Health Information Sharing Pattern on Social Media and User Engagement: A Content Analysis on Facebook Public Posts in Bangladesh

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Abstract

In this age of social media, people are using various platforms for seeking and sharing information. This study aims at exploring the patterns of sharing health information on the widely used social media platform Facebook and the users' engagement with the information. For this purpose, the researchers used mixed-method content analysis. We analyzed 485 Facebook posts about 14 types of issues across nine categories. The study results showed that the highest number (27.84%) of posts were related to health awareness, and the lowest were personal opinions. This paper offers a basis for comprehending the processes of sharing health information and how it could affect user involvements. To clarify the structures that guide user interactions with health content on social media, the study also integrates components from communication and information-sharing concepts. The study thus offers empirical insights into the kinds of health information provided, the most popular health topics, and user engagement patterns through a thorough content analysis of public Facebook postings in Bangladesh. The analysis provides sophisticated knowledge of the issues impacting engagement, including language, kind of material, and multimedia use, by measuring the interactions of users. Scholars can understand from

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this study how users interact with health-related content in the digital era. The result of this study can be used by academics exploring public health, media studies, and health communication to improve theories and create focused interventions for health communication. Additionally, this research can provide useful information for health practitioners to improve their online communication tactics.

Introduction

Social media platforms are Facebook, YouTube, X (former Twitter), WhatsApp, Instagram, LinkedIn, etc. (Lutkevich & Wigmore, 2021); among the most popular is Facebook (Biggest social media platforms 2023). Worldwide, 3.03 billion monthly active users use this platform (Lua, 2023). In Bangladesh, 59.2 people million use Facebook (Hossain, 2023). Users use Facebook for various reasons, such as for sharing and seeking information, entertainment, communication, and up to date with current information (Hossain *et al.*, 2020). Besides these daily activities, users also share and seek health information on various social media, especially on Facebook groups, pages, and personal profiles (AlQarni, 2016). Health communication (HC) encompasses interpersonal and mass communication endeavors aimed at enhancing the well-being of individuals and communities at large (Ishikawa and Kiuchi, 2010). Reminders for appointments, blogs, emails, patient portals, telehealth visits, and two-way messaging are just a few of the tools and techniques used in health communication. Other than these, at present, some of the most useful tools are social media platforms like Facebook, Messenger, WhatsApp, and so on. Several studies have been conducted worldwide regarding health information sharing through social media.

Users use social media platforms for health purposes, including sharing information, reserving information, sharing personal experience or knowledge, knowing about information, and gaining social and political benefits. According to De Choudhury *et al.* (2014), people use online platforms to ask questions, communicate with specialists and others who have gone through similar situations, share worries and queries about treatment options, and comprehend professional diagnoses. Patients can utilize social media for various purposes, including education, information, networking, research, support, goal setting, and monitoring their progress, according to

Courtney's (2013) analysis of the effects of social media on healthcare organizations, physicians, and patients. Above all, patients can communicate, share their experiences, learn from others, and disseminate health information. According to findings from another study, looking up health information online is one of the most common internet behaviors (Korda *et al.*, 2011). In addition, the Internet has emerged as a primary resource for health information, and in the upcoming years, there will likely be a notable surge in users (Sambandam *et al.*, 2007). According to Modahl *et al.* (2012), some doctors think social media might help patients with depression, cancer, unusual medical conditions, chronic illnesses, maternity and newborn care, weight management, well-being, and prevention. Facebook posts on health can benefit patients, doctors, and other users if they interact with each other's posts. According to Santiago (2023), Facebook engagement is defined as comments, sharing of a post, page, group, or advertisement, and reactions (such as likes, love, care, haha, wow, sad, and angry).

Bender *et al.* (2011) examined the use and objective of Facebook groups related to breast cancer. They discovered approximately 620 breast cancer groups on the social media platform. These groups were created for various purposes, including raising money (44.7%), knowledge (38.1%), goods or services advertising connected with raising funds or knowledge (9%), and patient/caregiver encouragement (7%). Setoyama *et al.* (2011) investigated the advantages associated with breast cancer patients' involvement in online communities. They discovered that there is a distinction between lurkers and posters, and posters believed they benefited more from online groups than did lurkers. The opportunity to vent feelings, assist other patients, and get emotional support was beneficial. Researchers discovered that even lurkers received some peer assistance, particularly when obtaining guidance and universality.

The previous research conducted by Bender *et al.* (2011) and Hale *et al.* (2014) focuses on content analysis of publicly available information at the group or page level (such as the group mission statement) but not at the post level (all posts posted by separate individuals). Rosa and Sen (2016) researched from within the direct post. We also conducted our research on actual Facebook posts. The central gap between Rosa and Sen's (2016) research and our study is that we analyzed both Facebook groups and friend lists publicly shared posts. They only use group posts.

This research investigates the pattern of health information sharing in social media platforms, Facebook public posts, and user engagement. The focus of this study is to analyze the types of issues, characteristics of posts, sources of information, polarity of the language in the comment section, reasons for posts, and how the users engage with these posts. To the best of researchers' knowledge, no research has been conducted in Bangladesh.

Conceptual Framework
Researchers developed a conceptual framework to show the health-related information shared on social media platform Facebook and users' engagement. On the social media platform Facebook, various information is shared from different pages, groups, and personal profiles. After these posts, users can see them on their timelines and engage by reacting, commenting, and sharing as they like.
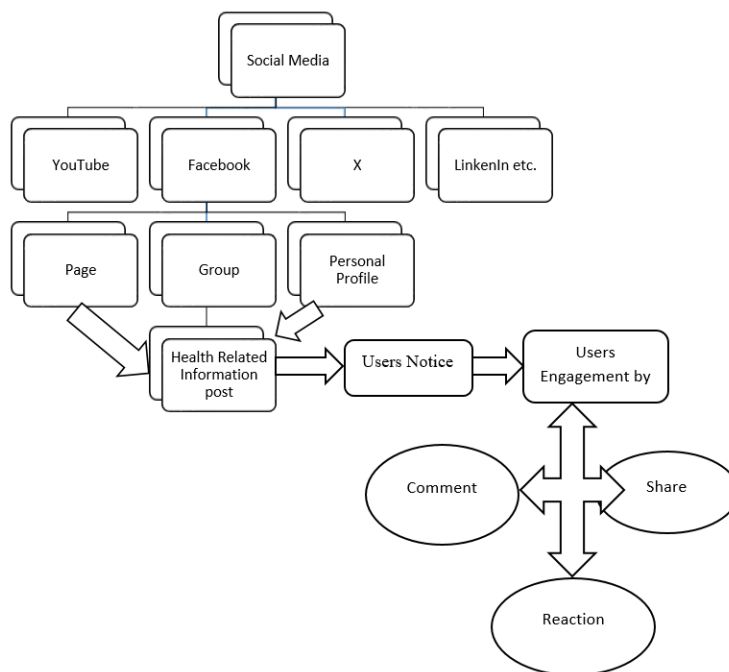

Fig.1: Conceptual Framework on health-related Public Posts on Facebook

Methodology
Study Design
A mixed-methods quantitative and qualitative content analysis was undertaken to assess Facebook (FB) posts written in Bangla, publicly available on the public group and users' profiles. The search was undertaken between March 2020 and March 2023. The study was carried out in March 2020 because the 1st COVID-19 case was detected in Bangladesh.

Data Collection
Researchers use FB friends who share their posts publicly, and FB search functions are used to identify groups related to health. A set of key terms involved with health in Bangla and English is used. Health information, Health information in Bangla, Coronavirus updates in Bangladesh, and Corona were the main terms for searching health-related public groups and public posts. Researchers also

check their FB friend list. The researchers purposively selected two groups with more than 100k members from the search list. We only used posts written in the Bangla language and written by Bangladesh and the citizens of Bangladesh. Researchers analyze both the FB group and individual wall posts. From two groups and the researcher's FB friend lists, we found 45697 public posts; among them, 26551 were health-related FB public posts. Among these, researchers analyzed 485 public posts related to health awareness, doctor information, health advice, skin disease, dental, sleeping problems, asthma,

Urinary infection, personal opinion, coronavirus updates, Government Initiatives, Symptoms of COVID-19, Vaccination, Product Advertisement, Personal Opinion. Researchers excluded repeated posts, FB accounts that have been used for less than four years, and posts that were not publicly shared from the analysis.

For collecting the data, researchers developed some variables (Table 1) from previous literature Rosa and Sen's (2016) study, and also researchers' thinking when they read health-related posts.

Table 1: Variables used in the study and their brief descriptions

Serial No.	Variables	Descriptions
1.	Frequency of health-related Public Post during the study period	Health-related public posts
2.	Characteristics of Health-related Posts	Post types such as Personally written text, personally made Video, News video, News video with text, News Text, News Text with personal text, etc.
3.	Source of information	What are the sources of information that users share publicly on their FB wall and group?
4.	Vaccination	Corona vaccine-related public posts
5.	Number of reactions	Total number of reactions such as like, love, haha, wow, sad, angry, care.
6.	Number of likes	The total number of the like reactions collected from the post
7.	Number of loves	The total number of love reactions collected from the post
8.	Number of haha	The total number of haha reactions collected from the post
9.	Number of wows	The total number of wow reactions collected from the post
10.	Number of sads	The total number of sad reactions collected from the post
11.	Number of angry	The total number of angry reactions collected from the post
12.	Number of cares	The total number of care reactions collected from the post
13.	Number of shares	How many times post has been shared
14.	Number of comments	Total number of comments that a post received
15.		Polarity of Language in comment The polarity of the language when FB users comment on health-related posts
16.	Issue of Post/Share	Health-related issues that users mainly post or share
17.	Reason of Post	What are the causes of post the issue

Data Analysis

Researchers used SPSS v.25 and JASP software to analyze the data. We used descriptive statistics like Mean, Std. Deviation, Minimum, and Maximum value to investigate how many health-related Facebook public posts are shared and how many people react to health-related FB posts by like, love, haha, angry, wow, care reactions, share, and comments. Qualitative analysis of each issue in one post and comment was employed to know the sharing of information related to health.

Table 2: the frequency and percentage of each issue with the example of posts and comment

Types of issue	Number (Percent of posts)	Example of Post	Users comment
Awareness			
Health awareness	135 (27.84%)	To get rid of irritable bowel syndrome (IBS), you have to be completely worry-free, eating, toileting (if possible), and sleeping, which means everything should be done on time. Take care of the body. Moreover, taking Ayurveda medicine and must control food and drink. Then, as the disease is slow, InshaAllah, it will be cured faster than that.	I am also an IBS sufferer. May Allah not give such a disease to the enemy.
COVID 19			
Symptom of COVID 19	50 (10.31%)	Corona symptoms are usually mild; most people do not need special treatment. Some patients may even be asymptomatic; they do not show any symptoms. However, some people have more severe symptoms, such as chest pain or pressure, difficulty breathing, slurred speech, or reduced movement ability. They may require immediate treatment or even hospitalization. The most commonly known symptoms include Fever, dry cough, and fatigue. Body aches and pains. Sore nose and throat. Diarrhea Loss of sense of taste and smell Skin rash Some patients may experience body aches and pains, nasal congestion, runny nose, sore throat, or diarrhea. These symptoms are usually mild and have a gradual onset. Some people are infected but do not develop symptoms or feel sick.	Thank you very much.
Corona update	34 (7.01%)	(02/07/2021) 482nd day Corona situation in Bangladesh in the last 24 hours: Sample Test: 30,012 Total Exam: 66,70,994	I am terrified about it.

Today's detections: 8,483
Total identified: 9,30,042
Today's death: 132
Male: 81
Female: 51
Total deaths: 14,778
Today's recovered: 4,509
Total recovered: 8,25,422
Detection Rate - 28.27%

Source: Jago News

Vaccination	35 (7.22%)	Yesterday, I took the third dose (booster dose) of the Corona vaccine. It was fine till evening. The hand pain started at night. Moreover, the hand is more severe today, and the whole body aches all day, like the pain of breaking a bone. The body is feeling feverish. Any suggestions or remedies would be appreciated. What would be the problem? Thanks in advance	Brother, do not be afraid. Nothing happens. The same happened to me. Just take a normal Napa. The fever lasts for one day. Then it goes away.
Advice			
Health advice	23 (4.74%)	What can be used for dry skin, acne scars, and minor facial holes???	Brother, if you want, I can send you a homemade cream. Inshallah, inshallah, you will get excellent results soon.
Information			
Doctor information	68 (14%)	A dermatologist (Women specialist) is needed to treat skin diseases.	Dr. Sushma Reza's chamber is at Panthaphat Life Spring.
General Problems			
Sleeping Problem	27 (5.57%)	I do not sleep at night. What should I do to sleep well at night?	Keep the mobile in your hand for at least half an hour before sleeping quietly; you will see that you will fall asleep automatically.
Variety of disease			
Skin disease	31 (6.39%)	The whole body is full of scabies. Please help, What can I do?	You can get treatment from Professor Dr. Kavir Chowdhury in Dhaka.
Dental	17 (3.51%)	Assalamu Alaikum. Insects have eaten my teeth for a long time and have made holes in the middle of the teeth. I have not had	Contact a dentist. Do RCT (Root Canal Treatment). Moreover,

		any treatment before but have had many toothaches lately. Now, do I remove this tooth? I do not know what to do. I am looking for expert advice.	put the crown on the teeth. The pain will go away; you can use it as before. Inshallah, remember that there are no insects in the teeth; it is just a misconception.
Asthma	14 (2.89%)	I am 26 years old, and I have shortness of breath almost every day; it used to be occasional, but now getting more. What medicine should I take to be released? It was not there before; it's been happening for two years.	Take Monas 10 mg & Fexo 120 mg every night for three consecutive months. InshaAllah, you will get benefits. If there are too many problems, see a doctor. I believe the doctor will give you the same suggestion along with an inhaler.
Urinary infection	9 (1.86%)	I have an Urinary infection! Frequently having urination However, the urine does not clear and also burns. What medicine would be better?	Drink more water. You will get relief from it.
Government initiative			
Government instruction	21 (4.33%)	"Vaccination will continue in the month of Ramadan to ensure the safety of the people" - Health Minister Zahid Malek	Good initiative
Advertisements			
Product advertisement	12 (2.47%)	Assalamu Alaikum.... how are you all. Dear brothers and sisters, those of you suffering from various dental problems and do not understand which toothpaste to use, do not worry anymore; Dxn brings you Dxn Ganozhi Toothpaste made from high-quality Malaysian mushrooms. You have used many things for dental problems; once you try our toothpaste, you will eliminate the problem inshallah. Features of Dxn Toothpaste: Removes bad breath. Will stop the tooth from bleeding. Will make the teeth whiter. Prevents tooth decay. Will destroy tooth decay. The toothache will stop. The gums will be stronger Removes black spots on teeth.	what is the price

Will increase dental calcium and oral capacity
Apart from that, there is good news for those who practice facials at home: You can use the paste as a scrub.

So do not delay and get high-quality Ganozhi Toothpaste today.

You can also use this toothpaste-
- In burnt areas.
- at the cutting site.
- To remove facial acne.

Opinions			
Personal opinion	9 (1.86%)	Chemicals can be taken as medicine if there is a related disease. A healthy body should never consume chemicals. One such chemical is baking soda. The way people eat baking soda is very likely to cause harm. For more details contact +1 215 397 9652. #love #food #nature #natural #health #healthylifestyle	No comment

Total 485 (100%)

Result
Sharing Health-Related Information through Facebook Groups and Personal Profiles in Bangladesh

This study analyzed 485 public posts from health-related Facebook groups and users' timelines. We divide the posts into nine different segments. These are awareness, COVID-19, advice, information, general problems, a variety of diseases, government initiatives, advertisements, and opinions. The result shows that fourteen issues under these nine segments are discussed on Facebook. Among these, the most (27.84%) posted segment is awareness, followed by COVID-19-related posts (24.54%), variety of disease (20.22%), doctors' information (14%), and the bottom of this rank is personal opinion (1.86%). In the COVID-19 segment, researchers found three sub-categories. These are symptoms of COVID-19, coronavirus updates, and vaccination. In the disease section, we found four sub-categories posts. These are Skin disease, dental, Asthma, and Urinary infection. All of the others have one sub-category. The users who want to know about the various information from their profiles and groups mainly want to know about doctors' information (Table 2).
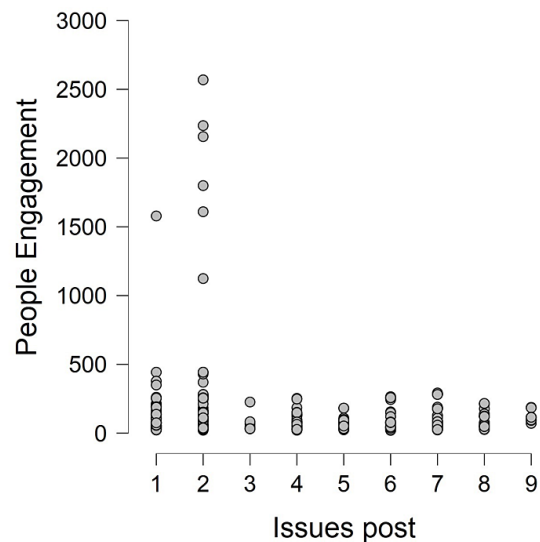

Fig. 2 issues post vs. user engagement

People's Engagement/reactions to the Health-Related Posts

The figure 2 below shows the posted issues and user engagement on them. In this study, researchers divided Facebook health posts into nine different segments. The nine segment's issues are numerically identified in the figure. Among these, 1 is awareness-related posts, 2 is COVID-19, 3 is advice, 4 is information, 5 is a general problem, 6 is the variety of diseases, 7 is government initiative, 8 is an advertisement, and 9 is health-related opinion posts. We analyzed 485 posts from these nine segments in our study. The results showed that the highest number of users engaged in posts related to COVID-19 and the least in posts related to personal opinions and general problems.

Table 3: General findings of the health-related posts on Facebook

Variable	Level	Counts	Total	Proportion
Characteristics of Post	Personally made video	3	485	0.61
	Personally written text	283	485	58.35
	News video	3	485	0.61
	News video with text	15	485	3.09
	News text	16	485	3.30
	News text with personal text	45	485	9.28
	YouTube video	5	485	1.03
	YouTube video with personal text	22	485	4.54
	Personal text with picture	93	485	19.18
Information source	Personally made (Without source)	204	485	42.06
	YouTube	34	485	7.01
	TV channel	38	485	7.84
	Newspaper	13	485	2.68
	Others Facebook post	6	485	1.2
	Online (website, Facebook group, page, etc.)	89	485	18.35
	WHO, IEDCR, DGHS	99	485	20.41
Polarity of Language in the comments	Positive	423	485	87.22
	Negative	15	485	3.09
	Mixed	47	485	9.69
Reason of Post	Share information	62	485	12.78
	Reserve information	71	485	14.64
	Share personal experience or knowledge	167	485	34.43
	Know about information	162	485	33.40
	Gain social and political benefits	23	485	4.74

Frequency Distribution of General Findings of Health-Related Posts

We analyzed the characteristics of health-related public posts used in the study, sources of information, the polarity of the language in the comment section, and reasons for posting. The following characteristics (personally made video, personally written text, news video, news video with text, news text, news text with personal text, YouTube video, YouTube video with personal text, personal text with picture) are observed in the posts. More than half, 284 (58.35%) of the posts are personally written text. Users have used personally made YouTube videos, TV channels, Newspapers, other Facebook posts, various websites, news portals, Facebook pages and groups, WHO, IEDCR, and DGHS as sources of information; among them, 204 of them (42.06%) posts have used personally made source or without source. (Table 3)

Of the language used in the comments, most 423 (87.22%) posts had positive language. Reasons for posting include sharing information, reserving information, sharing personal experience or knowledge, knowing about information, and gaining social and political benefits. Among them, 167 (34.43%) for knowledge sharing, and 162 of the posts were (33.40%) for knowing information.

People Engagement with the Characteristics of the Posts

In our study, we found nine characteristics of posts. These are: 1. Personally made video, 2. Personally written text 3. News video, 4. News video with text, 5. News text, 6. News text with personal text, 7. YouTube video, 8. YouTube video with text, and 9. Personal text with picture. Out of this, the 2nd feature's post i.e. Personally written text posts had the highest engagement of users, and the least engagement was in news video. (Figure 3)

Descriptive Statistics of Users' Engagement with Health-Related Post

The result revealed that the number of reactions (M=129.44, SD=245.48) and comments (M=11.78, SD=21.71) have the highest engagement. The number of shares (M=4.63, SD=14.45) was the lowest engagement. The minimum share was
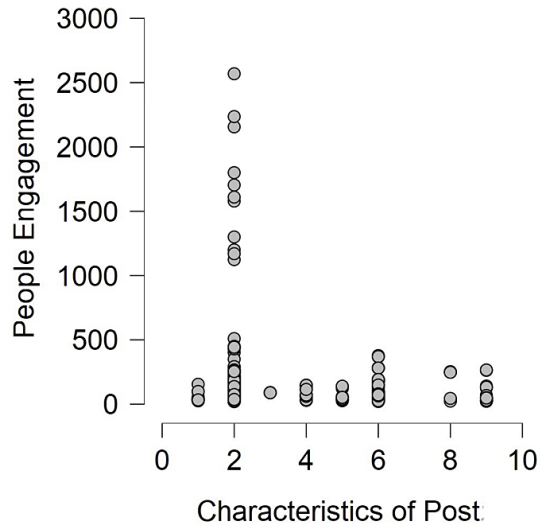

Fig. 3: Characteristics of post Vs. People engagement

zero, and the maximum was 97. Researchers also analyzed reactions like love, Wow, Haha, sad, anger, and care. The result shows that most users gave like reactions (M=104.49, SD=197.09) to various posts; the minimum is 12, and the maximum is 1900. The lowest single reaction was anger (M=0.11, S=0.56). (Table 4)

Table 4: Users' engagement with health-related public posts

Users' engagement	Mean	Standard deviation	Minimum	Maximum
Shares	4.63	14.45	0	97
Like reactions	104.49	197.09	12	1900
Love reactions	10.98	36.33	2	293
Wow reactions	0.61	2.49	0	23
Haha reactions	0.74	5.97	0	75
Sad reactions	10.56	36.08	0	420
Angry reactions	0.11	0.56	0	4
Care reactions	1.09	4.06	0	34
Total reactions of the post	129.44	245.48	20	2569
Comment	11.78	21.71	0	151

Discussion

In the information revolution world, we search for the information we need and share almost all kinds of information through several media. Social media platform Facebook is one of them. In this study, we explored patterns of health-related information sharing on the social media site Facebook and user engagement with these. We chose Facebook as the medium because Facebook has the highest number of users in Bangladesh (Hossain, 2023). Moreover, Facebook is a popular medium for health-related discussions (Della & Sen, 2019).

Our research results show 14 types of health-related issues posts under nine categories that users made in groups or on their timelines. Asiri *et al*. (2017) researched Facebook groups related to HIV, depression, and sickle cell disease. Similarly, AlQarni *et al*. (2016) conducted their study on Diabetes mellitus. Bender *et al*. (2011) conducted their study on breast cancer. Most of the posts in our study were awareness related to health. The results of this study somewhat align with the findings of Asiri *et al*. (2017) and AlQarni *et al*. (2016).

Our analysis showed that user engagement was the highest in Corona-related posts. Hale *et al*. (2014) showed that chronic diseases like cancer and diabetes have the most engagement. The result of the study also revealed that personally written text posts were the most engaging post type. On the other hand, a previous study conducted by Kiet *et al*. (2016) showed that video posts were the most engaging post type of their study. The research results showed that most (42.06%) posts are made without any information source. 87.22% of the comments on this study were positive. However, 3.09% of comments on various posts were negative. Asiri *et al*. (2017) study had 1% negative comments about the disease. The result depicts that the main reason behind the posts was to share personal experience or knowledge. Followed by knowing about information. This result is partially consistent with the AlQarni *et al*. (2016) results. The result of the reactions showed that like reactions and comments have the most engagement. Della & Sen (2019) also found similar results in their study.

The study's results showed users' engagement on various health-related posts on the social media platform Facebook. The health professionals could implement these results to their own needs. For example, they can be encouraged to share their profile and give their opinions and suggestions on Facebook to create health awareness. Government can use the results of this study to formulate policies regarding health information sharing through social media.

This study analyzed the number of reactions, comments, and shares on posts to verify user engagement. Future research should use survey methods on users who engage with these posts to verify how much users use this information for their needs.

This study has some limitations. First, the study was conducted only on posts made publicly on two health-related groups and some users' timelines. From which the pattern of health-related posts can be deduced, the nature of user engagement cannot be ascertained because many more groups and pages are related to health on Facebook. Secondly, the study analyzed 14 types of problems but posted some other topics in the groups that were not included in this study. Thirdly, in the context of Bangladesh, the research has taken posts written in Bengali as a sample. So, the study's results do not apply to the whole world. As a qualitative analysis of the study, only one post and comment on each issue was highlighted.

Conclusion
There are numerous health-related pages and groups on the social media platform Facebook in Bangladesh. Also, many users post various health-related posts on their profiles. This number is increasing day by day. However, users get the information they need from these Facebook groups and pages. Many times, the expert doctor's opinion and advice are also received. However, in most cases, it is seen that many people are giving their own fabricated information despite not having any knowledge about the disease. Some are even mentioning the name of the medicine for various diseases. According to experts, the medicine dose will differ for each person depending on the age, physical condition, and absence or presence of other diseases, even if the disease is the same. Therefore, everyone should be made aware of sharing sensitive information related to their health through social media and taking advice from everyone. Policies should be made regarding sharing health-related information through social media if necessary. Awareness should be created in coordination with specialist doctors, and arrangements should be made to provide primary consultation for various diseases.

Conflict of interest
The authors declare no conflict of interest.

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