



# The Negative Impact of Social Media during COVID-19 Pandemic

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## Abstract

The coronavirus pandemic is a global pandemic of Coronavirus Disease 2019 (COVID-19) resulting from the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV2). Despite its numerous benefits for sharing health information, social media has raised several concerns in terms of posing panic among the general population around the world during the COVID-19 pandemic. The main objective of this study was to investigate the negative impact of social media during the COVID-19 outbreak. A web-based poll was used to collect data from social media users. Snowball sampling was used to acquire information from participants for 1 month, from September 1 to September 30, 2020. To examine the effect of social media on fear among participants, the study employed Cohen's *d* statistic, analysis of variance, Chi-squared test, and linear regression analysis. The study results showed that more than three-fourth (73.26%) used Facebook followed by Telegram by 14.49%. Health news was the most frequently seen, read, or heard with 88.20% of the total. Moreover, 86.73% of respondents experienced panic, while only 13.27% was not. Compared to males, females were more likely to follow health news ( $p < 0.001$ ). The majority of participants reported being psychologically affected, while only a few were physically affected. Females were substantially more affected mentally and reported significantly more fear than males ( $p < 0.001$ ). The effect of social media panic is associated with participants' age, and gender at a 5% level of significance. A significant positive link between social media and the diffusion of COVID-19 fear has been shown in this study. According to the result of regression analysis, social media usage has a significant effect on the spread of panic among participants at a 5% level of significance. Study revealed that social media use has a significant impact on the development of panic among people regarding the COVID-19 epidemic, with possibly detrimental psychological and mental health repercussions. This study also discovered a strong correlation between COVID-19 fear and social media. According to the findings, the impact of social media on respondents' terror levels differs depending on their age and gender. The government should take steps to punish those who spread false information or fake news to the public.

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**Keywords** Corona virus · Fake news · Panic · Social media · Pandemic

## Background

The Coronavirus Pandemic (COVID-19) is an infectious disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV2) (Astuti, 2020; Pourhossein et al., 2020). The virus was initially discovered in Wuhan, China, in December 2019 (Ralph et al., 2020). On January 30, 2020, the World Health Organization declared an international public health emergency, and on March 11, 2020, it declared a pandemic (Chauhan, 2020; Wolkewitz & Puljak, 2020). Millions of new cases and deaths have been confirmed worldwide, making it one of the worst pandemics in history (Rose-Redwood et al., 2020). The Federal Ministry of Health (FMOH) confirmed a case of COVID-19 on March 13, 2020, and is the first case reported in Ethiopia (Abate et al., 2020; Mohammed et al., 2020). In Ethiopia, new cases for six consecutive months since the first case was reported were as follows: March (26), April (105), May (1041), June (4674), July (11,684), and August (34,601) (Nyoni et al., 2020).

During a pandemic breakout, COVID-19 material has been distributed on several websites, and readers have been given various instructions on how to prevent the virus from spreading, such as keeping a safe distance from one another, disguising, and washing their hands (Abdullahi et al., 2020; Kebede et al., 2020; Parikh et al., 2020). Social media became a critical area to communicate and share knowledge at a period when social distance and engagement with people were constrained. Many people have turned to social media for connections and entertainment because they have been ordered to stay at home (Ahmad & Murad, 2020). Many people are quarantined at home or in hospitals (Mohindra et al., 2020; Wilder-Smith & Freedman, 2020). Social media can be an efficient source of information and an effective means of keeping up with medical knowledge (Ahmad & Murad, 2020; Nisar & Shafiq, 2019).

The COVID19 pandemic has changed how people throughout the world use social media, including celebrities, world leaders, and professionals. Social media services were used to disseminate information and find humor and distraction from the pandemic through internetmemes (Nisar & Shafiq, 2019; Vincent et al., 2020). However, social distancing has forced a lifestyle change and put pressure on mental health for many people (Coroiu et al., 2020; Hwang et al., 2020; Son et al., 2020; Vos, 2020). Many online counseling services that use social media were created and gained popularity because they could do it safely and connect psychiatrists with those who need them (Ahmad & Murad, 2020).

Direct access to content through platforms such as Facebook, Twitter, YouTube, Instagram, Telegram, and others leaves users vulnerable to rumors and questionable information (Bavel et al., 2020). Information can strongly influence individual behavior, limit group cohesion, and thus the effectiveness of government countermeasures against the virus (Ahmad & Murad, 2020; Bavel et al., 2020). Politicians and health organizations at the federal and state levels share information quickly and reach many people using the platforms (Hamzah et al., 2020; Kearney et al., 2020).

The COVID-19 pandemic has resulted in a flood of misinformation and fake news being created and disseminated quickly (Tagliabue et al., 2020). The current study considered “misinformation” as both incorrect information that is disseminated instinctively by those who believe the information is correct, and inaccurate information shared consciously.

During the pandemic lockdown, information overload, infodemic, cyberchondria, and fake news are reported to have a relationship with panic spreading directly or indirectly (Laato et al., 2020a, 2020b). A previous study reported that information overload leads to an increased likelihood of fake news sharing by increasing consumers’ psychological strain (Islam et al., 2020; Laato et al., 2020a, 2020b). In addition to this exposure to infodemic, knowledge can cause psychological disorders and panic, fear, depression, and fatigue (Mukhtar, 2019; Teng et al., 2020).

Nonetheless, most individuals trust social media and prefer to use social media platforms for information rather than the official EFMOH website. Currently, the usage of social media is rapidly rising among people in Ethiopia. Internet usage is strongly associated with behaviors related to health information (Lipschultz, 2020). Social media is an information vacuum; it spreads both knowledge and information at an exponential rate, which allows for information exaggeration. The negative role played by social media and the possibility of information pollution have long been criticized from a variety of perspectives. The COVID-19 pandemic has focused attention in particular on the bad role played by social media and the potential for “information pollution.”

Even if social media serves a beneficial societal function in sharing critical information about the epidemic, it also serves a harmful function in increasing panic by disseminating false information. The major goal of this study was to investigate the negative impact of social media during the COVID-19 outbreak.

## Methods

### Study Design and Setting

The web-based cross-section study design was used in the current study. The study utilized the quantitative methodology for the collection of data from social media users in Ethiopia.

### Sampling Technique

Participants’ information was collected using the method of snowball sampling. This is a type of non-probability sampling technique, in which existing subjects provide referrals to recruit samples required for a study. Since the Snowball sampling method works by starting from some initial subjects and continues to increase, for the first time we have sent around 50 individuals and five groups on social media. Within a specified time, interval (September 1st–30th, 2020), we have obtained a

response from 1998 participants. Out of 1998, a completed questionnaire was obtained from 1967 with a response rate of  $(1967/1998)=98.4\%$ .

## Data Collection Method

Because the Ethiopian government-enforced obligatory isolation measures at the national level and asked the population to reduce direct face-to-face interaction and separate themselves at home, we employed a web-based technique to create, disseminate, and collect data for the survey. An anonymous electronic survey was created and delivered to Ethiopians using a variety of social media platforms, including Facebook, Telegram, Twitter, Instagram, WhatsApp, and others. Social media users took part in a random online poll to investigate the effects of social media on the spread of COVID-19 panic and the impact of social media on human mental health. Some potential study participants utilize social media to invite friends, relatives, and others to take part. Data have been collected for one month between 1 September 2020 and 30 September 2020.

## Tools of Data Collection

In the current study, we used a self-administered questionnaire which was created and used by Ahmad and Murad (Ahmad & Murad, 2020). The questionnaire used by this study had 4 parts. Part 1: Questions about sociodemographic variables like age, gender, marital status, religion, and education. Sociodemographic variables age in years ( $\leq 18$ , 19–30, 30–50,  $\geq 51$ ), gender (male, female), marital status (single, married, widowed, divorced), religion (Orthodox, Protestant, Muslim, Others), and education (just read and write, primary/secondary school, diploma/some certificates, bachelor degree, master's degree, Ph.D. and above). Part 2: The question included the type of social media platforms used to obtain information regarding COVID-19 during the pandemic. Part 3: Questions about the impact of social media on spreading panic among social media users during the COVID-19 pandemic. Part 4: Questionnaire focused on COVID-19's negative impact on participants.

## Method of Statistical Data Analysis

Descriptive statistical analysis was carried out to highlight participants' demographic features. Furthermore, the effects of social media on the propagation of fear about COVID-19 were analyzed by linear regression analysis. To examine the mean difference between the two groups, we applied an independent sample *t*-test and for more than two groups, we used Analysis of variance (ANOVA). The study also used Cohen's *d* for comparison of mean scores. We used Chi-square to test the relationship of groups. Two-sided statistical tests were judged statistically significant with a *p*-value  $< 0.05$ . We performed all statistical analyses using (IBM) SPSS version 20.

## Results

### Demographic Profile of Respondents

Table 1 depicts the overall characteristics of the study's participants. More than half of the 1967 respondents, 1058 (53.8%), were female, and 909 (46.2%) were male. Regarding the age of the respondents, 1146 (58.3%) were between the ages of 19 and 30, with only 36% over the age of 51 years. Of the 1967 people surveyed, 47.1% were single and 38.0% were married. Approximately half of the respondents 971 (49.4%) were members of the orthodox religion, followed by protestants 74 (37.7%), and Muslims 238 (12.1%). When it comes to the highest qualification education of respondents, the majority of respondents 37.3% (733 of them) have a bachelor's degree.

### Summary of Social Media Platforms Used

The most commonly used social media platforms were Facebook 1441 (73.26%) followed by Telegram 285 (14.49%) (Table 2). Facebook is at the top because it is the most popular social media platform used everywhere in Ethiopia.

**Table 1** Sociodemographic characteristics study participants

Variables	Categories	N	%
Gender	Male	909	46.2
	Female	1058	53.8
Age	Below 18	210	10.7
	19–30	1146	58.3
	30–50	541	27.5
	51 and above	70	3.6
Marital status	Single	927	47.1
	Married	748	38.0
	Widowed	206	10.5
	Divorced	86	4.4
Religion	Orthodox	971	49.4
	Protestant	742	37.7
	Muslim	238	12.1
	Others	16	0.8
Highest education qualification	Just read and write	45	2.3
	Primary/secondary school	534	27.1
	Diploma/some certificates	267	13.6
	Bachelor degree	733	37.3
	Master's degree	335	17.0
	Ph.D. and above	53	2.7

**Table 2** Social media platforms are used to get news about coronavirus disease

Types of social media platforms	N	N%
Facebook	1441	73.26
Telegram	285	14.49
YouTube	85	4.32
Twitter	74	3.76
Instagram	34	1.73
Whats app	6	0.31
Imo	3	0.15
Linked in	3	0.15
Tik Tok	4	0.20
Skype	4	0.20
Viber	5	0.25
Other	23	1.17

### Summary of News Heard, Seen, or Read on Social Media Platforms

The participants also asked the type of news issue they heard/seen/read about the most within social media in the 4 months since the outbreak began? As stated in Table 3, the highest proportion of participants 1735 (88.2%) had heard, seen, or read health news (COVID-19), while the lowest proportion of participants had heard, seen, or read miscellaneous news and cultural news 7 (0.4%) each. According to the poll findings of the 1967 participants, the COVID-19 health issue is influencing the kind of news subjects that are most widely followed on social media.

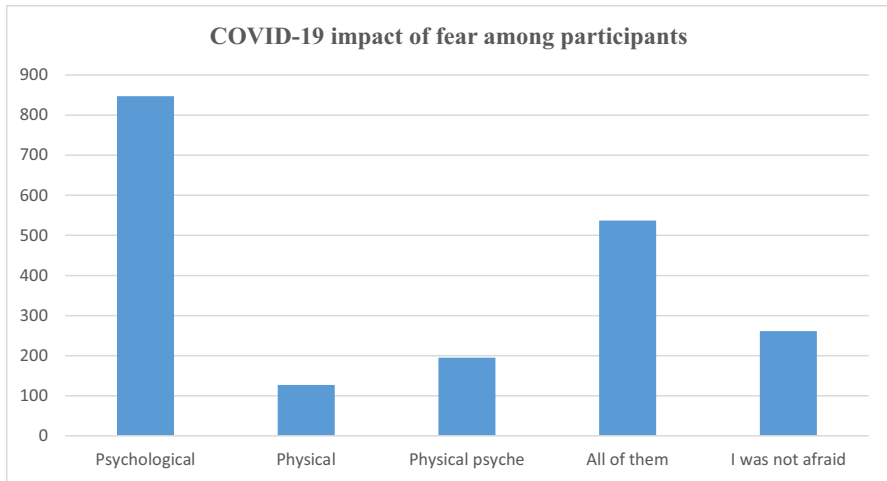
Figure 1 depicts the answers of 1967 participants, as well as the influence of COVID-19-related panic caused by social media. According to the pie chart, 847 (43.1%) of the participants were psychologically impacted, while 537 (27.3%) said they were impacted by all of them. A small number of people said they were physically impacted 127 (6.5%). According to the reactions of the 1967 participants, fear was largely a psychological response that could produce a loss of physical immunity, which is one of the causes of poor results when infected with COVID-19. As shown in Fig. 1, generally 86.73% of respondents experienced panic, while only 13.27% did not.

### Information Type Shared on Social Media

To investigate the impact of social media on respondents' panic over COVID-19, we studied and contrasted social media users' responses to the question of which type of information has the greatest impact on causing panic on social media. "Which type of information has had the greatest impact on social media panic?" the researchers questioned the participants in this study. As indicated in Table 4, the majority of respondents 634 (32.2%) agreed that fake news regarding the COVID-19 outbreak is the most common type of material used to spread fear about the disease. Furthermore, 398 (20.2%) agreed with the "publication of images and videos of cities and

**Table 3** Types of news heard, seen, or read by participants

	N	N %
Question 2: During the four months after the pandemic began, what news topic have you heard/seen/read the most on social media?		
Social news	30	1.5%
Health news (COVID-19)	1735	88.2%
Technology news	24	1.2%
Economy news	8	0.4%
Sport news	137	7.0%
Miscellaneous news	7	0.4%
Political news	19	1.0%
Cultural news	7	0.4%



**Fig. 1** Summary of Covid-19 impacts of fear on study participants

**Table 4** Information types that are shared on social media

Type of information shared on social media	N	%
Dissemination of the number of infections (A)	397	20.2
Dissemination of the death toll (B)	215	10.9
Dissemination of fear-inducing information about COVID-19(C)	139	7.1
Publication of photos and videos of the cities and countries with a high number of cases (D)	398	20.2
Fake news about COVID-19 (E)	634	32.2
A and B	30	1.5
A and C	18	0.9
A and D	19	1.0
A and E	19	1.0
B and C	17	0.9
Others	81	4.1

countries with a high number of cases” and 397 (20.2%) confirmed “dissemination of the number of COVID-19 infections”. This means that during the crisis, bogus news and misinformation, as well as statistics like the number of incidents, have an immediate and widespread influence on people.

### Responses for COVID-19–Related Questions by Gender of Respondents

About 1517 (77.1%) of the participants thought that posting more information related to COVID-19 on social media had caused people to become fearful and panicked, whereas 253 (12.9%) did not think. The analysis showed that



1500 (76.3%) of the participants thought that, on social media pages, groups, and accounts addressing COVID-19 in Ethiopia are effective. Only 255 (13.0%) answered neutrally. The analysis showed that the participants thought that 1500 (76.3%) on social media pages, groups, and accounts addressing COVID-19 in Ethiopia are effective. Only 25 (13.0%) answered neutrally. When asked if they would share information about COVID-19 on social media, 1440 (73.2%) responded yes, of which 53.8% were females and 46.2% males, respectively. On social media platforms, the majority of the respondents 1471 (74.8%) agreed with the necessity of following a specific policy during the time of the COVID-19 pandemic while 276 (14.0%) were neutral (Table 5).

According to Table 6, 751 (52%) of the 1441 Facebook users in this study were female, while 690 (48 percent) were male. The Telegram users were female (157), while the male (128). However, no male respondents mentioned LinkedIn or IMO, while only three female respondents (0.3%) mentioned each platform.

Furthermore, of study participants that “Health news (COVID-19)” were,  $N=810$  male and 925 females. Regarding “read sports news”, males and females were  $N=65$  and  $N=75$ , respectively. Regarding social media platforms with age, more than half 829 (57.5%) of Facebook users were aged between 19 and 30 years. Additionally, of those that sports news, 17 (12.4%) were aged less than 18 years, 82 were aged 19–30 years, 34 were aged 31–50 and only 4 were aged 51 above. The majority of individuals who heard/saw/read about health news on social media (COVID-19) were aged 19–30 years, with 1012 (58.3%) followed by ages of 31–50 years with (27.5%).

### **Association of Between Impact of COVID-19 and Variables Gender, Marital Status, and Age**

The Chi-squared test of association revealed a significant relationship between gender, marital status, and age in terms of impact fear of COVID-19 (Table 7). The majority of respondents, 887 (43.11%) were psychologically affected, while the number of physically affected people was 127 (6.5%), which was the lowest. The influence of social media panic about COVID-19 was shown to be significantly related to the respondents’ gender ( $p$ -value = 0.004). Female respondents were much more mentally affected than male respondents. Psychological effects were most common among respondents aged 19–30 years 511 (60.3%), with respondents aged  $\geq 51$  yearshaving the least effect ( $p < 0.001$ ). About 261 (13.3%) of the respondents said that spreading panic on social media had little effect on them, hence they were unconcerned about COVID-19. In comparison to other respondents, respondents aged  $\geq 51$  years reported lower fear of COVID-19. A significant association was observed between the impacts of social media panic about COVID-19 with the age group of the respondents ( $p < 0.001$ ). Answers of the respondents revealed that most respondents face psychological fear that leads to decreasing body immunity when infected with the coronavirus.

**Table 5** Some questions according to the gender of participants

	Male		Female		N (%)
	N (%)	N (%)	N (%)	N (%)	
Question 3: Do you believe that more COVID-19 news being shared on social media has caused people to become fearful and panicked?	No	97(10.7)	100(9.5)	197(10.0)	
	Neutral	112(12.3)	141(13.3)	253(12.9)	
	Yes	700(77.0)	817(77.2)	1517(77.1)	
Question 4: Do you think the social media pages, groups, and accounts addressing COVID-19 in Ethiopia are effective?	No	104(11.4)	108(10.2)	212(10.8)	
	Neutral	115(12.7)	140(13.2)	255(13.0)	
	Yes	690(75.9)	810(76.6)	1500(76.3)	
Question 5: Have you shared any COVID-19-related information or news on social media?	No	110(12.1)	121(11.4)	231(11.7)	
	Neutral	133(14.6)	163(15.4)	296(15.0)	
	Yes	666(73.3)	774(73.2)	1440(73.2)	
Question 6: Filters need to be set up for social media and a specific policy followed during humanitarian crises such as the spread of COVID-19	No	106(11.7)	114(10.8)	220(11.2)	
	Neutral	122(13.4)	154(14.6)	276(14.0)	
	Yes	681(74.9)	790(74.7)	1471(74.8)	

**Table 6** A summary of some of the questions based on the participant's gender and age (N = 1967)

	Gender		Age				
	Male	Female	Below 18	19–30	31–50	Above 50	
Question 1: Which social media platform do you use to get news and information about COVID-19?							
Facebook	690(75.9%)	751(71.0%)	161(11.2%)	829(57.5%)	410(28.5%)	41(2.8%)	
Telegram	128(14.1%)	157(14.8%)	22(7.7%)	173(60.7%)	76(26.7%)	14(4.9%)	
YouTube	32(3.5%)	53(5.0%)	10(1.8%)	60(70.6%)	11(12.9%)	4(4.7%)	
Twitter	32(3.5%)	42(4.0%)	11(14.9%)	33(44.6%)	26(35.1%)	4(5.4%)	
Instagram	12(1.3%)	22(2.1%)	3(8.8%)	28(82.4%)	2(5.9%)	1(2.9%)	
Whats App	1(0.1%)	5(0.5%)	1(16.7%)	1(16.7%)	2(33.3%)	2(33.3%)	
Imo	0(0.0%)	3(0.3%)	1(3.3%)	2(66.7%)	0(0.0%)	0(0.0%)	
LinkedIn	0(0.0%)	3(0.3%)	0(0.0%)	1(33.3%)	1(33.3%)	1(33.3%)	
TikTok	1(0.1%)	3(0.3%)	0(0.0%)	3(75.0%)	1(25.0%)	0(0.0%)	
Skype	1(0.1%)	3(0.3%)	0(0.0%)	2(50.0%)	2(50.0%)	0(0.0%)	
Viber	0(0.0%)	5(0.5%)	1(20.0%)	2(40.0%)	1(20.0%)	1(20.0%)	
Other	12(1.3%)	11(1.0%)	0(0.0%)	12(52.2%)	9(39.1%)	2(8.7%)	
Social news	10(1.1%)	20(1.9%)	4(13.3%)	16(53.3%)	8(26.7%)	2(6.7%)	
Health news (COVID-19)	810(89.1%)	925(87.4%)	184(10.6%)	1012(58.3%)	477(27.5%)	62(3.6%)	
Technology news	10(1.1%)	14(1.3%)	3(12.5%)	12(50.0%)	9(37.5%)	0(0.0%)	
Economy news	2(0.2%)	6(0.6%)	1(12.5%)	6(75.0%)	1(12.5%)	0(0.0%)	
Sport news	62(6.8%)	75(7.1%)	17(12.4%)	82(59.9%)	34(24.8%)	4(2.9%)	
Miscellaneous news	2(0.2%)	5(0.5%)	0(0.0%)	4(57.1%)	2(28.6%)	1(14.3%)	
Political news	8(0.9%)	11(1.0%)	0(0.0%)	10(52.6%)	9(47.4%)	0(0.0%)	
Cultural news	5(0.6%)	2(0.2%)	1(14.3%)	4(57.1%)	1(14.3%)	1(14.3%)	
Question 2: During the four months after the pandemic began, what news topic have you heard/seen/read the most on social media?							

**Table 7** The Chi-squared ( $\chi^2$ ) test of association for the variable impact of fear with gender, marital status, and age

		Psychological		Physical		Physical psyche		all of them		I was not afraid		P-value <sup>3</sup>
		N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	
Gender	Male	402(44.2%)	57(6.3%)	110(12.1%)	224(24.6%)	116(12.8%)	0.004					
	Female	445(42.1%)	70(6.6%)	85(8.0%)	313(29.6%)	145(13.7%)						
Marital status	Single	429(46.3%)	62(6.7%)	87(9.4%)	239(25.8%)	110(11.9%)						
	Married	306(40.9%)	52(7.0%)	81(10.8%)	233(31.1%)	76(10.2%)	0.073					
	Widowed	79(38.3%)	12(5.8%)	15(7.3%)	41(19.9%)	59(28.6%)						
	Divorced	33(38.4%)	1(1.2%)	12(14.0%)	24(27.9%)	16(18.6%)						
Age	Below 18	126(60.0%)	7(3.3%)	17(8.1%)	41(19.5%)	19(9.0%)						
	19–30	511(44.6%)	93(8.1%)	122(10.6%)	332(29.0%)	88(7.7%)	<0.001					
	30–50	189(34.9%)	21(3.9%)	52(9.6%)	155(28.7%)	124(22.9%)						
	51 and above	21(30.0%)	6(8.6%)	4(5.7%)	9(12.9%)	30(42.9%)						

<sup>3</sup>Chi-squared ( $\chi^2$ ) test *p*-values, *P*-value significant at  $\leq 0.05$

**Table 8** Cohen's d for comparison of meanscores for COVID-19–related questions by gender

	Question 3:	Question 4:	Question 5:	Question 6:
Gender	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Male	2.66(0.661)	2.64(0.677)	2.61(0.693)	2.63(0.683)
Female	2.68(0.639)	2.66(0.654)	2.62(0.682)	2.64(0.668)
Cohen's d	0.031	0.030	0.015	0.029

\*SD, standard deviation

**Table 9** Negative impact of sharing COVID-19 pandemic news

Measurement items	Mean	SD
1. I do often consider the COVID-19 Pandemic	4.37	0.751
2. I am afraid of contracting the COVID-19 infection based on what I've read on social media	4.39	0.745
3. Because I was concerned about the COVID-19 epidemic, I have trouble sleeping regularly	4.22	0.814
4. Social media posts on coronavirus diseases frequently have a bad impact on me	3.79	0.871
5. I often do not have the idea of COVID-19 Infection freak I outpost on social media	3.56	0.920

Note: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), &amp; Strongly Agree (5)

### A Comparison of the Mean for COVID-19–Related Questions Gender of Respondents

Participants were asked if they think that publishing more news related to COVID-19 on social media has spread fear and panic among people (Question 3). Since the Cohen's d statistic showed positive values, hence the second group (Female) higher mean value. Therefore, females were more likely than males to support this idea. Similarly, the Cohen's d values for Question 4 are positive, females were more likely to think that the social media pages, groups, and accounts addressing COVID-19 in Ethiopia are effective, as compared to males. Moreover, as compared to males, females had a higher mean score on sharing any COVID-19-related information or news on social media (Question 5). Females believed that filters for social media should be set up, and a special strategy should be followed during humanitarian emergencies like the spread of COVID-19 (Table 8).

### Effect of Social Media on Spreading Panic among Respondents during COVID-19 Pandemic

This section examined the negative effects (panic/care) of the pandemics COVID-19 obtaining, reading, and sharing. This negative effect (panic/worry) has been evaluated based on how frequently respondents think about the pandemic, social media reading, and dread of COVID-19, as demonstrated in Table 9. The most commonly

agreed item was “I panic about contacting the infection by my reading on the social media” (mean = 4.39, SD = 0.745) while the smaller mean scores were item five, “I often do not have the thought of an infection fraud COVID-19 I post on the social media” (m = 3.56, SD = 0.920) (Table 9).

The effect of the social media variable was found to be statistically significant at a 5% level of significance ( $P$ -value  $\leq 0.001$ ). Results further demonstrate that the statistical association between social media and the spread of panic about COVID-19 is positive. The total variation was found to be ( $R^2 = 0.539$ , 53.9%), which points out that 53.9% of the variation in spreading panic regarding COVID-19 has been explained by the social media variable, and the other variables (26.1%) are due to random error (Table 10). This result reveals that 53.9% of the factors that affect the spreading of panic regarding COVID-19 are related to social media.

## Discussion

During a pandemic outbreak, the spread of inaccurate information on social media significantly contributed to mental health issues (Zarocostas, 2020). An infodemic is also defined as “false or inaccurate information, especially that which is deliberately intended to deceive” (Lazer et al., 2018). Furthermore, information overload and fake news about the pandemic have a significant impact on people all over the world. Since the widespread and repeated dissemination of unauthenticated and sometimes dangerously incorrect information has had disastrous consequences. As a result of misinformation, people have died (for example, in Iran from the consumption of large amounts of alcohol, and in the USA by taking antimalarial for disease prophylaxis) (Hickok, 2020). COVID-19 has resulted in increased discrimination and racism, primarily among Asians and Africans (Tanaka et al., 2020).

This study looked at the negative impact of social media on spreading concern about the coronavirus outbreak by using data from social media users in an online poll. According to the current study’s findings, social media played a significant influence in influencing responders during the COVID-19 epidemic. A small percentage of the participants within the current study failed to experience fear or panic during the COVID-19 pandemic lockdown, while more than three fourth where experienced panic. This is consistent with previous study findings from Iraq (Ahmad & Murad, 2020; Radwan et al., 2021).

**Table 10** Model summary and ANOVA results

Model	Unstandardized coefficients		Standardized coefficients	t	p-value	ANOVA			
	B	Std. Error				Beta	R	R Square	F
(Constant)	.480	.030		16.093	.000	0.660	0.539	5575.104	0.000
Social media use	.810	.011	.860	74.667	.000				

A study from Gaza Strip, Palestine by Radwan et al. (2021) reported that Facebook is the most commonly used social media platform. Similarly, our study revealed that Facebook was the most popular social media for getting more information about COVID-19 news. Furthermore, another study from Iraq found that Facebook was the most popular platform, with more than a third of those surveyed spending two up to four hours each day on it (Arafat et al., 2020). Because Facebook is the most extensively used social media network in Ethiopia, it is placed first. This could be because it can be accessed using existing software rather than cellphones, computers, or other devices. As a result, it has become a popular mode of communication and information collection on health and science-related topics (Hargittai et al., 2018; Radwan et al., 2021). At the time of the COVID-19 lockdown, internet users turned to social media, notably Facebook, for a variety of reasons, including communicating with friends, families, as well as staying informed on the COVID-19 outbreak in their countries (Ahmad & Murad, 2020; Brindha et al., 2020; Ohme et al., 2020; Raamkumar et al., 2020; Radwan et al., 2021).

Females make up more than half of Facebook users, according to the findings. This suggests that females were more likely than males to utilize Facebook to stay up to date on COVID-19 news. This result matched the findings of Biernatowska et al. (2017) which found that females were more likely than males to use Facebook and see it as an important part of their lives. This might be because Facebook allows users to publish extensive and full-text posts regarding COVID-19. Some males, particularly those with limited time, may avoid using it to preserve time for other duties.

According to the current study, bogus news on the COVID-19 outbreak is the most popular sort of material used to generate panic about the disease. The current findings also suggest that participants believe that spreading more COVID-19-related news on social media has promoted fear and terror among the respondents. Females were much more inclined to support this viewpoint than males. This is in line with a prior study that found the COVID-19 pandemic is having an impact on the most popular news on social media sites. Health News (COVID-19) was the most read/seen/heard news by the respondents, whether real or false medical (Ahmad & Murad, 2020; Park et al., 2020). This could be due to a desire to be updated about all facets of the COVID-19 outbreak and its impact on various aspects of life. On social media platforms, filters need to be set up for social media and a specific policy followed during humanitarian crises such as the spread of COVID-19. Similar studies reported that preventing the spread of fake news, filtering social media content, and adhering to proper policies are all necessary processes for controlling the detrimental impact of fake news and disinformation on people's public health (Ahmad & Murad, 2020; Arafat et al., 2020; Radwan et al., 2021).

The study revealed that the majority of the fear among respondents was largely psychological whereas a few respondents said they were physically affected. Respondents became more exposed to reading, hearing, or watching news linked to the COVID-19 as their time spent on social media increased, and as a result, they were psychologically affected. Several studies conducted during the COVID-19 pandemic reported similar results (Ahmad & Murad, 2020; Fekih-Romdhane et al., 2020; Lee et al., 2020; Stainback et al., 2020). In the current study, a large number of

participants were psychologically affected, and nearly half of them are females. This indicates that female respondents were psychologically affected significantly more than males. The study's findings also revealed a statistically significant link between fear's effects and gender. This result supports the previous studies conducted during the COVID-19 pandemic, which found that females had much higher levels of despair, fear, and anxiety than males (Evren et al., 2020; Fekih-Romdhane et al., 2020; Hou et al., 2020; Radwan et al., 2021; Rodríguez-Hidalgo et al., 2020; Stainback et al., 2020). This could be because women express emotions more than men, and the COVID-19 epidemic may have exacerbated the problem (Hou et al., 2020). The results also showed that there is a significant association between the impact of fear and the age group of respondents. The findings suggested that psychological impacts were more common in elderly people than in children. The older respondents are more worried and depressed than the younger ones (Ahmad & Murad, 2020; Gao et al., 2020; Hwang et al., 2020; Lee et al., 2020; Radwan et al., 2021). This could be because they are anxious for a variety of reasons, including their dread of being infected by the coronavirus. Worry was found to be more common in elderly people than in children, owing to the existence of numerous physical and emotional changes that could contribute to anxiety development (Radwan et al., 2021).

Furthermore, the result from regression analysis suggested that social media and spreading panic about the COVID-19 pandemic have a substantial positive correlation. According to the study, respondents have a problem with social media dependency, being unable to distinguish which material on social media is trustworthy, and which is fake news and rumors about the COVID-19 epidemic. Fear, panic, anxiety, and despair are all increased in respondents because of these activities.

A previous study reported that panic caused by the dissemination of knowledge about the COVID-19 pandemic on social media spreads quicker than the virus itself (Ahmad & Murad, 2020; Radwan et al., 2021). Another study (Mertens et al., 2020) discovered that higher exposure to COVID-19 misinformation on social media increases panic and fear. The significance of social media during the COVID-19 epidemic was underlined by Odriozola-González et al. (2020). They stated that social media has both a positive and negative impact; proper use of social media platforms can aid in the rapid dissemination of trusted information, sharing possible treatments, avoiding infection, quarantine measurements, and follow-up protocols for both suspected and confirmed COVID-19 cases. On the other hand, the use of social media platforms to promote fake news, misinformation, rumors, myths, and pessimistic information about quarantine states has serious implications, resulting in individuals' mental health being destroyed.

### Limitations and Strengths of the Study

The current study tried to assess the impact of social media during the COVID-19 lockdown in Ethiopia. Some limitations while conducting this study are: first, a causal relationship cannot be proved in this cross-sectional study. Second, we conducted the self-reported questionnaire, which might contribute to some amount of answer bias. In addition to the variables, we addressed there may be other factors that



were related to the panic among respondents, which require further study. Despite this limitation, the strength of the current study is that it is among a very few studies in developing countries which was done on a timely issue and conducted during that such difficult time.

## Conclusion

A current study shows that social media has a substantial effect on the spreading of panic among responder people about the COVID-19 pandemic, with a possible harmful impact on their psychological and mental health. This study also indicated a significant positive association between social media and the spread of COVID-19 fear. During the lockdown, respondents used social media to interact with their friends as well as to learn about and be informed about the COVID-19 epidemic. The study suggested that the influence of social media on respondents' terror levels varies based on their age and gender. Government and concerned bodies should collaborate to offer people reliable COVID-19 resources and timely advice. It is also recommended that the government take action to punish people with huge followings who spread unsupported notions to the general population. We can safeguard people from this new virus and lessen its detrimental effects on their health in addition to taking preventive measures. These findings may help policymakers reduce concern among participants because of the COVID-19 outbreak.

**Abbreviations** ANOVA: Analysis of Variance; COVID-19: Corona Virus Disease 2019; MOH: Minister of Health; WHO: World Health Organization

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**Data availability** Data used in the current study are available on reasonable request to the corresponding author.

## Declarations

**Ethics approval and consent to participate** Support letter was obtained from Mizan-Tepi University, College of Natural Science, Department of Statistics. Each participant has full of right to be withdrawn from the study if not interested. verbal consent was taken from each participant. Personal identity is not used to protect confidentiality.

**Conflict of interest** The authors declare no competing interests.

## References

- Abate L., Bekele A.E., Bedada B. (2020). Status of distribution of coronavirus disease (COVID-19) in Ethiopia within first three months. *Academic Journal of Research Scientific Publication*.
- Abdullahi, L., Onyango, J. J., Mukiira, C., Wamicwe, J., Githiomi, R., Kariuki, D., Mugambi, C., Wanjohi, P., Githuka, G., & Nzioka, C. (2020). Community interventions in low—and middle-income

- countries to inform COVID-19 control implementation decisions in Kenya: A rapid systematic review. *PLoS ONE*, *15*, e0242403.
- Ahmad, A. R., & Murad, H. R. (2020). The impact of social media on panic during the COVID-19 pandemic in Iraqi Kurdistan: Online questionnaire study. *Journal of Medical Internet Research*, *22*, e19556.
- Arafat, S. M. Y., Kar, S. K., Menon, V., Kaliamoorthy, C., Mukherjee, S., Alradie-Mohamed, A., Sharma, P., Marthoenis, M., & Kabir, R. (2020). Panic buying: An insight from the content analysis of media reports during COVID-19 pandemic, *Neurol. Psychiatry. Brain Research*, *37*, 100–103.
- Astuti, I. (2020). Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2): An overview of viral structure and host response. *Diabetes and Metabolic Syndrome: Clinical Research and Reviews*, *14*, 407–412.
- Bavel, J. J. V., Baicker, K., Boggio, P. S., Capraro, V., Cichocka, A. M. C., Crockett, V., et al. (2020). Using social and behavioural science to support COVID-19 pandemic response. *Nature human behaviour*, *4*(5), 460–471.
- Biernatowska, A., Balcerowska, J. M., & Bereznowski, P. (2017). Gender differences in using Facebook—preliminary analysis.
- Brindha, D., Jayaseelan, R., & Kadeswaran, S. (2020). Social media reigned by information or misinformation about COVID-19: a phenomenological study.
- Chauhan, S. (2020). Comprehensive review of coronavirus disease 2019 (COVID-19). *Biomedical Journal*, *43*, 334–340.
- Coroiu, A., Moran, C., Campbell, T., & Geller, A. C. (2020). Barriers and facilitators of adherence to social distancing recommendations during COVID-19 among a large international sample of adults. *PLoS ONE*, *15*, e0239795.
- De Vos, J. (2020). The effect of COVID-19 and subsequent social distancing on travel behavior. *Transportation Research Interdisciplinary Perspectives*, *5*, 100121.
- Evren, C., Evren, B., Dalbudak, E., Topcu, M., & Kutlu, N. (2020). Measuring anxiety related to COVID-19: A Turkish validation study of the Coronavirus Anxiety Scale. *Death Studies* 1–7.
- Fekih-Romdhane, F., Ghrissi, F., Abbassi, B., Cherif, W., & Cheour, M. (2020). Prevalence and predictors of PTSD during the COVID-19 pandemic: Findings from a Tunisian community sample. *Psychiatry Research*, *290*, 113131.
- Gao, J., Zheng, P., Jia, Y., Chen, H., Mao, Y., Chen, S., Wang, Y., Fu, H., & Dai, J. (2020). Mental health problems and social media exposure during COVID-19 outbreak. *PLoS ONE*, *15*, e0231924.
- Hamzah, F. B., Lau, C., Nazri, H., Ligot, D. V., Lee, G., Tan, C. L., Shaib, M., Zaidon, U. H. B., Abdullah, A. B., & Chung, M. H. (2020). CoronaTracker: Worldwide COVID-19 outbreak data analysis and prediction, *Bull World Heal. The Organ*, *1*, 1–32.
- Hargittai, E., Füchslin, T., Schäfer, M. S. (2018). How do young adults engage with science and research on social media? Some preliminary findings and an agenda for future research, *Social Media + Society* *4*(3), 2056305118797720.
- Hickok, K. (2020). Husband and wife poison themselves trying to self-medicate with chloroquine. *Live Science*
- Hou, F., Bi, F., Jiao, R., Luo, D., & Song, K. (2020). Gender differences of depression and anxiety among social media users during the COVID-19 outbreak in China: A cross-sectional study. *BMC Public Health*, *20*, 1–11.
- Hwang, T.-J., Rabheru, K., Peisah, C., Reichman, W., & Ikeda, M. (2020). Loneliness and social isolation during the COVID-19 pandemic. *International Psychogeriatrics*, *32*, 1217–1220.
- Islam, A. K. M. N., Laato, S., Talukder, S., & Sutinen, E. (2020). Misinformation sharing and social media fatigue during COVID-19: An affordance and cognitive load perspective. *Technological Forecasting and Social Change*, *159*, 120201.
- Kearney, M. D., Chiang, S. C., Massey, P. M. (2020). The Twitter origins and evolution of the COVID-19 “pandemic” conspiracy theory. *Harvard Kennedy School Misinformation Review* 1(3)
- Kebede, Y., Yitayih, Y., Birhanu, Z., Mekonen, S., & Ambelu, A. (2020). Knowledge, perceptions and preventive practices towards COVID-19 early in the outbreak among Jimma university medical center visitors, Southwest Ethiopia. *PLoS ONE*, *15*, e0233744.
- Laato, S., Islam, A. K. M. N., Farooq, A., & Dhir, A. (2020a). Unusual purchasing behavior during the early stages of the COVID-19 pandemic: The stimulus-organism-response approach. *Journal of Retailing and Consumer Services*, *57*, 102224.

- Laato, S., Islam, A. K. M. N., Islam, M. N., & Whelan, E. (2020b). What drives unverified information sharing and cyberchondria during the COVID-19 pandemic? *European Journal of Information Systems*, 29, 288–305.
- Lazer, D. M. J., Baum, M. A., Benkler, Y., Berinsky, A. J., Greenhill, K. M., Menczer, F., Metzger, M. J., Nyhan, B., Pennycook, G., & Rothschild, D. (2018). The science of fake news. *Science*, 359(80-), 1094–1096.
- Lee, K., Jeong, G.-C., & Yim, J. (2020). Consideration of the psychological and mental health of the elderly during COVID-19: A theoretical review. *International Journal of Environmental Research and Public Health*, 17, 8098.
- Lipschultz, J. H. (2020). *Social media communication: Concepts, practices, data, law and ethics*. Routledge.
- Mertens, G., Gerritsen, L., Duijndam, S., Saleminck, E., & Engelhard, I. M. (2020). Fear of the coronavirus (COVID-19): Predictors in an online study conducted in March 2020. *Journal of Anxiety Disorders*, 74, 102258.
- Mohammed, H., Oljira, L., Roba, K. T., Yimer, G., Fekadu, A., & Manyazewal, T. (2020). Containment of COVID-19 in Ethiopia and implications for tuberculosis care and research. *Infectious Diseases of Poverty*, 9, 1–8.
- Mohindra, R., Ravaki, R., Suri, V., Bhalla, A., & Singh, S. M. (2020). Issues relevant to mental health promotion in frontline health care providers managing quarantined/isolated COVID19 patients. *Asian Journal of Psychiatry*, 51, 102084.
- Mukhtar, S. (2020). Psychological health during the coronavirus disease 2019 pandemic outbreak. *International Journal of Social Psychiatry*, 66, 512–516.
- Nisar, S., & Shafiq, M. (2019). Framework for efficient utilisation of social media in Pakistan's healthcare sector. *Technology in Society*, 56, 31–43.
- Nyoni, S. P., Nyoni T., & Chihoho T. A. (2020). Forecasting covid-19 cases in Ethiopia using artificial neural networks.
- Odrizola-González, P., Planchuelo-Gómez, Á., Iruartia, M. J., & de Luis-García, R. (2020). Psychological effects of the COVID-19 outbreak and lockdown among students and workers of a Spanish university. *Psychiatry Research*, 290, 113108.
- Ohme, J., Vanden Abeele, M. M. P., Van Gaeveren, K., Durnez, W., & De Marez, L. (2020). Staying informed and bridging “social distance”: Smartphone news use and mobile messaging behaviors of Flemish adults during the first weeks of the COVID-19 pandemic. *Socius* 6, 2378023120950190.
- Parikh, P. A., Shah, B. V., Phatak, A. G., Vadnerkar, A. C., Uttekar, S., Thacker, N., & Nimbalkar, S. M. (2020). COVID-19 pandemic: knowledge and perceptions of the public and healthcare professionals. *Cureus* 12(5).
- Park, Y. J., Choe, Y. J., Park, O., Park, S. Y., Kim, Y.-M., Kim, J., Kweon, S., Woo, Y., Gwack, J., & Kim, S. S. (2020). Contact tracing during coronavirus disease outbreak, South Korea, 2020. *Emerging Infectious Diseases*, 26, 2465.
- Pourhossein, B., Dabbagh, A., & Fazeli, M. (2020). Insights into the SARS-CoV2 outbreak; the great global challenge: A mini review. *Journal of Cellular and Molecular Anesthesia*, 5, 23–26.
- Raamkumar, A. S., Tan, S. G., & Wee, H. L. (2020). Use of health belief model-based deep learning classifiers for covid-19 social media content to examine public perceptions of physical distancing: Model development and case study. *JMIR Public Health & Surveillance*, 6, e20493.
- Radwan, E., Radwan, A., Radwan, W., & Pandey, D. (2021). Prevalence of depression, anxiety and stress during the COVID-19 pandemic: a cross-sectional study among Palestinian students (10–18 years). *BMC psychology*, 9(1), 1–12.
- Ralph, R., Lew, J., Zeng, T., Francis, M., Xue, B., Roux, M., Ostadgavahi, A. T., Rubino, S., Dawe, N. J., & Al-Ahdal, M. N. (2020). 2019-nCoV (Wuhan virus), a novel Coronavirus: Human-to-human transmission, travel-related cases, and vaccine readiness. *Journal of Infection in Developing Countries*, 14, 3–17.
- Rodríguez-Hidalgo, A J, Pantaleón, Y., Dios, I. Falla .D. (2020). Fear of COVID-19, stress, and anxiety in university undergraduate students: a predictive model for depression. *Frontiers in Psychology* 3041.
- Rose-Redwood, R., Kitchin, R., Apostolopoulou, E., Rickards, L., Blackman, T., Crampton, J., Rossi, U., & Buckley, M. (2020). Geographies of the COVID-19 pandemic, Dialogues. *Human Geography*, 10, 97–106.
- Stainback, K., Hearne, B. N., & Trieu M.M. (2020). COVID-19 and the 24/7 news cycle: Does COVID-19 news exposure affect mental health? *Socius* 6, 2378023120969339

- Son, C., Hegde, S., Smith, A., Wang, X., & Sasangohar, F. (2020). Effects of COVID-19 on college students' mental health in the United States: Interview survey study. *Journal of Medical Internet Research*, *22*, e21279.
- Tanaka, Y., Hipolito, C. J., Maturana, A. D., Ito K., Kuroda T., Higuchi T., Katoh T., Kato H.E., Hattori M., Kumazaki K. (2020). End coronavirus stigma now.
- Tagliabue, F., Galassi, L., & Mariani, P. (2020). The “pandemic” of disinformation in COVID-19. *SN Comprehensive Clinical Medicine*, *2*, 1287–1289.
- Teng, Z., Wei, Z., Qiu, Y., Tan, Y., Chen, J., Tang, H., Wu, H., Wu, R., & Huang, J. (2020). Psychological status and fatigue of frontline staff two months after the COVID-19 pandemic outbreak in China: A cross-sectional study. *Journal of Affective Disorders*, *275*, 247.
- Vincent, A., Mamzer, H., Ng, Z., & Farkas, K. J. (2020). People and their pets in the times of the COVID-19 pandemic. *Society Register*, *4*, 111–128.
- Wilder-Smith, A., & Freedman, D. O. (2020). Isolation, quarantine, social distancing and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *Journal of Travel Medicine*.
- Wolkewitz, M., & Puljak, L. (2020). Methodological challenges of analysing COVID-19 data during the pandemic. *BMC Medical Research Methodology*, *20*, 1–4.
- Zarocostas, J. (2020). How to fight an infodemic. *Lancet*, *395*, 676.

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