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## **Sharing of COVID-19 Related Messages on Facebook by Bangladeshi Government Agencies and Non-Profit Organizations/ NGOS: A Study on User Engagement**

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**SHARING OF COVID-19 RELATED MESSAGES ON FACEBOOK BY  
BANGLADESHI GOVERNMENT AGENCIES AND NON-PROFIT  
ORGANIZATIONS/NGOS: A STUDY ON USER ENGAGEMENT**

A Thesis

Submitted to the Graduate Faculty of the  
University of South Alabama  
in partial fulfillment of the  
requirements for the degree of

Master of Arts

in

Communication

by

Nabila Mushtarin

B.A., Jahangirnagar University, 2016

M.A., Jahangirnagar University, 2018

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## TABLE OF CONTENTS

	Page
LIST OF TABLES .....	v
LIST OF FIGURES .....	vi
ABSTRACT .....	vii
INTRODUCTION .....	1
LITERATURE REVIEW .....	4
2.1 Social Media .....	4
2.2 Social Accountability of Government Agencies and Non-Profit Organizations .....	5
2.3 Social Media for Health: The Case of Bangladesh.....	6
RESEARCH QUESTIONS .....	8
METHOD .....	9
4.1 Design .....	9
4.2 Materials .....	12
4.3 Tools .....	12
4.4 Measures .....	13
4.4.1 Different Types of Posts .....	13
4.4.2 User Engagement.....	13
RESULTS .....	15
DISCUSSION.....	25
LIMITATIONS AND STRENGTHS .....	28
CONCLUSION.....	30

REFERENCES .....	31
BIOGRAPHICAL SKETCH .....	37

## LIST OF TABLES

Table	Page
1. Post Type and Percentages within Page Category .....	16
2. Percentage of Post Type by Page Category .....	17
3. Interaction Percentages by Page Category .....	20
4. Interaction with Different Content Types .....	21
5. Interaction Numbers and their Percentages within the Interaction Types .....	22

## LIST OF FIGURES

Figure	Page
1. Facebook Users in Bangladesh .....	11
2. Facebook Reactions .....	14
3. Percentage of Post Type by Page Category .....	18
4. Total Interactions Timeline .....	23
5. Total Interactions by Post Type and Creation Date .....	24

## **ABSTRACT**

Mushtarin, Nabila, M.A, University of South Alabama, August 2022. Sharing of Covid-19 Related Messages on Facebook by Bangladeshi Government Agencies and Non-profit Organizations: A Study on User Engagement. Chair of Committee: M. Delwar, Hossain, Ph.D.

During the COVID-19 pandemic, health information was shared by the government agencies and non-profit organizations in Bangladesh. This study explored user engagement with the COVID-19 related health messages/contents shared by Bangladeshi government agencies and non-profit organizations/NGOs on social media. With this goal, this study examined social media posts by government and non-profit organizations' Facebook pages and their user interactions to understand engagement with distinct types of messages shared on these pages. The findings indicated that photos, videos, and links with Covid-19 related messages get more interactions from the Bangladeshi Facebook users, and further suggested that the users' sentiment to the contents was mostly positive. The results further showed that user engagement was higher with contents shared from non-profit organizations' Facebook pages. The study thus assessed the effectiveness of the health-related social media content by government agencies and non-profit organizations in Bangladesh and offered insights for future practices.



## **INTRODUCTION**

Coronavirus disease or COVID-19 has affected all parts of the lives of the public and has caused fear and uncertainty. On a large scale, this infectious disease caused by the SARS-CoV-2 virus has posed a threat to the healthcare system worldwide (World Health Organization, 2021). The virus outbreak was first observed in November 2019 in Wuhan, China, and since then, it has been announced by the World Health Organization as a global pandemic on March 11, 2020. For Bangladesh, a densely populated country with a 21.8% population living below the poverty line, the COVID-19 outbreak has become a severe healthcare crisis (Al Jazeera, 2020).

The World Health Organization (2021) reports 1,565,488 confirmed cases of COVID-19 with 27,768 deaths from January 3, 2020, to October 18, 2021, and till October 2021, a total of 55,213,069 vaccine doses have been administered. The healthcare system in this developing country is decentralized and controlled by for-profit organizations, government-led healthcare facilities, non-profits, and international welfare organizations (Barrientos, 2020). Moreover, due to the country having a large population, not everyone in Bangladesh has proper access to healthcare services, and there is a shortage and maldistribution of healthcare resources (World Health Organization, 2012).

During public health emergencies such as the 2019 Ebola outbreak in Congo and the 2002 SARS outbreak in China, misinformation, rumor, and stigma have been

observed. The spread of misinformation has similarly been observed during COVID-19 pandemic (Islam et al., 2020). Online platforms and social media play significant roles in spreading such misinformation during a crisis such as COVID-19 (Cinelli et al., 2020; Islam et al., 2020). Tedros Adhanom Ghebreyesus, WHO's Director-General, terms such spread of misinformation during public health crises as an *Infodemic* at the 2020 Munich Security Conference (The Lancet Infectious Diseases, 2020). Therefore, access to legitimate COVID-19 information and updates is essential for people during this public health emergency.

If used properly, social media can play a significant role in providing accurate and truthful information to the general users, act as an educational tool, and influence health behavior among the users (Pizzuti, 2020; Sharif et al., 2021; Ventola, 2014). Moorhead et al. (2013) identified seven uses of social media for health communication, which include focusing on increasing interactions with others, and facilitating, sharing, and obtaining health messages, along with six vital overarching benefits acknowledged as (1) increased interactions with others, (2) more available, shared, and tailored information, (3) increased accessibility and widening access to health information, (4) peer/social/emotional support, (5) public health surveillance, and (6) potential to influence health policy. Moreover, social media have been proven an essential tool for crisis management by organizations. These platforms also can bridge the gap between health care providers, institutions, and the general public (Guidry et. et al., 2017). Social media are, therefore, potentially valuable tools for disseminating authentic information in a country like Bangladesh, where immediate access to healthcare cannot always be guaranteed. With this view, this study analyzed 59,728 Facebook posts from January 1,

2020, through February 28, 2022, posted from Facebook pages labeled as Government pages and non-profit/ NGO pages. The findings indicated that photos, videos, and links with Covid-19 related messages get more interactions from the Bangladeshi Facebook users, and further suggested that the users' sentiment to the contents was mostly positive. The results further showed that user engagement was higher with contents shared from non-profit organizations' Facebook pages.

## **LITERATURE REVIEW**

### **2.1 Social Media**

Social media, Social Networking sites, or Web 2.0 refer to the online platform that allows individuals and communities to communicate and share information with each other (Ventola, 2014). Kaplan and Haenlein define social media as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content" (Kaplan & Haenlein, 2010). Social media have changed the way we communicate, and they have significant impacts on education, health, and recreation. According to Moorhead et al. (2013), social media advance health communication by influencing the nature and speed of health care interaction between individuals and health organizations. The authors have also noted that people have increasingly used social media to communicate health issues and acquire health-related information. During the COVID-19 pandemic, social media have helped disseminate COVID-19 updates and information along with online websites (Limaye et al., 2020).

However, the rapid dissemination of messages can have an adverse effect during health crises. The spread of rumors, conspiracies, stigma is common during a health emergency, and such information spreads faster online. An example of this would be the diffusion of misinformation during the pandemic referred to as *infodemic*, which can be

elaborated as "an overabundance of information—some accurate and some not—that makes it hard for people to find trustworthy sources and reliable guidance when they need it" (Islam et al., 2020). To prevent the spread of misinformation, government agencies and health organizations should share "correct and context-appropriate information supported by scientific evidence" online (Islam et al., 2020). Social media can play an important role in sharing such accurate information.

## **2.2 Social Accountability of Government Agencies and Non-Profit Organizations**

Malena & McNeil (2010) defines "social accountability" as "the broad range of actions and mechanisms beyond voting that the citizens can use to hold the state to account, as well as actions on the part of the government, civil society, media, and other societal actors that promote or facilitate these efforts." According to Grey et al. (2006), accountability relies on the relations between the institution and the society or stakeholder groups of interest. Dillard & Vinnari (2019) posit that accountability can serve various functions: it is needed for organizations not to abuse their power by violating rules (i.e., constitutional role); to accommodate the information needs of interested constituencies (democratic function), and to engage the different constituencies in a mutual learning process during an iterative approach to further develop the present accountability (epistemic role).

During the COVID-19 pandemic, the non-profit sector in many countries is taking the lead in terms of social accountability by "playing an active role in responding to the physical, psychological, and spiritual needs of needy individuals and communities" (Dong & Lu, 2020). Kumar & Pinky (2021) notes that nongovernmental organizations in

Bangladesh have come forward to financially support the government in tackling the coronavirus outbreak. Among the Bangladeshi NGOs, Gonoshasthaya Kendra developed cheap and reliable test kits, and Biddanondo Foundation has come forward to provide aids to the crisis-stricken people. Nongovernmental organizations have always supported Bangladeshi government to meet the population needs. Islam & Morgan (2012) note that since the independence of Bangladesh in 1971, the economic growth of this densely populated country has been unfavorable. According to the authors, the NGO sector has become an important agent for improving socio-economic conditions and addressing the inefficiencies of either the government or the market to deliver services. They further add that social development and NGOs' activities are synonymous in Bangladesh (Islam & Morgan, 2012). Working side by side, government agencies and the non-profit sector can thus help the public access helpful information about health messages, campaigns, and updates during the pandemic. Social media health campaigns carried out by these organizations can prove beneficial to influence positive health behaviors and attitudes (Limaye et al., 2020). Because of the social accountability, these organizations will share accurate health information, which is needed during this infodemic.

### **2.3 Social Media for Health: The Case of Bangladesh**

Information sharing has become easier with the rapid advancement of different social media platforms such as Facebook, Twitter, Reddit, Instagram, Snapchat, etc. The large-scale dissemination of information through social media can benefit public health emergencies such as Covid-19. A study conducted by Sharif et al. (2021) found that most people in Bangladesh used Facebook for health information during Covid-19. Moreover,

the author contends that those who receive Covid-19 related information from Facebook are more likely to follow health rules. Islam et al. (2021) additionally argue that creative social media use has a significant indirect effect on Covid-19 prevention. Further, those who have higher educational levels are more likely to follow preventive health measures. In Bangladesh, a developing country with 165 million people, social media can thus help people to stay connected with each other during times of uncertainty and inform themselves and each other.

The healthcare system in the country is lacking in many areas and has been characterized as having weak public health communication, inadequate healthcare facilities, and Medicare service delivery to the public (Al-Zaman, 2020; Mohiuddin, 2019). Because of this inefficiency, people heavily relied on social media to get Covid-19 related information and know about preventive measures and treatment of the disease during the lockdown (Islam et al., 2021). However, since Internet-based media took an active role in delivering information, rumors also spread rapidly. Al-Zaman (2020) notes that around 200 COVID-19–related online rumors spread across the country from March 2020 to July 2020. The government took initiative to detain the rumor spreaders. The author however argues that suppressing the political dissidents and the government’s critics along with the rumor spreaders may affect positive health-related communication. To sum it up, it can be said that social media platforms can be utilized to disseminate knowledge among many users in countries like Bangladesh, where healthcare facilities are not adequate. However, the spread of misinformation and the government control must be considered.

## RESEARCH QUESTIONS

Although several studies have explored user engagement on social media during Covid-19 and the use of social media by public health practitioners, none focus on Bangladesh, the social media user engagement scenario in the country, or the large number of government and non-profit activities on social media. Considering these limitations, the present study intended to understand user engagement with the Covid-19 contents shared by the government and non-profit organizations on Facebook, one of the most popular social media in Bangladesh. The following research questions were posed to guide this study and its subsequent analysis:

**RQ 1:** *What types of COVID-19 related health messages are shared on Bangladeshi Government social media channels?*

**RQ 2:** *What types of COVID-19 related health messages are shared on Bangladeshi NGO social media channels?*

**RQ 3:** *How do users engage/interact with different COVID-19 related content from their channels?*

**RQ 4:** *What kind of social media content related to COVID-19 gets more interactions from the users?*



## **METHOD**

### **4.1 Design**

The design for this study consisted of Quantitative Content Analysis, which was used to gather and analyze data from different Government organizations and non-profit organizations' Facebook pages. Quantitative content analysis was most suited for this study because it concerns the analysis of a large number of datasets. Facebook was selected for this study due to its unchallenged popularity in Bangladesh compared to other social media platforms. According to StatCounter (2022), among those who use social media in Bangladesh, 93.86% use Facebook, while only 3.6% use YouTube, 1.01% use LinkedIn, 0.47% use Pinterest, 0.43% use Twitter, and 0.36% use Instagram. According to NapoleonCat (2022), there are 52,713,900 Facebook users in Bangladesh in January 2022, which accounts for 30.4% of its entire population. 68% of the users are men and only 32% are women, making the male users the majority (Figure 1). Moreover, the statistics show that people aged 18 to 24 were the largest user group consisting of 43.6% users. The highest difference between men and women occurs within people aged 25 to 34, where men lead by 7,200,000. Therefore, an exploratory study of social media engagement may face gender bias.

The study by Islam et. al. (2021) notes that that the educational level of the people has a significant direct and positive impact on Covid-19 prevention. Another study conducted by Sharif et. al. (2021) shows that 84% of the participants used social media amid the pandemic where the predominant users were female (50.4%). However, the results also show that among the participants, 43.5% share COVID-19 related health information on various social media platforms and majority of them are male 55.5%. Moreover, there are expats who have moved from Bangladesh to other countries who interact with Bangladeshi social media contents. The social media user demographic is therefore important to consider. However, the content analysis was conducted through CrowdTangle, a metrics platform owned by Facebook which gives access to the publicly available content on Facebook. This study therefore only explored the likes and reactions of users on various contents.

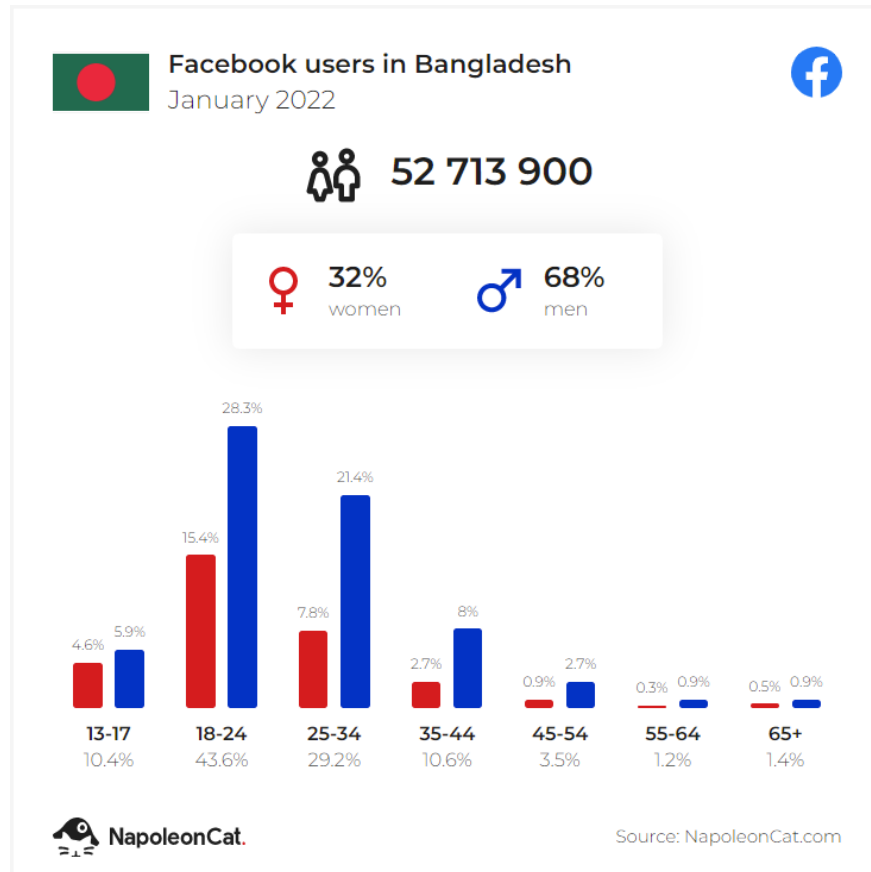


Figure 1. Facebook Users in Bangladesh (Source: NapoleonCat, 2022)

Chi-Square tests were employed to determine the significance of the relationship between user interaction for each page category and content type, the relationship between the page categories and types of user interactions, and the relationship between content types and user interactions. The data analysis yielded results appropriate for a conclusion of how effective the health messages are based on the level of user engagement.

## **4.2 Materials**

Government organizations' and government officials' pages as well as NGO pages were explored through CrowdTangle for the contents. Facebook posts related to Covid-19 were selected from each page category.

## **4.3 Tools**

The data for this study was gathered through the CrowdTangle, a metrics platform owned by Facebook which gives access to the publicly available content on Facebook. This study was thus limited to examining publicly shared contents, which was sufficient for this research as it studied only the government-managed and non-profit Facebook pages that are publicly accessible.

Keywords related to Covid-19 were used to search content on the CrowdTangle. The keywords that were used for data collection were: "করোনা", "করোনাভাইরাস", "কোভিড-১৯", "কোভিড", "করোনা টিকা", "করোনা প্রতিষেধক", "করোনা টিকা", "corona", "covid-19", "covid19", "covid", "coronavirus", "corona vaccine" and "corona prevention". Boolean connectors such as *and*, *or*, *not* were also used to broaden the search net. According to the website, CrowdTangle is defined as a "tool from Facebook to help follow, analyze, and report on what's happening across social media," making it a valuable tool for data extraction.

## **4.4 Measures**

### **4.4.1 Different Types of Posts**

Different types of Facebook posts were listed using keyword search. The posts were sorted into six types: link, live video, native video, photo, status, and YouTube video. Native video refers to video that is uploaded directly to a social media platform rather than being shared from other platforms. Both Bangla and English keywords were used for the keyword search, and keywords such as "করোনা", "করোনাভাইরাস", "কোভিড-১৯", "কোভিড", "করোনা টিকা", "করোনা প্রতিষেধক", "করোনা টিকা", "corona", "covid-19", "covid19", "covid", "coronavirus", "corona vaccine" and "corona prevention" were applied. The first reported case of Covid-19 in Bangladesh was identified in March 2020, and the timeline for data collection was set from January 2020 to February 2022. The data was cataloged in tables 1, 2, 3, 4 and 5.

### **4.4.2 User Engagement**

User engagement of the posts was measured through comments, shares and different types of Facebook reactions – *like, love, care, wow, sad, haha, and angry* (Figure 2). On Facebook pages, engagement metrics are defined through comments, shares, reactions/likes, account reach, follows and clicks ((Malnik, 2022). The interactions for each content were then measured, along with responses to each type of content. The data was then cataloged in tables 1, 2, 3, 4 and 5. The types of Facebook reactions and the types of contents were adapted from Al-Zaman's (2021) study. On a

second level, Quick Analysis determined whether the type of post is correlated with the number of reactions, i.e., engagements.

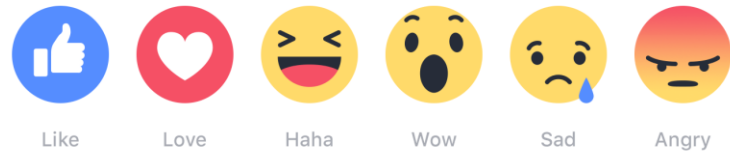


Figure 2. Facebook Reactions (Krug, 2019)

## RESULTS

This study explored the types of shared posts on government and NGO/non-profit page contents related to Covid-19 on Facebook in Bangladesh, and user engagement with each post types.

The research had several novel findings. The CrowdTangle search with keywords: "করোনা", "করোনাভাইরাস", "কোভিড-১৯", "কোভিড", "করোনা টিকা", "করোনা প্রতিষেধক", "করোনা টিকা", "corona", "covid-19", "covid19", "covid", "coronavirus", "corona vaccine" and "corona prevention" from the Facebook platform resulted in 59,728 posts and 105,614,379 interactions from non-profit pages and government agencies' pages combined. The timeline was set from January 1, 2020, to February 28, 2022. Among the posts, 29,390 were from various government agencies and 30,338 were from NGOs and non-profit organizations combined. Among the different types of posts, there were 35,000 photos, 5,638 native videos, 11,475 links, 2,933 statuses, 3,924 live videos and videos, and 758 YouTube video links.

An analysis revealed the following results:

**RQ 1:** *What types of COVID-19 related health messages are shared on Bangladeshi Government social media channels?*

Bangladeshi government agencies shared all 6 types of posts related to Covid-19 on their social media channels: links, live videos, native videos, photos, statuses, and

YouTube videos. In total, 29,390 posts were shared from the pages labeled as government agencies, which accounts to 49.26% of the total shared posts. Among these posts, there were 5723 links, 2296 live videos, 2281 native videos, 17376 photos, 1400 statuses and 314 YouTube video links (Table 1). Among the shared contents by government pages, photos were most dominant (59.12%), followed by links (19.47%), live videos (7.81%), native videos (7.76%) and statuses (4.76%). YouTube videos were the least dominant (1.07%).

**Table 1. Post Type and Percentages within Page Category**

Page Category	Post Types and Percentages within Page Category ( <i>n</i> , %)					
	Link	Live Video	Native Video	Photo	Status	YouTube
Government Page (29,390)	5723 (19.47)	2296 (7.81)	2281 (7.76)	17376 (59.12)	1400 (4.76)	314 (1.07)
Non-profit Page (30,338)	5752 (18.96)	1628 (5.37)	3357 (11.07)	17624 (58.09)	1533 (5.05)	444 (1.46)

Among the total shared posts from both page categories, 49.87% links, 58.51% live videos, 40.46% native videos, 49.65% photos, 47.73% statuses and 41.42% YouTube video links were shared by government pages (Table 2). A chi-square test of independence was performed to examine the relation between page category and post



type. For this procedure as well as the following procedures, significance was set at  $p \leq 0.05$ . For government pages, the Chi-Square value was 41493.55,  $df=5$ ,  $p < .001$ . Therefore, the difference between these variables was statistically significant. For non-profit pages, the Chi-Square value was 40891.07,  $df=5$ ,  $p < .001$ . Therefore, the difference between these variables was statistically significant as well. Overall, the difference of the number of interactions was statistically significant by whether the page was government or not for profit. For the two types of pages, the Chi-Square value was 32321906.87,  $df=1$ ,  $p < .001$ .

**Table 2. Percentage of Post Types by Page Category**

Page Category (%)	Percentage of Post Types by Page Category (%)					
	Link	Live Video	Native Video	Photo	Status	YouTube
Government Page (49.2)	49.87	58.51	40.46	49.65	47.73	41.42
Non-profit Page (50.79)	50.13	41.49	59.54	50.34	52.26	58.58

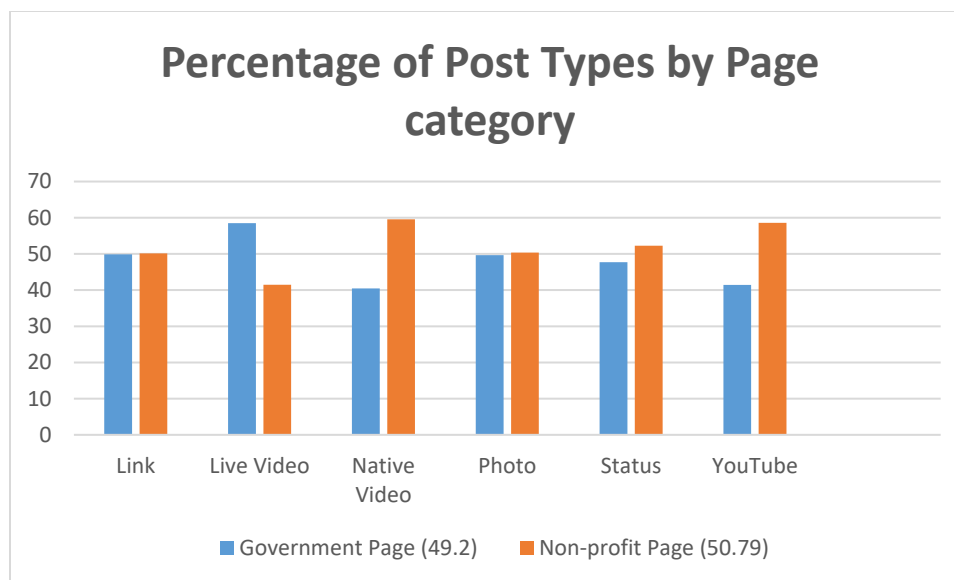


Figure 3. Percentage of Post Types by Page Category

**RQ 2:** *What types of COVID-19 related health messages are shared on Bangladeshi NGO social media channels?*

Bangladeshi non-profit organizations shared all 6 types of posts related to Covid-19 on their social media channels: links, live videos, videos, photos, statuses, and YouTube videos. In total, 30,338 posts were shared from Facebook pages labeled as non-profit/ NGOs, which accounts to 50.74% of the total posts. Among these posts, there were 5752 links, 1628 live videos, 3357 native videos, 17624 photos, 1533 statuses and 444 YouTube video links (Table 1). Of the shared contents, photos were most dominant (58.09%), followed by links (18.96%), native videos (11.07%), live videos (5.37%) and statuses (5.05%). YouTube videos were the least dominant (1.46%).

Among the total shared posts from both page categories, 50.13% links, 41.49% live videos, 59.54% native videos, 50.34% photos, 52.26% statuses and 58.58% YouTube video links were shared by NGOs and nonprofits (Table 2). NGO pages shared more

YouTube links and native videos related to Covid-19, while government pages shared more live videos. Both pages shared similar volumes of links, photos, and status updates (Figure 3).

**RQ 3:** *How do users engage/interact with different COVID-19 related content from their channels?*

Bangladeshi users were more likely to interact with Covid-19 related health messages shared by non-profit organizations than those shared by government agencies. For the users, most used interaction method was ‘liking’ the post, and the least used reaction was ‘angry’. There were 18460112 likes on the posts shared by government pages (21%), and 69420061 likes on posts shared by nonprofits (79%).

In total, there were 1006416 comments, 2239671 shares, 69420061 likes, 7103917 love reactions, 238510 wow reactions, 372216 haha reactions, 610320 care reactions, 959322 sad reactions, and 70016 angry reactions on the Covid-19 related posts shared by nonprofit pages (Table 3). Among the total interactions, nonprofits were leading with 51.55% comments, 56.76% shares, 79% likes, 82.79% love, 86.84% wow, 80.66% haha, 85.79% care, 56.06% sad and 73.55% angry reactions (Table 3).

On the other hand, there were 946605 comments, 1706363 shares, 18460112 likes, 1477083 love reactions, 36149 wow reactions, 89222 haha reactions, 101121 care reactions, 752102 sad reactions, and 25173 angry reactions on the Covid-19 related posts shared by government agencies’ pages. Among the total interactions, these pages had 48.45% comments, 43.25% shares, 21% likes, 17.22% love, 13.17% wow, 19.34% haha, 14.21% care, 43.94% sad and 26.44% angry reactions (Table 3). A Chi-Square test of independence was performed to examine the relation between page category and

interactions. For government pages, the Chi Square value was 97131715,  $df=8$ ,  $p < .001$ . The relation between these variables was therefore statistically significant. For non-profit pages, the Chi Square value was 403931295.61,  $df=8$ ,  $p < .001$ . The relation between these variables was therefore statistically significant as well.

**Table 3. Interaction Percentages by Page Category**

Page Category	Total interactions and percentages within interaction types ( <i>n</i> , %)								
	Comments	Shares	Likes	Love	Wow	Haha	Care	Sad	Angry
Government Page	946605 (48.45)	1706363 (43.25)	18460112 (21)	1477083 (17.22)	36149 (13.17)	89222 (19.34)	101121 (14.21)	752102 (43.94)	25173 (26.44)
Non-profit Page	1006416 (51.55)	2239671 (56.76)	69420061 (79)	7103917 (82.79)	238510 (86.84)	372216 (80.66)	610320 (85.79)	959322 (56.06)	70016 (73.55)

**RQ 4:** *What kind of social media content related to COVID-19 gets more interactions from the users?*

The results indicated that photos, native videos, and links had the greatest number of interactions from users. Photos led with 72815012 total number of interactions, which accounted to 68.94% of the total interactions on all six types of posts (Table 4).

**Table 4. Interaction with Different Content Types (Source: Al-Zaman, 2021)**

Content Types	Total Interactions (n, %)	Interaction numbers and percentages within content types								
		Comments	Shares	Like	Love	Care	Sad	Angry	Haha	Wow
Link	11352368 (10.75)	147484 (1.3)	261538 (2.3)	9846871 (86.74)	748825 (6.60)	59289 (0.52)	217382 (1.91)	8885 (0.08)	44609 (0.39)	17485 (0.15)
Native Video	16101101 (15.25)	252250 (1.57)	1873041 (11.63)	12020263 (74.65)	1486589 (9.23)	123831 (0.77)	119883 (0.74)	22286 (0.14)	159422 (0.99)	43536 (0.27)
Photo	72815012 (68.94)	1109270 (1.52)	1381908 (1.90)	62144848 (85.35)	6051210 (8.31)	509222 (0.70)	1162085 (1.60)	52047 (0.07)	203882 (0.28)	200540 (0.28)
Status	1831043 (1.73)	98048 (5.35)	108458 (5.92)	1328237 (72.54)	124878 (6.82)	8962 (0.49)	110653 (6.04)	3361 (0.18)	41909 (2.29)	6537 (0.36)
YouTube	261926 (0.25)	10420 (3.98)	17370 (6.63)	221003 (84.38)	9562 (3.65)	620 (0.24)	1897 (0.72)	134 (0.05)	640 (0.24)	280 (0.11)
Live Video	3252929 (3.08)	335549 (10.32)	303719 (9.34)	2318951 (71.29)	159936 (4.92)	9517 (0.29)	99524 (3.06)	8476 (0.26)	10976 (0.34)	6281 (0.19)

Native videos had 16101101 interactions (15.25%) and links had 11352368 interactions (10.75%). A chi-square test of independence was performed to examine the relation between number of interactions and content types. For comments, the Chi-Square value was 2119511.463, df=5, p= < .001. For shares, the Chi-Square value was 3927075.928, df=5, p= < .001. For likes, the Chi-Square value was 163572296.6, df=5, p= < .001. For love, the Chi-Square value was 16109849.62, df=5, p= < .001. For care, the Chi-Square value was 1386930.856, df=5, p= < .001. For sad, the Chi-Square value was 2821000.492, df=5, p= < .001. For angry, the Chi-Square value was 100741.9328, df=5, p= < .001. For shares, the Chi-Square value was 3927075.928, df=5, p= < .001. For haha, the Chi-Square value was 398563.2836, df=5, p= < .001. For wow, the Chi-Square

value was 553953.2884,  $df=5$ ,  $p < .001$ . The difference between each of these variables was therefore statistically significant.

Findings further revealed that photos had 56.80% of the total comments, 35.02% shares, 70.72% likes, 70.52% love, 71.58% care, 67.9% sad, 54.68% angry, 44.18% haha and 73.01% wow (Table 5). Native videos, however, were the most shared post type with 47.47% shares. Native videos and links had the second and third largest number of interactions after photos.

**Table 5. Interaction Number and their Percentages within the Interaction Types**

(Source: Al-Zaman, 2021)

Reactions	Total Interactions ( <i>n</i> , %)	Interaction percentages within interaction types (%)					
		Link	Native Video	Photo	Status	YouTube Video	Live Video
Comments	1953021 (1.85)	7.55	12.92	56.80	5.02	0.53	17.19
Shares	3946034 (3.74)	6.63	47.47	35.02	2.75	0.44	7.70
Likes	87880173 (83.21)	11.20	13.68	70.72	1.51	0.25	2.64
Love	8581000 (8.12)	8.73	17.32	70.52	1.46	0.11	1.86
Care	711441 (0.67)	8.33	17.41	71.58	1.26	0.09	1.32
Sad	1711424 (1.62)	12.70	7.00	67.9	6.47	0.11	5.82
Angry	95189 (0.09)	9.33	23.41	54.68	3.53	0.14	8.90
Haha	461438 (0.44)	9.67	34.55	44.18	9.08	0.14	2.38
Wow	274659 (0.26)	6.37	15.85	73.01	2.38	0.10	2.29

The results suggested that the contents received most interactions from March 2020 to May 2020, i.e., during the peak moment of the pandemic (Figure 4). The interactions hit a spike again from March to September 2021.

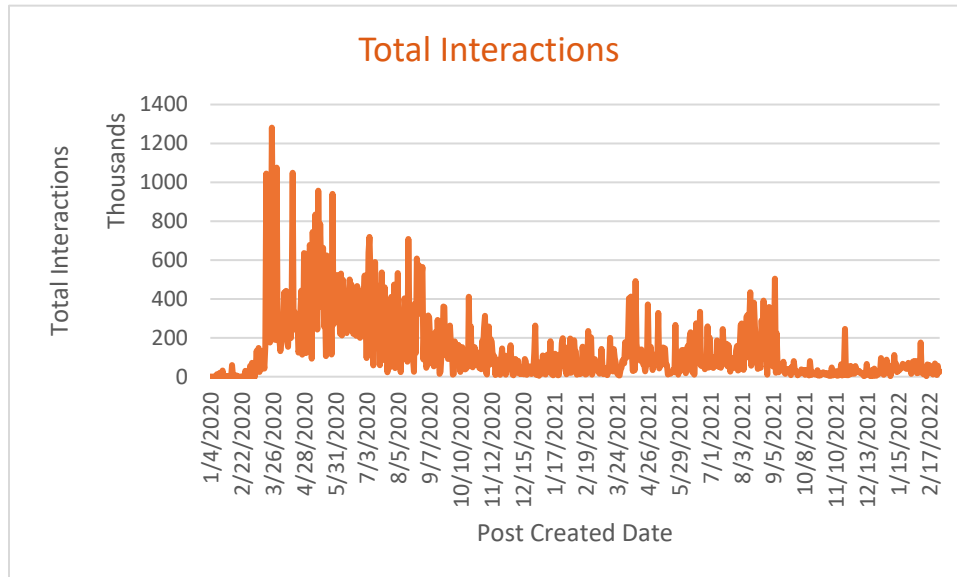


Figure 4. Total Interactions Timeline

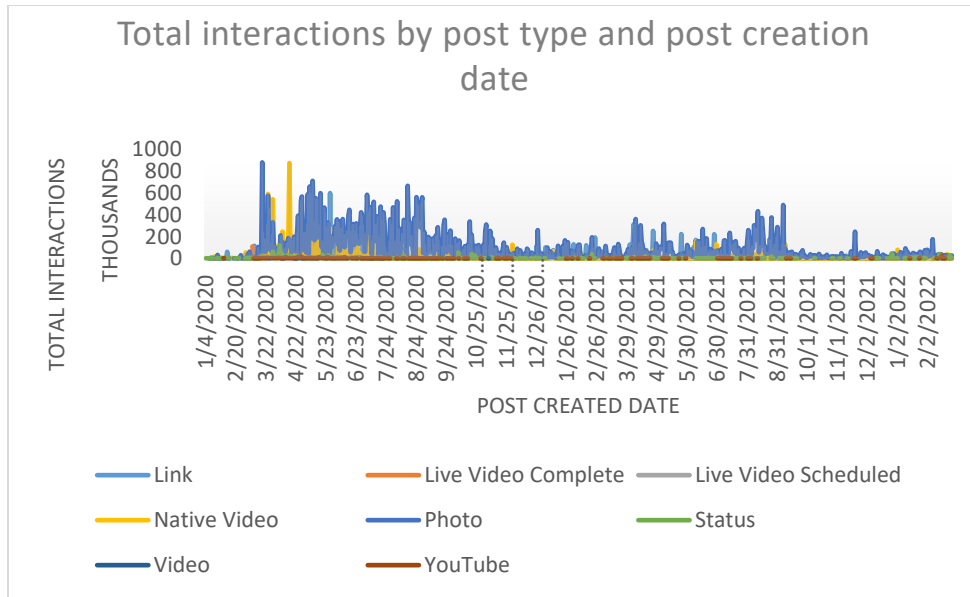


Figure 5. Total Interactions by Post Type and Creation Date

The findings further revealed that photos had consistent interactions from March 2020 to February 2022. Native videos had a significant spike in interactions during April 2020 (Figure 5).



## **DISCUSSION**

This study aimed to explore the nature of shared contents and public engagement in the COVID-19 related posts from Bangladeshi government agencies and nonprofit organizations on Facebook. 59,728 Facebook posts were analyzed.

This research resulted in a few main findings. Both government and nonprofit Facebook pages shared all type of contents. While both pages shared similar volumes of photos, links and status updates, non-profit pages shared more YouTube links and native videos related to Covid-19. On the other hand, government agencies' pages shared more live videos. For both page categories, photos were the most dominant post type with a significantly higher post rate, compared to other types of posts. This finding indicates that both page categories prioritize on posting photos. The results also indicated that photos, native videos, and links had the greatest number of interactions from users, which reflects the implications from previous studies that photos or images receive more interactions from the users (Brookes, 2010; Sabate et. al., 2014). Therefore, posting images with Covid-19 information was an effective information dissemination strategy taken up by the Bangladeshi government and nonprofit organizations.

Results also show a gradual decline in interactions with Covid-19 related page contents, which reflects the argument proposed by Kleis Nielsen et al. (2020) that using Facebook for COVID-19 news and information declined with time.

Like and love are the two leading reactions, which indicates that the users' reactions to Covid-19 related health messages is largely positive. The least used reaction was 'angry', indicating that the negative emotions were at a minimum. According to Al-Rawi (2020), Facebook reactions represent a variety of expressions, which may also have contradictory meanings. However, for this study, like, love, wow, and care can be defined as positive, and angry, sad, and haha can be defined as negative based on previous research (Al-Zaman, 2021; Giuntini et al., 2019). A prior study by Al-Zaman (2021) found that like and love were leading reactions from Bangladeshi Facebook users for Covid-19 vaccination related contents. The present finding suggests that this behavior has expanded in users' reactions to all types of Covid-19 contents.

Native videos gained more shares from the users, indicating that the users may find native video contents to be helpful and therefore shareable. Moreover, nonprofit pages led with the percentages of like, love, care, haha, wow, angry and care compared to government pages, indicating that the Bangladeshi Facebook users interacted more with posts from nonprofit organizations. This finding supports the argument posited by previous studies that non-profit organizations have taken up the role to support the needs of the Covid-19 stricken society because of their social accountability (Dong & Lu, 2020; Kumar & Pinky, 2021). Moreover, studies have shown that the public in Bangladesh mistrust the health system and are discontent with the government management of the Covid-19 pandemic (Hossain, 2021; Joarder et. al., 2020). This may explain lower user engagement with the contents shared from the government agencies' Facebook pages. During Covid-19, Bangladeshi social media users showed significant likelihood of obtaining health information from social media and following proper health

rules (Sharif et. al., 2021). It can therefore be argued that social media contents related to Covid-19 with higher user engagement can influence positive health behaviors.

## LIMITATIONS AND STRENGTHS

The study has a few limitations. First, as Al-Zaman (2021) notes, the ‘Care’ reaction on Facebook was added on April 2020. Therefore, the data before April did not include the care reaction, which marginally affected the overall percentages. Second, the data was extracted through CrowdTangle, which shared the number of reactions (like, love, care, wow, sad, haha, angry) for each post types. According to Giuntini et al. (2019), the like reaction may not be indicative of any emotion, it may rather indicate the absence of any particular emotion. So, the users’ motives behind reacting to a post could be further explored in future studies. Third, the extracted data from CrowdTangle contained Facebook posts that labeled themselves as non-profit, NGO, and Government page categories. There could be a few incorrectly labeled pages that could not be eliminated due to having a large amount of data.

Despite the listed limitations, this study has strength in several areas. First, the present study can help both government and non-profit agencies cater Covid-19 related contents that appeal the users based on the user engagement patterns. Social media is an ever-growing landscape, and it is important for corporations and nonprofits to know how to use this platform for greater good. Second, the study explored a large number of contents, making the results more reliable. The previous studies (e.g. Al- Zaman, 2021; Jahan et al., 2021) on Bangladeshi users’ Facebook use during Covid-19 pandemic only

included a limited amount of data. Finally, this present study shows that Bangladeshi users are open to Covid-19 and vaccination related content, which provides a positive picture of these users' acceptance of health messages on social media. Future studies on this area can shed more light on this phenomenon and explore a subjective motive of the users' interactions.

## CONCLUSION

Covid-19 posed a serious threat to Bangladesh, a densely populated country with limited resources. Media and social media campaigns contributed to the efforts in increasing public awareness. The current study contributes to research that explores user engagement with Covid-19 related messages on social media. The results indicated that most effective post types for disseminating Covid-19 messages were photos, links, and native videos. The findings moreover revealed that posts from Bangladeshi nonprofit organizations were more effective in terms of obtaining interactions. This study thus adds value to the current understanding of user engagement on Covid-19 information on Bangladeshi social media.

Social media have potential to play a substantial role in providing accurate and truthful information and influencing health behavior among the users. With a better understanding of how users engage with different type of Covid-19 related contents on Facebook, Bangladeshi government agencies and nonprofits can develop efficient health message dissemination strategies for popular social media platforms such as Facebook.

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