this problem.

2. METHODOLOGY

2.1 Participants

To evaluate the influence of social media on creating panic during the COVID-19 in Bangladesh, a cross-sectional study was carried out amid the social media users of Bangladesh from June 5, 2021, to June 11, 2021.

For this study, significance level was 5% and margin of error was 6% ($d = 0.06$). We found out our required sample size using Cochran's formula:

$$n = \frac{z^2 p(1-p)}{d^2}$$

Proportion of sample was taken 0.5 as it provides the maximum size of our sample. Hence, our requisite sample size was 385. 385 respondents who filled the questionnaires and gave us their valuable opinion were administered in the further analysis.

2.2 Study Design

Convenient sampling technique has been used for selecting the sample. Thereby, the questionnaires were supplied to social media users coming from different districts belonging to different types of professions. Before the survey, all the participants were aware about the motive of the research and ascertained about the secrecy of their opinion.

2.3 Variables

The questionnaire had two parts. They are: Demographic information and Social media-related information during COVID-19.

2.4 Demographic Information

Demographic information portion of the respondents involves the information about sex, age, educational status, living status, occupation, and marital status.

2.5 Social Media Related Information

This portion consists of the subsequent questions about social media related enquiry during COVID-19: no of hours spend on social media, if social media is useful for them or not, which social media are used by the people, no of social media platforms that they use, how often they use social media if social media is the first thing they check in the morning or not, social media channel name in which they are most active on, topics mostly read in social media. This section also contains the opinion of social media users such as if they think social media spread panic, Bangladeshi social media is good enough covering COVID-19, published any news related COVID-19, we need to filter the news for social media; categorized as scales 0–1 (0 = Yes, 1=No). This section contains two more opinions about social media users; how social media influence them and what kind of information creates the panic most during COVID-19.

2.6 Statistical Analysis

To analyze data, descriptive statistics was conducted. We observed frequencies and percentages of variables to assess the characteristics of participants. Ordinal logistic regression was carried out to detect the significant variables. The reliability and consistency of study variables was checked using Cronbach's alpha coefficient ranged between 0 to 1. Some variables were presented through

graphical representation. IBM SPSS (Statistical package for social science) for Windows (Version 26.0) was used for the conduction of data analysis.

3 RESULTS

Table 1 shows the association between demographic variables and spreading fear among people through publishing COVID-19 related news more on social media. From this table we see that, 192 (49.9%) were male and 193 (50.1%) were female among 385 study participants. Besides, most of them ($n = 294$, 76.4%) were aged 15 to 25 years and only 6% ($n = 23$) of the participants were 41 years and older. We separated the participants into seven groups on the basis of their educational qualifications. Most of them completed graduation ($n = 164$, 42.6%), but only 2.9% ($n = 11$) of the participants had higher degrees. A majority of the participants ($n=263$, 68.3%) lived in urban and 65 (16.9%) participants lived in rural. Among the participants 279 (72.5%) were unemployed and only 15 (3.9%) had government jobs. Besides, majority of the participants were unmarried ($n = 319$, 82.9%).

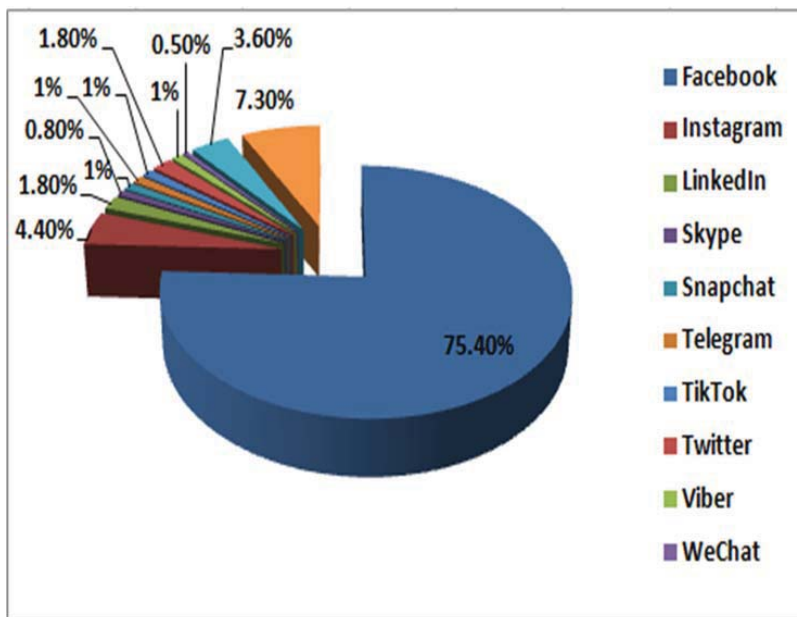


Figure 1. Percentage of Social Media Users

The participants who were aged between 41 to 60 years had a lower significant effect on spreading fear among them through publishing pandemic related news ($B = -2.819$, 95% CI: -5.386, -0.252) but the majority of the participants who were young (15-25 years) had no significant effect. Further, most of the participants who lived in urban had a higher significant score on spreading fear among them through publishing COVID-19 related news ($B = 1.187$, 95% CI: 0.261, 2.114) compared to those who lived in rural.

Other demographic variables such as gender, educational status, occupation and marital status had no significant effect on spreading fear among them through publishing COVID-19 related news more on social media.

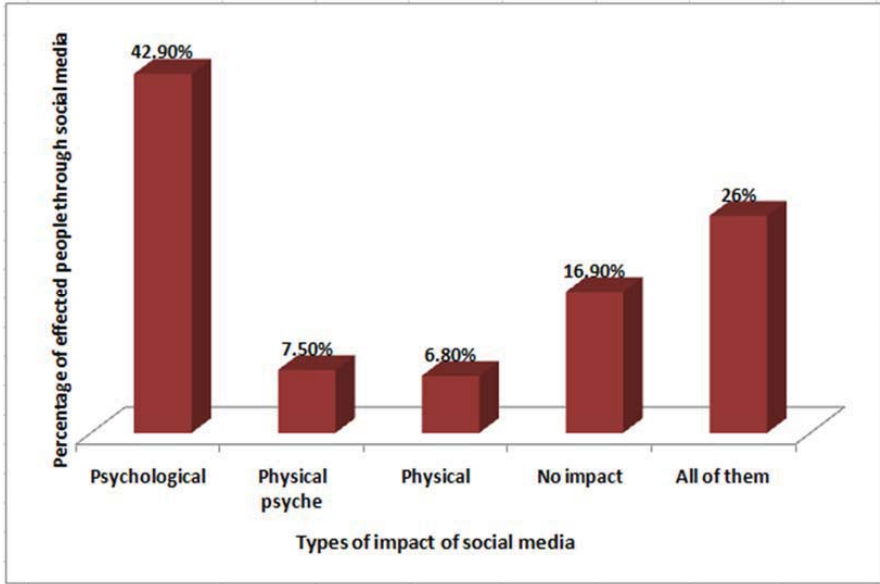


Figure 2. Percentage of affected people through social media

Table 1: Association between demographic variables and spreading fear among people through publishing COVID-

Variables	n (%)	B (95% Confidence Interval)
Gender		
Female	193 (50.1%)	0.066 (-0.535, 0.667)
Male	192 (49.9%)	
Age (years)		
15-25	294 (76.4%)	-1.856 (-4.345, 0.634)
26-40	68 (17.7%)	-2.383 (-4.830, 0.063)
41-60	15 (3.9%)	-2.819*(-5.386, -0.252)
More than 60	8 (2.1%)	
Educational Status		
Less than SSC	15 (3.9%)	-17.516 (-11589.096,
SSC	26 (6.8%)	11553.945)
HSC	128 (33.2%)	-17.362 (-11588.883,
Graduate	164 (42.6%)	11554.158)
Postgraduate	40 (10.4%)	-18.327 (-11589.847,
Higher	11 (2.9%)	11553.193)
Other	1 (.3%)	-18.788 (-11590.309,
		11552.732)
		-19.597 (-11591.118,

		11551.923)
		-18.590 (-11590.110,
		11552.931)
Living Area		
Urban	263 (68.3%)	1.187*(0.261, 2.114)
Semi-Urban	57 (14.8%)	0.380 (-0.698, 1.458)
Rural	65 (16.9%)	
Occupation		
Government Job	15 (3.9%)	0.472 (-3.000, 3.944)
Private Job	47 (12.2%)	0.571 (-2.631, 3.774)
Business	41 (10.6%)	0.404 (-2.787, 3.596)
Unemployed	279 (72.5%)	1.147 (-1.940, 4.235)
Other	3 (0.8%)	
Marital Status		
Unmarried	319 (82.9%)	-15.605 (-16.654, -14.555)
Married	64 (16.6%)	-14.869 (-14.869, -14.869)
Divorced	2 (0.5%)	

Table 2 shows the impact of social media related variables on spreading panic among people through publishing news related to COVID-19 more. From Table 2, Most of the participants (n= 149, 38.7%) spent more than 5 hours on social media every day during COVID-19 and only 29 (7.5%) participants spent less than one hour. Besides, 181 (47%) participants claimed that social media is very useful for getting news. Further, most of the respondents (n=290, 75.3%) used "Facebook" to get updates about this pandemic, because this platform is the most popular in Bangladesh among others social media and available to almost everyone. The other platforms such as Skype and WeChat were the lowest used platforms to get news (see Figure 1).

46.8% of the participants (n=180) used 6 and more social medias and 10.6% (n=41) of them used 3 social medias. Besides, majority of them (n=364 94.5%) used social media every day during COVID-19 and only 1.3% (n=5) of them used monthly. 36.4% (n=140) of the respondents posted rarely on social media during COVID-19 and 21.3% (n=82) of them posted very often. Among the participants, 63.4% (n= 244) checked social media as the first thing in the morning.

Furthermore, 86.5% (n=333) of the participants were mostly active on "Facebook" and 32.2% (n=124) of them mostly read health news related to COVID-19 on social media and only 2.6% (n=10) of them read economic news. 180 (46.8%) participants claimed that the quality of Bangladeshi pages, groups, and accounts on social media

Table 2: Relation between social media related variables and spreading panic among people

Variables	n (%)	B (95% Confidence Interval)
Spent hours on social media every day during COVID-19		
Less than 1 hour	29 (7.5%)	-1.881*(-3.512, -0.251)
1 hour	29 (7.5%)	-0.441 (-1.692, 0.810)
2-3 hours	86 (22.3%)	-0.026 (-0.757, 0.705)
3-5 hours	92 (23.9%)	0.192 (-0.509, 0.892)
More than 5 hours	149 (38.7%)	
Usefulness of social media for getting news		
Very useful	181 (47.0%)	0.697 (-1.321, 2.714)
Somewhat useful	191 (49.6%)	1.074 (-0.955, 3.103)
Not useful	13 (3.4%)	
Social media platforms that were used to get news		
Facebook		
Instagram	290 (75.3%)	0.562 (-0.916, 2.041)
YouTube	18 (4.7%)	0.339 (-1.483, 2.161)
Telegram	28 (7.3%)	1.094 (-0.666, 2.855)
LinkedIn	4 (1%)	-16.772 (-5925.521,
Skype	7 (1.8%)	5891.977)
Snapchat	3 (0.8%)	0.831 (-1.553, 3.215)
Tiktok	4 (1%)	-16.227 (-6503.821,
Twitter	4 (1%)	6471.366)
Viber	7 (1.8%)	3.554*(0.301, 6.806)
WeChat	4 (1%)	0.034 (-3.054, 3.122)
WhatsApp	2 (0.5%)	1.834 (-0.863, 4.531)
	14 (3.6%)	-2.144 (-5.807, 1.520)
		1.521 (-2.433, 5.475)
No of social media they use		
3	41 (10.6%)	0.234 (-0.913, 1.381)
4	71 (18.4%)	-0.686 (-1.518, 0.146)
5	93 (24.2%)	-0.494 (-1.194, 0.207)
6 and above	180 (46.8%)	
Used social media during COVID-19		
Everyday	364 (94.5%)	3.734*(-6.673, -0.795)
Weekly	12 (3.1%)	-2.586 (-5.953, 0.781)
Monthly	5 (1.3%)	-2.805 (-7.178, 1.569)
Other	4 (1%)	
Posted on social media during COVID-19		
Very often	82 (21.3%)	0.334 (-0.866, 1.535)
Somewhat often	113 (29.4%)	0.555 (-0.573, 1.684)
Rarely	140 (36.4%)	-1.176*(-0.065, 2.287)
Never	50 (13.0 %)	
Checked social media as the first thing in the morning		
No	141 (36.6%)	0.667*(0.057, 1.278)
Yes	244 (63.4%)	
Mostly active on		
Facebook	333 (86.5%)	-0.276 (-1.441, 0.890)
Instagram	20 (5.2%)	0.382 (-1.236, 2.000)
Snapchat	3 (0.8%)	0.434 (-2.651, 3.519)
Twitter	6 (1.6%)	1.325 (-1.038, 3.668)
Other	23 (6%)	
News topics that were mostly observed on social media		
Social	141(36.6%)	0.031(-0.796, 0.858)
Health	124 (32.2%)	1.482*(0.173, 2.790)
Technological	15(3.9%)	0.047 (-0.790, 0.883)
Economical	13 (3.4%)	-0.059 (-1.604, 1.486)

Sports	20 (5.2%)	0.588(-0.586, 1.743)
Miscellaneous	30 (7.8%)	0.922 (-0.114, 1.958)
Political	13 (3.4%)	0.634(-0.688, 1.956)
Others	32(8.3%)	
The quality of Bangladeshi social media features covering COVID-19 is up to the mark		
Yes	205 (53.2%)	0.023 (-0.572, 0.618)
No	180 (46.8%)	
Posted information related to COVID-19		
Yes		
No	155 (40.3%)	0.230 (-0.401, 0.862)
	230 (59.7%)	
Need of purifying news of social media and follow secured policy during this pandemic		
Yes		
No	318 (82.6%)	-0.839*(-1.624, -0.055)
	67 (17.4%)	
Effects of social media on behavior and action during COVID-19		
Psychological		
Physical	165 (42.9%)	0.026 (-0.761, 0.814)
Physical Psyche	26 (6.8%)	0.621 (-0.656, 1.898)
All of them	29 (7.5%)	1.599*(-3.081, 0.118)
No impact	100 (26.0%)	-0.515 (-1.372, 0.343)
	65 (16.9%)	
Categories of shared information that create panic on people		
	42 (10.9%)	
Increasing COVID-19 infected patients	38 (9.9%)	-0.370(-1.451, 0.711)
Death toll expansion	50 (13%)	0.072(-1.073, 1.217)
Spreading fear causing information about COVID-19	32 (8.3%)	1.175*(-2.317, 0.033)
Broadcasting photos and videos related to COVID-19	173(44.9%)	-0.086(-1.307, 1.135)
Rumor about COVID-19	50(13%)	-0.173(-1.015, 0.669)
Others		

covering COVID-19 is not up to the mark. Among them, 40.3% (n=155) of participants published information and news related to COVID-19 and majority of them (n= 318, 82.6%) felt the necessity of purifying news of social media and maintain a secured policy during this pandemic. From Table 2, we also find that 42.9% (n=165) of the participants had psychological effects of social media, while 7.5% (n= 29) of them had physical psyche effects and 26 % (n=100) of the participants had all the effects (psychological, physical and physical psyche, Figure 2)

Table 2 also illustrates the categories of information that created panic mostly on social media. From this table we see, many of the participants (n= 173, 45%) said that the fake news about COVID-19 had mostly created panic on people and 13% (n=50) of participants answered that spreading fear causing information about COVID-19 created panic among them Further, 10.9% (n=42) participants said that increasing COVID-19 patients had created panic.

Here, the study participants who spent less than one hour every day on social media had lower significant effect on spreading fear among them through social media ($B = -1.881$, 95% CI: -3.512, -0.251). Besides, the participants who used "Snapchat" to get news of COVID-19 had higher significant effect on spreading fear through social media ($B = 3.554$, 95% CI: 0.301, 6.806). Further, the participants who used social media every day during COVID-19 had higher significant effect ($B = 3.734$, 95% CI: -6.673, -0.795) and who rarely posted any updates on social media had lower significant effect on spreading fear ($B = -1.176$, 95% CI: -0.065, 2.287). The participants who checked social media as the first thing in the morning had higher significant effect ($B = 0.667$, 95% CI: 0.057, 1.278) and who mostly read health news related to COVID-19 also had higher significant effect on spreading fear ($B = 1.482$, 95% CI: 0.173, 2.790).

Furthermore, the participants who had physical psyche effects of social media had higher significant value on spreading fear ($B = 1.599$, 95% CI: -3.081, 0.118). Spreading fear causing information about COVID-19 had also higher significant effect on spreading fear among people ($B = 1.175$, 95% CI: -2.317, 0.033).

4 DISCUSSION AND CONCLUSION

According to the results, it may be concluded that social media plays a major character in getting into the people during this pandemic. The majority of the participants used Facebook (75.3%), YouTube (7.3%), Instagram (4.7%), WhatsApp (3.6%) to get the information about COVID-19. That is, people are far more likely to use social media for gathering news and information than any other sources. There was a strong positive relationship between the use of social media platforms as sources of knowledge about COVID-19 and holding one or more conspiracy beliefs (BBC News, [2020](#)).

The results of table 2 indicate that spreading fear causing information about COVID-19 ($B = 1.175$, 95% CI: -2.317, 0.033) had significant influence on around 13% people during this pandemic situation, and also created panic among them. Moreover, as an impact of fear 7.5% of the participants had physical psyche effects where the effect was visibly significant.

As the world responds to the COVID-19 pandemic, we face the challenge of an overabundance of information related to the virus (WHO, [2021](#)). Misinformation on COVID-19 spreads widely. Nowadays, people are panicked just because they can't differentiate the true and false information on social media, thus the misinformation related to the pandemic are spread. Sometimes the panic created by news related to COVID-19 in Dhaka of Bangladesh was worse than the actual frequency of COVID-19 cases. One may suggest that social media should be banned but it's not a proper solution. Policies such as the complete banning of social media or suppressing messages related to COVID-19 can have serious implications as they may suppress life-saving information related to COVID-19 or may cause distrust in the motives of governing power (Kadam & Atre, [2020](#)). However, we should help to stop misleading information. If anyone notices any content online that may be fake or not true, directly file a complaint to the authority of social media. We should communicate to media experts so that only true information can be published on social media.

Around 82.6% people feel the necessity of setting up filters for social media and maintaining a secured policy for spreading news which is significant to minimize the panic through social media. By single effort it is quite impossible to combat the spread of misinformation. All the general people including people of media like journalists should give collaborative effort to solve this problem. It's high time the government took all possible steps to overcome the problematic issues related to any pandemic or health situations. A systematic and in-depth analysis of misinformation related to COVID-19 pandemic needed to be carried out before recommending any strategies to refute misinformation. Previous research suggests various online misinformation prevention techniques, such as preparing myth busters, digital surveillance, reliable information circulation, medical information dissemination, accuracy nudges, and the use of artificial intelligence (Al-Zaman, 2021).

This study reveals that using social media every day during COVID-19, having physical psyche effects of social media on behavior and activities, reading mostly health news related to COVID-19, spreading fear causing information about COVID-19 had higher significant effect on people. As social media is now very easy to get involved with, people of all ages are getting information from this source. It is a source to create panic easily by spreading false news or pictures. So, we have to aware people to justify the information before trusting it. Nowadays, young people are consuming information and news without knowing the information is even reliable or not and that information is spreading among people so easily. Spreading of unworthy or fake information makes people panicked unnecessarily which affects the pandemic situation badly. So, we have to share more useful information on social media and people should have proper knowledge about news and information before sharing it.

5. REFERENCES

Al-Zaman, M.S., 2021, COVID-19-related online misinformation in Bangladesh, *Journal of Health Research*, 35, 4.

<https://www.emerald.com/insight/content/doi/10.1108/JHR-09-2020-0414/full/html>

Easton, M., 2020, Coronavirus: Social media 'spreading virus conspiracy theories, BBC News. <https://www.bbc.com/news/uk-53085640>

Gold, H., 2020, Inside the WHO's fight to stop false information about coronavirus from spreading, NEWSChannel 2. <https://www.wktv.com/content/news/568519502.html>

Kadam, A.B., and Atre, S.R., 2020, The negative impact of social media panic during the COVID-19 outbreak in India, *Journal of Travel Medicine*, 27, 3. <https://academic.oup.com/jtm/article/27/3/taaa057/5822107>

La, V., Pham, T., Ho, M., Nguyen, M., P. Nguyen, K., . . .Vuong, Q., 2020, Policy Response, Social Media and Science Journalism for the Sustainability of the Public Health System Amid the COVID-19 Outbreak: The Vietnam Lessons, *Sustainability*, 12, 7. <https://www.mdpi.com/2071-1050/12/7/2931>

Muwahed, J., 2020, Coronavirus pandemic goes viral in the age of social media, sparking anxiety, ABC News. <https://tinyurl.com/ybnms2se>

Rothschild, N., 2020, Coronavirus panic sells as alarmist information flies on social media, Axios. <https://www.axios.com/coronavirus-social-media-b56326b6-ab16-4c8a-bc86-e29b06e5ab2b.html>

Victor, D., 2020, Panic and Criticism Spread on Chinese Social Media Over Coronavirus, The New York Times. <https://www.nytimes.com/2020/01/24/world/asia/china-social-media-coronavirus.html>

World Health Organization (WHO), 2021, How to report misinformation online. <https://www.who.int/campaigns/connecting-the-world-to-combat-coronavirus/how-to-report-misinformation-online>

Yasmin, S., Ali, H, M., Rahman, S., and Salma, N., 2021, Preference and Feasibility of Online Classes among Bangladeshi Students during COVID-19 Pandemic, *International Journal of Ecological Economic and Statistics*, 41, 1. <http://www.ceser.in/ceserp/index.php/ijeess/article/view/6674>