

# Most Common Social Media Platforms in Saudi Arabia for Sharing COVID-19 Medical Information

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## Keywords

Coronavirus disease 2019 · Social media · Medical information · WhatsApp · Health care workers

## Abstract

**Introduction:** This study is a quantitative analysis of the most commonly used social media platforms during the coronavirus disease 2019 (COVID-19) pandemic among health care workers (HCWs) and non-HCWs (NHCWs) for sharing medical information pertaining to protective measures against COVID-19 in Saudi Arabia. **Methods:** An online survey was administered during the first 3 months of COVID-19 lockdown in Saudi Arabia. The sample size of the study was 1,249, including 275 HCWs and 974 NHCWs. **Results:** The findings show that WhatsApp is the most used social media platform in Saudi Arabia, followed by Twitter. Popular social media sites among HCWs are Instagram, WhatsApp, Snapchat, Telegram, and Twitter. Future researchers might investigate how HCWs assess the validity, trust, and reliability of information on social media platforms. **Conclusion:** This study has implications for how to effectively disseminate information through social media platforms based on health care specialty and demographics.

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## Introduction

Social media plays a role in global crisis management as both a resource and a source of misinformation [1]. Owing to the speed with which information gets shared on social media and its extensive reach, it can be used to wrongfully validate unreliable and incorrect news sources, which contributes to the spread of misinformation [2]. Examples of widespread misinformation related to the coronavirus disease 2019 (COVID-19) pandemic are the endorsements of hydroxychloroquine [3], ingesting disinfectants [4], and conspiracy theories about politics and technology [1].

To address the active threat of misinformation being accepted as the truth during the COVID-19 pandemic [5], social media platforms are actively trying to label false news with warnings [6] or encouraging users to seek the sources of information and scrutinize them [7]. Health professionals can play an active role in curbing the spread of misinformation by sharing verified medical content [8], sharing their expert opinions [9], and moderating social media groups [1]. However, there will always be limitations and barriers to their efforts.

Isolated echo-chamber groups in which every member of the group believes in the same information tend to be unreceptive to outside opinion [10], and improv-

erly sourced medical information posted on social media can cause great confusion regarding its accuracy and validity [11]. Additionally, second-hand medical information can be inaccurate, incomplete, or unreliable [12]. Lin et al. [13] put forward the possibility that social media could influence psycho-behavioral responses among medical students. Students with higher exposure to social media demonstrated higher intentions to take active preventive measures against the virus and treated it seriously. Ölcer et al. [14] outlined broad uncertainty regarding the severity of the virus, proper procedures and preventive measures, and trustworthiness of the government in safeguarding citizens' economic and social interests. Similarly, Farooq et al. [15] investigated social media users' self-isolation intention from online information and observed that those who perceived the virus as a threat and reported self-efficacy regarding taking the necessary steps had greater intention to self-isolate.

In the early stages of COVID-19, around March and April 2020, misinformation related to COVID-19 was spreading faster than the actual virus [16]. Pulido et al. [17] found that there were more posts on Twitter containing misinformation than posts that had been fact-checked, and misinformation was retweeted more frequently. Chan et al. [18] highlighted during this earlier phase of COVID-19, the importance of social media as a viable tool for rapid knowledge dissemination during this earlier phase of COVID-19. Although researchers observed that social media had an overall positive impact on public health protection [19], others cautioned about the possibility of misinformation and requested continued vigilance from health care professionals [20]. Researchers advise that health care professionals use caution in presenting patients with information [21] and use language that is easy to follow [22].

To minimize the "infodemic" elements of social media and use it to promote public health, Schillinger et al. [23] proposed a framework they called SPHERE, for Social Media and Public Health Epidemic and Response. Additionally, Merchant and Lurie [24] provided guidelines on how to respond to misinformation on social media during the COVID-19 pandemic, and Mulrennan and Colt [25] embarked on a project to provide health care professionals with easier access to evidence-based information. In the wake of COVID-19, research endeavors have been ongoing around the world, but research focus on Saudi Arabia has been minimal. Only Aldarhami et al. [26] and the Saudi Government [27] have conducted any notable studies, respectively, explor-

ing the most trusted site for COVID-19 information and the digital response to the pandemic response during COVID-19, respectively.

The aim of this study was to determine the most common social media platforms in Saudi Arabia for receiving and sharing medical information regarding COVID-19 protective measures during the COVID-19 pandemic in health care workers (HCWs) and the general population of non-HCWs (NHCWs) and to find the associations between the most common social media platforms used and demographic variables including age, gender, nationality, residence area, education level, and health care specialty. HCWs or Saudi Ministry of Health can play a significant role in the suppression of misinformation on social media platforms to the general population. Therefore, seeking the opportunity to direct more research efforts toward Saudi Arabia, this research presents potential for novel outcomes.

## Materials and Methods

### *Study Design and Population*

This cross-sectional descriptive study was conducted between April 21 and May 12, 2020. The participants were HCWs and NHCWs from all regions of Saudi Arabia: every citizen of at least 18 years of age was eligible to participate in the study, and any participants younger than 18 were excluded.

### *Measurement Tool*

For this study, a quantitative research methodology was used to statistically analyze COVID-19 information sharing on social media platforms among HCWs and NHCWs in Saudi Arabia for information sharing regarding COVID-19. A survey questionnaire was developed, approved by a panel of experts, and tested on 20 volunteers; after that pilot test, modifications were made to the draft. Participants were recruited online to voluntarily participate in the study including giving their consent. Participants who consented to participate were provided a URL that took them to the survey page, and the survey asked eight questions, covering region of residence in Saudi Arabia, nationality, gender, age, education level, whether participant was a HCW, health care specialty if that answer was yes, and preferred social media platforms for information sharing and receiving.

### *Statistical Analysis*

The collected data were processed using IBM SPSS 22 (SPSS Inc. Chicago, IL, USA). Data processing steps included data extraction, null value elimination, and outlier detection. We used two-tailed statistical tests with significance set at  $p$  less than 0.05. We compared all variables between HCWs and NHCWs with comparative analysis and calculated significance of relationships in cross-tabulation was tested using Pearson's  $\chi^2$  test or exact probability test for small frequencies.

**Table 1.** Study participants demographic distribution

Personal data	Total, N (%)	HCW			
		yes (n = 275)		no (n = 974)	
		n	%	n	%
<i>Region</i>					
Central region	403 (32.3)	76	27.6	327	33.6
Eastern region	123 (9.8)	27	9.8	96	9.9
Northern region	83 (6.6)	8	2.9	75	7.7
Southern region	80 (6.4)	23	8.4	57	5.9
Western region	560 (44.8)	141	51.3	419	43.0
<i>Nationality</i>					
Saudi	1,192 (95.4)	254	92.4	938	96.3
Non-Saudi	57 (4.6)	21	7.6	36	3.7
<i>Gender</i>					
Male	288 (23.1)	98	35.6	190	19.5
Female	961 (76.9)	177	64.4	784	80.5
<i>Age group</i>					
Young adults (18–40)	824 (66.0)	193	70.2	631	64.8
Middle-aged adults (41–60)	391 (31.3)	70	25.5	321	33.0
Older adults (60+)	34 (2.7)	12	4.4	22	2.3
<i>Educational level</i>					
Less than high school	32 (2.6)	0	0.0	32	3.3
High school	178 (14.3)	3	1.1	175	18.0
Bachelor's degree	713 (57.1)	142	51.6	571	58.6
Post graduate degree	326 (26.1)	130	47.3	196	20.1

## Results

Table 1 gives the descriptive statistics of the total of 1,249 survey respondents for this study, of whom 22% were HCWs. Among HCWs, the most frequently reported specialty was physician (100 participants), followed by laboratory technician (78) and pharmacist (23). Of the total study population, most participants were from western (44.8%; 560) or central (32.3%; 403) Saudi Arabia. Nearly all respondents, 95.4%, were Saudi by nationality, and 76.9% were Female. The distribution of female to male was also higher for both HCWs and NHCWs (80.5% and 64.4%, respectively). In the sample population, 66% were young adults, 31.3% were middle-aged, and 2.7% were older adults. Regarding education level, 57.1% of the study participants had bachelor's degrees, and a higher proportion of HCWs than NHCWs held postgraduate degrees (47.3% vs. 20.1%, respectively). Table 1 provides the breakdown of each of these statistics according to HCWs and NHCWs.

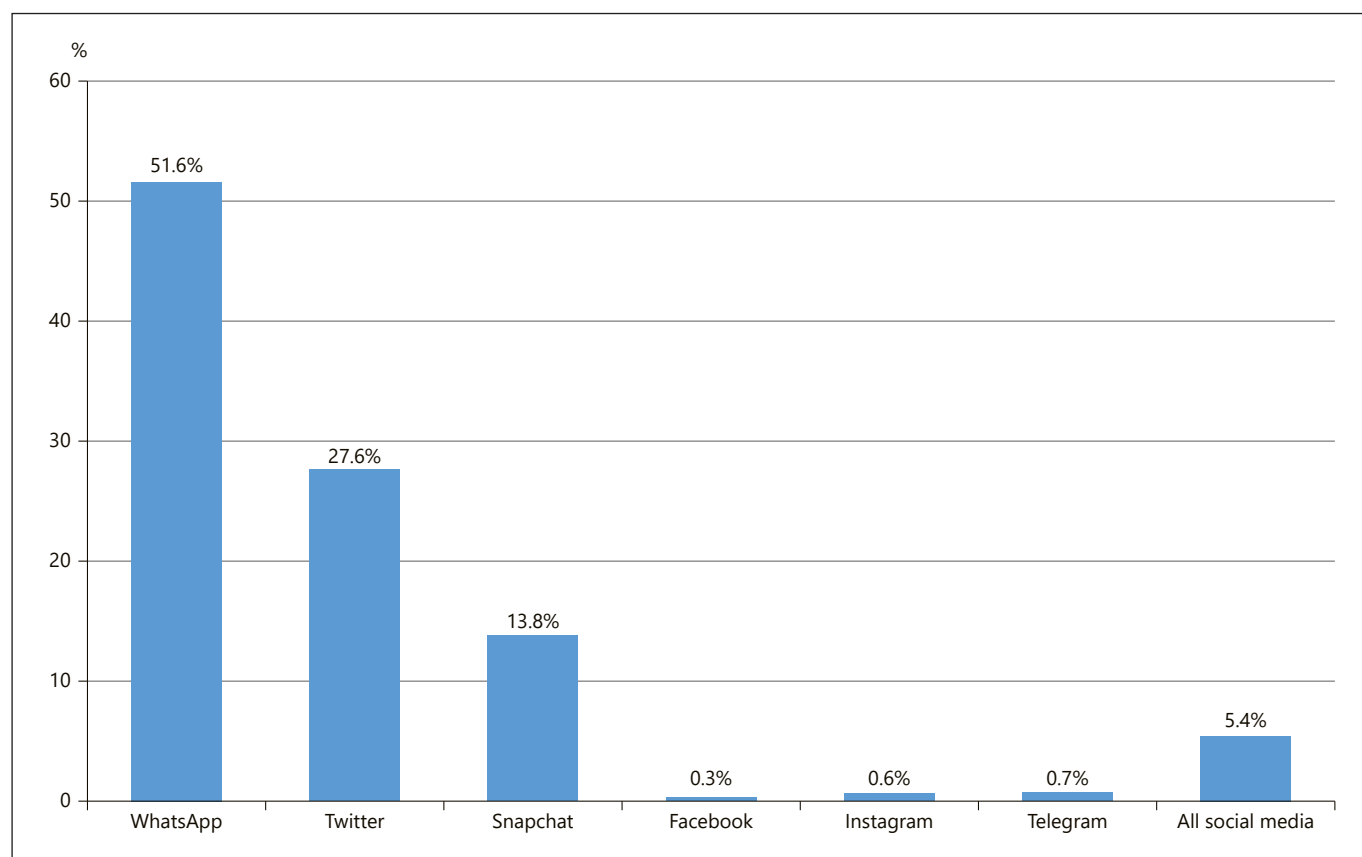
Table 2 illustrates the distribution of the social media platforms most preferred for COVID-19-related information among the total study population. The table shows that among all survey respondents, WhatsApp was the most popular social media platform for COVID-19 with 644 total users, accounting for 51.6% of the sample population, of whom 144 were HCWs. By respondent group, 52.4% of HCWs and 51.3% of NHCWs preferred WhatsApp. Twitter was the second most popular choice, with 345 users, accounting for 27.6% of the sample population. The table gives the full details along with summaries of the most popular social media platforms. All these varieties in usage were statistically significant at  $p = 0.018$ . Figure 1 shows the distribution of the most used social media platforms for COVID-19-related information among all participants during the lockdown.

Table 3 shows the social media platform preferences among study participants based on demographics. WhatsApp, Instagram, and Telegram were the preferred platforms in the western regions as for sharing information regarding protective measures during the COVID-19

**Table 2.** Social media usage distribution in study group

Social media used	Total, N (%)	HCW				p value
		yes		no		
		n	%	n	%	
WhatsApp	644 (51.6)	144	52.4	500	51.3	0.018*
Twitter	345 (27.6)	88	32.0	257	26.4	
Snapchat	172 (13.8)	21	7.6	151	15.5	
Facebook	4 (0.3)	0	0.0	4	0.4	
Instagram	8 (0.6)	1	0.4	7	0.7	
Telegram	9 (0.7)	2	0.7	7	0.7	
All social media	67 (5.4)	19	6.9	48	4.9	

p: exact probability test. \* p < 0.05 (significant).



**Fig. 1.** Most common social media platforms for the COVID-19-related information among all participants during the lockdown.

pandemic, and Twitter, Snapchat, and Facebook were more popular in the central region. As expected by the overall population breakdown, nearly all users of each platform were of Saudi nationality (100% of Instagram users were Saudi), and nearly all were female. By age, only

Facebook had more middle-aged users than other age groups; WhatsApp, Twitter, Snapchat, and Instagram all had younger adult users than other demographics. By education level, all platforms had more users with a bachelor's degree than other education levels, although Insta-

**Table 3.** Social media platform preferences among study participants based on demographics

Personal data	Social media, %						
	WhatsApp	Twitter	Snapchat	Facebook	Instagram	Telegram	all social media
<i>Region</i>							
Central region	25.5	43.5	40.1	75.0	25.0	0.0	22.4
Eastern region	9.9	8.1	12.2	0.0	25.0	0.0	11.9
Northern region	7.5	5.5	7.6	0.0	0.0	0.0	4.5
Southern region	5.7	5.8	9.3	0.0	0.0	22.2	7.5
Western region	51.4	37.1	30.8	25.0	50.0	77.8	53.7
<i>Nationality</i>							
Saudi	95.2	97.1	95.3	50.0	100.0	88.9	92.5
Non-Saudi	4.8	2.9	4.7	50.0	0.0	11.1	7.5
<i>Gender</i>							
Male	27.5	21.4	7.6	25.0	0.0	33.3	29.9
Female	72.5	78.6	92.4	75.0	100.0	66.7	70.1
<i>Age group</i>							
Young adults	50.8	82.9	90.1	25.0	100.0	55.6	62.7
Middle-aged adults	44.7	17.1	9.9	50.0	0.0	44.4	31.3
Older adults	4.5	0.0	0.0	25.0	0.0	0.0	6.0
<i>Education level</i>							
Less than high school	2.6	1.7	2.9	0.0	12.5	0.0	4.5
High school	12.4	12.2	24.4	0.0	37.5	0.0	16.4
Bachelor's degree	54.8	65.2	54.7	75.0	37.5	66.7	43.3
Post graduate degree	30.1	20.9	18.0	25.0	12.5	33.3	35.8

**Table 4.** Most commonly used social media platforms by HCWs

Health care speciality	Social media platforms, %						<i>p</i> value
	WhatsApp	Twitter	Snapchat	Instagram	Telegram	all social media	
Clinical nutrition	2.8	4.5	19.0	100.0	50.0	10.5	0.016*
Health administrator	8.3	4.5	0.0	0.0	0.0	5.3	
Laboratory technologist	29.2	28.4	28.6	0.0	0.0	26.3	
Medical equipment engineers	0.7	5.7	14.3	0.0	0.0	5.3	
Nurse	8.3	6.8	4.8	0.0	50.0	5.3	
Pharmacist	9.7	6.8	4.8	0.0	0.0	10.5	
Physician	38.2	38.6	19.0	0.0	0.0	36.8	
Public health promotion	2.1	1.1	4.8	0.0	0.0	0.0	
Radiologist	0.7	3.4	4.8	0.0	0.0	0.0	

*p*: exact probability test. \* *p* < 0.05 (significant).

gram showed an equal distribution of users with bachelor's and high school degrees.

Table 4 shows the associations among HCWs between the most common social media platforms and health care specialty. WhatsApp was mostly used by physicians

(38.2%) followed by laboratory technicians (29.2%), and 38.6% of Twitter users were physicians followed by laboratory technicians (28.4%). Laboratory technicians also made up 28.6% of the Snapchat users. All values were statistically significant (*p* = 0.016).



## Discussion

The higher concentration of social media users in central and western Saudi Arabia indicates that information is most likely to spread rapidly in these regions, and this has both positive and negative connotations. The positive connotation is that these regions have more active social media users who can educate and guide the community on the proper health care prevention measures and general information about COVID-19 as well as debunk the misinformation that is constantly spread. The negative connotation is that misinformation can also spread rapidly in these areas because of the significantly larger number of NHCWs compared to HCWs. More users increase the probabilities that echo-chamber groups will develop [10] and make it difficult to present valid information to everyone [11]. However, given that the demographic statistics also indicate that overall, the most common user base is young adults, there is a higher likelihood that this population can influence psycho-behavioral responses if they are HCWs. This means the likelihood of taking active preventive measures against COVID-19 among HCW social media users is potentially high [13], and considering this demographic distribution, more active efforts to curb the spread of misinformation are needed in regions where the HCW-to-NHCW ratio is low.

For instance, northern Saudi Arabia has the lowest ratio of HCWs to NHCWs, so greater efforts are needed to warn residents of that region against the spread of misinformation. Promoting public health will in part entail giving the small HCW workforce in the area as much support as possible. At the same time, HCWs in areas with higher ratios of HCWs to NHCWs (east, west, and central Saudi Arabia) need extra support because they are attempting to guide larger populations. Southern Saudi Arabia can be considered the safest in terms of COVID-19 misinformation because it has a smaller population than the rest of the country but the highest HCW-to-NHCW ratio. However, caution is required before generalizing these findings to the broader population of Saudi Arabia because the study was limited only to people who had access to the online questionnaire.

The high overall education level among the social media users in this study suggests that people can be expected to validate the sources of information they post. Thus, although the risk of misinformation might still be high [16], the possibility that medically accurate advice on social media will get more engagement is also high [17, 18].

Because WhatsApp, Twitter, and Snapchat are the most common social media platforms, they require the

most vigilance for potential misinformation. Waldrop et al. [5, 6] proposed that these and other popular platforms introduce alerts, notifications, and labels for false or unverified COVID-19 information. Given that these platforms were most popular with physicians and laboratory technicians in this study, this population of HCWs can potentially contribute the most accurate information regarding protective measures against COVID-19.

## Conclusion

In Saudi Arabia, WhatsApp has been the most used social media platform for receiving and sharing medical information regarding protective measures during the COVID-19 pandemic among both HCWs and the general population. Young Saudi female are the most common users of social media, most users are in the western and central region, and among study participants who were HCWs, most were physicians and laboratory technicians.

This study does have limitations, primarily the limited population size, particularly number of the HCWs, which limits the generalizability of the findings. It is also the case that the study was conducted early in the pandemic and preferences might have changed over time. This study does provide insights as to where resources for abating the spread of COVID-19 misinformation should be focused in terms of geographic location, social media platform, and health care specialty. Future researchers could study how HCWs themselves determine the validity, trust, and reliability of information on social media platforms.

## Statement of Ethics

Ethical approval was obtained from the Biomedical Ethics Committee, Faculty of Medicine, Umm Alqura University, Approval No. (HAPO-02-K-012-2020-04-378). An online informed consent form was posted on the first page of survey. Participants could not proceed to the survey without completing the consent request in the affirmative.

## Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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## Author Contributions

Alotaibi K. contributed to the design and implementation of the research. Alotaibi K. and Alotiby A. performed data collection, entry, and analysis. Both authors contributed equally to writing the manuscript and revising it critically for important intellectual content, and both gave final approval of the version to be published.

## Data Availability Statement

The original contributions presented in the study are included in the article; further inquiries can be directed to the corresponding author.

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