Reasons and Effects of Fake News Spreading (During COVID-19) on Facebook: A Survey in The Context of Bangladesh

Md. Rakibul Hasan Shezan[1], Yeasir Arafat Shahed[1], Sayed Atique Newaz[1], Mohammed Nasif Zawad[1], and Mostofa Rafid Uddin[1]

[1]Department of Computer Science and Engineering
East West University
Dhaka-1212, Bangladesh
*Corresponding author: rafid_duran@ewubd.edu

***Abstract*—In recent years, social media played an exigent role in promulgating misinformation among its users about different topics. But during the COVID-19 pandemic, this misinformation spreading has taken a terrible turn as it is creating confusion and panic among mass people. A developing country like Bangladesh where the vast use of social media was introduced very long ago, it is important for the users to understand how to handle social media news that they interact with. The reasons why fake news related with COVID-19 is spreading rapidly and how much it is affecting the social media users is unclear. This study identifies the reasons that trigger the misinformation spreading on Facebook and the effects it has on the users and provides a broader view in the context of Bangladesh. The findings indicated different reasons that influence the spreading of misinformation, like - sharing posts depends on to what extent a user believes news on Facebook, users sometimes share posts without verifying it's credibility, fake news and memes cover up original news from spreading, and groups in Facebooks plays a vital role to spread misinformation. It was found that Facebook users had a higher percentage (around 57.5%) to be affected mentally and physically by false information related to COVID-19. The results suggest that different factors are related that help fake news to reach more users and findings like these can help the peoples judge the news they share or react on Facebook.**

***Index Terms*—Disinformation and Misinformation, Mental Health and Covid-19, Aftershock of Covid-19 on social media, Bangladesh.**

I. Introduction

Spreading of misinformation or disinformation is nothing new for the world but because of technology and social media (Facebook, Twitter, etc.), "fake news" spreads at unprecedented speed to a large number of users. During this COVID-19 pandemic, the spread of false information has grown to a greater extent as the World Health Organization(WHO) addressed that this infodemic (misinformation) is causing casualty and contributing to deaths and injuries. Health related misinformation is present in all the social platforms more or less [1], [2]. Misinformation is so much of a concern not only because of how it is affecting the spread of panic but also creating trust issues as people's trust in institutions are decreasing [3].

Spreading of misinformation on Facebook could make a serious impact on an overpopulated country like Bangladesh as according to the Facebook usage till 31st march of 2020, there are around 33,713,000 users in Bangladesh. Like all other countries, Bangladesh is also now fighting with COVID-19 and the government is finding it hard to control the situation. There have been different hoaxes gathered around COVID-19 and it started even before the virus arrived in this country. Identifying misinformation is not an easy task, especially when it is a developed country like Bangladesh where people speak Bengali. There are different fact checking websites where someone can search any news topic wise to measure the authenticity of it. The Bengali search engine is not that much powerful and there are no Bengali fact-checking sites, which makes investigating news a bit harder for average users. There has been news related to COVID-19, like- eat thankuni leaf(Pennywort) to cure corona, watering coconut tree, government hiding the news of the virus and so many more. We provided some screenshots in the appendix section [C] about different hoaxes related to COVID-19 in Bangladesh that appeared on Facebook in different times during the whole lockdown period in Bangladesh.
It is necessary to understand why misinformation spreads so rapidly and does it affect peoples mentally or physically. Some local articles addressed this situation of the spreading of fake news and how it is affecting peoples of Bangladesh in different ways but no specific and broadly research has been done. An elaborate understanding of the effect of fake news related to COVID-19 in Bangladesh could help both the general mass and government to take necessary actions to lower the level of spreading the misinformation.

As the misinformation regarding COVID-19 has been affecting different communities, lives, and triggering the spread of the disease to a much greater extent, exploring the reasons for the vast spreading of misinformation and effects of it on social media could be a really helpful mechanism for the users.

The objectives that need to be completed to achieve this goal are:

- To classify users who are somehow affected by false information.
- To identify the likely sources of misinformation or disinformation and reasons for engagement.
- To find people's interaction with different types of posts containing false information.

To better understand why fake news spreads quickly in Facebook and the effect of it to the users who interact with them we pose the following research questions:
Can we provide a broader view to the users about what are the reasons and effects of misinformation regarding COVID-19 on Facebook in the context of Bangladesh? In addition to it, can we find about how much they believe a piece of news on Facebook and do the peoples who are more familiar with fake news have a chance to be affected mentally or physically?

Because of the COVID-19 pandemic, we limited the whole study to online from the beginning to the end and we focused only in one platform which is Facebook, because random peoples in Bangladesh are not that much familiar and used to other online platforms like Twitter or Reddit.
Our findings suggested different factors are responsible to spread COVID-19 rumors among Facebook users like- sharing posts depends on to what extent a user believes news on Facebook, users sometimes share posts without verifying it's credibility, fake news and memes cover up original news from spreading, and groups in Facebook as the main source to spread misinformation. We also found that Facebook users have a higher chance to be affected mentally or physically by COVID-19 misinformation exposure.

II. Related Works

"Misinformation" refers to the collection of contents like misleading news reports, hoaxes, conspiracy theories, click-bait headlines, junk science, and even satire [4], [5]. Fake news or misinformation and its unprecedented spread through social media have become one of the most crucial issues in this digital world. The existence of fake news is not a new affair as it has been there in media history since ancient times [6]. There are around 330 million monthly and 140 million daily active users on Twitter [7] and over 2.7 billion monthly active users on Facebook[11] and one research showed that 67% of Americans as of 2017 get at least some of their daily news from social media [12]. Everyday users go through social platforms to access news and views, where there is always a chance to be exposed to misleading information. The spread of fake news or misinformation can be harmful not only for the individuals but for the whole population. Sometimes people can not identify whether the news is true or false that they spread or consume [8]. Not only humans, but recent study also shows that bot plays a vital role to spread misinformation on social media platforms [4], [9]. The consequences of spreading misinformation are beyond imagination. People were influenced by fake news on Twitter during the 2016 US presidential election, where 25% of news were detected as false or biased news found in a study[14]. Spreading low-credibility content on social media during the election, bots were responsible to influence twitter users to consume fake news [5]. Social media platforms are the powerful sources of spreading misleading news [6], as millions of people are involved with social media [7].
It's a big challenge for the government to control the spread of misleading news on social media during a national crisis. During the Covid-19 crisis, people get panicked because of its high rate of fatality and transmissibility [10]. How the Spreading of rumors influences people at the COVID-19 crisis can be clarified by the recent rumor spread by Cable News Network, Inc(CNN). The news channel rumored about a possible lockdown of a region in Italy and as a result, people overcrowded the public transportation areas [11]. On social platforms, false information spreads faster without considering accuracy because the context of social media focuses more on the topic or subject rather than the accuracy [8]. Researchers found that trolls and memes are now the primary sources to spread information on social media and how it can be a reason for someone's death [12]. There was a survey conducted for a research [13] in China via WeChat that got the result that, one-fifth of total 1577 respondents reported probable anxiety and probable depression. It is always difficult to identify false news and the spread of information mainly depends on how users interact with them [8], [14] and also on their ability or knowledge about that certain topic [8].
In Bangladesh, there has been news related to COVID-19, like- false claims regarding vaccines, irrelevant curing approaches(like- eating Indian Pennywort or Thankuni), different conspiracy theories(like-government hiding the spread information of COVID19), etc. Some local and international articles addressed this situation of the spreading of fake news and how it is affecting peoples of Bangladesh in different ways but no specific and broad research has been done.

III. Methodology

Our study was designed to find the effects and reasons for spreading misinformation regarding COVID-19 in the social media platform where we tried to involve as many participants as possible for collecting data. We did random sampling and to accommodate more participants in our research we chose the online anonymous questionnaire method. As the Pandemic situation refrained us to contact with our participants physically, we made it through online by sharing a google form containing some questions regarding COVID-19.

In the first section of the survey, we included a consent form where we mentioned why we are collecting the data from the participants, how we are going to use them and ensured them that we are not going collect any identical information(name or email). If they agreed then we presented second section that contained all the survey questions. We created 13 questions(attached in the appendix section) combining categorized and open-ended questions for the participants. The questions were designed to collect information about why Bangladeshi people share COVID-19 related misinformation and how it might affect them. Our survey questions were prepared in

English and distributed by research team members through their Facebook account in different Facebook groups having people of different ages. For better understanding and getting more responses, we made our survey open to all anonymous respondents and took their consent. We restricted the response to one email one response to get rid of redundancy and users who might want to submit a form multiple times. For collecting responses, the survey was open for 2 weeks, and a total of 146 participants responded to the survey. Among these, 72 participants were aged between 18-22, 70 participants were from 23-27, and the rest were above 27. In our survey, the form was given to the users with a consent section and we ensured them that this data will not be disclosed elsewhere, and to contain the anonymity we didn't collect their email addresses.

As mentioned in the above, we used google form to complete the data collection method. Then we converted our dataset to a spreadsheet in CSV format which is available in google drive link here. By using filtering functionality we did some filtering according to a different logic. We also used the pandas framework to generate different graphs and other python libraries to compute statistical measurements like- p-value, Pearson Chi-square test and Cramer's V for measuring the significance and correlation of the datasets. The codes for statistical analysis can be obtained upon request to the corresponding author.

IV. Data Findings and Result

Doing analysis of the results of 146 respondents, we now describe our findings on how users respond when they interact with misinformation on Facebook. We surfaced the reasons why misinformation gets more focus and it's effect on the users.

A. *Sharing of posts or memes related to COVID-19 depends on user's level of belief on a particular news*

We collected responses regarding what was the participant's main source of daily information. Among the 146 responses we got, 87 participants selected Facebook as their main source of information. Then among those 87 responses, we filtered them according to each participant's level of belief (on a scale of 5) for particular news on Facebook. We applied Pearson Chi-square test and Cramer's V to these two sets of data of user's level of belief and their frequency of sharing COVID-19 posts or memes to determine whether they are correlated or not. The Chi-Square Test and Cramer's V determines whether there is an association between categorical variables. If the Cramer's V is more than 0.1 then variables are considered to be related to each other. In our case, the value of Chi-square test was 11.35 and the Cramer's V was 0.2 which ensured that these two variables were related or associated to each other.

1) ***Users who do not believe social media news much (with 2 or below believe rating)****:* 31.03% participants were found who answered that they do not believe a piece of news or post on Facebook as their level of belief was either 1 or 2. Among those participants, we measured their responses on how often they share COVID-19 posts or memes on Facebook. As shown in Figure 1, users were found who never share or post news, memes related to COVID-19 through their Facebook account. 29.6% users sometimes share them and only 3.7% of users often share in their personal chats with their Facebook friends.

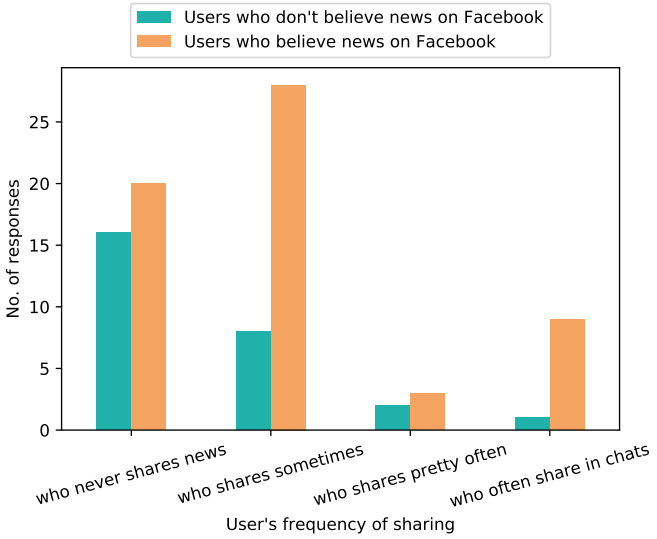

Fig. 1: A compound bar chart showing how much users share posts or memes related to COVID-19 according to their belief level. Users who believe a particular news on Facebook sometimes share COVID-19 posts more.

2) ***Users who believe social media news much (with 3 or above believe rating)****:* In this case, we found 60 (around 68.97%) participants who gave 3 or above ratings for their belief level for the news they interact within Facebook. Then among those 60 responses, we measured their frequency of sharing posts or memes related to COVID-19 on Facebook. As we can see in Figure 1, 41.18% participants (28) answered that they sometimes share posts or any kind of memes that are related to COVID-19 and they pretty much believe posts or news they interact with on Facebook. And 9 users often shared in their personal chats and 3 of users pretty often post news or memes on Facebook. Although, 33.3% users were found who answered that they never share any news or memes containing the COVID-19 topic.

B. *In Facebook, the groups play more role to spread misinformation than pages and others*

Participants were asked about their idea regarding which sources on Facebook they think are responsible for sharing misleading information related to COVID-19. We considered four main sources which are- random pages, news channel pages, groups, or posts from individuals and we gave participants the privilege to check multiple sources as answers to this question.

We found out that according to Figure 2, among 146 participants; 85 participants answered that Facebook groups are mainly responsible for spreading misinformation [15].

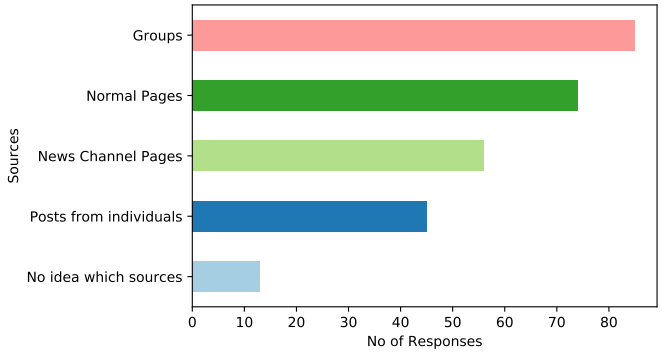

Fig. 2: Likely sources who are responsible for sharing misinformation on Facebook

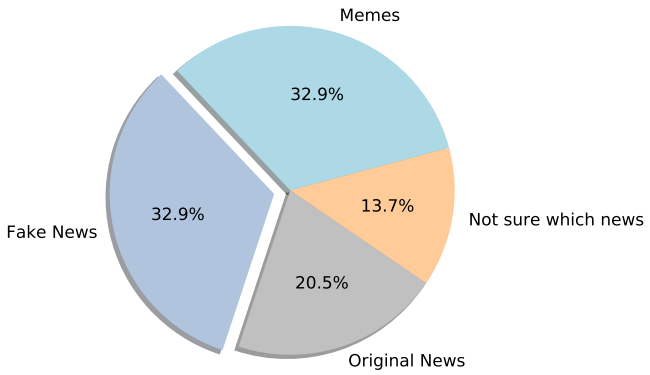

Fig. 3: A pie chart showing which type of news gets more attention on Facebook

On Facebook, there are groups that anyone can create with different privacy settings like- public, closed, and secret. Closed groups are exclusive as the user first need approval from the group's admin before joining it. So, users who are not members can't know what is going on inside these types of groups. It is more interactive with the members as any member can post anything by the approval of the admin. As a result, spreading misinformation between a certain amount of people could be pretty much easy inside these groups.

Normal pages in Facebook are different from groups as it is more open and there is no option to make the privacy of the page private or closed and also only the page owner can post something. Users can be connected with a page to get updates like-getting posts from these pages by just giving it a like. These pages could be another source to lead the spread of misinformation as 74 of our participants (50.7%) marked it as another source that mostly shares fake news. As these pages are more open than groups, it can reach to people very easily. 38.4% of our responses were in favor of the news channel pages as a possible source to guide misinformation to spread. Different news channels have their own pages on Facebook and they have a huge amount of engagements; like- Bangladeshi news channel page Somoy News has around 6,898,000 likes on their Facebook page [Facebook Link].

Figure 2 shows that only 30.8% or 45 participants mentioned posts from individuals as a source of misleading information.

C. Fake news and memes are getting more attention than original news on Facebook

A question where we asked the participants about the type of news in their opinion that get more attention (mainly- likes, share, etc.). Interestingly, 32.9% of participants answered that posts containing memes and fake news get more attention in their opinion. As shown in Figure 3, 20.5% of the participants shared their opinion in favor of Original news getting more attention on Facebook. There was another question whose answer actually supports the output of this question.

In the result of the question where we asked the participants about on a scale of 5 how frequently they have seen fake news on their news feeds on Facebook, 59 participants (49.4% of total) gave 4 out of 5 ratings and 19.9% gave 5 out of 5 also meaning they frequently see fake news on their wall.

D. Fake news related to COVID-19 affected people mentally and physically

We provided the participants with a question mentioning whether they are affected by fake news mentally and physically. Among the 146 responses, 89 participants(61% of total participants) claimed being affected mentally and physically by fake news. Then among the 89 responses, we filtered them according to their main source to know about daily news.

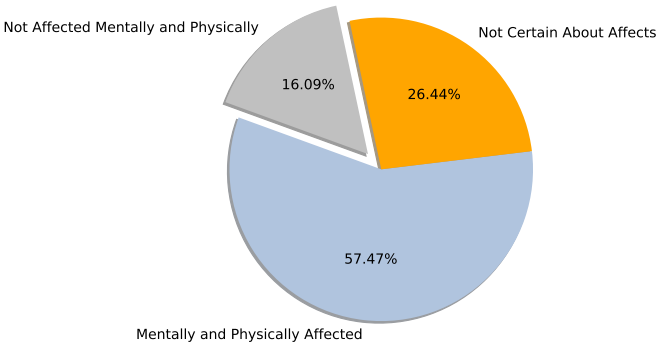

Fig. 4: A pie chart showing the percentage of participants who are mentally and physically affected and their primary source of news was Facebook.

87 of our participants' main source to know about daily news was Facebook. As shown in Figure 4, among those participants, 57.5% of participants (50 participants) think they were affected by fake news related to COVID-19. 23 participants (26.4%) weren't completely sure that they are affected or not as they selected "maybe" as their answer. And 14 participants (16.1%) think they weren't affected mentally and physically at all.

E. Fake news exposure impacts people mentally and physically

According to our data, 104 participants selected 3 or fewer options in a multiple question where we asked them to select

rumors they heard through Facebook related to COVID-19. We gave participants the following options in question - Eating Thankuni leaf (Pennywort) to cure CORONA, Government hiding actual numbers of corona patients, Posts about the government going to open educational institutions, Pouring water on Coconut trees using a Kolosh (Pitcher) to eradicate CORONA, Other. We considered 3 rumors as the threshold value because we provided our participants with 5 rumor option and 3 is the middle point (median) out of the 5 rumor option. We have mentioned the screenshots of these rumors on the appendix section[C] to verify the veracity of these rumors.

As shown in Figure 5, 42 participants (28.76% of total participants) selected 4 and above rumors that they heard through Facebook. Out of those 104 participants (71.24% of total participants), 55.8% think they are affected by fake news mentally and physically. The 42 participants who heard 4 or more rumor related to COVID-19, has a higher percentage (73.8%) of being affected by fake news mentally and physically. To ensure that this dataset containing information about the number of rumors participants heard and being affected mentally and physically affected is statistically significant, we calculated the p-value. A p-value is a measure of the probability that an observed difference could have occurred just by random chance [Wikipedia]. If a p-value is less than 0.05 then it indicates that the difference of data is statistically significant and the null hypothesis can be rejected. We measured the p-value for this dataset using the one way ANOVA for numeric independent variable vs a categorical dependent variable. And the p-value was 2.45e-15 which is very much less then 0.05 indicating that the dataset of fake news exposure is statistically significant and the difference did not occur by random chance.

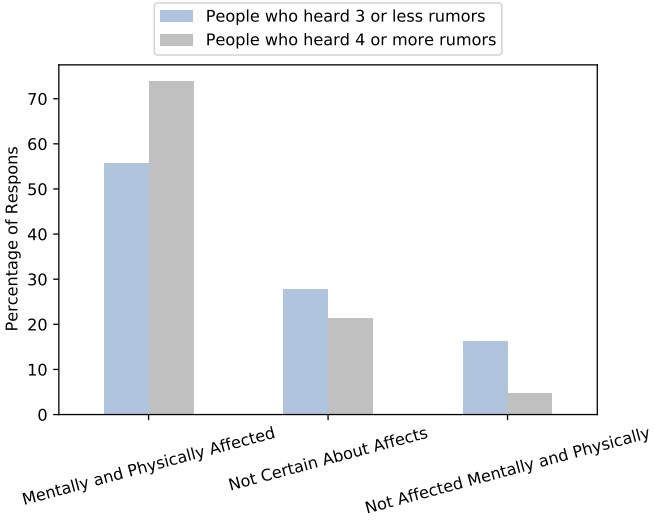

Fig. 5: A compound bar chart showing percentage of people who heard 3 or fewer rumors Vs people who heard 4 or more rumors.

The variation is also noticeable in those who thirnk they aren't affected mentally and physically. Those who heard less rumor(3 or less) had a higher percentage(16.3% and 4.8%) of not being affected. Fewer people think not being affected among the people who heard 4 or more rumors through Facebook. A study [16] found that the group of people who follow COVID-19 news through numerous media have a higher chance of having mental consequences.
We measured Pearson Chi-square, p-value, and Cramer's V for all the rumors separately to find whether individual rumors affected the participants or not. The result signified that individual fake news is not responsible for participants' mental and physical health as the values were not significant.

F. Many users ignorantly share fake news

We provided the participants a question mentioning whether they ever believed and shared any news related to COVID-19 on Facebook that later turned out to be fake. We included this question to elicit do they depend on facts or try to make sure the credibility of news before sharing them publicly.

As shown in Figure 6, the responses showed that around 65.8% of peoples didn't face this type of situation as their answer was no. But we also measured that, 36 users actually had this issue in common as they answered yes. Means, those 24.7% of total users actually shared misinformation on Facebook without knowing the credibility or actual fact about the news they shared. 9.6% respondents found this question private or not important to answer as they gave - "can't answer" as their response.

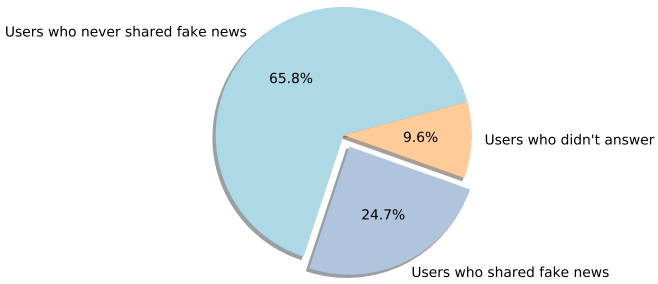

Fig. 6: Responses of users to the question about whether they shared any COVID-19 misinformation on Facebook

It gives us a notion that people sometimes share posts on their timeline without measuring or investigating the truthfulness of the post [14]. And because of the COVID-19 pandemic, the numbers of rumors and interactions with them are huge as Figure 6 suggests that almost all the respondents heard about different misinformation on Facebook. As users interact with both COVID-19 information and misinformation daily, sharing them without knowledge of truthfulness can trigger the spreading of fake news. Study [17] suggested some features that a particular user could use to measure the credibility of a post on Facebook.

V. Discussion and Future Works

The findings from the data analysis suggest that reasons for the vast spreading of fake news or misinformation depend not only on a single factor and exposure of misinformation on Facebook has both mental and physical effects on the users.

According to the Facebook usage till 31st march of 2020, there are around 33,713,000 users in Bangladesh [18]. According to our result, there were 87 participants which are 59.6% of the total 146 who selected Facebook as their main source of information and this result follows the findings of the research [19], who found that around 67% of the total Americans (as of 2017) get some of their information from social media. Our result showed that memes get more attention from Facebook rather than any original news and this result reflects the outcome of [12]. User's frequency or level of interaction can be a reason for his/her mental illness as our result showed in the above, the users who heard 4 or more COVID-19 rumors that we mentioned in the questionnaire have a higher percentage (73.8%) of being mentally or physically affected. This result gives an indication to the findings of the study [12], who researched how Facebook exposure to different content can affect users mentally and physically.

This study mainly focused to get a broader view of why misleading COVID-19 information spreads quickly on to the social media platform in the aspect of Bangladesh. It was difficult to collect resources from the users as the COVID-19 pandemic is at its highest peak now and not only in Bangladesh but all over the world. If we could collect the data by physically meeting the participants, we could also monitor their views and expressions when they were answering the questions. We were also not able to get a better understanding of how these hoaxes of COVID-19 affecting the individuals as it was hard to express them in a question and answer the issues they have faced. As most of the hoaxes were somehow came from rural areas of Bangladesh, if we managed to visit those people in person we might have a better understanding of the effect. In addition, On April 4, Facebook restricted access to its data for researchers studying Facebook [20]. In the future, we can use Facebook's data if the current data restriction becomes flexible.

As the internet and smartphones are becoming widely available and cheap in Bangladesh, people of all sorts are getting into Facebook. Facebook provides an unrestricted platform for anyone to express their opinion regardless of its validity. Newcomers and the ill-informed are often fooled by fake news and unverified personal theories. More verifications and restrictions should be applied to Facebook groups in the future, as our result identified groups as the main source to spread COVID-19 misinformation on Facebook. We found how much different conspiracy theories and hoaxes related to COVID1-9 can affect the users mentally or physically(57.47% of total participants). So it suggests that users should be aware when they are interacting with any news on social media and ignoring any doubtful post might be a better option if they cannot determine their credibility.
Some of our findings are not unexpected but the whole study provides a systematic way for users to use and deal with both information and misinformation on social media. Fake news is here to stay, so research like this will help people in the future to understand the reasons and effects of fake news spread on social media.

References

[1] R. Briones, X. Nan, K. Madden, and L. Waks, "When vaccines go viral: an analysis of hpv vaccine coverage on youtube," *Health communication*, vol. 27, no. 5, pp. 478–485, 2012.

[2] M. Sharma, K. Yadav, N. Yadav, and K. C. Ferdinand, "Zika virus pandemic—analysis of facebook as a social media health information platform," *American journal of infection control*, vol. 45, no. 3, pp. 301–302, 2017.

[3] A. Swift, "Americans' trust in mass media sinks to new low," *Gallup News*, vol. 14, no. 6, 2016.

[4] S. Vosoughi, D. Roy, and S. Aral, "The spread of true and false news online," *Science*, vol. 359, no. 6380, pp. 1146–1151, 2018.

[5] C. Shao, G. L. Ciampaglia, O. Varol, K.-C. Yang, A. Flammini, and F. Menczer, "The spread of low-credibility content by social bots," *Nature communications*, vol. 9, no. 1, pp. 1–9, 2018.

[6] J. Soll, "The long and brutal history of fake news," *Politico Magazine*, vol. 18, no. 12, p. 2016, 2016.

[7] Y. Lin, "Twitter statistics every marketer should know in 2020," 2019.

[8] G. Pennycook, J. McPhetres, Y. Zhang, J. G. Lu, and D. G. Rand, "Fighting covid-19 misinformation on social media: Experimental evidence for a scalable accuracy-nudge intervention," *Psychological science*, vol. 31, no. 7, pp. 770–780, 2020.

[9] E. Ferrara, O. Varol, C. Davis, F. Menczer, and A. Flammini, "The rise of social bots," *Communications of the ACM*, vol. 59, no. 7, pp. 96–104, 2016.

[10] M. S. Hossain, S. Ferdous, and M. H. Siddiqee, "Mass panic during covid-19 outbreak-a perspective from bangladesh as a high-risk country," *Journal of Biomedical Analytics*, vol. 3, no. 2, pp. 1–3, 2020.

[11] M. Cinelli, W. Quattrociocchi, A. Galeazzi, C. M. Valensise, E. Brugnoli, A. L. Schmidt, P. Zola, F. Zollo, and A. Scala, "The covid-19 social media infodemic," *arXiv preprint arXiv:2003.05004*, 2020.

[12] M. A. R. APK, M. C. Maria, and M. A. Michael, "Social media and meme culture: A study on the impact of internet memes in reference with 'kudathai murder case'."

[13] M. Y. Ni, L. Yang, C. M. Leung, N. Li, X. I. Yao, Y. Wang, G. M. Leung, B. J. Cowling, and Q. Liao, "Mental health, risk factors, and social media use during the covid-19 epidemic and cordon sanitaire among the community and health professionals in wuhan, china: Cross-sectional survey," *JMIR mental health*, vol. 7, no. 5, p. e19009, 2020.

[14] C. Geeng, S. Yee, and F. Roesner, "Fake news on facebook and twitter: Investigating how people (don't) investigate," in *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, pp. 1–14, 2020.

[15] S. Frenkel, D. Alba, and R. Zhong, "Surge of virus misinformation stumps facebook and twitter," *The New York Times*, 2020.

[16] A. Fiorillo and P. Gorwood, "The consequences of the covid-19 pandemic on mental health and implications for clinical practice," *European Psychiatry*, vol. 63, no. 1, 2020.

[17] K. R. Saikaew and C. Noyunsan, "Features for measuring credibility on facebook information," *International Scholarly and Scientific Research & Innovation*, vol. 9, no. 1, pp. 174–177, 2015.

[18] M. M. Group, "Asia internet use, population statistics data and facebook data."

[19] J. Gottfried and E. Shearer, "Americans' online news use is closing in on tv news use," *Pew Research Center*, vol. 7, 2017.

[20] S. T. W. Marco Bastos, *Facebook's data lockdown is a disaster for academic researcher*.

Appendix A
Informed Consent Form

We are asking for your voluntary participation in our mini project-based research regarding "Effects of Fake News (During COVID-19) on Social Media in Bangladesh". This study is being done by Md. Rakibul Hasan Shezan, Mohammed Nasif Zawad, Yeasir Arafat Shahed and Syed Atique Newaz who are currently at 11th semester in the Bachelor of Science in Computer Science and Engineering program at East West university CSE department. The purpose of this study is to evaluate the reasons and effects of misinformation related to COVID-19 on Facebook. The analysis will be based on interviews and this online survey. Filling the questionnaire should take about

5 minutes only. You may not be personally benefited from taking part in this study. However, you may receive a copy of the final report upon request. Your identical information (name or mail address) will not be recorded. For your safety, no information from this survey will be shared outside. If you feel uncomfortable answering any of the questions, feel free to skip. By clicking "Next" below you are indicating that you have read and understood this consent form and agree to participate in this research study. If you have any questions then feel free to contact: rakibulshezan97@gmail.com

Appendix B
Survey Questonnaires

1. What is your age?
   (a) 18-22
   (b) 23-27
   (c) 28-32
   (d) 33-37
   (e) 38 or more

2.What is your main source to know about daily news??
   (a) Facebook
   (b) Television
   (c) Newspaper
   (d) YouTube
   (e) Not interested in daily news

3. On a scale of 5 how much you believe news on Facebook?

4. In a range between 1-5, how much have you heard about different fake news related to COVID-19 in Bangladesh?

5. How frequently have you seen fake news on your Facebook feed? On a scale out of 5.

6.Which of the following rumors you have heard through Facebook? [You can check multiple answers]
   (a) Eating Thankuni leaf to cure CORONA
   (b) Government hiding actual numbers of corona patient
   (c) Posts about the government going to open educational institutions
   (d) Pouring water in Coconut tree using pitcher or Kolosh to eradicate CORONA
   (e) Other
   (f) none of them

7. How often do you share or post news, memes related to COVID-19?
   (a) Never
   (b) Sometimes
   (c) Pretty often
   (d) Often share in personal chats

8. How do you verify a news or post about covid19?
   (a) Own knowledge
   (b) Number of like and comment
   (c) Friend's opinion
   (d) I Only believe in TV/newspaper
   (e) I don't verify them

9. Have you ever believed or shared any news related to COVID-19 on Facebook that later turned out to be fake?
   (a) Yes
   (b) No
   (c) Can't answer

10. At what period of time have you shared[if you shared any] fake news related to COVID-19? [not mandatory]
   (a) Before Corona was tested in Bangladesh
   (b) When lockdown started
   (c) During the lockdown
   (d) Recently (August-September)
   (e) Can't Remember

11. Do you know which kind of sources mostly share these COVID-19 fake news?[You can check multiple answers
   (a) Normal Pages
   (b) News Channel Pages
   (c) Groups
   (d) Posts from the individual
   (e) Don't know

12. Do you think that fake news related to COVID-19 affected you both mentally and physically?
   (a) Yes
   (b) No
   (c) Maybe

13. In your opinion, which type of COVID-19 posts get more attention (likes, comments, shares)?
   (a) Original news
   (b) Fake news
   (c) Memes
   (d) Don't know

14. What would be a suggestion to protect the spreading of misinformation about COVID-19 on Facebook? [Not Mandatory]

Appendix C
Fake News Related Screenshots

Fig. 7: A rumor about government taking decision to open educational institutions

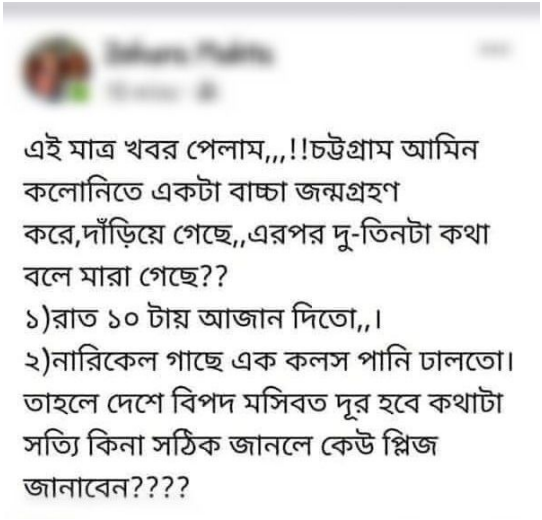

Fig. 8: A rumor related to watering coconut tree to cure corona

Fig. 10: Post showing peoples watering coconut trees as they heard rumor that it can cure corona

Fig. 9: Post containg an unverified video claiming that government is hiding corona patients

Fig. 11: Posts about people eating thankuni leaf to cure corona